

3S03 Midterm Notes

Ahmad Allabadi

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1 Module 1

1.1 Testing Types

- **Dynamic Testing:** Executing code.
- **Static Testing:** Without execution.
 - Code Review
 - Requirements Review
 - Design Review
- **Black-Box:** No implementation knowledge.
- **Grey-Box:** Some implementation knowledge.
- **White-Box:** Full implementation knowledge.

1.2 Testing Strategies

- **Functional Testing:** Specific functionality checks.
- **Non-Functional Testing:** Beyond functionality.
- **Unit Testing:** Smallest parts testing.
- **System Testing:** Whole system testing.
- **Integration Testing:** Component interaction testing.
- **Acceptance Testing:** User needs and business requirements.
- **Smoke Testing:** Basic functionality check.
- **Regression Testing:** Re-use tests post-changes.
- **Solitary Unit Testing:** Isolated unit tests.
- **Social Unit Testing:** Dependent unit tests.

2 Module 2

2.1 Advanced Testing Techniques

- **Exploratory Testing:** No predefined tests.
- **Specification-Based Testing:** Against specifications.
- **Model-Based Testing:** Against expected behavior models.
- **Fuzz Testing:** Random inputs testing.
- **Test Oracle:** Determines test outcomes.
- **Partition Testing:** Input domain partitioning.
- **Boundary Testing:** Domain boundary values.
- **Coverage-Based Testing:** Until coverage target.
- **Fault Injection:** Introduce faults deliberately.

2.2 Methodologies

- Waterfall Method
- V-Model
- Test Driven Development (TDD)

3 Module 3

3.1 Coverage and Metrics

- **Software Metric:** Measurement system.
- **Exhaustive Testing:** All inputs.
- **Coverage Types**
 - Statement
 - Branch
 - Condition
 - Path
 - Combinatorial
- MC/DC: Modified Condition/Decision Coverage.
- Criteria Subsumption

4 Module 4

4.1 Review and Analysis

- **Reviews:** Qualitative evaluation.
- **Analysis:** Repeatable evidence.
- **Peer Review**
- **Software Review**

4.2 Types of Review

- Ad-hoc reviews
- Peer deskcheck
- Pair Programming
- Walkthrough
- Team Review
- Formal Inspection

4.3 Testing Enhancements

- **Fault Injection**
- **Mutation Testing**