Test Management: Part I

Software Testing: INF3121 / INF4121

Summary: Week 6

Test organisation

Independence | Tasks of the test leader and testers

Test planning and estimation

Activities | Entry and exit criteria | Estimation | Strategy and approach

Test progress monitoring and control

Configuration and management

Risk and testing

Part I: Close-ended questions

Independent Testing

Question 1

Why is independent testing important?

a. Independent testing is usually cheaper than testing your own work
b. Independent testing is more effective at finding defects
c. Independent testers should determine the processes and methodologies used
d. Independent testers are dispassionate about whether the project succeeds or fails

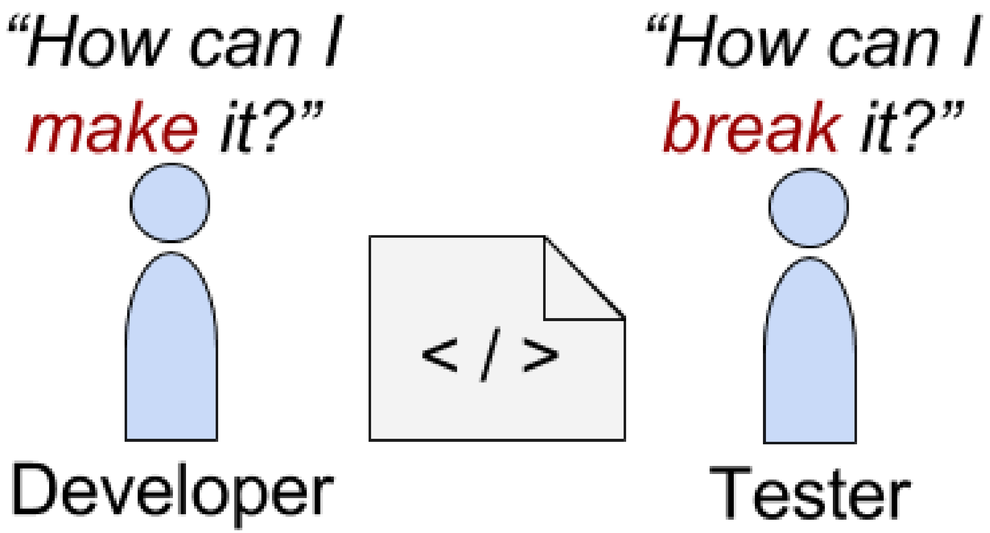
Question 1: Answer

Why is independent testing important?

Testing software and developing (building) software are not the same

Different tasks involved

Require different mindsets from testers and developers



Question 1: Answer

Why is independent testing important?

Issue: Testing is an assessment of quality

- Assessments are not always positive
- Can be difficult to communicate defects / areas of improvement
  - In particular when commenting on the work of a peer

Solution: Separate the testers from the developers

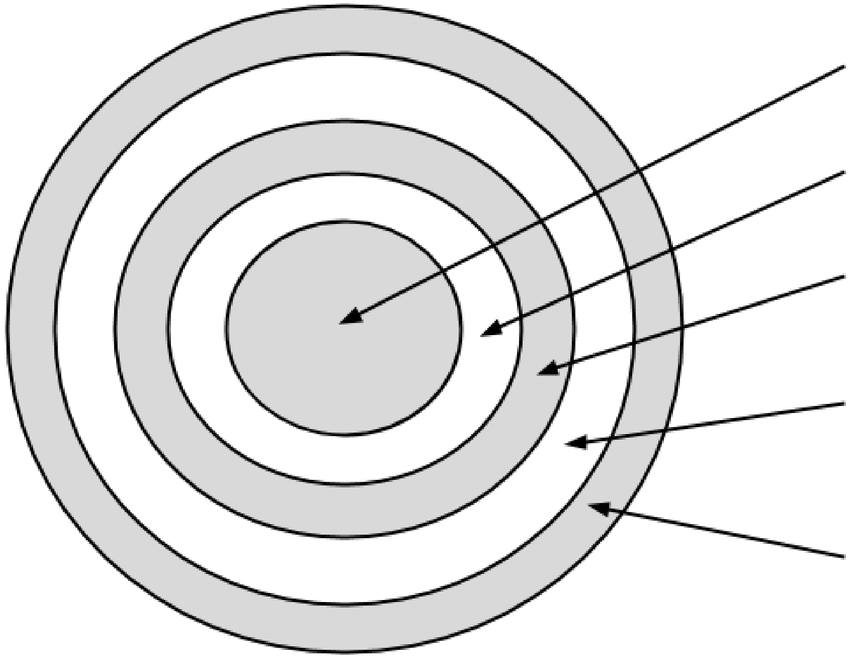
- Improve defect finding by using independent testers
- Avoid author bias → Objective assessments
- Developers can be *blinded* by their own code

Question 1: Answer

Why is independent testing important?

Options for independence

Independence is not either or, but a continuum



1. No independent testers. Developers test own code.
2. Independent testers within development teams.
3. Independent test team / group within organisation report to project management.
4. Independent testers from business or user community.
5. Independent test specialists for specific test targets such as usability testers, security testers or certification testers.

Question 1: Answer

Why is independent testing important?

a. Independent testing is usually cheaper than testing your own work
b. Independent testing is more effective at finding defects
c. Independent testers should determine the processes and methodologies used
d. Independent testers are dispassionate about whether the project succeeds or fails

Question 2

Which of the following is an advantage of independent testing?

a. Independent testers don’t have to spend time communicating with the project team
b. Programmers can stop worrying about the quality of their work and focus on producing more code
c. The others on the project can pressure the independent testers to accelerate testing at the end of the test schedule
d. Independent testers sometimes question the assumptions behind the requirements, design and implementations

Question 2: Answer

Which of the following is an advantage of independent testing?

Benefits of independent testing

- Independent testers can often see more, other, different defects
  - Compared to testers working within the programming team
- Bring a different set of assumptions to testing / reviews
  - Expose hidden defects / problems
  - Not affected by business analysts, designers, programmers, etc.
- Sceptical attitude
- Professional pessimism

Question 2: Answer

Which of the following is an advantage of independent testing?

Benefits of independent testing

- Independent test teams may enjoy more credibility in an organisation
  - Compared to a test leader who is part of the programming team
- Can report test results honestly and without concern
  - Distanced from co-workers (programmers/managers) responsible for the defects
- Often have separate budgets
  - Facilitates to ensure proper level of spending on testing resources
  - Training, test tools, equipment, etc.

Question 2: Answer

Which of the following is an advantage of independent testing?

- Risks of independent testing
  - Testers / test team can become isolated
    - Interpersonal isolation from programmers, designers, project team
    - Isolation from the broader view of quality and business objectives
      - Obsessive focus on defect finding
      - Refusal to accept business prioritisation of defects
  - Communication problems
  - Lack of identification with the project goals

Question 2: Answer

Which of the following is an advantage of independent testing?

Risks of independent testing

Developers may abdicate their responsibility for quality

“Why bother unit testing when we already have a test team?”

Focus only on pointing out flaws / defects

Provide little (or no) solutions

Failure to understand the tester’s role

Should provide a *service* to the project team

Goal is not to dictate how things should be done

Question 2: Answer

Which of the following is an advantage of independent testing?

a. Independent testers don’t have to spend time communicating with the project team
b. Programmers can stop worrying about the quality of their work and focus on producing more code
c. The others on the project can pressure the independent testers to accelerate testing at the end of the test schedule
d. Independent testers sometimes question the assumptions behind the requirements, design and implementations

Testing Roles and Tasks

Question 3

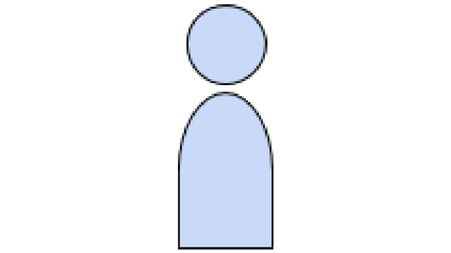
According to the ISTQB glossary, what do we mean when we call someone a test manager?

a. A test manager manages a collection of test leaders
b. A test manager is the leader of a test team or teams
c. A test manager gets paid more than a test leader
d. A test manager reports to a test leader

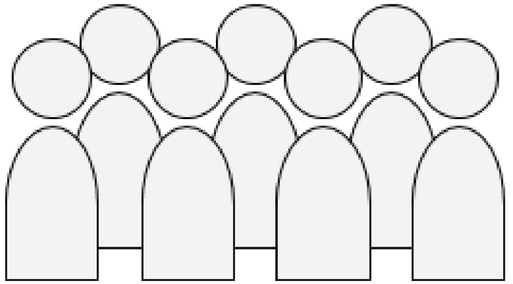
Question 3: Answer

According to the ISTQB glossary, what do we mean when we call someone a test manager?

Roles within a test team



Test Leader
(manager / coordinator)



Testers

Test manager

Plans / Monitors / Controls the testing activities and tasks

Leader of a test team

Question 3: Answer

According to the ISTQB glossary, what do we mean when we call someone a test manager?

a. A test manager manages a collection of test leaders
b. A test manager is the leader of a test team or teams
c. A test manager gets paid more than a test leader
d. A test manager reports to a test leader

Question 4

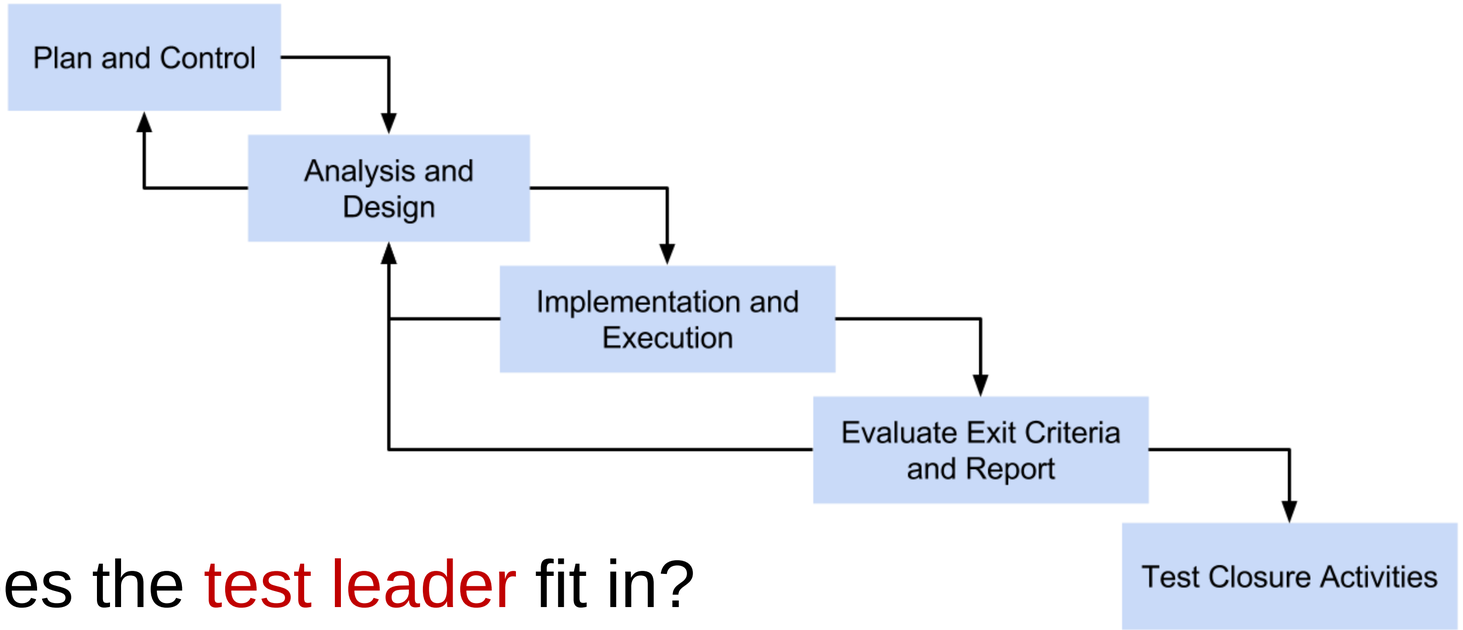
Which of the following is among the typical tasks of a test leader?

a. Develop system requirements, design specifications and usage models
b. Handle all test automation duties
c. Keep test cases and coverage hidden from programmers
d. Gather and report test progress metrics

Question 4: Answer

Which of the following is among the typical tasks of a test leader?

Recall: Fundamental test process



Where does the test leader fit in?

Question 4: Answer

Which of the following is among the typical tasks of a test leader?

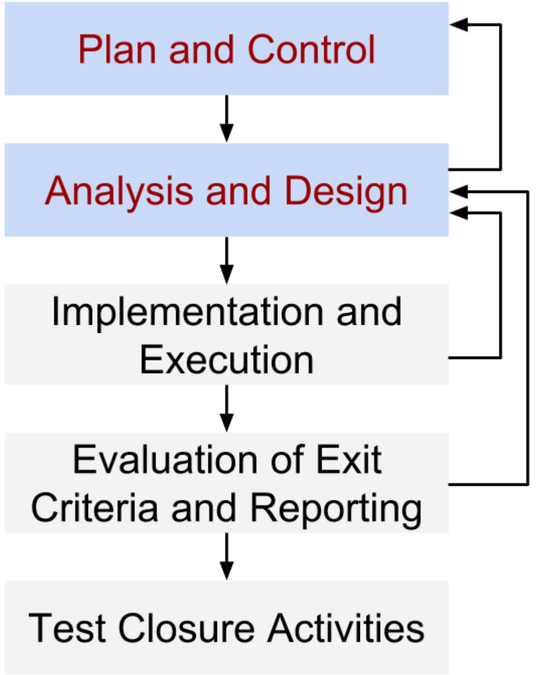
Coordination

- Devise test strategy and plan with project managers

Planning the tests

- Understand the test objectives
- Select test approaches / Define test levels
- Estimate time, effort, and cost of testing

Select test tools / test environment



Question 4: Answer

Which of the following is among the typical tasks of a test leader?

Manage test configuration

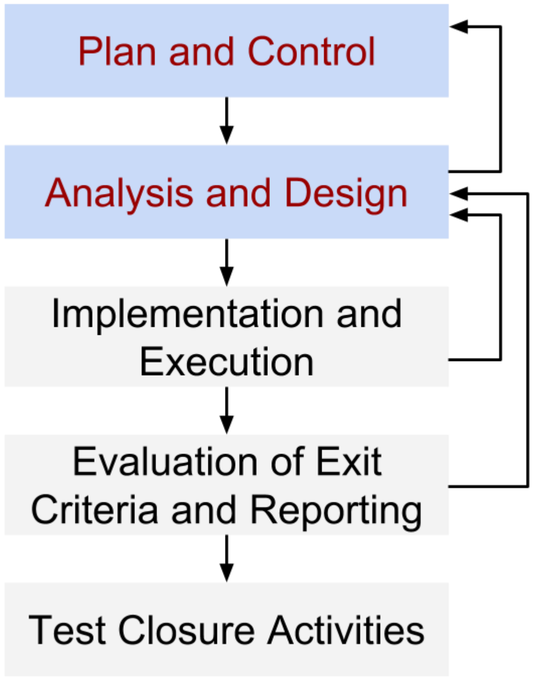
- Set up adequate configuration management
- Testware for traceability

Introduce metrics

- For measuring test progress
- Evaluate quality of the testing / product

Automation of tests

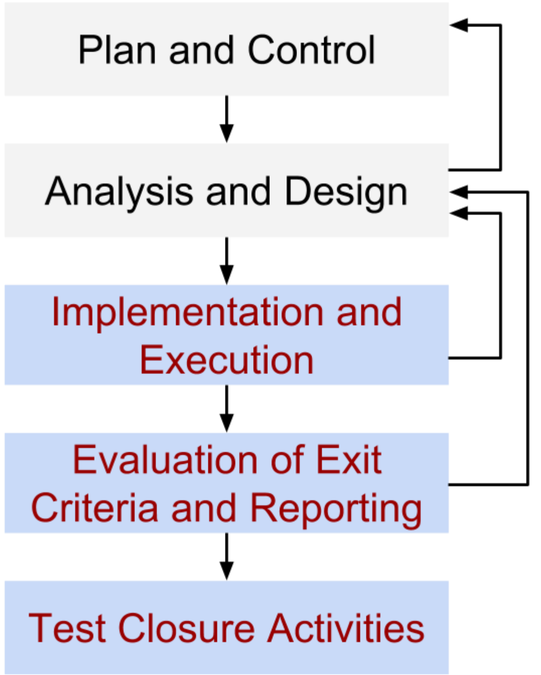
- Decide what to automate / To what degree?



Question 4: Answer

Which of the following is among the typical tasks of a test leader?

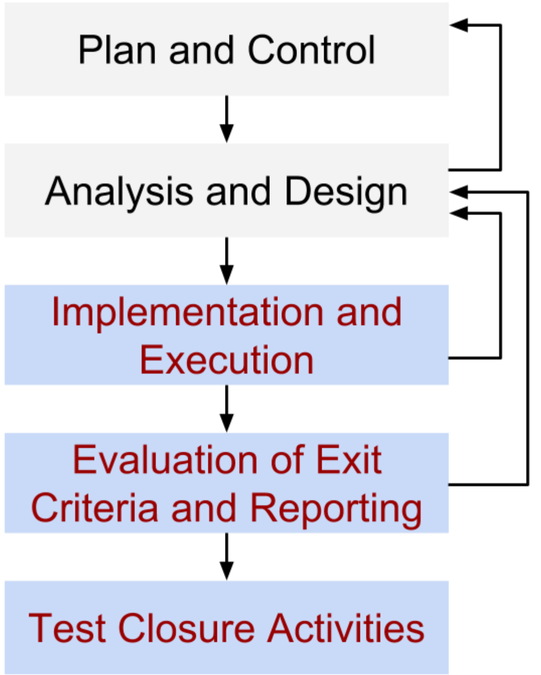
- Test specifications, preparation and execution
  - Initiate specification / preparation / implementation / execution
  - Monitor test results
  - Check exit criteria
- Adapt planning
  - Based on test results and progress
  - Take actions to compensate for problems



Question 4: Answer

Which of the following is among the typical tasks of a test leader?

- Introduce metrics
  - To measure test progress
  - Evaluate quality of the testing / product
- Automation of tests
  - Decide what should be automated and not
  - To what degree?
- Write test summary reports



Question 4: Answer

Which of the following is among the typical tasks of a test leader?

a. Develop system requirements, design specifications and usage models
b. Handle all test automation duties
c. Keep test cases and coverage hidden from programmers
d. Gather and report test progress metrics

Question 5

According to the ISTQB Glossary, what is a test level?

a. A group of test activities that are organised together
b. One or more test design specification documents
c. A test type
d. An ISTQB certification

Question 5: Answer

According to the ISTQB Glossary, what is a test level?

Test level

“A group of test activities that are organised and managed together”

Four test levels

Component testing / Integration testing / System testing / Acceptance testing

Purpose of test levels

Include different methodologies that can be used when conducting the test effort

Has clear, level-specific, pre-defined objectives

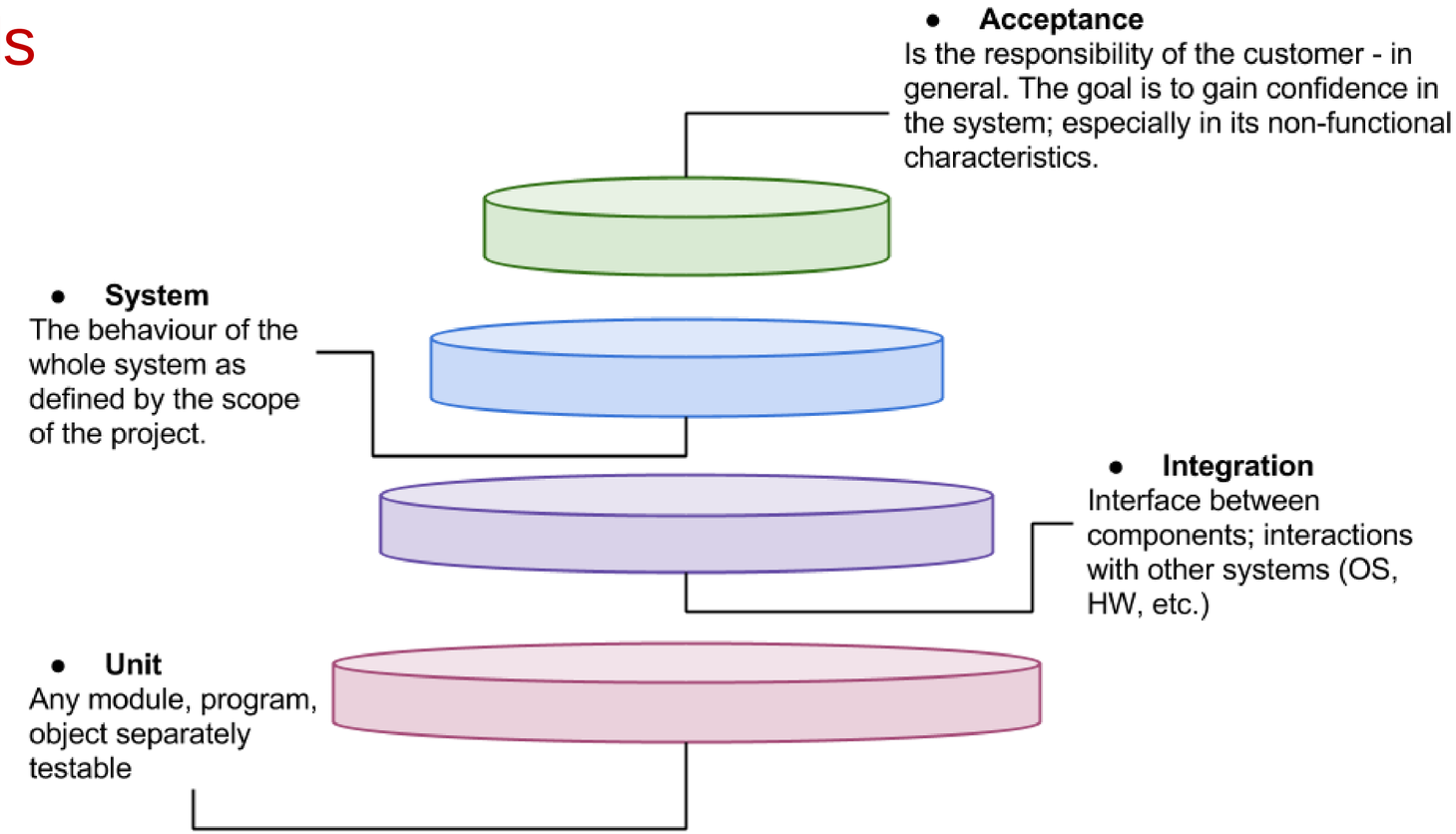
Different test types may be performed at different levels

Linked to the responsibilities in a project

Question 5: Answer

According to the ISTQB Glossary, what is a test level?

Test levels



Question 5: Answer

According to the ISTQB Glossary, what is a test level?

a. A group of test activities that are organised together
b. One or more test design specification documents
c. A test type
d. An ISTQB certification

Test Planning and Documents

Question 6

A test plan is written specifically to describe a level of testing where the primary goal is establishing confidence in the system. Which of the following is a likely name for the document?

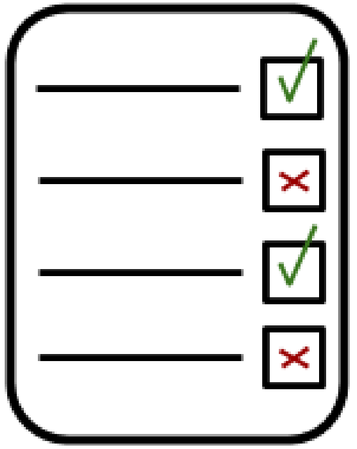
a. Master test plan
b. System test plan
c. Acceptance test plan
d. Project test plan

Question 6: Answer

Which of the following is a likely name for the document where the goal is establishing confidence in the system?

Test plan → Project plan for the testing work to be conducted

- Elaborates on the challenges that await the test effort
- Highlights important topics
- Serves to communicate all aspects of the test effort
  - Project team, testers, peers, managers, other stakeholders
- Helps to manage change
  - Revise test plans as we gather more information
- Serves as documentation



Question 6: Answer

Which of the following is a likely name for the document where the goal is establishing confidence in the system?

Considerations for writing a test plan

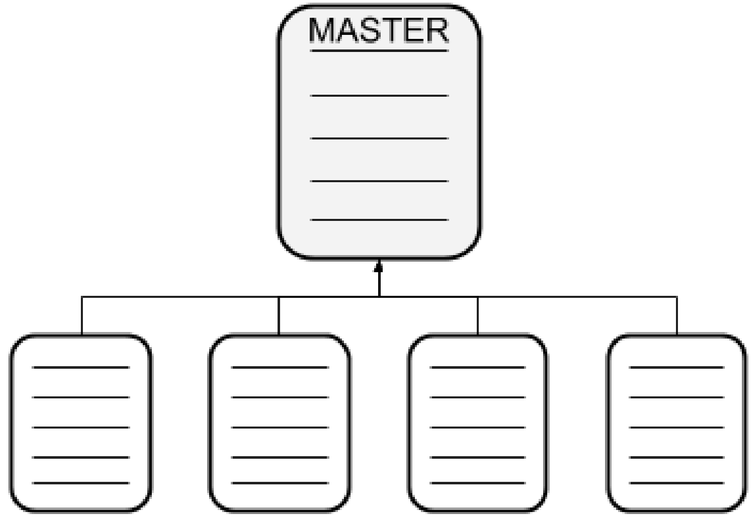
- What is within the scope of the test effort, and what is outside the scope?
- What are the constraints affecting the test effort?
  - E.g. budget limitations, time constraints, etc.
- What are the test objectives?
- What are the important project and product risks?
- Which aspects of the product are more (or less) testable?
- What should be the overall test execution schedule?

Question 6: Answer

Which of the following is a likely name for the document where the goal is establishing confidence in the system?

Test plan documentation

- Master test plan
  - Overall plan for the test effort
- Level-specific test plans
  - Plans specifically aimed at each test level
  - Aims to adhere to the objectives of that level
  - Central question: What is the purpose of this test level?
    - The test plan seeks to facilitate the realisation of these objectives



Question 6: Answer

A test plan is written specifically to describe a level of testing where the primary goal is establishing confidence in the system. Which of the following is a likely name for the document?

a. Master test plan
b. System test plan
c. Acceptance test plan
d. Project test plan

Question 7

What is the primary difference between a test plan, test design specification, and test procedure specification?

a. The test plan describes one or more levels of testing, the test design specification identifies the associated high-level test cases and a test procedure specification describes the actions for executing a test
b. The test plan is for managers, the test design specification is for programmers and the test procedure specification is for the testers who are automating the tests
c. The test plan is the least thorough, the test procedure specification is the most through and the test design specification is midway between the two
d. The test plan is finished in the first third of the project, the test design specification is finished in the middle third of the project and the test procedure specification is finished in the last third of the project

Question 7: Answer

What is the primary difference between a test plan, test design specification, and test procedure specification?

Before executing a test → Need to know what we are trying to test

- Inputs / Expected outcomes
- How to get ready and run the actual tests

Artefacts for testing → Each specified in its own document (IEEE 829)

- Test conditions
- Test cases
- Test procedures

Question 7: Answer

What is the primary difference between a test plan, test design specification, and test procedure specification?

Test conditions → Test Design Specification

Condition: Something that can be tested

Approach: “Throw the net wide”

Identify as many conditions as possible

Exhaustive testing is impossible → Select a subset of all possible tests

Examples

Measuring branch coverage → Test basis is the code itself

Requirements specification → Table of contents can be the list of test conditions

Question 7: Answer

What is the primary difference between a test plan, test design specification, and test procedure specification?

Test cases → Test Case Specification

Case: Set of input values, preconditions, expected results

Developed for a particular objective or test condition

Can cover a number of test conditions

E.g. Age, gender, enough credit?, place of birth, etc.

Objective

To assess that the system does what it is supposed to do

Given the conditions, does it behave correctly?

Question 7: Answer

What is the primary difference between a test plan, test design specification, and test procedure specification?

Test procedures → Test Procedure Specification

- Procedure: Sequence of actions for the execution of a test
- Test script
- Manual test script

Formed into a test execution schedule

- Description of the order of the test procedures
- By whom do the tests need to be run?
- Useful for prioritising tests → Ensure best testing is done in the time available

Question 7: Answer

What is the primary difference between a test plan, test design specification, and test procedure specification?

Example: Buying movie tickets

Conditions → The things we can test (age, time, discount)

Cases → Combination of conditions to assess system behaviour (rules)

Procedure → Sequence of actions to execute test (step-by-step)

	Inputs	R1	R2	R3	R4
[AGE]	Under 13 years?	Y	Y	N	N
[TIME]	Movie time before 18:00?	Y	N	Y	N
	Effects (Outputs)				
[DISCOUNT]	Eligible for “children’s ticket”?	Y	N	N	N

[CONDITIONS] [CASES]

Buy Movie Tickets

1. User selects a movie
2. System returns available times
3. User selects time
4. System asks for number of tickets
5. User inputs number of tickets
6. System provides available seats
7. ...

[PROCEDURE]

Question 7: Answer

What is the primary difference between a test plan, test design specification, and test procedure specification?

IEEE 829 Standard: TEST DESIGN SPECIFICATION

- Test design specification identifier
  - Unique name / Version date and number
  - Author and contact information
  - Revision history
- Features to be tested
  - Features
  - Appropriate level of testing
  - Reference to original documentation
- Approach refinements
  - Selection of test technique
  - Methods for analysis
  - Relationship between test items and level of testing
- Test identification
  - Identification of each test case / procedure
- Feature Pass / Fail criteria
  - Describe criteria for assessing the feature
  - Whether the tests were successful or not

IEEE 829 Standard: TEST CASE SPECIFICATION

- Test case specification identifier
  - Unique name / Version date and number
  - Author and contact information
  - Revision history
- Test items
  - Requirements specification
  - System and detail design specification
  - User guide / Operations manual / etc.
- Input and Output specifications
  - Data (values, ranges, sets) / Files
  - Tables
  - Human actions
  - Conditions (states) / Relationships
- Environmental needs
- Special procedural requirements
- Intercase dependencies
  - Any prerequisite test cases

IEEE 829 Standard: TEST PROCEDURE SPECIFICATION

- Test procedure specification identifier
  - Unique name / Version date and number
  - Author and contact information
  - Revision history
- Purpose
  - List all test cases covered by the procedure
  - Description of the procedure
- Special requirements
  - Manual or automated
  - Stages in which the test is to be used (Pre-testing, regression, etc.)
  - Test environment
  - Skills required
  - Prerequisite procedures
- Steps
  - Log / Setup / Start / Proceed / Stop
  - Shutdown / Restart / Wrap-up
  - Measure
  - Contingencies

Question 7: Answer

What is the primary difference between a test plan, test design specification, and test procedure specification?

a. **The test plan describes one or more levels of testing, the test design specification identifies the associated high-level test cases and a test procedure specification describes the actions for executing a test**
b. The test plan is for managers, the test design specification is for programmers and the test procedure specification is for the testers who are automating the tests
c. The test plan is the least thorough, the test procedure specification is the most through and the test design specification is midway between the two
d. The test plan is finished in the first third of the project, the test design specification is finished in the middle third of the project and the test procedure specification is finished in the last third of the project

Entry and Exit Criteria

Question 8

Entry criteria for testing means that the company management gave their OK to the development team to start the test activities

a. True
b. False

Question 8: Answer

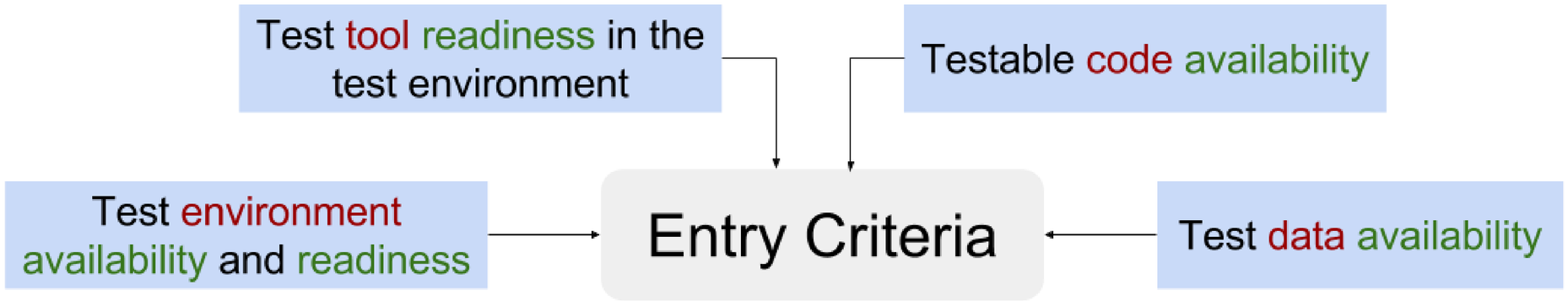
Entry criteria means that the company management gave their OK to the dev. team to start the test activities

Entry criteria

Defines when to start testing

Central question: Do we have enough to conduct a meaningful test effort?

Typical considerations



Question 8: Answer

Entry criteria for testing means that the company management gave their OK to the development team to start the test activities

a. True
b. False

Question 9

The ISTQB Foundation Syllabus established a fundamental test process where test planning occurs early in the project, while test execution occurs later. Which of the following elements of the test plan, while specified during test planning, are assessed during test execution?

a. Test tasks
b. Environmental needs
c. Exit criteria
d. Test team training

Question 9: Answer

Which of the following elements of a test plan, while specified during test planning, are assessed during test execution?

Purpose of testing

Verify some aspect of the system / Reveal faults in the implementation

What do we define *prior* to test execution?

Test tasks: What is to be done and when?

Environmental needs: What requirements do we have for the test environment?

Entry and exit criteria: When to start and when to end the test effort?

Question 9: Answer

Which of the following elements of a test plan, while specified during test planning, are assessed during test execution?

What do we assess *during* to test execution?

The results of the test against the pre-defined objectives

We are interested in answering the following questions

How did the test go?

Did it go according to plan? Why, why not?

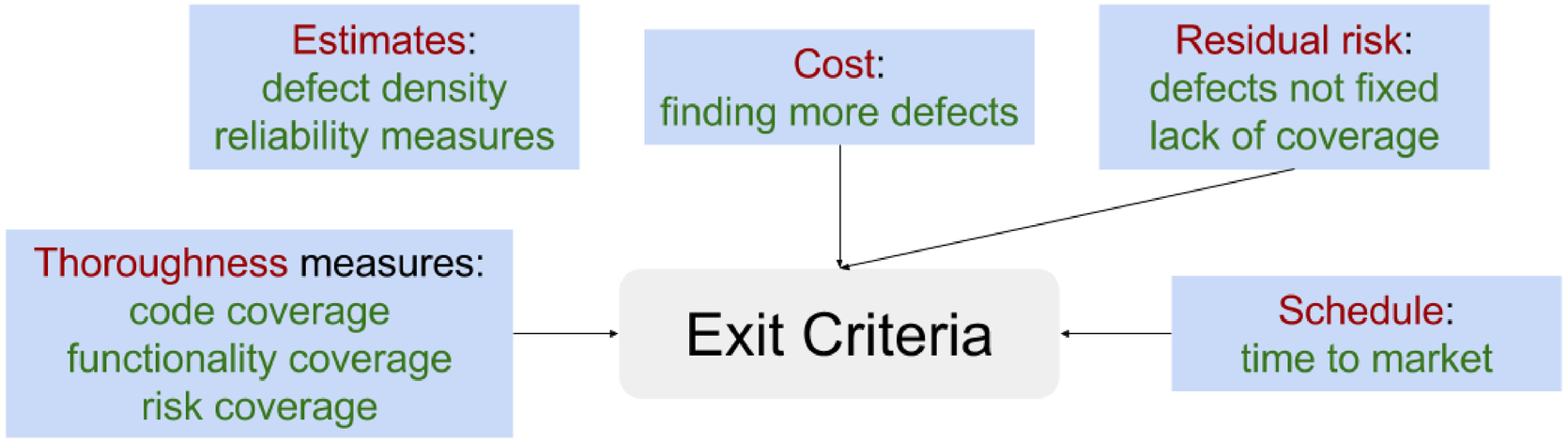
Do we need to run more tests?

Question 9: Answer

Which of the following elements of a test plan, while specified during test planning, are assessed during test execution?

Exit criteria → When to stop testing? (Definition of *enough*)

Typical considerations



Question 9: Answer

The ISTQB Foundation Syllabus established a fundamental test process where test planning occurs early in the project, while test execution occurs later. Which of the following elements of the test plan, while specified during test planning, are assessed during test execution?

a. Test tasks
b. Environmental needs
c. Exit criteria
d. Test team training

Question 9: Example

Example using Entry and Exit criteria

Want to test *login* functionality for an imaginary website

We write test cases for two different scenarios

User already registered / User not registered

ID	Test Case	Preconditions	Input Test Data	Procedure	Expected Results
1	Test if registered user is able to log in successfully	User must be registered	Correct username	1. Enter input username and password	Login successful
			Correct password	2. Click "Login"	
2	Test if unregistered user is not able to log in	None	Incorrect username	1. Enter input username and password	Login failed
			Incorrect password	2. Click "Login"	

Question 9: Example

Example using Entry and Exit criteria

Use entry and exit criteria to assess the test effort

Entry criteria

Testing environment established?

Yes

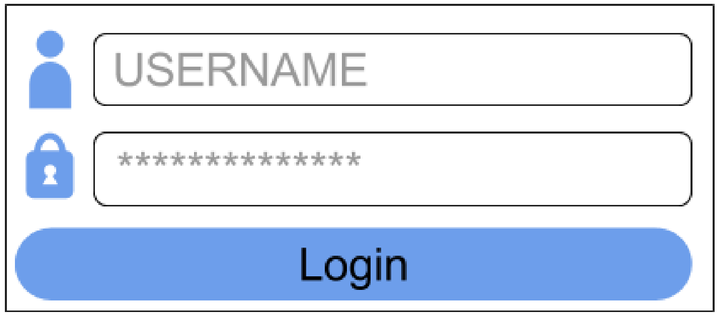
Graphical user interface in place

We choose manual testing

Adequate test data is available?

Valid username / Valid password

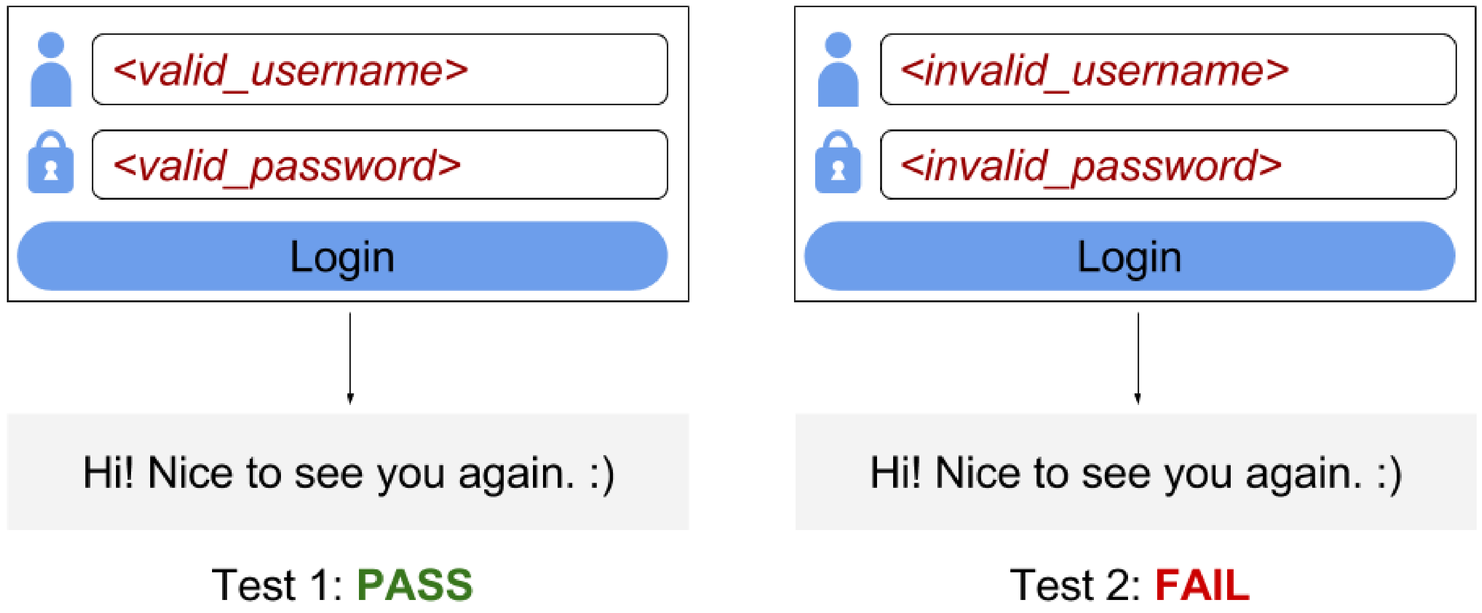
Invalid username / Invalid password



Question 9: Example

Example using Entry and Exit criteria

Assume we run the two tests, and get the following:



Must assess tests based on exit criteria

Question 9: Example

Example using Entry and Exit criteria

Use entry and exit criteria to assess the test effort

Exit criteria

All test cases (100 %) have been executed?

Yes → Both test 1 and test 2 have been executed

Failed cases have a satisfactory resolution?

Yes → Developers will fix the discovered defect

Defects were documented and reported?

Yes → Defect revealed by test 2 has been documented

New tests will be run once developers fix the discovered defect

Question 10

Consider the following exit criteria which might be found in a test plan. Which of these belong in an acceptance test plan?

1. No known customer-critical defects
2. All interfaces between components tested
3. 100 % code coverage of all items
4. All specified requirements satisfied
5. System functionality matches legacy system for all business rules

a. All statements belong in an acceptance test plan
b. Only statement 1 belongs in an acceptance test plan
c. Only statements 1, 2 and 5 belong in an acceptance test plan
d. Only statements 1, 4 and 5 belong in an acceptance test plan

Question 10: Answer

Which of the given exit criteria belong in an acceptance test plan?

Acceptance testing

- Validation testing with respect to the users
- Requirements, business processes

Typically assesses aspects such as

- The system's adherence to the requirements specification
- Defects that may be critical to the customer
- Functionality in accordance with the business rules?
- Whether or not the system is *fit for use*

Question 10: Answer

Consider the following exit criteria which might be found in a test plan. Which of these belong in an acceptance test plan?

1. No known customer-critical defects
2. All interfaces between components tested
3. 100 % code coverage of all items
4. All specified requirements satisfied
5. System functionality matches legacy system for all business rules

a. All statements belong in an acceptance test plan
b. Only statement 1 belongs in an acceptance test plan
c. Only statements 1, 2 and 5 belong in an acceptance test plan
d. Only statements 1, 4 and 5 belong in an acceptance test plan

Question 11

During test execution, the test manager describes the following situation to the project team:

- 90 % of the test cases have been run.
- 20 % of the test cases have identified defects.
- 110 defects have been found.
- 100 defects have been fixed and have passed confirmation testing.
- Of the remaining 10 defects, project management has decided that they do not need to be fixed prior to release.

Question 11

Which of the following is the most reasonable interpretation of this test status report?

a. The remaining 10 defects should be confirmation tested prior to release
b. The remaining 10 % of test cases should be run prior to release
c. The system is ready for release with no further testing or development effort
d. The programmers should focus their attention on fixing the remaining known defects prior to release

Question 11: Answer

Which of the following is the most reasonable interpretation of this test status report?

Test progress monitoring

Gathering detailed test data

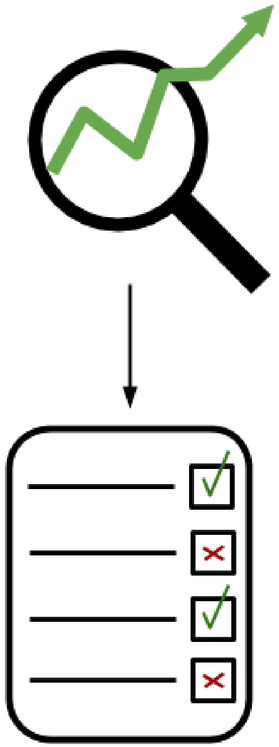
Test status reporting

Analysing available information and metrics to support conclusions

Have exit criteria been met?

Effectively communicating the findings to various stakeholders

Ensure stakeholders understand the results of a test period



Question 11: Answer

Which of the following is the most reasonable interpretation of this test status report?

What we know from the given status report

- 90 % of the test cases have been run
- 20 % of the test cases have identified defects
- 110 defects have been found
- 100 defects have been fixed, and have passed confirmation testing
- 10 defects remaining do not need to be fixed prior to release

What do these points indicate?

Question 11: Answer

Which of the following is the most reasonable interpretation of this test status report?

- 90 % of the test cases have been run
  - 10 % of the test cases have *not* been run yet
  - Follow-up question: Given that 10 % of cases remain untested, are we finished?
- 20 % of the test cases have identified defects
- 110 defects have been found
  - From the 90 % of the run test cases, 20 % of those found defects
  - The total number of defects in this portion were 110

Question 11: Answer

Which of the following is the most reasonable interpretation of this test status report?

100 defects have been fixed, and have passed confirmation testing

Identified 100 defects as customer-critical

We needed to fix these prior to release

The 10 defects remaining do not need to be fixed prior to release

We fixed 100 out of 110 defects

The remaining 10 defects are not regarded customer-critical

We leave these defects untouched

Question 11: Answer

Which of the following is the most reasonable interpretation of this test status report?

a. The remaining 10 defects should be confirmation tested prior to release
b. The remaining 10 % of test cases should be run prior to release
c. The system is ready for release with no further testing or development effort
d. The programmers should focus their attention on fixing the remaining known defects prior to release

Question 12

The purpose of _____ criteria is to define when to stop testing, such as at the end of a test level or when a set of tests has a specific goal.

Question 12: Answer

The purpose of _____ criteria is to define **when to stop testing**, such as at the **end** of a **test level** or when a **set** of **tests** has a **specific goal**.

EXIT (criteria)

Question 13

The metrics for test progress monitoring can be collected both manually and automatically

a. True
b. False

Question 13: Answer

The metrics for test progress monitoring can be collected both manually and automatically

- Test progress monitoring
  - Provide feedback on how the test effort is going
  - Visible information about the test results
  - Measure the status of testing
- Can use metrics to assess progress → Evaluated against exit criteria
  - Test case execution → Number of test cases run / not run, passed / failed
  - Test coverage → Requirements / Risks / Code
  - Percentage of work done → Case and environment preparation

Question 13: Answer

The metrics for test progress monitoring can be collected both manually and automatically

How to collect metrics for test progress monitoring?

Manually

Collect information about the test progress by hand

E.g. Using spreadsheets, checklists, etc.

Automatically

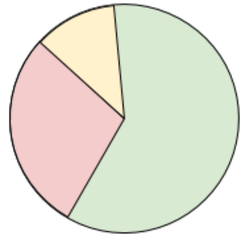
Using progress monitoring software

Metrics generated directly from the test suites

Different test tools provide different features

Test ID	Test Case	Status
A_1	Create new author	PASS
A_2	Create new book	PASS
A_3	Edit existing author	PASS
A_4	Edit existing book	FAIL
A_5	Reassign book to new author	PASS
A_6	Group books by author	FAIL
A_7	Group books by genre	SKIP

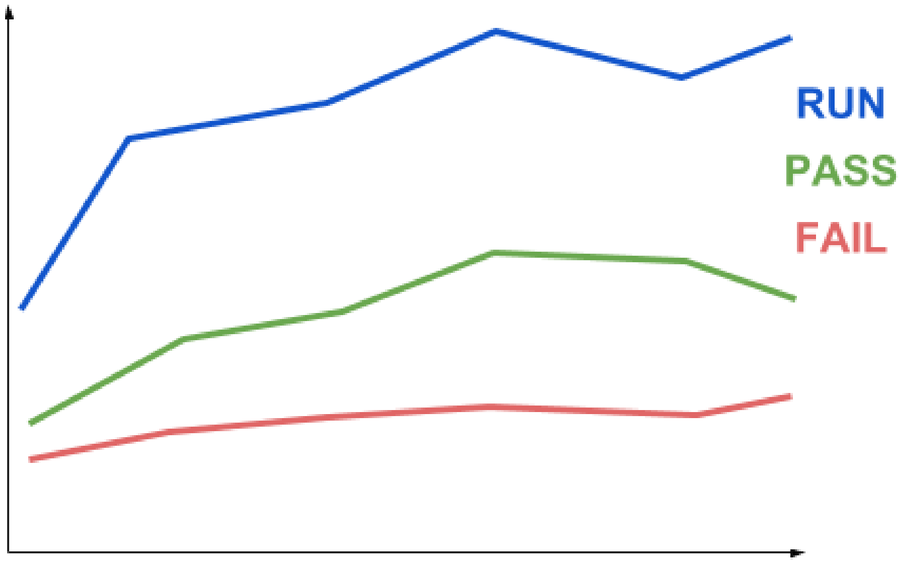
Test Case Results		
Passed	4	57,14 %
Failed	2	28,57 %
Skipped	1	14,29 %

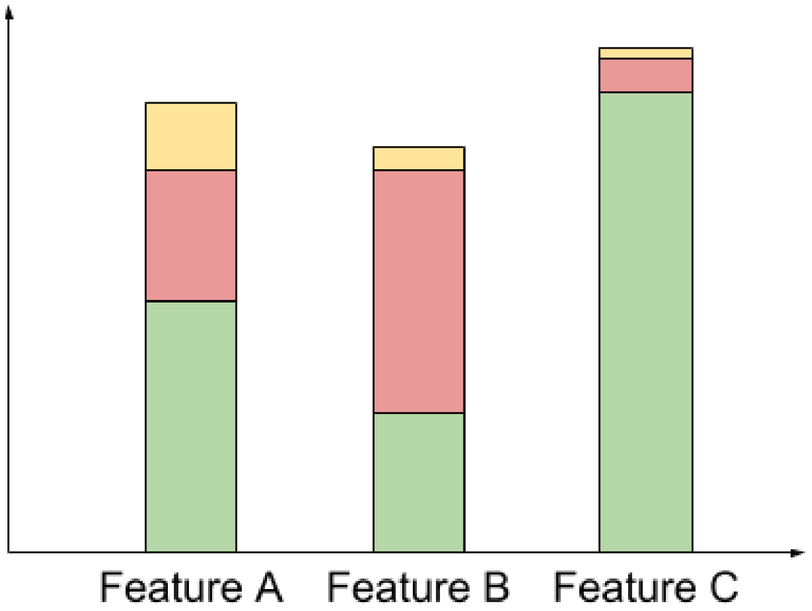


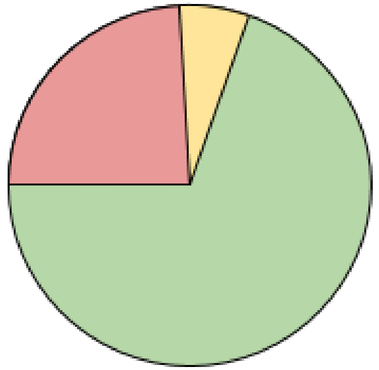
Question 13: Answer

The metrics for test progress monitoring can be collected both manually and automatically

Different ways of representing metrics and test progress







Question 13: Answer

The metrics for test progress monitoring can be collected both manually and automatically

a. True

b. False

Question 14

Pair the following roles with their typical activities

Tester	Evaluates the results of the execution of tests: Pass or fail
	Evaluates the exit criteria and gives recommendations based on it: Continue testing or stop
	Introduces metrics for measuring the test progress
Test Leader	Test data: Acquires it and prepares it
	Writes test summary reports for management
	Writes automated tests

Question 14: Answer

Pair the following roles with their typical activities

Tester	Evaluates the **results** of the **execution** of tests: Pass or fail
	Evaluates the **exit criteria** and gives recommendations based on it: **Continue** testing or **stop**
	Introduces **metrics** for measuring the test progress
Test Leader	Test **data**: **Acquires** it and **prepares** it
	Writes test **summary reports** for management
	Writes **automated tests**

Part II: Exercises and Open-ended questions

Exercise 1

Describe briefly what is meant by the following test approaches (strategies)

a. Analytical approach
b. Model-based approach
c. Methodical approach
d. Process- or standard-compliant approach
e. Dynamic and heuristic approach
f. Consultative approach
g. Regression-averse approach

Is one approach better than the other? Why, why not? Which do you prefer?

Exercise 1(a): Answer

Analytical approach

- Use of formal / informal analytical technique
  - Factors strongly affecting the testing environment
- Risk-based strategy
  - Perform risk analysis using project documents and stakeholder input
  - Planning, estimation, designing, and prioritising tests based on risk
- Requirements-based strategy
  - Analysis of the requirements specification
  - Basis for planning, estimation, design

Exercise 1(b): Answer

Model-based approach

Tests designed based on models of the object functionality

- Critical system behaviour

Emphasis on identification and selection of the appropriate model

- Preventive test approach

Examples

- Can build mathematical models for loading/response for e-commerce servers
- Design tests based on the models
- Check if behaviour of the system conforms to the predicted behaviour (from model)

Exercise 1(c): Answer

Methodical approach

- Adhere to a pre-planned, systematised approach
  - Developed in-house, assembled from various concepts
- Following a specific method
  - Tests are designed, executed and implemented in accordance
- Examples
  - Adherence to certain checklists
  - Failure-based (error checking, fault-attacks)
  - Experience-based

Exercise 1(d): Answer

Process- or standard-compliant approach

- "*Go by the book*" as opposed to "*do it your own way*"
- Uses externally developed industry standards
  - Design and implement test assets based on these
  - Little (or no) customisation
- Examples
  - Adhering to IEEE 829 standards
  - Adhering to agile methodologies
    - E.g. Extreme programming (XP)

Exercise 1(e): Answer

Dynamic and heuristic approach

Heuristic (techniques)

Approach to problem solving that employs a practical methods

Not guaranteed to be optimal, but sufficient for intermediate goals

Typically applied during the later stages of testing

Problem: Exhaustive testing is impossible

Solution: Finding as many defects as possible

Examples

Exploratory testing

Exercise 1(f): Answer

Consultative approach

- Rely on a group of non-testers to guide / perform test effort
- Seek advice and guidance from externals
  - Business domain experts
  - Technical experts (e.g. security experts)
  - Outside the test team
- Examples
  - Asking users for what to test
  - Asking developers to develop the tests

Exercise 1(g): Answer

Regression-averse approach

Techniques to manage the risk of regression

Goal: Avoid (re-)occurrence of defects

Create effective regression tests to run when anything changes

Re-run every test to ensure nothing has been broken

Practices

Automating functional tests prior to release / Re-use existing test material

Example

Having a standard set of test data for which a screen needs to pass

Exercise 1: Answer

Is one approach better than the other? Why, why not?

Some strategies are preventive (prior)

Analytical test strategies involve upfront analysis of the problem area

Tend to identify test basis prior to test execution

Some strategies are reactive (during)

Dynamic test strategies focus on the test execution period

Enable the identification of defect (clusters) that may be hard to anticipate

Strategies complement each other

Testing is context-dependent: There is no *best way* to test

Exercise 1: Answer

Factors to consider when choosing test strategies

Risks

Testing is about risk-management

Consider the risks and level of risk

Well-established applications that evolve slowly → Regression is an important risk

Skills

Strategies must not only be chosen → They must also be executed

Consider which skills the test team possesses / lacks

Standard-compliant strategy can make up for lack of skill within a test team

Exercise 1: Answer

Factors to consider when choosing test strategies

Objectives

Testing must satisfy the needs of the stakeholders to be successful

Example

If the objective is to find as many defects as possible, with limited resources

Dynamic testing may prove beneficial

Regulations

Sometimes you must satisfy not only to stakeholder, but also to existing regulations

Devise a methodical test strategy that adheres to these regulations

Exercise 1: Answer

Factors to consider when choosing test strategies

Product

Some products tend to have well-specified requirements

E.g. weapons and contract-development systems

Synergy with a requirements-based analytical strategy

Business

Business considerations and continuity are important

Example: Model-based approach

When you can use a legacy system as a model for a new system

The seminar slides are made by

Yulai Fjeld **ydfjeld @ uio.no**

Master student

Department of Informatics

University of Oslo

Previously taught courses

Systemutvikling (INF1050), Universitet i Oslo

Software Testing (INF3121/4121), Universitetet i Oslo

Systemutvikling (ADSE2200), Høgskolen i Oslo og Akershus