[Student Name:

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King Saud University
College of Computer and Information Sciences
Computer Science Department

Course Code:	CSC 342
Course Title:	Software Engineering
Semester: 1	Fall 2014
Exercises Cover Sheet:	**Midterm 21** **2 h**

Student Name: …………………………………………………

Student ID: …………………………………………………

Student Section No. …………………………………………………

Tick the Relevant	Computer Science B.Sc. Program ABET Student Outcomes	Question No. Relevant Is Hyperlinked	Covering %
	a) Apply knowledge of computing and mathematics appropriate to the discipline;	-------	-------
√	b) Analyze a problem, and identify and define the computing requirements appropriate to its solution	**2 – 3 - 4**	**67%**
√	c) Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;	-------	------
√	d) Function effectively on teams to accomplish a common goal;	--------	------
√	e) Understanding of professional, ethical, legal, security, and social issues and responsibilities;	**5**	**16.5%**
	f) Communicate effectively with a range of audiences;	-------	------
	g) Analyze the local and global impact of computing on individuals, organizations and society;	-------	------
	h) Recognition of the need for, and an ability to engage in, continuing professional development;	-------	------
√	i) Use current techniques, skills, and tools necessary for computing practices.	-------	------
	j) Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;	-------	------
√	k) Apply design and development principles in the construction of software systems of varying complexity;	-------	------
√	General Question	**1**	**16.5%**

Exercise 1: *(55. points)*

1. What type of UML diagram is used to describe a specific scenario of a use case? 1

    Sequence Diagram

2. What would you use a UML Statechart Diagram for? 1

    Statechart Diagram used to model the behavior of a single object.

3. What is a domain model in Object-Oriented Approach? 1
    –   Illustrates meaningful conceptual classes in problem domain
    –   Represents real-world concepts, not software components
    –   A diagram (or set of diagrams) which represents real world domain objects: 'conceptual classes'

4. Which of the following UML diagrams describe the behavioral view 1.5
    a) Sequence diagrams
    b) Class diagrams
    c) Collaboration diagrams
    d) Use case diagrams
    e) Activity diagrams

5. Which of the following UML diagrams describe the static view 1
    a) Statecharts
    b) Class diagrams
    c) Collaboration diagrams
    d) Use case diagrams
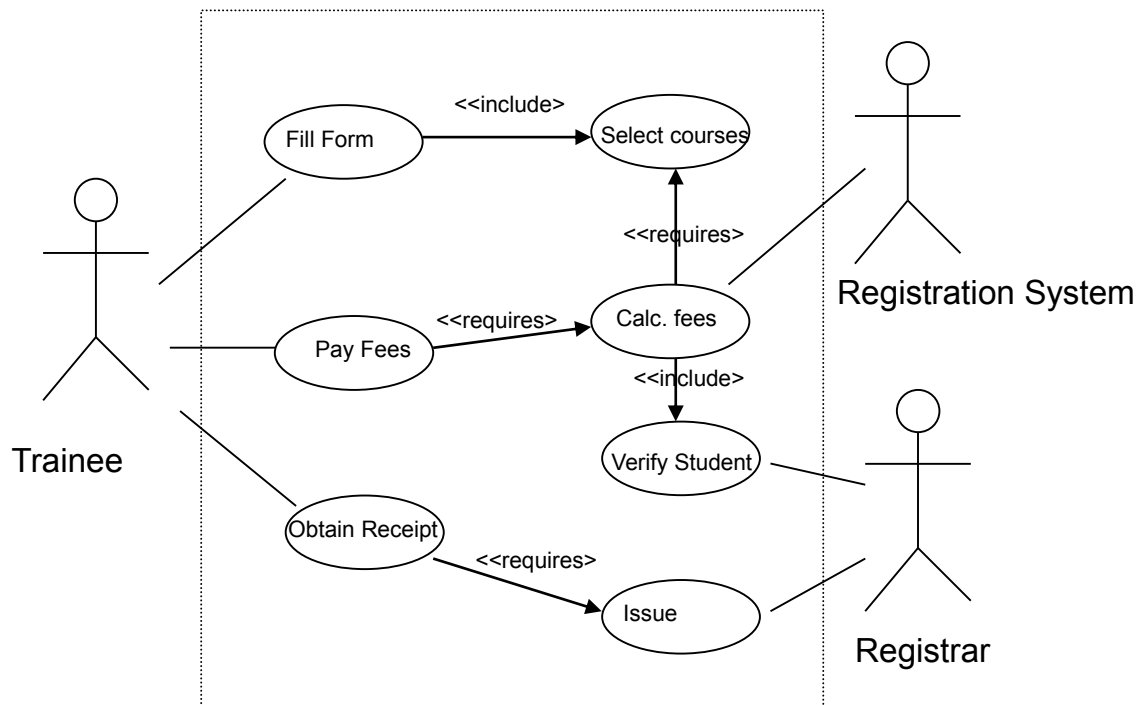   e) Sequence diagrams

Exercise 2: *(10 points)*

A trainee (employee) wants to enroll in the training. The trainee <u>selects course</u> and <u>hands a filled out copy of Training Application Form to the registrar.</u> The registrar clicks on the Create Trainee icon. The system displays Create Trainee Screen. The registrar inputs the name, address, and phone number of the trainee. The system checks whether the <u>trainee is on the applicants list</u> and

whether they already exist within the system. If the trainee is on the applicants list but not already on the system, then a record is created. The trainee enrolls in courses. The system calculates the required initial payment. The system displays Fee Summary Screen. The trainee pays the initial fee. The system prints a receipt. The registrar validates and gives the trainee the receipt.

1. Draw a UML Use Case Diagram for the above system. 5
2. Write the scenario which describe the registration use case (*from the selection of the course to the fees payment*). 2
3. Use an appropriate UML diagram to model the previous scenario. 3

Answer:

1.

Exercise 3: *(15 points)*

ClubRiyadh Video-Games is a chain of 11 games stores are distributed throughout many cities. The owner of the chain is considered to have a new game rental system for it. Each store has a stock of games for rent. The system needs to keep track of each game's title, category... Each game has many copies. In addition to tracking each title, the system must track each individual copy to note its purchase date and rental status. Each time a game is rented, the system will keep track of which copies of which games are rented, the rental date and return date. Customer's information are also processed by the system. Therefore the ClubRiyadh Video-Games has two kinds of customers authorized to rent games: SelverCustomers and GoldCustomers.

Draw a class diagram for the description above. Make sure to show attributes, multiplicities and different types of relationships, where appropriate.