



Midterm Examination Cover Sheet

First Semester: 1435-1436 / 2014-2015

Course Instructor:	_____	Exam Date:	9 th Nov 2014
Course Title:	Computer Programming	Course Code:	CS140
Exam Duration:	60 Minutes	Number of Pages: (including cover page)	6 pages

Student Name:	_____	Student ID:	_____
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Exam Guidelines

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

Marking Scheme

Questions	Score	Student Score
1	10	
2	5	
3	15	
4	10	
5	10	
Total	50	
Score	Total / 2	

Q.1. Choose the correct option for the following questions

(10 x 1 = 10 Marks)

Q.1.1) 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.

Q.1.2) 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

Q.1.3) What do static variables belong to?

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

Q.1.4) A method which changes state of its implicit parameter is known as ___

- (a) Accessor
- (b) Mutator
- (c) Constructor
- (d) None of the above

Q.1.5) Constructors contain instructions to _____.

- (a) Print the instance variables of an object.
- (b) Create the instance variables of an object
- (c) Initialize the instance variables of an object
- (d) None of the above.

Q.1.6) Which is the correct version of Java code for constructing an object of class Rectangle, and for declaring an object variable of class Rectangle.

- (a) `Rectangle box = new Rectangle();`
- (b) `Rectangle box = new Rectangle(5, 10, 20, 30);`
- (c) `Rectangle box = new Rectangle(5, 10);`
- (d) **All of the above**

Q.1.7) Which of the following is the correct syntax for if statement?

`int x = 5; String size = "";`

- (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"; }`

Q.1.8) Which of the following values does not have a primitive data type?

- (a) 12.50
- (b) **"Hello"**
- (c) 6
- (d) 1E4

Q.1.9) Which java statements changes the string "SEU" to "seu".

- (a) `"SEU".replace("SEU", "seu")`
- (b) `"SEU".toLowerCase().`
- (c) **All of the above**
- (d) None of the above

Q.1.10) What kind of operator is the <= operator?

- (a) Boolean
- (b) Arithmetic
- (c) Inequality
- (d) **Relational**

Q.2. Write True/False for the following statements.

(5 x 1 = 5 Marks)

S. No.		Write T / F
1.	Encapsulation is the process of hiding object data and providing methods for data access.	True
2.	In Java, the garbage collector periodically reclaims objects when they are no longer used.	True
3.	<code>java.util</code> package is automatically imported in any Java program	False
4.	Every statement with if must also include else.	False
5.	Invoking a method means asking the method to do its job	True

Q.3. Write short answer for the following questions.

(3 x 5 = 15 Marks)

Q.3.1. Suppose your cell phone carrier charges you \$29.95 for up to 300 minutes of calls, and \$0.45 for each additional minute, plus 12.5 percent taxes and fees. Give an algorithm to compute the monthly charge for a given number of minutes.

Answer:

Is the number of minutes at most 300?

- a. If so, the answer is $\$29.95 \times 1.125 = \33.70 .
- b. If not,
 1. Compute the difference: (number of minutes) – 300.
 2. Multiply that difference by 0.45.
 3. Add \$29.95.
 4. Multiply the total by 1.125. That is the answer.

Q.3.2. Define Identifier. List out 3 rules, which are to be followed to declare an identifier.

Answer:

An identifier is the name of a variable, method, or class. **(2 Marks)**

Java imposes the following rules for identifiers: **(3 Marks)**

1. Identifiers can be made up of letters, digits, and the underscore (`_`) and dollar sign (`$`) characters.
2. They cannot start with a digit, though.
3. You cannot use spaces or symbols such as `?` or `%`.
4. Furthermore, you cannot use reserved words, such as `public`, as names; these words are reserved exclusively for their special Java meanings.

Q.3.3. What is *this* reference? What is the difference between instance variable and instance of a class?

The *this* reference denotes the implicit parameter. (2 Marks)

Instance variables store the data of an object while Instance of a class is an object of the class (3 marks)

Q.4. Java sample code analysis

(3 + 2 + 5 = 10 Marks)

Q.4.1. Find output of the following java code.

(3 Marks)

```
public class Circle{
    double radius = 1;
    public static final double PI = 3.14;
    public static void main(String[] args) {
        double volume = PI * radius * radius;
        System.out.println(volume);
    }
}
```

Output: Compile Time Error (Cannot make a static reference to the non-static field radius)

Q.4.2. Find output of the following java code.

(2 Marks)

```
public class Test{
    public static void main(String[] args)
    {
        int value = 20;
        value = value * 2;
        value--;
        System.out.println(value);
    }
}
```

Output: 39

Q.4.3. Find syntax errors in the following java code. (Denote errors with circle)

(5 Marks)

```
public class test1 {
    public Static void main(String[] a){
        int x = 30;
        byte y = 10;
```

```
if( x == 30 ){  
    if( y > 10 ){  
        System.out.print("X = 30" + " and Y > 10");  
    }else (y == 10) {  
        System.out.print("X = 30 and Y = 10");  
    }  
}  
}
```

Q.5. Write a program in java to read three numbers from the user and print the largest number.

(10 Marks)

```
import java.util.Scanner;  
  
class LargestOfThreeNumbers  
{  
    public static void main(String args[])  
    {  
        int x, y, z;  
        System.out.println("Enter three integers ");  
        Scanner in = new Scanner(System.in);  
  
        x = in.nextInt();  
        y = in.nextInt();  
        z = in.nextInt();  
  
        if ( x > y && x > z )  
            System.out.println("First number is largest.");  
        else if ( y > x && y > z )  
            System.out.println("Second number is largest.");  
        else if ( z > x && z > y )  
            System.out.println("Third number is largest.");  
        else  
            System.out.println("Entered numbers are not  
distinct.");  
    }  
}
```