الجامعة السعودية الالكترونية
Saudi Electronic University

Ministry of Higher Education
Saudi Electronic University
College of Computing and Informatics

Midterm Examination Cover Sheet
First Semester: 1436-1437 / 2015-2016

Course Instructor:		**Exam Date:**	**25/10/2015**
Course Title:	**Computer Programming 1**	**Course Code:**	**CS140**
Exam Duration:	**1 Hour**	**Number of Pages:** (including cover page)	**7**

Exam Guidelines

- **Mobile phones are not permitted.**
- **Calculators are permitted.**

Marking Scheme

Questions	Score
Q1	**/ 17**
Q2	**/ 10**
Q3	**/ 8**
Q4	**/ 5**
Q5	**/ 10**
Exam Score / 50	**/ 50**
Final Score / 25	**/ 25**

Student Name: _____ **Student ID:** _____

Q1) For each of the following multiple choice questions, choose <u>one</u> correct answer.

1- 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

2- What is the relationship between a Class and an Object of the same class type?
  A. A class is an instance of an object.
  B. An object is a template to create a class from it.
  C. An Object is an instance of that class.
  D. There is no relation.

3- When a Java application starts, what is the name of the method that is executed?
  A. main
  B. start
  C. begin
  D. Main

4- To declare two integer variables we can use:
  A. int x; y;
  B. int x, int y;
  C. int x y;
  D. int x, y;

5- What is the name of the = operator in Java?
  A. inequality
  B. assignment
  C. identity
  D. equality

6- In Java, a collection of classes with a related purpose is called
  A. interface
  B. package
  C. JVM
  D. container

7- Which operator constructs object instances?
   A. new
   B. instanceof
   C. void
   D. construct

8- You should declare all instance variables as _____
   A. public
   B. void
   C. private
   D. final

9- The process of hiding object data and providing methods to access these data is called _____
   A. Public interface
   B. Encapsulation
   C. Implementation
   D. Unit testing

10- Any method declaration header should be:
   A. access-specifier, return-type, method-name, (list of parameters).
   B. access-specifier, return-type, (list of parameters), method-name.
   C. return-type, access-specifier, method-name, (list of parameters).
   D. access-specifier, method-name, return-type, (list of parameters).

11- The implicit parameter of a method is _____
   A. Parameter passed in a method
   B. the object on which the method is invoked
   C. name of method
   D. none of above

12- 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

13- **Using these statements:**
```
String message="Welcome Abdullah";
String sub=message.substring(9, 12);
```
The value of the variable sub is _____ .
   A. Abd
   B. bdul
   C. bdu
   D. Abdu

14- **Which one of the following is a correct representation of the given mathematical expression in Java.**

$$\frac{(a - b/2)}{2}$$

   A. (a – b / 2) / 2
   B. a - b / 2
   C. a - (b / 2) / 2
   D. a – b / 2 % 2

15- **What is the value of the following expression?**
        5 / 2 + 3 + 2
   A. 5
   B. 6
   C. 7
   D. 7.5

16- **Which of the following operators is NOT a relational operator?**
   A. <=
   B. +=
   C. !=
   D. ==

17- **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

[17 Marks]

Q2) For each of the following statements, answer with <u>True</u> or <u>False</u>.

1.	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.	T
2.	You can take code that has been generated by the Java compiler and run it on different CPUs	T
3.	The expression `13.println()` is valid in Java.	F
4.	Number 11.00 can be stored as integer because it is equal to 11.	F
5.	A variable defined within a method is a local variable.	T
6.	Private instance variables can be accessed by methods from any class.	F
7.	The statements x/3 and x/3.0 return the same value in all cases.	F
8.	Variable names can be no more than 8 characters long	F
9.	The operator !> is not an operator in Java.	T
10.	To avoid round off errors, it is better to use == to compare floating-point numbers	F

[*10 Marks*]

Q3) Answer the following questions <u>briefly</u>.

1. **What is the advantages of Java over other programming languages?**

   Java is write once and run anywhere language since it will run on any platform that has JVM. Java has safety and portability features.

   Simple, Safe, Platform-independent ("write once, run anywhere"), Rich library (packages), and Designed for the internet

   <u>Any two advantages should be fine.</u>

   [*2 Marks*]

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2. **Define identifier, and list 3 of its rules.**

Identifire is a name of variable, method or class.
The rules:
1. Can be made up of letters, digits, and the underscore (_) and dollar sign ($) characters
2. Cannot start with a digit
3. Cannot use other symbols such as ? or %
4. Spaces are not permitted inside identifiers
5. You cannot use reserved words such as public
6. They are case sensitive

[*4 Marks*]

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3. **Consider the following invocation of the substring method. What are implicit and explicit parameters?**

```
"SEU_CCI".substring(2,3);
```

Answer: One implicit parameter, called *SEU_CCI*, and two explicit parameter: 2 and 3.

[*2 Marks*]

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Q4) Consider the following code snippet. What is the potential problem with the `if` statement? How to fix it ?

```
double average;
average = (g1 + g2 + g3 + g4) / 4.0;
if (average == 90.0)
{
   System.out.println("You earned an A in the
class!");
}
```
Using `==` to test the `double` variable `average` for equality is error-prone.

```
final double EPSILON = 1E-14;
double average;
average = (g1 + g2 + g3 + g4) / 4.0;
if (Math.abs(avrage – 90.0) <= EPSILON)
{
   System.out.println("You earned an A in the class!");
}
```
[*5 Marks*]

Q5) Write a program that asks the user to enter two integer numbers, and to pick an operation in which 1 means addition, 2 means subtraction. So, based on user's choice the entered numbers will be either added or subtracted. Finally, display the result of the operation.

[*10 Marks*]

Typical run of the program:
Enter first number: 5
Enter second number: 3
Enter 1 for addition, 2 for subtraction: 1
Result = 8

Enter first number: 5
Enter second number: 3
Enter 1 for addition, 2 for subtraction: 2
Result = 2

```java
import java.util.Scanner;
public class calculator
{
    public static void main(String [] args)
    {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter first number:");
        int x = input.nextInt();
        System.out.println("Enter second number:");
        int y = input.nextInt();
        System.out.println("Enter 1 for addition, 2 for substraction:");
        int op = input.nextInt();
        int result;
        if (op == 1)
            result = x + y;
        else if (op == 2)
            result = x - y;
        else
            System.out.println("Invalid operation");
        System.out.println("Result = " + result);
    }
}
```

End of the Exam … Good Luck