King Saud University

College of Computer and Information Sciences
Computer Science Department

Course Code:	**CSC 342**
Course Title:	**Software Engineering**
Semester:	**Fall 2019**
Exercises Cover Sheet:	**Midterm 2**	**1 hour 30 mn**

Student Name:	....
Student ID:	*Solution Mid 2*
Department Name:	....

Tick the Relevant	Computer Science B.Sc. Program ABET Student Outcomes	NCAAA Outcomes	Question No. Relevant Is Hyperlinked	Covering %
	a) Apply knowledge of computing and mathematics appropriate to the discipline;	1.1	----	-----
√	b) Analyze a problem, and identify and define the computing requirements appropriate to its solution	2.1	Ex. 1	33.3%
√	c) Design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;	2.2	----	----
√	d) Function effectively on teams to accomplish a common goal;	3.1	-----	------
√	e) Understanding of professional, ethical, legal, security, and social issues and responsibilities;	1.2 – 3.2	----	------
	f) Communicate effectively with a range of audiences;	4.1	----	------
	g) Analyze the local and global impact of computing on individuals, organizations and society;	2.3	----	----
	h) Recognition of the need for, and an ability to engage in, continuing professional development;	2.4	------	---
√	i) Use current techniques, skills, and tools necessary for computing practices.	1.3	------	------
	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;	1.4	------	------
√	k) Apply design and development principles in the construction of software systems of varying complexity;	1.5	Ex-2-3	66.7%
	Software project Management	------	-----	------

This exam comprises 3 exercises. Make sure you read each exercise carefully before attempting an answer. Be sure to clearly indicate your final answer for each exercise. Also, be sure to state any assumptions that you are making in your answers.

Good luck!

Exercise 1: *(5 points)*

Design a system for a book-shop, in order to handle ordering of books and browsing of the catalogue of the store, and user subscriptions with rechargeable cards.

- Only subscribers are allowed reading books with their own card.
- Credit is updated on the card during rent operations.
- Both users and subscribers can buy a book and their data are saved in the related order.
- When a book is not available it is ordered.

Answer:
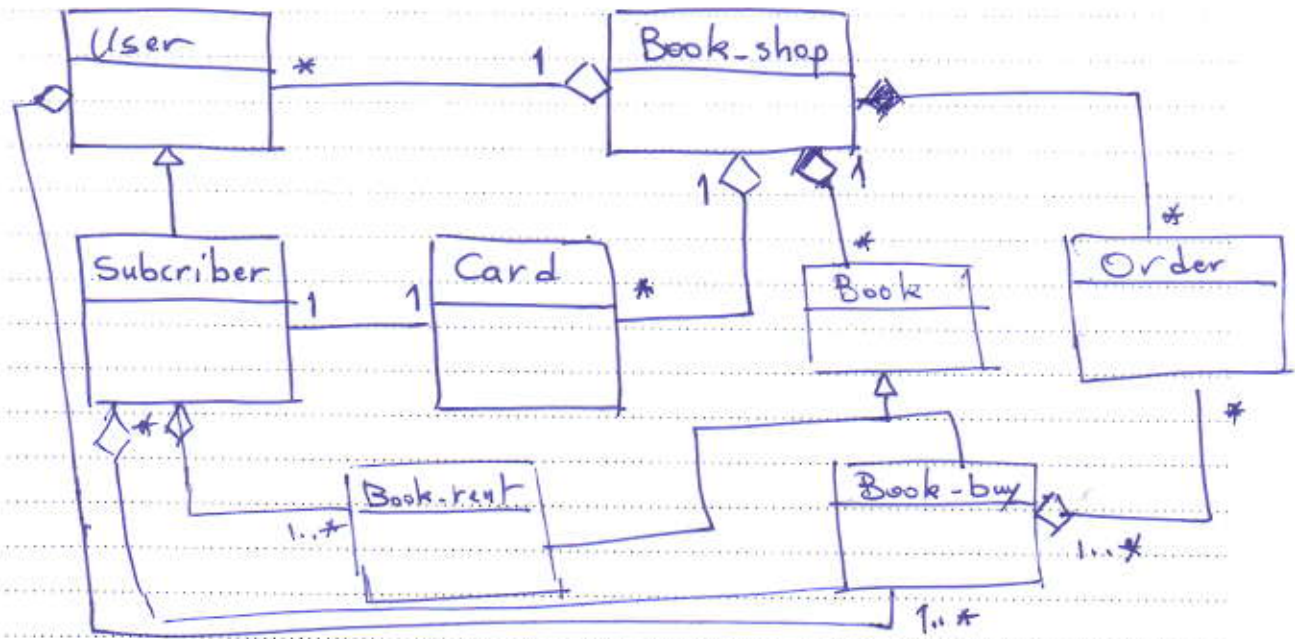
Exercise 2: *(5 points)*

Draw the sequence diagram related to an adaptive based learning system:

- Firstly the student send a message to the device to open the application.
- The device then gets access to the web cam.
- The webcam captures the image of the student.
- The device uses algorithms to detect the face.
- It then requests the student portfolio to have students' skills level.
- The skills level is retrieved from the student portfolio.
- The skills level is displayed to the student.
- The corresponded activity related to the skills level is requested from the e-content database.
- The document is generated and finally shown to the student.

Answer:
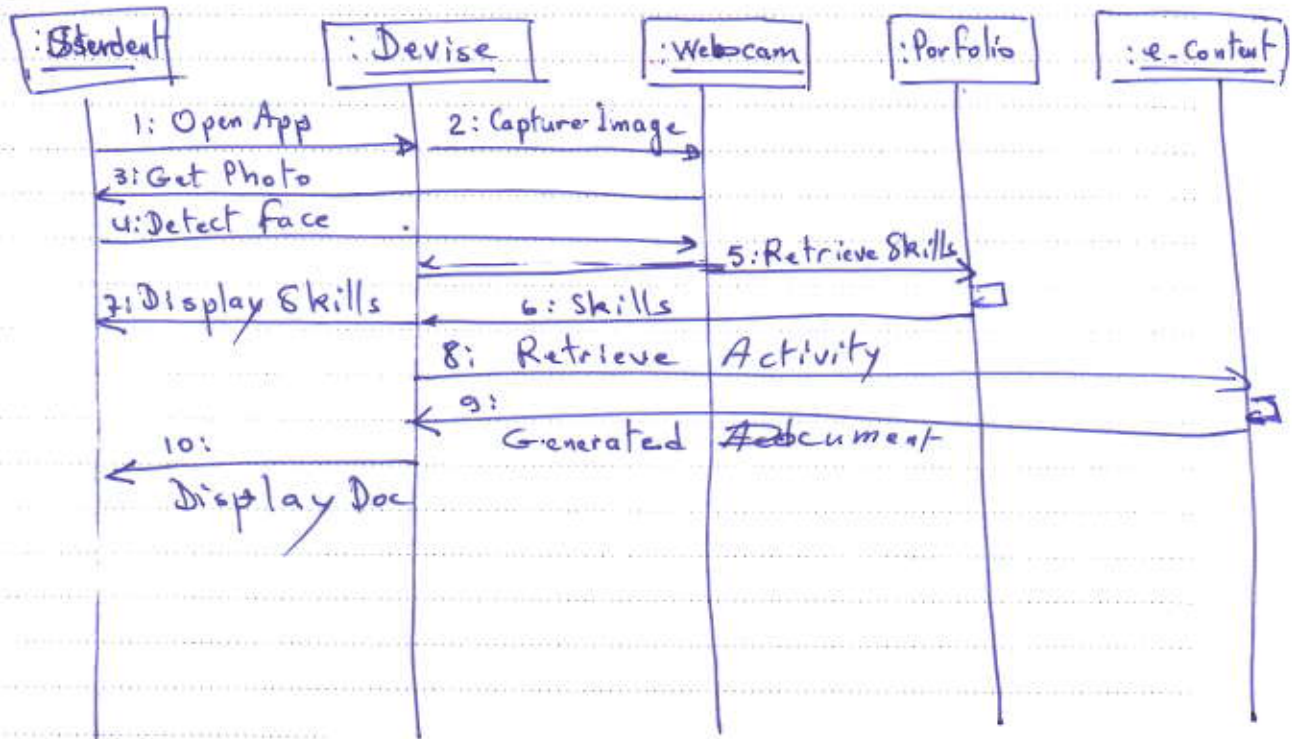
Exercise 3: (5 points)

Draw the UML Statechart diagram of the online ordering system:

1. On the event of an order being received, we transit from our initial state to unprocessed order state.

2. The unprocessed order is then checked.

3. If the order is rejected, we transit to the Rejected Order state.

4. If the order is accepted and we have the items available we transit to the fulfilled order state.

5. However if the items are not available we transit to the Pending Order state.

6. After the order is fulfilled, we transit to the final state. In this example, we merge the two states i.e. Fulfilled order and Rejected order into one final state.

Answer:
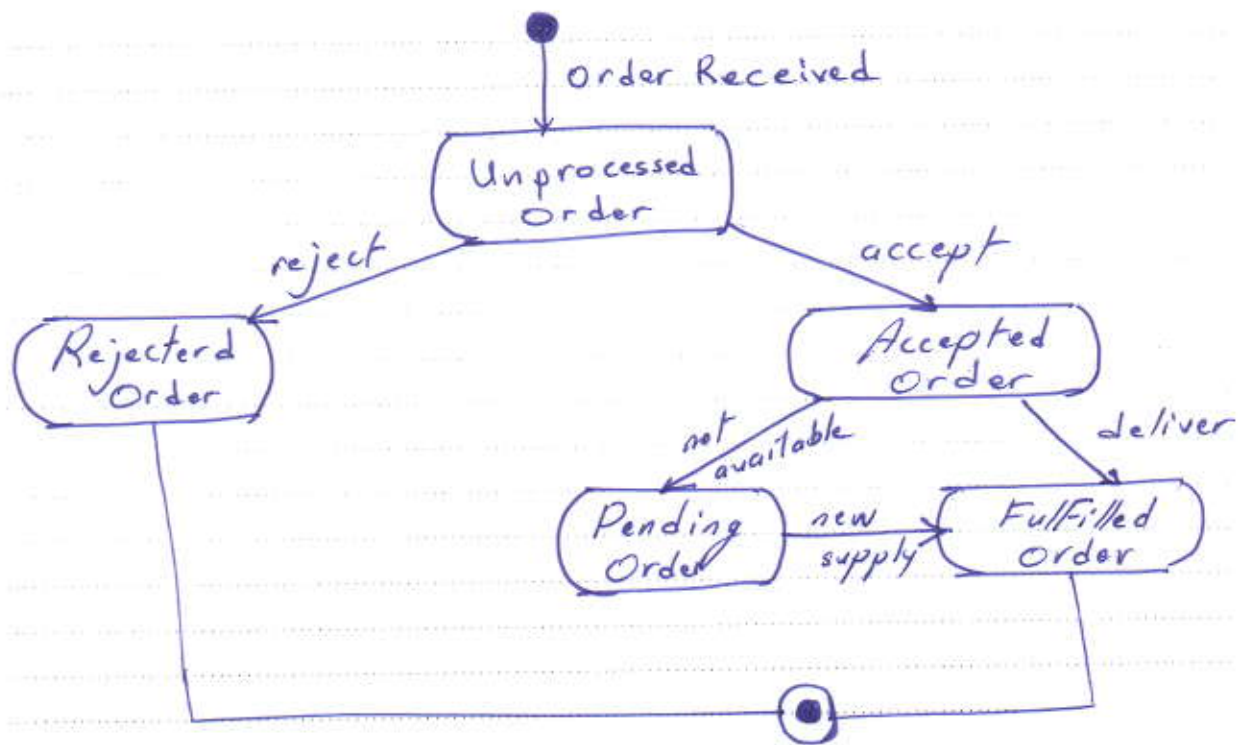
			Result			
Question No.	Relevant ABET Student Outcome	Relevant NCAAA Student Outcome	SO is Covered by %	Full Mark	Student Mark	Assessor's Feedback
Ex. 1	b	2.1	33.3%	5		
Ex. 2	k	1.5	33.3%	5		
Ex. 3	k	1.5	33.3%	5		
Totals			**100%**	**15**		

I certify that the work contained within this assignment is all my own work and referenced where required.

Feedback Received:

Student Signature: Date:

Student Signature: Date: