

ICS52 - Introduction to Software Engineering
Midterm Exam – Winter, 2006

Last Name: _____ First Name: _____

Row: _____ Seat Number: _____

1. (15 points, 5 points each) Define the following terms, as used in software engineering:

A. Software Engineering.

B. Process Model.

C. Programming-in-the-large.

2. (10 points) Name and briefly define the two varieties of the prototyping process model. For each, state an advantage it has over the other.

3. (15 points) The textbook says "one of the main difficulties for users is to express their requirements precisely" (p. 52). Why is this so?

Name three software engineering process models, and for each one describe how the model addresses this "main difficulty."

First

Second

Third

4. (10 points) What are the main differences between the user-based and product-based definitions of quality? Name and define an example of each type of quality.

5. (10 points) The textbook describes several requirements elicitation techniques. For example, one is "Asking," defined as "We may simply ask the users what they expect from the system." Name and briefly define one other requirements elicitation technique described in the textbook.

6. (15 points.) Draw and label a diagram of the spiral model.

7. (10 points) Consider this claim:

"The System Requirements write-up for the Online Wine Store illustrates the software engineering quality of _____."

- a. Fill in the blank with the name of a software engineering quality discussed in lecture or the book, other than "correctness."

- b. Explain why the claim is true (using the quality you selected). Your answer should be quite specific. Make sure you focus on the System Requirements write-up, not the eventual (currently unimplemented) system.

8. (6 points) Match each software quality on the left with one of McCall's software quality factors on the right.

Portability

Correctness

Maintainability

Reliability

Testability

Reusability

Product Operation

Product Revision

Product Transition

9. (3 points) External interface requirements, performance requirements, design constraints, and software system attributes are four types of (choose the best answer)
- A. spiral model quadrants.
 - B. non-functional requirements.
 - C. desirable software qualities.
 - D. software process models.
 - E. user functional requirements.
10. (3 points) Which of the following is *not* on Boehm's list of software risk factors?
- A. Personnel shortfalls.
 - B. Gold plating.
 - C. Insufficient prototyping.
 - D. Developing the wrong user interface.
 - E. Continuing requirements changes.
11. (3 points) According to the textbook, which of the following can reasonably be viewed as the cause of the Ariane 5 failure?
- A. A software failure.
 - B. A flawed component.
 - C. A flaw in the design.
 - D. All of the above.