COMP 248 EE – Test 1 - A

Instructions:

Date: September 30th, 2011
Time: 17:45 – 18:15 (30 minutes)

Only ENCS-approved calculators (with the ENCS sticker) are allowed.
No other electronic devices (including cell phones) are allowed.
No books, papers or extra notes are allowed.
Answer directly on this questionnaire.

Identification:

Last Name: _____

First Name :   _____

Student ID :   _____

Signature: _____

Marking scheme (for the instructor's use only):

QUESTION 1	QUESTION 2	QUESTION 3	QUESTION 4	QUESTION 5	QUESTION 6	TOTAL
/ 6	/ 8	/ 30	/ 16	/ 24	/ 16	**/ 100**

Question 1 (6pts) Assume that you need a variable named `big` to represent an integer greater than 2,147,483,647 (i.e. $> 2^{32-1}-1$). What type would you declare `big`?

Recall that in Java, the type `int` is stored in 32 bits; so you can only store integer values within the range -2,147,483,648 to 2,147,483,647.

> **Answer:**

Question 2 (8pts) Assume that the variables `x`, `y` and `z` have been properly declared. Write the following equation in Java.

$$z = \frac{3x^2 + 4xy - \frac{1}{2x}}{3}$$

> **Answer:**

Question 3 (30pts)

A- **(15pts)** For each of the following expressions, indicate their value and their type:

Expression	Type	Value
`(int) 34.6`		
`11 / (float) 2`		
`8.0 + 3 % 2`		

B- **(15pts)** For each of the following statements, indicate :
- if there is a syntax error, OR
- if there is no error, indicate the value of the variable `a`, after the statements are executed.

Statements	Syntax error?	If no error, value of `a`?
`float a;` `a = (double) (10%2);`		
`double a;` `a = 10/3;`		

`int a = 2, b = 10;`
`int c = 5, d = 3;`
`d = d - b / c;`
`c = c * b % c;`
`a += (c+d);`		

Question 4 (16pts) Assume the following declarations :

```
char c1, c2, c3;
```

Write the necessary statements to shift the content of these 3 variables left. This means that after your statements :
- `c1` should contain the value of `c2`, and
- `c2` should contain the value of `c3`, and
- `c3` should contain the value of `c1`.

<u>For example</u>, if `c1` contained `'a'`, `c2` contained `'b'` and `c3` contained `'c'`, then after your statements, `c1` should be `'b'`, `c2` should be `'c'` and `c3` should be `'a'`.

Answer:

Question 5 (24pts) What is the <u>exact</u> output produced by the following code segments. Clearly indicate spaces and line changes.

A-(12pts)
```
char init ='M';
System.out.print("init is \'" + init);
System.out.println("\' " + "but \n ");
System.out.print("10.0/3 is \n" + "10.0/3");
```

Answer:

D-(12pts)
```
int v1 = 2;
int v2 = 5;
int res = 6;
res = v1++ * v2--;
System.out.println("v1: " + v1);
System.out.println();
System.out.println(" v2: " + v2 + " res: " + res);
```

Answer:

Question 6 (16pts) The following Java program contains several errors. Identify and correct one syntax error, and one logical error.

```
/*1*/      /*
/*2*/       * This program computes the average of 2 marks
/*3*/       */
/*4*/
/*5*/      import java.util.Scanner;
/*6*/
/*7*/      public class Average
/*8*/      {
/*9*/         public static void main (String() args)
/*10*/        {
/*11*/           Scanner keyboard = new Scanner(System.in);
/*12*/           final int NB_ASSIGNMENTS = 2;  // nb of assignments
/*13*/           double average;
/*14*/           int mark1=0, mark2=0;
/*15*/
/*16*/            // read input
/*17*/           System.out.print("Enter the marks of the 2 assignments: );
/*18*/           mark1 = keyboard.nextInt();
/*19*/           mark1 = keyboard.nextInt();
/*20*/
/*21*/            // compute average
/*22*/           average = mark1 + mark2 / NB_ASSIGNMENTS;
/*23*/
/*24*/           // print output
/*25*/           System.out.println("Average: ", average);
/*26*/        }
/*27*/     }
```

Answer:

There is a **syntax** error on line : _____

The line should be corrected to:

There is a **logical** error on line : _____

The line should be corrected to:

End of the exam