

ZIMBABWE EZEKIEL GUTI UNIVERSITY



FACULTY OF SCIENCE, TECHNOLOGY, AGRICULTURE AND FOOD SYSTEMS
DEVELOPMENT

Department of Information Systems

Module: DIS124

Name: Object Oriented Programming (Java)

Exam Duration: 3 hours

Date: 2024

11 JUN 2024

Instructions

- (i) Attempt all questions, the mark allocation for each question is shown in square brackets.
- (ii) Number your answers accordingly.
- (iii) The total marks for the examination is 100.
- (iv) The Examination consists of Section A and Section B
- (v) Answer any **three** Questions from Section B
- (vi) Write your answers of section A in answer booklet provided
- (vii) Write your answers of section B on your computer under one folder

Section A – Theory Question – [40 marks]

Question One

- a) What is the use of constructor? Explain different types of constructors with an example program. [10 Marks]
- b) Write short notes on the following OOP concepts.
- i) inheritance
 - ii) encapsulation
 - iii) method overloading [9 marks]
- d) Write a program segment to show how the following can be done in Java;
- i) Declaring a constant in java [4 Marks]
 - ii) Passing a parameter by reference [5 Marks]
- e) Compare and contrast static polymorphism and dynamic polymorphism. [6 marks]
- f) List the features of Java language that makes it favorable for developing enterprise application. [6 marks]

Section B- Practical Questions- [60 marks]

Answer any three questions from section B

Question Two

Code a Java program to create a class called Emp with instance variables OvertimePeriod and RatePerHour. The class should implement getters, setters and a method that will calculate an Emp object's overtime given by $OvertimePeriod * RatePerHour$. Create two Emp objects namely John and James. Determine and display their overtime for a given period worked.

[20 Marks]

Question three

Write a Java program to create a class called JoyCar with a subclass named RoyRoyce that inherited currentGear and numberOfGears member variables from JoyCar class. The subclass should implement a method increaseGear() that will increase the gear from current gear by the number of gears specified for a Ferrari which is given by $currentGear + numberOfGears$. Create a Ferrari object named Cruise and display its new gear after gear increase.

[20 Marks]

Question four

Code a java application program that defines an interface called Greeting with method called welcome, a class named CDT204 will implement the interface and defines the method in the interface to display the message "Welcome to Java programming". Create an object of type CDT204 named Java and invoke the method defined in the class.

[20 Marks]

Question five

Code a Java application program to create a class called WebDeveloper with member variables totalHours and ratePerHour and method calculateWage() that determines wage of the Web Developer. Demonstrate the use of constructor overloading to initialize the member variables of the class. Create at least two instances of the class using different constructors of WebDeveloper and display their net salaries.

[20 Marks]

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