

SOEN 342 Software Requirements Specifications
Fall 2013
Midterm Exam – Example Questions

Name: _____

Total Points:

ID: _____

_____ / _____

Instructions. *This example SOEN 342 Midterm contains questions from previous years that you can use to test your preparation. Note that the midterm is a **closed book** exam. The real exam will contain more questions: about 4-5 larger questions that you will need to solve in about 5–15mins, plus some multiple-choice questions. Also, note that the actual midterm will not necessarily cover the same questions as the ones here (or even the same type of questions)!*

- This is a closed book, 60 min. exam
- **Do not** detach any pages from this exam!
- Check if your booklet has all 7 pages
- The only allowed tool is an ENCS-approved calculator
- Provide all answers in this booklet
- You will get marks for brief and precise answers. You will not get marks for long essays or for information that is correct but does not answer the question.
- If you leave the room, you must submit your exam and cannot return until the end of the exam period

- (2^{pts}) 1. Name five *defects* that can appear in a requirements document and provide a one-sentence definition for each.

2 pts

1. Name: _____

Definition: _____

2. Name: _____

Definition: _____

3. Name: _____

Definition: _____

4. Name: _____

Definition: _____

5. Name: _____

Definition: _____

- (1^{pt}) 2. When doing an interview with a stakeholder (e.g., user), the following is **NOT** recommended: (*Check only one answer*)

1 pt

- ☐ Preparing for the interview (e.g., review of domain documents)
- ☐ Using an interview template
- ☐ Asking the users directly about their needs
- ☐ Starting by presenting a solution to the stakeholder's problems
- ☐ Asking context-free questions

- (1^{pt}) 3. To be *complete*, a decision table with N input conditions must have: (*Check only one answer*)

1 pt

- ☐ N columns
- ☐ $2 \cdot N$ columns
- ☐ N^2 columns
- ☐ $\frac{N}{2}$ columns
- ☐ 2^N columns

(3^{pts}) 4. Consider the following interaction matrix:

3 pts

Statement	S1	S2	S3	S4	Total
S1	0	1000	1	1	
S2	1000	0	0	1	
S3	1	0	0	1	
S4	1	1	1	0	
Total					

Here, $S_{ij} =$

- 1: conflict
- 0: no overlap
- 1000: no conflict

- (a) (1 pt) Compute the values for the total row and column and insert them in the table above.
- (b) (1 pt) Use the formula discussed in the lecture to compute the total number of *conflicts*: _____
- (c) (1 pt) Use the formula discussed in the lecture to compute the total number of *non-conflicting overlaps*: _____

- (7pts) 5. Consider the following Defect Detection Prevention (DDP) risk-consequence table for a library loan management system:

7 pts

Objectives	Risks				Loss of objective
	Late returns (likelihood: 0.6)	Stolen copies (likelihood: 0.3)	Lost copies (likelihood: 0.1)	Long loan by staff (likelihood: 0.5)	
Regular availability of book copies (weight: 0.4)	0.40	0.60	0.60	0.20	
Comprehensive coverage of library (weight: 0.3)	0	0.20	0.20	0	
Staff load reduced (weight: 0.2)	0.30	0.50	0.40	0.10	
Operational costs decreased (weight: 0.1)	0.10	0.30	0.30	0.10	
Risk criticality					

With

$$Criticality(r) = Likelihood(r) \times \sum_{obj} (Impact(r, obj) \times Weight(obj))$$

and

$$Loss(obj) = Weight(obj) \times \sum_r (Impact(r, obj) \times Likelihood(r))$$

- (a) (1 pt) What is the meaning of a single table entry, i.e., of each pair (obj, r) ?
- ☐ (estimated) loss of satisfaction of objective obj if risk r occurs
 - ☐ relative cost to recover objective obj if risk r occurs
 - ☐ this is the risk-reduction leverage (RRL)
 - ☐ the (estimated) reduction of risk r under objective obj
 - ☐ None of these options
- (b) (2 pts) Compute the values for *Loss of objective* and enter them in the last column of the table.
- (c) (2 pts) Compute the values for *Risk criticality* and enter them in the last row of the table.
- (d) (1 pt) Which *objective* is most at risk?
- ☐ Regular availability of book copies
 - ☐ Comprehensive coverage of library
 - ☐ Staff load reduced
 - ☐ Operational costs decreased
 - ☐ None of these options
- (e) (1 pt) What is the *highest risk* overall? _____

- (8pts) 6. You are the requirements engineer in an information system project for a video rental store. Simplifying assumptions and details:

8 pts

- It is a stand-alone store, not part of a larger organization.
- Rents only videos, not computer games or other items.
- A “video” can be in any medium: tape, DVD, and so on.
- The rental charge may vary by medium. For example, DVD rentals are more expensive than tapes.
- The store does not sell anything. For example, there are no sales of videos or food.
- All transactions are rentals.
- The input medium by which membership and video rentals are captured is not important.
- Cash-only payments.
- On completion of a rental, the customer receives a transaction report with ‘typical’ information on it (use your judgement).
- Each renter has a separate membership.

(a) (1 pt) Identify 4 *actors* and give a brief description (3–5 words) for each

• **Actor 1:** Name: _____

Description: _____

• **Actor 2:** Name: _____

Description: _____

• **Actor 3:** Name: _____

Description: _____

• **Actor 4:** Name: _____

Description: _____

⇒ *Continued on next page!*

- (b) (2 pts) Identify four primary (user-goal level) use cases and related actors (identified by A1, A2 etc.):

• **UC1** Name: _____ Actors: _____

• **UC2** Name: _____ Actors: _____

• **UC3** Name: _____ Actors: _____

• **UC4** Name: _____ Actors: _____

- (c) (1 pt) Draw the UML use case context diagram for your actors and use cases:

⇒ *Continued on next page!*

- (d) (3 pts) Write the use case (steps only, no additional details like pre- and postconditions) for “Rent Video” in *essential* style, for the main success scenario (basic flow):

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. ...

- (e) (1 pt) Write two extensions (alternative scenarios) for the “Rent Video” use case. Provide the step number in the main success scenario and a brief description.

- _____ : _____
- _____ : _____