



VIT
Vellore Institute of Technology

Final Assessment Test – November 2018

Course: CSE4028 - Object Oriented Software Development

Class NBR(s): 6263 / 6265 / 6266

Time: Three Hours

Slot: D2

Max. Marks: 100

Answer any TEN Questions

(10 X 10 = 100 Marks)

✓ 1. a) Compare and Contrast traditional software development methodology versus OOSD methodology. [5]

b) As software developers, we often build models during design and/or we reverse-engineer them from an existing system. List five reasons for building these models. [5]

✓ 2. Explain how waterfall and prototyping model can be accommodated in the spiral process model.

3. Explain in detail the life cycle phases of Object Oriented System Development with a neat diagram.

4. Consider the following scenario, Class and Object relationship: Association, Aggregation and Generalization should be clearly justified.

Prepare a "class diagram" for a graphical document editor that supports grouping. Assume that a document consists of several sheets. Each sheet contains drawing objects, including text, geometrical objects, and groups. A group is simply a set of drawing objects, possibly including other groups. A group must also contain at least two drawing objects. A drawing object can be a direct member of at most one group. Geometrical objects include circles, ellipses, rectangles, lines, and squares.

5. Consider the situation where you have the following four requirements for an employee information system:

- i) Response time for short queries must be less than 1 sec. ^{MF}
- ii) In defining employee record, user must be able to enter employee name and be prompted for all the remaining employee attributes that are needed for the employee record. ^f
- iii) Employee information may be searched using either the employee number or employee's last name. ^{NF}

iv) Only authorized (employee himself, managers in his/her chain of command, personnel) search will show employee salary, benefits, and family information. ^{NF}

(a) Which requirement(s) are functional requirements, and which are non-functional requirement(s)? Justify your answer.

(b) For each of the non-functional requirement(s), is it a quality requirement? If no, justify your answer. If yes, which quality attribute does the requirement belong to, among the following quality attributes?

- Availability/Reliability
- Modifiability
- Performance
- Security and privacy
- Usability

6. Consider the ATM system shall perform the following authentication steps at the start of a session and verification of customer transactions:

- The customer shall insert the ATM card.
- The ATM shall check the card integrity.
- The customer shall be prompted to enter the personal identification number (PIN).
- The ATM card number and the PIN shall be authenticated with the bank.
- The ATM shall abort the session if PIN authentication fails three times. (The PIN entered should match the PIN specified by the user.)
- Cash withdrawal shall be allowed only after the bank permits the transaction.
- Presence of a cash/check envelope shall be checked before completing the bank transaction.
- Cash and check deposits shall be manually verified to ascertain that the amount entered by the user matches the cash /check value in the deposit envelope.
- The money transfer between checking and saving shall be verified by the bank.

Based on the above scenario draw a interaction diagram for the following cases:

- a) Sequence Diagram for System Start-up and Transaction
- b) Collaboration diagram for realizing Deposit and Transfer transactions

[4]

[6]

7. Draw a DFD diagram for the following scenario:

A supermarket needs to develop the following software to encourage regular customers. For this, the customer needs to supply his/her residence address, telephone number, and the driving license number. Each customer who registers for this scheme is assigned a unique customer number (CN) by the computer. A customer can present his/her CN to the check-out staff when he/she makes any purchase. In this case, the value of his/her purchase is credited against his/her CN. At the end of each year, the supermarket intends to award surprise gifts to 10 customers who make the highest total purchase over the year. Also, it intends to award a 22 carat gold coin to every customer whose purchase exceeds Rs.10,000. The entries against the CN are the reset on the day of every year after the prize winners' lists are generated.

(Note: Build up-to level 2 and appropriate Notations)

8. Illustrate the significance of Model View Controller (MVC) pattern with respect to software architecture.

9. Describe the various testing strategies and analyse the impact in OOSD.

10. List out the maintenance activities and maintenance problems. How the cost of maintenance is estimated?

11. Explain in detail the various activities involved in software configuration Management (SCM).

