

Chapter 1 Testbank: Introduction

Multiple Choice

1. Which statement **best describes a computer program**?

- A) A program is a sequence of comments.
- B) A program can decide what task it is to perform.
- C) A program is a sequence of instructions and decisions that the computer carries out.**
- D) A program can only perform one simple task.

Ans: C

2. Which statement **regarding** computer programs is correct?

- A) Computer programs can decide what task to perform.
- B) Large and complex computer programs are generally written by only one programmer.
- C) Computer programs are composed of extremely primitive operations.**
- D) Small computer programs are not documented.

Answer: c

3. What does **CPU stand for**?

- A) Computer Programming Unit
- B) Computer Processing Unit
- C) Central Processing Unit**
- D) Central Programming Unit

Ans: C

4. Which one of the following is **NOT a function of a CPU**?

- A) Performing arithmetic operations
- B) Processing data and controlling programs
- C) Querying a database**
- D) Fetching and storing data from storage and input devices

Ans: C

5. Which type of **storage** is made from **memory chips**?

- A) CD
- B) hard disk
- C) primary storage**
- D) DVD

Ans: C

6. Which one of the following memory types provides **storage that persists without electricity**?

- A) primary storage
- B) RAM
- C) memory
- D) secondary storage**

Ans: D

7. Which type of secondary storage consists of rotating platters, which are coated with a magnetic material, and read/write heads, which can detect and change the patterns of varying magnetic flux on the platters?

- A) hard disk
- B) flashdrive
- C) DVD
- D) RAM

Ans: A

8. What are the electrical lines called that interconnect the CPU, RAM, and the electronics controlling the hard disk and other devices?

- A) bus
- B) network
- C) optical disk
- D) power lines

Ans: A

9. Which part of a computer contains the CPU, the RAM, and connectors to peripheral devices?

- A) network
- B) bus
- C) motherboard
- D) optical disk

Ans: C

10. For a program to be executed, where must it reside so that the CPU can read its instructions?

- A) optical disk
- B) primary memory
- C) secondary memory
- D) hard disk

Ans: B

11. Which memory type does not provide persistent storage?

- A) secondary storage
- B) hard disk
- C) primary storage
- D) DVD

Answer: c

12. Which of the following is not contained on the motherboard of a computer?

- A) RAM
- B) integrated circuit
- C) hard disk
- D) CPU

Answer: c

13. What term is used to refer to the computer instructions that are executed by a CPU, which are specific to each CPU?

- A) virtual machine
- B) machine code
- C) high-level code
- D) instruction set

Ans: B

14. What is the JVM?

- A) A vital machine that never fails to run compiled Java code.
- B) A vital machine that compiles Java code into machine instructions.
- C) A virtual machine that runs compiled Java code on any CPU.
- D) A virtual machine that compiles Java code into machine instructions.

Answer: c

15. What is the term used to refer to Java code that runs in a browser?

- A) applet
- B) script
- C) html
- D) class

Answer: a

16. What term is used to refer to languages that allow programmers to describe tasks at a higher conceptual level than machine code?

- A) virtual
- B) high-level
- C) sophisticated
- D) conceptual

Ans: B

17. What translates high-level descriptions into machine code?

- A) debugger
- B) assembler
- C) compiler
- D) linker

Ans: C

18. What translates Java source code into files that contain instructions for the JVM?

- A) linker
- B) compiler
- C) assembler
- D) interpreter

Ans: B

19. Which statement is true about running a Java program on a different CPU?

- A) You need different Java source code for each processor.
- B) You can take code that has been generated by the Java compiler and run it on different CPUs.
- C) You need to recompile the Java program for each processor.
- D) You cannot run the program on a computer with a different processor because Java, being a high-level programming language, is machine dependent.

Ans: B

20. When was Java officially introduced?

- A) 1989
- B) 1995
- C) 2005
- D) 2000

Ans: B

21. Which statement best describes the portability characteristic of Java?

- A) It is easy to copy Java source code from one machine to another.
- B) The same Java class files will run on different operating systems without change.
- C) It is easy to compile Java source code on different operating systems.
- D) It is easy to change a Java program so that it will work on different operating systems.

Ans: B

22. When a Java application starts, what is the name of the method that is executed?

- A) main
- B) start
- C) begin
- D) Main

Answer: a

23. Text enclosed between this and the end of line is ignored by the compiler.

- A) "
- B) //
- C) ()
- "D) """"""

Answer: b

24. What is the name of the file declaring the class named MyClass?

- A) MyClass

- B) myclass.java
- C) MyClass.class
- D) MyClass.java

Answer: d

25. In a console window, how do you compile the declaration of the class MyClass?

- A) javac MyClass.java
- B) javac MyClass
- C) java MyClass.java
- D) java MyClass

Answer: a

26. In a console window, assuming that MyClass includes the main method, how do you run the program?

- A) java MyClass.class
- B) javac MyClass
- C) java MyClass
- D) javac MyClass.java

Answer: c

27. A(n) _____ is a collection of code that has been programmed and translated by someone else, ready for use in your program.

- A) method
- B) class
- C) parameter
- D) library

Answer: d

28. Every Java program consists of one or more of these fundamental building blocks.

- A) class
- B) CPU
- C) applet
- D) parameter

Ans: A

29. What is the name of the file that contains the Java source code for the class BankAccount?

- A) BankAccount
- B) BankAccount.java
- C) BankAccount.class
- D) BankAccount.txt

Ans: B

30. A _____ contains sequences of instructions to perform a particular task.

- A) parameter
- B) label
- C) variable
- D) method

Ans: D

31. What term is used to refer to an instruction in a method?

- A) statement
- B) constant
- C) comment
- D) object

Ans: A

32. In Java, every statement must end with this symbol.

- A) .
- B))
- C) !
- D) ;

Ans: D

33. What term is used to refer to text in a program that helps human readers understand the program?

- A) methods
- B) comments
- C) constants
- D) statements

Ans: B

34. The Java compiler ignores any text between ____.

- A) (* and *)
- B) /* and */
- C) {* and *}
- D) // and //

Ans: B

35. What term is used to refer to a sequence of characters enclosed in quotation marks?

- A) string
- B) object
- C) comment
- D) variable

Ans: A

36. What entity belongs to a class and is manipulated in a program?

- A) constant
- B) package
- C) object
- D) comment

Ans: C

37. A method is called on what entity in the program?

- A) constant
- B) statement
- C) comment

D) object

Ans: D

38. What term is used to refer to information passed in to a method on a call?

A) class

B) object

C) parameter

D) comment

Ans: C

39. Parameters to methods are enclosed by these symbols.

A) ()

"B) """"""

C) {}

D) //

Ans: A

40. A method may be called by specifying which 3 items in the specified order?

A) method name, parameters, object

B) object, parameters, method name

C) object, method name, parameters

D) class, parameters, method name

Ans: C

41. What is the syntax for calling the println method on the object System.out?

"A) println("""Any message""").System.out;"

"B) System.out("""Any message""").println;"

"C) System.out.println("""Any message""");"

"D) println(System.out, ""Any message"");"

Ans: C

42. What is the object in the given method call?

"System.out.println("""Welcome""");"

A) println

B) System.out

C) System.out.println

D) Syste

Ans: B

43. What is the name of the method in the given method call?

"System.out.println("""Welcome""");"

"A) ""Welcome""

B) System

C) println

D) out

Ans: C

44. What is the parameter in the given method call?

```
System.out.println("Welcome");
```

A) out

B) println

C) "Welcome"

D) System

Ans: C

45. What is the output of the following Java statement?

```
System.out.println("4 + 6");
```

A) 10

B) 46

C) 4

D) 4 + 6

Ans: D

46. What is the output of the following Java statement?

```
System.out.println(4 + 6);
```

A) 4 + 6

B) 4

C) 10

D) 46

Ans: C

47. What type of program can you use to enter your Java program?

A) compiler

B) editor

C) spreadsheet

D) database

Ans: B

48. Which statement is true about a Java program?

A) Java forces the programmer to use a particular layout for readability.

B) Java requires that at most one statement appear on one line.

C) The first method that is executed in a Java program is called Main.

D) Java is case sensitive.

Ans: D

49. What is the name of the class declared in the file MyClass.java?

A) MyClass

B) MyClass.class

C) MyClass.java

D) myclass

Ans: A

50. The Java compiler translates source code into what type of file?

A) document

B) object

C) class

D) text

Ans: C

51. What is the name of the file created after a successful compilation of MyClass.java?

A) MyClass.java

B) MyClass.class

C) myClass.class

D) MyClass

Ans: B

52. What does a class file contain?

A) Instructions for the specific CPU on the computer.

B) Instructions for the Java Virtual Machine.

C) The JVM instructions for all classes in the Java application.

D) The Java source code for a class.

Ans: B

53. What is the file extension of a Java class file?

A) .java

B) There is no file extension.

C) .class

D) .txt

Ans: C

54. In a console window, what is the name of the command used to compile Java source code?

A) javac

B) javadoc

C) compile

D) java

Ans: A

55. In a console window, what is the name of the command used to run a Java program?

A) javadoc

B) javac

C) java

D) run

Ans: C

56. In a console window, how do you compile the declaration of the class BankAccount?

A) java BankAccount

- B) javac BankAccount
- C) javac BankAccount.java
- D) java BankAccount.java

Ans: C

57. In a console window, assuming that BankAccountTester includes the main method, how do you run the program?

- A) javac BankAccountTester
- B) java BankAccountTester.class
- C) javac BankAccountTester.java
- D) java BankAccountTester

Ans: D

58. What is a Java library?

- A) A collection of Java source code that has been programmed and can be reused.
- B) A collection of books on Java.
- C) A collection of electronic documentation on Java.
- D) A collection of code that has been programmed and translated by someone else, ready for you to use in your program.

Ans: D

59. Which of the following statements is true about running a Java program?

- A) The Java compiler executes your program.
- B) The Java virtual machine loads the instructions for the program that you wrote, starts your program, and loads the necessary library files as they are required.
- C) The java compiler signals the JVM to execute the program.
- D) The javadoc utility runs the documentation of the program.

Ans: B

60. Suppose that a computer virus infects your computer and corrupts the files you were going to submit for your current homework assignment. What precaution could have saved you from a disastrously bad grade for this assignment?

- A) Defragment the hard drive.
- B) Purchase an anti-virus program to remove the virus from your computer.
- C) Make regular backups of all your important files.
- D) Purchase an extended warranty for your computer.

Ans: C

61. Which one of the following statements regarding backup strategies for Java files is correct?

- A) You should have multiple copies of your source files in different locations.
- B) You should regularly print out your work so you can retype it in case of data loss.
- C) You should regularly back up the Java virtual machine instructions to prevent loss of valuable work.
- D) Your compiler automatically makes backups of your source files.

Answer: a

Section reference Programming Tip 1.1

62. Which statement is true about the following Java statement:

```
" System.out.println("Hello!");"
```

- A) There is a run-time error.
- B) There are no errors.
- C) There is a compile-time error.
- D) There are multiple errors.

Answer: c

Section reference: 1.6 Errors

"63. Assuming the programmer wishes to display ""Hello!"" on the screen, which statement is true about the following Java statement:"

```
" System.out.println("""Helo!""");"
```

- A) There is a run-time error.
- B) There are no errors.
- C) There is a compile-time error.
- D) There are multiple errors.

Answer: a

Section reference: 1.6 Errors

"64. Assuming the programmer wishes to display ""Hello!"" on the screen, which statement is true about the following Java statement:"

```
" System.out.println("""Hello!""");"
```

- A) There is a run-time error.
- B) There are no errors.
- C) There is a compile-time error.
- D) There are multiple errors.

Answer: b

Section reference: 1.6 Errors

"65. Assuming the programmer wishes to display ""Hello!"" on the screen, which statement is true about the following Java statement:"

```
" System.out.println("""Helo!""");"
```

- A) There is a run-time error.
- B) There are no errors.
- C) There is a compile-time error.
- D) There are multiple errors.

Answer: d

Section reference: 1.6 Errors

66. Assume that the following Java statement is contained in the main method of the class named Hello:

```
" System.out.println("""Hello!""");"
```

What is the name of the file generated by the Java compiler?

- A) Hello.java

- B) Hello
- C) No file is generated due to an error.
- D) Hello.class

Answer: c

Section reference: 1.6 Errors

67. What is defensive programming?

- A) Writing a program that does not contain run-time errors.
- B) Programming in a language that allows programmers to describe tasks at a higher conceptual level than machine code.
- C) Structuring programs and development processes in such a way that an error in one part of the program does not trigger a disastrous response.
- D) Writing a program that does not contain compile-time errors.

Answer: c

Section reference: 1.6 Errors

68. What is the term used to describe an error detected by the compiler that is a violation of the programming language rules?

- A) logic error
- B) compile-time error
- C) run-time error
- D) typo

Ans: B

69. What is another term used to describe an error detected by the compiler that is a violation of the programming language rules?

- A) typo
- B) logic error
- C) semantic error
- D) run-time error

Ans: C

70. What is the term used to describe an error causing a program to take an action that the programmer did not intend?

- A) typo
- B) run-time error
- C) compile-time error
- D) syntax error

Ans: B

71. What is another term used to describe an error causing a program to take an action that the programmer did not intend?

- A) syntax error
- B) logic error

- C) mistake
- D) compile-time error

Ans: B

72. Which statement is true about the following Java statement:

```
" System.out.println("Welcome!");"
```

- A) There are multiple errors.
- B) There are no errors.
- C) There is a run-time error.
- D) There is a compile-time error.

Ans: D

"73. Assuming the programmer wishes to output the phrase "Hello!", which of the following is true about the following Java statement."

```
" System.out.println("Welcme!");"
```

- A) There are multiple errors.
- B) There is a run-time error.
- C) There are no errors.
- D) There is a compile-time error.

Ans: B

74. Which statement is true about the following Java statement:

```
" System.out.println("Welcome!");"
```

- A) There are no errors.
- B) There is a run-time error.
- C) There are multiple errors.
- D) There is a compile-time error.

Ans: A

"75. Assuming the programmer wishes to output the phrase "Welcome!", which of the following is true about the following Java statement."

```
" System.out.println("Wlcome!");"
```

- A) There are no errors.
- B) There is a compile-time error.
- C) There is a run-time error.
- D) There are multiple errors.

Ans: D

76. Assume that the following Java statement is contained in the main method of the class named Welcome:

```
" System.out.println("Welcome!");"
```

What is the name of the file generated by the Java compiler?

- A) Welcome.class
- B) Welcome.java
- C) No file is generated due to an error.
- D) Welcome

Ans: C

77. Which statement is true about the compilation process?

- A) The compiler will generate CPU specific instructions even if it detects an error.
- B) The compiler will generate Java virtual machine instructions even if it detects an error.
- C) The compiler will stop compiling when it finds the first error.
- D) The compiler will continue compiling after it finds an error.

Ans: D

78. Who or what is responsible for inspecting and testing the program to guard against logic errors?

- A) JVM
- B) programmer
- C) end-user
- D) compiler

Ans: B

79. Structuring programs and development processes in such a way that an error in one part of the program does not trigger a disastrous response is referred to as ____.

- A) high-level programming
- B) offensive programming
- C) defensive programming
- D) low-level programming

Ans: C

80. What are special software tools called that let you trace through a program to find run-time errors?

- A) compiler
- B) debugger
- C) CPU
- D) virtual machine

Ans: B

81. A step sequence that contains precise instructions for what to do at each step and where to go next is

_____.

- A) unambiguous
- B) terminating
- C) executable
- D) documented

Answer: a

Section reference: 1.7 Problem Solving: Algorithm Design

82. A step sequence that can be carried out in practice is _____.

- A) unambiguous
- B) terminating
- C) executable

D) documented

Answer: c

Section reference: 1.7 Problem Solving: Algorithm Design

83. A step sequence that eventually comes to an end is _____.

A) unambiguous

B) terminating

C) executable

D) documented

Answer: b

Section reference: 1.7 Problem Solving: Algorithm Design

84. What is the purpose of the following algorithm?

somenum = 0

Repeat the following steps for 15 times

input variable1

if variable1 < somenum then

somenum = variable1

end of if

end of repeat

print somenum

A) To search for a particular number among 15 numbers.

B) To find the largest among 15 numbers.

C) To print out the 15 numbers.

D) To find the smallest among 15 numbers.

Answer: d

Section reference: 1.7 Problem Solving: Algorithm Design

85. Evaluate the given pseudocode to calculate the efficiency of a vehicle's fuel consumption using the following test values:

The trip odometer reading (odometer) = 350

The amount to fill the gas tank (amount) = 12

input odometer

input amount

output odometer/amount

What is the final output?

A) 27.7

B) 29.2

C) 34.4

D) 32.3

Answer: b

86. Evaluate the given pseudocode to calculate the weighted score for a student:

The average homework score (homework) = 95

The weight of homework (hwWeight) = 35%

The average exam score (exams) = 87

The weight of exams(exWeight) = 65%

input homework

input hwWeight

input exams

input exWeight

output homework*hwWeight + exams*exWeight

What is the final output?

A) 89.20

B) 89.80

C) 87.80

d.92.20

Answer: b

87. Evaluate the given pseudocode to calculate the payment (pmt) with the following test values:

The total number of hours worked (working_hours) = 60

The rate paid for hourly work (rate) = 12

input working_hours

input rate

pmt = working_hours * rate

if working_hours > 40 then

 extra_hours = working_hours – 40

 extra_pmt = extra_hours * rate

 pmt = pmt + extra_pmt

end of if

output pmt

What is the final output?

A) 960

b.840

c.240

d.720

Answer: a

88. What term is used to refer to an informal description of a sequence of steps for solving a problem?

A) assembly language instructions

B) pseudocode

C) machine instructions for a specific CPU

D) Java virtual machine instructions

Ans: B

89. What term is used to refer to a sequence of steps for solving a problem that is unambiguous, executable, and terminating?

- A) documentation
- B) pseudoprogram
- C) algorithm
- D) comments

Ans: C

90. Which of the following options is true about algorithms?

- A) Algorithms are described informally and can contain ambiguous steps.
- B) Algorithms are written in a programming language.
- C) Algorithms can replace the source code in programs.
- D) You must create an algorithm for a problem before you can create a program to solve the problem.

Ans: D

91. A step sequence is unambiguous when _____

- A) it will eventually come to an end.
- B) it is clearly documented.
- C) it can be carried out in practice.
- D) there are precise instructions for what to do at each step and where to go next.

Ans: D

92. A step sequence is executable when _____

- A) it will eventually come to an end.
- B) it can be carried out in practice.
- C) it is documented.
- D) there are precise instructions for what to do at each step and where to go next.

Ans: B

93. A step sequence is terminating when _____

- A) there are precise instructions for what to do at each step and where to go next.
- B) it will eventually come to an end.
- C) it can be documented.
- D) it can be carried out in practice.

Ans: B

94. What is the purpose of the following algorithm?

num = 0

Repeat the following steps for 10 times

input var1

if var1 > num then

num = var1

end of if

end of repeat

print num

- A) To print out the 10 numbers
- B) To search for a particular number among 10 numbers
- C) To find the largest among 10 numbers
- D) To find the smallest among 10 numbers

Ans: C

95. Evaluate the given pseudocode to calculate the efficiency of a vehicle's fuel consumption using the following test values:

The trip odometer reading (odometer) = 300

The amount to fill the gas tank (amount) = 15

input odometer

input amount

output odometer/amount

What is the final output?

- A) 15
- B) 10
- C) 30
- D) 20

Ans: D

96. Evaluate the given pseudocode to calculate the weighted score for a student:

The average program score (program) = 92

The weight of programs (pgmWeight) = 40%

The average exam score (exams) = 85

The weight of exams(exWeight) = 60%

input program

input pgmWeight

input exams

input exWeight

output program*pgmWeight + exams*exWeight

What is the final output?

- A) 89.20
- B) 87.80
- C) 89.80
- D) 92.20

Ans: B

97. Evaluate the given pseudocode to calculate the payment (pmt) with the following test values:

The total number of hours worked (working_hours) = 50

The rate paid for hourly work (rate) = 10

input working_hours

input rate

pmt = working_hours * rate

if working_hours > 40 then

 extra_hours = working_hours – 40

 extra_pmt = extra_hours * rate

pmt = pmt + extra_pmt

end of if

output pmt

What is the final output?

- A) 540
- B) 580
- C) 500
- D) 600

Ans: D

98. What is the correct order of the steps in the program development process:

- i. Develop and describe the algorithm.
- ii. Translate the algorithm into Java.
- iii. Understand the problem.
- iv. Compile and test the program.
- v. Test the algorithm with different inputs.

- A) iii, i, ii, iv, v
- B) i, ii, iv, v, iii
- C) iii, i, v, ii, iv
- D) i, iii, v, ii, iv

Ans: C

Chapter 2: Using ObjectsTest Bank

Multiple Choice

1. A set of values and the operations that can be carried out with those values are called _____.

- A) literals
- B) numbers
- C) values
- D) types

Ans: D

2. What is the name of the type that denotes floating-point numbers that can have fractional parts?

- A) double
- B) floatingPoint
- C) int
- D) integer

Ans: A

3. What is the name of the type that denotes whole numbers?

- A) double
- B) int
- C) whole
- D) integer

Ans: B

4. Which is a valid number literal?

- A) 1×10^4
- B) 1E4
- C) 3 1/2
- D) 10,000

Ans: B

5. What is the name of the type that denotes a string of characters?

- A) Characters
- B) char
- C) charString
- D) String

Ans: D

6. Which of the following values does not have a primitive type?

- A) 12.50
- B) ""Hello""
- C) 6
- D) 1E4

Ans: B

7. What is a storage location in the computer's memory called that has a type, name, and contents?

- A) identifier
- B) literal
- C) label
- D) variable

Ans: D

8. Which of the following declares a variable that will store a welcome message?

- A) String welcome;
- B) double welcome;
- C) Char welcome;
- D) int welcome;

Ans: A

9. Which of the following declares a variable that will store a measurement with fractional parts?

- A) int measure;
- B) double measure;
- C) String measure;
- D) integer measure;

Ans: B

10. Which of the following declares a variable that will store a count with an integer value?

- A) integer count;
- B) double count;
- C) String count;
- D) int count;

Ans: D

11. Which term is used to describe the name of a variable, method, or class?

- A) type
- B) literal
- C) identifier
- D) label

Ans: C

12. Which statement about identifiers is correct?

- A) Identifiers are not case sensitive.
- B) Spaces are permitted inside identifiers.
- C) Identifiers can use symbols such as ? or %.
- D) Identifiers can be made up of letters, digits, and the underscore (_) character.

Ans: D

13. By convention, variables begin with a(n) _____.

- A) uppercase letter
- B) digit
- C) lowercase letter
- D) dollar sign

Ans: C

14. By convention, classes begin with a(n) _____.

- A) lowercase letter
- B) dollar sign
- C) digit
- D) uppercase letter

Ans: D

15. Which of the following is the best choice for a variable identifier that will store a name?

- A) name
- B) Name
- C) n
- D) nm

Ans: A

16. What is the name of the = operator in Java?

- A) inequality
- B) assignment
- C) identity
- D) equality

Ans: B

17. What is the purpose of the assignment operator?

- A) to check for inequality
- B) to check for identity
- C) to check for equality
- D) to change the value of a variable

Ans: D

18. Which statement declares a variable that will store an integer value?

- A) integer count;
- B) int count;
- C) count = 5;
- D) String count = 5;

Ans: B

19. Which statement stores an integer value in a variable?

- A) count = 5;
- B) String count = 5;
- C) int count;
- D) integer count = 5;

Ans: A

20. Which statement declares and stores an integer value in a variable?

- A) count = 5;
- B) int count = 5;
- C) integer count = 5;
- D) String count = 5;

Ans: B

21. Assume that the variable count has been declared as type int, which statement changes the value of count?

- A) count = 6;
- B) count == 6;
- C) integer count = 6;
- D) count := 6;

Ans: A

22. Assume that the variable count has been declared as type int. Which statement adds 10 to count?

- A) count = 10;
- B) count == count + 10;
- C) count = count + 10;
- D) count + 10;

Ans: C

23. Which of the following code fragments will cause an error?

- "A) String greeting = ""Hello, Dave!"";"

```
"B) String greeting = ""Hello, World!"";
int n = greeting.length();
C) int luckyNumber;
System.out.println(luckyNumber);
D) PrintStream printer = System.out;
```

Ans: C

24. What is an object?

- A) A sequence of instructions.
- B) Any value stored in a variable.
- C) An entity in your program that is manipulated by calling methods.
- D) Any input to a method.

Ans: C

25. What is the type of an object?

- A) variable
- B) method
- C) reference
- D) class

Ans: D

"26. ""System.out"" is an instance of (example of?) which class? "

- A) String
- B) Println
- C) System
- D) PrintStream

Ans: D

27. Which of the following statements about objects is correct?

- A) An object defines the methods for a class.
- B) Every object belongs to a class.
- C) An object is a sequence of instructions.
- D) All entities, even numbers, are objects.

Ans: B

28. Which of the following statements about methods is correct?

- A) A method is a sequence of instructions that could access the data of an object
- B) A method name is unique across the entire program.
- C) A method can be called on any object in any class.
- D) Methods are stored in variables.

Ans: A

29. Which of the following statements about classes is correct?

- A) By convention, class names begin with a lowercase letter.
- B) A class declares the methods that you can apply to its objects.
- C) All entities, even primitive numbers, are classes.

D) A class is a sequence of instructions that accesses the data of an object.

Ans: B

30. Which is not a method of the String class?

- A) length
- B) toUpperCase
- C) toLowerCase
- D) println

Ans: D

31. If greeting is a String object, which method call is incorrect?

- A) greeting.length()
- B) greeting.toLowerCase()
- C) greeting.toUpperCase()
- D) greeting.println()

Ans: D

32. What is the term used to specify the remote control for a class, indicating what you can do with the objects that belong to the class?

- A) private interface
- B) public interface
- C) private implementation
- D) hidden implementation

Ans: B

33. A method name is _____ if a class has more than one method with that name (but different parameter types).

- A) overridden
- B) overimplemented
- C) overwhelmed
- D) overloaded

Ans: D

34. The input to a method is called a(n) _____.

- A) overloaded
- B) parameter
- C) interface
- D) procedure

Ans: B

35. The object on which the method call is invoked provides input to the method, and is called a(n) _____.

- A) interface
- B) procedure
- C) implicit parameter
- D) explicit parameter

Ans: C

36. Input to a method enclosed in parentheses after the method name is known as _____.

- A) implicit parameters
- B) interfaces
- C) explicit parameters
- D) return values

Ans: C

37. Which method call represents the invocation of a method that does not have explicit parameters?

- "A) greeting.replace("Hello", "Welcome");"
- B) greeting.length
- C) greeting.length()
- D) System.out.println(greeting);

Ans: C

38. The output of a method is called its _____ value.

- A) implicit
- B) explicit
- C) parameter
- D) return

Ans: D

39. Which of the following statements about methods is correct?

- A) A method can have only one explicit parameter.
- B) The return value of a method can be used as a parameter.
- C) Every method must have a return value.
- D) A method can have multiple implicit parameters.

Ans: B

40. Which of the following method calls illustrates the return value of a method as a parameter?

- A) greeting.length();

What will be output from the following statements that use the revisedBankAccount class?

```
BankAccount first = new BankAccount (100.0);  
BankAccount second = new BankAccount (300.0);  
first.transfer (second, 50.0);  
"System.out.println (first.getBalance() + " " "  
+ second.getBalance());
```

- a)100.0 300.0
- b)150.0 250.0
- c)150.0 300.0
- d)100.0 250.0

Answer: B

100) We want to create a class that represents a date. A date has a day, month, and year. For example, the date March 16, 2014 has the day 16, month 3, and year 2014. The basic framework of a date class is below:

```
public class Date
```

```
{
private int day;
private int month;
private int year;
}
```

The default date will be set to January 1, 1990. What should the body of the constructor with zero parameters be?

```
a) day = 1;
month = 1;
year = 1990;
b) int day = 1;
int month = 1;
int year = 1990;
```

Answer: A

101) We want to create a class that represents a date. A date has a day, month, and year. For example, the date March 16, 2014 has the day 16, month 3, and year 2014. The basic framework of a date class is below:

```
public class Date
{
private int day;
private int month;
private int year;
}
```

We want to create a specific date using code like:

```
Date first = new Date (16, 3, 2014);
// Creates March 16, 2014
Date second = new Date (1, 9, 2013);
// Creates September 1, 2013
```

Which of the constructor specifications below will allow this code to behave as desired?

```
a) public void Date (int d, int m, int y)
b) public init (int d, int m, int y)
c) public Date (int d, int m, int y)
d) public Date Date (int d, int m, int y)
```

Answer: C

102) We want to create a class that represents a date. A date has a day, month, and year. For example, the date March 16, 2014 has the day 16, month 3, and year 2014. The basic framework of a date class is below:

```
public class Date
{
private int day;
private int month;
private int year;
}
```

What should the body of the constructor be?

```
a) day = d;
month = m;
year = y;
```

```
b)d = day;
m = month;
y = year;
c)int day = d;
int month = m;
int year = y;
d)day = 1;
month = 1;
year = 1990;
```

Answer: A

103)We want the toString method to return strings like 3/16/2014. Give the body of the toString method.

```
"a)return ""m/d/y"";"
"b)return month + ""/"" + day + ""/"" + year;"
"c)return m + ""/"" + d + ""/"" + y;"
"d)return ""month/day/year"";"
```

Answer: B

Package Title: Test Bank

Course Title: Big Java

Chapter Number: 4 Fundamental Data Types

Question type:Multiple Choice

1) Which of the following options declares a float variable?

```
a) Float age;
b) flt age;
c) float age;
d) age: float;
```

Answer: c

Section Reference 2: Special Topic 4.1

2) What is the result of the following code snippet?

```
public static void main(String[] args)
{
    double circleRadius;
    double circleVolume = 22 / 7 * circleRadius * circleRadius;
    System.out.println(circleVolume);
}
```

```
a) 0
b) 3.14
c) 6.28
d) compile-time error
```

Answer: d

3) What is wrong with the following code snippet?

105) What is the output of this loop?

```
inti = 0;
boolean found;
while (i < 20 && !found)
{
int sum = i * 2 + i * 3;
"System.out.print(sum + "" "");"
    if (sum > 50)
    {
        found = true;
    }
i++;
}
```

- a) 0 5 10 15 20 25 30 35 40 45 50 55
- b) 0
- c) No output, compilation error
- d) 0 5 10

Answer: c

106) How many times does the following loop execute?

```
inti = 0;
boolean found = false;
while (i < 100 && !found)
{
i++;
"System.out.print(i + "" "");"
int j = i * i;
    if ((i * i * i) % j == j)
    {
        found = true;
    }
}
```

- a) 10 times
- b) 20 times
- c) 100 times
- d) An infinite number of times

Answer: c

107) Which code snippet produces the sum of the first n even numbers?

```
a)
int sum = 0;
for (inti = 1; i <= n; i++)
{
    if (i % 2 == 0)
    {
        sum = sum + i;
    }
}
```

```

    }
}
b)
int sum = 0;
for (inti = 1; i<= n; i++)
{
    sum = sum + i * 2;
}
c)
int sum = 0;
for (inti = 0; i< n; i++)
{
    if (i % 2 == 0)
    {
        sum = sum + i;
    }
}
d)
int sum;
for (inti = 1; i<= n; i++)
{
    sum = sum + i * 2;
}

```

Answer: b

108) Which of the following loops will print the odd numbers between 0 and 20?

```

a)for (intnum = 1; num< 20; num++)
{
"System.out.print (num % 2 + "" "" );"
}
b)for (intnum = 0; num< 20; num+= 2)
{
"System.out.print (num + "" "" );"
}
c)for (intnum = 1; num< 20; num+= 2)
{
"System.out.print (num + "" "" );"
}
d)for (intnum = 0; num< 20; num+= 2)
{
if (num % 2 == 1)
"System.out.print (num + "" "" );"
}

```

Answer: c

"109) Which of the following conditions can be added to the code below so it will loop until the user enters ""no"" or ""NO""?"

```

Scanner in = new Scanner (System.in);
"System.out.print (""Continue? "");"
String response = in.next();
while (/* put condition here */)
{
"System.out.println (""Hello beautiful!");"
"System.out.print (""Continue? "");"
    response = in.next();
}
"a)response.equals("no") != response.equals("NO") "
"b)!(response.equals("no") || response.equals("NO"))"
"c)!response.equals("no") || !response.equals("NO")"
"d)!(response.equals("no") &&response.equals("NO"))"

```

Answer: b

110) For which input values will the following loop not correctly compute the maximum of the values?

```

Scanner in = new Scanner (System.in);
int max = 0;
while (in.hasNextInt())
{
int value = in.nextInt();
    if (value > max)
    {
        max = value;
    }
}

```

a)3 333
b)0 1 2 9 107
c)107 2 9 -3
d)-4 -2 -10 -7

Answer: d

111) A loop inside another loop is called:

- a) A sentinel loop
- b) A nested loop
- c) A parallel loop
- d) A do/while loop

Answer: b

112) What is the first and last value of i to be displayed by the following code snippet?

```

int n = 20;
for (inti = 0; i<= n; i++)
{
    for (int j = 0; j <= i; j++)
    {

```

```
"System.out.println("***** + i);"  
    }  
}
```

- a) 0 and 20
- b) 1 and 20
- c) 0 and 19
- d) 1 and 19

Answer: a

113) How many times will the output line be printed in the following code snippet?

```
for (int num2 = 1; num2 <= 3; num2++)  
{  
    for (int num1 = 0; num1 <= 2; num1++)  
    {  
"System.out.println("***** + num2 + "" "" + num1);"  
    }  
}
```

- a) 3 times
- b) 6 times
- c) 9 times
- d) 12 times

Answer: C

114) In the following code snippet, when does the execution of the program switch from the inner loop to the outer loop?

```
inti;  
int j;  
for (i = 0; i <= 9; i++)  
{  
    for (j = 1; j < 5; j++)  
    {  
"System.out.println("Hello");"  
        if (j == 2)  
        {  
            j = 6;  
        }  
    }  
}
```

- a) When the value of j becomes 6
- b) When the program executes completely
- c) When the condition for the outer loop is met
- d) When the value of i is incremented

Answer: a

115) What is the last output line of the code snippet given below?

```
inti = 0;
```

```

while (i < 10)
{
    int num = 1;
    for (int j = i; j > 1; j--)
    {
        System.out.print(j + " ");
        num = num * 2;
    }
    System.out.println("****");
    i++;
}

```

- a) 3 2 ***
- b) 9 8 7 6 5 4 3 2 ***
- c) 8 7 6 5 4 3 2 ***
- d) 2 ***

```

@Test public void twoIncrements()
{
    Counter ctr = new Counter(10);
    ctr.increment();
    ctr.increment();
    // Put test line here
}

```

Which line will test that the resulting value is 12?

- a) Assert.assertEquals(12, ctr.getValue());
- b) Assert.assertEquals(ctr.getValue());
- c) System.out.println(12 == ctr.getValue());
- "d) if (12 == ctr.getValue()) { System.out.println("Passed"); }"
- " else { System.out.println("Failed");}"

Answer: a

94. Which of the following is one of the most popular testing frameworks?

- a) JUnit
- b) JUnitTest
- c) JTester
- d) JQATester

Answer: a

95. Which annotation is used to mark test methods when using JUnit?

- a) @TestMethod
- b) @TestCode
- c) @Test
- d) @JUnitTest

Answer: c

41. If greeting refers to a String object, which of the following is a syntactically correct Java statement?

- A) System.out.println(length().greeting);
- B) System.out.println(greeting());
- C) System.out.println(greeting.length());
- "D) greeting.println("Hello");"

Ans: C

42. What is the declared return type for a method that does not have a return value?

- A) String
- B) There is no declared return type when a method does not return a value.
- C) void
- D) A method must return a value.

Ans: C

43. Which of the following represents a method declaration with a void return type?

- A) public void setValue(int value) { ... }
- B) public void getIntValue() { ... }
- C) void public setValue(int value) { ... }
- D) void getIntValue() { ... }

Ans: A

44. Which of the following represents a method call to a method with a void return type?

- A) greeting.isEmpty()
- B) System.out.println()
- "C) greeting.replace("Hello", "World")"
- D) greeting.length()

Ans: B

45. Which operator constructs object instances?

- A) new
- B) instanceof
- C) void
- D) construct

Ans: A

46. Which of the following constructs a Circle of radius 3, assuming the construction parameter is the radius value?

- A) Circle(3).new
- B) new Circle(3)
- C) new.Circle(3)
- D) Circle(3)

Ans: B

47. Which statement declares a variable that references a Circle of radius 3?

- A) Circle c = Circle(3)
- B) Circle c = new Circle(3);
- C) Circle c.new.Circle(3);

D) c.Circle(3);

Ans: B

48. Which statement calls a constructor with no construction parameters?

A) Circle c = new Circle();

B) A call to a constructor must have construction parameters.

C) Circle c = new Circle;

D) Circle c = Circle();

Ans: A

49. What terminology describes a method that returns information about its implicit parameter and does not change the parameter's internal data?

A) mutator

B) accessor

C) void

D) public

Ans: B

50. What terminology describes a method that modifies the internal data of its implicit parameter?

A) public

B) void

C) mutator

D) accessor

Ans: C

51. Which of the following is a mutator method for the Rectangle class?

A) getHeight

B) translate

C) getWidth

D) isEmpty

Ans: B

52. What does API stand for?

A) Applet Programming Interface

B) Application Programmer Interaction

C) Application Programming Instance

D) Application Programming Interface

Ans: D

53. A _____ is a collection of classes with a related purpose.

A) package

B) import

C) method

D) collection

Ans: A

54. To use a class in another package you need to _____ it.

- A) export
- B) overload
- C) rewrite
- D) import

Ans: D

55. Which package is automatically imported in any Java program?

- A) java.system
- B) java.lang
- C) java.language
- D) java.util

Ans: B

56. Which class is part of the java.lang package?

- A) Rectangle
- B) PrintStream
- C) String
- D) Circle

Ans: C

57. Which import statement allows for the use of the Rectangle class?

- A) import java.geom.Rectangle2D;
- B) import java.geom.Rectangle;
- C) import java.geom.RectangularShape;
- D) import java.awt.Rectangle;

Ans: D

58. Which method checks whether a point lies within the rectangle?

- A) add
- B) getBounds
- C) translate
- D) contains

Ans: D

59. Which method would you use to obtain the string ""1234567890"" from the string ""123-456-7890""?

- A) isEmpty
- B) replace
- C) trim
- D) length

Ans: B

60. Which of the following statements about test programs is true?

- A) Test programs verify that methods have been implemented correctly.
- B) A tester class does not contain the main method.
- C) You do not have to display the expected results.

D) Writing test programs is not an important skill.

Ans: A

61. Which of the following terms denotes the memory location of an object?

- A) implicit parameter
- B) mutator method
- C) encapsulation
- D) object reference

Ans: D

62. What do object variables store?

- A) objects
- B) classes
- C) references
- D) numbers

Ans: C

63. Assuming the following Java statement:

```
Circle c1 = new Circle(3);
```

What does the variable c1 store?

- A) The constructed object itself.
- B) A reference to the Circle class.
- C) A reference to the memory location of the constructed object.
- D) The numeric value 3.

Ans: C

64. Assuming the following Java statement:

```
intnum = 10;
```

What does the variable num store?

- A) A reference to the memory location where the value 10 is stored.
- B) A reference to the int primitive type.
- C) An object representing the number 10.
- D) The numeric value 10.

Ans: D

65. What is the output of the following code:

```
Circle c1 = new Circle(3);
```

```
Circle c2 = c1;
```

```
c1.setRadius(4);
```

```
System.out.println(c2.getRadius());
```

- A) 4
- B) 3
- C) 6
- D) 8

Ans: A

66. What is the output of the following code:

```
Circle c1 = new Circle(3);  
Circle c2 = new Circle(3);  
c1.setRadius(4);  
System.out.println(c2.getRadius());
```

- A) 3
- B) 8
- C) 6
- D) 4

Ans: A

67. What is the output of the following code:

```
int num1 = 6;  
int num2 = num1;  
num2 = num2 + 10;  
System.out.println(num1);
```

- A) 6
- B) 10
- C) 4
- D) 16

Ans: A

68. What is the output of the following code:

```
int num1 = 6;  
int num2 = 10;  
num1 = num2;  
num2 = num1;  
"System.out.println(num1 + " ", "" + num2);"
```

- A) 6, 10
- B) 10, 6
- C) 6, 6
- D) 10, 10

Ans:

69. What is the output of the following code:

```
int num1 = 6;  
int num2 = 10;  
num1 = num1 + num2;  
num2 = num1 + num2;  
"System.out.println(num1 + " ", "" + num2);"
```

- A) 6, 10
- B) 16, 16
- C) 16, 22
- D) 16, 26

Ans: D

70. Complete this code fragment to ensure that the frame is shown:

```
JFrame frame = new JFrame();
```

- A) frame.setVisible(true);
- B) frame.visible = true;
- C) JFrame.setVisible();
- D) frame.setVisible();

Ans: A

71. Based on the following code, which of the following statements sets the frame to a width of 400 and a height of 200:

```
finalint FRAME_WIDTH = 400;
```

```
finalint FRAME_HEIGHT = 200;
```

```
JFrame frame = new JFrame();
```

- A) frame.size = (FRAME_WIDTH, FRAME_HEIGHT);
- B) frame.addSize(FRAME_WIDTH, FRAME_HEIGHT);
- C) frame.setSize(FRAME_WIDTH, FRAME_HEIGHT);
- D) frame.setSize(FRAME_HEIGHT, FRAME_WIDTH);

Ans: C

72. Based on the following statement, which of the following statements sets the title of the frame:

```
JFrame frame = new JFrame();
```

```
"A) frame.title = ""An Empty Frame"";"
```

```
B) frame.setTitle(JFrame.EMPTY);
```

```
"C) frame.addTitle("""An Empty Frame""");"
```

```
"D) frame.setTitle("""An Empty Frame""");"
```

Ans: D

73. What is the nickname for the graphical user interface library in Java?

- A) Applet
- B) GUI
- C) JComponent
- D) Swing

Ans: D

74. Place drawing instructions inside the _____ method, which is called whenever the component needs to be repainted.

- A) paintComponent
- B) draw
- C) paint
- D) drawComponent

Ans: A

75. Complete the following statement, which constructs an ellipse.

```
Ellipse2D.Double ellipse =
```

```
new _____ (x, y, width, height);
```

- A) Double.Ellipse2D
- B) Ellipse2D.Double
- C) Ellipse2D
- D) Double

Ans: B

76. In the code below, write a statement that sets the graphic to green.

```
public class ItalianFlagComponent extends JComponent
{
    public void paintComponent(Graphics g)
    {
        Graphics2D g2 = (Graphics2D) g;
        Rectangle.DoubleleftRectangle = new Rectangle.Double(100, 100, 30, 60);
        ...
        _____
        ...
    }
}
```

- A) g2.setColor(GREEN);
- B) g2.SetColor(0, 255, 0);
- C) g2.setColor(Color.GREEN);
- "D) g2.setColor("GREEN");"

Ans: C

Course Title: Big Java, Early Objects

Chapter 3: Implementing Classes

Multiple Choice

1) What does an object store its data in?

- a)files
- b)methods
- c)instance variables
- d)accessspecifiers

Answer: C

2) Each object of a class has its own set of ____.

- a)methods
- b)instance variables
- c)constructors
- d)classes

Answer: B

3) An instance variable declaration consists of which of the following parts?

- a)the return type, the name of the method, and a list of the parameters (if any).
- b)an access specifier, the type of the instance variable, and the name of the instance variable.
- c)an access specifier, a list of the parameters (if any), and the body of the method.
- d)the type of the instance variable, an access specifier, a list of the parameters (if any), and the body of the method.

Answer: B

4) You should declare all instance variables as ____.

- a)protected
- b)class
- c)public
- d)private

Answer: D

5) What statement is used to specify the value that a method gives back to its caller?

- a)new
- b)public
- c)private
- d)return

Answer: D

6) Private instance variables ____.

- a)can only be accessed by methods of a different class
- b)can only be accessed by methods of the same class
- c)cannot be accessed by methods of the same class
- d)can only be accessed by the constructor of the class

Answer: B

7) What is the name of the instance variable for a BankAccount object?

- a)makeDeposit
- b)makeWithdrawl
- c)getBalance
- d)balance

Answer:D

8) Encapsulation allows a programmer to use a class without having to know its ____.

- a)interface
- b)name
- c)methods
- d)implementation

Answer: D

9) The black boxes from which a program is manufactured are called ____.

- a)objects
- b>accessspecifiers
- c)methods
- d)instance variables

Answer: A

10) What is the process of hiding object data and providing methods for data access called?

- a)documentation
- b)encapsulation

c)instantiation

d)abstraction

Answer: B

11) Information hiding makes it simpler for the implementor of a class to _____.

a)change the private implementation

b)change the method headers

c)change the name of the class

d)change the public interface

Answer: A

12) A method header consists of which of the following parts?

a)the return type, the name of the method, and a list of the parameters (if any)

b)an access specifier, the type of the instance variable, and the name of the instance variable

c)the type of the instance variable, an access specifier, and a list of the parameters (if any)

d)an access specifier, a return type, a method name, and a list of the parameters (if any)

Answer: D

13) What contains the instructions to initialize the instance variables of an object?

a)constructor

b)accessspecifier

c)initializer

d)type name

Answer: A

14)What contains the instructions to initialize the instance variables of an object?

a)constructor

b)accessspecifier

c)initializer

d)type name

Answer: A

15) What is the return type of the println method of the PrintStream class?

a)void

b)public

c)String

d)double

Answer: A

16) What is the return type of a constructor?

a)void

b) A constructor does not have a return type.

c)private

d)public

Answer: B

17) A class declaration consists of which of the following parts?

- a) an access specifier, the keyword class, the name of the class, declarations for instance variables, constructors, and methods
- b) an access specifier, a return type, a method name, a list of the parameters (if any), and the body of the method
- c) the keyword class, the name of the class, declarations for instance variables, constructors, and methods
- d) an access specifier, the name of the class, a list of the parameters (if any), and the body of the constructor

Answer: A

18) The name of the constructor is always the same as the name of the ___.

- a) access specifier
- b) class
- c) instance variable
- d) parameter variable

Answer: B

19) Consider the following method comment and method header:

```
/**
 * Converts from a source measurement to a target measurement.
 * @param _____ the measurement
 * @return the input value converted to the target unit
 */
public double convertTo(double fromMeasurement) { . . . }
```

Fill in the blank.

- a) return
- b) fromMeasurement
- c) double
- d) convertTo

Answer: B

20. Consider the following method comment and method header:

```
/**
 * Converts from a source measurement to a target measurement.
 * _____ fromMeasurement the measurement
 * @return the input value converted to the target unit
 */
public double convertTo(double fromMeasurement) { . . . }
```

Fill in the blank.

- a) @param
- b) param
- c) @parameter
- d) parameter

Answer: A

21) Consider the following method comment and method header:

```
/**
 * Converts from a source measurement to a target measurement.
 * @param fromMeasurement the measurement
```

_____ the input value converted to the target unit

*/

```
public double convertTo(double fromMeasurement) { . . . }
```

Fill in the blank.

- a) return double
- b) return
- c) @return double
- d) @return

Answer: D

22) What is the name of the constructor for the BankAccount class?

- a) BankAccount
- b) deposit
- c) balance
- d) withdraw

Answer: A

23) Which of the following corresponds to a valid constructor header for the Player class?

- a) public Player()
- b) private Player
- c) public void Player()
- d) private void Player()

Answer: A

24) Which of the following statements is true about constructors?

- a) Providing a constructor for a class is optional.
- b) You can only provide one constructor for a class.
- c) The body of the constructor must initialize all instance variables or the constructor will not successfully compile.
- d) A constructor has a void return type.

Answer: A

25) Which of the following is a valid constructor header for the Player class that accepts the player name as a parameter?

- a) public void Player(String playerName)
- b) private Player(playerName)
- c) private void Player(playerName)
- d) public Player(String playerName)

Answer: D

26) Consider the following code to declare a constructor for the Player class:

```
public void Player(String playerName)
{
    name = playerName;
}
```

Which statement is true?

- a) The code compiles successfully and results in the instantiation of a Player object when called.

- b) The code compiles successfully but results in a compiler error in the code that calls the constructor.
- c) The code does not compile.
- d) The code compiles successfully but results in a run-time error in the code that calls the constructor.

Answer: B

27) The public constructors and methods of a class form the public _____ of the class.

- a) interface
- b) initialization
- c) implementation
- d) encapsulation

Answer: A

28) What are the operations that any programmer can use to create and manipulate objects of the class called?

- a) public implementation
- b) public interface
- c) private implementation
- d) private interface

Answer: B

29) We want to change the BankAccount class so that all accounts will have a monthly fee. When a BankAccount is created, its monthly fee is set and cannot be changed. Which of the following will properly define the instance variable `monthlyFee` that holds the monthly fee?

- a) `monthlyFee: double;`
- b) `instancevar monthlyFee;`
- c) `private double monthlyFee;`
- d) `private field monthlyFee;`

Answer: C

30) We want to change the BankAccount class so that all accounts will have a monthly fee. When a BankAccount is created, its monthly fee is set and cannot be changed. The instance variable `monthlyFee` will hold the monthly fee. Which of the following constructors properly sets the monthly fee to a default value of 20?

- a.
{
balance = initialBalance;
monthlyFee = 20;
}
- b.
{
balance = initialBalance;
double monthlyFee = 20;
}
- c.
{
balance = initialBalance;
monthlyFee = initialBalance - 20;
}

d.
{
balance = initialBalance - 20;
}

Answer: A

31) We want to change the BankAccount class so that all accounts will have a monthly fee. When a BankAccount is created, its monthly fee is set and cannot be changed. The instance variable monthlyFee will hold the monthly fee. Which of the following is the correct public interface for a constructor that sets both the initial balance and monthly fee?

- a) public BankAccount (double initialBalance, double monthlyFee)
- b) public BankAccount (double initialBalance, double monthlyFee)
- c) public BankAccount (double initialBalance) has monthlyFee
- d) public BankAccount (double initialBalance)

```
{  
double monthlyFee;  
// The rest of the constructor code follows  
}
```

Answer: B

32) We want to change the BankAccount class so that all accounts will have a monthly fee. When a BankAccount is created, its monthly fee is set and cannot be changed. The instance variable monthlyFee will hold the monthly fee. Which of the following methods deducts the value of the monthly fee from the account?

- a.
{
balance = balance - monthlyFee;
}
- b.
{
initialBalance = initialBalance - monthlyFee;
}
- c.
{
balance = monthlyFee;
}
- d.
{
balance - monthlyFee;
}

Answer: a

33) We want to create a class that represents a geometric sequence. A geometric sequence is a sequence of numbers that begin at some value and then multiplies each value by some constant to get the next value. For example, the geometric sequence 1, 2, 4, 8, 16 starts at 1 and multiplies each term by 2 to get the next. The geometric sequence 10.8, 5.4, 2.7, 1.35 starts at 10.8 and multiplies each term by 0.5 to get the next. The basic framework of a geometric sequence class is below:

```
public class GeometricSequence
```

```
{  
private double initialValue;  
private double multiplier;  
}
```

We want to create a geometric sequence using code like:

```
GeometricSequence first = new GeometricSequence (1, 2);  
// Creates 1, 2, 4, 8, 16...  
GeometricSequence second = new GeometricSequence (10.8, 0.5);  
// Creates 10.8, 5.4, 2.7, 1.35 ...
```

Which of the constructor specifications below will allow this code to behave as desired?

- a) public void GeometricSequence(double initial, double mult)
- b) public GeometricSequence init(double initial, double mult)
- c) public GeometricSequence GeometricSequence(double initial, double mult)
- d) public GeometricSequence(double initial, double mult)

Answer: D

34) We want to create a class that represents a geometric sequence. A geometric sequence is a sequence of numbers that begin at some value and then multiplies each value by some constant to get the next value. For example, the geometric sequence 1, 2, 4, 8, 16 starts at 1 and multiplies each term by 2 to get the next. The geometric sequence 10.8, 5.4, 2.7, 1.35 starts at 10.8 and multiplies each term by 0.5 to get the next. The basic framework of a geometric sequence class is below:

```
public class GeometricSequence  
{  
private double initialValue;  
private double multiplier;  
}
```

What should the body of the constructor be?

- a) initialValue = initial;
multiplier = mult;
- b) initial = initialValue;
mult = multiplier;
- c) double initialValue = initial;
double multiplier = mult;
- d) double initial = initialValue;
double mult = multiplier;

Answer: A

35) We want to create a class that represents a geometric sequence. A geometric sequence is a sequence of numbers that begin at some value and then multiplies each value by some constant to get the next value. For example, the geometric sequence 1, 2, 4, 8, 16 starts at 1 and multiplies each term by 2 to get the next. The geometric sequence 10.8, 5.4, 2.7, 1.35 starts at 10.8 and multiplies each term by 0.5 to get the next. The basic framework of a geometric sequence class is below:

```
public class GeometricSequence  
{  
private double initialValue;  
private double multiplier;
```

```

}
We want to produce elements of the geometric sequence using code like:
System.out.println (first.next());
System.out.println (first.next());
System.out.println (first.next());
System.out.println (first.next());
System.out.println (second.next()); //Prints 10.8 and advances
System.out.println (second.next()); //Prints 5.4 and advances
System.out.println (second.next()); //Prints 2.7 and advances
Which of the method specifications below will allow this code to behave as desired?

```

- a) public next() : double
- b) public int next()
- c) public void next(double result)
- d) public double next()

Answer: D

36) We want to create a class that represents a geometric sequence. A geometric sequence is a sequence of numbers that begin at some value and then multiplies each value by some constant to get the next value. For example, the geometric sequence 1, 2, 4, 8, 16 starts at 1 and multiplies each term by 2 to get the next. The geometric sequence 10.8, 5.4, 2.7, 1.35 starts at 10.8 and multiplies each term by 0.5 to get the next. The basic framework of a geometric sequence class is below:

```

public class GeometricSequence
{
private double initialValue;
private double multiplier;
}

```

```

We want to produce elements of the geometric sequence using code
System.out.println (first.next());
System.out.println (first.next());
System.out.println (first.next());
System.out.println (second.next()); //Prints 10.8 and advances
System.out.println (second.next()); //Prints 5.4 and advances
System.out.println (second.next()); //Prints 2.7 and advances
What should the body of the next method be?

```

- a) double result = initialValue;
initialValue = initialValue * multiplier;
return result;
- b) return initialValue;
initialValue = initialValue * multiplier;
- c) double result = initialValue;
multiplier = initialValue * multiplier;
return result;
- d) initialValue = initialValue * multiplier;
return initialValue;

Answer: A

37) Documentation ___ can be used to describe the classes and public methods of programs.

- a)components
- b)comments
- c)constants
- d)commands

Answer: B

38) What is the name of the utility that formats comments into a set of documents that you can view in a Web browser?

- a)javadoc
- b)javac
- c)javad
- d)java

Answer: A

39) If a method has two parameters, one explicit and one implicit, and a return type of void, then the documentation comments should include:

- a)One @param statement, and one @return statement
- b)Two @param statements, and one @return statement
- c)One @param statement, and no @return statement
- d)Two @param statements, and no @return statement

Answer:C

40) You should provide documentation comments for ___.

- a)only classes
- b)only methods with parameters
- c)every class, every method, every parameter, and every return value
- d)only methods with return values

Answer: C

41) When you declare a method, you also need to provide the method ____, which consists of statements that are executed when the method is called.

- a)body
- b)header
- c)return type
- d>accessspecifier

Answer: A

42) The private implementation of a class consists of ___.

- a)instance variables and the method headers
- b)local variables and the method headers
- c)parameter variables and the method bodies
- d)instance variables and the implementation of the constructors and methods

Answer: D

43) Which line of code is part of the private implementation of the BankAccount class?

- a)publicBankAccount()
- b)balance = balance - amount;

- c)public void deposit(double amount)
- d)public void withdraw(double amount)

Answer: B

44) Which line of code is part of the public implementation of the BankAccount class?

- a)balance = balance + amount;
- b)balance = balance - amount;
- c)publicBankAccount(double initialBalance)
- d)return balance;

Answer: C

45) Fill in the blank in the following method comment.

```
/**
    Deposits money into the bank account
    @param _____ the amount to deposit
*/
public void deposit(double amount)
{
    balance = balance + amount;
}
```

- a)amount
- b)balance
- c)double amount
- d)money

Answer: A

46) Given this method comment, fill in the blank in the method implementation.

```
/**
    Deposits money into the bank account
    @param amount the amount to deposit
*/
public _____ deposit(double amount)
{
    balance = balance + amount;
}
```

- a)double
- b)void
- c)return
- d)null

Answer: B

47) Given this method implementation, fill in the blank in the method comment.

```
/**
    Withdraws money from the bank account
    _____ amount the amount to withdraw
*/
```

```
public void withdraw(double amount)
{
    balance = balance - amount;
}
```

- a)parameter
- b)@param
- c)param
- d)@parameter

Answer: B

48) Given this method comment, fill in the blank in the method implementation.

```
/**
    Constructs a bank account with a given balance
    @param initialBalance the initial balance
*/
public BankAccount(double _____)
{
    balance = initialBalance;
}
```

- a)amount
- b)parameter
- c)initialBalance
- d)balance

Answer: C

49) Given this method implementation, fill in the blank in the method comment.

```
/**
    Gets the current balance of the bank account
    _____ the current balance
*/
public double getBalance()
{
    return balance;
}
```

- a)return
- b)double
- c)@return
- d)balance

Answer: C

50) Given this method comment, fill in the blank in the method implementation.

```
/**
    Gets the current balance of the bank account
    @return the current balance
*/
public double getBalance()
```

```
{  
    _____ balance;  
}
```

- a)balance
- b)@return
- c)double
- d)return

Answer: D

51) Choose the method header that goes with this method comment.

```
/**  
    Raises the salary of the employee  
    @param percentRaise salary percentage raise  
*/
```

- a)public void raiseSalary(double percent)
- b)public double raiseSalary(double percent)
- c)public double raiseSalary(double percentRaise)
- d)public void raiseSalary(double percentRaise)

Answer: D

52) Consider the following method header for an Employee class:

```
public void raiseSalary(double percentRaise)  
{
```

```
    _____  
}
```

Fill in the blank in the method body:

- a)salary = salary * (1 + percentRaise);
- b)salary = salary * percentRaise;
- c)salary = salary * raise;
- d)salary = salary * (1 + raise);

Answer: A

53) Choose the method header that goes with this method comment.

```
/**  
    Gets the salary of the employee  
    @return the salary of the employee  
*/
```

- a)public void getSalary()
- b)public void getSalary
- c)public double getSalary()
- d)public double getSalary

Answer: C

54) Consider the following method header:

```
/**  
    Adds interest to the bank account
```

```
*/  
public void addInterest(double rate)
```

```
...
```

Fill in the blank in the javadoc comment:

- a) @param rate the rate of interest
- b) @parameter rate the rate of interest
- c) @paraminterestRate the rate of interest
- d) @parameterinterestRate the rate of interest

Answer: A

55) Consider the following method header for the BankAccount class:

```
public void addInterest(double rate)  
{
```

```
}
```

Fill in the blank in the method body.

- a) balance = balance * (1 + rate);
- b) balance = balance * rate;
- c) balance = balance * (1 + interestRate);
- d) balance = balance * interestRate;

Answer: A

56) Fill in the blank in the comment for this method header.

```
/**  
 Gets the interest for the bank account
```

```
*/  
public double getInterest()
```

```
...
```

- a) @return double the interest
- b) return the interest
- c) @return the interest
- d) return double the interest

Answer: C

57) Fill in the blank in the comment for this method header.

```
/**  
 Constructs a player with the given name
```

```
*/  
public Player(String playerName)
```

```
...
```

- a) @return the player
- b) @parameterplayerName the name of the player
- c) @paramplayerName the name of the player

d) return the player

Answer: C

58) What verifies that a class works correctly in isolation, outside a complete program?

- a) unit test
- b) encapsulation
- c) abstraction
- d) enumeration

Answer: A

59) What is a tester class?

- a) A class that constructs objects.
- b) A class that invokes one or more methods.
- c) A class that is named Tester.
- d) A class with a main method that contains statements to run methods of another class.

Answer: D

60) Complete the following tester program by choosing the line that prints the expected outcome.

```
public class BankAccountTester
{
    public static void main(String[] args)
    {
        BankAccount account = new BankAccount(1000);
        account.deposit(account.getBalance());
        System.out.println(account.getBalance());
        _____
    }
}
```

- "a) System.out.println("Expected: 1000");"
- "b) System.out.println("Expected: 2000");"
- "c) System.out.println("Expected: 2000");"
- "d) println("Expected: 2000");"

Answer: B

61) What is a local variable?

- a) A variable that is declared in the header of a class.
- b) A variable that is declared in the body of the class.
- c) A variable that is declared in the header of a method.
- d) A variable that is declared in the body of a method.

Answer: D

62) What is a parameter variable?

- a) A variable that is declared in the header of a method.
- b) A variable that is declared in the body of the class.
- c) A variable that is declared in the body of a method.
- d) A variable that is declared in the header of a class.

Answer: A

63) When a method exits, its ____ are removed.

- a)local variables
- b)classes
- c)comments
- d)instance variables

Answer: A

64) What do parameters and local variables belong to?

- a)an object
- b)a class
- c)a method
- d)a package

Answer: C

65) What do instance variables belong to?

- a)an object
- b)a class
- c)a method
- d)a package

Answer: A

66) What do static variables belong to?

- a)a method
- b)a package
- c)a class
- d)an object

Answer: C

67) What is the name of the parameter variable of the recordPurchase method of the CashRegister class?

- a)amount
- b)payment
- c)purchase
- d)change

Answer: A

68) What is the name of the local variable of the giveChange method of the CashRegister class?

- a)amount
- b)change
- c)payment
- d)purchase

Answer: B

69) Which of the following is an instance variable of the CashRegister class?

- a)amount
- b)balance

- c)change
- d)purchase

Answer: D

70) When are instance variables initialized?

- a) Instance variables are initialized when the method is called.
- b) Instance variables are initialized with a default value before a constructor is invoked.
- c) You must initialize instance variables in the constructor.
- d) You must initialize instance variables in a method body.

Answer: B

71) Given the following constructor for the BankAccount class, what output is generated by a call to newBankAccount()?

```
publicBankAccount()  
{  
System.out.println(balance);  
}
```

- a) The code fragment has a syntax error and does not compile.
- b)1000.0
- c)0.0
- d) You cannot print out the value of an uninitialized instance variable.

Answer: C

72) When are local variables initialized?

- a) Local variables are initialized with a default value before a constructor is invoked.
- b) Local variables are initialized when the method is called.
- c) You must initialize local variables in a method body.
- d) You must initialize local variables in the constructor.

Answer: C

73) Assuming the following code is the body of the main method, what output is generated?

```
BankAccountmyAccount;  
System.out.println(myAccount.getBalance());
```

- a) The code fragment does not compile because the local variable is not initialized.
- b)0.0
- c) The code fragment has a syntax error and does not compile.
- d)1000.0

Answer: A

74) Assuming the following code is the body of the deposit method, what output is generated by the valid call myAccount.deposit(1000) for an account with an initial balance of 500?

```
public void deposit(double amount)  
{  
System.out.println(amount);  
doublenewBalance = balance + amount;  
balance = newBalance;
```

}

a)1500.0

b) The code fragment has a syntax error and does not compile.

c) The code fragment does not compile because the parameter variable is not initialized.

d)1000.0

Answer: D

75) Instance variables that are object references are initialized to what default value?

a)empty

b) Instance variables are not initialized to a default value.

c)null

d)nil

Answer: C

76) Instance variables that are numbers are initialized to what default value?

a) Instance variables are not initialized to a default value.

b)nil

c)0

d)null

Answer: C

77) Which of the following denotes the implicit parameter?

a)void

b)this

c)extends

d)public

Answer: B

78) A method is invoked on what type of parameter?

a)public parameter

b)explicit parameter

c) private parameter

d) implicit parameter

Answer: D

79) The use of an instance variable name inside a method denotes the instance variable of what?

a)the parameter variable

b)the access specifier

c)the explicit parameter

d)the implicit parameter

Answer: D

80) Identify the explicit parameter of the withdraw method of the BankAccount class.

a)public

b)double

c)balance

d)amount

Answer: D

81) In the statement below, amount is referred to as the ____ parameter.

```
public void deposit(double amount)
```

a)private

b)public

c)explicit

d)implicit

Answer: C

82) Consider the following invocation of the deposit method:

```
mySavings.deposit(250);
```

What is the implicit parameter?

a)deposit

b)mySavings

c)250

d) There is no implicit parameter.

Answer: B

83) Consider the following invocation of the deposit method:

```
mySavings.deposit(250);
```

What is the explicit parameter?

a) There is no explicit parameter.

b)deposit

c)250

d)mySavings

Answer: C

84) Consider the constructor of the BankAccount class that has a parameter for the initial balance. Which line of code is equivalent to this constructor body?

```
balance = initialBalance;
```

a)this.balance = initialBalance;

b)this.initialBalance = balance

c)balance = this.initialBalance;

d)this.balance = this.initialBalance;

Answer: A

85) Which statement is true about the following constructor of the BankAccount class?

```
public BankAccount(double balance)
```

```
{
```

```
this.balance = balance;
```

```
}
```

a) The code has a syntax error.

b) The code has a logic error.

c) You can't have an instance variable and a parameter variable with the same name.

d) The code sets the instance variable balance to the parameter variable balance.

Answer: D

86) When drawing complex shapes, provide a(n) _____ to set the position of the shape.

- a) constructor
- b) viewer
- c) component
- d) frame

Answer: A

87) Consider the following code fragment from the Italian Flag program in How To 3.2:

```
public class ItalianFlagComponent
{
    public void paintComponent(Graphics g)
    {
        Graphics2D g2 = (Graphics2d) g;
        ItalianFlagflag = newItalianFlag(100, 100, 90);
        flag.draw(g2);
    }
}
```

Which of the following statements is true?

- a) It is impossible to construct an ItalianFlagComponent because no constructor is implemented.
- b) It is impossible to add an ItalianFlagComponent object to a frame because the class does not extend JComponent.
- c) The code will not compile because it should have called g2.draw(flag);
- d) The code has a syntax error and will not compile.

Answer: C

88) Which of the following declares a sideLength instance variable for a Square class that stores an integer value?

- a) private integer sideLength;
- b) private int sideLength;
- c) public integer sideLength
- d) public static int sideLength;

Answer: B

89) Which of the following corresponds to the constructor body for a Square class that accepts an initial side length value where the instance variable is named sideLength?

- a) sideLength = initialLength;
- b) initialLength = sideLength;
- c) initialLength = 0;
- d) sideLength = 0;

Answer: A

90) Which of the following corresponds to the getArea method header for a Square class assuming an integer value for a side length?

- a) public int getArea
- b) public integer getArea

- c) public int getArea()
- d) public integer getArea()

Answer: C

91) Which of the following corresponds to the getArea method body for a Square class where the instance variable is named sideLength?

- a) return sideLength;
- b) return area;
- c) return width * height;
- d) return sideLength * sideLength;

Answer: D

92) Fill in the first line of this SquareTester program so that it declares and initializes a variable mySquare as an instance of a Square class with a side length of 6.

```
public class SquareTester
{
    public static void main(String[] args)
    {
        /*
            Step 1: declare and initialize a variable mySquare as an
            instance of a Square class with a side length of 6
        */
        _____
        /*
            Step 2: print out the area of the object referenced by the
            variable mySquare using the getArea method
        */
        /*
            Step 3: print the expected outcome
        */
    }
}
```

- a) Square mySquare = new Square(6);
- b) mySquare = new Square(6);
- c) mySquare = Square(6);
- d) Square mySquare = Square(6);

Answer: A

93) Fill in the third line of this SquareTester program so that it prints out the expected outcome.

```
public class SquareTester
{
    public static void main(String[] args)
    {
        /*
            Step 1: declare and initialize a variable mySquare as an
            instance of a Square class with a side length of 6
        */
    }
}
```

```
*/  
/*  
    Step 2: print out the area of the object referenced by the  
variablemySquare using the getArea method
```

```
*/  
/*  
    Step 3: print the expected outcome  
*/
```

```
    }  
}  
"a)System.out.println("Expected: 12");"  
"b)System.out.println("Expected: 6");"  
"c)System.out.println("Expected: 36");"  
"d)System.out.println("Expected: 18");"
```

Answer: C

94) If the CarComponent class had the call below added to it, where will car3 be placed?

```
int y3 = (getHeight() - 30)/2;  
Car car3 = new Car(0, y3);  
car3.draw(g2);
```

- a) At the middle of the right side of the window
- b) At the middle of the left side of the window
- c) At the middle of the top of the window
- d) At the middle of the bottom of the window

Answer: B

95) Which lines would need to be added to CarComponent to put car3 at the middle of the left side of the window?

```
a)int y3 = (getHeight() - 30)/2;  
Car car3 = new Car(0, y3);  
car3.draw(g2);  
b)int x3 = (getHeight() - 30)/2;  
Car car3 = new Car(x3, 0);  
car3.draw(g2);  
c)int y3 = (getWidth() - 30)/2;  
Car car3 = new Car(0, y3);  
car3.draw(g2);  
d)int x3 = (getWidth() - 30)/2;  
Car car3 = new Car(x3, 0);  
car3.draw(g2);
```

Answer: A

96) What will be output from the following statements that use BankAccount class?

```
BankAccount first = new BankAccount (100);  
BankAccount second = new BankAccount (100);  
BankAccount third = first;  
first.deposit (50.0);
```

```
second.deposit (50.0);
third.deposit (50.0);
"System.out.println (first.getBalance() + "" "" "
+ second.getBalance() + third.getBalance());
a)150.0 200.0 250.0
b)150.0 150.0150.0
c)250.0 250.0250.0
d)200.0 150.0 200.0
```

Answer: D

97) What will be output from the following statements that use BankAccountclass?

```
BankAccount first = new BankAccount (100);
first.deposit (50.0);
BankAccount second = new BankAccount (first.getBalance());
first.deposit (50.0);
BankAccount third = new BankAccount (first.getBalance());
first.deposit (50.0);
"System.out.println (first.getBalance() + "" "" "
+ second.getBalance() + third.getBalance());
a)150.0 200.0 250.0
b)250.0 250.0250.0
c)250.0 150.0 200.0
d)250.0 200.0 250.0
```

Answer: C

98) Assume the method below has been added to the BankAccountclass.

```
public void giveBonus ()
{
balance = balance + 5.0;
}
```

What will be output from the following statements that use the revisedBankAccount class?

```
BankAccountpremiumAccount = new BankAccount (100);
premiumAccount.giveBonus ();
premiumAccount.giveBonus ();
premiumAccount.giveBonus ();
System.out.println (premiumAccount.getBalance());
a) 110.0
b)100.0
c)105.0
d) 115.0
```

Answer: D

99) Assume the method below has been added to the BankAccountclass.

```
public void transfer (BankAccount source, double amount)
{
balance = balance + amount;
```

```

source.balance = source.balance - amount;
}
public class Area
{
    public static void main(String[] args)
    {
        int width = 10;
        height = 20.00;
        System.out.println("area = " + (width * height));
    }
}

```

- a) The code snippet uses an uninitialized variable.
- b) The code snippet uses an undeclared variable.
- c) The code snippet attempts to assign a decimal value to an integer variable.
- d) The code snippet attempts to add a number to a string variable.

Answer: b

4) What is wrong with the following code snippet?

```

int average;
average = 78A;

```

- a) The average variable is never initialized.
- b) The data type for the average variable is not specified.
- c) The average variable is never assigned a value.
- d) The average variable is assigned a non-numeric value.

Answer: d

5) Which of the following guidelines will make code more explanatory for others?

- a) Use more statements in source code.
- b) Add comments to source code.
- c) Avoid usage of complex calculations in source code.
- d) Always enclose the statements in curly braces in source code.

Answer: b

6) What will be the value stored in the variable x after the execution of the following code snippet?

```

int a = 10;
int b = 20;
int c = 2;
int x = b / a /*c*/;

```

- a) 1
- b) 2
- c) 4
- d) The code has a syntax error

Answer: b

7) Which of the following statements with comments is(are) valid?

I. `int cnt = 0; /* Set count to 0`

II.int cnt = 0; /* Set count to 0 */

III.int cnt = 0; // Set count to 0

- a) Only I is valid
- b) I and II are valid
- c) II and III are valid
- d) Only III is valid

Answer: c

8) What is wrong with the following code?

```
int count = 2000 * 3000 * 4000;
```

- a) Wrong data type
- b) Variable is undefined
- c) Integer overflow
- d) Illegal expression

Answer: c

Section Reference 2: Common Error 4.2

9) Which one of the following variables is assigned with valid literals?

a)

```
int salary = 0;  
salary = 5000.50;
```

b)

```
int salary1 = 0;  
salary1 = 1.2E6;
```

c)

```
double salary2 = 0;  
salary2 = 2.96E-2;
```

d)

```
long salary3 = 0;  
salary3 = 1E-6;
```

Answer: c

10) What will be the value inside the variables a and b after the given set of assignments?

```
int a = 20;  
int b = 10;  
a = (a + b) / 2;  
b = a;  
a++;
```

- a) a = 15, b = 16
- b) a = 16, b = 16
- c) a = 16, b = 15
- d) a = 15, b = 15

Answer: c

11) What is the value inside the value variable at the end of the given code snippet?

```
public static void main(String[] args)  
{
```

```
int value = 3;
value = value - 2 * value;
value++;
}
```

- a) -2
- b) 0
- c) 2
- d) 4

Answer: a

12.) What are the values of num1 and num2 after this snippet executes?

```
double num1 = 4.20;
double num2 = num1 * 10 + 5.0;
```

- a) num1 = 4.20 and num2 = 42.0
- b) num1 = 4.20 and num2 = 47.0
- c) num1 = 42.0 and num2 = 42.0
- d) num1 = 42.0 and num2 = 47.0

Answer: b

13) What is the result of the following expression?

```
double d = 2.5 + 4 * -1.5 - (2.5 + 4) * -1.5;
```

- a) 24.375
- b) 6.25
- c) 12.375
- d) 6

Answer: b

14) What is the output of the following code snippet?

```
public static void main(String[] args)
{
    int value = 3;
    value++;
    System.out.println(value);
}
```

- a) 2
- b) 3
- c) 4
- d) No output due to syntax error

Answer: c

15) What is the output of the following code snippet?

```
public static void main(String[] args)
{
    int value = 25;
    value = value * 2;
    value--;
```

```
System.out.println(value);  
}
```

- a) 25
- b) 50
- c) 49
- d) 26

Answer: c

16) Assuming that the user inputs a value of 25 for the price and 10 for the discount rate in the following code snippet, what is the output?

```
public static void main(String[] args)  
{  
    Scanner in = new Scanner(System.in);  
    System.out.print("Enter the price: ");  
    double price = in.nextDouble();  
    System.out.print("Enter the discount rate: ");  
    double discount = in.nextDouble();  
    System.out.println("The new price is " +  
        price - price * (discount / 100.0));  
}
```

- a) The new price is 25
- b) The new price is 15
- c) The new price is 22.5
- d) The new price is 20.0

Answer: c

17) Which of the following statements is correct about constants?

- a) Constants are written using capital letters because the compiler ignores constants declared in small letters.
- b) The data stored inside a constant can be changed using an assignment statement.
- c) You can make a variable constant by using the `final` reserved word when declaring it.
- d) Constant variables can only be changed through the Math library.

Answer: c

18) Which one of the following operators computes the remainder of an integer division?

- a) /
- b) %
- c) \
- d) !

Answer: b

19) What is the value of `Math.pow(3, 2)`?

- a) 6.0
- b) 9.0
- c) 8.0
- d) 5.0

Answer: b

20) What is the output of the following code snippet?

```
public static void main(String[] args)
{
    double a;
    a = Math.sqrt(9.0) + Math.sqrt(16.0);
    System.out.println(a);
}
```

- a) 25.0
- b) 337.0
- c) 7.0
- d) 19.0

Answer: c

21) Which is the Java equivalent of the following mathematical expression?

$c = \sqrt{a^2 + b^2}$

- a) `c = Math.sqrt(a * 2 + b * 2);`
- b) `c = Math.sqrt(a * 2) + Math.sqrt(b * 2);`
- c) `c = Math.sqrt(Math.pow(a, 2) + Math.pow(b, 2));`
- d) `c = Math.sqrt(Math.pow(a, 2)) + Math.sqrt(Math.pow(b, 2));`

Answer: c

22) Which one of the following is a correct representation of the given mathematical expression in Java?

$a + \frac{b}{2}$

- a) `a + b % 2`
- b) `a + b / 2`
- c) `a + (b / 2)`
- d) `(a + b) / 2`

Answer: d

23) Which of the following is the Java equivalent of the following mathematical expression?

$c = 2\pi \text{radius}$

- a) `c = 2 * Math.PI * radius * 2;`
- b) `c = 2 * Math.PI * Math.pow(2, radius);`
- c) `c = 2 * Math.PI * Math.pow(radius, 2);`
- d) `c = 2 * Math.PI * radius;`

Answer: d

24) What is the result of the following statement?

```
"String s = ""You"" + ""had"" + ""me"" + ""at"" + ""hello"";"
```

- "a) The string s has the following value: ""You had me at ""hello"""
- b) The statement results in an error because the + operator can be used only with numbers
- c) The statement results in an error because the + operation cannot be performed on string literals
- "d) The string s has the following value: ""Youhadmeathello"""

Answer: d

25) Which operator is used to concatenate two or more strings?

- a) +
- b) %
- c) &
- d) ^

Answer: a

26) What output is produced by these statements?

```
String name = "Joanne Hunt";  
System.out.println(name.length());
```

- a) 8
- b) 10
- c) 9
- d) 11

Answer: d

27) How do you compute the length of the string str?

- a) length(str)
- b) length.str
- c) str.length
- d) str.length()

Answer: d

28) What is the output of the following code snippet?

```
public static void main(String[] args){  
{  
    String str1;  
    str1 = "I LOVE MY COUNTRY";  
    String str2 = str1.substring(4, 11);  
    System.out.println(str2);  
}
```

- a) OVE MY
- b) OVE MY C
- c) VE MY CO
- d) VE MY C

Answer: d

29) What is the output of the following code snippet?

```
public static void main(String[] args)  
{  
    int s;  
    double f = 365.25;  
    s = f / 10;  
    System.out.println(s);
```

- ```
}
```
- a) 36
  - b) 36.525
  - c) 37
  - d) No output because the code snippet generates compilation errors

**Answer: d**

30) Assuming that the user inputs "Joe" at the prompt, what is the output of the following code snippet?

```
public static void main(String[] args)
{
 System.out.print("Enter your name ");
 String name;
 Scanner in = new Scanner(System.in);
 name = in.next();
 name += ", Good morning";
 System.out.print(name);
}
```

- a) The code snippet does not compile because the += operator cannot be used in this context.
- b) Joe, Good morning
- c) , Good morning
- d) Joe

**Answer: b**

31) Which one of the following refers to a number constant that appears in code without explanation?

- a) Constant
- b) Variable
- c) Magic number
- d) String literal

**Answer: c**

32) What happens to the fractional part when a division is performed on two integer variables?

- a) The fractional part is rounded off to the nearest integer value.
- b) The fractional part is discarded.
- c) Two integers cannot be used in division; at least one of the operands should be a floating-point number.
- d) Instead of using an integer division, you should use the modulus operator to perform floating-point division.

**Answer: b**

33) Consider the following division statements:

- I.  $22 / 7$
- II.  $22.0 / 7$
- III.  $22 / 7.0$

Which of the following is correct?

- a) All three statements will return an integer value.
- b) Only I will return an integer value.
- c) Only I, II will return an integer value.

d) Only I and III will return an integer value.

**Answer: b**

34) Which of the following options is valid with reference to the code snippet?

```
public static void main(String[] args)
{
 double d = 45.326;
 double r = d % 9.0;
 System.out.println(r);
}
```

a) The value inside the variable r will be 0.326

b) The value inside the variable r will be 5.036

c) Variable r has to be defined as an integer because the % operator always returns an integer

d) The initialization of variable r is wrong, because the % operator expects integer values as operands

**Answer: a**

35) What is the output of the following code snippet?

```
public static void main(String[] args)
{
 int var1 = 10;
 int var2 = 2;
 int var3 = 20;
 var3 = var3 / (var1 % var2);
 System.out.println(var3);
}
```

a) 0

b) 4

c) 20

d) There will be no output due to a run-time error.

**Answer: d**

36) Which one of the following statements gives the absolute value of the floating-point number  $x = -25.50$ ?

a) `abs(x)`;

b) `Math.abs(x)`;

c) `x.abs()`;

d) `x.absolute()`;

**Answer: b**

37) Assuming that the user enters 45 and 62 as inputs for n1 and n2, respectively, what is the output of the following code snippet?

```
public static void main(String[] args)
{
 " System.out.print("Enter a number: ");"
 Scanner in = new Scanner(System.in);
 String n1 = in.next();
 " System.out.print("Enter another number: ");"
```

```
String n2 = in.next();
String result = n1 + n2;
System.out.print(result);
}
```

- a) 46
- b) 4662
- c) 107
- d) 4562

**Answer: d**

38) Which of the methods below are static methods?

- I. length
- II. substring
- III. pow
- IV. sqrt

- a) All the methods are static
- b) Only I, II and III
- c) Only II and IV
- d) Only III and IV

**Answer: d**

39) Which one of the following statements can be used to extract the last five characters from any string variable str?

- a) str.substring(str.length() - 5, str.length())
- b) str.substring(5, 5)
- c) str.substring(str.length() - 4, 5)
- d) str.substring(str.length() - 5, 5)

**Answer: a**

40) Assuming that the user inputs a value of 25000 for the pay and 10 for the bonus rate in the following code snippet, what is the output?

```
public static void main(String[] args)
{
 Scanner in = new Scanner(System.in);
 " System.out.print("Enter the pay: ");"
 double pay = in.nextDouble();
 " System.out.print("Enter the bonus rate: ");"
 double bonus = in.nextDouble();
 " System.out.println("The new pay is " +
 (pay + pay * (bonus / 100.0)));
}
```

- a) The new pay is 25000
- b) The new pay is 25100
- c) The new pay is 27500
- d) The new pay is 30000

**Answer: c**

41) What is the value of Math.abs(-2)?

- a) -2
- b) 0
- c) 2
- d) 4

**Answer: c**

42) What is the output of the following code snippet?

```
public static void main(String[] args)
{
 double x;
 x = Math.pow(3.0, 2.0) + Math.pow(4.0, 2.0);
 System.out.println(x);
}
```

- a) 25.0
- b) 34
- c) 7.0
- d) 14

**Answer: a**

43) Which is the Java equivalent of the following mathematical expression?

$$c = (\sqrt{a} + \sqrt{b})^2$$

- a) `c = Math.sqrt(a * 2 + b * 2);`
- b) `c = Math.sqrt(a * 2) + Math.sqrt(b * 2);`
- c) `c = Math.sqrt(pow(a, 2) + Math.pow(b, 2));`
- d) `c = Math.pow((Math.sqrt(a) + Math.sqrt(b)), 2);`

**Answer: d**

44) Which of the following is the Java equivalent of the following mathematical expression?

$$p = 2 * \pi * (\text{radius})^3$$

- a) `p = 2 * Math.PI * (radius * 3);`
- b) `p = Math.PI * Math.pow(3, radius);`
- c) `p = 2 * Math.PI * Math.pow(radius, 3);`
- d) `p = 2 * Math.pow(Math.PI * radius, 3);`

**Answer: c**

45) How do you extract the first 5 characters from the string str?

- a) `substring(str, 5)`
- b) `substring.str(0, 5)`
- c) `str.substring(5)`
- d) `str.substring(0, 5)`

**Answer: d**

46) Which of the given System.out.print statements generates the following output?

"ABCDE""\"

- "a) `System.out.println("""ABCDE\\\"\\\"");`"

"b) System.out.println("ABCDE\\");"  
"c) System.out.println("ABCDE\\");"  
"d) System.out.println("ABCDE\\");"

**Answer: a**

47) Which of the given statements generates the following output?

"\\\\"

"a) System.out.println("\\\\");"  
"b) System.out.println("\\\\\\\\");"  
"c) System.out.println("\\\\\\\\");"  
"d) System.out.println("\\\\");"

**Answer: b**

48) What will be the value inside the variables x and y after the given set of assignments?

int x = 20;

int y = 10;

x = (x - y) \* 2;

y = x/2;

a) x = 40, y = 20

b) x = 20, y = 10

c) x = 10, y = 20

d) x = 20, y = 20

**Answer: b**

49) What is the value inside the variable at the end of the given code snippet?

```
public static void main(String[] args)
```

```
{
 int var = 30;
 var = var + 2 / var;
 var++;
}
```

a) 0

b) 1

c) 30

d) 31

**Answer: d**

50) What is the output of the following code snippet?

```
public static void main(String[] args)
```

```
{
 int num1 = 10;
 int num2 = 5;
 int num3 = 200;
 num3 = num3 % (num1 * num2);
 System.out.println(num3);
}
```

- a) 0
- b) 4
- c) 10
- d) 250

**Answer: a**

51) Assuming that the user enters 23 and 45 as inputs for num1 and num2, respectively, what is the output of the following code snippet?

```
public static void main(String[] args)
{
 Scanner in = new Scanner(System.in);
 " System.out.print("Enter a number: ");"
 String num1 = in.next();
 " System.out.print("Enter another number: ");"
 String num2 = in.next();
 System.out.println(num1 + num2);
}
```

- a) 23
- b) 4523
- c) 68
- d) 2345

**Answer: d**

52) Which one of the following statements can be used to extract the last 10 characters from the string variable str?

- a) str.substring(str.length()-10, str.length())
- b) str.substring(10, str.length())
- c) str.substring(str.length()-9, 10)
- d) str.substring(0, 10)

**Answer: a**

53) Which one of the following statements can be used to convert a string str to a double?

- a) double n = str.parseDouble();
- b) double n = Integer.parseDouble(str);
- c) double n = Double.parseDouble(str);
- d) double n = double.parseDouble(str);

**Answer: c**

54) Which one of the following statements can be used to get the fifth character from a string str?

- a) char c = str.charAt(5);
- b) char c = str.charAt(4);
- c) char c = str[5];
- d) char c = str[4];

**Answer: b**

55) Which one of the following statements displays the output as 54321.00?

- "a) System.out.printf("%8.2f", 54321.0);"
- "b) System.out.printf("%8,2f", 54321.0);"

"c) System.out.printf("",8.2f"", 54321.0);"  
"d) System.out.printf("""%8.00f""", 54321.0);"

**Answer: a**

56) Which one of the following statements displays the output as (1.23e+02)?

"a) System.out.printf("""%(5.2e""", -123.0);"  
"b) System.out.printf("""%5.2e""", -123.0);"  
"c) System.out.printf("""^5.2e""", -123.0);"  
"d) System.out.printf("""%5.2E""", -123.0);"

**Answer: a**

57) Which one of the following statements defines a constant with the value 123?

a) final int MY\_CONST = 123;  
b) const int MY\_CONST = 123;  
c) final int MY\_CONST;  
MY\_CONST = 123;  
d) static int MY\_CONST = 123;

**Answer: a**

58) Which one of the following statements displays the output as +000321.00?

"a) System.out.printf("""+%09.2f""", 321.0);"  
"b) System.out.printf("""%009,2f""", 321.0);"  
"c) System.out.printf("""+9.2f""", 321.0);"  
"d) System.out.printf("""%09.00f""", 321.0);"

**Answer: a**

59) One way to avoid round-off errors is to use:

a) Math.sqrt()  
b) Math.pow()  
c) Math.round()  
d) Math.truncate()

**Answer: c**

60) What (if any) type of error occurs with the following code if the user input is ABC?

```
public static void main(String[] args)
{
 Scanner in = new Scanner(System.in);
 " System.out.print("""Enter a number: """);"
 String str = in.next();
 int count = Integer.parseInt(str);
 " System.out.println("""Input is "" + count);"
}
```

a) Compile-time error  
b) Run-time error  
c) Overflow error  
d) Illegal expression

**Answer: b**

61) What does the following statement sequence print?

```
String str = ""Harry"";
int n = str.length();
String mystery = str.substring(0, 1) + str.substring(n - 2, n);
System.out.println(mystery);
```

- a) Ha
- b) Har
- c) Hy
- d) Hry

**Answer: d**

62) What does the following statement sequence print?

```
String str = ""Hello"";
int n = str.length();
String mystery = str.substring(0, 1)
+ str.substring(n - 2, n + 1);
System.out.println(mystery);
```

- a) Run-time error
- b) He
- c) Ho
- d) Hry

**Answer: a**

63) What does the following statement sequence print?

```
String str = ""Java Is Good"";
int n = str.length();
String mystery = str.substring(n - 4, n) +
 str.charAt(4) + str.substring(0, 4);
System.out.println(mystery);
```

- a) Java
- b) Good Java
- c) Good
- d) Is Good

**Answer: b**

64) What does the following statement sequence print?

```
final String str = ""Java"";
str += "" is powerful"";
System.out.println(str);
```

- a) Java is powerful
- b) Java + is powerful
- c) is powerful
- d) Nothing; compile-time error

**Answer: d**

65) What does the following statement sequence print?

```
"String str = ""Java"";"
"str += "" is powerful""; "
System.out.println(str);
```

- a) Java is powerful
- b) Java + is powerful
- c) is powerful
- d) Compile-time error

**Answer: a**

66) What does the following statement sequence print if the user input is 123?

```
public static void main(String[] args)
{
 Scanner in = new Scanner(System.in);
 System.out.print("Enter a number ");
 int myInt = in.nextInt();
 myInt += 456;
 System.out.println(myInt);
}
```

- a) 579
- b) Compile-time error
- c) Run-time error
- d) 123456

**Answer: a**

67) What does the following statement sequence print if the user input is 123?

```
public static void main(String[] args)
{
 Scanner in = new Scanner(System.in);
 System.out.print("Enter a number: ");
 String str = in.next();
 str += 456;
 System.out.println(str);
}
```

- a) 579
- b) Compile-time error
- c) Run-time error
- d) 123456

**Answer: d**

68) What is the output of the following statement sequence?

```
public static void main(String[] args)
{
 int x = 100.0 % 6.0;
 System.out.println(x);
}
```

}

- a) 4
- b) Compile-time error
- c) Run-time error
- d) 16

**Answer: b**

69) Which statement is true?

- a) Variables cannot be assigned and declared in the same statement
- b) Variable names must contain at least one dollar sign
- c) Variable names can be no more than 8 characters long
- d) It is incorrect to initialize a string variable with a number

**Answer: d**

70) Which statement about number literals in Java is false?

- a) Numbers in exponential notation always have type double
- b) Zero is an integer
- c) Integers must be positive
- d) An integer with fractional part of .0 has type double.

**Answer: c**

71) Which option represents the best choice for a variable name to represent the average grade of students on an exam?

- a) averageGrade
- b) \$averageGrade
- c) avg
- d) AveGd

**Answer: a**

72) The assignment operator

- a) denotes mathematical equality
- b) places a new value into a variable
- c) means the same as the equals sign used in algebra
- d) makes it illegal to write a statement like `sum = sum + 4;`

**Answer: b**

73) Which of the following statements about constants in Java are true?

- I. Although not required, constants are commonly named using uppercase letters
- II. Only integer values can appear as constants
- III. A variable can be defined with an initial value, but the reserved word `final` prevents it from being changed
- IV. A named constant makes computations that use it clearer

- a) I, II, III
- b) II, III, IV
- c) I, III, IV
- d) I, II, IV

**Answer: c**

74) What is the output of this code snippet?

```
int sum = 22;
sum = sum + 2;
System.out.print(sum); // sum = sum + 4;
System.out.print(sum);
```

- a) 2424
- b) 2425
- c) 2428
- d) 2528

**Answer: a**

75) What is the output of this code snippet?

```
double average;
int grade1 = 87;
int grade2 = 94;
"// System.out.print("The average is " + (grade1 + grade2) / 2.0);"
"System.out.print("The average is " + average);"
```

- a) Compile-time error
- b) The average is 91.5
- c) The average is 91.5  
The average is 91.5
- d) The average is 91.5  
The average is 0.0

**Answer: a**

Section Reference 2: Common Error 4.1

76) What is the output of the following code snippet?

```
int counter = 0;
counter++;
"System.out.print("The initial value of the counter is ");"
System.out.println(count);
```

- a) The initial value of the counter is 0
- b) The initial value of the counter is 1
- c) The code will not compile
- d) The initial value of the counter is

**Answer: c**

Section Reference 2: Common Error 4.1

77. Which statements about numeric types in Java are true?

- I. There is more than one integer type
- II. The data type float uses twice the storage of double
- III. The numeric range of the Java integer type is related to powers of two

- a) I, II
- b) I, III
- c) II, III

d) I, II, III

**Answer: b**

Section Reference 2: Special Topic 4.1

78. The typical ranges for integers may seem strange but are derived from

- a) Base 10 floating-point precision
- b) Field requirements for typical usage and limits
- c) Overflows
- d) Powers of two because of base 2 representation within the computer

**Answer: d**

79. What is the result of evaluating the following expression?

$(45 / 6) \% 5$

- a) 2
- b) 7
- c) 2.5
- d) 3

**Answer: a**

80. What is the difference between the result of the following two Java statements?

I. `int cents = (int)(100 * price + 0.5);`

II. `int cents = (100 * price + 0.5);`

- a) Statement I causes truncation, but II does not
- b) Statement II causes truncation, but I does not
- c) Statement I compiles, but II does not
- d) Statement II compiles, but I does not

**Answer: c**

81) The first step in problem solving is

- a) To write the expression that calculates the answer
- b) To understand the problem and its inputs and outputs
- c) To do examples by hand that confirm the solution will work
- d) To write Java code that can be executed and tested

**Answer: b**

82) At what point in the problem-solving process should one write pseudocode?

- a) After writing Java code, as a way to summarize the code's algorithm
- b) Before writing Java code, as a guide for a general solution
- c) After defining Java variables so that the pseudocode and data types make sense
- d) Before working out examples by hand in order to guide those examples

**Answer: b**

83) The problem solving process emphasizes a "first, do-it-by-hand" approach because

- a) Pseudocode is not able to capture the subtleties of complex problems.
- b) it is faster to do computations by hand than to do them by computer.
- c) this guarantees that programs will be correct.
- d) if programmers cannot compute a solution by hand, it is unlikely they will be able to write a program that can do it.

**Answer: d**

84) What is the output of the following code snippet?

```
String firstname = "William";
String lastname;
System.out.println("First: " + first);
System.out.println("Last: " + lastname);
```

a)

First: William

Last:

b)

First: William

Last: lastname

c)

Code will not compile

d)

Unpredictable output

**Answer: c**

85) What is the correct way to invoke methods on variables in Java that are strings?

a) Methods can only be invoked on string constants, not on variables.

b) For each method there is a special operator that must be used.

c) There are no methods available in Java for string variables.

d) Invoke them using the variable name and the dot (.) notation.

**Answer: d**

86) Suppose a phone number, stored as a ten-character string (of digits only) called `phoneNumber` must be converted into a string that has parentheses around the area code. Which statement below will do that?

"a) `String newNumber = "(" + phoneNumber.substring(3, 0) + ")"`;"

"b) `String newNumber = "(" + phoneNumber`;"

"c) `String newNumber = "(" + phoneNumber.substring(1, 3) + ")" + phoneNumber.substring(3, 7)`;"

"d) `String newNumber = "(" + phoneNumber.substring(0, 3) + ")" + phoneNumber.substring(3, 10)`;"

**Answer: d**

87) Which of the following options defines an integer variable?

a) `char age`;

b) `integer age`;

c) `int age`;

d) `age: int`;

**Answer: c**

88) Which statement is true about variable names in Java?

a) They can contain the percent sign (%)

b) They can contain an underscore symbol ("\_")

c) They can contain spaces

d) They must make sense as a word

**Answer: b**

89) Consider the following Java variable names:

- I. 1stInstance
- II. basicInt%
- III. empName\_
- IV. addressLine1
- V. DISCOUNT

Which of the following options is correct?

- a) Only IV is a valid Java variable name.
- b) Only I and IV are valid Java variable names.
- c) Only I, IV, and V are valid Java variable names.
- d) Only III, IV, and V are valid Java variable names.

**Answer: d**

90) What is the value of the following expression?

$3 * 5 / 2 * 5$

- a) 1.5
- b) 30
- c) 35
- d) 37.5

**Answer: c**

91) What is the result of the following code snippet?

```
double bottles;
double bottleVolume = bottles * 2;
System.out.println(bottleVolume);
```

- a) 0
- b) 1
- c) 2
- d) Does not compile

**Answer: d**

Section Reference 2: Common Error 4.1

92) Which one of the following is a correct method for defining and initializing an integer variable with name value?

- a) `int value = 30;`
- b) `Int value = 30;`
- c) `int value = .30;`
- d) `Int value = .30;`

**Answer: a**

93) What is wrong with the following code snippet?

```
int size = 42;
cost = 9.99;
"System.out.println(""size = "" + size);"
"System.out.println("" cost = "" + cost);"
```

- a) The code snippet uses a variable that has not yet been initialized.
- b) The code snippet uses a variable that has not been declared.
- c) The code snippet attempts to assign a decimal value to an integer variable.
- d) The code snippet attempts to assign an integer value to a decimal variable.

**Answer: b**

Section Reference 2: Common Error 4.1

94) Which one of the following reserved words is used in Java to represent a value without a fractional part?

- a) integer
- b) int
- c) Int
- d) Float

**Answer: b**

95) In an airline reservation system, the number of available seats in an airplane is required. Which data type should be used to store this value?

- a) double
- b) float
- c) int
- d) long

**Answer: c**

96) When you purchase donuts, they come in boxes of 12, so 24 donuts take 2 boxes. All donuts need to be in a box, so if you buy 13 donuts, you'll get 2 boxes with 12 in the first box and 1 in the second. If the integer variable numberOfDonuts contains the positive number of donuts purchased, which of the following will correctly give the number of boxes needed?

- e.
- f.
- g.
- h.

**Answer: a**

97) What is wrong with the following code snippet?

```
int price;
price = 9.42;
```

- a) The price variable is never initialized.
- b) The data type for the price variable is not specified.
- c) The price variable is never assigned a value.
- d) The price variable is assigned a decimal value.

**Answer: d**

98.) Which one of the following is an assignment statement?

- a) int a = 20;
- b) a = 20;
- c) assign a = 20;
- d) assign 20 to a;

**Answer: b**

99) Which one of the following types of statements is an instruction to replace the existing value of a variable with another value?

- a) Update
- b) Declaration
- c) Assignment
- d) Initialization

**Answer: c**

100) What is the meaning of `x = 0;` in Java?

- a) It checks whether x equals 0.
- b) It sets the variable x to zero.
- c) It defines a variable named x and initializes it with 0.
- d) It is a syntax error because x is not always 0.

**Answer: b**

101) What are the values of num1 and num2 after this snippet executes?

```
double num1 = 4.20;
```

```
double num2 = num1 * 10 + 5.0;
```

- a) num1 = 4.20 and num2 = 63.0
- b) num1 = 4.20 and num2 = 47.0
- c) num1 = 42.0 and num2 = 42.0
- d) num1 = 42.0 and num2 = 47.0

**Answer: b**

102) Which of the following statements places input into the variable value given this line of code?

```
Scanner in = new Scanner(System.in);
```

- a) `int value = in();`
- b) `int value = in.nextInt();`
- c) `int value = in.next();`
- d) `int value = in.nextFloat();`

**Answer: b**

103) Assuming that the user inputs a value of 30 for the price and 10 for the discount rate in the following code snippet, what is the output?

```
Scanner in = new Scanner(System.in);
```

```
"System.out.print("Enter the price: ");"
```

```
double price = in.nextDouble();
```

```
"System.out.print("Enter the discount rate: ");"
```

```
double discount = in.nextDouble();
```

```
"System.out.print("The new price is ");"
```

```
System.out.println(price - price * (discount / 100.0));
```

- a) The new price is 30.0
- b) The new price is 20.0
- c) The new price is 27.0

d) The new price is 33.0

**Answer: c**

104) Which of the following statements is correct about constants?

- a) Constants are written using uppercase letters because the compiler ignores constants declared in lowercase letters.
- b) The data stored inside a final variable can be changed using an assignment statement.
- c) You can make a variable constant by using the constant reserved word while declaring the variable.
- d) Variables defined using final make a code snippet more readable and easier to maintain.

**Answer: d**

105) What is the value of `Math.pow(2, 3)`?

- a) 5.0
- b) 6.0
- c) 8.0
- d) 9.0

**Answer: c**

106) Which one of the following is a correct representation of the given mathematical expression in Java?

- a)  $a - b / 2 \% 2$
- b)  $a - b / 2$
- c)  $a - (b / 2) / 2$
- d)  $(a - b / 2) / 2$

**Answer: d**

107) Given the definition `final double PI = 3.14159`; which of the following is the Java equivalent of the mathematical expression  $c = \pi^2 \text{radius}^2$

- a) `c = PI * (radius * 2);`
- b) `c = PI * Math.pow(2, radius);`
- c) `c = PI * Math.pow(radius, 2);`
- d) `c = Math.pow(PI * radius, 2);`

**Answer: c**

108) Which of the following is the mathematical equivalent of the following Java expression?

`h = (4.0 * a * b - Math.pow(b, 2)) / c;`

- a)  $h = 4ab - 2b / c$
- b)  $h = (4ab - 2b) / c$
- c)  $h = 4ab - b^2 / c$
- d)  $h = (4ab - b^2) / c$

**Answer: d**

109) Assuming `price` contains the value 20.0, which of the following statements displays

`price = 20.00`

- a) `"System.out.print(""price = "");"`  
`System.out.printf(price);`

b)

```
"System.out.print("price = ");"
"System.out.printf("%f", price);"
```

c)

```
"System.out.print("price = ");"
"System.out.printf("%10.2f", price);"
```

d)

```
"System.out.print("price = ");"
"System.out.printf("%2.10f", price);"
```

**Answer: c**

110) What is the output of the following code snippet?

```
"System.out.printf("%5.3f", 20.0);"
```

a) 20

b) 20.0

c) 20.00

d) 20.000

**Answer: d**

111) Which of the following statements will assign the largest value of three integer variables a, b, and c to the integer variable maximum?

a) maximum = Math.max(a, b, c);

b) maximum = Math.max(a, b);

maximum = Math.max(b, c);

maximum = Math.max(a, c);

c) maximum = Math.max(a, b);

maximum = Math.max(maximum, c);

d) maximum = Math.max(a, b) + Math.max(b, c) + Math.max(a, c);

**Answer: c**

112) A student's class average can be computed by dividing the number of points they have earned by the number of points possible in the class. Assume the following variables have been declared as shown and given values elsewhere:

```
int pointsEarned, pointsPossible;
```

```
double classPercentage;
```

Which of the following statements will assign the correct percentage average to classPercentage? For example, if pointsEarned is 725 and pointsPossible is 1000, classPercentage should be assigned the value 72.5.

a) classPercentage = pointsEarned/pointsPossible \* 100.0;

b) classPercentage = 100 \* pointsEarned/pointsPossible;

c) classPercentage = (100.0 \* pointsEarned)/pointsPossible;

d) classPercentage = (100.0 + pointsEarned)/pointsPossible;

**Answer: c**

113) Assume the following variables have been declared and given values as shown:

```
int i = 2345;
```

```
double m = 67.8;
```

What will be printed by the statement below?

```
"System.out.printf ("Values are %10d and %7.2f", i, j);"
```

- a) Values are 2345 and 67.8
- b) Values are 2345 and 67.80
- c) Values are 2345 and 67.80
- d) Values are %10d and %7.2f 2345 67.8

**Answer: b**

114) Assume the following variables have been declared and given values as shown:

```
int i = 2345;
```

```
double m = 67.8;
```

Which statement will give the output below?

Values are 2345 and 67.80

```
"a)System.out.printf ("Values are %10d and %7.2f", i, m);"
```

```
"b)System.out.printf ("Values are %6d and %2.2f", i, m);"
```

```
"c)System.out.printf ("Values are %i and %m");"
```

```
"d)System.out.println ("Values are " + i + " and " + m);"
```

**Answer: a**

115) What will be printed by the statement below?

```
"System.out.print ("O\my\t\\no!");"
```

```
"a)Omyt\no!"
```

```
"b)O\my\t\\no!"
```

```
"c)O\ my\t\\ no!"
```

```
"d)Omy"
```

**Answer: d**

116) Assume the following variable has been declared and given values as shown:

```
"String name = "Mamey, Jean";"
```

"Which statement will print the name as "Jean Mamey"?"

a.

```
+ name.substring(0, 5));
```

b.

```
+ name.substring(1, 5));
```

c.

```
+ name.substring(1, 4));
```

d.

```
+ name.substring(1));
```

**Answer: a**

117) What will be printed by the statements below?

```
final int BONUS = 20;
```

```
int salary = 100;
```

```
int netSalary = salary + BONUS;
```

```
System.out.print (netSalary);
```

```
a)salaryBONUS
```

```
b)120
```

```
c)100BONUS
```

d) Nothing will be printed because constants cannot be used in expressions.

**Answer: b**

118) What will be printed by the statements below?

```
int x = 20;
```

```
int y = x;
```

```
x++;
```

```
y--;
```

```
"System.out.print (""x = "" + x + "", y = "" + y);"
```

```
x = 21, y = 19
```

a)x = 20, y = 20

b)x = 21, y = 20

c)x = 20, y = 19

d) x = 21, y = 19

**Answer: d**

119) What is the value of the following expression?

```
-18 % 5
```

a)-2

b)-3

c)2

d)3

**Answer: b**

120) What is the value of the following expression?

```
1 % 12
```

a)1

b)0

c)-11

d) This is an error because 12 is greater than 1

**Answer: a**

121) What is the value of the following expression?

```
2 + 3 + 5 / 2
```

a)5

b)6

c)7

d)7.5

**Answer: c**

122) Assume the following variables have been declared as shown and given values elsewhere:

```
double a, b, c;
```

The discriminant of a quadratic equation is defined to be:

Which of the following statements will assign the correct value to discriminant?

a)double discriminant = Math.sqrt (b \* b - 4 \* a \* c);

b)double discriminant = Math.sqrt (b \* b) – 4 \* a \* c;  
c)double discriminant = Math.sqrt (b \* b) - Math.sqrt (4 \* a \* c);  
d)double discriminant = ;

**Answer: a**

123) What will be printed by the statements below?

```
int x = 20;
int y = x;
x += 3;
y *= 2;
"System.out.print (""x = "" + x + "", y = "" + y);"
```

- a)x = 23, y = 46
- b)x = 23, y = 40
- c)x = 46, y = 46
- d)x = 3, y = 2

**Answer: b**

124) Assume the following variables have been declared and given values as shown:

```
"String str = ""0123456789"";
String sub = str.substring(3, 4);
```

Which is the value of sub?

- a)3
- b)34
- c)345
- d)3456

**Answer: a**

125) Assume the following variable has been declared and given a value as shown:

```
"String str = ""0123456789"";
```

Which is the value of str.length()?

- a)9
- b)10
- c)11
- d)12

**Answer: a**

126) Assume the variable str has been declared to be a String that has at least one character. Which is the following represents the last character in str?

- a)str.charAt (str.length())
- b)str.lastChar()
- c)str.charAt (str.length() – 1)
- d)str.substring(str.length())

**Answer: c**

127) What will be printed by the statements below?

```
int x = 100;
```

```
int y = -12;
```

```
"System.out.print (""Sum is "" + x + y);"
```

a)Sum is 100-12

b)Sum is 88

c)Sum is xy

d)Sum is 100 + -12

**Answer: a**

Package Title: Test Bank

Course Title: Big Java

Chapter Number: 5 Decisions

Question type:Multiple Choice

1) What are the two parts of an if statement?

a) A condition and a body

b) A check and an increment

c) An increment and a body

d) An increment and a return value

**Answer: a**

2) Which of the following statements is true about the if statement?

a) The if statement can have only one condition that evaluates to an integer value.

b) The if block is optional.

c) The else block is optional.

d) The if and else blocks should always be included within curly braces.

**Answer: c**

3) Which of the following statements is correct about an if statement?

a) You must use braces if the body of an if statement contains only a single statement.

b) You can omit an else statement if there is no task defined in the else branch.

c) You cannot use braces if the body of an if statement contains only a single statement.

d) The number of opening braces can be different from the number of closing braces.

**Answer: b**

4) Which of the following is the correct syntax for an if statement?

a)

```
"if (x < 10) { size = ""Small""; }"
```

```
"else (x < 20) { size = ""Medium""; }"
```

b)

```
"if (x < 10); { size = ""Small""; }"
```

```
"else (x < 20) { size = ""Medium""; }"
```

c)

```
"if (x < 10) { size = ""Small""; }"
```

```
"else { size = ""Medium""; }"
```

d)

```
"if { size = ""Small""; }"
"else (x < 20) { size = ""Medium""; }"
```

**Answer: c**

5) Assuming that the user provides 303 as input, what is the output of the following code snippet?

```
int x;
int y;
Scanner in = new Scanner(System.in);
"System.out.print("Please enter a number: ");"
y = in.nextInt();
if (y > 300)
{
 x = y;
}
else
{
 x = 0;
}
"System.out.println("x: " + x);"
```

- a) x: 0
- b) x: 300
- c) x: 303
- d) There is no output due to compilation errors.

**Answer: c**

6) Assuming that the user provides 99 as input, what is the output of the following code snippet?

```
int a;
int b;
Scanner in = new Scanner(System.in);
"System.out.print("Please enter a number: ");"
b = in.nextInt();
if (b > 300)
{
 a = b;
}
else
{
 a = 0;
}
"System.out.println("a: " + a);"
```

- a) a: 0
- b) a: 99
- c) a: 100
- d) a: 300

**Answer: a**

7) The following code snippet contains an error. What is the error?

```
if (cost > 100);
{
 cost = cost - 10;
}
"System.out.println("Discount cost: " + cost);"
```

- a) Syntax error (won't compile)
- b) Logical error: use of an uninitialized variable
- c) Logical error: if statement has do-nothing statement after if condition
- d) Logical error: assignment statement does not show equality

**Answer: c**

Section Reference 2: Common Error 5.1A Semicolon After the if Condition

8) What can be done to improve the following code fragment?

```
if ((counter % 10) == 0)
{
 " System.out.println("Counter is divisible by ten: " + counter);"
 counter++;
}
else
{
"System.out.println("Counter is not divisible by ten: " " "
+counter);
 counter++;
}
```

- a) Move the duplicated code outside of the if statement
- b) Shorten variable names
- c) Move the brackets to save several lines of code
- d) Add semicolons after the if condition and the else reserved word

**Answer: a**

9) What kind of operator is the <= operator?

- a) Ternary
- b) Arithmetic
- c) Inequality
- d) Relational

**Answer: d**

10) Which of the following operators is used as a relational operator?

- a) =<
- b) <=
- c) =
- d) !

**Answer: b**

11) The operator !> stands for

- a) not less than.

- b) not greater than.
- c) not equal to.
- d) this is not an operator in Java

**Answer: d**

12) Assuming that a user enters 15 as input, what is the output of the following code snippet?

```
Scanner in = new Scanner(System.in);
"System.out.print("Please enter a number: ");"
int number = in.nextInt();
if (number > 20)
{
" System.out.println("The number is LARGE!");"
}
else
{
" System.out.println("The number is SMALL!");"
}
```

a)

There is no output due to compilation errors.

b)

The number is LARGE!

c)

The number is SMALL!

d)

The number is LARGE!

The number is SMALL!

**Answer: c**

13) What is the output of the following code snippet if the input is 25?

```
int i;
Scanner in = new Scanner(System.in);
"System.out.print("Enter a number: ");"
i = in.nextInt();
if (i > 25)
{
i++;
}
else
{
i--;
}
System.out.print(i);
```

a)24

b) 25

c) 26

d) 27

**Answer: a**

14) Assuming that a user enters 25 as the value for x, what is the output of the following code snippet?

```
int x;
Scanner in = new Scanner(System.in);
"System.out.print(""Enter a number: "");"
x = in.nextInt();
if (x < 100)
{
 x = x + 5;
}
if (x < 500)
{
 x = x - 2;
}
if (x > 10)
{
 x++;
}
else
{
 x--;
}
System.out.println(x);
```

a) 27

b) 28

c) 29

d) 30

**Answer: c**

15) A store provides 10 percent discount on all items with a price of at least \$100. No discount is otherwise applicable. Which of the following DOES NOT correctly compute the discount?

a)

```
double discount = 0;
if (price >= 100)
{
 discount = 0.10 * price;
}
```

b)

```
double discount = 0.10 * price;
if (price <= 100)
{
 discount = 0;
```

```
}
c)
double discount;
if (price < 100)
{
 discount = 0;
}
else
{
 discount = 0.10 * price;
}
```

```
d)
double discount = 10;
if (price >= 100)
{
 discount = 0.1 * price;
}
else
{
 discount = 0;
}
```

**Answer: b**

16) Which of the following statements is (are) true about an if statement?

- I. It guarantees that several statements are always executed in a specified order.
- II. It repeats a set of statements as long as the condition is true.
- III. It allows the program to carry out different actions depending on the value of a condition.

- a) I
- b) II
- c) III
- d) I, II, III

**Answer: c**

17) What is the output of the following code snippet?

```
double income = 45000;
double cutoff = 55000;
double minIncome = 30000;
if (minIncome > income)
{
 " System.out.println("Minimum income requirement is not met.");"
}
if (cutoff < income)
{
 " System.out.println("Maximum income limit is exceeded.");"
}
else
```

```
{
" System.out.println("Income requirement is met.");"
}
```

- a) Minimum income requirement is not met.
- b) Maximum income limit is exceeded.
- c) Income requirement is met.
- d) There is no output.

**Answer: c**

18) In Java, which of the following orderings is used to compare strings?

- a) Lexicographic
- b) Semantic
- c) Alphabetic
- d) Syntactic

**Answer: a**

19) Suppose one needs an if statement to check whether an integer variable pitch is equal to 440 (which is the frequency of the note "A" to which strings and orchestras tune). Which condition is correct?

- a) if (pitch - 440 = 0)
- b) if ((pitch != 440) && (pitch != 440))
- c) if (pitch = 440)
- d) if (pitch == 440)

**Answer: d**

20) Which statement about an if statement is true?

- a) The condition in an if statement using relational operators will evaluate to a Boolean result
- b) The condition in an if statement should make exact comparisons to floating-point numbers
- c) The condition in an if statement should always evaluate to true
- d) The condition in an if statement should never include integer variables

**Answer: a**

21) What is the problem with the following if statement?

```
double count = 15.0;
if (count / 3.0)
{
" System.out.println("The value of count is ");"
}
```

- a) There should be an "else" condition
- b) The condition does not evaluate to a Boolean value
- c) The variable count should be part of the string
- d) It is never possible to use the "/" operator in an if statement

**Answer: b**

22) Consider the following code snippet. What is the potential problem with the if statement?

```
double average;
average = (g1 + g2 + g3 + g4) / 4.0;
```

```
if (average == 90.0)
{
 System.out.println("You earned an A in the class!");
}
```

- a) Using == to test the double variable average for equality is error-prone.
- b) The conditional will not evaluate to a Boolean value.
- c) The assignment operator should not be used within an if-statement conditional.
- d) Literals should never be used in ifstatement conditionals.

**Answer: a**

#### Section Reference 2: Common Error 5.3 Using == to Compare Strings

23. Which code snippet will output “Yes!” when two strings s1 and s2 are equal?

```
a)
if (s1 = s2)
{
 System.out.println("Yes!");
}
```

```
b)
if (s1 == s2)
{
 System.out.println("Yes!");
}
```

```
c)
if (s1.equals(s2))
{
 System.out.println("Yes!");
}
```

```
d)
if (s1.compareTo(s2) == 1)
{
 System.out.println("Yes!");
}
```

**Answer: c**

#### Section Reference 2: Special Topic 5.2

24) Which condition, when supplied in the if statement below in place of (. . .), will correctly protect against division by zero?

```
if (. . .)
{
 result = grade / num;
 System.out.println("Just avoided division by zero!");
}
```

- a) (grade == 0)
- b) ((grade / num) == 0)
- c) (num == 0)
- d) (num != 0)

**Answer: d**

25) What is the output of the following code snippet?

```
int num = 100;
if (num != 100)
{
 System.out.println("100");
}
else
{
 System.out.println("Not 100");
}
```

a) There is no output due to compilation errors.

b) 100

c) Not 100

d) 100

Not 100

**Answer: c**

26) What is the output of the following code snippet?

```
"String str1 = ""her"";"
"String str2 = ""cart"";"
if (str1.compareTo(str2) < 0)
{
 System.out.print(str2);
}
else
{
 System.out.print(str1);
}
```

a) her

b) hercart

c) cart

d) carther

**Answer: a**

27) What is the conditional required to check whether the length of a string s1 is odd?

a) if ((s1.length() % 2) == 0)

b) if ((s1.length() % 2) != 0)

c) if ((s1.length() / 2))

d) if ((s1.length() \* 2))

**Answer: b**

28) The two strings "Aardvark" and "Aardvandermeer" are exactly the same up to the first six letters. What is their correct lexicographical ordering?

a) They cannot be compared lexicographically unless they are the same length

- b) "Aardvandermeer" is first, then "Aardvark"
- "c) "Aardvark" is first, then "Aardvandermeer"
- d) The shorter word is always first

**Answer: b**

29) Write an if-statement condition that is true if the length of string s1 is greater than 42.

- a) if (s1.length() > 42)
- b) if (s1.length() != 42)
- c) if (42 > s1.length())
- d) if (42 != s1.length())

**Answer: a**

30) Which of the following options is a legally correct expression for inverting a condition?

- a) if (!(a == 10))
- b) if (!a == 10)
- c) if (a != 10)
- d) if (a ! 10)

**Answer: a**

31) Suppose you want to write an if statement with multiple alternatives to print out the single tax bracket that someone is in, based on their income. Assume the integer variable income holds the annual income. What is wrong with the following if statement?

```
if (income < 10000)
{
" System.out.println("Lowest tax bracket");"
}
if (income < 20000)
{
" System.out.println("Low-Middle tax bracket");"
}
if (income < 30000)
{
" System.out.println("Middle tax bracket");"
}
"System.out.println("High tax bracket");"
```

- a) The conditions are in the wrong order; the check for the highest bracket should be first
- b) The conditions should use an if else/if else sequence, not just independent if statements
- c) The conditions should be a switch statement instead
- d) Nothing is wrong – the if statement will correctly print out the correct tax brackets

**Answer: b**

32. The switch statement in Java

- a) is like a sequence of if statements that compares a single integer value against several constant alternatives.
- b) is a compound statement that tests all branches against different variables.
- c) requires compound Boolean expressions as alternatives.
- d) none of the choices is correct.

**Answer: a**

Section Reference 2: Special Topic 5.3

33) In a switch statement, if a break statement is missing

- a) The break happens at the end of each branch by default
- b) The statement will not compile
- c) Execution falls through the next branch until a break statement is reached
- d) The default case is automatically executed

**Answer: c**

Section Reference 2: Special Topic 5.3

34. An if statement inside another if statement is called a

- a) switch statement
- b) nested if statement
- c) break statement
- d) syntax error, since that is not permitted in Java

**Answer: b**

35) When an if statement is nested inside another if statement, it creates the possibility of

- a) an infinite loop
- b) the misuse of the break statement
- c) type mismatch
- d) The dangling else

**Answer: d**

Section Reference 2: Common Error 5.4 The Dangling else Problem

36) What is the output of the following code snippet?

```
int s1 = 20;
if (s1 <= 20)
{
 System.out.print("1");
}
if (s1 <= 40)
{
 System.out.print("2");
}
if (s1 <= 20)
{
 System.out.print("3");
}
```

- a) 1
- b) 2
- c) 3
- d) 123

**Answer: d**

37) Consider a situation where multiple if statements are combined into a chain to evaluate a complex condition. Which of the following reserved words is used to define the branch to be executed when none of the conditions are true?

- a) if
- b) else if
- c) else
- d) All of the above items

**Answer: c**

38) Consider the following code snippet:

```
int number = 0;
Scanner in = new Scanner(System.in);
"System.out.print(""Enter a number: "");"
number = in.nextInt();
if (number > 30) { ... }
else if (number > 20) { ... }
else if (number > 10) { ... }
else { ... }
```

Assuming that the user input is 40, which block of statements is executed?

- a) if (number > 30) { ... }
- b) else if (number > 20) { ... }
- c) else if (number > 10) { ... }
- d) else { ... }

**Answer: a**

39) Assuming that the user enters 60 as the input, what is the output after running the following code snippet?

```
int num = 0;
Scanner in = new Scanner(System.in);
"System.out.print(""Enter a number: "");"
num = in.nextInt();
if (num < 10)
{
" System.out.println(""Too small!");"
}
else if (num < 50)
{
"System.out.println(""Intermediate!"); "
}
else if (num < 100)
{
" System.out.println(""High!"); "
}
else
{
" System.out.println(""Too high!"); "
}
}
```

- a) Too small!

b) Intermediate!

c) High!

d) Too high!

**Answer: c**

40) Assuming that a user enters 5 as the value for num, what is the output of the following code snippet?

```
int num = 0;
Scanner in = new Scanner(System.in);
"System.out.print(""Enter a number: "");"
num = in.nextInt();
if (num < 50)
{
 num = num + 5;
}
if (num < 10)
{
 num = num - 2;
}
if (num > 5)
{
 num++;
}
else
{
 num--;
}
System.out.println(num);
```

a) 0

b) 9

c) 5

d) 11

**Answer: d**

41) Consider the following code snippet. Assuming that the user enters first 20 and then 12 as the two input values, what is the output of the code snippet?

```
int num1 = 0;
int num2 = 0;
int num3 = 0;
int num4 = 0;
int num5 = 0;
Scanner in = new Scanner(System.in);
"System.out.print(""Enter a number: "");"
num1 = in.nextInt();
"System.out.print(""Enter a number: "");"
num2 = in.nextInt();
if (num1 < num2)
```

```

{
 num3 = num1;
}
else
{
 num3 = num2;
}
if (num1 < num2 + 10)
{
 num4 = num1;
}
else if (num1 < num2 + 20)
{
 num5 = num1;
}
"System.out.println(""num1 = "" + num1 + "" num2 = "" + num2 "
"+ "" num3 = "" + num3 + "" num4 = "" + num4 "
" + "" num5 = "" + num5);"

```

a) num1 = 20 num2 = 12 num3 = 20 num4 = 20 num5 = 0

b) num1 = 20 num2 = 12 num3 = 12 num4 = 0 num5 = 20

c) num1 = 20 num2 = 12 num3 = 12 num4 = 20 num5 = 0

d) num1 = 20 num2 = 12 num3 = 20 num4 = 0 num5 = 20

**Answer: c**

42) What is the value of the price variable after the following code snippet is executed?

```

int price = 42;
if (price < 40)
{
 price = price + 10;
}
if (price > 30)
{
 price = price * 2;
}
if (price < 100)
{
 price = price - 20;
}

```

a) 42

b) 52

c) 84

d) 64

**Answer: d**

43) Consider the following code snippet. Assuming that the user inputs 75 as the age, what is the output?

```

int age = 0;

```

```
Scanner in = new Scanner(System.in);
"System.out.print("Please enter your age: ");"
age = in.nextInt();
if (age < 10)
{
" System.out.print("Child "); "
}
if (age < 30)
{
" System.out.print("Young adult "); "
}
if (age < 70)
{
" System.out.print("Old "); "
}
if (age < 100)
{
" System.out.print("Impressively old "); "
}
a)Impressively old
b) Child Young adult Old
c) Young adult Old
d) Child Young adult Old Impressively old
```

**Answer: a**

44) What is the value of the magicPowers variable after executing the following code snippet?

```
"String magicPowers = """";"
int experienceLevel = 9;
if (experienceLevel > 10)
{
"magicPowers = magicPowers + "Golden sword "; "
}
if (experienceLevel > 8)
{
"magicPowers = magicPowers + "Shining lantern "; "
}
if (experienceLevel > 2)
{
"magicPowers = magicPowers + "Magic beans "; "
}
a)Golden sword Shining lantern Magic beans
b) Shining lantern Magic beans
c) Magic beans
d) An empty string
```

**Answer: b**

45) Assuming that a user enters 5 as the age, what is the output of the following code snippet?

```
int age = 0;
Scanner in = new Scanner(System.in);
"System.out.print("Please enter your age: ");"
age = in.nextInt();
if (age < 10)
{
" System.out.println("Kid"); "
}
if (age < 30)
{
" System.out.print("Young"); "
}
if (age < 70)
{
" System.out.print("Aged"); "
}
if (age < 100)
{
" System.out.print("Old"); "
```

- a) Kid
- b) Kid  
Young
- c) Kid  
YoungAged
- d) Kid  
YoungAgedOld

**Answer: d**

46) When drawing flowcharts, unconstrained branching and merging can lead to

- a) So-called "spaghetti code"
- b) A better design
- c) Intuitive understanding of the flow of control
- d) Clear visualization of the problem solution

**Answer: a**

47) The flow chart shows the order in which steps should be executed, and the diamond-shaped boxes indicate

- a) input
- b) algorithms
- c) tasks
- d) conditional tests

**Answer: d**

48) When testing code for correctness, it always makes sense to

- a) Test all cases
- b) Identify boundary cases and test them
- c) Check all cases by hand
- d) Assume invalid input will never occur

**Answer: b**

49) Which of the following variables is used to store a condition that can be either true or false?

- a) Algebraic
- b) Logical
- c) Boolean
- d) Conditional

**Answer: c**

50) Consider the following code snippet:

```
boolean attendance = true;
```

```
boolean failed = false;
```

Which of the following if statements includes a condition that evaluates to true?

```
"a) if (attendance == "true") { . . . }
```

```
b) if (attendance) { . . . }
```

```
c) if (failed) { . . . }
```

```
d) if (attendance == failed) { . . . }
```

**Answer: b**

51) What is the output of the following code snippet?

```
boolean attendance = false;
```

```
"String str = "Unknown";"
```

```
attendance = !(attendance);
```

```
if (!attendance)
```

```
{
```

```
 " str = "False"; "
```

```
}
```

```
if (attendance)
```

```
{
```

```
 attendance = false;
```

```
}
```

```
if (attendance)
```

```
{
```

```
 " str = "True"; "
```

```
}
```

```
else
```

```
{
```

```
 " str = "Maybe"; "
```

```
}
```

```
System.out.println(str);
```

- a) False
- b) True
- c) Unknown
- d) Maybe

**Answer: d**

52) Which of the following operators is used to combine two Boolean conditions?

- a) ##
- b) \$\$
- c) %%
- d) &&

**Answer: d**

53) Assuming that a user enters 56 for age, what is the output of the following code snippet?

```
int age = 0;
Scanner in = new Scanner(System.in);
"System.out.print("Please enter your age: ");"
age = in.nextInt();
if (age < 13)
{
" System.out.println("Kid!"); "
}
if (age >= 13 && age < 19)
{
" System.out.println("Teen!"); "
}
if (age >= 19 && age < 30)
{
" System.out.println("Young!"); "
}
if (age >= 30 && age < 50)
{
" System.out.println("Adult!"); "
}
if (age >= 50)
{
" System.out.println("Old!");"
}
```

- a) Teen!
- b) Young!
- c) Adult!
- d) Old!

**Answer: d**

54) Which of the following expressions represents a legal way of checking whether a value assigned to the num variable falls in the range 100 to 200?

- a) if (num >= 200 && num <= 100)
- b) if (num >= 100 && num <= 200)
- c) if (num >= 100 || num <= 200)
- d) if (num >= 200 || num <= 100)

**Answer: b**

55) Which of the following expressions represents a legal way of checking whether a value for the num variable is either less than 100 or more than 200?

- a) if (num <= 100 && num >= 200)
- b) if (num < 100 && num > 200)
- c) if (num < 100 || num > 200)
- d) if (num <= 100 || num >= 200)

**Answer: c**

56) Assuming that a user enters 64 as his score, what is the output of the following code snippet?

```
int score = 0;
Scanner in = new Scanner(System.in);
"System.out.print("Enter your score: ");"
score = in.nextInt();
if (score < 40)
{
" System.out.println("F"); "
}
else if (score >= 40 || score < 50)
{
" System.out.println("D"); "
}
else if (score >= 50 || score < 60)
{
" System.out.println("C"); "
}
else if (score >= 60 || score < 70)
{
" System.out.println("B");"
}
else if (score >= 70 || score < 80)
{
" System.out.println("B+"); "
}
else
{
" System.out.println("A");"
}
a)D
```

- b) C
- c) B
- d) A

**Answer: a**

57) What is the output of the following code snippet?

```
int num = 100;
if (num > 100);
{
 num = num - 10;
}
System.out.println(num);
```

- a) 90
- b) 100
- c) 99
- d) 101

**Answer: a**

58) Which of the following operators is used to invert a conditional statement?

- a) !
- b) !=
- c) ||
- d) ?

**Answer: a**

59) Which of the following operators is NOT a relational operator?

- a) <=
- b) +=
- c) !=
- d) ==

**Answer: b**

60) What is the output of the following code snippet?

```
final int MIN_SPEED = 45;
final int MAX_SPEED = 65;
int speed = 55;
if (!(speed < MAX_SPEED))
{
 speed = speed - 10;
}
if (!(speed > MIN_SPEED))
{
 speed = speed + 10;
}
System.out.println(speed);
```

- a) 45

- b) 55
- c) 65
- d) 50

**Answer: b**

61) What is the value of num after you run the following code snippet?

```
int num = 100;
if (num <= 100)
{
 num++;
}
if (num <= 200)
{
 num--;
}
if (num <= 300)
{
 num++;
}
if (num <= 400)
{
 num--;
}
if (num <= 500)
{
 num++;
}
```

- a) 99
- b) 100
- c) 101
- d) 102

**Answer: c**

62) Which of the following options correctly represents a “nested if” structure?

- a)  
if (cost < 70)  
{  
 if (tax\_rate < 0.10) { ... }  
}
- b)  
if (cost < 70) { ... }  
if (tax\_rate < 0.10) { ... }
- c)  
if (cost < 70) { ... }  
else { ... }  
if (tax\_rate < 0.10) { ... }

```
d)
if (cost < 70){ ... }
{
 else
 {
 if (tax_rate < 0.10) { ... }
 }
}
```

**Answer: a**

63) Which of the following statements is true about the “nested if” structure?

- a) It cannot have any else branches at all.
- b) It allows multiple else branches in a single if statement.
- c) It allows one if statement within another if statement.
- d) It does not allow multiple else branches inside a nested if statement.

**Answer: c**

64) Assuming that a user enters 10, 20, and 30 as input values one after another, separated by spaces, what is the output of the following code snippet?

```
int num1 = 0;
int num2 = 0;
int num3 = 0;
Scanner in = new Scanner(System.in);
"System.out.print(""Enter a number: "");"
num1 = in.nextInt();
"System.out.print(""Enter a number: "");"
num2 = in.nextInt();
"System.out.print(""Enter a number: "");"
num3 = in.nextInt();
if (num1 > num2)
{
 if (num1 > num3)
 {
 System.out.println(num1);
 }
 else
 {
 System.out.println(num3);
 }
}
else
{
 if (num2 > num3)
 {
 System.out.println(num2);
 }
}
```

```
else
{
 System.out.println(num3);
}
}
```

- a) 0
- b) 10
- c) 20
- d) 30

**Answer: d**

65) What is the output of the following code snippet?

```
int num = 100;
if (num < 100)
{
 if (num < 50)
 {
 num = num - 5;
 }
 else
 {
 num = num - 10;
 }
}
else
{
 if (num > 150)
 {
 num = num + 5;
 }
 else
 {
 num = num + 10;
 }
}
System.out.println(num);
```

- a) 95
- b) 100
- c) 105
- d) 110

**Answer: d**

66) Which of the following options refers to the technique of simulating program execution on a sheet of paper?

- a) Compiling
- b) Prototyping
- c) Tracing

d) Debugging

Answer: c

67) Which of the following coding techniques can hand-tracing be applied to?

- a) Pseudocode
- b) Java code
- c) Both pseudocode and Java code
- d) Neither pseudocode nor Java code

Answer: c

68) Assuming that a user enters 22 as the price of an object, which of the following hand-trace tables is valid for the given code snippet?

```
int price = 0;
String status = """";
Scanner in = new Scanner(System.in);
System.out.print("Please enter object's price: ");
price = in.nextInt();
if (price >= 50)
{
 status = "reasonable";
 if (price >= 75)
 {
 status = "costly";
 }
}
else
{
 status = "inexpensive";
 if (price <= 25)
 {
 status = "reasonable";
 }
}
```

- a) price 0 22
- b) price 0 22
- c) price 0 22
- d)

price

0

22

**Answer: a**

69) Which of the following operators compare using short-circuit evaluation?

a) ++

b) –

c) &&

d) ==

**Answer: c**

Section Reference 2: Special Topic 5.6

70) Consider the following code snippet:

```
int score = 0;
double price = 100;
if (score > 0 && price < 200 && price / score > 10)
{
 System.out.println("buy");
}
```

Which of the following statements is true on the basis of this code snippet?

a) The output is buy.

b) The code snippet compiles and runs, but there is no output.

c) The code snippet doesn't compile.

d) The code snippet causes a divide-by-zero error.

**Answer: b**

Section Reference 2: Special Topic 5.6

71) Which of the following options checks that city is neither Chicago nor Dallas?

"a) if (!city.equals("Chicago") || !city.equals("Dallas"))"

"b) if (!(city.equals("Chicago") || city.equals("Dallas")))"

"c) if (!(city.equals("Chicago") && city.equals("Dallas")))"

"d) if (!city.equals("Chicago") || city.equals("Dallas"))"

**Answer: b**

Section Reference 2: Special Topic 5.7

72) Assuming that a user enters 45, 78, and then 12, what is the output of the following code snippet?

```
int num1 = 0;
int num2 = 0;
int num3 = 0;
Scanner in = new Scanner(System.in);
"System.out.print("Enter a number: ");"
num1 = in.nextInt();
"System.out.print("Enter a number: ");"
num2 = in.nextInt();
"System.out.print("Enter a number: ");"
```

```

num3 = in.nextInt();
if (!(num1 > num2 && num1 > num3))
{
 System.out.println(num1);
}
else if (!(num2 > num1 && num2 > num3))
{
 System.out.println(num2);
}
else if (!(num3 > num1 && num3 > num2))
{
 System.out.println(num3);
}

```

- a) 12
- b) 45
- c) 78
- d) There is no output due to compilation errors.

**Answer: b**

73) Which of the following statements can be used to validate that the user input for the floor variable is between 0 and 20 inclusive?

- a) if (floor >= 0 && floor <= 20)
- b) if (floor >= 0 || floor <= 20)
- c) if (floor <= 0 && floor >= 20)
- d) if (floor <= 0 || floor >= 20)

**Answer: a**

74) Assuming that a valid price should be between 30 and 50, does the following code snippet test this condition correctly?

```

final int MIN_PRICE = 30;
final int MAX_PRICE = 50;
int price = 0;
Scanner in = new Scanner(System.in);
"System.out.print("Please enter the price: ");"
price = in.nextInt();
if (price < MIN_PRICE)
{
 " System.out.println("Error: The price is too low.");"
}
else if (price > MAX_PRICE)
{
 " System.out.println("Error: The price is too high.");"
}
else
{
 " System.out.println("The price entered is in the valid price range.");"
}

```

```
}
```

- a) This code snippet ensures that the price value is between 30 and 50.
- b) This code snippet only ensures that the price value is greater than 30.
- c) This code snippet only ensures that the price value is less than 50.
- d) This code snippet ensures that the price value is either less than 30 or greater than 50.

**Answer: a**

75) Which of the following conditions tests whether the user enters an integer value that will then be assigned to the floor variable?

```
int floor = 0;
Scanner in = new Scanner(System.in);
"System.out.print("Floor: ");"
(. . .)
```

- ```
floor = in.nextInt();  
a) if (in.nextInt(floor))  
b) if (in.hasNextInt())  
c) if (in.fail())  
d) if (in.nextInt())
```

Answer: b

76) Assuming that the user provides 3 as input, what is the output of the following code snippet?

```
int x;  
int y;  
x = 0;  
"System.out.print("Please enter y: ");"  
Scanner in = new Scanner(System.in);  
y = in.nextInt();  
if (y > 0)  
{  
    x = 2 * y;  
}  
else  
{  
    x = 2 + x;  
}  
"System.out.println("x: " + x);"
```

- a) x: 2
- b) x: 4
- c) x: 6
- d) There is no output due to compilation errors.

Answer: c

77) Assuming that the user provides 49 as input, what is the output of the following code snippet?

```
int x = 0;  
int y = 0;  
"System.out.print("Please enter y: ");"
```

```
Scanner in = new Scanner(System.in);
```

```
y = in.nextInt();
```

```
if (y > 50);
```

```
{
```

```
    x = y;
```

```
}
```

```
"System.out.println("x: " + x);"
```

a)x: 0

b) x: 49

c) x: 50

d) There is no output due to compilation errors.

Answer: b

78) What is the output of the following code snippet?

```
int age = 25;
```

```
if (age > 30)
```

```
{
```

```
    " System.out.println("You are wise!"); "
```

```
}
```

```
else
```

```
{
```

```
    " System.out.println("You have much to learn!");"
```

```
}
```

a)

There is no output due to compilation errors.

b)

You are wise!

c)

You have much to learn!

d)

You are wise!

You have much to learn!

Answer: c

79) What is the output of the following code snippet?

```
int x = 50;
```

```
if (x > 100)
```

```
{
```

```
    x++;
```

```
}
```

```
else
```

```
{
```

```
    x--;
```

```
}
```

```
System.out.println(x);
```

a)49

b) 50

c) 51

d) 52

Answer: a

80) A store applies a 15 percent service charge on all items with a price of at least \$150. No service charge is otherwise applicable. Which of the following DOES NOT correctly compute the service charge?

a)

```
double serviceCharge = 0;
if (cost >= 150)
{
    serviceCharge = 0.15 * cost;
}
```

b)

```
double serviceCharge = 0.15 * cost;
if (cost <= 150)
{
    serviceCharge = 0;
}
```

c)

```
double serviceCharge;
if (cost < 150)
{
    serviceCharge = 0;
}
else
{
    serviceCharge = 0.15 * cost;
}
```

d)

```
double serviceCharge = 15;
if (cost >= 150)
{
    serviceCharge = 0.15 * cost;
}
else
{
    serviceCharge = 0;
}
```

Answer: b

81) What is the output of the following code snippet?

```
double salary = 55000;
double cutOff = 65000;
double minSalary = 40000;
if (minSalary > salary)
```

```

{
" System.out.println("Minimum salary requirement is not met.");"
}
if (cutOff < salary)
{
" System.out.println("Maximum salary limit is exceeded.");"
}
else
{
" System.out.println("Salary requirement is met."); "
}

```

a) Minimum salary requirement is not met.

b) Maximum salary limit is exceeded.

c) Salary requirement is met.

d) There is no output.

Answer: c

82) What is the output of the following code snippet?

```

int digit = 500;
if (digit != 500)
{
" System.out.println("500"); "
}
else
{
" System.out.println("Not 500");"
}

```

a)

There is no output due to compilation errors.

b)

500

c)

Not 500

d)

500

Not 500

Answer: c

83) What is the output of the following code snippet?

```

"String someString1 = "his"; "
"String someString2 = "cycle"; "
if (someString1.compareTo(someString2) < 0)
{
" System.out.println(someString2);"
}
else

```

```
{  
    System.out.println(someString1);  
}
```

- a) his
- b) hiscycle
- c) cycle
- d) There is no output due to compilation errors.

Answer: a

84) What is the output of the following code snippet?

```
int num1 = 40;  
if (num1 <= 40)  
{  
    System.out.print("F");  
}  
if (num1 <= 75)  
{  
    System.out.print("C");  
}  
if (num1 <= 90)  
{  
    System.out.print("B");  
}
```

- a) F
- b) C
- c) B
- d) FCB

Answer: d

85) What is the output after running the following code snippet?

```
int number = 600;  
if (number < 200)  
{  
    System.out.println("Low spender");  
}  
else if (number < 500)  
{  
    System.out.println("Spending in moderation");  
}  
else if (number < 1000)  
{  
    System.out.println("Above average!");  
}  
else  
{  
    System.out.println("High Roller!");  
}
```

- }
- a) Low spender
- b) Spending in moderation
- c) Above average!
- d) High Roller!

Answer: c

86) What is the output of the following code snippet?

```
int x = 25;
if (x < 100)
{
    x = x + 5;
}
if (x < 500)
{
    x = x - 2;
}
if (x > 10)
{
    x++;
}
else
{
    x--;
}
System.out.println(x);
```

- a) 27
- b) 28
- c) 29
- d) 30

Answer: c

87) What is the value of the costvariable after the following code snippet is executed?

```
int cost = 82;
if (cost < 100)
{
    cost = cost + 10;
}
if (cost > 50)
{
    cost = cost * 2;
}
if (cost < 100)
{
    cost = cost - 20;
}
```

- a) 82
- b) 92
- c) 184
- d) 164

Answer: c

88) Consider the following code snippet. What is the output?

```
int score = 68;
if (score < 50)
{
" System.out.print("""You need to practice!"""); "
}
if (score < 100)
{
" System.out.print("""Almost respectable!""");"
}
if (score < 150)
{
" System.out.print("""You hit triple digits!"""); "
}
if (score < 250)
{
" System.out.print("""Impressive!"""); "
}
```

- a) You need to practice!
- b) Almost respectable!You hit triple digits!
- c) You hit triple digits!Impressive!
- d) Almost respectable!You hit triple digits!Impressive!

Answer: d

89) What is the output of the following code snippet?

```
int shoeSize = 8;
if (shoeSize < 6)
{
" System.out.println("""Petite"""); "
}
if (shoeSize < 8)
{
" System.out.println("""Small"""); "
}
if (shoeSize < 10)
{
" System.out.println("""Medium"""); "
}
if (shoeSize < 14)
{
```

```
" System.out.println("Large"); "
```

```
}
```

a)

Petite

b)

Petite

Small

c)

Small

Medium

d)

Medium

Large

Answer: d

90) Consider the following code snippet:

```
boolean married = true;
```

```
boolean engaged = false;
```

Which of the following if statements includes a condition that evaluates to true?

"a) if (married == "true") { ... }"

b) if (married) { ... }

c) if (engaged) { ... }

d) if (married == engaged) { ... }

Answer: b

91) What is the output of the following code snippet?

```
boolean passed = false;
```

```
"String someStr = "Unknown"; "
```

```
passed = !(passed);
```

```
if (!passed)
```

```
{
```

```
" someStr = "False"; "
```

```
}
```

```
if (passed)
```

```
{
```

```
passed = false;
```

```
}
```

```
if (!passed)
```

```
{
```

```
" someStr = "True"; "
```

```
}
```

```
else
```

```
{
```

```
" someStr = "Maybe"; "
```

```
}
```

```
System.out.println(some_str);
```

- a) False
- b) True
- c) Unknown
- d) Maybe

Answer: b

92) What is the output of the following code snippet?

```
int golfScore = 64;
if (golfScore < 60)
{
    System.out.println("Astounding!");
}
if (golfScore >= 60 && golfScore < 70)
{
    System.out.println("Professional!");
}
if (golfScore >= 70 && golfScore < 80)
{
    System.out.println("Pretty good!");
}
if (golfScore >= 80 && golfScore < 90)
{
    System.out.println("Not so hot!");
}
if (golfScore >= 90)
{
    System.out.println("Keep your day job!");
}
```

- a) Astounding!
- b) Professional!
- c) Pretty good!
- d)Keep your day job!

Answer: b

93) Which of the following expressions represents a legal way of checking whether a value assigned to the number variable falls between 50 and 100 inclusive?

- a) if (number >= 100 && number <= 50)
- b) if (number >= 50 && number <= 100)
- c) if (number >= 50 || number <= 100)
- d) if (number >= 100 || number <= 50)

Answer: b

94) Assuming that a user enters 68 as the score, what is the output of the following code snippet?

```
int score = 68;
if (score < 50)
{
    System.out.println("F");
}
```

```
"else if (score >= 50 || score < 55) { System.out.println("D"); }"  
"else if (score >= 55 || score < 65) { System.out.println("C"); }"  
"else if (score >= 65 || score < 75) { System.out.println("B"); }"  
"else if (score >= 75 || score < 80) { System.out.println("B+"); } "  
"else { System.out.println("A"); }"
```

- a) D
- b) C
- c) B
- d) A

Answer: a

95) Assuming that a user enters 50, 70, and 60 as input values one after another, separated by spaces, what is the output of the following code snippet?

```
int number1 = 0;  
int number2 = 0;  
int number3 = 0;  
Scanner in = new Scanner(System.in);  
"System.out.print("Enter a number: ");"  
number1 = in.nextInt();  
"System.out.print("Enter a number: ");"  
number2 = in.nextInt();  
"System.out.print("Enter a number: ");"  
number3 = in.nextInt();  
if (number1 > number2)  
{  
    if (number1 > number3)  
    {  
        System.out.println(number1);  
    }  
    else  
    {  
        System.out.println(number3);  
    }  
}  
else  
{  
    if (number2 > number3)  
    {  
        System.out.println(number2);  
    }  
    else  
    {  
        System.out.println(number3);  
    }  
}  
}
```

- a) 0

b) 50

c) 60

d) 70

Answer: d

96) Assuming that a user enters 45 as the brightness of a lamp, which of the following hand-trace tables is valid for the given code snippet?

```
int brightness = 0;
String description = "";
Scanner in = new Scanner(System.in);
System.out.print("Enter your lamp brightness (in watts): ");
brightness = in.nextInt();
if (brightness >= 120)
{
    description = "very bright";
    if (brightness >= 100)
    {
        description = "bright";
    }
}
else
{
    description = "pleasant";
    if (brightness <= 50)
    {
        description = "dim";
    }
}
```

a)

brightness

0

45

b)

brightness

0

45

c)

brightness

0

45

d)

brightness

0

45

Answer: a

97) Which of the following options checks that the string country is neither China nor Denmark?

- "a) if (!country.equals("China") || !country.equals("Denmark"))"
- "b) if (!(country.equals("China") || country.equals("Denmark")))"
- "c) if (!(country.equals("China") && country.equals("Denmark")))"
- "d) if (country.equals("China") || country.equals("Denmark"))"

Answer: b

98) Assuming that the valid cost should be between 100 and 200, does the following code snippet test this condition correctly?

```
final int MIN_COST = 100;
final int MAX_COST = 200;
int cost = 0;
Scanner in = new Scanner(System.in);
"System.out.print("Please enter the cost: ");"
cost = in.nextInt();
if (cost < MIN_COST)
{
" System.out.println("Error: The cost is too low.");"
}
else if (cost > MAX_COST)
{
" System.out.println("Error: The cost is too high."); "
}
else
{
" System.out.println("The cost entered is in the valid cost range.");"
}
```

- a) This code snippet ensures that the cost value is between 100 and 200.
- b) This code snippet only ensures that the cost value is greater than 100.
- c) This code snippet only ensures that the cost value is less than 200.
- d) This code snippet ensures that the cost value is either less than 100 or greater than 200.

Answer: a

99) Which of the following conditions tests whether the user enters the single digit 5?

```
String s;
Scanner in = new Scanner(System.in);
"System.out.print("Enter a single digit: ");"
s = in.next();
"a) if (s == "5")"
b) if (s == '5')
"c) if (s = "5")"
"d) if (s.equals("5"))"
```

Answer: d

Section Reference 2: Common Error 5.3 Using == to Compare Strings

100) Assuming that the user inputs "twenty" as the input, what is the output of the following code snippet?

```

String numEmployeesStr;
Scanner in = new Scanner(System.in);
"System.out.println("Please enter the number of your employees: ");"
numEmployeesStr= in.next();
int numEmployees = Integer.parseInt(numEmployeesStr);
if (numEmployees < 10)
{
" System.out.println("Very small business!"); "
}
else
{
" System.out.println("Small business");"
if (numEmployees > 100)
{
" System.out.println("Mid size business");"
}
else
{
" System.out.println("Large business");"
}
}

```

- a) Very small business!
- b) Small business
- c) Mid size business
- d) Run-time error

Answer: d

101) Which of the following conditions tests for the user to enter the string "Hello"?

```

String s;
Scanner in = new Scanner(System.in);
"System.out.print("Enter a word: ");"
s = in.next();
"a) if (s == "Hello")"
"b) if (s.substring(0,5) == "Hello")"
"c) if (s.equals("Hello"))"
"d) if (s = "Hello")"

```

Answer: c

102) Which of the following options checks that character ch is neither a letter nor a white space?

- a) if (!Character.isLetter(ch) || !Character.isWhiteSpace(ch))
- b) if (!(Character.isLetter(ch) || Character.isWhiteSpace(ch)))
- c) if (!(Character.isLetter(ch) && Character.isWhiteSpace(ch)))
- d) if (!Character.isLetter(ch) || Character.isWhiteSpace(ch))

Answer: b

103) What will be printed by the statements below?

```
int a = 10;
if (a > 5)
{
" System.out.print ("One");"
}
else
{
" System.out.print ("Two");"
}
"System.out.print ("Three");"
```

- a)One
- b)OneThree
- c)TwoThree
- d)OneTwoThree

Answer: b

104) A company applies a discount based on the size of the order. If the order is over \$50, the discount is 5%. If the order is over \$100, the discount is 10%. Otherwise, there is no discount. If the integer variable order contains the size of the order, which of the following will assign the double variable discount the correct value?

i.

```
discount = 0.10;
else if (order > 50)
discount = 0.05;
else
discount = 0;
```

j.

```
discount = 0.10;
if (order > 50)
discount = 0.05;
else
discount = 0;
```

k.

```
discount = 0.10;
if (order > 50)
discount = 0.05;
if (order <= 50)
discount = 0;
```

l.

```
discount = 0.05;
else if (order > 100)
discount = 0.10;
else
discount = 0;
```

Answer: a

105) What will be printed by the statements below?

```
int a = 10;
int b = 20;
int count = 0;
if (a > 5)
{
    count ++;
}
if (b > 5)
{
    count ++;
}
if (a > 10)
{
    count ++;
}
if (b > 10)
{
    count ++;
}
System.out.print (count);
```

- a)1
- b)2
- c)3
- d)4

Answer: c

106) What will be printed by the statements below?

```
int a = 10;
int b = 20;
int count = 0;
if (a > 5)
{
    count ++;
}
else if (b > 5)
{
    count ++;
}
else if (a > 10)
{
    count ++;
}
else if (b > 10)
{
    count ++;
}
```

```
System.out.print (count);
```

- a)1
- b)2
- c)3
- d)4

Answer: a

107) What will be printed by the statements below?

```
int a = 10;
int b = 20;
int count = 0;
if (a > 5)
{
    count ++;
    if (b > 5)
    {
        count ++;
    }
}
if (a > 10)
{
    count ++;
    if (b > 10)
    {
        count ++;
    }
}
```

```
System.out.print (count);
```

- a)1
- b)2
- c)3
- d)4

Answer: b

108) What will be printed by the statements below?

```
int a = 10;
int b = 20;
int count = 0;
if (a > 5)
    if (b > 5)
    {
        count ++;
    }
else
    count = 7;
System.out.print (count);
```

- a)0
- b)1
- c)7

Answer: a

109) What will be printed by the statements below?

```
int a = 10;
int b = 20;
int count = 0;
if (a > 10)
{
    count ++;
    if (b > 5)
    {
        count ++;
    }
    if (a > 10)
    {
        count ++;
    }
}
if (b > 10)
{
    count ++;
}
System.out.print (count);
```

- a)1
- b)2
- c)3
- d)4

Answer: a

"110) Which of the following conditions will correctly check if the String variable greeting is ""bonjour""?"

- "a)if (greeting == ""bonjour"")"
- "b)if (greeting.compareTo(""bonjour"") < 0)"
- "c) if (greeting.equals(""bonjour""))"
- "d)if (greeting.compareTo(""bonjour"") > 0)"

Answer: c

"111) Which of the following conditions will correctly check if the String variable early comes before ""middle"" alphabetically?"

- "a)if (greeting <= ""middle"")"
- "b)if (greeting.compareTo(""middle"") > 0)"
- "c)if (greeting.compareTo(""middle"") == 0)"
- "d)if (early.compareTo(""middle"") < 0)"

Answer: d

112) Assume a, b, and c have been defined to be integer variables. Which of the following values make the expression `!(a == b) && (c > a)` true?

- a) a = 10, b = 10, c = 15
- b) a = 10, b = 20, c = 15
- c) a = 10, b = 2, c = 5
- d) a = 10, b = 20, c = 10

Answer: b

113) Which of the following conditions can be added to the code below so it will assign the larger value of two integer variables a and b to the integer variable maximum?

```
if (/* put condition here */)
{
    maximum = a;
}
else
{
    maximum = b;
}
a) a == b
b) b > a
c) a > b
d) a.compareTo (b) > 0
```

Answer: c

114) Which of the following conditions is true only when the integer variable number is even?

- a) `number / 2 == 0`
- b) `number > 2`
- c) `number / 2 > 1`
- d) `number % 2 == 0`

Answer: d

115) Which of the following conditions is true only when the integer variable middle is between the values 0 and 10?

- a) `(0 <= middle) && (middle <= 10)`
- b) `0 <= middle <= 10`
- c) `(0 <= middle) || (middle <= 10)`
- d) `(0 <= 10) && (middle <= 10)`

Answer: a

116) Which of the following conditions is true only when the integer variables a, b, and c contain three different values?

- a) `(a != b) && (a != c) && (b != c)`
- b) `(a != b) || (a != c) || (b != c)`
- c) `!((a == b) && (b == c) && (a == c))`
- d) `a != b != c`

Answer: a

117) Assume the following variables have been declared and given values elsewhere:

boolean isFelon;

int age;

A person may vote if they are 18 or older and not a felon. Which of the following statements assigns the Boolean variable mayVote correctly?

a) mayVote = (age >= 18) || !isFelon;

b) mayVote = !((age >= 18) && isFelon);

c) mayVote = (age >= 18) && !isFelon;

d) mayVote = !((age >= 18) || isFelon);

Answer: c

118) Assume the following variables have been declared and given values elsewhere:

boolean completedProject;

int programsDone;

double classPercentage;

A student will pass programming class if and only if they have a percentage of 70.0% or higher and have either completed the project or they have done 5 or more programs. Which of the following statements assigns the Boolean variable passProgramming correctly?

a) passProgramming = (classPercentage >= 0.7) &&(programsDone >= 5 || completedProject);

b) passProgramming = (classPercentage >= 0.7) && (programsDone >= 5) && (completedProject);

c) passProgramming = (classPercentage >= 0.7) || (programsDone >= 5) || (completedProject);

d) passProgramming = ((classPercentage >= 0.7) && (programsDone >= 5)) && completedProject;

Answer: a

119) Assume isBusy and isHappy have been defined to be Boolean variables. Which of the following conditions has the same value as !isBusy || isHappy?

a) !(isBusy || !isHappy)

b) isBusy && !isHappy

c) !(isBusy && !isHappy)

d) isBusy || !isHappy

Answer: c

120) Assume isBusy has been defined to be a Boolean variables. Which of the following has the same value as (isBusy || true) && !isBusy?

a) isBusy

b) !isBusy

c) true

d) false

Answer: b

121) Assume isBusy has been defined to be a Boolean variables. Which of the following has the same value as (isBusy || true) && false?

a) isBusy

b) !isBusy

c) true

d) false

Answer: d

122) Which of the following performs the same way as the switch statement below?

```
switch (value)
{
" case 1: System.out.print ("Small"); break;"
" case 10: System.out.print ("Large"); break;"
" default: System.out.print ("Other"); break;"
}
```

```
a)if (value == 1)
"System.out.print ("Small");"
  else if (value == 10)
"System.out.print ("Large");"
  else
"System.out.print ("Other"); "
```

```
b)if (value == 1)
"System.out.print ("Small");"
  if (value == 10)
"System.out.print ("Large");"
  else
"System.out.print ("Other"); "
```

```
c)if (value <= 1)
"System.out.print ("Small");"
  else if (value >= 10)
"System.out.print ("Large");"
  else
"System.out.print ("Other"); "
```

```
d)if (value <= 1)
"System.out.print ("Small");"
  if (value >= 10)
"System.out.print ("Large");"
  else
"System.out.print ("Other"); "
```

Answer: a

Package Title: Testbank

Course Title: Big Java

Chapter Number: 6 Loops

Question type: Multiple Choice

1) How many times will the following loop run?

```
inti = 0;
while (i< 10)
{
System.out.println(i);
i++;
}
```

- a) 0
- b) 8
- c) 9
- d) 10

Answer:d

2) What is the output of the code snippet given below?

```
inti = 0;
while (i != 9)
{
    "System.out.println("" + i);"
    i = i + 2;
}
```

- a) No output
- b) 0 2 4 6 8
- c) 10 12 14 16 18 (infinite loop)
- d) 0 2 4 6 8 10 12 14 (infinite loop)

Answer:d

3) How many times does the code snippet given below display ""Loop Execution""?

```
inti = 1;
while (i != 10)
{
    "System.out.println (""Loop Execution"");"
    i++;
}
```

- a) Infinite times
- b) 8 times
- c) 9 times
- d) 10 times

Answer:c

4) What is the output of the code fragment given below?

```
inti = 0;
int j = 0;
while (i < 27)
{
    i = i + 2;
    j++;
}
"System.out.println(""j="" + j);"
```

- a) j=27
- b) j=12
- c) j=13
- d) j=14

Answer:d

5) What is the output of the following code snippet?

```
inti = 1;
while (i < 10)
```

```

{
"System.out.print(i + "" "");"
i = i + 2;
  if (i == 5)
  {
i = 9;
  }
}

```

- a) 1 3 5
- b) 1 3 9
- c) 1 3 5 7 9
- d) 1 3 5 9

Answer:b

6) The code snippet below checks whether a given number is a prime number. What will be the result of executing it?

```

public static void main(String[] args)
{
int j = 2;
int result = 0;
int number = 0;
  Scanner reader = new Scanner(System.in);
"System.out.println("Please enter a number: ");"
  number = reader.nextInt();
  while (j <= number / 2) // better is while (j * j <= number)
  {
    if (number % j == 0)
    {
      result = 1;
    }
    j++;
  }
  if (result == 1)
  {
"System.out.println("Number: "" + number + "" is Not Prime.");"
  }
  else
  {
"System.out.println("Number: "" + number + "" is Prime. ");"
  }
}

```

- a) The code snippet will not compile.
- b) The code snippet will display the desired result.
- c) The code snippet will display an incorrect result. // incorrect if number is 1
- d) The code snippet will loop forever.

Answer:b

Section reference 1: 6.1 The whileLoop

7) What are the values of i and j after the following code fragment runs?

```
inti = 60;
int j = 50;
int count = 0;
while (count < 5)
{
i = i + i;
i = i + 1;
    j = j - 1;
    j = j - j;
    count++;
}
"System.out.println(""i="" + i + "", j="" + j);"
```

- a) i = 1951, j = 0
- b) i = 1951, j = 45
- c) i = 65, j = 1
- d) i = 65, j = 45

Answer:a

"8) Which error type does the ""off-by-one"" error belong to?"

- a) Syntax error
- b) Compile-time error
- c) Run-time error
- d) Infinite loop

Answer:c

"9) How many times does the following code fragment display ""Hi""?"

```
inti = 10;
while (i >= 0)
{
"System.out.println(""Hi"");"
i--;
}
```

- a) 9 times
- b) 10 times
- c) 11 times
- d) 12 times

Answer:c

10) What is the output of the following code fragment?

```
inti = 1;
int sum = 0;
while (i <= 11)
{
    sum = sum + i;
i++;
}
"System.out.println(""The value of sum is "" + sum);"
```

- a) The value of sum is 65
- b) The value of sum is 66

c) The value of sum is 55

d) The value of sum is 56

Answer:b

11) What is the output of the following code snippet?

```
inti = 1;
while (i<= 10)
{
"System.out.println("Inside the while loop");"
i = i + 10;
}
```

a) No output because of compilation error.

b) "Inside the while loop" will be displayed 10 times.

c) No output after successful compilation.

d) "Inside the while loop" will be displayed only once.

Answer:d

"12) How many times does the code snippet below display "Hello"?"

```
inti = 0;
while (i != 15)
{
"System.out.println("Hello");"
i++;
}
```

a) Infinite times

b) 14 times

c) 15 times

d) 16 times

Answer:c

13) What is the output of the code snippet given below?

```
"String s = "abcde";"
inti = 1;
while (i< 5)
{
System.out.print(s.substring(i, i + 1));
i++;
}
```

a) No output

b) abcd

c) abcde

d) bcde

Answer:d

14) What is the output of the code snippet given below?

```
"String s = "12345";"
inti = 1;
while (i< 5)
{
System.out.print(s.substring(i, i + 1));
```

```
i++;  
}  
a) No output  
b) 1234  
c) 12345  
d) 2345
```

Answer:d

15) What is the output of the code fragment given below?

```
inti = 0;  
int j = 0;  
while (i < 125)  
{  
    i = i + 2;  
    j++;  
}  
System.out.println(j);
```

- a) 0
- b) 62
- c) 63
- d) The code fragment displays no output because it does not compile.

Answer: c

16) What is the output of the following code snippet?

```
inti = 1;  
while (i < 20)  
{  
    "System.out.print(i + "" """);"  
    i = i + 2;  
    if (i == 15)  
    {  
        i = 19;  
    }  
}
```

- a) 1 3 5 7 9 11 13 15 17 19
- b) 1 3 5 7 9 11 13 19
- c) 1 3 5 7 9 11 13 15 17
- d) 1 3 5 7 9 11 13 17 19

Answer: b

17) What are the values of i and j after the following code snippet is run?

```
inti = 10;  
int j = 20;  
int count = 0;
```

```

while (count < 5)
{
i = i + i;
i = i + 1;
    j = j - 1;
    j = j - j;
    count++;
}
"System.out.println("i = " + i + ", j = " + j);"
a) i = 45, j = 1
b) i = 351, j = 0
c) i = 351, j = 2
d) i = 1311, j = 35

```

Answer: b

18) What is the output of the following code fragment?

```

inti = 1;
int sum = 0;
while (i<= 15)
{
    sum = sum + i;
i++;
}
"System.out.println("The value of sum is " + sum);"
a) The value of sum is 0
b) The value of sum is 105
c) The value of sum is 120
d) The value of sum is 136

```

Answer: c

19) What is the output of the following code snippet?

```

double a = 2;
int n = 16;
double r = 1;
double b = a;
inti = n;
while (i> 0)
{
    if (i % 2 == 0) // n is even
    {
        b = b * b;
i = i / 2;
    }
    else
    {
        r = r * b;
i--;
}
}

```

```
}  
}  
"System.out.println("r = " + r);"
```

- a) r = 16.0
- b) r = 128.0
- c) r = 4096.0
- d) r = 65536.0

Answer: D

20) What output does this while loop generate?

```
j = 6;  
while (j > 0)  
{  
"System.out.print(j + " ", "");"  
  j--;  
}
```

- A) No output is generated.
- B) 6, 5, 4, 3, 2, 1
- C) 6, 5, 4, 3, 2, 1,
- D) The output is infinite.

Answer: C

21) What is the output of this code snippet?

```
"String str = "ABCabc";"  
char ch;  
inti = 0;  
while (i < str.length())  
{  
ch = str.charAt(i);  
  if (Character.isLowerCase(ch))  
  {  
"System.out.print(i + " ");"  
  }  
  else  
  {  
i++;  
  }  
}
```

- a) 3 4 5
- b) 3
- c) 3 3333 ... (infinite loop)
- d) 0 1 2

Answer: c

22) What will be the result of running the following code fragment?

```
int year = 0;
```

```
double rate = 5;
double principal = 10000;
double interest = 0;
while (year < 10)
{
    interest = (principal * year * rate) / 100;
    "System.out.println(""Interest "" + interest);"
}
```

- a) The code fragment will display the interest calculated for nine years.
- b) The code fragment will continue to display the calculated interest forever because the loop will never end.
- c) The code fragment will not display the calculated interest and halt abruptly.
- d) The code fragment will not display any output because it will not compile.

Answer: b

23) Which of the following code snippets displays the output exactly 10 times?

a)

```
inti = 0;
while (i < 10);
{
    "System.out.println(""This is example 1. "");"
    i++;
}
```

b)

```
inti = 0;
while (i < 10)
{
    "System.out.println(""This is example 2. "");"
    i++;
}
```

c)

```
inti = 0;
while (i < 10)
{
    "System.out.println(""This is example 3. "");"
}
```

d)

```
inti = 1;
while (i < 10)
{
    "System.out.println(""This is example 4. "");"
    i++;
}
```

Answer: b

24) What is the output of the following code snippet?

```
inti = 1;
while (i != 9)
```

```
{  
"System.out.print(i + "" "");"  
i++;  
  if (i == 9)  
  {  
"System.out.println(""End "");"  
  }  
}
```

- a) 1 End
- b) 1 End (infinite loop)
- c) 1 2 3 4 5 6 7 8 End
- d) 1 2 3 4 5 6 7 8 End (infinite loop)

Answer: c

25) What changes do you need to make in the following code snippet to display "Let us learn Java" exactly 10 times?

```
inti = 0;  
while (i<= 10)  
{  
"System.out.println(""Let us learn Java "");"  
i++;  
}
```

- a) while (i< 9)
- b)while (i< 11)
- c) while (i< 12)
- d)inti = 1;

Answer: D

26) What is the output of the code snippet given below?

```
inti = 0;  
while (i != 11)  
{  
"System.out.print("" "" + i);"  
i = i + 2;  
}
```

- a) No output
- b) 0 2 4 6 8
- c) 10 12 14 16 18 (infinite loop)
- d) 0 2 4 6 8 10 12 14 (infinite loop)

Answer: D

27) What is the output of the code snippet given below?

```
inti = 0;  
while (i != 11)  
{  
"System.out.print(i + "" "");"  
i = i + 3;  
}
```

- a) No output
- b) 0 3 6 9 12 15 18
- c) 0 1 3 5 7 9
- d) 0 3 6 9 (infinite loop)

Answer: D

28) Select the statement that correctly completes the loop in this code snippet.

```
int years = 20;
double balance = 10000;
while (years > 0)
{
    _____
    double interest = balance * rate / 100;
    balance = balance + interest;
}
```

- a) years++;
- b) years--;
- c) balance++;
- d) balance--;

Answer: b

29) When hand-tracing the loop in the code snippet below, which variables are important to evaluate?

```
inti=10;
int j=5;
int k= -10;
int sum=0;
while (i> 0)
{
    sum = sum + i + j;
    i--;
    "System.out.println("Iteration: ""+i);"
}
```

- a) The variables i and j
- b) The variables i and sum
- c) The variables i, j, and k
- d) The variables j and k

Ans: B

30. When hand tracing, drawing a line through the value stored in a variable means that

- a) The value stored there has changed to something new
- b) The variable is the wrong data type for the code being executed
- c) The expression being evaluated uses that variable
- d) The variable must be inside a loop

Ans: A

31. When hand-tracing a portion of code, which statement about Boolean conditions is true?

- a) They typically are too complex to be evaluated.
- b) They do not need to be monitored because their result usually is not stored in a variable.
- c) It is rare to encounter a Boolean condition.
- d) They are crucial to evaluate since they determine if-statement conditions and looping.

Ans: D

32. What are the values of i and j after the following code snippet executes?

```
inti = 60;
int j = 50;
int count = 0;
while (count < 5)
{
i = i + j;
i = i + 1;
    j = j - 1;
    j = j - j;
    count++;
}
System.out.println(i);
System.out.println(j);
```

- a) i = 65, j = 1
- b) i = 65, j = 45
- c) i = 1951, j = 0
- d) i = 1951, j = 45

Ans: C

33. The process of hand-tracing code is valuable because

- a) It is usually faster than just running the code.
- b) It is the best way to design an algorithm.
- c) You must already have a working program in order to do it.
- d) It gives valuable insight that you do not get by running the code.

Ans: D

34) How many times does the loop execute in the following code fragment?

```
inti;
for (i = 0; i < 50; i = i + 4)
{
System.out.println(i);
}
```

- a) 11
- b) 12
- c) 13
- d) 14

Answer: c

35) How many times does the following code snippet display "Loop Execution"?

```
for (inti = 0; i < 10; i++);  
{  
"System.out.println("Loop Execution");"  
}
```

- a) Ten times.
- b) The code snippet does not run because of a compile error.
- c) Infinite loop.
- d) Only one time.

Answer: D

36) What is the output of the code snippet given below?

```
inti;  
int j = 0;  
for (i = 0; i < 5; i++)  
{  
    if (i % 2 == 0)  
    {  
i = i + 2;  
        j++;  
    }  
    else  
    {  
i++;  
        j = j + 2;  
    }  
    j++;  
}  
"System.out.println("i=" + i + ", j=" + j);"
```

- a) i=7, j =7
- b) i =7, j =6
- c) i =6, j =7
- d) i =5, j =5

Answer: D

37) Which of the following is considered a loop with a bound that could be problematic?

- a) for (i = 1; i != n; i++)
- b) for (years = n; years < 0; years--)
- c) for (i = 1; i <= n; i++)
- d) for (int i = 1; i <= 10; i++)

Answer: a

38) In the _____ loop header, you can include multiple update expressions, separated by commas, but it is not recommended.

- a) do

- b) while
- c) for
- d) do

Answer: c

39) What values does counter variable i assume when this loop executes?

```
for (inti = 20; i>= 2; i = i - 6)
{
"System.out.print(i + " ", "");"
}
```

- a) 20, 14, 8, 2
- b) 20, 14, 8, 2, -4
- c) 20, 14, 8
- d) 14, 8, 2

Answer: b

40) What is the output of the following code snippet?

```
int f1 = 0;
int f2 = 1;
intfRes;
"System.out.print(f1 + " " ");"
"System.out.print(f2 + " " ");"
for (inti = 1; i < 10; i++)
{
fRes= f1 + f2;
"System.out.print(fRes+ " " ");"
  f1 = f2;
  f2 = fRes;
}
System.out.println();
```

- a) 0 1 5 7 9 11 13 15 17 19
- b) 0 1 1 2 3 5 8 13 21 3455
- c) 0 1 4 6 8 10 12 14 16 18
- d) 0 1 6 7 9 12 14 17 19 21

Answer: b

41) What is the output of the following code snippet?

```
int counter = 1;
for (double i = 0.01; i <= 1.0; i = i + 0.01)
{
  counter++;
}
System.out.println(counter);
```

- a) 100
- b) 49.50
- c) 60.5

d) 10

Answer: a

42) What does the following code snippet print?

```
int a = 120;
int b = 90;
int n1 = Math.abs(a);
int n2 = Math.abs(b);
int result = 1;
for (int k = 1; k <= n1 && k <= n2; k++)
{
    if (n1 % k == 0 && n2 % k == 0)
    {
        result = k;
    }
}
System.out.println(result);
```

a) 10

b) 20

c) 30

d) 40

Answer: c

43) Which of the following for loops is illegal?

a) for (int i = 0; ;) { }

b) for (int i = 0) { }

c) for (int i = 0, k = 1; ; i++) { }

d) for (; ;)

Answer: b

44) How many times does the following loop execute?

```
for (double d = 1; d != 10; d++)
{
    d = d / 3;
    "System.out.print(d + "" "" );"
}
```

a) 10

b) 9

c) 8

d) An infinite number of times

Answer: D

45) Which of the following statements expresses why the following code is considered bad form?

```
for (rate = 5; years-- > 0; System.out.println(balance))
```

...

I. Unrelated expressions in loop header

II. Doesn't match expected for loop idiom

III. Loop iteration is not clear

a) II and III only

b) I and II only

c) I and III only

d) I, II, and III

Answer: D

46) Which of the following is considered a loop with a problematic condition?

a) for(i = 1; i != n; i++)

b) for (years = n; years > 0; years++)

c) for(i = 1; i <= n; i++)

d) for (int i = 20; i >= 10; i--)

Answer: a

47) Is the code snippet written below legal?

```
"String s = ""1234"";"
```

```
for (inti = 0; i<= 5; i++)
```

```
{
```

```
System.out.print(s.substring(i, i + 1));
```

```
}
```

a) Yes.

b) No; there should be a semicolon at the end of line 2.

c) No; for i = 4, s.substring(i, i + 1) will result in an StringIndexOutOfBoundsException error.

d) No; line 4 should have no semicolon at the end.

Answer: c

48) Which statement about this code snippet is accurate?

```
int years = 50;
```

```
double balance = 10000;
```

```
double targetBalance = 20000;
```

```
double rate = 3;
```

```
for (inti = 1; i<= years; i++)
```

```
{
```

```
    if (balance >= targetBalance)
```

```
    {
```

```
        i = years + 1;
```

```
    }
```

```
    else
```

```
    {
```

```
        double interest = balance * rate / 100;
```

```
        balance = balance + interest;
```

```
    }
```

```
}
```

a) The loop will run 50 times.

b) The loop will never stop.

c) The loop will run at most 50 times, but may stop earlier when balance exceeds or equals targetBalance.

d) There is a compilation error.

Answer: c

49) What will be printed by the statements below?

```
int a = 10;
while (a > 5)
{
    System.out.print (a + " ");
    a = a - 2;
}
```

a)10 9 8 7 6 5

b)10 8 6 4

c)10 8 6

d)10 8

Answer: c

50) What will be printed by the statements below?

```
int a = 10;
while (a > 5)
{
    a = a - 2;
    System.out.print (a + " ");
}
```

a)10 8 6

b)10 8 6 4

c)8 6

d)8 6 4

Answer: d

51) What will be printed by the statements below?

```
int val = 1;
int sum = 0;
while (val < 5)
{
    sum = sum + val;
    val++;
}
System.out.print (sum);
```

a)4

b)5

c)10

d)15

Answer: c

52) What will be printed by the statements below?

```
intval = 1;
int sum = 0;
while (val < 5)
{
    sum = 0;
    sum = sum + val;
    val++;
}
System.out.print (sum);
```

- a)15
- b)10
- c)5
- d)4

Answer: d

53) What will be printed by the statements below?

```
for (intctr = 0; ctr < 10; ctr++)
{
    "System.out.print (ctr + "" "" );"
}
```

- a)0 1 2 3 4 5 6 7 8 9 10
- b)0 1 2 3 4 5 6 7 8 9
- c)0 2 4 6 8
- d)0 1 3 5 7 9

Answer: b

54) What will be printed by the statements below?

```
for (intctr = 10; ctr > 5; ctr--)
{
    "System.out.print (ctr + "" "" );"
}
```

- a)10 9 8 7 6 5
- b)10 9 8 7 6
- c)5 6 7 8 9 10
- d)6 7 8 9 10

Answer: b

55) Which of the following loops will print the odd numbers between 0 and 20?

```
a)
intnum = 1;
while (num < 20)
{
    "System.out.print (num + "" "" );"
    num += 2;
}
```

- b)

```
intnum = 1;
while (num < 20)
{
"System.out.print (num + "" "");"
num ++;
}
```

c)

```
intnum = 0;
while (num < 20)
{
"System.out.print (num + "" "");"
num += 2;
}
```

d)

```
intnum = 1;
while (num < 20)
{
num += 2;
"System.out.print (num + "" "");"
}
```

Answer: a

56) Which of the following loops will print the odd numbers between 0 and 20?

m.

```
while (num < 10)
{
int value = num * 2 - 1;
"System.out.print (value + "" "");"
num ++;
}
```

n.

```
while (num < 20)
{
int value = num * 2 - 1;
"System.out.print (value + "" "");"
num ++;
}
```

o.

```
while (num < 10)
{
"System.out.print (num + "" "");"
num += 2;
}
```

p.

```
while (num < 20)
{
```

```
num += 2;
"System.out.print (num + "" "" );"
}
```

Answer: a

57) Which of the following conditions can be added to the code below so it will loop until the value of sum is greater than 100?

```
Scanner in = new Scanner (System.in);
int sum = 0;
do {
sum += in.nextInt();
}
while (/* put condition here */)
```

- a)sum != 0
- b)sum <= 100
- c)sum > 100
- d)sum == 100

Answer: b

58) What does the following loop compute?

```
Scanner in = new Scanner (System.in);
int sum = 0;
int count = 0;
while (in.hasNextInt())
{
int value = in.nextInt();
if (value > 0)
{
sum += value;
count++;
}
}
```

```
double result = (sum * 1.0)/count;
```

- a)The average of all the integers in the input
- b)The sum of all the positive integers in the input divided by the number of integers in the input
- c) The average of all the positive integers in the input
- d)The second smallest value in the input

Answer: c

59) What does the method below return?

```
int findSomething (String str)
{
int position = 0;
while (position <str.length() &&
(str.charAt (position) != 'e'))
{
position++;
}
```

```
}  
    return position;  
}
```

- a) The position of the first 'e' in the string or the length of the string if there is no 'e'
- b) The position of the last 'e' in the string or the length of the string if there is no 'e'
- c) The position of the first character that is not an 'e' in the string or the length of the string if there is no character that is not an 'e'
- d) The position of the last character that is not an 'e' in the string or the length of the string if there is no character that is not an 'e'

Answer: a

60) What is the output of the code below?

```
for (int val = 0; val < 4; val ++)  
{  
    "System.out.print (""+""");"  
    for (intnum = 0; num<val; num++)  
    {  
        "System.out.print (""0""");"  
    }  
}
```

- a)+0+00+000+0000
- b)+000+000+000+000
- c)++0+00+000
- d)++++000000

Answer: c

61) What is the output of the code below?

```
for (int val = 0; val < 4; val ++)  
{  
    int sum = val;  
    for (intnum = 0; num<val; num++)  
    {  
        sum = sum + num;  
    }  
    "System.out.print (sum + "" """);"  
}
```

- a)0 1 3 6
- b)0 1 4 10
- c)0 2 5 9
- d)0 2 7 16

Answer: c

62) What for loop can be used in the indicated area so the code will print:

```
****  
  
***  
  
**
```

```

*
for (int val = 0; val < 4; val ++ )
{
"System.out.print (""+""");"
  // Put for loop here
  {
"System.out.print (""*""");"
  }
System.out.println ();
}
a) for (intnum = 0; num< 4 – val; num++)
b)for (intnum = 0; num<val; num++)
c)for (intnum = 4; num<val; num++)
d)for (intnum = 4; num> 0; num--)

```

Answer: a

63) Assume the following variable has been declared and given a value as shown:

```
Random rand = new Random();
```

Which of the following will generate a random integer in the range – 20 to 20, inclusive, where each value has an equal chance of being generated?

- a)rand.nextInt (-20, 20)
- b)rand.nextInt(20) - 41
- c)rand.nextInt (-20) + 40
- d)rand.nextInt(41) - 20

Answer: d

64) Assume the following variable has been declared and given a value as shown:

```
Random rand = new Random();
```

```
int number = rand.nextInt (27) * 2 + 3;
```

What are the smallest and largest values number may be assigned?

- a)3, 57
- b)0, 27
- c)3, 55
- d)0, 26

Answer: c

65) Assume the following variable has been declared and given a value as shown:

```
Random rand = new Random();
```

```
double number = rand.nextDouble () * 2 + 3;
```

What are the smallest and largest values number may be assigned?

- a)3.0, 5.0
- b)0.0, 6.0
- c)-3.0, 3.0
- d)0.0, 3.0

Answer: a

66) Which of the following loops executes the statements inside the loop before checking the condition?

- a) for
- b) while
- c) do
- d) do-for

Answer: c

67) Which loop does not check a condition at the beginning of the loop?

- I. The do loop
- II. The while loop
- III. The for loop

- a) I and II
- b) I and III
- c) I only
- d) III only

Answer:C

68) How many times does the following loop run?

```
inti = 0;
int j = 1;
do
{
"System.out.println("i + j");"
i++;
    if (i % 2 == 0)
    {
        j--;
    }
}
while (j >= 1);
```

- a) 0 times
- b) 1 times
- c) 2 times
- d) 4 times

Answer: c

69) What is the result when the following code is run?

```
double x = 1;
double y = 1;
inti = 0;
do
{
    y = x / 2;
    x = x + y;
i = i + 1;
}
while (x < 2.5);
"System.out.print(i + " ");"
```

- a) 1
- b) 2
- c) 3
- d) 4

Answer: c

70) Given the following code snippet, what should we change to have 26 alphabet characters in the string str?

```
"String str = """";"  
for (char c = 'A'; c < 'Z'; c++)  
{  
    str = str + c;  
}
```

- a) int c = 'A'
- b) str = c + str;
- c) c <= 'Z'
- d) Must change to use a do loop

Answer: c

71) What is the output of the code snippet given below?

```
"String s = ""abcde"";"  
inti = 1;  
do  
{  
    if (i > 1)  
    {  
        System.out.print(s.substring(i, i + 1));  
    }  
}  
while (i < 5);
```

- a) No output
- b) No output (infinite loop)
- c) abcde
- d) bcde

Answer: b

72) What is the output of the code snippet given below?

```
"String s = ""12345"";"  
inti = 1;  
do  
{  
    if (i > 1)  
    {  
        System.out.print(s.substring(i, i + 1));  
    }  
}  
while (i < 5);
```

- a) No output
- b) No output (infinite loop)
- c) 12345
- d) 2345

Answer: b

73) What is the output of the code snippet given below?

```
"String s = ""abcdefghijkl"";"  
inti = 1;  
do  
{  
    if (i > 2)  
    {  
        System.out.print(s.substring(1, i));  
    }  
    i++;  
}  
while (i < 5);
```

- a) abcd
- b) bcde
- c) bcbcd
- d) cdef

Answer: c

74) Choose the loop that is equivalent to this loop.

```
int n = 1;  
double x = 0;  
double s;  
do  
{  
    s = 1.0 / (n * n);  
    x = x + s;  
    n++;  
}  
while (s > 0.01);  
a)  
double x = 0;  
double s = 1;  
for (int k = 1; s > 0.01; k++)  
{  
    s = 1.0 / (k * k);  
    x = x + s;  
}  
b)  
double x = 0;  
double s = 1;
```

```
for (int k = 1; k < 100; k++)  
{  
    s = 1.0 / (k * k);  
    x = x + s;  
}
```

c)

```
double x = 0;  
double s = 1;  
int k = 10;  
while (s > 0.01)  
{  
    s = 1.0 / (k * k);  
    x = x + s;  
    k++;  
}
```

d)

```
double x = 0;  
double s = 10;  
int k = 1;  
while (s > 0.01)  
{  
    s = 1.0 / (k * k);  
    x = x + s;  
    k++;  
}
```

Answer: a

75) What is the output of the following loop?

```
int s = 1;  
int n = 1;  
do  
{  
    s = s + n;  
    n++;  
}  
while (s < 10 * n);  
System.out.println(s);
```

a) 211

b) 210

c) 120

d) 123

Answer: a

76) Which of the following loop(s) could possibly not enter the loop body at all?

I. for loop

II. while loop

III. do loop

- a) I only
- b) I and II only
- c) II and III only
- d) I and III only

Answer: b

77) Which of the loop(s) test the condition after the loop body executes?

- I. for loop
- II. while loop
- III. do loop

- a) I only
- b) II only
- c) III only
- d) II and III

Answer: c

78) How many times is the text "Let's have fun with Java." printed when this code snippet is run?

```
inti = 0;
do
{
"System.out.println("Let's have fun with Java.");"
i++;
    if (i % 2 == 0)
    {
i = 10;
    }
}
while (i<= 10);
```

- a) 1
- b) 2
- c) 3
- d) 10

Answer: c

79) Is the following code snippet legal?

```
boolean b = false;
do
{
"System.out.println("Do you think in Java?");"
}
while (b != b);
```

- a) Yes, it is legal but does not print anything.
- "b) Yes, it is legal and prints ""Do you think in Java?"" once."
- "c) Yes, it is legal and prints ""Do you think in Java?"" twice."
- d) No, it is not legal and gives a compilation error.

Answer: b

80) How many times does the following loop run?

```
inti = 0;
int j = 1;
do
{
"System.out.println("***** + i + "";" + j);"
i++;
    if (i % 3 == 0)
    {
        j--;
    }
}
while (j >= 1);
```

- a) 1 time
- b) 2 times
- c) 3 times
- d) 4 times

Answer: c

81) What is the output of the code snippet given below?

```
"String s = ""aeiou"";"
inti = 0;
do
{
System.out.print(s.substring(i, i + 1));
i++;
    if (i >= 3)
    {
i = 5;
    }
}
while (i < 5);
```

- a) a
- b) ae
- c) aeiou
- d) aei

Answer: D

82) What is the last output line of the code snippet given below?

```
inti = 5;
while (i >= 1)
{
intnum = 1;
    for (int j = 1; j <= i; j++)
    {
```

```
"System.out.print(num + ""**""");"  
num = num * 2;  
}  
System.out.println();  
i = i - 1;  
}
```

- a) No output
- b) 1**2
- c) 1**2**3
- d) 1**

Answer: D

83) What is the output of this code snippet?

```
int s = 1;  
int n = 1;  
do  
{  
    s = s + n;  
    "System.out.print(s + "" """);"  
    n++;  
}  
while (s < 3 * n);
```

- a) 2 4 7 11 16 22
- b) 1 3 5 7 9
- c) 2 3 5 6 7
- d) 2 4 6 8

Answer: a

84) What is the sentinel value in the following code snippet?

```
public static void main(String[] args)  
{  
    int age = 0;  
    int sumOfAges = 0;  
    int stop = 1;  
    Scanner reader = new Scanner(System.in);  
    "System.out.println(""Enter an age (-1 to stop): "");"  
    age = reader.nextInt();  
    while (age != -1)  
    {  
        sumOfAges = sumOfAges + age;  
        "System.out.println(""Enter an age (-1 to stop): "");"  
        age = reader.nextInt();  
    }  
    "System.out.println(""Sum of ages "" + sumOfAges);"  
    return 0;  
}
```

- a) 0
- b) 1
- c) 2
- d) -1

Answer: D

85) What will be the final output of the following code snippet when a user enters input values in the order 10, 20, 30, 40, 50, and -1?

```
public static void main(String[] args)
{
    double sum = 0;
    int count = 0;
    double salary = 0;
    double average = 0;
    Scanner reader = new Scanner(System.in);
    "System.out.println("Enter salaries (-1 to stop): ");"
    while (salary != -1)
    {
        salary = reader.nextInt();
        if (salary != -1)
        {
            sum = sum + salary;
            count++;
        }
    }
    if (count > 0)
    {
        average = sum / count;
        "System.out.println("The Average Salary: " + average);"
    }
    else
    {
        "System.out.println ("No data!");"
    }
    return 0;
}
```

- a) The Average Salary: 0
- b) The Average Salary: 30
- c) The Average Salary: 24.83333
- d) There will be no output as the code snippet will not compile.

Answer: b

86) What will be the output of the following code snippet?

```
boolean token = false;
while (token)
{
```

```
"System.out.println("Hello");"  
}
```

- a) "Hello" will be displayed infinite times.
- b) No output because of compilation error.
- c) No output after successful compilation.
- d) "Hello" will be displayed only once.

Answer: c

87) What will be the output of the following code snippet?

```
boolean token = false;  
do  
{  
"System.out.println("Hello");"  
}  
while (token);
```

- a) "Hello" will be displayed infinite times.
- b) No output because of compilation error.
- c) No output after successful compilation.
- d) "Hello" will be displayed only once.

Answer: D

88) What is the outcome of the following code snippet?

```
boolean val1 = true;  
boolean val2 = false;  
while (val1)  
{  
  if (val1)  
  {  
"System.out.println("Hello");"  
  }  
  val1 = val2;  
}
```

- a) No output will be displayed because of compilation error.
- "b) "Hello" will be displayed only once."
- "c) "Hello" will be displayed infinite times."
- d) No output will be displayed even after successful compilation of the code snippet.

Answer: B

89) Insert a statement that will correctly terminate this loop when the end of input is reached.

```
boolean done = false;  
while (!done)  
{  
  String input = in.next();  
  " if (input.equalsIgnoreCase("Q")) "  
  {  
    _____
```

```

    }
    else
    {
        double x = Double.parseDouble(input);
    data.add(x);
    }
}
a) stop;
b) done = 1;
c) exit;
d) done = true;

```

Answer: D

90) What does the following code snippet display?

```

char ch1 = '\u0000';
char ch2 = '\uffff';
for (inti = 0; i < 1000; i++)
{
    if (i % 50 == 0)
    {
        System.out.println();
    }
    System.out.print((char)(ch1 + Math.random() * (ch2 - ch1 + 1)));
}

```

- a) It displays random Unicode characters.
- b) It displays random ASCII characters.
- c) Nothing because it has compilation error.
- d) It displays the hexadecimal characters between '0' and 'F'.

Answer: a

91) Which of the following loops executes exactly 10 times?

a) for (inti = 0; i <= 10; i++) { }

b)

inti = 0;

boolean found = false;

do

{

i++;

if (i % 10 == 0)

{

found = true;

}

}

while (i < 10 && !found);

c)

inti = 0;

```
while (i<= 10)
```

```
{
```

```
  i++;
```

```
}
```

```
d) for (int i = 1; i <= 10; i++)
```

Answer: D

92) Suppose that a program asks a user to enter multiple integers, either positive or negative, to do some calculation. The data entry will stop when the user enters a certain value to indicate the end of the data. What value should the code use as the sentinel?

a) 0

b) -1

c) 999

d) An alphabetic character

Answer: D

93) How do you fix this code snippet to make it print out the sum when the user enters Q?

```
"System.out.print(""Enter a value, Q to quit: "");"
```

```
double sum = 0;
```

```
Scanner in = new Scanner(System.in);
```

```
booleanhasData = true;
```

```
do
```

```
{
```

```
  double value = in.nextDouble();
```

```
  sum = sum + value;
```

```
"System.out.print(""Enter a value, Q to quit: "");"
```

```
}
```

```
while (in.hasNext());
```

```
"System.out.println(""sum "" + sum);"
```

a) while (in.hasData());

b) while (!in.hasEnded());

c) while (in.hasNextDouble());

d) while (hasData);

Answer: c

94) Which of the following loop(s) should be used when you need to ask a user to enter one data item and repeat the prompt if the data is invalid?

I. for loop

II. while loop

III. do loop

a) I only

b) I and II

c) III only

d) II only

Answer: c

95) Which of the following statements is correct about a sentinel?

- a) A sentinel is a value that creates a bridge between a data set and unrelated input.
- b) A sentinel is a value that is part of the data to be processed by the program.
- c) A sentinel is a value that terminates a program.
- d) A sentinel is a value that indicates the end of an input sequence.

Answer: D

96) Which statement is correct about the execution of the loop in the following code fragment?

```
double num;
int incr = 0;
Scanner reader = new Scanner(System.in);
do
{
    incr = incr + 1;
    "System.out.println("Please enter a number(0 when done): ");"
    num = reader.nextDouble();
}
while (num != 0);
"System.out.println("" + incr);"
```

- a) The loop will execute only when 0 is entered.
- b) The execution of the loop is independent of user input.
- c) The program prints the count of positive inputs.
- d) The loop will execute at least once even if the user has entered the sentinel value.

Ans: D

97) What will be the output of the following code snippet?

```
boolean token1 = true;
while (token1)
{
    for (inti = 0; i < 10; i++)
    {
        "System.out.println("Hello");"
    }
    token1 = false;
}
```

- a) No output.
- b) Hello will be displayed 10 times.
- c) Hello will be displayed 9 times.
- d) Hello will be displayed infinite times.

Answer: b

98) When will the loop in the following code snippet stop?

```
java.util.Scanner in = new java.util.Scanner(System.in);
double sum = 0;
int count = 0;
"System.out.print("Enter values, Q to quit: ");"
do
```

```
{
    double value = in.nextDouble();
    sum = sum + value;
    count++;
    "System.out.print(""Enter values, Q to quit: "");"
}
```

while (in.hasNextDouble() && count < 100);

I. When the user enters an integer

II. When the user enters an alphabetic character

III. After the user enters 100 numbers

a) I or II

b) II only

c) III only

d) II or III

Answer: D

99) Storyboards are a helpful part of the design process because the storyboard develops

a) A pseudocode description of the algorithm being designed

b) The mathematical formulas required for computing a correct answer

c) The information needed to solve the problem, and how to present that information

d) The amount of time and space needed to find a solution

Ans: C

100) When designing storyboards, it is a good idea to use different colors to

a) Make it easy to distinguish between user input and program output.

b) Match the colors your program will use when it is finally designed.

c) Emphasize the difference between numbers and words.

d) Draw lines to divide up panels into different regions.

Ans: A

101) Suppose you must design a program to calculate the roll-out (number of inches traveled in one revolution of the pedals of a bicycle based on its gear combinations). The user must provide the gear sizes, which must be converted into roll-out for all different gear combinations. How can the flow of user interaction for this problem be designed?

a) Hand-tracing can confirm code that implements gear selection.

b) Pseudocode can guide algorithm design through divide-and-conquer strategy.

c) A storyboard can be used.

d) The physical gears can lead to ideas for the correct algorithm to use.

Ans: C

102) Which statement about storyboards is true?

a) A storyboard can help prevent potential user confusion early in the design process.

b) Storyboards are used primarily to understand how implemented programs work.

c) The storyboard helps to train users about how to use software.

d) Storyboards have no relationship to the structure of an actual working program.

Ans: A

103) How many times does the following loop execute?

```
int upperCaseLetters = 0;
String str = "abcdEfghI";
boolean found = false;
for (int i = 0; i < str.length() && !found; i++)
{
    char ch = str.charAt(i);
    if (Character.isUpperCase(ch))
    {
        found = true;
    }
}
```

- a) 9 times
- b) 8 times
- c) 5 times
- d) 1 time

Answer: c

104) What is the output of this code snippet if the user enters the numbers 1 2 3 4 -1 5?

```
double total = 0;
boolean hasValidNumber = true;
Scanner in = new Scanner(System.in);
while (in.hasNextDouble() && hasValidNumber)
{
    double input = in.nextDouble();
    if (input < 0)
    {
        hasValidNumber = false;
    }
    else
    {
        total = total + input;
    }
}
System.out.println(total);
```

- a) 15.0
- b) 14.0
- c) 12.0
- d) 10.0

Answer: D

Answer: b

116) Which for loop prints data across each row in the following code snippet?

```
int i;
int j;
for (i = 1; i <= 3; i++)
```

```

{
  for (j = 1; j <= 3; j++)
  {
    "System.out.print("X");"
  }
  "System.out.println(" ");"
}

```

- a) The inner for loop
- b) The outer for loop
- c) Both for loops
- d) Another missing for loop

Answer: a

117) What will be the output of the following code snippet?

```

inti;
int j;
for (i = 0; i < 7; i++)
{
  for (j = 7; j > i; j--)
  {
    "System.out.print(" * ");"
  }
  "System.out.println(" ");"
}

```

- a) A rectangle with six rows and seven columns of asterisks. The number of rows increments by one on completion of one iteration of the inner loop.
- b) A right triangle with six rows and seven columns of asterisks. The number of columns increments by one on completion of one iteration of the inner loop.
- c) A rectangle with seven rows and six columns of asterisks. The number of rows increments by one on completion of one iteration of the inner loop.
- d) A right triangle with six rows and seven columns of asterisks. The number of columns decrements by one on completion of one iteration of the inner loop.

Answer: D

118) In the following code snippet, when does the execution of the program switch from the inner loop to the outer loop?

```

inti;
int j;
for (i = 0; i <= 9; i++)
{
  for (j = 1; j < 5; j++)
  {
    "System.out.println("Hello");"
  }
}

```

- a) When the value of j becomes 5

- b) When the program executes completely
- c) When the condition for the outer loop is met
- d) When the value of i is incremented

Answer: a

119) Which of the following activities can be simulated using a computer?

- I. Waiting time in a line at a restaurant
 - II. Tossing a coin
 - III. Shuffling cards for a card game
- a) I only
 - b) II only
 - c) I and II only
 - d) I, II, and III

Answer: D

120) What will be the range of the random numbers generated by the following code snippet?

```
Random generator = new Random();  
int r1 = generator.nextInt(50) + 1;
```

- a) Between 1 and 49
- b) Between 0 and 50
- c) Between 0 and 49
- d) Between 1 and 50

Answer: d

121) Which of the following is the correct code snippet for throwing a pair of dice to get a sum of the numbers on two dice between 2 and 12 with different probabilities? (Assume Random generator = new Random();)

- a) `int sum = generator.nextInt(6) + generator.nextInt(6) + 2`
- b) `int sum = generator.nextInt(12) + 1`
- c) `int sum = generator.nextInt(6 + 1) + generator.nextInt(6 + 1)`
- d) `int sum = generator.nextInt(11) + 2`

Answer: a

122) What is the data type of the number generated by the Random.nextDouble() method?

- a) double
- b) float
- c) int
- d) String

Answer: a

123) What does the following code do?

```
int sum = 0;  
final double count = 1000;  
Random generator = new Random();  
for (inti = 1; i<= count; i++)  
{  
    sum = sum + generator.nextInt(101);  
}
```

```
}  
System.out.println(sum / count);
```

- a) It simulates the outcome of throwing a coin.
- b) It calculates the average of 1000 random numbers between 0 and 100.
- c) It performs Monte Carlo simulation of fluid dynamics.
- d) It calculates the average of 1000 random numbers between 1 and 101.

Answer: b

124) How many times does the following loop execute?

```
double d;  
Random generator = new Random();  
double x = generator.nextDouble() * 100;  
do  
{  
    d = Math.sqrt(x) * Math.sqrt(x) - x;  
    System.out.println(d);  
    x = generator.nextDouble() * 10001;  
}  
while (d != 0);
```

- a) Exactly once
- b) Exactly twice
- c) Can't be determined
- d) Always infinite loop

Answer: c

125) What does the following code snippet display?

```
char ch1 = '\u0000';  
char ch2 = '\uffff';  
Random generator = new Random();  
for (inti = 0; i < 1000; i++)  
{  
    if (i % 50 == 0)  
    {  
        System.out.println();  
    }  
    System.out.print((char)(ch1 + generator.nextDouble() * (ch2 - ch1 + 1)));  
}
```

- a) It displays random Unicode characters.
- b) It displays random ASCII characters.
- c) Nothing because it has compilation error.
- d) It displays the hexadecimal characters between '0' and 'F'.

Answer: a

126) Which of the following is correct for simulating the toss of a pair of coins to get 0 (head) or 1 (tail) with different probabilities? (Assume `Random generator = new Random();`)

"a) `System.out.println(generator.nextInt(1)+ "" "" + generator.nextInt(2));`"

b) `System.out.println((generator.nextDouble()+ 2) * 2);`
"c) `System.out.println(generator.nextInt(1)+ "" "" + generator.nextInt(1));"`
"d) `System.out.println(generator.nextInt(2) + "" "" + generator.nextInt(2));"`

Answer: d

127) Suppose that the chance to hit the jackpot in a lottery is one in one million. Which of the expressions simulates that random number? (Assume `Random generator = new Random();`)

- a) `generator.nextDouble() * 1000000`
- b) `generator.nextDouble() * 100000`
- c) `generator.nextDouble() * 9999990 + 1`
- d) `generator.nextDouble() * 1000000 + 1`

Answer: a

128) Which of the following code snippets will generate a random number between 0 (inclusive) and 79 (inclusive)? (Assume `Random generator = new Random();`)

- a) `intval = generator.nextInt(79) + 1;`
- b) `intval = generator.nextInt(80) - 1;`
- c) `intval = generator.nextInt(79);`
- d) `intval = generator.nextInt(80);`

Answer: d

Package Title: Test Bank

Course Title: Big Java

Chapter Number: 7 Arrays and ArrayLists

Question type: Multiple Choice

1) Consider the following line of code:

```
int[] somearray = new int[30];
```

Which one of the following options is a valid line of code for displaying the twenty-eighth element of `somearray`?

- a) `System.out.println(somearray[28]);`
- b) `System.out.println(somearray(28));`
- c) `System.out.println(somearray(27));`
- d) `System.out.println(somearray[27]);`

Answer: d

2) Identify the correct statement for defining an integer array named `numarray` of ten elements.

- a) `int[] numarray = new int[9];`
- b) `int[] numarray = new int[10];`
- c) `int[10] numarray;`
- d) `int numarray[10];`

Answer: b

3) Which one of the following statements is a valid initialization of an array named `somearray` of ten elements?

- a) `int[] somearray = { 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 };`
- b) `int somearray[] = { 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 };`
- c) `int[10] somearray = { 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 };`
- d) `int somearray[10] = { 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 };`

Answer: a

4) What is the output of the following code snippet?

```
int[] myarray = { 10, 20, 30, 40, 50 };
```

```
System.out.print(myarray[2]);
```

```
System.out.print(myarray[3]);
```

a) 1050

b) 2030

c) 3040

d) 4050

Answer: c

5) What is the result of executing this code snippet?

```
int[] marks = { 90, 45, 67 };
```

```
for (int i = 0; i <= 3; i++)
```

```
{
```

```
System.out.println(marks[i]);
```

```
}
```

a) The code snippet does not give any output.

b) The code snippet displays all the marks stored in the array without any redundancy.

c) The code snippet causes a bounds error.

d) The code snippet executes an infinite loop.

Answer: c

6) What is the valid range of index values for an array of size 10?

a) 0 to 10

b) 1 to 9

c) 1 to 10

d) 0 to 9

Answer: d

7) Which one of the following statements is correct about the given code snippet?

```
int[] somearray = new int[6];
```

```
for (int i = 1; i < 6; i++)
```

```
{
```

```
    somearray[i] = i + 1;
```

```
}
```

a) The for loop initializes all the elements of the array.

b) The for loop initializes all the elements except the first element.

c) The for loop initializes all the elements except the last element.

d) The for loop initializes all the elements except the first and last elements.

Answer: b

8) What is the output of the given code snippet?

```
int[] mynum = new int[5];
```

```
for (int i = 1; i < 5; i++)
```

```
{  
    mynum[i] = i + 1;  
    System.out.print(mynum[i]);  
}
```

- a) 2345
- b) 1234
- c) 1345
- d) 1111

Answer: a

9) Which one of the following statements is correct for the given code snippet?

```
int[] number = new int[3]; //Line 1  
number[3] = 5; //Line 2
```

- a) Line 2 declares and initializes an array of three elements with value 5.
- b) Line 2 causes a bounds error because 3 is an invalid index number.
- c) Line 2 initializes the third element of the array with value 5.
- d) Line 2 initializes all the elements of the array with value 5.

Answer: b

10) What is displayed after executing the given code snippet?

```
int[] mymarks = new int[10];  
int total = 0;  
Scanner in = new Scanner(System.in);  
for (int cnt = 1; cnt <= 10; cnt++)  
{  
    System.out.print("Enter the marks: ");  
    mymarks[cnt] = in.nextInt();  
    total = total + mymarks[cnt];  
}  
System.out.println(total);
```

- a) The code snippet displays the total marks of all ten subjects.
- b) The for loop causes a run-time time error on the first iteration.
- c) The code snippet causes a bounds error.
- d) The code snippet displays zero.

Answer: c

11) When an array myArray is only partially filled, how can the programmer keep track of the current number of elements?

- a) access myArray.length()
- b) maintain a companion variable that stores the current number of elements
- c) access myArray.currentElements()
- d) access myArray.length() - 1

Answer: b

12) Suppose you wish to write a method that returns the sum of the elements in the partially filled array myArray. Which is a reasonable method header?

- a) public static int sum(int[] values)
- b) public static int sum()
- c) public static int sum(int[] values, int currSize)
- d) public static int sum(int[] values, int size, int currSize)

Answer: c

13) Which code snippet prints out the elements in a partially filled array of integers?

- a)
for (int i = 0; i < myArray.length(); i++)
{
 System.out.print(myArray[i]);
}
- b)
for (int i = 0; i < myArray.currLength(); i++)
{
 System.out.print(myArray[i]);
}
- c)
for (int i = 0; i < currLength; i++)
{
 System.out.print(myArray[i]);
}
- d)
for (int i = 0; i < myArray.length(); i++)
{
 System.out.print(myArray[currLength]);
}

Answer: c

14) In a partially filled array, the number of slots in the array that are not currently used is

- a) the length of the array minus the number of elements currently in the array
- b) the number of elements currently in the array minus the length of the array
- c) the length of the array plus the number of elements currently in the array
- d) the number of elements currently in the array

Answer: a

15) Complete the following code snippet with the correct enhanced for loop so it iterates over the array without using an index variable.

```
"String[] arr = { ""abc"", ""def"", ""ghi"", ""jkl"" };"
```

```
_____  
{  
    System.out.print(str);  
}
```

- a) for (String str : arr)
- b) for (str : String arr)
- c) for (str[] : arr)

d) for (arr[] : str)

Answer: a

7.2Section Reference 1: 7.2 The Enhanced for Loop

16) Which statements are true about the buffer overrun attack launched over the Internet in 1988?

I.The buffer overrun exploited a program that was written in C running on the Unix operating system

II.The Java programming language generates a run-time exception when buffer overrun occurs

III.In recent years computer attacks have lessened

a) I, II

b) I, III

c) II, III

d) I, II, III

Answer: a

Section Reference 2: Random Fact 7.1

17) What is the result of the following code?

```
for (double element : values)
```

```
{
```

```
    element = 0;
```

```
}
```

a) The elements of the array values are initialized to zero.

b) The elements of the array element are initialized to zero.

c) The first element of the array values is initialized to zero.

d) The array values is not modified.

Ans: d

7.2Section Reference 1: 7.2 The Enhanced for Loop

18) Which statements about the enhanced for loop are true for arrays of primitive data?

I.It is suitable for all array algorithms

II.It does not allow the contents of the array to be modified

III.It does not require the use of an index variable

a) I, II

b) I, III

c) II, III

d) I, II, III

Answer: c

7.2Section Reference 1: 7.2 The Enhanced for Loop

19) The enhanced for loop

a) is convenient for traversing all elements in an array

b) is convenient for traversing elements in a partially filled array

c) is only used for arrays of integers

d) is used to initialize all array elements to a common value

Answer: a

Learning Objective 1: LO 7.2 Know when to use the enhanced for loop.

20) When the order of the elements is unimportant, what is the most efficient way to remove an element from an array?

- a) Delete the element and move each element after that one to a lower index.
- b) Replace the element to be deleted with the last element in the array.
- c) Replace the element to be deleted with the first element in the array.
- d) Replace the element with the next element.

Answer: b

7.3

21) When an array reading and storing input runs out of space

- a) the program could be recompiled with a bigger size for the array.
- "b) the array could be ""grown"" using the growArray method."
- c) it automatically resizes to accommodate new elements.
- "d) the array could be ""grown"" using the new command and the copyOf method."

Answer: d

"22) It may be necessary to ""grow"" an array when reading inputs because"

- a) the number of inputs may not be known in advance.
- b) arrays in Java must be resized after every 100 elements.
- c) arrays are based on powers of two.
- d) the only alternative is a bounds exception.

Answer: a

23) The binary search is faster than the linear search, providing

- a) the size of the array is a power of two.
- b) the elements of the array are ordered.
- c) the elements of the array are unordered.
- d) the element being searched for is actually in the array.

Answer: b

Section Reference 2: Special Topic 7.2

24) Which statements about array algorithms are true?

- I. The array algorithms are building blocks for many programs that process arrays
- II. Java contains ready-made array algorithms for every problem situation
- III. It is inefficient to make multiple passes through an array if you can do everything in one pass

- a) I, II
- b) I, III
- c) II, III
- d) I, II, III

Answer: b

25) Suppose you wish to use an array to solve a new problem. What is the first step to take in finding a solution?

- a) structure a program using methods
- b) adapt a built-in array algorithm

- c) decompose the problem into steps
- d) assemble a test program and run it

Answer: c

26.) Suppose you wish to process an array of values and eliminate any potential duplicate values stored in the array. Which array algorithms might be adapted for this?

- a) find the minimum
- b) remove an element
- c) add an element
- d) calculate the sum of the elements

Answer: b

27) Which code snippet finds the largest value in an array that is only partially full?

a)

```
double largest = values[0];
for (int i = 1; i < values.length; i++)
{
    if (values[i] > largest)
    {
        largest = values[i];
    }
}
```

b)

```
double largest = values[0];
for (int i = 1; i < values.length; i++)
{
    if (values[i] < largest)
    {
        largest = values[i];
    }
}
```

c)

```
double largest = values[0];
for (int i = 1; i < currSize; i++)
{
    if (values[i] > largest)
    {
        largest = values[i];
    }
}
```

d)

```
double largest = values[0];
for (int i = 1; i < currSize; i++)
{
    if (values[i] < largest)
    {
```

```
largest = values[i];  
}  
}
```

Answer: c

28) When a Java program terminates and reports an exception, the error message contains which pieces of useful information?

- I. The compile and revision control history of the source code changes that caused the error
- II. The name of the exception that occurred
- III. The stack trace

- a) I, II
- b) I, III
- c) II, III
- d) I, II, III

Answer: c

Section Reference 2: Programming Tip 7.2

29) Which code snippet calculates the sum of all the even elements in an array values?

a)

```
int sum = 0;  
for (int i = 0; i < values.length; i++)  
{  
    if ((values[i] % 2) == 0)  
    {  
        sum += values[i];  
    }  
}
```

b)

```
int sum = 0;  
for (int i = 0; i < values.length; i++)  
{  
    if ((values[i] % 2) == 0)  
    {  
        sum++;  
    }  
}
```

c)

```
int sum = 0;  
for (int i = 0; i < values.length; i++)  
{  
    if ((values[i] / 2) == 0)  
    {  
        sum += values[i];  
    }  
}
```

d)

```
int sum = 0;
for (int i = 0; i < values.length; i++)
{
    if ((values[i] / 2) == 0)
    {
        sum++;
    }
}
```

Answer: a

30) Which code snippet calculates the sum of all the elements in even positions in an array?

a)

```
int sum = 0;
for (int i = 1; i < values.length; i+=2)
{
    sum++;
}
```

b)

```
int sum = 0;
for (int i = 0; i < values.length; i++)
{
    sum++;
}
```

c)

```
int sum = 0;
for (int i = 0; i < values.length; i++)
{
    sum += values[i];
}
```

d)

```
int sum = 0;
for (int i = 0; i < values.length; i = i + 2)
{
    sum += values[i];
}
```

Answer: d

31) Consider using a deck of cards as a way to visualize a shuffle algorithm. When two cards shuffle their position, what has to happen to the size of the array holding them?

a) it increases by one

b) it decreases by one

c) it stays the same

d) it increases by two

Answer: c

32) Consider the telephone book as a physical object that can help understand algorithms. What kind of algorithm might be visualized using it?

- a) Sorting
- b) Searching
- c) Finding the maximum
- d) Monte Carlo methods

Answer: b

33) Why is the use of physical objects helpful in algorithm design?

- a) It simulates the way the computer actually implements the algorithm
- b) It is more abstract than using a pencil and paper
- c) Because the constraints on physical things are the same as the constraints on bits and bytes
- d) Many people feel it is less intimidating than drawing diagrams

Answer: d

34) Which statement(s) about the size of a Java array, array list, and string are true?

I. The syntax for determining the size of an array, an array list, and a string in Java is consistent among the three

II. The string uses `s.size()`, while the array list uses `a.length()`

III. The array uses `a.length`, which is not a method call

- a) I
- b) II
- c) III
- d) II, III

Answer: c

7.7 Section Reference 1: 7.7 Array Lists

35) If a programmer confuses the method required for checking the length of a string and uses `size()` instead of `length()`, what will happen?

- a) The program will crash.
- b) The program will not compile.
- c) The program will run but will produce an uncertain result.
- d) The compiler will automatically correct the error.

Answer: b

36) Babbage's machine for automatically producing printed tables was called

- a) the slide rule.
- b) the difference engine.
- c) the mechanical calculator.
- d) the cog wheel.

Answer: b

37) Java 7 introduced enhanced syntax for declaring array lists, which is termed

- a) angle brackets.
- b) method lists.
- c) diamond syntax.
- d) symmetric slants.

Answer: c

38) The following statement gets an element from position 4 in an array:

```
x = a[4];
```

What is the equivalent operation using an array list?

a) `x = a.get(4);`

b) `x = a.get();`

c) `x = a.get[4];`

d) `x = a[4];`

Answer: a

39) Which statements are true regarding the differences between arrays and array lists?

I. Arrays are better if the size of a collection will not change

II. Array lists are more efficient than arrays

III. Array lists are easier to use than arrays

a) I, II

b) I, III

c) II, III

d) I, II, III

Answer: b

40) What is the value of the count variable after the execution of the given code snippet?

```
ArrayList<Integer> num = new ArrayList<Integer>();
```

```
num.add(1);
```

```
num.add(2);
```

```
num.add(1);
```

```
int count = 0;
```

```
for (int i = 0; i < num.size(); i++)
```

```
{
```

```
    if (num.get(i) % 2 == 0)
```

```
    {
```

```
        count++;
```

```
    }
```

```
}
```

a) 1

b) 2

c) 0

d) 3

Answer: a

41) Which one of the following code snippets accepts the integer input in an arraylist named num1 and stores the odd integers of num1 in another array list named oddnum?

a)

```
ArrayList<Integer> num1 = new ArrayList<Integer>();
```

```
ArrayList<Integer>oddnum =new ArrayList<Integer>();
```

```
int data;
```

```
Scanner in = new Scanner(System.in);
```

```

for (int i = 0; i < 10; i++)
{
    data = in.nextInt();
    num1.add(data);
    if (num1.get(i) % 2 == 0)
    {
        oddnum.add(num1.get(i));
    }
}

```

b)

```

ArrayList<Integer> num1 =new ArrayList<Integer>();
ArrayList<Integer>oddnum =new ArrayList<Integer>();
int data;
Scanner in = new Scanner(System.in);
for (int i = 0; i < 10; i++)
{
    data = in.nextInt();
    num1.add(data);
    if (num1.get(i) % 2 != 0)
    {
        oddnum.add(num1.get(i));
    }
}

```

c)

```

ArrayList<Integer> num1 =new ArrayList<Integer>();
ArrayList<Integer>oddnum =new ArrayList<Integer>();
int data;
Scanner in = new Scanner(System.in);
for (int i = 0; i < 10; i++)
{
    data = in.nextInt();
    num1.add(data);
    if (num1.get(i) % 2 == 0)
    {
        oddnum.add(num1[i]);
    }
}

```

d)

```

ArrayList<Integer> num1;
ArrayList<Integer>oddnum =new ArrayList<Integer>();
int data;
Scanner in = new Scanner(System.in);
for (int i = 0; i < 10; i++)
{
    data = in.nextInt();
    num1.add(data);
}

```

```
if (num1[i] % 2 != 0)
{
    oddnum.add(num1[i]);
}
}
```

Answer: b

42) Is there anything wrong with the following code snippet?

```
"String[] data = { ""abc"", ""def"", ""ghi"", ""jkl"" };"
"String searchedValue = ""ghi"";"
int pos = 0;
boolean found = false;
while (pos < data.length)
{
    if (data[pos].equals(searchedValue))
    {
        found = true;
    }
    else
    {
        found = false;
    }
    pos++;
}
if (found)
{
    " System.out.println("Found at position: " + pos); "
}
else
{
    " System.out.println("Not found"); "
}
```

- a) There is nothing wrong.
- b) There is a compile-time error.
- c) There is a bounds error.
- d) There is a logic error.

Answer: d

43) Consider the following code snippet:

```
"String[] data = { ""abc"", ""def"", ""ghi"", ""jkl"" };"
String [] data2;
```

In Java 6 and later, which statement copies the data array to the data2 array?

- a) `data2 = Arrays.copyOf(data, data2.length);`
- b) `data2 = Arrays.copyOf(data, data.length);`
- c) `data2 = Arrays.copyOf(data, data.size());`
- d) `data2 = Arrays.copyOf(data);`

Answer: b

44) Consider the following code snippet in Java 6 or later:

```
String[] data = { ""abc"", ""def"", ""ghi"", ""jkl"" };  
String[] data2 = Arrays.copyOf(data, data.length - 1);  
What does the last element of data2 contain?
```

- a) ""abc""
- b) ""def""
- c) ""ghi""
- d) ""jkl""

Answer: c

45) Consider the following code snippet:

```
String[] data = { ""abc"", ""def"", ""ghi"", ""jkl"" };  
Using Java 6 or later, which statement grows the data array to twice its size?
```

- a) data = Arrays.copyOf(data, 2 * data.length);
- b) data = Arrays.copyOf(data, 2);
- c) data = Arrays.copyOf(data, 2 * data);
- d) data = Arrays.copyOf(data, 2 * data.size());

Answer: a

45) Consider the following code snippet:

```
String[] data = { ""123"", ""ghi"", ""jkl"", ""def"", ""%&*"" };  
Which statement sorts the data array in ascending order?
```

- a) data = Arrays.sort();
- b) Arrays.sort(data);
- c) data = Arrays.sort(data.length);
- d) data = Arrays.sort(data);

Answer: b

46) Which one of the following statements is true about passing arrays to a method?

- a) By default, arrays are passed by value to a method
- b) Arrays, when updated in a called method, are not reflected to the calling method
- c) By default, arrays are passed by reference to a method
- d) Arrays are passed only if size is specified as another argument

Answer: a

Learning Objective 1: LO 6.4 Implement methods that process arrays.

47) Which one of the following is the correct header for a method named arrMeththat is called like this:

```
arrMeth(intArray); // intArray is an integer array of size 3
```

- a) public static void arrMeth(int[] ar, int n)
- b) public static void arrMeth(r[], n)
- c) public static void arrMeth(int n , int[] ar)
- d) public static void arrMeth(int[] ar)

Answer: d

48) Why is the following methodheader invalid?

```
public static int[5] meth(int[] arr, int[] num)
```

- a) Methods that return an array cannot specify its size
- b) Methods cannot have an array as a return type
- c) Methods cannot have an array as a parameter variable
- d) Methods cannot have two array parameter variables

Answer: a

49) What is the output of the following code snippet?

```
public static void main(String[] args)
{
    " String[] arr = { ""aaa"", ""bbb"", ""ccc"" };"
    mystery(arr);
    " System.out.println(arr[0] + "" "" + arr.length);"
}
public static void mystery(String[] arr)
{
    arr = new String[5];
    " arr[0] = ""ddd"";"
}
```

- a) ddd 5
- b) ddd 3
- c) aaa 5
- d) aaa 3

Answer: d

50) Consider the following code snippet. Which statement should be used to fill in the empty line so that the output will be [32, 54, 67.5, 29, 35]?

```
public static void main(String[] args)
{
    double data[] = {32, 54, 67.5, 29, 35};
    _____
    System.out.println(str);
}
```

- a) String str = Arrays.format(data);
- b) String str = data.toString();
- c) String str = Arrays.toString(data);
- "d) String str = str + "", "" + data[i];"

Answer: c

51) Select the statement that reveals the logic error in the following method.

```
public static double minimum(double[] data)
{
    double smallest = 0.0;
    for (int i = 0; i < data.length; i++)
    {
```

```
if (data[i] < smallest)
{
    smallest = data[i];
}
}
return smallest;
}
```

- a) double m = minimum(new double[] { 1.2, -3.5, 6.6, 2.4 });
- b) double m = minimum(new double[] { 1.2, 23.5, 16.6, -23.4 });
- c) double m = minimum(new double[] { -10.2, 3.5, 62.6, 21.4 });
- d) double m = minimum(new double[] { 12.2, 31.5, 6.6, 2.4 });

Answer: d

52) Consider the following 2-dimensional array. Select the statement that gives the number of columns in the third row.

```
int[][] counts =
{
    { 0, 0, 1 },
    { 0, 1, 1, 2 },
    { 0, 0, 1, 4, 5 },
    { 0, 2 }
};
```

- a) int cols = counts[2].size();
- b) int cols = counts.length[2];
- c) int cols = counts.length;
- d) int cols = counts[2].length;

Answer: d

53) Consider the following code snippet:

```
int cnt = 0;
int[][] numarray = new int[2][3];
for (int i = 0; i < 3; i++)
{
    for (int j = 0; j < 2; j++)
    {
        numarray[j][i] = cnt;
        cnt++;
    }
}
```

What is the value of numarray[1][2] after the code snippet is executed?

- a) 2
- b) 5
- c) 3
- d) 4

Answer: b

54) How many elements can be stored in an array of dimension 2 by 3?

- a) 2

- b) 3
- c) 5
- d) 6

Answer: d

55) Which one of the following statements is the correct definition for a two-dimensional array of 20 rows and 2 columns of the type integer?

- a) `int[][] num = new int[20][2];`
- b) `int[][] num = new int[2][20];`
- c) `int[][] num = new int[20,2];`
- d) `int[][] num = new int[2,20];`

Answer: a

56) Consider the following code snippet:

```
int[][] numarray =  
{  
    { 3, 2, 3 },  
    { 0, 0, 0 }  
};  
System.out.print(numarray[0][0]);  
System.out.print(numarray[1][0]);  
What is the output of the given code snippet?
```

- a) 00
- b) 31
- c) 30
- d) 03

Answer: c

57) Which one of the following is the correct definition for initializing data in a two-dimensional array of three rows and two columns?

a)
`int[][] arr =`
{
 { 1, 1, 1 },
 { 2, 2, 2 },
};

b)
`int[][] arr =`
{
 { 1, 1 },
 { 2, 2 },
 { 3, 3 }
};

c)
`int[][] arr =`
{
 { 1, 1 }

```
{ 2, 2 }
{ 3, 3 }
};
d)
int[][] arr =
{
    { 1, 1, 1 }
    { 2, 2, 2 }
    { 3, 3, 3 }
};
```

Answer: b

58) Which one of the following statements is correct for displaying the value in the second row and the third column of a two-dimensional, size 3 by 4 array?

- a) System.out.println(arr[1][2]);
- b) System.out.println(arr[2][3]);
- c) System.out.println(arr[2][1]);
- d) System.out.println(arr[3][2]);

Answer: a

59) Consider the following code snippet:

```
int[][] arr =
{
    { 13, 23, 33 },
    { 14, 24, 34 }
};
```

Identify the appropriate statement to display the value 24 from the given array?

- a) System.out.println(arr[1][2]);
- b) System.out.println(arr[2][2]);
- c) System.out.println(arr[1][1]);
- d) System.out.println(arr[2][1]);

Answer: c

60) Consider the following code snippet:

```
int val = arr[0][2];
```

Which value of arr is stored in the val variable?

- a) The value in the first row and the second column
- b) The value in the first row and the first column
- c) The value in the first row and the third column
- d) The value in the third row and the second column

Answer: c

61) Consider the following code snippet:

```
int[][] arr =
{
    { 1, 2, 3 },
```

```
{ 4, 5, 6 }  
};  
int val = arr[0][2] + arr[1][2];  
System.out.println(val);
```

What is the output of the given code snippet on execution?

- a) 5
- b) 7
- c) 9
- d) 10

Answer: c

62) Which one of the following is a valid signature of a method with an integer two-dimensional array parameter of size 10 x 10?

- a) public static void func(int[][] arr)
- b) public static void func(int[10][] arr)
- c) public static void func(int[][10] arr)
- d) public static void func(int[10][10] arr)

Answer: a

63) Consider the following code snippet:

```
ArrayList<Integer> num1 = new ArrayList<Integer>();  
int data;  
Scanner in = new Scanner(System.in);  
for (int i = 0; i < 5; i++)  
{  
    data = in.nextInt();  
    num1.add(data);  
    if (data == 0 && num1.size() > 3)  
    {  
        num1.remove(num1.size() - 1);  
    }  
}
```

```
"System.out.println("size is : " + num1.size());"
```

What is the output of the given code snippet if the user enters 1,2,0,0,1 as the input?

- a) size is : 1
- b) size is : 2
- c) size is : 4
- d) size is : 0

Answer: c

64) Which one of the following statements about declaring an array list as a method parameter is true?

- a) An array list declared as a method parameter should be accompanied with its size.
- b) An array list declared as a method parameter is a constant value by default.
- c) An array list value cannot be modified in a method when the array list is declared as a parameter.
- d) An array list value can be modified inside the method.

Answer: d

65) Which one of the following is a correct declaration for a method named passArrayList with the array list num of size 5 as a parameter?

- a) public static void passArrayList(ArrayList<Integer> num[5])
- b) public static void passArrayList(ArrayList<Integer> num, 5)
- c) public static void passArrayList(ArrayList<Integer> num)
- d) public static void passArrayList(num)

Answer: c

66) Consider the following code snippet:

```
public static void check(ArrayList<Integer> chknum1)
{
    int cnt = 0;
    for(int i = 0; i < chknum1.size(); i++)
    {
        if(chknum1.get(i) == 0)
        {
            cnt++;
        }
    }
    System.out.println("The total 0 values in the list are: " + cnt);
}
```

Which one of the following is true about the checkmethod in the given code snippet?

- a) The checkmethod counts all the elements with value 0 in an array list passed as a parameter to the method.
- b) The checkmethod removes all the elements with value 0 from an array list passed as a parameter to the method.
- c) The checkmethod counts all the elements with value 0 in an array list passed as a parameter to a method and also returns the count.
- d) The checkmethod adds 0 to the elements of an array list as a parameter to a method and also returns the array list.

Answer: a

67) Consider the following line of code for calling a method named func1:

```
func1(listData, varData);
```

Which one of the following method headers is valid for func1, where listData is an integer array list and varData is an integer variable?

- a) public static void func1(int[] listData, int varData)
- b) public static void func1(ArrayList<Integer>listData, varData)
- c) public static void func1(ArrayList<Integer>ldata, int vdata)
- d) public static void func1(int vdata, ArrayList<Integer>ldata)

Answer: c

68) What is the output of the following code snippet?

```
public static int check(ArrayList<Integer>listData)
{
    int sum = 0;
    for (int i = 0; i <listData.size(); i++)
    {
        sum = sum + listData.get(i);
    }
}
```

```
}
return sum;
}
public static void main(String[] args)
{
    ArrayList<Integer> vdata = new ArrayList<Integer>();
    int rsum;
    for (int cnt = 0; cnt < 3; cnt++)
    {
        vdata.add(cnt + 1);
    }
    rsum = check(vdata);
    System.out.println(rsum);
}
```

- a) 4
- b) 2
- c) 3
- d) 6

Answer: d

69) What is the result of the following definition of an array list?

```
ArrayList<Double> points;
```

- a) The statement causes a compile time error as the size of the array list is not defined.
- b) The statement creates an array list of size 0.
- c) The statement creates an array list with unlimited size.
- d) The statement defines an array list reference but does not create an array list.

Answer: d

70) Consider the following code snippet:

```
ArrayList<Double> somedata = new ArrayList<Double>();
somedata.add(10.5);
```

What is the size of the array list somedata after the given code snippet is executed?

- a) 0
- b) 1
- c) 10
- d) 2

Answer: b

71) What is the output of the following code snippet?

```
ArrayList<Integer> num;
num.add(4);
System.out.println(num.size());
```

- a) 1
- b) 0
- c) 4
- d) Error because num is not initialized

Answer: d

72) Your program needs to store an integer sequence of unknown length. Which of the following is most suitable to use?

- a) An array declared as `int[] marks;`
- b) A array list declared as `ArrayList<Integer> marks = new ArrayList<Integer>();`
- c) An array declared as `int marks[10000];`
- d) An array declared as `int marks[10];`

Answer: b

73) Consider the following code snippet:

```
ArrayList<Integer> arrList = new ArrayList<Integer>();  
for (int i = 0; i <arrList.size(); i++)  
{  
    arrList.add(i + 3);  
}
```

What value is stored in the element of the array list at index 0?

- a) 0
- b) 3
- c) 6
- d) None

Answer: d

74) What should you check for when calculating the largest value in an array list?

- a) The array list contains at least one element.
- b) The array list contains at least two elements.
- c) The array list contains the minimum value in the first element.
- d) The array list contains the maximum value in the first element.

Answer: a

75) Which one of the following is the correct code snippet for calculating the largest value in an integer array list `arrList` of size 10?

- a)

```
int maximum = 0;  
for (int counter = 1; counter <arrList.size(); counter++)  
{  
    if (arrList.get(counter) > maximum)  
    {  
        maximum = arrList.get(counter);  
    }  
}
```
- b)

```
int maximum = arrList.get(0);  
for (int counter = 1; counter <arrList.size(); counter++)  
{  
    if (arrList.get(counter) > maximum)  
    {
```

```

    maximum = arrList.get(counter);
}
}
c)
int maximum = arrList.get(1);
for (int counter = 1; counter <arrList.size(); counter++)
{
if (arrList.get(counter)> maximum)
{
    maximum = arrList.get(counter);
}
}
d)
int maximum = arrList.get(0);
for (int counter = 1; counter >arrList.size(); counter++)
{
if (arrList.get(counter) < maximum)
{
    maximum = arrList.get(counter);
}
}

```

Answer: b

76)What is the value of the cnt variable after the execution of the code snippet below?

```

ArrayList<Integer> somenum = new ArrayList<Integer>();
somenum.add(1);
somenum.add(2);
somenum.add(1);
int cnt = 0;
for (int index = 0; index< somenum.size(); index++)
{
    if (somenum.get(index) % 2 == 0)
    {
        cnt++;
    }
}

```

- a) 1
- b) 2
- c) 3
- d)0

Answer: a

77) Which one of the following code snippets accepts the integer input in an array list named num1 and stores the even integers of num1 in another array list named evennum?

a)
ArrayList<Integer> num1 = new ArrayList<Integer>();

```
ArrayList<Integer> evennum = new ArrayList<Integer>();
Scanner in = new Scanner(System.in);
int data;
for (int i = 0; i < 10; i++)
{
    data = in.nextInt();
    num1.add(data);
    if (num1.get(i) % 2 == 0)
    {
        evennum.add(num1.get(i));
    }
}
```

b)

```
ArrayList<Integer> num1 = new ArrayList<Integer>();
ArrayList<Integer> evennum = new ArrayList<Integer>();
Scanner in = new Scanner(System.in);
int data;
for (int i = 0; i < 10; i++)
{
    data = in.nextInt();
    num1.add(data);
    if (num1.get(i) % 2 != 0)
    {
        evennum.add(num1.get(i));
    }
}
```

c)

```
ArrayList<Integer> num1 = new ArrayList<Integer>();
ArrayList<Integer> evennum = new ArrayList<Integer>();
Scanner in = new Scanner(System.in);
int data;
for int i = 0; i < 10; i++)
{
    data = in.nextInt();
    num1.add(data);
    if (num1.get(i) % 2 != 0)
    {
        evennum[i] = num1[i];
    }
}
```

d)

```
ArrayList<Integer> num1 = new ArrayList<Integer>();
ArrayList<Integer> evennum = new ArrayList<Integer>();
Scanner in = new Scanner(System.in);
int data;
for (int i = 0; i < 10; i++)
```

```

{
    data = in.nextInt();
    num1.add(data);
    if (num1.get(i) % 2 == 0)
    {
        evennum[i] = num1[i];
    }
}

```

Answer: a

78) Which one of the following is a correct declaration for a method named passAList that has as arguments an array list myList of size 10 and an integer array intArr of size 20, and that modifies the contents of myList and intArr?

- a) public static void passAList(ArrayList<Integer>myList(10), int[] intArr)
- b) public static void passAList(ArrayList<Integer>myList, int[20] intArr)
- c) public static void passAList(ArrayList<Integer>myList, int[] intArr)
- d) public static void passAList(ArrayaList<Integer>myList, int intArr)

Answer: c

79) What is the value of myArray[1][2] after this code snippet is executed?

```

int count = 0;
int[][] myArray = new int[4][5];
for (int i = 0; i < 5; i++)
{
    for (int j = 0; j < 4; j++)
    {
        myArray[j][i] = count;
        count++;
    }
}

```

- a) 8
- b) 9
- c) 19
- d) 11

Answer: b

80) How many elements can be stored in a two-dimensional 5 by 6 array?

- a) 5
- b) 6
- c) 11
- d) 30

Answer: d

81) What is the output of the code snippet below?

```

int[][] numarray =
{
    { 8, 7, 6 },

```

```
{ 0, 0, 0 }  
};  
System.out.print(numarray[0][0]);  
System.out.print(numarray[1][0]);
```

- a) 00
- b) 87
- c) 80
- d) 08

Answer: c

82) Which one of the following statements is correct for displaying the value in the third row and the fourth column of a two-dimensional 5 by 6 array?

- a) System.out.println(arr[2][3]);
- b) System.out.println(arr[3][4]);
- c) System.out.println(arr[3][2]);
- d) System.out.println(arr[4][3]);

Answer: a

83) What is the output of the code snippet below?

```
int[][] arr =  
{  
    { 1, 2, 3, 0 },  
    { 4, 5, 6, 0 },  
    { 0, 0, 0, 0 }  
};  
int val = arr[1][2] + arr[1][3];  
System.out.println(val);
```

- a) 5
- b) 6
- c) 7
- d) 9

Answer: b

84) Consider the following code snippet:

```
int[][] arr =  
{  
    { 1, 2, 3, 0 },  
    { 4, 5, 6, 0 },  
    { 0, 0, 0, 0 }  
};  
int[][] arr2 = arr;  
System.out.println(arr2[2][1] + arr2[1][2]);
```

What is the output of the given code snippet on execution?

- a) 5
- b) 6
- c) 7

d) 9

Answer: b

85) Which statement is true about the code snippet below?

```
ArrayList<String> names = new ArrayList<String>();  
"names.add("John");"  
"names.add("Jerry");"  
ArrayList<String> friends = names;  
"friends.add("Harry");"
```

- a) The final size of names is 2; the final size of friends is 3
- b) The final size of names is 3; the final size of friends is 2
- c) The final size of names is 3; the final size of friends is 3
- d) Compilation error

Answer: c

86) Which statement is true about the code snippet below?

```
ArrayList<String> names = new ArrayList<String>();  
"names.add("John");"  
"names.add("Jerry");"  
ArrayList<String> friends = new ArrayList<String>(names);  
"friends.add("Harry");"
```

- a) The final size of names is 2; the final size of friends is 3
- b) The final size of names is 3; the final size of friends is 2
- c) The final size of names is 3; the final size of friends is 3
- d) Compilation error

Answer: a

87) Consider the following code snippet:

```
public static void main(String[] args)  
{  
    ArrayList<String> names = new ArrayList<String>();  
    " names.add("John");"  
    " names.add("Jerry");"  
    " names.add("Janet");"  
    ArrayList<String> names2 = reverse(names);  
}  
public static ArrayList<String> reverse(ArrayList<String> names)  
{  
    ArrayList<String> result = new ArrayList<String>();  
    for (int i = names.size() - 1; i >= 0; i--)  
    {  
        result.add(names.get(i));  
    }  
    return <String>result;  
}
```

Which statement is true after the main method is executed?

- "a) names contains ""Janet"", ""Jerry"", ""John"" in this order"
- "b) names contains ""John"", ""Jerry"", ""Janet"" in this order"
- c) reverse method has a bound error
- d) Compilation error due to the return statement in reverse method

Answer: d

88) Which statement is true about the code snippet below?

```
public static void main(String[] args)
{
    Scanner in = new Scanner(System.in);
    ArrayList<Double> inputs = new ArrayList<Double>();
    int ind = 0;
    while (in.hasNextDouble())
    {
        inputs.set(ind, in.nextDouble());
        ind++;
    }
}
```

- a) The code adds all input numbers to the array list
- b) The code has compile-time error
- c) The array list is full after 100 numbers are entered
- d) The code has a run-time error

Answer: d

89) Which statement is true about the code snippet below?

```
ArrayList<String> names = new ArrayList<String>();
"names.add(""John"");"
"names.add(""Jerry"");"
ArrayList<String> friends = new ArrayList<String>(names);
"names.add(""Harry"");"
```

- a) The final size of names is 2; the final size of friends is 3
- b) The final size of names is 3; the final size of friends is 2
- c) The final size of names is 3; the final size of friends is 3
- d) Compilation error

Answer: b

90) When an integer literal is added to an array list declared as `ArrayList<Integer>`, Java performs:

- a) casting
- b) trimming
- c) auto-boxing
- d) auto-fixing

Answer: c

91) What is the output of the following statements?

```
ArrayList<String> names = new ArrayList<String>();
"names.add(""Bob"");"
```

```
"names.add(0, ""Ann"");"  
names.remove(1);  
"names.add(""Cal"");"  
"names.set(1, ""Tony"");"  
for (String s : names)  
{  
" System.out.print(s + "" , "");"  
}
```

- a) Cal, Bob, Ann
- b) Ann, Bob
- c) Ann, Tony
- d) Cal, Bob, Tony

Answer: c

92) What is the output of the following statements?

```
ArrayList<String> names = new ArrayList<String>();  
"names.add(""Bob"");"  
"names.add(0, ""Ann"");"  
names.remove(1);  
"names.add(""Cal"");"  
"names.set(2, ""Tony"");"  
for (String s : names)  
{  
" System.out.print(s + "" , "");"  
}
```

- a) Cal, Bob,Ann
- b) Ann, Bob
- c) Ann, Cal, Tony
- d) Array list bound error

Answer: d

93) What is the output of the following statements?

```
ArrayList<String> cityList = new ArrayList<String>();  
"cityList.add(""London"");"  
"cityList.add(""New York"");"  
" cityList.add(""Paris"");"  
" cityList.add(""Toronto"");"  
" cityList.add(""Hong Kong"");"  
" cityList.add(""Singapore"");"  
System.out.print(cityList.size());  
" System.out.print("" "" +cityList.contains(""Toronto""));"  
" System.out.print("" "" + cityList.indexOf(""New York""));"  
" System.out.println("" "" + cityList.isEmpty()); "
```

- a) 5 true 1 false
- b) 6 true 2 false
- c) 5 false 1 false
- d) 6 true 1 false

Answer: d

94) What should you check for when calculating the smallest value in an array list?

- a) The array list contains at least one element.
- b) The array list contains at least two elements.
- c) The array list contains the maximum value in the first element.
- d) The array list contains the minimum value in the first element.

Answer: a

95) Which one of the following is the correct code snippet for calculating the largest value in an integer array list aList?

a)

```
int max = 0;
for (int count = 1; count < aList.size(); count++)
{
    if (aList.get(count) > max)
    {
        max = aList.get(count);
    }
}
```

b)

```
int max = aList.get(0);
for (int count = 1; count < aList.size(); count++)
{
    if (aList.get(count) > max)
    {
        max = aList.get(count);
    }
}
```

c)

```
int max = aList[1];
for (int count = 1; count < aList.size(); count++)
{
    if (aList.get(count) > max)
    {
        max = aList.get(count);
    }
}
```

d)

```
int max = aList.get(0);
for (int count = 1; count > aList.size(); count++)
{
    if (aList.get(count) >= max)
    {
        max = aList.get(count);
    }
}
```

Answer: b

96) Consider the following code snippet, where the array lists contain elements that are stored in ascending order:

```
ArrayList<Integer>list1 = new ArrayList<Integer>();  
ArrayList<Integer>list2 = new ArrayList<Integer>();
```

...

```
int count = 0;
```

```
for (int i = 0; i <list1.size()&& i <list2.size(); i++)
```

```
{
```

```
if (list1.get(i)== list2.get(i))
```

```
{
```

```
count++;
```

```
}
```

```
}
```

Which one of the following descriptions is correct for the given code snippet?

- a) The code snippet finds the highest value out of the two array lists.
- b) The code snippet finds the lowest value out of the two array lists.
- c) The code snippet compares the values of two array lists and stores the count of total matches found.
- d) The code snippet adds the values of the two array lists.

Answer: c

97) What is the output of the following code?

```
int[][] counts =
```

```
{
```

```
{ 0, 0, 1 },
```

```
{ 0, 1, 1, 2 },
```

```
{ 0, 0, 1, 4, 5 },
```

```
{ 0, 2 }
```

```
};
```

```
System.out.println(counts[3].length);
```

a) 2

b) 3

c) 4

d) 5

Answer: a

98) Assume the following variable has been declared and given a value as shown:

```
int[] numbers = {9, 17, -4, 21 };
```

Which is the value of numbers.length?

a)3

b)4

c)9

d)21

Answer: b

99) Assume the variable numbers has been declared to be an array that has at least one element. Which is the following represents the last element in numbers?

- a) numbers[numbers.length]
- b) numbers.length
- c) numbers[-1]
- d) numbers[numbers.length - 1]

Answer: d

100) What will be printed by the statements below?

```
int[] values = { 1, 2, 3, 4};  
values[2] = 24;  
values[values[0]] = 86;  
for (int i = 0; i < values.length; i++)  
" System.out.print (values[i] + "" "");"
```

- a) 86 2 24 4
- b) 86 24 3 4
- c) 1 86 24 4
- d) 1 2 24 86

Answer: c

101) What will be printed by the statements below?

```
int[] values = { 10, 20, 30, 7};  
int[] numbers = values;  
numbers[2] = 24;  
values[3] = numbers[0] + 6;  
"System.out.println (numbers[2] + "" "" + numbers[3] + "" "" "  
" + values[2] + "" "" + values[3]); "
```

- a) 24 0 30 16
- b) 24 0 30 6
- c) 24 7 30 16
- d) 24 16 24 16

Answer: d

102) The integer array numbers will be filled with the values from the Scanner in. If there are more input values than there are spaces in the array, only enough values to fill the array should be read. The integer variable currentSize should be set to the number of values read. Partial code to do this is given below:

```
int[] numbers; // Assume it is created with at least 1 space  
Scanner in = new Scanner (System.in);  
int currentSize = 0;  
while (/* Put condition here */)   
{  
    int value = in.nextInt();  
    numbers[currentSize] = value;  
    currentSize++;  
}
```

What condition will complete this code?

- a) currentSize < numbers.length && in.hasNextInt()
- b) currentSize < numbers.length || in.hasNextInt()

c)currentSize <= numbers.length && in.hasNextInt()

d)currentSize <= numbers.length || in.hasNextInt()

Answer: a

103) The method findLargest should return the largest of any number of double values. For example, the call findLargest (3.4, -2.6, 2.9) should return 3.4 and the call findLargest (9.2, 17.6, 3.4, -2.6, 2.9) should return 17.6. Partial code to do this is given below:

```
double findLargest (double... values)
{
    double max = values[0];
    // New code goes here
    return max;
}
```

What code will complete this method?

q.

```
{
    if (val > max)
        max = val;
}
```

r.

```
{
    if (i > max)
        max = i;
}
```

s.

```
{
    if (values[val] > max)
        max = values[val];
}
```

t.

```
{
    if (values[i] > max)
        max = i;
}
```

Answer: a

104) Assume the array of integers values has been created and process is a method that has a single integer parameter. Which of the following is equivalent to the loop below?

```
for (int val: values)
```

```
{
    process (val);
}
```

a)for (int i = 0; i < values.length; i++)

```
{
    process (values[i]);
}
```

```
b)for (int i = 1; i <= values.length; i++)
{
    int val = values[i];
    process (val);
}
```

```
c) for (int i = 0; i < values.length; i++)
{
    int val = values[i];
    process (val);
}
```

```
d)for (int i = 0; i < values.length; i++)
{
    process (i);
}
```

Answer: c

105) Assume the array of integers values has been created. Which condition must be used in the indicated area so the loop below will assign max the largest value in values?

```
int max = values[0];
for (int val: values)
{
    if (/* Put condition here */)
        max = val;
}
```

- a)max > val
- b)val > max
- c)values[val] > max
- d)max > values[val]

Answer: b

106) Assume the array of integers values has been created. Which condition must be used in the indicated area so the loop below will assign max the largest value in values?

```
int max = values[0];
for (intcurrent = 1; current < values.length; current++)
{
    if (/* Put condition here */)
        max = values[current];
}
```

- a)current > max
- b)max > current
- c)max > values[current]
- d)values[current] > max

Answer: d

107) What will be printed by the statements below?

```
int[] values = { 10, 20, 30, 40};
for (int i = 1; i < values.length; i++)
```

```
values[i] = values[i - 1];  
for (int i = 0; i < values.length; i++)  
    System.out.print (values[i] + " " );"
```

- a)10 9 8 7
- b)10 19 29 39
- c)10 10 10 10
- d)9 19 29 39

Answer: c

108) What will be printed by the statements below?

```
int[] values = { 4, 5, 6, 7};  
for (int i = 1; i < values.length; i++)  
    values[i] = values[i - 1] + values[i];  
for (int i = 0; i < values.length; i++)  
    System.out.print (values[i] + " " );"
```

- a)4 9 11 13
- b)4 9 15 22
- c)9 11 13 7
- d)4 5 6 7

Answer: b

109) What will be printed by the statements below?

```
int[] values = { 4, 5, 6, 7};  
values[0] = values[3];  
values[3] = values[0];  
for (int i = 0; i < values.length; i++)  
    System.out.print (values[i] + " " );"
```

- a)7 5 6 4
- b)7 6 5 4
- c)7 5 6 7
- d)4 5 6 4

Answer: c

110) What will be printed by the statements below?

```
int[] values = { 10, 24, 3, 64};  
int position = 0;  
for (int i = 1; i < values.length; i++)  
    if (values[i] > values[position])  
        position = i;  
System.out.print (position);
```

- a)0
- b)1
- c)2
- d)3

Answer: c

111) Assume the method createSomething has been defined as follows:

```
int [] createSomething (int start, int size)
{
    int [] result = new int[size];
    for (int i = 0; i < result.length; i++)
    {
        result[i] = start;
        start++;
    }
    return result;
}
```

What is printed by the statement below?

```
System.out.print (Arrays.toString(createSomething(4, 3)));
```

- a)[3, 4, 5, 6]
- b)[4, 4, 4]
- c)[3, 3, 3, 3]
- d)[4, 5, 6]

Answer: d

112) Assume the method doSomething has been defined as follows:

```
int [] doSomething (int[] values)
{
    int [] result = new int[values.length - 1];
    for (int i = 0; i < result.length; i++)
    {
        result[i] = values[i] + values[i + 1];
    }
    return result;
}
```

What is printed by the statements below?

```
int [] nums = {3, 18, 29, -2};
```

```
System.out.print (Arrays.toString(doSomething(nums)));
```

- a)[4, 19, 30, -1]
- b)[21, 47, 27]
- c)[21, 50, 48]
- d)[3, 21, 47, 27]

Answer: b

113) Assume the following variable has been declared and given a value as shown:

```
int[][] data = {
    {9, 17, -4, 21 },
    {15, 24, 0, 9},
    {6, 2, -56, 8},
};
```

Which is the value of data.length?

- a)4
- b)3
- c)12

d)6

Answer: b

114) Assume the following variable has been declared and given a value as shown:

```
int[][] data = {  
{9, 17, -4, 21 },  
{15, 24, 0, 9},  
{6, 2, -56, 8},  
};
```

Which is the value of data[0].length?

a)21

b)12

c)4

d)3

Answer: c

115) Assume the following variable has been declared and given a value as shown:

```
int[][] data = {  
{9, 17, -4, 21 },  
{15, 24, 0, 9},  
{6, 2, -56, 8},  
};
```

Which is the value of data[1][2]?

a)0

b)17

c)15

d)-56

Answer: a

116) What will be printed by the statements below?

```
ArrayList<String> names = new ArrayList<String>();
```

```
"names.add("Annie");"
```

```
"names.add("Bob");"
```

```
"names.add("Charles");"
```

```
"names.set(2, "Doug");"
```

```
"names.add(0, "Evelyn");"
```

```
System.out.print (names);
```

a)[Annie, Bob, Charles, Doug, Evelyn]

b)[Evelyn, Annie, Bob, Doug]

c)[Evelyn, Doug, Charles]

d)[Evelyn, Annie, Doug, Charles]

Answer: b

117) What will be printed by the statements below?

```
ArrayList<String> names = new ArrayList<String>();
```

```
"names.add("Annie");"
```

```
"names.add("Bob");"
```

```
"names.add("Charles");"  
for (int i = 0; i < 3; i++)  
{  
    String extra = names.get(i);  
    names.add (extra);  
}  
System.out.print (names);  
a)[Annie, Bob, Charles, Annie, Bob, Charles]  
b)[Annie, Bob, Charles, Charles, Bob, Annie]  
c)[Annie, Annie, Bob, Bob, Charles, Charles]  
d)[Annie, Bob, Charles, Bob, Charles]
```

Answer: a

Chapter 08: Designing Classes

Test Bank

Multiple Choice

1. Which of the following is considered by the text to be the most important consideration when designing a class?

- a) Each class should represent an appropriate mathematical concept.
- b) Each class should represent a single concept or object from the problem domain.
- c) Each class should represent no more than three specific concepts.
- d) Each class should represent multiple concepts only if they are closely related.

Answer: b

2. Which of the following questions should you ask yourself in order to determine if you have named your class properly?

- a) Does the class name contain 8 or fewer characters?
- b) Is the class name a verb?
- c) Can I visualize an object of the class?
- d) Does the class name describe the tasks that this class will accomplish?

Answer: c

3. Which class category has static methods and constants, but no objects?

- a) Real-life entity abstraction
- b) Actor class
- c) Utility class
- d) Concept class

Answer: c

4. A class named CurrencyTranslator would most probably fall into which of the following class categories?

- a) Actor classes
- b) Starter classes
- c) Abstract entities
- d) Utility classes

Answer: a

5. Why does the Scanner class belong to the category of classes known as actors?

- a) It acts as an interface between your program and the command line.
- b) It serves as an abstract entity that represents a user of your program.
- c) It plays an important part in streamlining the operation of your system.
- d) It performs a task, such as scanning a stream for numbers and characters.

Answer: d

6. Which of the following would be an appropriate name for a game-related class?

- a) CompletedLevelOne
- b) InitialLevel
- c) ResetCurrentLevel
- d) AscendToFinalLevel

Answer: b

7. Which of the following most likely indicates that you have chosen a good name for your class?

- a) The name consists of a single word.
- b) You can tell by the name what an object of the class is supposed to represent.
- c) You can easily determine by the name how many concepts the class represents.
- d) The name describes what task the class will perform.

Answer: b

8. Which of the following describes the first thing you should do when beginning a new object-oriented programming activity?

- a) Consider how many concepts each class should represent.
- b) Determine which categories of classes may be needed for the project.
- c) Decide what combination of functions and methods are appropriate for the project.
- d) Identify the objects and the classes to which they belong.

Answer: d

9. Under which of the following conditions would the public interface of a class be considered cohesive?

- a) All of its features are public and none of its features are static.
- b) The quality of the public interface is rated as moderate to high.
- c) All of its features are related to the concept that the class represents.
- d) It is obvious that the public interface refers to multiple concepts.

Answer: c

10. General Java variable naming conventions would suggest that a variable named NICKEL_VALUE would most probably be declared using which of the following combinations of modifiers?

- a) public void final
- b) public static final double
- c) private static double
- d) private static

Answer: b

11. Which of the following is a good indicator that a class is overreaching and trying to accomplish too much?

- a) The class has more constants than methods
- b) The public interface refers to multiple concepts

- c) The public interface exposes private features
- d) The class is both cohesive and dependent.

Answer: b

12. Given the following class definition, which of the following are considered part of the class's public interface?

```
public class CashRegister
{
    public static final double DIME_VALUE = 0.1;
    private static int objectCounter;
    public void updateDimes(int dimes) { . . . }
    private boolean updateCounter(int counter) { . . . }
}
```

- a) objectCounter and updateCounter
- b) DIME_VALUE and objectCounter
- c) DIME_VALUE and updateDimes
- d) updateDimes and updateCounter

Answer: c

13. A class (ClassOne) is considered to have a dependency on another class (ClassTwo) under which of the following conditions?

- a) Each class uses objects of the other.
- b) The public interfaces of both classes are cohesive.
- c) ClassTwo uses objects of ClassOne.
- d) ClassOne uses objects of ClassTwo.

Answer: d

14. A UML class diagram would be most useful in visually illustrating which of the following?

- a) the cohesiveness of a class's interface.
- b) the amount of complexity of a class's interface.
- c) dependencies between classes.
- d) relationships between classes and their interfaces.

Answer: c

15. Why is it generally considered good practice to minimize coupling between classes?

- a) Low coupling increases the operational efficiency of a program.
- b) High coupling implies less interface cohesion.
- c) High coupling increases program maintenance and hinders code reuse.
- d) Low coupling decreases the probability of code redundancy.

Answer: c

16. Which of the following represents a good strategy regarding cohesion and coupling?

- a) Maximize cohesion and remove unnecessary coupling.
- b) Minimize cohesion and remove unnecessary coupling..
- c) Maximize both cohesion and coupling.
- d) Minimize cohesion and maximize coupling..

Answer: a

17. Which of the following is a true statement regarding consistency in coding?

- a) Inconsistencies nearly always produce fatal flaws.
- b) Inconsistencies are an annoyance, because they can be so easily avoided.
- c) Consistency is not important in programming.
- d) Consistency always requires extra coding.

Answer: b

18. Which of the following describes an immutable class?

- a) A class that has no accessor or mutator methods.
- b) A class that has no accessor methods, but does have mutator methods.
- c) A class that has accessor methods, but does not have mutator methods.
- d) A class that has both accessor and mutator methods.

Answer: c

19. Which type of method modifies the object on which it is invoked?

- a) Constructor method.
- b) Static method.
- c) Accessor method.
- d) Mutator method.

Answer: d

20. The String class is an example of which of the following types of classes?

- a) Static class.
- b) Immutable class.
- c) Abstract class.
- d) Mutable class.

Answer: b

21. Which of the following is true regarding objects created from immutable classes?

- a) It is safe to give out references to immutable class objects freely.
- b) An immutable object can only be modified by its mutator method.
- c) It is not advisable to return immutable object references from accessor methods.
- d) Immutable classes do not have constructors.

Answer: a

22. Which of the following is an example of an immutable class?

- a) Math.
- b) Scanner.
- c) String.
- d) System.

Answer: c

23. Judging by the name of the method, which of the following methods would most likely be a mutator method?

- a) getListOfDeposits.
- b) printAccountBalance.

c) isOverdrawn.

d) Deposit.

Answer: d

24. Which of the following statements is true relative to classes that will successfully compile?

a) They must have both mutator and accessor methods.

b) They must have accessors, and optionally may have mutators.

c) They must have mutators, and optionally may have accessors.

d) They may have either mutator or accessor methods, or both.

Answer: d

25. Mutator methods exhibit which of the following types of side effect?

a) Modification of the implicit parameter.

b) Modification of an explicit parameter.

c) Production of printed output.

d) Acceptance of text input.

Answer: a

26. Which of the following is true regarding side effects of methods?

a) Modification of implicit parameters should be restricted to primitive data types.

b) Modification of explicit parameters should never be allowed.

c) Side effects involving standard output should be limited to String data.

d) Minimize side effects that go beyond modification of implicit parameters.

Answer: d

27. Side effects related to standard output generally violate which of the following rules?

a) Never display the values of explicit parameters.

b) Never display the values of implicit parameters.

c) Minimize the coupling of classes.

d) Maximize the coupling of classes.

Answer: c

28. Given the following method header, other would be classified as which of the following parameter types?

```
public void transfer(double amount, BankAccount other)
```

a) Implicit parameter.

b) Explicit parameter.

c) Global parameter.

d) Mutable parameter.

Answer: b

29. Which of the following does NOT describe a particular side effect related to standard output?

a) Messages printed in a particular language may be of limited usefulness.

b) Methods that rely on standard output have limited usefulness in embedded systems.

c) Programmers may be surprised by unexpected method actions.

d) Programmers may need values for purposes other than informational messages.

Answer: c

30. Why can't Java methods change parameters of primitive type?

- a) Java methods can have no actual impact on parameters of any type.
- b) Parameters of primitive type are considered by Java methods to be local variables.
- c) Parameters of primitive type are immutable.
- d) Java methods cannot accept parameters of primitive type.

Answer: b

31. Which of the following classifications of method behavior is accurate?

- a) Methods that do not change explicit parameters always have side effects.
- b) Methods that change explicit parameters do not have side effects.
- c) Methods that change explicit parameters always have side effects.
- d) Methods that do not change explicit parameters never have side effects.

Answer: C

32. Which of the following can potentially be changed by a Java method?

- a) An object reference parameter.
- b) The state of an object reference parameter's attribute.
- c) A primitive parameter.
- d) A String parameter.

Answer: b

33. Which of the following types of side effects potentially violates the rule of minimizing the coupling of classes?

- a) Standard output.
- b) Modification of implicit parameters.
- c) Modification of explicit parameters.
- d) Modification of both implicit and explicit parameters.

Answer: a

34. Which of the following classifications of method behavior produces acceptable side effects?

- a) Accessor methods that do not change explicit parameters.
- b) Mutator methods that do not change explicit parameters.
- c) Any method that changes an explicit parameter.
- d) Any method that changes another object.

Answer: b

35. Which of the following statements is true regarding method parameters in Java?

- a) All method parameters use the call-by-value mechanism.
- b) Only method parameters of primitive type use the call-by-value mechanism.
- c) All method parameters use the call-by-reference mechanism.
- d) Only method parameters of object type use the call-by-value mechanism.

Answer: a

36. In Java, which of the following mechanisms describe the copying of an object reference into a parameter variable?

- a) Call-by-reference .
- b) Call-by-value.

c) Call-by-precondition.

d) Call-by-object.

Answer: b

37. A class that has only accessor methods and no mutators methods is called a/an ____ class.

A)

B)

C)

D)

Answer: c

38. Consider the method in the following code snippet:

```
public void getRewardPoints()
```

```
{
```

```
    System.out.println("Your Reward Points balance is now " + pointBalance);
```

```
}
```

Which of the following statements would not be a valid criticism of the design of this method?

a) It violates the design rule of minimizing the coupling of classes.

b) It assumes that the message will always need to be in English.

c) It might not work in an embedded system.

d) It should not be a separate method since it is only one line long.

Answer: d

39. Which of the following statements describes a precondition?

a) A logical condition in a program that you believe to be true.

b) A guarantee that the object is in a certain state after the method call is completed.

c) A requirement that the caller of a method must meet.

d) A set of criteria defined by the caller of a method.

Answer: c

40. Which of the following statements describes one aspect of a postcondition?

a) A logical condition in a program that you believe to be true.

b) A guarantee that the object is in a certain state after the method call is completed.

c) A requirement that the caller of a method must meet.

d) A set of criteria defined by the caller of a method.

Answer: b

41. Which of the following statements describes an assertion?

a) A logical condition in a program that you believe to be true.

b) A guarantee that the object is in a certain state after the method call is completed.

c) A requirement that the caller of a method must meet.

d) A set of criteria defined by the caller of a method.

Answer: a

42. Which of the following statements is true regarding the precondition of a method?

a) It is a suggestion to the caller of the method regarding method input values.

- b) It guarantees the object will be in a certain state after the method call is completed.
- c) It limits the potential data type of the parameter variables.
- d) If it is not met, the method is not responsible for computing the correct result.

Answer: d

43. An `AssertionError` will be generated under which of the following conditions?

- a) Assertion checking is turned off.
- b) Assertion checking is turned off and an assertion fails.
- c) An assertion fails and assertion checking is turned on.
- d) Any time an assertion fails.

Answer: c

44. Pre- and postconditions may be viewed as a contract between which of the following parties?

- a) A method and its caller.
- b) A class and its interface.
- c) A method signature and its implementation.
- d) An object and its class.

Answer: a

45. Which perspective should be used in formulating pre- and postconditions?

- a) The private implementation of the class.
- b) The public interface of the class.
- c) The knowledge of the designer.
- d) The requirements of the user.

Answer: b

46. Consider the method signature in the following code snippet:

```
public static double getTriangleArea (double heightLen, double baseLen)
```

Which of the following would be a valid postcondition for this method?

- a) Postcondition: `getTriangleArea() >= 0`
- b) Postcondition: `getTriangleArea() > 0`
- c) Postcondition: `getTriangleArea() <= baseLen`
- d) There are no valid postcoditions that could be specified for this method

Answer: b

47. Which command would execute a program with assertion checking turned on?

- A)
- B)
- C)
- D)

Answer: d

48. Consider the partial `Date` class below which represents a day of the year.

```
public class Date
{
    private int month; // A value between 1 and 12
```

```

private int day; // A value between 1 and the last day
               // of the month
public int getMonth() {return month;}
public void setMonth(int newMonth)
{
if (newMonth >= 1 && newMonth <= 12){month = newMonth;}
}
public int getDay() {return day;}
private int lastDayOfMonth()
{
switch (month)
{
case 9: case 4: case 6: case 11:
return 30;
case 2: return 28;
default: return 31;
}
}
}

```

What type of method is getMonth?

- A) mutator
- B) constructor
- C) accessor

Answer: c

49. Consider the partial Date class below which represents a day of the year.

```

public class Date
{
private int month; // A value between 1 and 12
private int day; // A value between 1 and the last day
               // of the month
public int getMonth() { return month; }
public void setMonth(int newMonth)
{
if (newMonth >= 1 && newMonth <= 12){ month = newMonth; }
}
public int getDay() { return day; }
private int lastDayOfMonth()
{
switch (month)
{
case 9: case 4: case 6: case 11:
return 30;
case 2: return 28;
default: return 31;
}
}
}

```

```
}  
}
```

What type of method is setMonth?

- a) mutator
- b) accessor
- c) constructor

Answer: a

50. It has been suggested the accessor method below be added to the class to return the Date one day later than the given date.

```
public Date getNextDate()  
{  
    if (day == lastDayOfMonth())  
    {  
        month++;  
        if (month == 12){ month = 1; }  
        day = 1;  
    }  
    else{ day++; }  
    returnthis;  
}
```

What is wrong with this design?

- a) You cannot return this from a method.
- b) It uses lastDayOfMonth, a private method of the class.
- c) It has the side effect of changing the Date.
- d) Since it returns a Date other than this one, the class is not consistent.

Answer: c

51. Which of the following types of methods are invoked on objects?

- a) Static method.
- b) Class method.
- c) Instance method.
- d) Either static or instance methods.

Answer: c

52. A static method can have which of the following types of parameters?

- a) Only implicit parameters.
- b) Only explicit parameters.
- c) Both implicit and explicit parameters.
- d) A static method cannot have parameters.

Answer: b

53. Which of the following constitutes a common reason for creating a static method?

- a) To encapsulate a computation that involves only numbers.
- b) To implement a computation that only involves implicit parameters.
- c) To test a computation prior to implementing it in a class.

d) To improve efficiency by reducing overhead associated with the use of objects.

Answer: a

54. The use of the static keyword in a method declaration implies which of the following?

- a) The method can only operate on immutable objects.
- b) The method can only be called from within the main method.
- c) The method cannot be overloaded.
- d) The method can have only explicit parameters.

Answer: d

55. Which of the following statements regarding static methods is true?

- A)
- B)
- C)
- D)

Answer: a

56. Why is a static variable also referred to as a class variable?

- a) There is a single copy available to all objects of the class.
- b) It is encapsulated within the class.
- c) Each class has one and only one static variable.
- d) It is stored in the separate class area of each object.

Answer: a

57. In which of the following cases could a static variable be declared as something other than private?

- a) When it will be accessed by multiple objects.
- b) When implementing static constants.
- c) When declared inside a private method.
- d) Static variables should never be declared as anything but private.

Answer: b

58. Which of the following classes has a static variable that is commonly used when communicating with standard output?

- a) Scanner.
- b) String.
- c) System.
- d) Object.

Answer: c

59. Which of the following statements is generally true regarding static methods and variables?

- a) The use of static variables and methods should be minimized.
- b) The use of static variables and methods should be maximized.
- c) A lot of static methods and variables indicate a well-designed object-oriented system.
- d) Always choose static methods and variables over similar object-based implementations.

Answer: a

60. Where in a class should static variables be declared and initialized?

- a) Inside the constructor method.
- b) Inside the class, but outside of any method body.
- c) Outside the class – in a separate designated static class.
- d) Outside the class, but inside the same physical file.

Answer: b

61. When are statements in a class-level initialization block executed?

- a) Before the code in the class constructor is executed.
- b) Once when the class is loaded.
- c) Whenever objects of the class are used to access methods.
- d) After the code in the class constructor is executed.

Answer: a

Title: When are statements in a class-level initialization block executed?

62. When are statements in a class-level static initialization block executed?

- a) Before the code in the class constructor is executed.
- b) Once when the class is loaded.
- c) Whenever objects of the class are used to access methods.
- d) After the code in the class constructor is executed.

Answer: b

63. Which of the following statements generally describes the scope of a variable?

- a) The ability of a variable to access other variables in the same program.
- b) The amount of data in bytes that the variable can contain.
- c) The range of data types that the variable can legally be cast into.
- d) The region of a program in which the variable can be accessed.

Answer: d

64. Which of the following statements describes the scope of a local variable?

- a) From the beginning through the end of the block that encloses it.
- b) From the point of its declaration to the point where it is set to null.
- c) From the point of its initialization to the end of the block that encloses it.
- d) From the point of its declaration to the end of the block that encloses it.

Answer: d

65. Under which of the following conditions can you have local variables with identical names?

- a) If their scopes are nested.
- b) If they are of different data types.
- c) If their scopes do not overlap.
- d) If they both reference the same object.

Answer: c

66. Which of the following are considered members of a class?

- a) Private instance variables and methods.
- b) All instance variables and methods.
- c) Non-static instance variables and methods.
- d) Public instance variables and methods.

Answer: b

67. What is the scope of a private instance variable?

- a) The entire class in which the variable is defined.
- b) All classes in the same package as the class in which the variable is defined.
- c) The entire program.
- d) Only the method in which the variable is defined.

Answer: a

68. Which of the following names would be considered to be qualified?

- a) studentOne.getGraduationYear()
- b) this.getGraduationYear()
- c) getGraduationYear()
- d) getGraduationYear().print()

Answer: a

69. Consider the following code snippet:

```
public class RewardPointsAccount
{
    private int currentRewardPointBalance;
    private static int level1Cutoff = 15000;
    ...
}
```

If a program instantiates four objects using this class, which of the following statements will be true?

- a) Each object will have a currentRewardPointBalance instance variable and a level1Cutoff instance variable.
- b) All objects will share a single currentRewardPointBalance class variable and a level1Cutoff class variable.
- c) Each object will have a currentRewardPointBalance instance variable, but all objects will share a level1Cutoff class variable.
- d) All objects will share a currentRewardPointBalance class variable and each object will have a level1Cutoff instance variable.

Answer: c

70. Consider the following code snippet:

```
public class RewardPointsAccount
{
    private int currentRewardPointBalance;
    private int level1Cutoff = 15000;
    public static void main (String [] args)
    {
        int level1Cutoff = 15000;
        if (blnEliteCustomer)
    {
        this.Level1Cutoff = 12500;
        ...
    }
}
```

Which of the following statements is true?

- a) It is illegal to declare the level1Cutoff variable within the main method
- b) The code within the main method changes the value of the instance variable level1Cutoff for elite customers
- c) The level1Cutoff variable within the main method does not change the level1Cutoff instance variable for elite customers
- d) The level1Cutoff class variable shadows the level1Cutoff variable within the main method

Answer: b

71. Consider the following code snippet:

```
public class Vehicle
{
    String vehicleType;
    ...
}
```

Which of the following statements about the variable vehicleType is true?

- a) It can be accessed by all classes in the same package as the Vehicle class.
- b) It can be accessed only by code within the Vehicle class.
- c) It can be accessed only by public methods declared within the Vehicle class.
- d) It can be accessed only by private methods declared within the Vehicle class.

Answer: a

72. To use a public variable or method outside of its class, you must ____ the name.

- a) bind
- b) encapsulate
- c) instantiate
- d) qualify

Answer: d

73. Under which of the following conditions must you qualify the name of a public class member?

- a) If it is to be used outside its class.
- b) If it is to be used inside its class.
- c) Public class members must always be qualified.
- d) Public class members never need to be qualified.

Answer: a

"74. A new method, getMonthName, to get the name of the Date's month (""January"", February"", etc.) is to be added to the class Date. Which of the following headers should it have?"

- a) public String getMonthName(int month)
- b) public String getMonthName()
- c) public void getMonthName(String monthName)
- d) public void getMonthName(int month, String monthName)

Answer: b

"75. A new method, getMonthName, to get the name of the Date's month (""January"", February"", etc.) is to be added to the class Date. How will the instance variables need to be changed to handle this new method?"

- a) The type of the month instance variable will need to be changed to String.

- b) A new String variable called monthName will need to be added to the class.
- c) A new class called MonthNameAndNumber will need to be created to store both the name and number of the month and the type of the instance variable month will need to be changed to MonthNameAndNumber.
- d) No change is needed.

Answer: d

76. Can the method lastDayOfMonth be changed to be a static method by just changing the header to the following?

```
private static int lastDayOfMonth()
```

- a) No. It could no longer access the month instance variable.
- b) No. A class cannot have both static and non-static methods.
- c) Yes. No other change is necessary.
- d) Yes, but it must be changed to public as well.

Answer: a

77. What will have to change if the instance variables month and day of the Date class are replaced by the single instance integer variable dayOfTheYear?

- a) The implementation of the methods will change, but the interface will not need to change.
- b) The implementation of getDay will not change, but the implementations of the other methods will not change and the interface will not change.
- c) The interface will need to change to remove setMonth, but no other parts of the interface will change.
- d) All of the interface will need to be changed when the instance variables change.

Answer: a

78. A new class is proposed to collect information about a group of DVDs. Which of the following is the best name for this class?

- a) DVDCollection
- b) DVD
- c) StoreDVDInformation
- d) Collection

Answer: a

79. A new class is proposed to collect information about a group of DVDs. Which of the following is the best structure for this class?

- a) Have separate classes for a single DVD and the entire DVD collection.
- b) Have one class to store information about DVDs and the collection named DVDsInformation
- c) Have one class to store information about the collection name and send information about the DVDs as simple data (integers, Strings, etc.)
- d) Have one class to store information about a single DVD and just use an ArrayList to store the collection.

Answer: a

80. A new class is proposed to collect information about a group of DVDs. A separate class containing information about a single DVD, named DVD, has already been created. Which of the following is the best design to store the data and size of this collection?

- a) Have an ArrayList of DVDs and use its size as the size of the collection.
- b) Have an ArrayList of DVDs and an integer representing the number of DVDs in the collection.
- c) Have an array of DVDs and use its size as the size of the collection.

d) Have a single DVD variable representing the last DVD added and an integer representing the number of DVDs in the collection.

Answer: a

81. A theater needs a TicketCounter to keep track of the number of tickets sold. There are two types of ticket: regular and discount. What instance data should be used for this class?

a) String[] ticketsSold;

" // Each entry is either ""regular"" or ""discount""

b) int regularTicketsSold;int discountTicketsSold;

c)ArrayList<String> ticketsSold;

// Each entry is either ""regular"" or ""discount""

d)double ticketsSold;

// Add 1 for regular and 0.5 for discount tickets

Answer: b

82. A theater needs a TicketCounter to keep track of the number of tickets sold. There are two types of ticket: regular and discount. Which technique would be the best approach to printing the number of tickets sold?

a) Create a toString() method in the class that creates a representation with the number of discount and regular priced tickets sold.

b) Create a print() method that will print out the number of discount and regular priced tickets sold.

c) Make the instance variables public so programs can access the values and print them.

d) Create a getValues(int regular, int discount) method that will return the number of discount and regular priced tickets sold.

Answer: a

83. Which of the following is not a reason to place classes into a package?

a) to avoid name clashes (most important)

b) to organize related classes

c) to show authorship of source code for classes

d) to make it easier to include a set of frequently used but unrelated classes

Answer: d

84. Which of the following is not accomplished by using the import directive?

a) It allows you refer to a class of a package without having to qualify it.

b) It allows you import all classes from a package.

c) It allows you organize packages into groups.

d) It helps to document all of the class resources used in a program in one place.

Answer: c

85. If you do not include a package statement at the top of your class source file, its classes will be placed in which package?

a) java.lang

b) java.util

c) the default package, which has no name

d) java.awt

Answer: c

86. Consider the Checker class below.

```
public class Checker
{
public static int count = 0;
public int number = 0;
public Checker()
{
count++;
number = count;
}
public int getCount() { return count; }
public int getNumber() { return number; }
}
```

What is output from the code fragment below?

```
Checker one = new Checker();
Checker two = new Checker();
"System.out.println(one.getNumber() + " " + two.getNumber());"
```

- a) 1 2
- b) 1 1
- c) 2 1
- d) 2 2

Answer: a

87. Consider the Checker class below.

```
public class Checker
{
public static int count = 0;
public int number = 0;
    public Checker()
{
count++;
number = count;
}
public int getCount() { return count; }
public int getNumber() { return number; }
}
```

What is output from the code fragment below?

```
Checker one = new Checker();
Checker two = new Checker();
"System.out.println(one.getCount() + " " + two.getCount());"
```

- a) 2 2
- b) 1 1
- c) 1 2
- d) 2 1

Answer: a

88. Consider the partial class below:

```
public class Thing
{
    private int number;
    private char letter;
    {
        number = -10;
        letter = 'Z';
    }
    ...
}
```

Which code is equivalent to the code above?

a) public class Thing

```
{
    private int number = -10;
    private char letter = 'Z';
    ...
}
```

b) public class Thing

```
{
    private int number;
    private char letter;
    public Thing()
    {
        number = -10;
        letter = 'Z';
    }
    ...
}
```

c) public class Thing

```
{
    public Thing()
    {
        int number;
        char letter;
        number = -10;
        letter = 'Z';
    }
    ...
}
```

d) public class Thing

```
{
    public static void main(String[] args)
    {
        int number;
        char letter;
```

```
    number = -10;
    letter = 'Z';
}
...
}
```

Answer: a

89. Which class does not require an import statement at the beginning of the program that uses it?

- a) java.lang.Double
- b) java.awt.Color
- c) java.math.BigDecimal
- d) java.util.GregorianCalendar

Answer: a

90. Which statement will import the static methods of the Math class into a program so they do not need the Math. prefix before them in the code?

- a) import static java.lang.Math.*;
- b) import * from java.lang.Math;
- c) static import * from java.lang.Math;
- d) import java.lang.Math.*;

Answer: a

91. If the Math class has been imported into a program using the line `import static java.lang.Math.*;`, how can the statement below be rewritten?

```
result = Math.tan(Math.toRadians(degrees));
```

- a) result = tan(toRadians(degrees));
- b) result = Math.tan(toRadians(degrees));
- c) result = tan.toRadians(degrees);
- d) result = tan(Math.toRadians(degrees));

Answer: c

92. How would you create the class PackageSample in a package named bigjava.Chapter8?

- a) package bigjava.chapter8;
 public class PackageSample {}
- b) public package bigjava.chapter8.PackageSample {}
- c) public class bigjava.chapter8.PackageSample {}
- d) public class PackageSample : package bigjava.chapter8 {}

Answer: a

93. Consider the partial JUnit test below, designed to test a class that keeps a count: