King Saud University

College of Computer and Information Sciences
Computer Science Department

Course Code:	**CSC 342**
Course Title:	**Software Engineering**
Semester:	**Spring 2018**
Exercises Cover Sheet:	**MID1 Exam** — **90 Minutes**

Student Name:	
Student ID:	
Department Name:	

	mark	
Q1		2
Q2		1
Q3		1
Q4		4
Q5		2
Total		10

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**	*Q3*	
√	**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**	*Q2*	
	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**	Q4, Q5	
	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**		
√	**General Question**	**-----**	*Q1*	

Question #1:

Circle the most appropriate answer(s) [/ 2 Points]

1. What is the most expensive phase in a custom software development life cycle?
   a) Design and implementation
   b) Maintenance
   c) Analysis
   d) Testing

2. Which of these are the 4 generic software engineering framework activities?
   a) Specification, modeling, deployment, testing
   b) Risk management, measurement, production, reviewing
   c) Specification, designing, evaluation, evolution
   d) Analysis, designing, programming, evolution

3. The most important feature of spiral model is
   a) requirement analysis.
   b) risk management.
   c) quality management.
   d) configuration management.

4. Changes made to an information system to add the desired but not necessarily the required features is called
   a) Preventative maintenance.
   b) Adaptive maintenance.
   c) Corrective maintenance.
   d) Perfective maintenance.

5. For a well understood data processing application it is best to use
   a) waterfall model
   b) incremental model
   c) evolutionary model
   d) spiral model

6. Software consists of
   a) Set of instructions + operating procedures
   b) Programs, documentation and data
   c) Programs + hardware manuals
   d) Set of programs

7. Alpha and Beta Testing are forms of
   a) acceptance testing
   b) integration testing
   c) system Testing
   d) unit testing.

8. You were requested to develop a special hotel management system. You have 15 programmers, out of which 10 are busy with other projects for the time being. The customers want the project to start promptly but have no hard deadline constraints. Which model you will follow:
   a) incremental
   b) waterfall
   c) spiral
   d) parallel

Question #2:
Indicate whether each of the following statement is "true" or "false". Justifying any "false" choice. [/ 1Points]

Statement	Answer [T / F]
1. The IEEE/ACM Software Engineering Code of Ethics by its own declaration, does *not* apply to students or professors of software engineering.	F
2. It is unethical to undertake a project that you know in advance cannot be completed by the customer's deadline, unless you inform the customer of the risk and establish a project plan that can deliver the needed system incrementally.	T
3. The SE Code requires that software engineers report violations of Intellectual Property law that they observe during work.	T
4. A software engineer uses the company laptop for his social networking and online gaming. This is not considered as violation of SE code if this is done outside the office and during weekends.	F

Question #3:
Indicate whether each of the following software requirements is Functional (F) or Non-functional (N). [/ 1 Points]

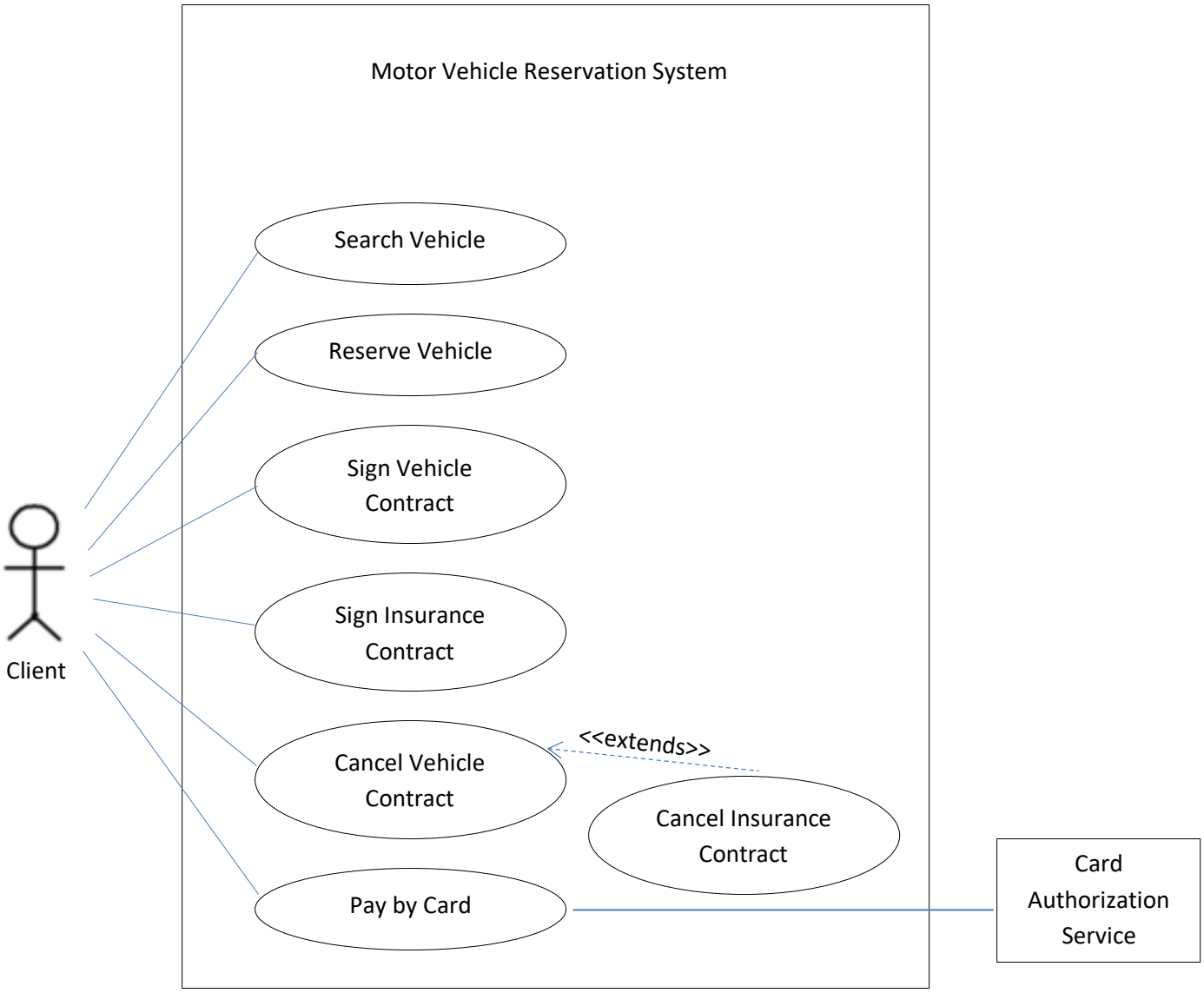
Requirements	Type [F / N]
1. In an online library system the requirement: the system should present the user with matching search items within less than 30 seconds.	N
2. In an online airline ticket reservation system: the customer should be able to check-in online	F
3. In an elevator control system: The system should provide audio output of the floor number once the door opened	N
4. In an ATM machine: The system should allow the user to view his balance.	F

Question #4:

A. Draw a Use Case Diagram for the following system.

[/ 3 Points]

The Online Motor Vehicle Reservation System, allows customers to rent motor vehicles of different types. The assortment comprises cars, vans, and trucks. Vans are small trucks, which may be used with the same driving license as cars. The system allows clients to search for available motor vehicles. Once the desired vehicle is found, the client can, in no longer than 30 seconds, reserve it for a certain period. He has to sign an electronic reservation contract. The client can sign a car insurance contract also if he likes. The system allows the client to cancel the reservation at any time and optionally the associated signed insurance contract. Within the reserved period, at latest at its end, the client returns the motor vehicle to the rental office and pays the bill online using his card.



B. Fill in the information for the "Reserve Vehicle**" use case.**
[/ 1 Points]

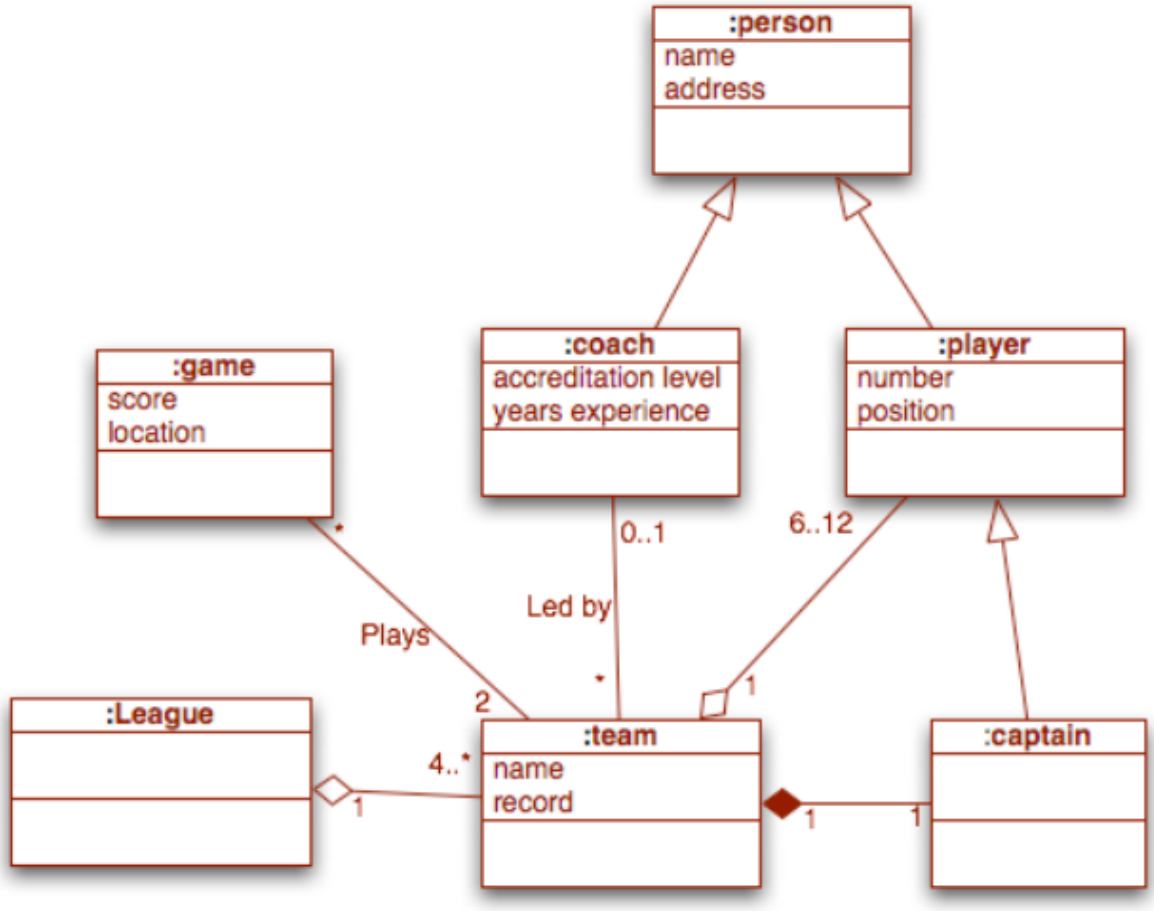
Actors:	Client
Description:	
Stakeholders and Interests:	Client, car rental office, car owners, …..
Trigger:	Client hits the reserve button
Pre-conditions:	Reservation function is activated (works always) –may be ignored
Post-conditions:	Chosen reservation is reflected in DB or DB remains unchanged
Normal Flow:	1. Customer types vehicle number 2. Customer types time period 3. The system checks if the vehicle available during that time 4. The system confirms saving the reservation to the DB
Alternative Flows (if any):	3a. The system displays "car not available during this time " and end use case
Special Requirements (if any):	The search for an available vehicle should take no longer than 30 seconds

Question #5:

A hockey league is made up of at least four hockey teams. Each hockey team is composed of six to twelve players, and one player captains the team. A team has a name and a record. Players have a number and a position. Hockey teams play games against each other. Each game has a score and a location. Teams are sometimes lead by a coach. A coach has a level of accreditation and a number of years of experience, and can coach multiple teams. Coaches and players are people, and people have names and addresses. Draw a class diagram for this information, and be sure to label all associations with appropriate multiplicities.

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

[/ 2 Points]



Notes: captain could alternatively be represented as a second, named association between player and team.
Assumptions: each player only plays on one team, each captain only captains one team, each team only plays in one league.

Result						
Question No.	**Relevant ABET Student Outcome**	**Relevant NCAAA Student Outcome**	**SO is Covered by %**	**Full Mark**	**Student Mark**	**Assessor's Feedback**
Ex. 1	--	--	20	2		
Ex. 2	e	1.2	10	1		
Ex. 3	b	2.1	10	1		
Ex. 4	i	1.3	30	4		
Ex. 5	i	1.3	30	2		
Totals			**100%**	**10**		
Student Signature: **Date:**						**Feedback Received:** **Student Signature:** **Date:**