King Saud University

College of Computer and Information Sciences
Computer Science Department

Course Code:	**CSC 342**	
Course Title:	**Software Engineering**	
Semester:	**Fall 2016**	
Exercises Cover Sheet:	**Solution Midterm 2**	**1 h 30 mn**

Student Name:	……
Student ID:	……
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 %**
√	**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	**67 %**

This exam comprises 2 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.

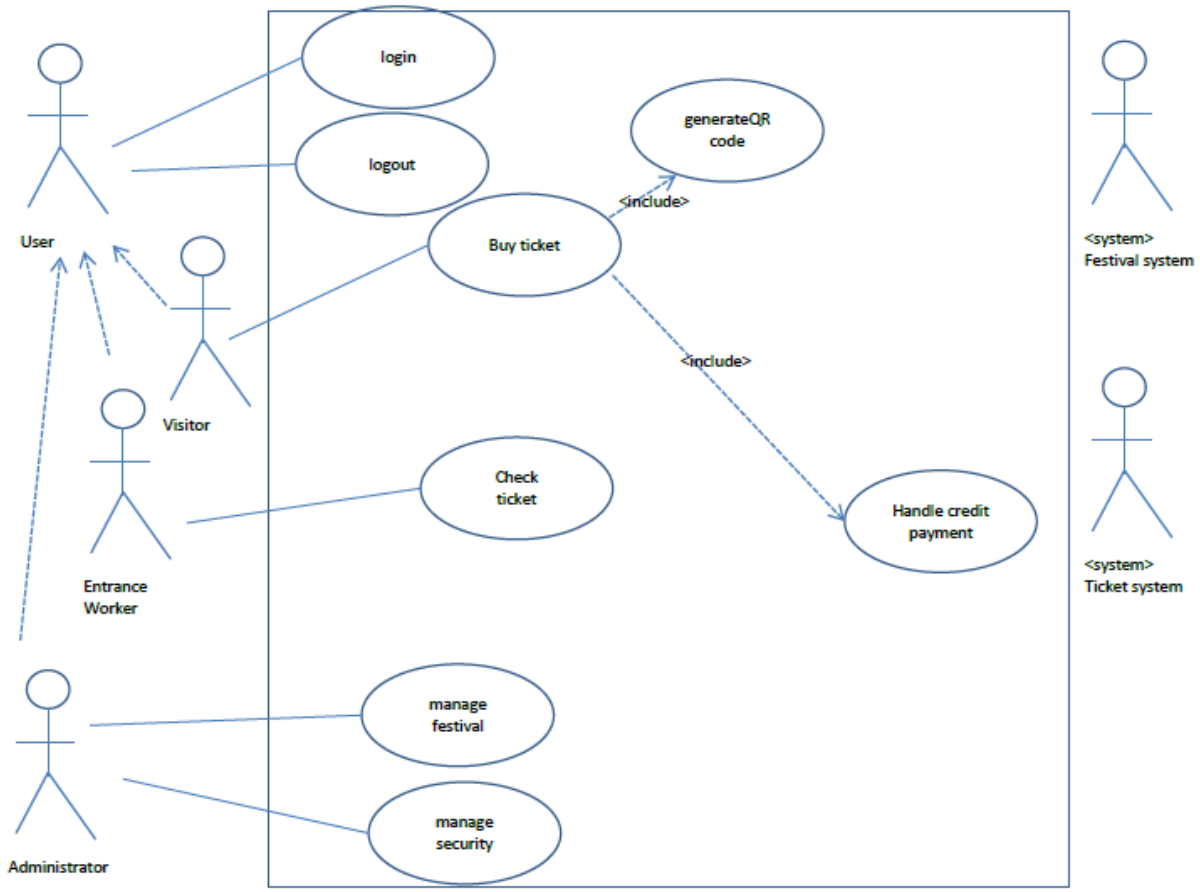
Good luck!

Exercise 1: ***(Requirement Analysis)*** *(15 points)*

Company X will develop a Circus ticket system (CTS) to be used to manage tickets and access to circus in Riyadh. The system includes a server computer and software to manage the operations of the system. The system provides a mobile interface to enable circus visitors to buy tickets. Moreover the system provides a mobile interface to enable festival personnel to check tickets at the entrance. Last, the system provides a web based interface for administration functions, such as declaration of new circus and statistics generation. The most basic functions are to handle ticket sales and to check tickets at entrance. When a visitor wants to buy a ticket, he logs in the system, the CTS starts a transaction, checks that there are enough available tickets for the given circus. When the sale transaction is over, the visitor can pay in cash or credit card. After the payment is successful, the visitor gets a Quick Response (QR) code sent to his mobile. Only credit card payment is supported. Only mobile based sales are supported. When a visitor arrives at a circus, the circus worker in charge uses his mobile to scan the QR code of the visitor, then CTS will retrieve the name of the visitor from the backend visitor system and interact with ticket system to update the number of visitors to this circus. The users of the CTS system are circus visitors, circus workers, and the administrator. The administrator can access the system management functions of the CTS system including circus management and security configuration.

a) Make the Actor Goal List for this system.
b) Draw the use case diagrams for all functions in the system.

Answer:



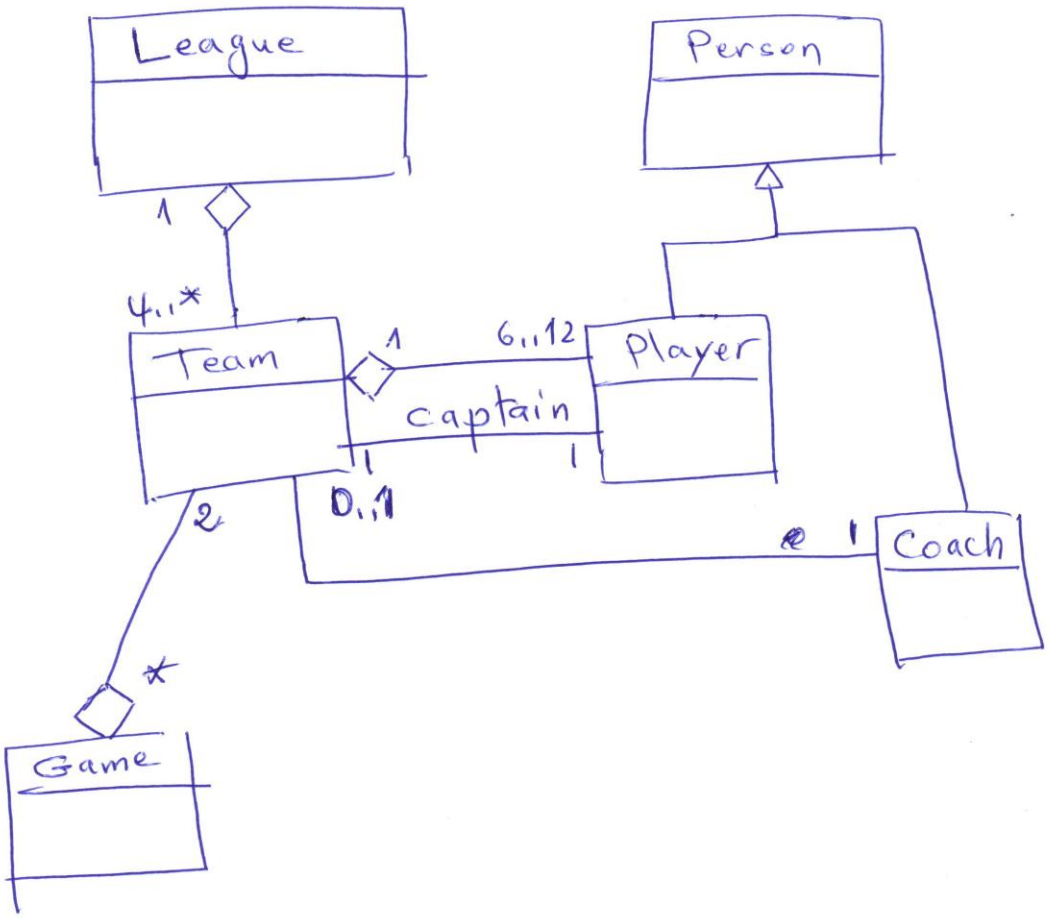
Exercise 2: ***(Domain Model)*** *(30 points)*

A volleyball league is made up of at least four volleyball teams. Each volleyball 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. Volleyball teams play games against each other. The ranking of these teams is important, than the system will need to know, for each team, what the next team is, and what the previous team is. Each game has a score and a location. Teams are led by a coach. A coach has a level of accreditation and a number of years of experience, and can coach only one team. Coaches and players are people, and people have names and addresses.

Draw a class diagram for the description above. Make sure to show attributes, multiplicities and aggregations/compositions, inheritance where appropriate. No need to show any operations.

Answer:



Result						
Question No.	**Relevant ABET Student Outcome**	**Relevant NCAAA Student Outcome**	**SO is Covered by %**	**Full Mark**	**Student Mark**	**Assessor's Feedback**
1	**b**	**2.1**	**33 %**	**15**		
2	**k**	**1.5**	**67 %**	**30**		
Total			**100 %**	**45**		
	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:**		