

Course No: **ESGD4117**
 Course Title: **Object Oriented Analysis and Design**
 Date: **18/01/2011**
 No. of Questions: **4**
 Time: **2 hr**
 Using Calculator **(No)**

University of Palestine

 Final Exam
First term 2010/2011
 Total Grade: **60**

Instructor: **Eng. Tasneem Darwish**
 Student No.: _____
 Student Name: _____
 College Name: **Eng. College**
 Dep. / Specialist: **Software Engineering**
 Using Dictionary **(No)**

First Question

(15/60)

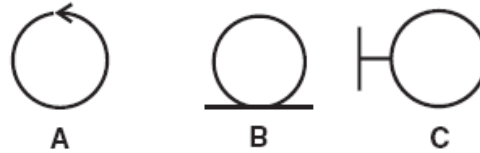
Q1: choose the right answer and write your answers in the table below (choose only one option):

Question number	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.10	Total mark
Answer number											

- 1.1)** Which statement is true?
 (A) The UML is a development process for software systems.
 (B) The UML is a modeling language for software analysis.
 (C) The UML is a visual programming language.
- 1.2)** Objects that are polymorphic _____.
 (A) must have the same attributes
 (B) share all the same operations, and the operations perform the same
 (C) can only be implemented through interfaces
 (D) may have the same operation names but the operations perform differently
- 1.3)** Which statement is true about attributes?
 (A) Their values cannot be changed once the object is instantiated.
 (B) They have different values from object to object of the same class.
 (C) They can only be primitives.
 (D) They are required for every class.
- 1.4)** Which question does the use of multiplicity on relationships answers?
 (A) How many links can an object of one type maintain with objects of another type?
 (B) Is an object of a given type permitted to interact with objects of another type?
 (C) Is the relationship between objects permanent or temporary?

- 1.5)** Why is encapsulation important?
 (A) It describes the relationship between two subclasses.
 (B) It allows other objects to change private operations and attributes of an object.
 (C) It prevents other objects from directly changing the attributes of an object.
- 1.6)** What is an association class?
 (A) It describes the various kinds of relationship that can exist between classes.
 (B) It adds attributes and/or behavior to an association between two other classes.
 (C) It associates an object with the class of which it is an instance.
- 1.7)** when an instance of one class is made up of instances of another class this relation is called:
 (A) Composition
 (B) Inheritance
 (C) Aggregation
- 1.8)** which of the following relations describes a **compile-time** relationship between classes:
 (A) Composition
 (B) Inheritance
 (C) Aggregation
 (D) Assosiation

1.9) With reference to the following figures, what kind of objects are A, B and C?



- (A) A is an entity, B is a controller, C is a boundary.
- (B) A is a boundary, B is an entity, C is a controller.
- (C) A is an entity, B is a boundary, C is a controller.
- (D) A is a controller, B is an entity, C is a boundary.
- (E) A is a boundary, B is a controller, C is an entity.
- (F) A is a controller, B is a boundary, C is an entity.

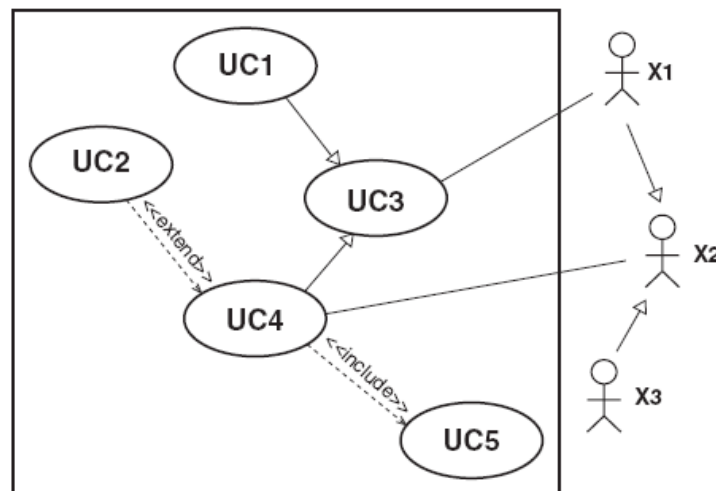
1.10) In UML, which diagrams are used to show messages sent between objects?

- (A) Activity diagrams.
- (B) Object diagrams.
- (C) Communication diagrams.
- (D) State machine diagrams.
- (E) Deployment diagrams.

Second Question

(20/60)

Q2 (A): with reference to the following figure answer the following question:



1) What are the actors names?

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2) What is the relations between the actors?

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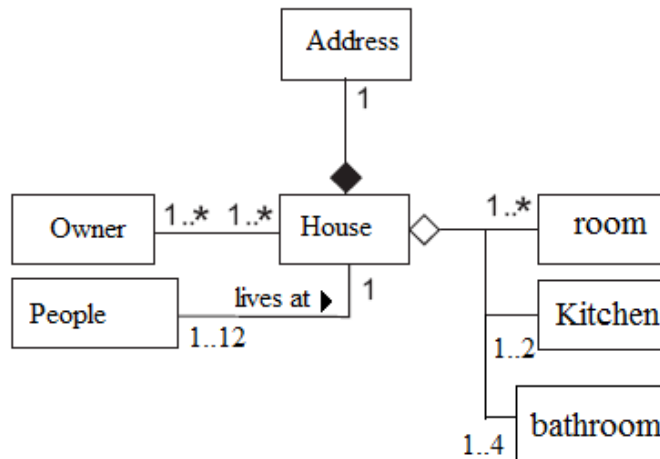
3) Which of the relations have inheritance relations?

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4) What is the difference between the <<include>> and <<extend>>?

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Q2 (B): with reference to the following figure answer the following question:



1) What is the relation between the house and the room classes?

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2) How many rooms a house can have?

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3) What is the maximum number of people who can live in a house?

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4) Is there a house without an owner?

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5) Describe the relation between the House and the Address class? Can it be the same type of relation as with the room class? (Explain your answer)

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Q2 (C): read carefully the following mission statement for a coffee machine system, then try to write two system use cases for this system in details:

“The coffee machine has five different choices of drinks also it has two buttons to increase or decrease the sugar level. The coffee machine is always in standby mode until user insert money, and then the machine waits until the user specifies the sugar level and the drink choice then it will start processing the user order. If the money is not enough for the chosen drink then it will ask the user to insert more money then it start processing after it gets the write amount of money. When the machine finish processing the drink it returns the change for the customer and return to the standby mode. If the machine doesn’t have the required change it will not process the user order and it returns the money back and display a message (there is no change). If any of the component of the drinks is not available it will return the money and display the message (sorry your order can not be processed)”

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Third Question

(25/60)

Q3 (A): draw the UML notation for a class named Student and it has the following attributes and operations:

Operations	
operation name	Operation description
getStudentID	It takes the student name as a parameter and returns the student ID
getStudentname	It takes the student ID as a parameter and returns the student name
getStudentAddress	It takes the student ID as a parameter and returns the student address
getStudentGPA	It takes the student ID as a parameter and returns the student GPA
Setstudentaddress	It takes the address as a parameter and return nothing

Attributes	
Attribute name	Attribute type
Student_ID	integer
Student_name	String
StudentAddress	String
StudentGPA	float

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Q3 (B): what is the difference between tangible and intangible objects?

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Q3 (C): what is Use case realization

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Q3 (D): why we sometimes prefer to use communication diagram instead of sequence diagram?

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Q3 (E): what does the Green, Amber and Red colors means in prioritizing system use cases?

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Q3 (F): what are the advantages of Incremental methodology?

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Q3 (G): what is the difference between abstract and concrete classes?

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Fourth Question (Bonus)

5 Bonus marks

Q4 (A): What is the difference between business modeling and system modeling?

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Q4 (B): what is the purpose of using an activity diagram? And what are the forks and joins?

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Good Luck