COMP241 Midterm I (Written Part)

Student Name: _________________________________ Lecture No: ______

12 questions. Total: 40 pts. Good luck…

Note: Because of the difficulty of coordinating four classrooms, NO REQUESTS TO CLARIFY EXAM PROBLEMS are allowed during the exam. If you are unclear about the statement of a problem, make a reasonable guess and write down your interpretation. If your interpretation and your answer are consistent, you will receive full credit.

WARNING: For multiple selection questions, each wrong answer will cancel 1 pts.

1. Which of the following can be an argument in a method call? (3 pts)
   a. Constants.
   b. Variables.
   c. Expressions.
   d. All of the above.

2. Find as many errors as you can in the following program, and explain each error briefly. Wrong answers will cancel correct ones. (4 pts)

   ```java
   public class 1stMidterm {
   public static void main() {
   final int ARRAY_SIZE;
   int a[] = new int [ARRAY_SIZE];
   ARRAY_SIZE = 10;
   int b[] = {0,1,2,3,4,5,6,7,8,9};
   int c[] = new int [ARRAY_SIZE];
   for (int i=0; x <= c.length; i++) {
   a[i] = i * 2;
   c[i] = a[i] + b[i];
   }
   }
   }
   ```

   a. Start with digit
   b. "String arg[]" is missing
   c. ARRAY_SIZE has not been set
   d. It may exceed the array bound. It should be i < c.length
   e. x is not declared.

3. Swing GUI components typically are attached to (3 pts)
   a. a JApplet.
   b. a content pane.
   c. an init method.
   d. a JTextArea.
4. In a class containing methods with the same name, the methods are distinguished by:

(3 pts)
   a. Number of arguments.
   b. Types of arguments.
   c. Return type.
   d. a and b.
   e. b and c.

5. Which of the following statements is not true? (3 pts)
   A. A break statement can only break out of an immediately enclosing while, for, do...while or switch statement.
   B. Labeled break statements break out of any number of enclosing repetition structures.
   C. A continue statement proceeds with the next iteration of the immediately enclosing while, for, do...while statement.
   D. Labeled continue statements break out of any number of enclosing repetition structures, and continue execution with next iteration of the labeled repetition structure.
   a. A and C.
   b. B and D.
   c. None of the above are true.
   d. All of the above are true.

6. Write the equivalent while loop for the following code. (4 pts)
   ```java
   int total = 0;
   for (int i = 0; i < 10; i++) {
       if (i == 5)
           continue;
       total += i;
   }
   ```
   ```java
   int total = 0, i = 0;
   while (i < 10) {
       if (i < 10) {
           i++;
           continue;
       }
       total += i;
       i++;
   }
   ```

7. Which of the following package is imported by default into every Java program? (3 pts)
   a. java.io
   b. java.lang
   c. javax.swing
   d. java.awt
8. If inputChar is of type char, use the switch statement below to answer questions: (3 pts)

   a. What is the output when inputChar is 'A'?

   b. What is the output when inputChar is 'B'?

   ```java
   switch (inputChar) {
       case 'A':
       case 'a':
           System.out.println(inputChar);
       case 'Z':
       case 'z':
           System.out.println(inputChar);
           break;
       default:
           System.out.println(inputChar + " is not found");
           break;
   }
   a. A
   b. B is not found
   ```

9. What is the value (True or False) of the following expressions when integer \( a = 5 \) and \( b = 6 \), and boolean flag is true. (Consider each case separately). Each wrong answer will cancel a correct one. (3 pts)

   a. \((a++ = = b) \ || \ (a < b)\)  
      - True      - False

   b. \((\neg b \ % \ a = = 0) \ & \ flag\)  
      - False     - True

   c. \((b - a - 1) = = 0\)  
      - True      - False

10. (4 pts)

   a. Write statement(s) that assigns random integers to the variable \( n \) in the following ranges: \(-3 \leq n \leq 11\)

       \[ n = (\text{int})(\mathbb{R} + \text{Math.random()} \times 15); \]

   b. For the following set of integers, write a single statement that will print a number at random from the set: 2, 4, 6, 8, 10.

       ```java
       System.out.println((\text{int})(1 + \text{Math.random()} \times 5) \times 2);
       ```
11. Which of the following primitive types is never promoted to another type? (3 pts)
   a. double.
   b. byte.
   c. boolean.
   d. Both a and c.

12. What is the output of the following program? (4 pts)

import java.awt.*;
import javax.swing.*;

public class WhatDoesThisDo2 extends JApplet {
    public void init() {
        int array[] = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};
        JTextArea outputArea = new JTextArea();
        someFunction(array, 0, outputArea);
        Container container = getContentPane();
        container.add(outputArea);
    }

    public void someFunction(int array2[], int x, JTextArea out) {
        if (x < array2.length) {
            someFunction(array2, x + 1, out);
            out.append(array2[x] + " ");
        }
    }
}

10  9  8  7  6  5  4  3  2  1