

ICS 52 – Introduction to Software Engineering  
Final Exam – Fall, 2007

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

1. (8 points, 4 points each) Define the following terms, as used in software engineering:

A. Testing oracle.

B. Regression testing

2. (12 points) Although "testing" is sometimes thought of as a phase in the software life cycle, it can also be viewed as a set of verification and validation activities performed throughout the software life cycle. Match each phase below to one or more activities that would typically be performed as part of that phase. Write **R**, **D**, **I** or **M** next to each activity.

<u>Phase</u>	<u>Activity</u>
Requirements	check consistency between design and implementation
	test requirements specification
	execute white box test cases
Design	test the design
	repeat other activities as part of redevelopment
	determine overall testing strategy
Implementation	check consistency between design and requirements
	evaluate the software architecture
	generate functional test data
Maintenance	generate structural and functional test data (matches 2)
	test implementation

3. (20 points) You have been assigned to design test cases for black box testing of the `equalsIgnoreCase` method in `java.lang.String`. Here is part of that method's documentation:

```
public boolean equalsIgnoreCase(String anotherString)  
    Compares this String to another String, ignoring case considerations. Two  
    strings are considered equal ignoring case if they are of the same length, and  
    corresponding characters in the two strings are equal ignoring case.
```

- (a) What is the input domain of the `equalsIgnoreCase` method?
- (b) What is a basis for dividing the input domain you described into subdomains?
- (c) Using the basis defined in (b), specify 3 or 4 subdomains.
- (d) For each subdomain from (c), give a test case input and the expected output.



6. (5 points) In which quadrant of the spiral model (NW, NE, SW, or SE) does testing occur?
  
  
  
  
  
  
  
  
  
  
7. (5 points) For white box testing, it can be helpful to abstract away the meaning of each statement in a program and focus on the relationships between the instructions, primarily which instruction can be executed after another one. What is the tool we used to focus on this?
  
  
  
  
  
  
  
  
  
  
8. (5 points) What is the role of the “basis” in equivalence partitioning?
  
  
  
  
  
  
  
  
  
  
9. (5 points) What is the name of a software architecture or design pattern that identifies three components, one which encapsulates the system’s data, one which displays the data, and one which handles input actions from the user?
  
  
  
  
  
  
  
  
  
  
10. (5 points) What is the difference between white-box testing and black-box testing?
  
  
  
  
  
  
  
  
  
  
11. (5 points) How does software engineering differ from computer programming?