Name:_____

1. [6 pts.] Identify two risks in converting a rapidly-created prototype into a complete, working system.

- 2. [16 pts.] We discussed in class two software lifecycles, Waterfall and Incremental.
 - a. Explain the role that configuration management plays in each of these two lifecycles.

b. Explain the role that maintenance plays in each of these two lifecycles.

3. [6 pts.] Explain how Exceptions in the Java Language improves the definition of interfaces.

4. [20 pts.] Assume you have interfaces Manage, Process and class C (D is not shown):

- a) Explain how you would modify c to also implement the Process interface.
- b) Assume you remove the implementation of close from the definition of class c by deleting lines L1-L3. Describe a circumstance that allows c to still be compilable.
- c) If you make the open method in class C protected, is C still compilable? Explain Why or why not.
- d) If you make the open method in class c private, is c still compilable? Explain Why or why not.

5. [6 pts.] Explain the difference between implementation inheritance and interface inheritance.

6. [18 pts.] Testing:

a) If you fix a defect in a class by modifying a single line of code, which testing method would you recommend: Black Box testing or White Box testing?
Explain Why.

b) Typically, 80% of the defects observed for a software system can be traced to just 20% of the actual code. Explain the impact this has on the design of test cases.

c) Explain the impact inheritance has on the testing of an object-oriented class.

7. **[12 pts.]** Many claim that reusing a software component will reduce the overall cost (both time and money) in building a software system.

- a) Explain two ways in which reuse reduces the cost.
- b) Explain two ways in which reusing a component increases the overall cost.

8. [0 pts]. Dilbert



9. [6 pts.] A thorough object-oriented analysis often creates many classes. Is the cohesion of these classes low or high? Explain.

10. **[10pts.]** Preventative maintenance (PM) is any effort to correct the structure of a software system to reduce the costs of future maintenance.

a) Explain two ways that object-oriented technology makes PM easier.

b) Explain two ways that object-oriented technology makes PM harder.