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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
SECOND YEAR, FIRST SEMESTER EXAMINATION
FOR THE BACHELOR OF BUSINESS INFORMATION TECHNOLOGY
KBI 2204 – OBJECT ORIENTED DESIGN AND PROGEAMMING

Date: 13TH December 2023
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

A system allows an existing customer to login. (For new customers, they first need to register. Registration details: customer identification number, first name, last name, date of birth and date of registration). The airline has different destinations. A customer will choose their destination and select available airline planes scheduled for the day a customer wishes to travel. A customer is also expected to select the time of departure from the available list of departures to the chosen destination. System allows addition of departure times, flights, and airplanes for the system by the administrator. A customer cannot complete reservation before paying the flight cost. Once a customer pays the flight cost, they are asked to confirm their reservation. If they fail to pay the total cost of the flight, the reservation is cancelled. The airline has many airplanes: the system allows the administrator to add new flights, add new planes, remove flights, remove planes, suspend flights, reroute flights/reschedule flights among others. A customer need see only necessary details in the system. Note: search facility for planes, flights, should be activated.

i) Discuss common types of OOADP relationships and their UML representation (6 Marks)
ii) Generate use case diagram(s)targeting the entire system. (6 Marks)
iii) Identify the system classes and their attributes and operations as described in this system and develop class diagram of the identified classes. (6 Marks)
iv) Explain five metrics to measure the quality of classes (6 Marks)
v) In detail discuss the concept of system modeling in object oriented design and programming (6 Marks)

QUESTION TWO (20 MARKS)

a) Define the Term UML (2 Marks)
b) State and briefly explain the benefits of modeling in OODP (10 Marks)
c) Draw a use case diagram to model the video library system that can be applicable in kiriri women's university (8 Marks)

QUESTION THREE (20 MARKS)

a) Define the term inheritance (4 Marks)
b) Using UML notation, depict the inheritance relationship between the following classes:4-sided shapes and other shapes showing their attributes and operation that can be associated with each shape. (8 Marks)
c) Using an example describe the concept of multiple inheritance. (8 Marks)

QUESTION FOUR (20 MARKS)

a) Describe the following types of modes
   i) Static models
   ii) Dynamic modes
   iii) Behavioral models (6 Marks)

b) Discuss the Advantages of object oriented design and programming (6 Marks)

c) What are the steps followed by system developer to come up with a good system. (8 Marks)

QUESTION FIVE (20 MARKS)

a) Explain the difference between a class and an object. Using an example, show their UML notations. (4 Marks)

b) Identify and show the relationship between classes in the following statement. (8 Marks)

"An airline company has employees. A team builds an airplane which has a number of components. An airplane lands and takes off from an airstrip in an airport. The airplane carries passengers from a source to destination. An airplane is managed by a captain and co-pilot along with his cabin crew consisting of airhostess and attendants.

c) To achieve high quality in software we need to be able to answer a lot of question a software engineer discusses those questions how it is relevant (8 Marks)