

# 3S03 Midterm Notes

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## Module 1

### Testing

- **Dynamic Testing:** Execute code.
- **Static Testing:** No code execution. Examples:
  - Code Review
  - Requirements Review
  - Design Review
- **Black-Box Testing:** No implementation knowledge. Examples:
  - Login page functionality
  - Cart checkout functionality
- **Grey-Box Testing:** Some implementation knowledge. Examples:
  - Database queries
  - API requests
- **White-Box Testing:** Full implementation knowledge.

### Functional vs Non-Functional Testing

- **Functional:** Specific function checks. Examples:
  - Login Page
  - Shopping Cart
- **Non-Functional:** Beyond functionality. Examples:
  - Load Testing
  - Security Testing

### Fault, Error, Failure

- **Fault:** Leads to an error.
- **Error:** Incorrect internal state.
- **Failure:** Incorrect external state.

## Testing Types

- **Unit Testing:** Smallest parts, typically white-box.
- **System Testing:** Whole system, often black-box.
- **Integration Testing:** Testing combined components.
- **Acceptance Testing:** Based on user needs.
- **Smoke Testing:** Basic functionality check.
- **Regression Testing:** Ensure unchanged functionality.

## Module 2

### Testing Techniques

- **Exploratory Testing:** No predefined tests.
- **Specification-Based Testing:** Against specifications.
- **Model-Based Testing:** Against expected behavior model.
- **Fuzz Testing:** Random inputs.
- **Partition Testing:** Input domain partitioning.
- **Boundary Testing:** Values on domain boundaries.

### Coverage-Based Testing

- **Statement Coverage:** Execute every statement.
- **Branch Coverage:** Ensure each path.
- **Condition Coverage:** Each condition true/false.
- **Path Coverage:** All independent paths.

## Module 3

### Software Metrics

- **Exhaustive Testing:** All possible inputs.
- **Coverage:** Proportion of domain tested.
- **MC/DC:** Important combinations only.

### Structural Testing

- **Source vs Code:** Differences in coverage.
- **Criteria Subsumption:** One criterion implies another.

## Module 4

### Reviews and Analysis

- **Types of Review:**
  - Ad-hoc
  - Peer deskcheck
  - Pair Programming
  - Walkthrough
  - Team Review
  - Formal Inspection

### Mutation Testing

- Assume correctness, make changes, check behavior.