

SOFTWARE TESTING

Assignment 1

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**A black and white image of a person walking next to a computer

Description automatically generatedSOFTWARE TESTING EVOLUTION & METHODOLOGIES**

Testing, an integral part off 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 mid of 90’s the testing process had its own lifecycle.

**THE ERA OF PROGRAMMERS AND TESTERS**

Development and testing was 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 requirement analysis phase
* Testers have limited interaction with business stakeholders
* Dependent on documentation knowledge
* Limited testing strategies
* Software were tested in ad-hoc manner

**Reason To Evolve Into Next:**

Tester would develop test plan 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 case and test plans. It include 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 way for automating the test that were repetitive in nature.

**Tools:**

JIRA, Microsoft Test Manager, Zephyr and TestLink.

**THE AUTOMATION ERA**

Testing was now seemed as integral part of the SDLC at every step. Automation took testing to different level. 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

**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 intermediate working model as a end product. So demand for frequent and intermediate software release up leads to 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 challenge 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

**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**

Algorithm in AI is based on predictive analysis of data. It means AI testing heavily depend 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

**Tools:**

Applitools, Testim and mabl for autonomous testing