# Varadraj

## SE_TY09_40.docx

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## Q1. Coupling and Cohesion Analysis [10 Marks]

Scenario Recap:
Module A has tightly coupled dependencies on other modules but high internal cohesion. Module B has low coupling but moderate cohesion. Both are part of a large distributed system.

### 1. Analysis of Coupling and Cohesion

Module A: High coupling and high cohesion.
Module B: Low coupling and moderate cohesion.

### 2. Impact on System Maintenance

• Module A: Difficult maintenance due to strong interdependencies; changes may cause ripple effects.
However, internal structure is easier to understand because of high cohesion.
• Module B: Easier maintenance since changes are localized; moderate cohesion may slightly reduce clarity but still manageable.

### 3. Impact on Scalability

• Module A: Harder to scale due to tight interconnections.
• Module B: Easier to scale and integrate in distributed systems due to independence.

### 4. Recommendation for Reuse

Recommended Module: Module B
Justification: Low coupling ensures better reusability and integration in new projects. Moderate cohesion can be improved easily, while tight coupling in Module A restricts reuse.

Conclusion: Module B is more suitable for reuse as low coupling enhances maintainability, scalability, and adaptability.

## Q2. Perfective vs Preventive Maintenance [10 Marks]

Scenario Recap:
CRM software is deployed, with frequent feature improvements and a plan to prevent security vulnerabilities.

### 1. Types of Maintenance

Perfective Maintenance: Improves performance, usability, and features (e.g., enhancing UI responsiveness).
Preventive Maintenance: Focuses on preventing future failures or vulnerabilities (e.g., enhancing security).

### 2. Distinction

Perfective – driven by user needs and feature enhancement.
Preventive – driven by risk assessment to ensure long-term stability and security.

### 3. Prioritization and Implementation

1. Prioritize preventive maintenance first to eliminate security threats.
2. Implement perfective maintenance iteratively based on feedback.
3. Use automated regression testing after each update.
4. Adopt continuous integration and regular security audits.

Conclusion: Focus on preventive maintenance for system reliability, then perform perfective updates for improved user satisfaction.

## Q3. Test Plan for Login and User Profile Module [5 Marks]

Scenario: Agile sprint developing user registration, secure login, and profile update features.

**1. Test Objectives**

• Validate registration, login, and profile update functionalities.
• Ensure data integrity, security, and usability.
• Detect and resolve defects early in the sprint.

**2. Scope of Testing**

In-Scope:
• Functional testing of registration, login, and profile modules.
• Security testing (password encryption, session handling).
• Compatibility testing on mobile platforms.

Out-of-Scope:
• Payment integration.
• Load testing (to be covered in later sprints).

**3. Key Testing Activities**

• Unit Testing – Verify each function (registration, login).
• Integration Testing – Validate interaction between modules.
• Functional Testing – Check all user workflows.
• Security Testing – Verify data protection and authentication mechanisms.
• Regression & UAT – Ensure stability and stakeholder acceptance.

**4. Entry and Exit Criteria**

Entry Criteria:
• User stories approved, test environment ready, and test cases written.

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Exit Criteria:
• All critical test cases executed successfully.
• No major defects remain open.
• UAT approval obtained.

Conclusion: The test plan ensures secure and stable login/profile features before sprint completion, supporting Agile quality goals.