

SOFTWARE ARCHITECTURE AND DESIGN

CSE 815
3 units

MSC

BY

**Dr. Chinwe
Peace Igiri**





Quality Assurance and Testing

Software Quality Assurance?

- a procedure to ensure the quality of software products or services provided to the customers by an organization

Software Testing

- a method to check whether the actual software product matches expected requirements and to ensure that software product is defect free



Types of Testing

Functional Testing

- Unit testing
- Integration
- Smoke
- User Acceptance Testing
- Localization
- Globalization

Non-Functional Testing

- Performance
- Endurance
- Load
- Volume
- Scalability
- Usability

Maintenance

- Regression
- Maintenance



Selenium

- Selenium is a testing framework to perform web application testing across various browsers and platforms like Windows, Mac, and Linux.
- Selenium helps the testers to write tests in various programming languages like Java, PHP, C#, Python, Groovy, Ruby, and Perl.
- It offers record and playback features to write tests without learning Selenium IDE.



TestingWhiz

TestingWhiz is a test automation tool with the code-less scripting by Cygnet Infotech, a CMMi Level 3 IT solutions provider.

TestingWhiz tool's Enterprise edition offers a complete package of various automated testing solutions like web testing, software testing, database testing, API testing, mobile app testing, regression test suite maintenance, optimization, and automation, and cross-browser testing.

TestingWhiz offers various important features like:

- Keyword-driven, data-driven testing, and distributed testing
- Browser Extension Testing
- Object Eye Internal Recorder
- SMTP Integration
- Integration with bug tracking tools like Jira, Mantis, TFS and FogBugz
- Integration with test management tools like HP Quality Center, Zephyr, TestRail, and Microsoft VSTS
- Centralized Object Repository
- Version Control System Integration
- Customized Recording Rule



HPE Unified Functional Testing (HP – UFT formerly QTP)

- HP QuickTest Professional was renamed to HPE Unified Functional Testing. HPE UFT offers testing automation for functional and regression testing for software applications.
- Visual Basic Scripting Edition scripting language is used by this tool to register the test processes and operates the various objects and controls in testing the applications.
- QTP offers various features like:
 - Integration with Mercury Business Process Testing and Mercury Quality Center
 - Unique Smart Object Recognition
 - Error handling mechanism
 - Creation of parameters for objects, checkpoints, and data-driven tables
 - Automated documentation



TestComplete

- TestComplete is a functional testing platform that offers various solutions to automate testing for desktop, web, and mobile applications by SmartBear Software

features:

- GUI testing
- Scripting Language Support – JavaScript, Python, VBScript, JScript, DelphiScript, C++Script & C#Script
- Test visualizer
- Scripted testing
- Test recording and playback



Ranorex

- Ranorex Studio offers various testing automation tools that cover testing all desktop, web, and mobile applications.

Features:

- GUI recognition
- Reusable test codes
- Bug detection
- Integration with various tools
- Record and playback



Ranorex

Sahi is a testing automation tool to automate web application testing.
The open-source Sahi is written in Java and JavaScript programming languages.

Features:

- Performs multi-browser testing
- Supports ExtJS, ZK, Dojo, YUI, etc. frameworks
- Record and playback on the browser testing



Watir

Watir is an open-source testing tool made up of Ruby libraries to automate web application testing.

Features:

- Tests any language-based web application
- Cross-browser testing
- Compatible with business-driven development tools like RSpec, Cucumber, and Test/Unit
- Tests web page's buttons, forms, links, and their responses



Tosca Testsuite

- Tosca Testsuite by Tricentis uses model-based test automation to automate software testing.

Features:

- Plan and design test case
- Test data provisioning
- Service virtualization network
- Tests mobile apps
- Integration management
- Risk coverage



Katalon Studio

- Katalon Studio is a free automation testing solution developed by Katalon LLC.
- The software is built on top of the open-source automation frameworks Selenium, Appium with a specialized IDE interface for API, web and mobile testing.
- This tool includes a full package of powerful features that help overcome common challenges in web UI test automation.

Features:

- Built-in object repository, XPath, object re-identification
- Supports Java/Groovy scripting languages
- Built-in support for Image-based testing
- Support Continuous Integration tools like Jenkins & TeamCity
- Supports Dual-editor Interface
- Customizable execution workflow