ZCAS University

SCHOOL OF COMPUTING, TECHNOLOGY AND APPLIED SCIENCES

MID-SEMESTER EXAM-2023

INTRODUCTION OBJECT ORIENTED PROGRAMMING (CCS 2121)

INSTRUCTIONS:

1. This paper consist of only one practical question

2. **You are required to ensure that you have a working machine and all the programmes are running perfectly.**

3. **There are five (5) Questions in this paper. Answer any four (4)**

4. **All questions carry equal marks (25)**

5. Open your ECLIPSE or any IDE of your choice and create a Java Project with your name and ID.   For example Emmanuel_202228292.

6. Ensure that your programme runs to score maximum points.

7. Time allowed is 1hr 30 Minutes

8. Copy all your working code and save it in notepad with your name and ID, same as in 3 above for submission using a device to be provided.

Question One

Write a Program to demonstrate basic data type and operators in JAVA. Your program should be able to implement the following logic: [25 Marks]

    i.   Declare and define a class
    ii.   Define main method
    iii. Declare variables and initialize variables
    iv. Implement different operators in Java for e.g. Arithmetic, logical, conditional etc. with the help of variables.
    v.   Print all the values of variables, by using basic syntax of Java language.

Question Two

Create a class rectangle. The class has attributes length and width each of which defaults to 1. It has member function that calculates the perimeter and the area of the rectangle. It has set() and get() functions for both length and width. The set() function should verify that length and width are each floating point numbers larger than 0.0 and less than 20.0.   [25 Marks]

Question Three

Write a Java program that prints all real solutions to the quadratic equation $ax^2 + bx + c = 0$. Read in a, b, c and use the quadratic formula. If the discriminate b2-4ac is negative, display a message stating that there are no real solutions.   [25 Marks]

Question Four

Write a java program that simulates a traffic light. The program lets the user select one of three lights: red,yellow or green. When a radio button is selected, the light is turned on, and only one light can be on at a time. No light is on when the program starts.   [25 Marks]

Question Five

The Fibonacci sequence is defined by the following rule. The first two values in the sequence are 1 and 1. Every subsequent value is the sum of the two values preceding it. Write a java program that uses both recursive and non recursive functions.   [25 Marks]