Fundamentals Test Process

SoftUni Team

Technical Trainers

Software University

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Software University

http://softuni.bg

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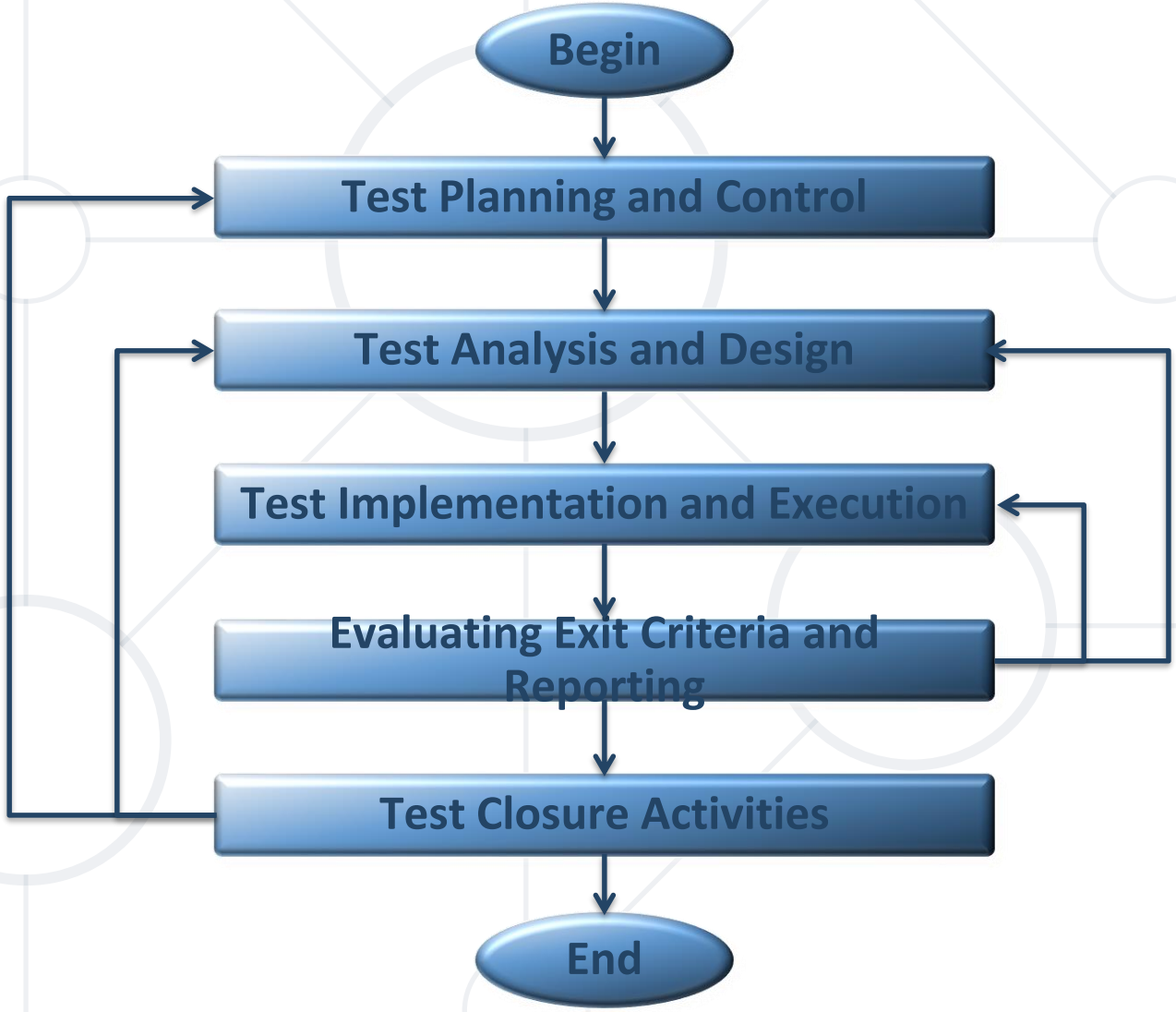
   - Test Closure Activities

Test Plan


Begin
Test Planning and Control
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Test Implementation and Execution
Evaluating Exit Criteria and Reporting
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End

Test Planning and Control

Test Plan

- The results from the planning activities should be documented in a test plan
- The test plan is a formal document that describes how tests will be performed
  - List of test activities to be performed to ensure meeting the requirements
  - Features to be tested, testing approach, schedule, acceptance criteria

Planning of The Resources

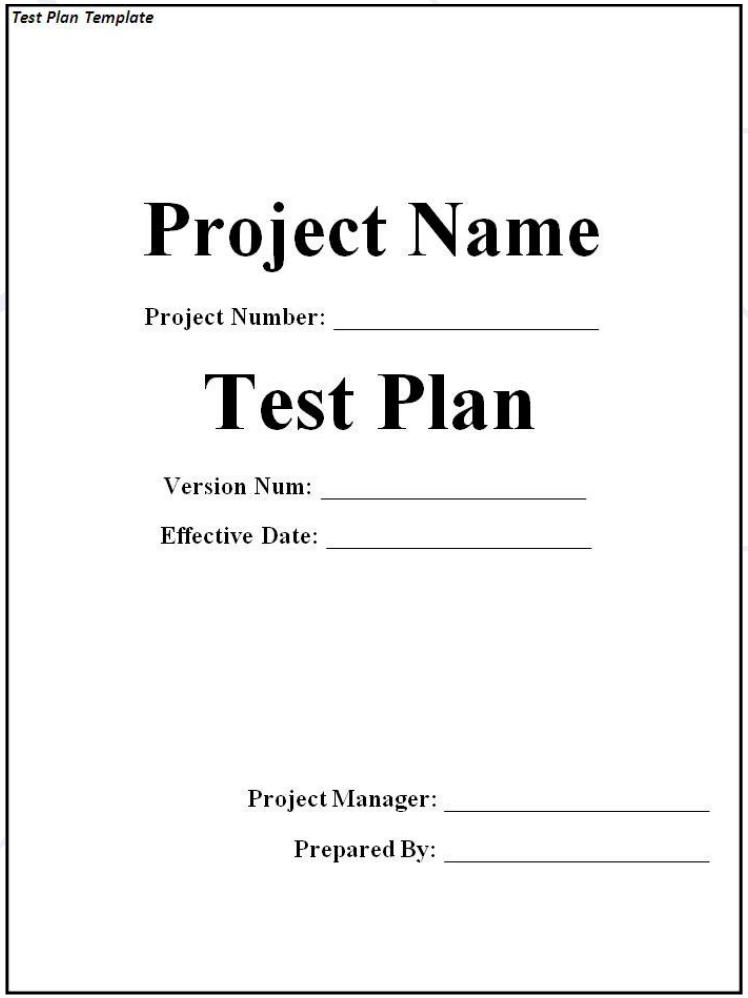
- Necessary resources:
  - Which employees are needed, for what, when?
  - How much time is needed?
  - Which tools, equipment and utilities?
- Necessary training of the employees
- Organizational structure
  - With the appropriate test management

Test Control

- Monitoring of the test activities
- Comparing with the plan
- Reporting status of deviations from the plan
- Taking actions for correction
- Updating the test plan according to the feedback

Example

- Test plans usually are written with templates
- Example test plan



Test Analysis And Design

Test Analysis And Design

- Identify test conditions
  - Product specification may not be testable
  - Defining what should be tested starts with reviewing the test basis
- Designing test cases

Designing Test Cases

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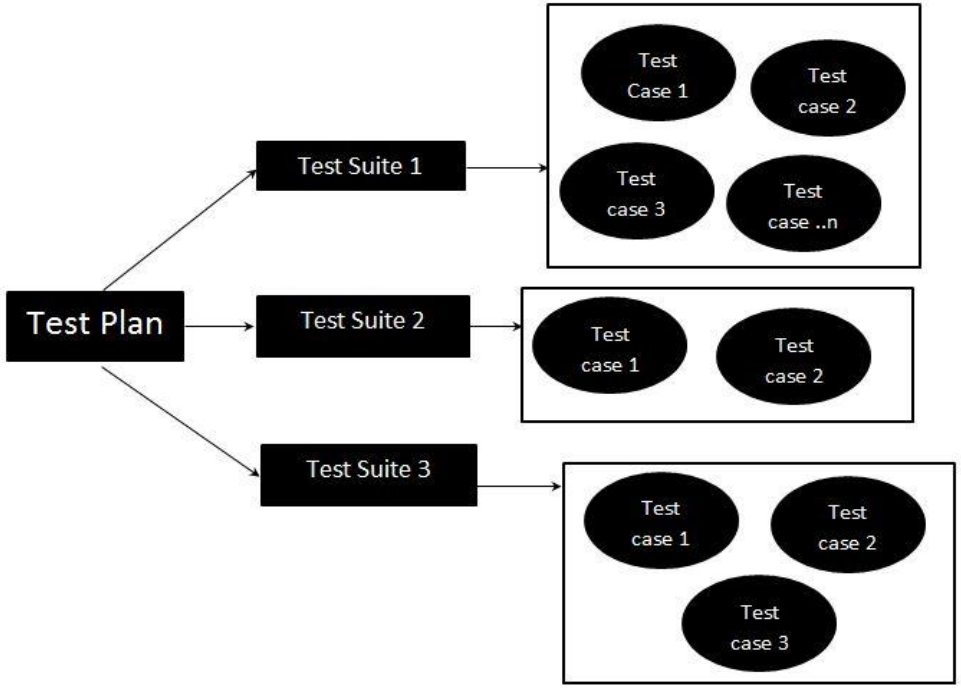
- According to the level of concreteness test cases can be logical and concrete
  - Logical test cases
    - They have to be defined first
    - Do not include concrete input/output values
  - Concrete test cases
    - The actual inputs that are chosen
    - Priority of the next phase of the test proces

Designing Test Cases (2)

- Initial situation (precondition) must be described
  - Needed environmental conditions
- Which results and behavior are expected
  - Outputs
  - Changes to global (persistent) data and states
  - Any other consequences of the test case

Test Suites

- Test cases can be part of a Test suite
- Test suite is a group of similar Test cases
  - `Login functionality test cases leads to Login test suite`
- Test suites can be
  - `Abstract test suites`
  - `Executable test suites`



Test Case

- Sequence of steps to check the correct behavior
- At least two cases to fully test a requirement
  - A positive test
  - A negative test
- Consist of
  - Title
  - Steps to follow
  - Expected result

	A	B	C	D	E	F	G	H
1	**ID**	TC00051					**Cycle**	Major
2	**Name**	Test Login					**Category**	Regression Tests
3	**Revision**	1.0						
4								
5	**Description**	Check the basic login functionality						
6	**Precondition**	Server installed						
7	**Postcondition**	User is logged in						
8	**Expected Result**							
9								
10	**Note**	Do not skip this!						
11	**Area**	REGRESSION						
12	**Design Method**	BLACK_BOX						
13	**Variety**	NEGATIVE						
14	**Execution**	MANUAL						
15	**Priority**	MEDIUM						
16	**State**							
17	**Team**	QA						
18	**Level**	COMPONENT						
19	**Document Base**	Requirements Document 1.5 (12.7.2011)						
20	**Dependency**	-						
21	**Evaluation**	MANUAL						
22	**Traceability**	UC-112						
23								
24								
25	**Step**	**Action**	**Precondition**	**Postcondition**	**Expected Result**			
26	1	Open login page			Login page displayed			
27	2	Enter username						
28	3	Enter password			Password should not be visible			
29	4	Press ok			User is logged in			
30								

General Properties

Custom Properties

Test Steps

Test Case (2)

- Optionally may consist of
  - ID
  - Description
  - Related requirements
  - Test category
  - Author
  - Is automated
  - Pass/fail

Test Case (3)

- Example test case

```
Step No: 1
Step description: Login to the app with user:
“XXX” and password: “YYY”
Expected result: Home page is displayed

Step No: 2
Step description: Click “Logout”
Expected result: Login page is displayed
```

Test Implementation and Execution

What This Phase Includes?

- Test conditions and logical test cases are transformed into concrete test cases
- The environment is set up to support the test execution activity
- Tests are executed and logged

Test Execution

- How the tests will be executed?
- Follows the priority of the test cases set in the test plan
- Grouping test cases into test suites
  - For efficient test execution
  - For easier overview
- Time pressure may cause running just a subset of all tests
  - Having tests prioritized is important

Test Execution

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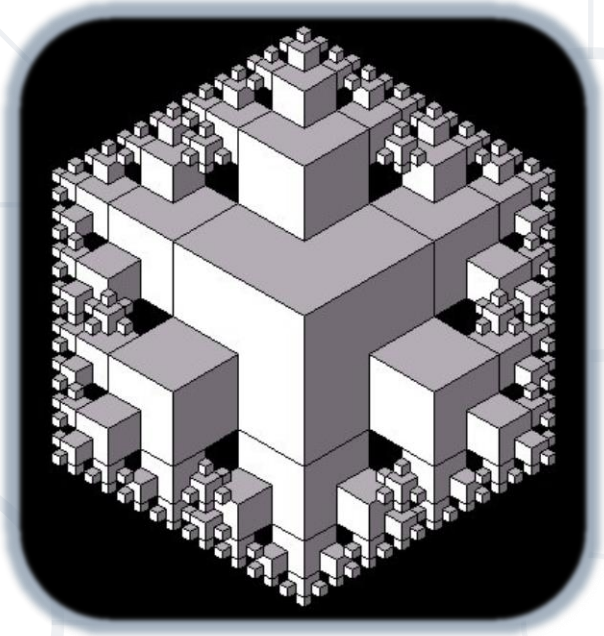
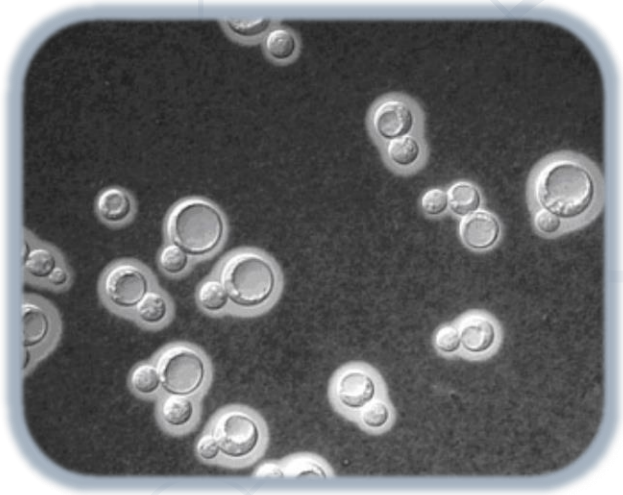
Reproducibility

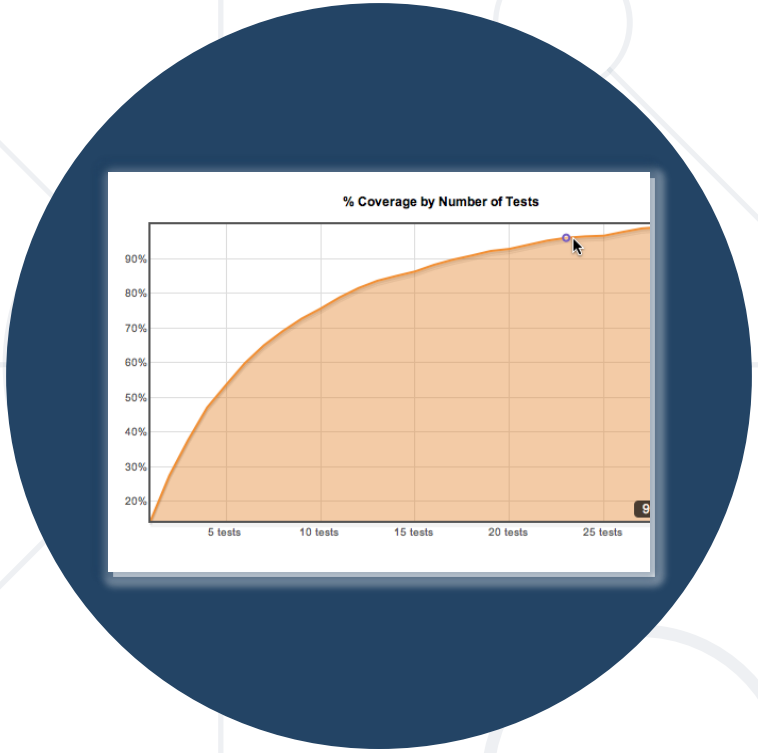
- The tests must be easily repeated
  - Test environment
  - Input data
  - Test logs
  - Etc.





Failure Found?

- Is it really a failure?
  - Erroneous or inexact test specification
  - Problematic test infrastructure or test case
  - Incorrect test execution
- If it is a failure:
  - The failure must be documented
  - Rough analysis of possible causes
  - Additional test cases might be required



Evaluating Exit Criteria and Reporting

Exit Criteria

- What is exit criteria?
  - The set of generic and specific conditions for permitting a proce ss to be officially completed
    - Agreed upon with the stakeholders
  - Used to report against and to plan when to stop testing

Exit Criteria - Example

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- 100% statement coverage
- 100% requirement coverage
- all screens / dialogue boxes / error messages seen
- 100% of test cases have been run
- 100% of high severity faults fixed
- 80% of low & medium severity faults fixed
- maximum of 50 known faults remain
- maximum of 10 high severity faults predicted
- time has run out
- testing budget is used up

Test Summary Report

- Summary reports might have different size
  - Simple message to the project manager
    - Used in lower level tests
    - E.g., component tests
  - Formal reports for the stakeholders
    - Used in higher-level tests
    - E.g., integration tests, system tests

Test Closure Activities

Test Summary Report

- The experience gathered should be analyzed and made available for further projects
  - Achieved results
  - Unexpected events
    - What were their causes?
  - Open change requests
    - Why were they not implemented?
  - User acceptance after deploying

Exercises

1. Which activity in the fundamental test process creates test suit es for efficiency of testing?

   a) Implementation and execution

   b) Planning and control

   c) Analysis and design

   d) Test closure

Exercises

2. What is the purpose of exit criteria?
   a) To define when a test level is complete
   b) To determine when a test has completed
   c) To identify when a software system should be retired
   d) To determine whether a test has passed

Exercises

3. Which is not a test Oracle
   a) The existing system (for a benchmark)
   b) The code
   c) Individual's knowledge
   d) User manual

Exercises

4. Reviewing the test basis is a part of which phase
   a) Test Analysis and Design
   b) Test Implementation and execution
   c) Test Closure Activities
   d) Evaluating exit criteria and reporting

Exercises

5. A test plan defines
   a) What is selected for testing
   b) Objectives and results
   c) Expected results
   d) Targets and misses

Exercises

6. Which of the following is most important to promote and maintain good relationships between testers and developers?
   a) Understanding what managers value about testing
   b) Explaining test results in a neutral fashion
   c) Identifying potential customer workarounds for bugs
   d) Promoting better quality software whenever possible

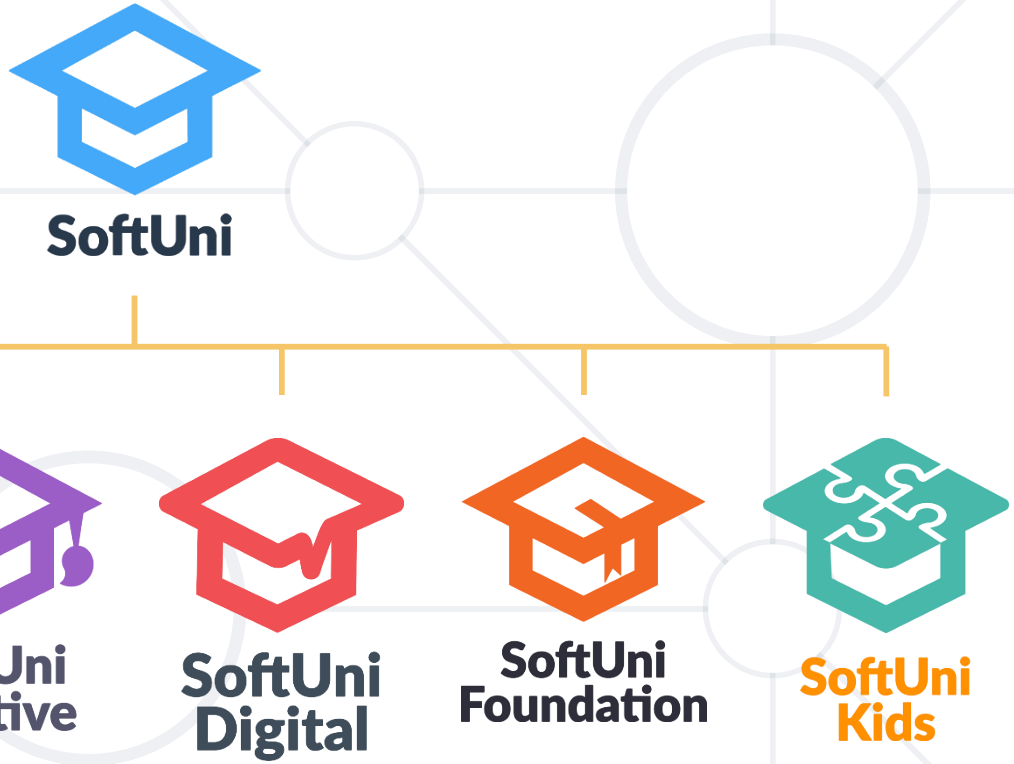
Exercises

7. Which of the following is not a part of the Test Implementation and Execution Phase
   a) Creating test suites from the test cases
   b) Executing test cases either manually or by using test execution tools
   c) Comparing actual results
   d) Designing the Tests

Summary

- Test Planning and Control
- Test Analysis and Design
- Test Implementation and Execution
- Evaluating Exit Criteria and Reporting
- Test Closure Activities

Questions?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