

Comprehensive Exam

Software Testing

Spring 2007

This exam includes 5 equally weighted questions. Please provide answers to only 4. If you submit 5 answers, you will be awarded the grade for the first four answers and your answer to the fifth question will be ignored.

Question 1

You are working on a software development project as a software tester. The project manager approaches you for guidance about software lifecycles. She can select either the waterfall model or the evolutionary model and she wants to understand the testing implications of her choice.

- A. Briefly describe the waterfall and evolutionary models.
- B. Briefly describe three ways in which the waterfall would make your work easier, and three ways in which it would make your work more difficult.
- C. Briefly describe three ways in which the evolutionary approach would make your work easier and three ways in which it would make your work more difficult.
- D. In your opinion, which should the manager use, and why?

(Answer to Question 1 Continued)

Question 2

Imagine testing a file name field. For example, go to an Open File dialog, you can enter something into the field. Do a domain testing analysis: List a risk, equivalence classes appropriate to that risk, and best representatives of the equivalence classes. For each test case (use a best representative), briefly explain why this is a best representative. Keep doing this until you have listed 6-to-8 best-representative test cases.

Question 3

Explain the definition of “coverage” in testing. Describe three different types of coverage that you can measure. For each one, describe a type of bug that you would be certain to find with this type of coverage and describe a type of bug that you might miss even if you achieved 100% of this type of coverage.

Question 4

Imagine that you are an external test lab, and Microsoft comes to you with the newest version of MS Word. They want you to test the product. How will you decide what test documentation to give them? (Suppose that when you ask them what test documentation they want, they say that they want something appropriate but they are relying on your expertise.) To decide what to give them, what questions would you ask (list 5 to 7 questions) and how would the answers to each of those questions guide you?

Question 5

The *oracle problem* is the problem of finding a method that lets you determine whether a program passed or failed a test.

- Suppose that you were doing automated testing of the Microsoft word function, *Word Count* (which counts characters, words, paragraphs and pages in the document).
- Describe two different oracles that you could use or create to determine whether this feature was working. For each of these oracles:
 - identify a bug that would be easy to detect using the oracle,
 - identify another bug that your oracle would be more likely to miss
 - explain whether and why it would be hard or easy to use this oracle in automated testing.

