MANICALAND STATE UNIVERSITY OF APPLIED SCIENCES

FACULTY OF ENGINEERING, APPLIED SCIENCES AND TECHNOLOGY

DEPARTMENT: COMPUTER SCIENCE AND INFORMATION SYSTEMS

MODULE: OBEJCT ORIENTED METHODOLOGIES

CODE: BCOS223

SESSIONAL EXAMINATIONS
OCTOBER-2023

DURATION: 3 HOURS

EXAMINER: MR T.S MUWANI

INSTRUCTIONS

1. Answer **ANY five** questions
2. Start a new question on a fresh page
3. Total marks 100

Additional material(s): None

Question 1
Explain five core features of object-oriented programming.   [20 marks]

Question 2
   a) Distinguish between a class and an object.   [8 marks]
   b) Illustrate the five types of constructors used in OOP.   [10 marks]
   c) Differentiate between dynamic and static polymorphism.   [2 marks]

Question 3
Evaluate the differences between structured programming and object-oriented
programming.   [20 marks]

Question 4
Pair programming is an agile software development technique in which two
programmers work together at one work station. One types in code while the other
reviews each line of code as it is typed in. The person typing is called the driver.
The person reviewing the code is called the observer. The two programmers switch
roles frequently (possibly every 30 minutes or less).

Suppose that you are asked to build a system that allows Remote Pair
Programming. That is, the system should allow the driver and the observer to be in
remote locations, but both can view a single desktop in real-time. The driver should
be able to edit code and the observer should be able to "point" to objects on the
driver's desktop. In addition, there should be a video chat facility to allow the
programmers to communicate. The system should allow the programmers to easily
swap roles and record rationale in the form of video chats. In addition, the driver
should be able to issue the system to backup old work.

   a) Draw a use case diagram to show all the functionality of the system.
                [10 marks]
   b) Describe in detail four non-functional requirements for the system.
                [5 marks]
   c) Give a prioritized list of design constraints for the system and justify your list
      and the ordering.   [5 marks]

Question 5

Formulate an example where polymorphism is used. Implement the example in a program; you only have to write code classes relevant to the polymorphism.

[20marks]

Question 6

Explain how you can use the patterns of MVC and Layer to create a good architecture. [20 marks]

Question 7

Explain how an agile software process differs from a waterfall software process and give an advantage and a disadvantage of each. [20 marks]

END OF EXAMINATION