Comprehensive Exam for Requirements Engineering
Fall 2009

Student ID_____

The first question is mandatory and is worth 50 points. The remaining 4 questions are worth 25 points each. Answer the first question and then any 2 of the remaining 4 questions. Please mark below which optional questions you want graded. Use only the space provided. *Do not attach additional sheets.*

Questions to grade (circle the appropriate number): 2 3 4 5 **(If you leave this blank, questions 2-3 will be graded.)**

1. (50 points)

Consider a department store website that allows engaged couples to create a list of potential wedding gifts, e.g., china, silver, etc. The list contains a description of the item, the price, the number desired (e.g., 8 place-settings), and the number not yet ordered for the couple (e.g., 3 place-settings left).

Assuming that the list of gifts already exists, a user enters the website and searches for the couple by name. Once the correct couple has been identified, the list of gifts as described above is presented. The user may view a picture of any item by clicking on the description. The user may select one or more of the gifts and also select the quantity of each (e.g. 2 plates and 3 cups). Once the selection has been completed, the system displays the order with pricing, tax and handling charges. If the user decides to continue with the purchase, the system converts into secure mode, and obtains the user's name, address and credit card information. The system validates the credit card information electronically with a credit card validation service. If the card is valid, a summary of the order is presented to the user who may choose to send the order or to cancel the transaction. Upon acceptance, the order is transmitted by the system to the appropriate warehouse.

On the following 5 pages, follow the directions to write 5 requirements for the wedding gift system described above. Remember,

- Description refers to a single requirement statement expressed with a "shall".
- Rationale refers to the reason that the requirement has been included.
- Fit Criterion refers to how you plan to determine whether or not the final system meets the stated requirement, i.e., how you will you demonstrate to the client's satisfaction that the requirement has been met?

Grading for each requirement: (a) 4 points for a correct description (b) 2 points for the rationale for the requirement (c) 3 points for an acceptable Fit Criterion and (d) 1 point for grammar.

1-1. (10 of 50 points)
Write a functional requirement that will ensure that a picture of each item offered will be available for viewing.

- State the requirement

- Explain the rationale

- State the Fit Criterion

1-2. (10 of 50 points)
Write a functional requirement that will ensure that the correct state tax amount will be added to each bill.

- State the requirement

- Explain the rationale

- State the Fit Criterion

1-3. (10 of 50 points)
Write an availability requirement that will ensure that the online system will be available for the customer to use *most of the time.*

- State the requirement

- Explain the rationale

- State the Fit Criterion

1-4. (10 of 50 points)
Write a usability requirement to ensure that the website will be easy to use for a person with few computer skills.

- State the requirement

- Explain the rationale

- State the Fit Criterion

1-5. (10 of 50 points)
Write a security requirement that will ensure that the user's credit card information will be kept confidential.

- State the requirement

- Explain the rationale

- State the Fit Criterion

2. (25 points)

There are many techniques for eliciting (trawling for) requirements. Identify and describe 2 of them. For each technique, specify the conditions or circumstances under which the technique would be a valuable one to use.

Grading: (a) 4 points for each identification (8 points); (b) 4 points for each description (8 points); (c) 4 points for identification of conditions (8 points); (d) 1 point for grammar (1 point).

3. (25 points)

What are Use Cases and Domain Models? In using these approaches to capture and analyze requirements, what characteristics of the proposed system are represented by Use Cases and what characteristics are represented by Domain Models?

Grading: (a) 6 points for each definition (12 points); (b) 6 points for each set of characteristics (12 points); (c) 1 point for grammar (1 point).

4. (25 points)

Indicate to the left of each statement whether the statement is True (T) or False (F).

_____1. Studies have shown that incomplete requirements and lack of user involvement in the requirements process have little effect on software project success or failure.

_____2. There is sometimes a need for a requirement to state what a system will *not* do.

_____3. It is only necessary to be able to trace a requirement to a component of the software, but it is not necessary to trace a software component back to its requirements.

_____4. It is permissible to move into the next lifecycle phase if there are still TBDs in the requirements after the Requirements Review so long as there is a plan to resolve the issues.

_____5. Requirements Reviews are generally considered to be a requirements validation technique.

_____6. Business events are triggers that happen outside the scope of the system in question.

_____7. Business events require a specific action and cannot be triggered simply by the passage of time.

_____8. Selecting a button in a GUI window is a good example of a business event.

_____9. Use Cases should be named with verb-phrases.

_____10. Apprenticing with the user tends to bias your view of the work and should not be used as a trawling technique.

_____11. The term essence of the system means the fundamental reason that the system exists.

_____12. When conducting a brainstorming session, all suggestions are to be recorded, even if some appear to be nonsense.

Grading: 2 points for each correct answer plus 1 free point.

5. (25 points)

What is a requirements baseline? What is the purpose of placing requirements under configuration control? Describe a typical requirements configuration control procedure, i.e., what are the steps in modifying a set of requirements that are under configuration management?

Grading: (a) 6 points for definition of requirements baseline; (b) 6 points for identifying its purpose; (c) 12 points for explaining configuration control procedures; (d) 1 point for grammar.