April 8, 2013

[**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: 2	Spring 2013	
Exercises Cover Sheet:	**Midterm 1**	**3 Hours**

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	**1-3-4**	**75%**
√	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;	**2**	**25%**
	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	-------	-----

Exercise 1: ***Software Process Model*** *(10 points)*
Match each lifecycle model with its definition, by drawing a line connecting them.

waterfall		assess risks at each step; do most critical action first
spiral		build an initial small requirement spec, code it, then "evolve" the spec and code as needed
evolutionary prototyping		build initial requirement specs for several releases, then design-and-code each in sequence
incremental delivery		standard phases (requirements, design, code, test) in order

Exercise 2: ***Ethics & Professional Practice*** *(15 points)*

- Ali is a database programmer
  - large statistical program needed by his company (actuarial requirements)
- Ali has found himself stuck on a problem
  - Has persisted at this for several months.
  - His manager does not recognize complexity of problem.
  - He insists job be completed in the few days.
- Ali remembers:
  - co-worker had given him source listings of their current work
  - he also has an early version of commercial software developed at another company
- Ali studies these programs
  - Sees two areas of code which could be directly incorporated into his own program.
  - He uses segments of code both from his coworker and from the commercial software.
  - He does not tell anyone or mention it in the documentation.
- He completes the project and turns it in a day ahead of time.

What kind of problems related to the professional issues highlights this case study? Give the Code of Ethics that justify your answer.

Answer:

Ali violated professional ethics in two areas:

- Failure to give credit for another's work.
- Using code from a commercial package that (presumably) was copyrighted.

If Ali only "looked" at co-worker's source code:

- Could he then write his own program and still have an obligation to give credit?
- Yes:
  - He should have acknowledged credit in documentation.

- (Some professional discretion possible here, especially if intellectual material is trivial.)

Use of commercial software code was also not appropriate:

- Joe should have checked to determine whether or not company was authorized to use source code before using it.

In general:

- Desirable to share and exchange intellectual materials
- But using bootlegged software is definitely a violation of code.

This case highlights issues involving intellectual property

2.01. Be honest
2.02. Not knowingly use software that is obtained or retained either illegally or unethically.
2.03. Use the property of a client or employer only in ways properly authorized, and with the client's or employer's knowledge and consent.
3.13. Be careful to use only accurate data derived by ethical and lawful means, and use it only in ways properly authorized.

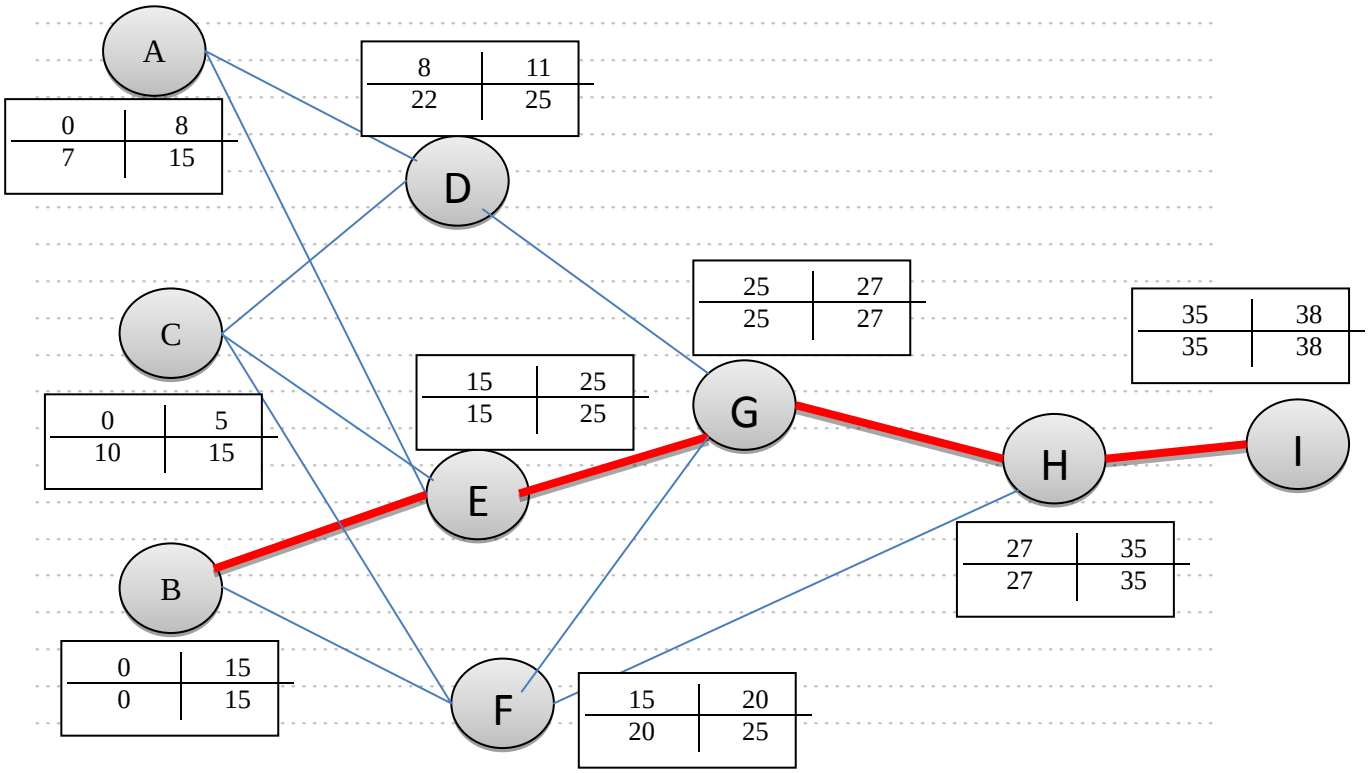
Exercise 3: ***Software Project Management*** *(15 points)*

The following table shows the estimated activity duration and pre-requisites for a project development.

Task	Duration (Week)	Precedence
A	8	-
B	15	-
C	5	-
D	3	A,C
E	10	A,B,C
F	5	B,C
G	2	D,E,F
H	8	F,G
I	3	H

1. Draw the activity network related to the table?

2.



3. Compute for each task the earliest start time (ES), earliest finish time (EF), latest start time (LS), and latest finish time (LF). Write your numbers on the activity network using the following notation:

ES	EF
LS	LF

Task	Duration (Week)	Precedence	Earliest Start	Earliest Finish	Latest Start	Latest Finish	Slack
A	8	-	0	8	7	15	7
B	15	-	0	5	10	15	10
C	5	-	**0**	**15**	**0**	**15**	**0**
D	3	A,C	15	18	22	25	7
E	10	A,B,C	**15**	**25**	**15**	**25**	**0**
F	5	B,C	15	20	20	25	5
G	2	D,E,F	**25**	**27**	**25**	**27**	**0**
H	8	F,G	**27**	**35**	**27**	**35**	**0**
I	3	H	**35**	**38**	**25**	**38**	**0**

4. Show the critical path.

B-E-G-H-I

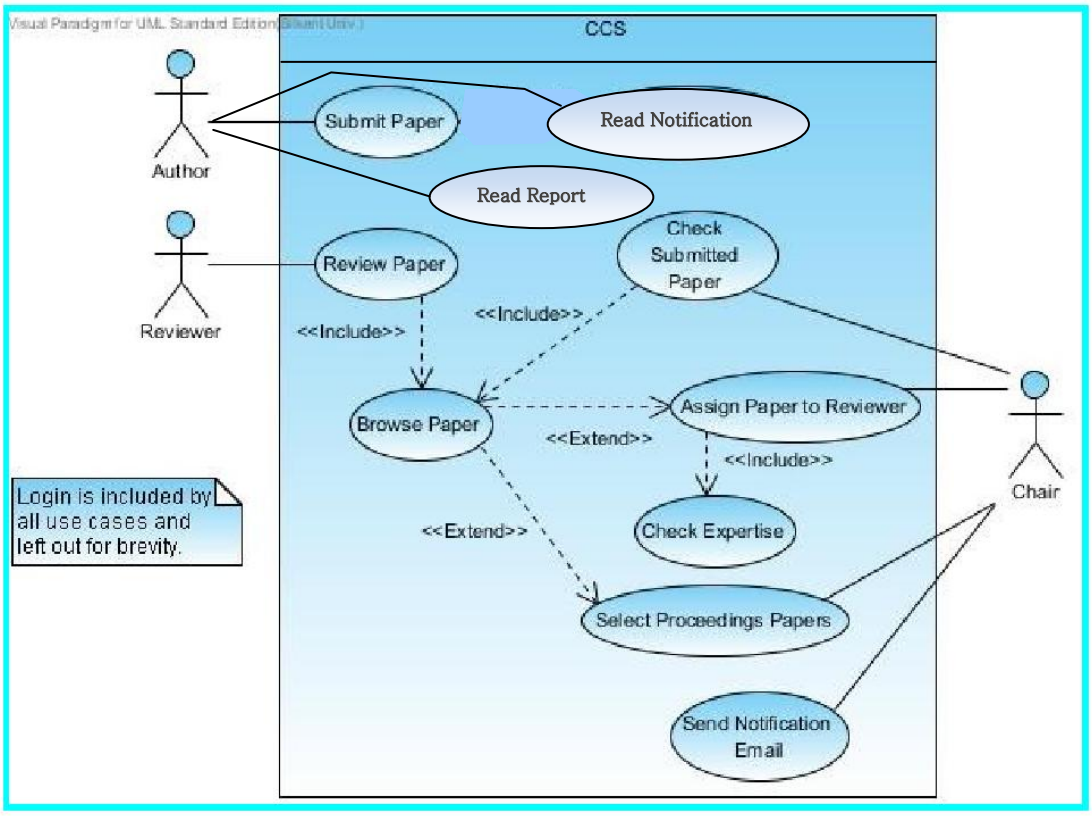
Exercise 4: ***Analysis (Functional Requirements and Use Cases)*** *(20 points)*

Consider the following problem description:

A Conference Management System (CMS) is to be designed and implemented to automate the review process for scientific events such as conferences and workshops as described below.
An author can submit papers using CMS. All papers should include a title, an abstract, a list of keywords, size, and a list of authors.
Not every paper submitted is to be selected for presentation and included in the proceedings. The review and selection process is performed by a scientific committee. The scientific committee consists of members. One of the members is assigned as a chair. The chair is responsible for checking the completeness of the submitted papers and assigning the papers to other members for reviewing. When the chair assigns a paper to a reviewer, it is first checked that the area of expertise of the reviewer matches the keywords provided in the paper. Each reviewer is responsible for reviewing the assigned paper(s) and writing a report. Based on the reports, papers to be included in the final proceedings are selected by the chair. Once the selection is completed, the chair can send notification emails about the decisions to all authors using CMS.

a) Identify functional requirements for the above situation.
b) Draw the Use Case Diagram of the system

Answer:



Result					
Question No.	**Relevant Student Outcome**	**SO is Covered by %**	**Full Mark**	**Student Mark**	**Assessor's Feedback**
1	b	16,5%	10		
3		25%	15		
4		33,5%	20		
2	e	25%	15		
Totals		**100%**	**60**		
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:**