

ICS 52 - Introduction to Software Engineering
Midterm Exam #1 – Winter, 2007

Last Name: ___K E Y_____ First Name: _____

1. (10 points) According to the textbook, what are two essential characteristics of software engineering that are always present, either explicitly or implicitly?

See pages 6 – 8. We also accepted "multi-person, multi-version."

2. (10 points) The textbook lists several "pros and cons" of prototyping. Name one of each, and describe why and in what way having a prototype is likely to help or hurt the resulting system.

See p. 54.

3. (20 points) Suppose you are about to initiate a large project concerning the development of a patient tracking and billing system for a hospital. You may opt for one of two strategies. Strategy A is to start with a thorough analysis of user requirements, after which the system is built according to these requirements. Strategy B starts with a less complete requirements phase, after which a pilot version is developed. This pilot version is installed in a few small departments. Further development of the system is then guided by the experience gained with the pilot version.

- What process model does Strategy A follow? Explain why.

Waterfall, spiral, RAD were all accepted with good explanations.

- What process model does Strategy B follow? Explain why.

Evolutionary, prototyping, incremental, XP, agile were all accepted with good explanations.

- Discuss the pros and cons of each strategy.

8 pts for this section; 4 points each for the other three sections.

- Which strategy do you favor? Explain why.

We were looking for a good discussion of the issues; either strategy could be favored.

4. (20 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. Make sure you focus on the System Requirements write-up document and the process that created it, not the eventual (currently unimplemented) system.

15 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.

5. (20 points) The textbook identifies three processes which occur during the requirements engineering phase. Fill in the complete name of the processes (one complete name is given). For each of the three processes, name and briefly describe one technique the book proposes for accomplishing that process's goals.

Requirements _____

See all of chapter 9.

The two names and the three techniques each counted for 4 points.

Requirements specification_____

Requirements _____

6. (10 points) The presentation of the **X** software process model included a discussion of risk factors, including some proposed by the class, and some proposed by Barry Boehm, creator of the **X** model.

a. What is the real name of this software process model?

(3 pts) Spiral

b. What aspects of this model pertain to thinking about risks and risk factors?

(7 pts) We looked for at least two of risk analysis, prototyping, and evaluating alternatives.

7. (10 points) Several qualities have been identified as being desirable in software. One software product is the requirements specification. Select one quality discussed in lecture or in the textbook (other than "correctness") and describe how a requirements specification could manifest that quality.

A wide range of answers were acceptable; some responses lost points for not discussing requirements specifications.