

ICS52 - Introduction To Software Engineering  
Midterm Exam – Spring, 2005

Last Name: \_\_\_\_\_ First Name: \_\_\_\_\_

Row: \_\_\_\_\_ Seat Number: \_\_\_\_\_

1. (25 points, 5 points each) Define the following terms, as used in software engineering:

A. Prescriptive Software Process Model.

**A definition of a set of activities, actions, tasks, milestones, and work products that are required to engineer high-quality software. A prescriptive model prescribes or dictates the process elements. (45, 46)**

B. Use-case.

**A contract that describes the system's behavior under various conditions as the system responds to a request from one of its stakeholders.  
A description of how end users will interact with a system.  
A description of processes that perform a task.**

C. Analysis Model.

**depiction of requirements for data, function, and behavior using a combination of text and diagrams. (175)  
Elaboration of basic requirements  
(164) Provides a description of the required informational, functional, and behavioral domains for a computer-based system**

D. Stakeholder.

**Anyone who benefits from [or is impacted by, or is involved with], in a direct or indirect way, the system which is being developed (150)**

E. Legacy Software.

**Older programs which have been continuously modified. pp. 10-11**

2. (10 points) What risk associated with the prototyping software process model was illustrated by the FBI's VCF system?

**The prototype is assumed to be the actual system. Also, "gold-plating."**

3. (15 points) Pressman identifies a number of requirements engineering tasks. One of them is "specification," which describes the function and performance of a computer-based system. Name and describe one other requirements engineering task listed by Pressman.

**see pp. 144 – 148.**

4. (15 points.) Draw and label a diagram of the waterfall model (you can follow either the textbook or the lecture slides)

**see p. 47, and lecture slides**

5. (10 points) Describe one problem that is often encountered when the waterfall model is applied.

**pp. 47-48**

**Real project rarely follow the sequential flow**

**It is often difficult for the customer to state all the requirements explicitly.**

**The customer must have patience.**

**Also: requirements change after the requirements phase is completed.**

6. (10 points) Consider this claim:

"The System Requirements write-up for the Online Wine Store illustrates the software engineering principle of \_\_\_\_\_."

- a. Fill in the blank with the name of a software engineering principle discussed in lecture or the book.

**5 pts.**

**Any of Abstraction, Modularity, Separation of concerns, Anticipation of change, Information Hiding. 2 pts. for qualities such as Portability, User friendliness.**

- b. Explain why the claim is true (using the principle you selected). Your answer should be quite specific.

**5 pts. Full credit for showing a clear connection between the part a answer and the Systems Requirements write-up. Partial credit when answer is not specific or connection is tenuous. A common mistake was answering based on an imagined Online Wine Store implementation, and not on the Systems Requirement write-up.**

7. (3 points) Which of the following activities would be associated with the lower right hand quadrant of the spiral model (as described in lecture)? (Choose one.)
- A. **Software product design.** ← lecture notes
  - B. Risk analysis.
  - C. Determining objectives.
  - D. Prototyping.
  - E. Project planning.
8. (3 points) In data modeling, "cardinality" specifies (choose the best answer)
- A. **how the number of occurrences of one object relates to the number of occurrences of another object.** ← p. 183
  - B. the order in which input objects, output objects, and external entities are listed.
  - C. the sequence in which data is transformed as it moves through the system.
  - D. the ratio of classes to methods in a class diagram.
  - E. the maximum number of arrows leaving a level  $n$  node and pointing to a level  $n+1$  node.
9. (3 points) The RAD process model assumes that (choose the best answer)
- A. **the requirements are well-understood and the project scope is constrained.** ← p. 50
  - B. a prototype has already been created.
  - C. planning and modeling tasks are performed in parallel.
  - D. increasingly more complete versions will be delivered in each iteration.
  - E. All of the above.
10. (3 points) Valuing "responding to change" over "following a plan" is a hallmark of (choose the best answer)
- A. **agile software development.** ← p. 71
  - B. evolutionary process models.
  - C. programming as opposed to software engineering.
  - D. the spiral model.
  - E. analysis models.
11. (3 points) Which of the following is *not* on Boehm's list of software risk factors?
- A. **Inadequate formality of requirements document.** ← lecture notes
  - B. Personnel shortfalls.
  - C. Shortfalls in externally performed tasks.
  - D. Developing the wrong user interface.
  - E. Continuing stream of requirements changes.