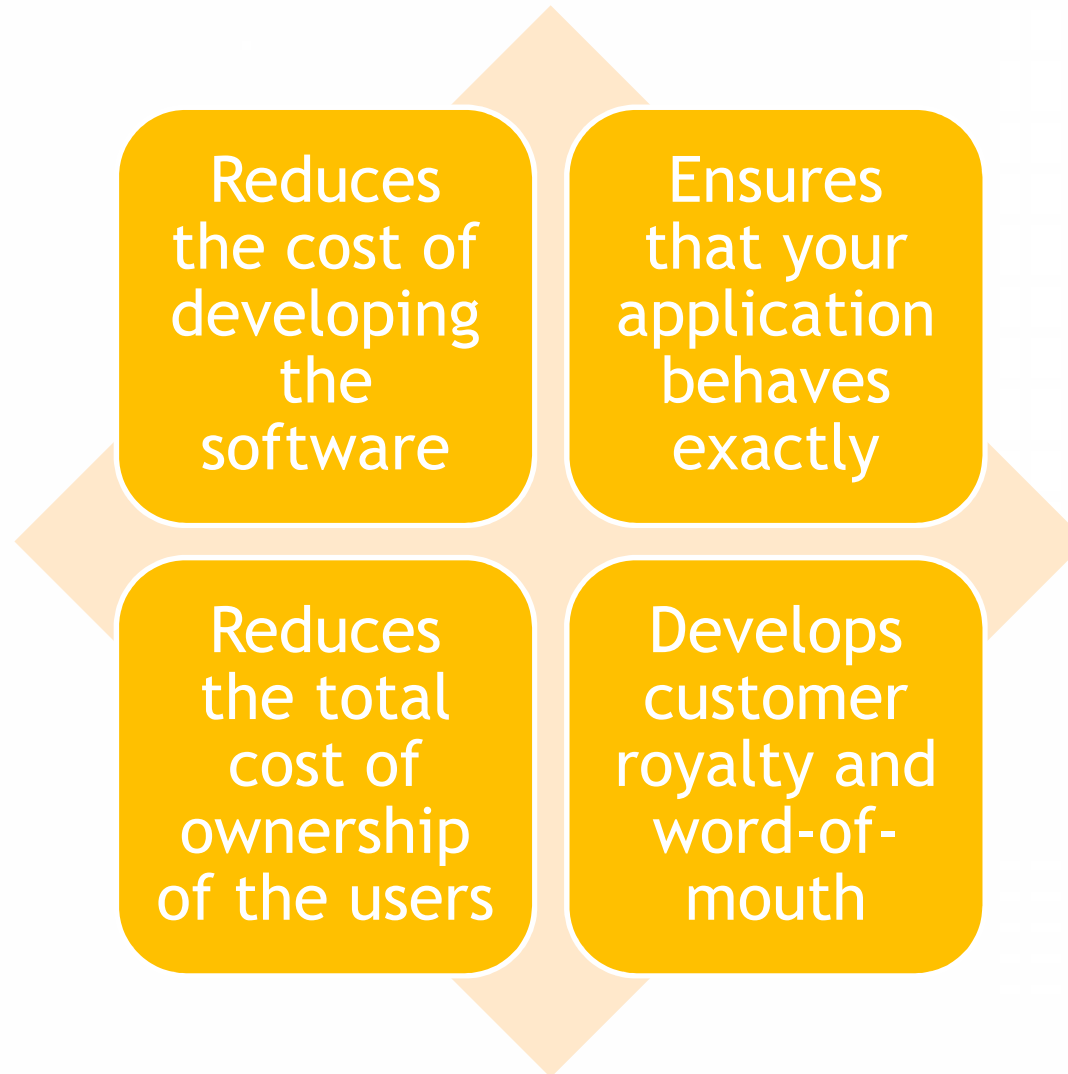




Software Development Testing

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Why We Need to Test the Codes



Software Testing and Software Quality

- Software Testing constructs a software quality
- Quality defined by the non functional and functional aspect
 - Performance metrics: time to solve a task on a software
 - Reliability metrics : defect density (number bugs divided by the loc)

Testing based on point of view

Black Box Testing

- Testing without knowledge of the internal workings of system
- Focusing End-user experience

White Box Testing

- Examining the code for potential failure scenarios
- Created by the developer or tester to understand the behaviour of the codes

Testing Execution

Manual Testing : Creating a test case, step-by-step execution, logs the result (also known as: Acceptance testing)

- Fast to execute
- Easy to do
- Ambiguity on testing result

Automated Testing : Using a software to help test the codes

- Slow to construct (need a developer/tester)
- Quick to test
- Easy to repetitive
- Lower mistakes than manual testing

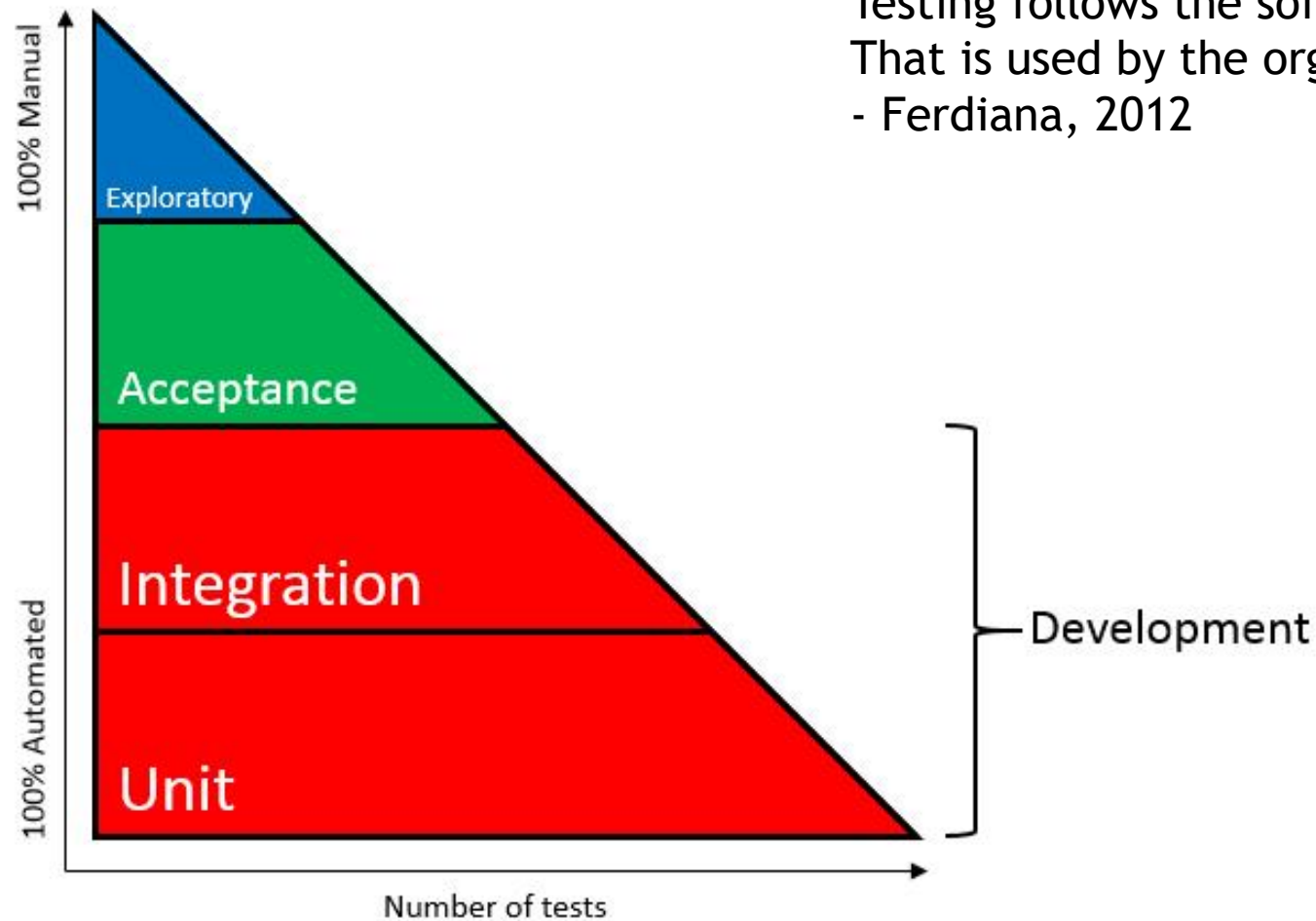


DEMO

Black Box Testing

Black box testing for a web page

Software Testing Types



Testing follows the software method
That is used by the organization
- Ferdiana, 2012

Unit Testing

- Also known as Developer Test
- Created by the developer
- Testing the method or function
- Several methods use this unit testing heavily
 - eXtreme Programming
 - Test Driven Development



DEMO

Unit Testing

Unit Test for a web application

Integration testing

- Also known as Component Testing
- Created by the tester
- Testing the integration between components
- Several methods use this heavily
 - Rational Unified Process
 - Scrum

Other type of software testing

Regression

- Any changes are made, the application should be evaluated through regression test.

Stress / Load Testing

- Pushes a system functional limits, multiple users

Performance testing

- Measure the responsiveness, speed, resources allocation

Security testing

- Validates an application security.

Usability testing

- Validates the user experience of the users

Localization testing

- Focuses on UI and others area (daylight, region, time)

Accessibility

- Application supports for disabilities

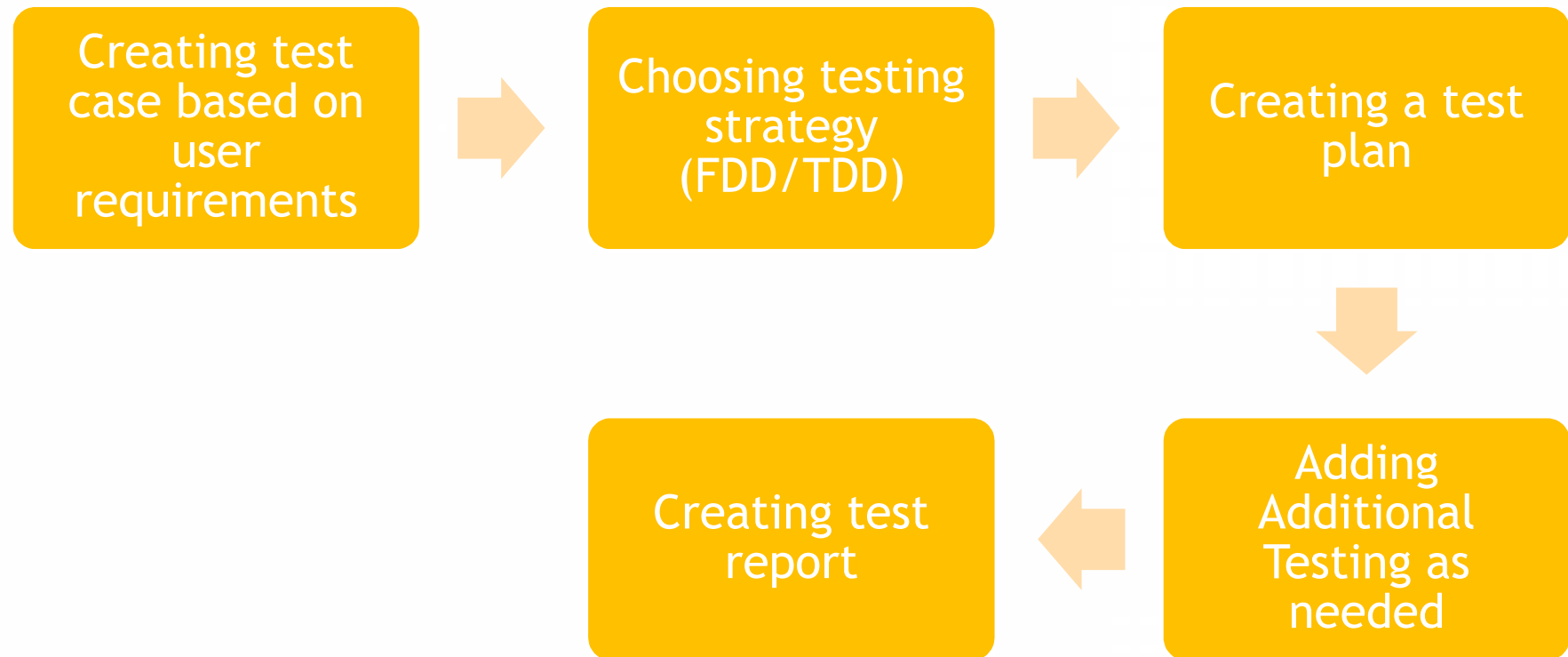


DEMO

Load Testing

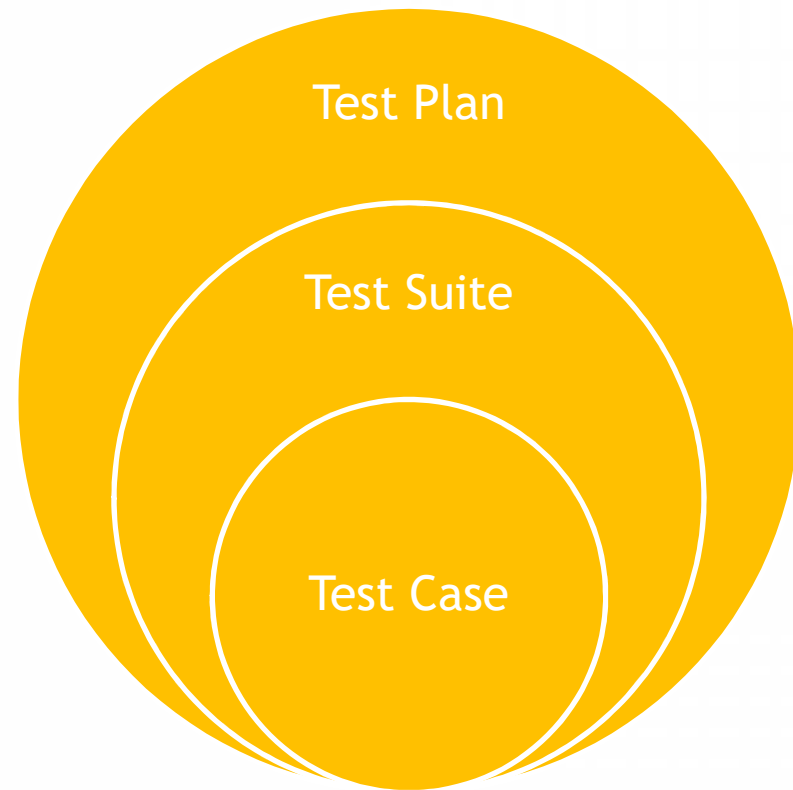
Load testing using cloud computing

Building Software Test



What is test plan

- Test Plan components
 - A description
 - An owner
 - Start and end dates
 - Associated area
 - Associated iteration
- Test suite is a container that has a set of related tests



Test Report Consideration

- Typical Test Design Consideration
 - Positive Test Case (Happy Path)
 - Negative Test Case (Additional / Alternate Path)
 - Boundary Test Case
 - Zero, Null, and Empty Test Case
- A test report that shows and finds the high quality bugs



DEMO *Test Report*

Building Test Report

Debugging

- Debugging : a process to understand the behaviour of the codes
- Debugging model
 - Step Next
 - Step Into
- Debugging techniques
 - Data inspection
 - What if value scenario



DEMO

Debugging

Debugging on Integrated development environment

Key points

- Software testing as a foundation of software quality
- Software testing can be classified through several ways
 - Point of view
 - Execution model
 - Types and Usages
- 5 Steps to build and create software testing report
- Debugging is a quick way to test and to evaluate the codes

References

- Ridi Ferdiana. 2015. Software Testing Course Module. MCT Module
- Ivan Shcherbakov. 2012. 10+ powerful debugging tricks with Visual Studio. Code Project.