December 14, 2015

[**Student Name:** ……..…..]

K i n g S a u d U n i v e r s i t y
College of Computer and Information Sciences
Computer Science Department

Course Code:	CSC 342	
Course Title:	Software Engineering	
Semester: 1	Fall 2015	
Exercises Cover Sheet:	**Solution Midterm 2**	**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**	**23%**
√	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;	------	-----
	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.	**1**	**13.5%**
	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;	**3-4**	**63.5%**
√	General Question	-----	-----

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Exercise 1: *UML diagrams (4 points)*

1. Which of the following statements is TRUE about classes and class diagrams?
   a) Class diagrams focus on the execution and flow of the behavior of a system.
   b) Class diagram specifies the scenarios and the transformation executed by the system.
   c) Class diagrams are used to capture the static relationships of software.
   d) In class diagram we specify the actors and the use cases executed by them.

2. Which of the following UML diagrams describe the behavioral views of an individual object over time.
   a) Sequence diagrams
   b) Class diagrams
   c) Statecharts
   d) Use case diagrams

3. Which of the following UML diagrams describe the temporal interaction between multiple objects over time.
   e) Sequence diagrams
   f) Class diagrams
   g) Statecharts
   h) Use case diagrams

4. Which of the following UML diagrams describe the static views
   a) Class diagrams
   b) Statecharts
   c) Use case diagrams
   d) Activity diagrams

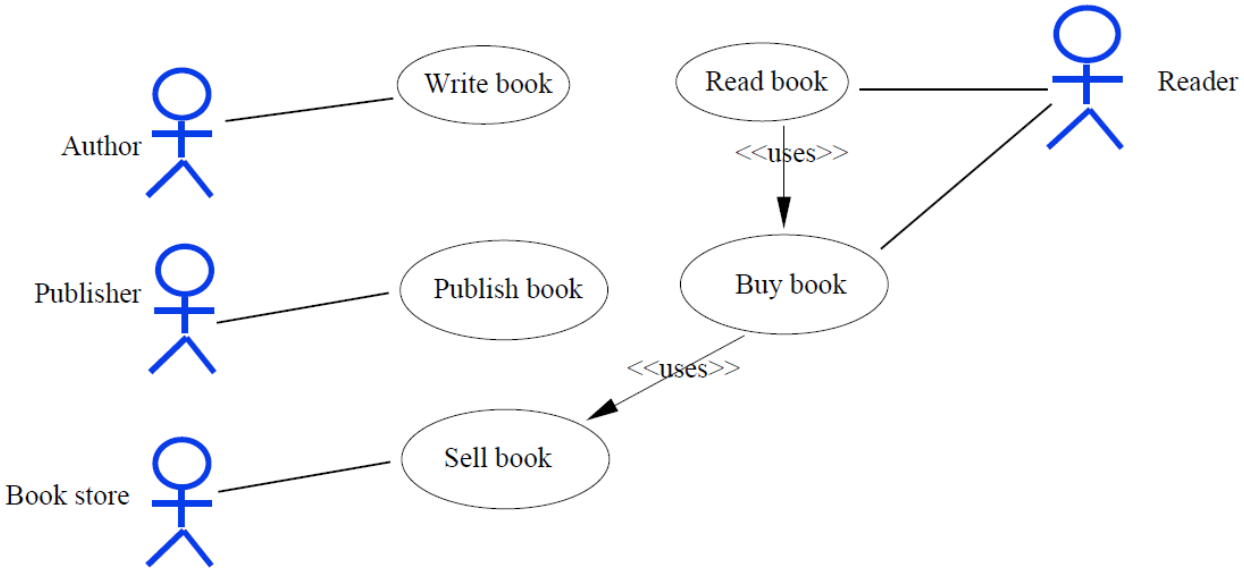
Answer:

1	2	3	4
c	c	e	a-c

Exercise 2: *Use case diagrams (7 points)*

A book is written by an author, published by a publisher, sold by a book store, and read by a reader. Moreover, for a reader to read a book, she must buy it from a book store that is selling it.
Draw a use case diagram for this scenario, showing relationships between different use cases.

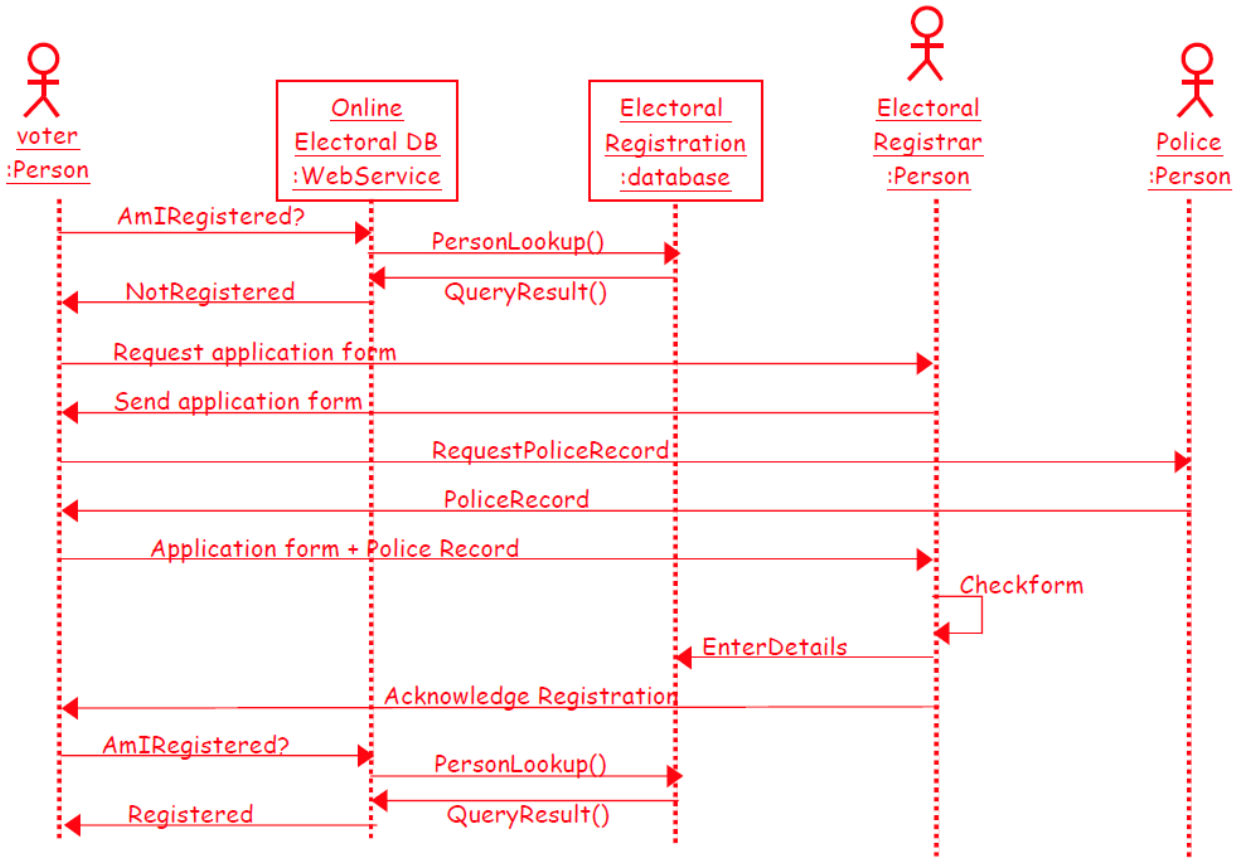
Answer:



Exercise 3: *Sequence Diagrams (7 points)*

Draw a Sequence Diagram for the process of registering a new voter who is not currently registered to vote in an upcoming election. Assume that a *voter* starts by checking the online *electoral registration database* through a separate *online electoral DB web service front end*, to see if he is listed. When he finds that he is not listed, he contacts the *electoral registrar*, who sends her an application form. As part of the application, he needs to contact the *police*, to request a copy of her police record, as persons with recent criminal convictions cannot vote. He then sends the police record along with the application form to the registrar. The registrar checks the form is filled out correctly, and then enters his details in the registration database. The registrar then sends an acknowledgement to the voter, who finally checks the online registration database again to confirm that his application was processed.

Answer:

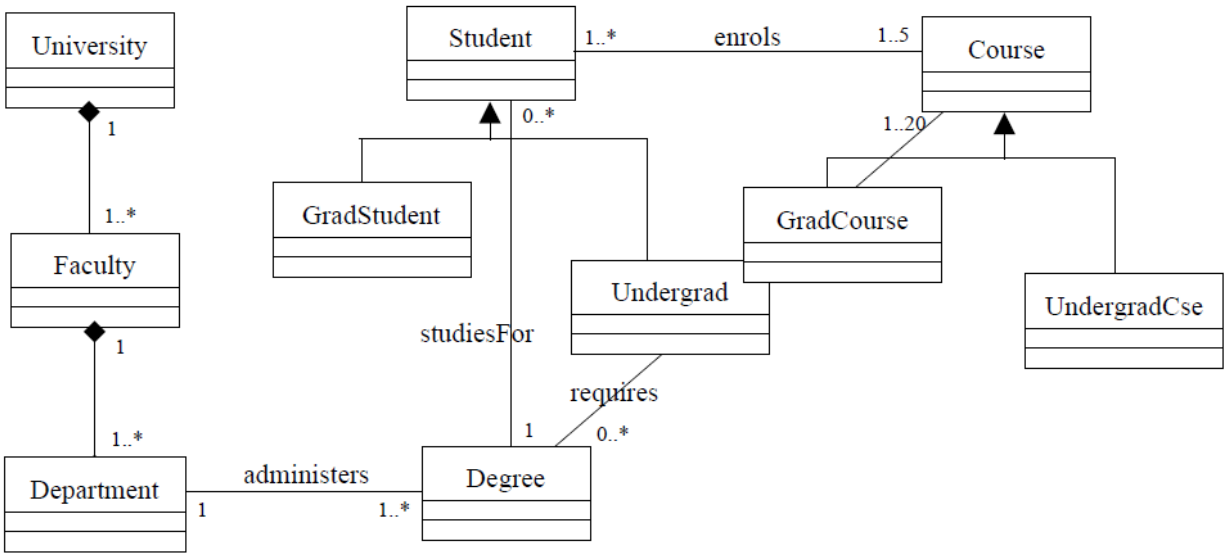


Exercise 4: *Domain Model (12 points)*

A KSU offers degrees to students. The KSU consists of colleges. Each college consists of departments. Each department consists of faculties. Each degree is administered by a single department. Each student is studying towards a single degree. Each degree requires one to 20 courses. Each faculty teach between 2 to 3 courses. A student enrolls in 1-5 courses (per term.) A course can be either graduate or undergraduate, but not both. Also, students are graduates or undergraduates but not both.

Draw a class diagrams which represents the classes and relationships described above. Make sure to specify multiplicities for all associations shown in your diagrams.

Answer:



Result					
Question No.	**Relevant Student Outcome**	**SO is Covered by %**	**Full Mark**	**Student Mark**	**Assessor's Feedback**
1	i	13.5%	4		
2	b	23%	7		
3	k	23%	7		
4		40.5%	12		
Totals		**100%**	**30**		
I certify that the work contained within this assignment is all my own work and referenced where required. **Student Signature:** **Date:**					**Feedback Received:** **Student Signature:** **Date:**