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2017/2018 First Semester Test 2
COSC 211 Object Oriented Programming I

Date: March 14, 2018   **Time Allowed**: 40 Minutes

REGNO: MARKING SCHEME   SIGNATURE:

Instructions: Attempt **any four** questions. Each question carries (**7.5 marks**)

1.   Study the programs below and write the expected output:
   a.   (**3.5 marks**).

Program	Output

public class Test2Q1A{
    private static int y = 3;
    public static void main(String[] args){
        display(5);
        display(3);
        display(2);
    }
    public static void display(int a){
        y++;
        a = y + a;
        System.out.println(a + " , "+ y);
    }
 }
	9,4
	8,5
	8,6

   b. (**4 marks**).

Program	Output

public class Test2Q1B{
    public static void main(String[] args){
        System.out.println(compute(4,6));   // Output 1
        System.out.println(compute(12,3.0));   // Output 2
        System.out.println(compute(21.0,2.0)); // Output 3
        System.out.println(compute(4,6,1.0)); // Output 4
        System.out.println(compute(7.0,2)); // Output 5
    }
    public static int compute(int a, double b){
        return a/(int)b;
    }
    public static double compute(int a , int b){
        return a * b;
    }
    public static double compute(int a , int b, double c){
        return a + b + c;
    }
    public static int compute(double a , double b){
        return (int)(a / b);
    }
 }
	Output 1 : **24.0**
	
	Output 2 : **4**
	
	Output 3 : **10**
	
	Output 4 : **11.0**
	
	Output 5 : **no such method with parameter of type *double*, and *int***

2. a. (**4 marks**). Write a method `processEmail()` that receives a parameter `email` of type string and displays the username and the domain name. e .g. engrabusadik@gmail.com, then print "Username is *engrabusadik* and domain name is *gmail.com*". **Note that your method should be able to cater any email for whatsoever length**.

```java
public String processEmail(String email){
        String username = email.substring(0, email.indexOf('@'));
        String domain = email(email.indexOf('@')+1);
        return "Username is "+username+" and domain name is  "+domain;
}
```

   a. (**3.5 marks**) Write the output of the following code snippet

Code snippet	Output
String str = "is good to be good";	
System.out.println(str.substring(str.indexOf('d')+5));	**be good**
System.out.println(str.charAt(str.length()/2)+"ld");	**old**
System.out.println(str.substring(3,7).equalsIgnoreCase("Good"));	**true**
System.out.println(str.charAt(str.length());	**Index out of bound or error**

3. a. (**3.5 marks**) Assume X, Y, Z are declared as doubles, `a` as an integer equal to 2, and `d` as a double equal to 2.0. Compute the values of the following expressions.

Expression	Output
X = d + 43 % 5 * (23 * 3 % 2) Y = 1.5 * 3 + (++a) Z = 3 + d * d + 4.	X = **5.0** Y = **7.5** Z = **11.0**

   b. (**4 marks**)If x and y are integers, transform the following mathematical expressions into Java expressions:

Mathematical Expression	Java Expression
$\sqrt{\dfrac{(x-4)^2}{9} + \dfrac{(y+9)^2}{16}}$	**Math.sqrt((Math.pow(x - y,2) / 9 + Math.pow(y + 9,2)/16)** Or **Math.sqrt(((x - y)* (x-y)) / 9 + ((y + 9)* (y + 9))/16)**
$e^{\frac{\pi}{2}x} \sin x + log|x|^5 \cos x$	**Math.exp(Math.PI/2*x) * Math.sin((x*Math.PI)/180) +** **Math.log(Math.pow(Math.abs(x),5)) * Math.cos((x * Math.PI)/180))**

4. a. Write the following pseudocode in java form. **(5 marks)**

```
1 set counter to zero
2 set total to zero
3 While counter is less than or equal to 5
4   Prompt the user to enter the next number
5   Input the next number
6   Add the number into the total
7   Add one to the counter
```

```java
int count = 0;
int total = 0;
while(count < 5){
  System.out.println("Enter the next number:");
  total = total + input.nextInt();
  count++;
}
```

b. Write the import statements for the following classes. **(2.5 marks)**

Scanner	import java.util.Scanner;
StringTokenizer	import java.util.StringTokenizer;

5. a. Write a program that will print the pattern below using a **single print statement**. **NO MARKS** will be given if done otherwise. **(5 marks)**

```
*       *       *

*       *       *

    *       *
```

Program

```java
public class Pattern{
  public static void main(String[] args){
    System.out.println("*\t*\t*\n*\t*\t*\n  * \t*\n ");
  }
}
```

b. How many times will the following loop execute? **(2.5 marks)**

```
String text = "this is a java test";
for(int i = 0; i < text.length - 2; i++)
    System.out.println("The letter at index " + i + " is: " + text.charAt(i));
```

Answer: **18**

6. a. Write a java program that will take the string: Hi there, do you like Java? I do; very much. , tokenize it and print every word on a new line. **(5.5 marks)**

```java
import  java.util.StringTokenizer;
public class StringTokenisation{
  public static void main(String[] args){
    String str = "Hi there, do you like java? I do; very much.,";
    StringTokenizer token = new StringTokenizer(str," ,.;?");
    while(token.hasMoreTokens())
      System.out.println(token.nextToken());
  }
}
```

b. What is wrong with the following code? **(2 marks)**

Program	Answer

public class Test02{
  int i = 0;
  int j = 1;
  System.out.println(--i + j);
}
	Absent of main method