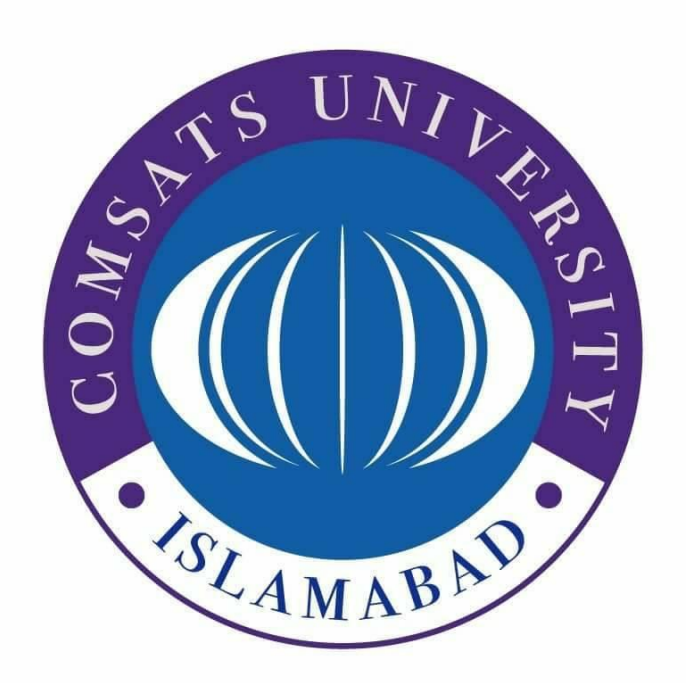

SOFTWARE TESTING
ASSIGNMENT 1

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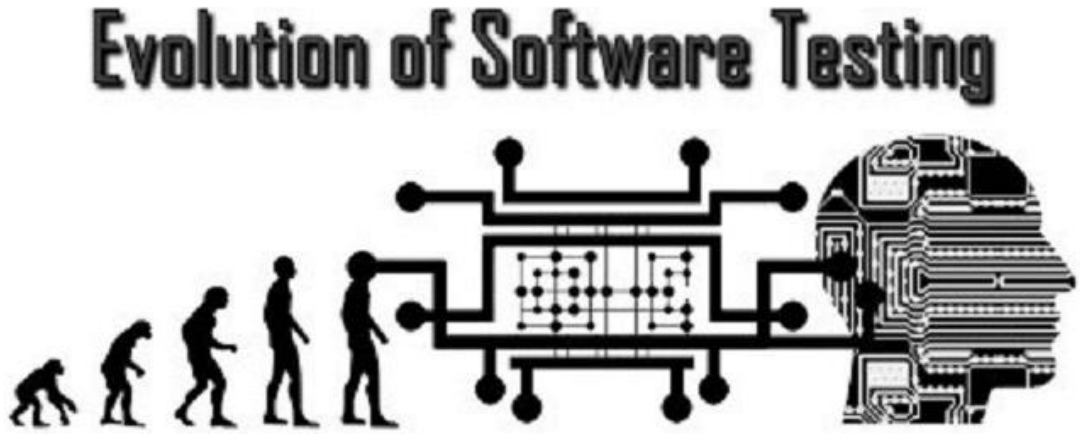
SOFTWARE TESTING EVOLUTION & METHODOLOGIES



Testing, an integral part of software development has gone through series of changes.

HISTORY

Its all started when finding errors during debugging is considered as testing. In 1957 testing got individual identity and was considered as separate activity. In 18's testing was considered as measurement of quality. By the mid 90's the testing process had its own lifecycle.

THE ERA OF PROGRAMMERS AND TESTERS

Development and testing were treated as independent activities in this era. If software is ready it was passed to testing team for verification

Limitations:

- Testers were not involved in the requirement analysis phase.
- Testers have limited interaction with business stakeholders.
- Dependent on documentation knowledge
- Limited testing strategies
- Software was tested in ad-hoc manner

Sample Test Plan Template:

Company: Microsoft Corporation.
Project: Windows Operating System.

Test Plan Template: In the early 2000s, Microsoft used a basic test plan template to build the Windows operating system. The plan included sections on objectives, scope, testing approach, and resource allocation.

Reason To Evolve into Next:

Testers would develop test plans based on their understanding of documentation this obviously have some limitations and testing was not comprehensive that's why testing evolved and moved to next generation.

Tools:

Practitest, TestRail etc.

THE ERA OF EXPLORATION AND MANUAL TESTING

In this era testing was done manually using detailed test cases and test plans. It includes several methodologies like agile testing and exploratory testing.

Limitations:

- Time consuming
- Limited resources
- Subjective
- Limited coverage
- Scalability issues
- Repetitive tasks
-

Reason To Evolve into Next:

The incremental and iterative way of testing paved the way for automating the test that were repetitive in nature.

Sample Test Plan Template:

Company: Google LLC.
Project: Google Docs

Test plan template: Google used a structured test plan template in the mid-2000s to develop their Google Docs product. The plan has sections for test objectives, scope, test strategy, test environment requirements, and risk management.

Tools:

JIRA, Microsoft Test Manager, Zephyr and TestLink.

THE AUTOMATION ERA

Testing now seemed like integral part of the SDLC at every step. Automation took testing to different levels. Automation helped in performing regression testing and sanity testing with speed and accuracy.

Limitations:

- Specialized skills and expertise required
- Inflexibility with UI changes
- Limited scope of testing
- Automated scripts need to be regularly updated and maintained

Sample Test Plan Template:

Company: Apple Inc.
Project Name: iOS Mobile Operating System

Test Plan Template In the late 2010s, Apple began using a modern test plan template to create its iOS mobile operating system. The template included agile testing principles, user stories, acceptance criteria, and a test automation plan.

Reason To Evolve Into Next:

This era saw the need to scale up the testing process. As business dynamics started changing, customers expected to see an intermediate working model as an end product. So demand for frequent and intermediate software release leads to a new era.

Tools:

IBM Rationale Functional Tester, selenium, Cypress

THE ERA OF CONTINUOUS TESTING

In this era continuous integration and continuous deployment CI/CD became popular. The rise of DevOps and CI/CD led to shorter delivery cycles. Real-time risks are assessed. Continuous testing helps in handling risks by managing the bugs before any software release.

Limitations:

- Organization face challenges in integrating testing into every step of CI/CD pipeline.
- It relies on external service, API's or third party component.
- It requires up to date test data for efficient testing.
- It equires cultural shift towards collaboration and transparency across development and testing teams

Sample Test Plan Template:

Company: Netflix Inc.
Project: streaming platform

Template: Netflix used a continuous testing method for their streaming platform project, with components for integration, deployment, and risk management.

Reason To Evolve Into Next:

Continuous testing needed to be evolved to be more efficient because of demands of business stakeholders to release intermediate with tight timelines without compromising quality of end product.

Tools:

Gitlab CI/CD, GitHub, Jenkins

THE ARTIFICIAL INTELLIGENCE ERA

Algorithms in AI is based on predictive analysis of data. It means AI testing heavily depends upon the data.

Limitations:

- Data dependency
- They are too complex and difficult to interpret or explain.
- AI models are trained on specific data set and work on specific area
- They may can expose sensitive and personal information during testing
- Developing and maintain AI powered testing tools are expensive

Example test plan template:

Company: Amazon.com Inc.

Project: E-commerce platform

Templates: Amazon used AI-powered testing for its e-commerce platform project, emphasising predictive analysis and data-driven testing methods.

Tools:

Applitools, Testim and mabl for autonomous testing