

KABARAK



UNIVERSITY

EXAMINATIONS

2008/2009 ACADEMIC YEAR

**FOR THE DEGREE OF BACHELOR OF BUSINESS
MANAGEMENT AND INFORMATION TECHNOLOGY**

COURSE CODE: BMIT 327

**COURSE TITLE: OBJECT ORIENTED ANALYSIS AND
DESIGN**

STREAM: Y3S2

DAY: THURSDAY

TIME: 8.30 -11.30 A.M.

DATE: 18/12/2008

INSTRUCTIONS:

Answer Question ONE and any other THREE questions

PLEASE TURN OVER

Question One (20 mks)

- a) What is data encapsulation and why is it important in Object analysis and design 1mk
- b) Explain the
 - i) term UML 1mk
 - ii) Concept of Generalization and specification 2mks
 - iii) Composition 2mks
 - iv) Aggregation 2mks
- c) By giving an example, explain what an abstract class is and show how it is implemented in java 3mks
- d) From the following list of objects, use UML diagrams to show at least two aggregate relationships and two composition relationships existing between some of the objects
House, Car, Engine, Tyre, Wall, Window, Roof, Parking 4mk
- e) State the two types of communication diagrams used in object oriented analysis and briefly explain their use 4mks
- f) Differentiate between an object and a class 1mk

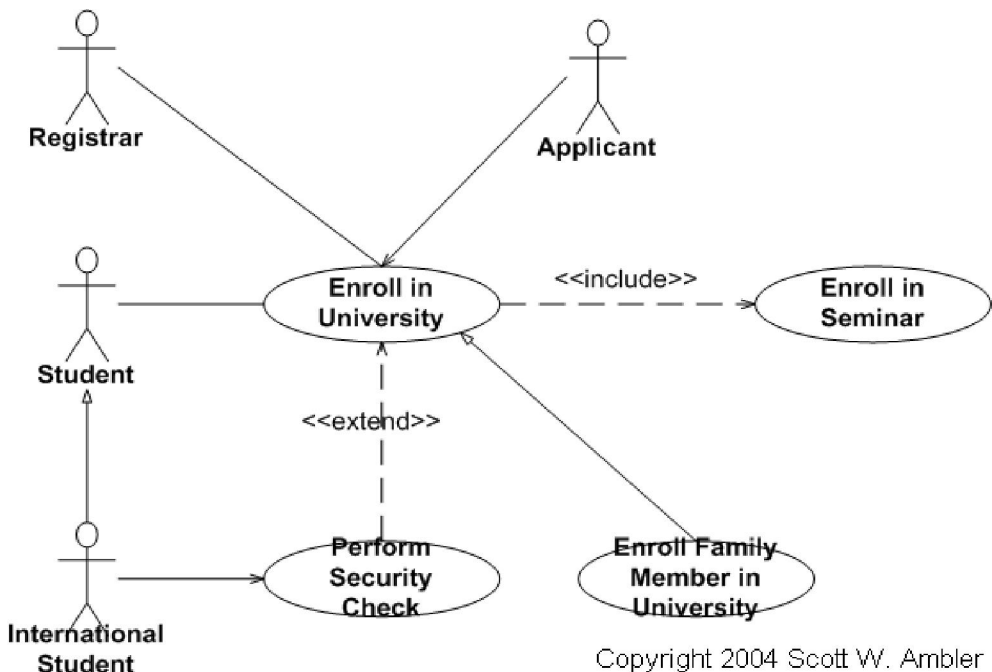


Fig1

Question Two (10mks)

- a) State any four benefits of using Use case modeling in system design and development 4mks
- b) Using Fig1 above,
 - i) Explain the difference between the interaction between the applicant and the use case “perform the security checks” and the interaction between the registrar and the use case “perform the security checks” a 3mks

- ii) Explain the type and the meaning of the relationships between the use case “perform the security checks” and each of the other use cases 3mks

Question Three (10mks)

- a) Give one advantage of inheritance in object oriented design 1mk
 b) Using appropriate diagrams, describe the different types of inheritance and how they are represented in UML modeling 3mks
 c) Study the objects below and draw a possible inheritance hierarchy
 Tank, Car, Sports Car, Saloon Car, Truck, Articulated Truck, Motorbike, Jeep, Boat
 Sailing Boat, Jet Plane, Helicopter, Airplane, Submarine 4mks
 d) Pick one of the class and its sub class and demonstrate by writing a simple code how inheritance is implemented in java 2mks

Question Four (10mks)

- a) State one advantage of using sequence diagrams over collaboration diagrams 1mk
 b) Give one benefit of using the collaboration diagrams 1mk

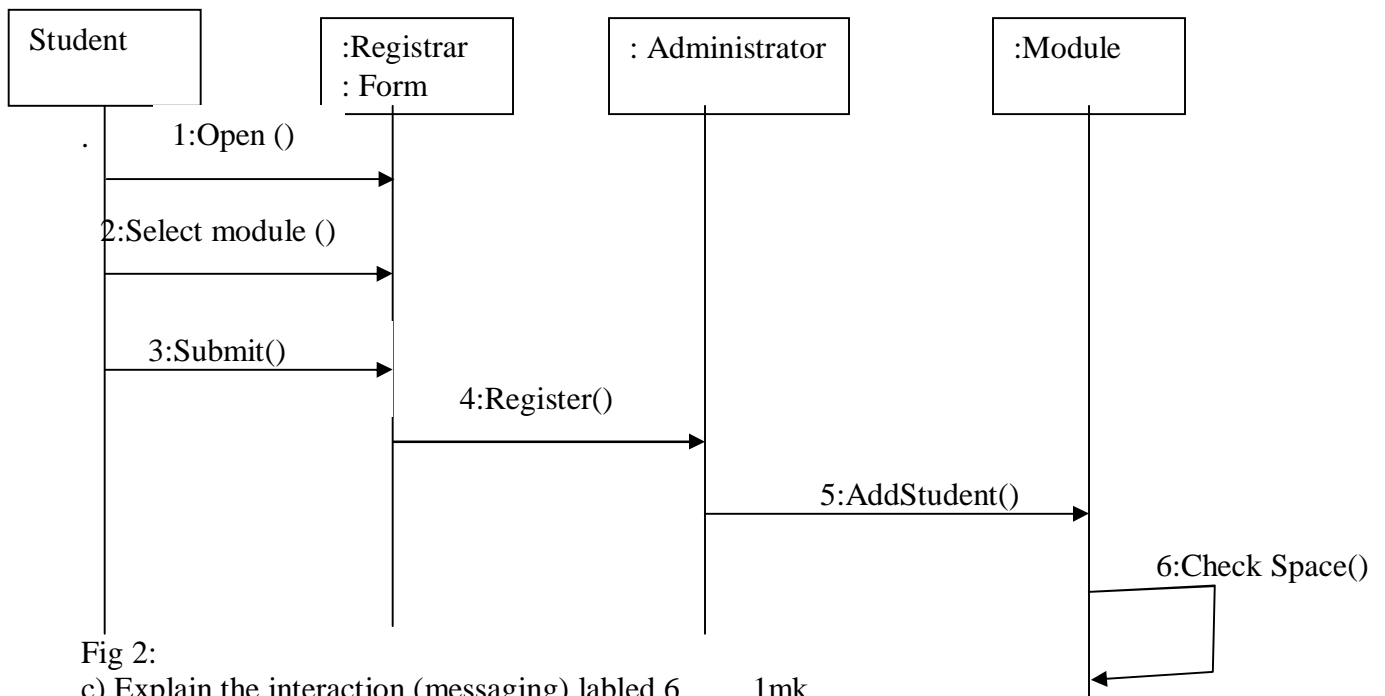


Fig 2:

- c) Explain the interaction (messaging) labeled 6 1mk
 d) Write a possible narrative use-case that could have been used to derive the sequence diagram in fig 2. 3mks
 e) Draw a collaboration diagram to represent the same use case that was represented by the sequence diagram in fig 2. 4mks

Question Five (10mks)

- a) What is a state diagram and how is it used in object oriented system design 2mks
- b) Explain the following terms as used in the state flow diagrams
 - i) Event
 - ii) Transition
 - iii) Guard Condition
 - iv) Action4mks
- c) Using a simple diagram, show the different symbols of a state diagram and demonstrate how they are used 4mks

Question Six (10mks)

- a) Explain the different types of accessibility modifiers 4mks
- b) Demonstrate the use of these modifiers in UML class diagrams 1mk
- c) Fig 3 below shows a UML class communicating with another class. Write a simple java code to implement this communication 3mks

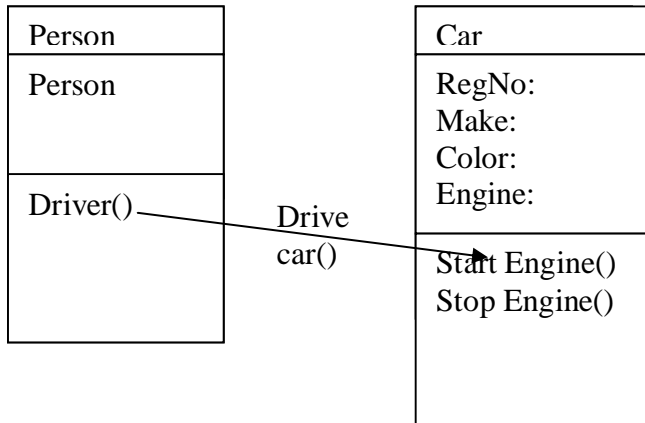


FIG 3:

- c) I identify possible classes in the following scenario
“A student who wishes to register for our Degree programmes should communicate with the dean of students” 2mks