CS504_final_spring2006

(Q 1)

Following is the prototype of a function to find the square root of a number.

```
double sqrt (int num);
```

a) Identify equivalence partitions to devise black-box test cases for this function. (10 Pts)

b) Write test cases against each partition identified in part (a). (5 Pts)

(Q 2)

For each of the following cases, identify which Design Pattern should be used and why? Discuss briefly.

a) There are two objects, "A" and "B". Both of them are interacting with each other in such a way that the state of the object "B" depends on the state of the object "A" and it is the responsibility of "B" to synchronize its state whenever "A" changes.

b) A client wants to build Simulation Software, which is used to show customer the preview of interior decoration of rooms. The software presents rooms as object and it can interact with other objects. These objects, like Television, Sofa etc, can change their state. The client has determined that there can be limited number of operations that can be performed on the objects, e.g. a TV can be placed at either of the walls of the rooms etc. The interaction between the objects should be low.

(Q 3)

Draw the corresponding object model diagram for the following system description. (Note: Use the UML Object Model Notation)

"An online banking system allows customers to manage their account. Each account has a balance. Customers can deposit to or withdraw from their account. Each deposit or withdrawal is called a *transaction*. A transaction always has a value and a date. At any time a customer can see a statement, which is a listing of each transaction."

(Q 4)

definition & example of Equivalence Partitions

(Q 5)

What is the importance of Self Documented Code in Software Engineering?

(Q 6)

Explain why encapsulation, inheritance, and polymorphism are three important characteristics of object-oriented systems.

(Q 7)

List the problems we risk facing if software engineering principles are not applied to software development.

(Q 8)

What are the differences between Thin Client and Fat Client architecture?

(Q 9)

Following is the list of bugs' symptoms; identify the bug classes in each case.

a) System slowdowns.

b) The program doesn't crash, but the flow of the program takes odd branches through the code.

c) If your program simply locks up, repeatedly displays the same data over and over, or infinitely displays the same message box.

(Q 9) **(Marks: 2)**

The component-based development model is

退 Only appropriate for computer hardware design.
退 Not able to support the development of reusable components.
退 Dependent on object technologies for support.
退 Not cost effective by known quantifiable software metrics.

(Q 10) **(Marks: 2)**

Use-Cases are scenarios that describe

退 How software is to be used in a given situation.
退 How CASE tool will be used to construct the system.
退 To build plan for a software product.
退 The test cases for a software product.

(Q 11) **(Marks: 2)**

The cyclomtic complexity metric provides the designer with information regarding the number of

退 Cycles in the program.
退 Errors in the program.
退 Independent logic paths in the program.
退 Statements in the program.

(Q 12) **(Marks: 2)**

In which software development problem solving stage are the results delivered?

退 Status quo
退 Problem definition
退 Technical development
退 Solution integration

(Q 13) **(Marks: 2)**

Which of the items listed below is not one of the software engineering layers?

退 Process
退 Manufacturing
退 Methods
退 Tools