00228

THE OPEN UNIVERSITY OF SRI LANKA

BSc (IT) DEGREE PROGRAMME: LEVEL 03
NO BOOK TEST: 2023/2024
COU3304: FUNDAMENTALS OF PROGRAMMING
DURATION: ONE HOUR (1 HOUR)

Date: **30th March 2024** Time: **1.00 pm – 2.00 pm**

Answer ALL questions.

QUESTION 1

1) Why do we need programming languages? **(5 Marks)**

2) What is **machine language**? **(6 Marks)**

3) "Java is portable, architecture-neutral and platform-independent".
Explain **JVM's** involvement on the given statement. **(6 Marks)**

4) Consider the following simple Java program to get the name from the user and then greet them with "Welcome to Java". Fill in the missing snippets.

(*Important: Incorrect case sensitivity may lead to a deduction of marks.*) **(16 Marks)**

```
import ..... (a) .....

public ..... (b) ..... WelcomeToJava {

    public static void ..... (c) ..... {

        ..... (d) ..... obj = new Scanner( ..... (e) ..... );

        System.out.print("Enter your name: ");

        ..... (f) ..... name = ..... (g) .....

        System.out.println("Welcome to Java, " + name + "!");

        ..... (h) ..... .close();

    }

}
```

QUESTION 2

1) `Scanner myObject = new Scanner(System.in);`

Explain the following code segments of the above snippet. (6 Marks x 3)

(i). `Scanner`

(ii). `myObject`

(iii). `= new Scanner(System.in);`

2) What are the outputs of given codes? (10 Marks x2)

(a)

```
public class NestedForLoop {
    public static void main(String[] args) {
        int rows = 4;

        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < i; j++) {
                System.out.print(" ");
            }
            for (int k = i; k < rows; k++) {
                System.out.print("* ");
            }

            System.out.println();
        }
    }
}
```

(b)

```
public class PreVsPostDecrement {

    public static void main(String[] args) {
        int x = 10;
        System.out.println("x :"+x);
        int xPreDecremented=--x;
        System.out.println("xPreDecremented :"+xPreDecremented);
        System.out.println("new x:"+x);

        int y = 10;
        System.out.println("y :"+y);
        int yPostDecremented=y--;
        System.out.println("xPostDecremented :"+yPostDecremented);
        System.out.println("new y:"+y);

    }
}
```

3)

(i). What is the output of the following programming code? (5 Marks)

```
public class MyFirstProgram {

    public static void main(String[] args) {
        int x=1;
        int y=1;
        do{
            System.out.println("do-while");
            x++;
        }while(x>3);

        while(y>3){
            System.out.println("while");
            y++;
        }
        System.out.println("x :"+x+"\ny :"+y);
    }

}
```

(ii) Explain the difference between `while` and `do-while` using the output of the above code. (5 Marks)

QUESTION 3

Write a Java program for the following processes.

1) Tell the user to enter the exam score between 0 and 100. **(4 Marks)**

2) Firstly, check if the entered score is within the range of 0 to 100 (including 0 and 100). **(4 Marks)**

3) If the entered value is within the 0-100 range, then assign a grade based on the following criteria:
   (i). if the score is greater than or equal to 75, the grade is 'A';
   (ii). if the score is between 65 and 74, the grade is 'B';
   (iii). if the score is between 55 and 64, the grade is 'C';
   (iv). if the score is between 45 and 54, the grade is 'S';
   (v). if the score is below 45, the grade is 'Fail'. **(5 Marks)**

4) Finally, **use exceptional handling** to make sure that user entered value is an invalid input (such as non-integer values or some other data type). **(6 Marks)**