

ICS 52 - Introduction to Software Engineering
Final Exam – Fall, 2009

First Name: _____ Last Name: _____

1	2	3	4	5	6	7	Total
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1. (11 points) Chapter 1 of the textbook (“Introduction”) discusses several prominent software system failures. We also discussed a few software non-success stories from recent news in lecture. The Scientific American article “Command and Control” is about a software project that eventually ended up being quite successful. Select one software failure story from the textbook or lecture, and compare it to the “Command and Control” project. Focus on **one** quality, process, or principle that has been covered in ICS 52 and explain how that concept helps understand the failure and the success. Your answer should be detailed and specific.

2. (16 points) You have been assigned to test a Pepsi Cola soda machine (such as the one outside the ICS building) using a black box approach. Your task is to focus on features important to a typical customer, specifically the functionality of selecting, paying for, and receiving a bottle of soda.

(a) What is the input domain of this functionality?

(b) What is a basis for dividing the input domain you described into subdomains?

(c) Using the basis from (b), name three or four subdomains.

(d) For each subdomain from (c), give a test case input and the expected output.

3. (24 points, 4 points each) Define the following terms, as used in software engineering:

A. Function point.

B. Unit test.

C. Regression testing.

D. Static analysis technique (for testing)

E. Equivalence partitioning.

F. Testing oracle.

4. (12 points) Describe in a few words each quadrant of the spiral model.
- A. Upper left (northwest).
 - B. Upper right (northeast).
 - C. Lower right (southeast).
 - D. Lower left (southwest).
5. (12 points) Since testing is never complete, we need to have some criterion for determining whether a certain amount of testing is adequate. Define the following three categories of test adequacy criteria:

Coverage-based testing

Fault-based testing

Error-based testing

Which category or categories apply to homework 4? Explain why.

6. (15 points) Consider the following phrases: “a module’s interface,” “a user interface,” “the Java keyword `interface`.” What is the shared meaning in these three uses of the word “interface”?

In light of the shared meaning you’ve identified, briefly define each of the three phrases.

a module’s interface

a user interface

the Java keyword `interface`

7. (10 points) Someone wrote that “every software quality must be verified.” Choose a software quality other than correctness, and briefly describe how it might be verified.