SmartCliff
CAREER MOBILITY SOLUTIONS

We are on a mission to address the digital skills gap for 10 Million+ young professionals, train and empower them to forge a career path into future tech

Automation Testing

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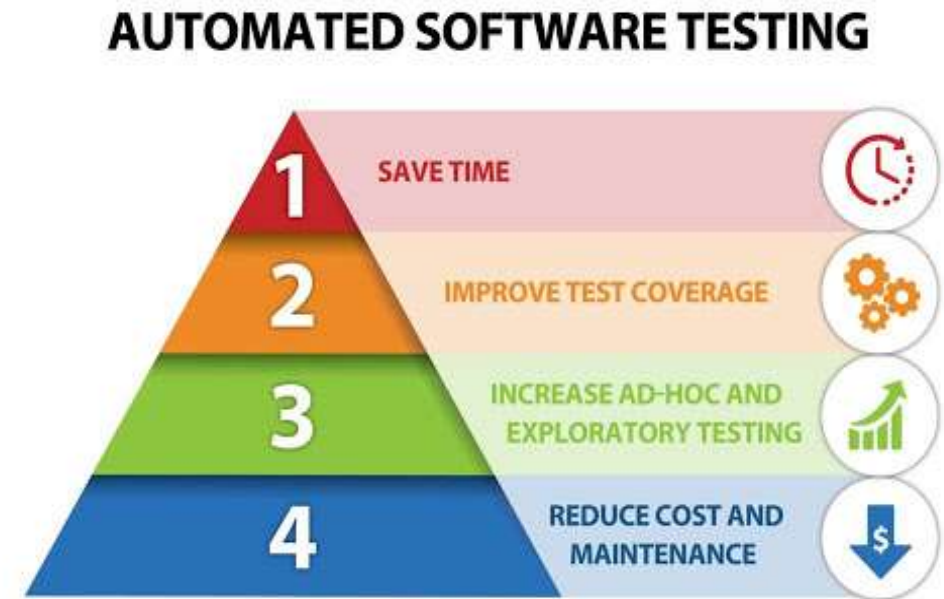
What is Automation?

Overview

- Automation Testing is the process of performing activities with little or no human interaction, in order to achieve greater speed and efficiency.

- Automation testing is the process of carrying out the test activities using the assistance of tools, scripts, and software by repeating pre-defined actions.

- Test automation is used to automate repetitive tasks and other testing tasks which are difficult to perform manually.

Advantages of Automation Testing

1) Increased productivity

2) More efficient use of materials

3) Better product quality

4) Greater Efficiency

5) Minimum manpower

6) Improved safety

AUTOMATED SOFTWARE TESTING

1 SAVE TIME

2 IMPROVE TEST COVERAGE

3 INCREASE AD-HOC AND EXPLORATORY TESTING

4 REDUCE COST AND MAINTENANCE

Disadvantages of Automation Testing

- Proficiency is required to write the automation test scripts.

- Debugging the test script is major issue. If any error is present in the test script, sometimes it may lead to deadly consequences.

- Test maintenance is costly in case of playback methods. Even though a minor change occurs in the GUI, the test script has to be re-recorded or replaced by a new test script.

- Maintenance of test data files is difficult, if the test script tests more screens.
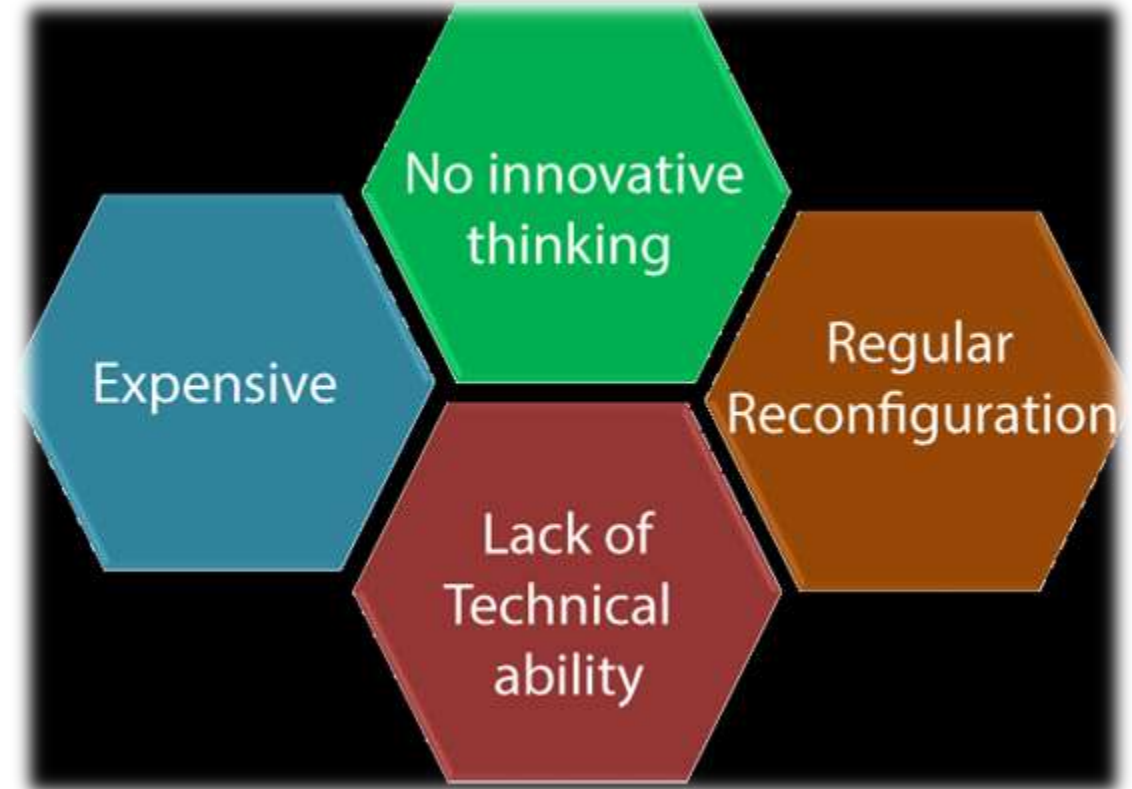
Manual Testing vs Automation Testing

Manual Testing	Automation Testing
Manual testing takes more time and Human resources.	Automation Testing is faster.
Investment is low.	Initial Investment is higher
Manual testing is not accurate due to human errors.	It is reliable due to use of tools.
Batch testing is not possible	Batch testing is possible
Programming knowledge is not required.	Programming knowledge is must.

Why do we need Automation Testing?

Example Scenario:

- Imagine that a manual tester has this scenario: Checking whether the web app's signup page (www.example.com/signup) validates input strings and registers a user successfully in latest versions of Chrome and Firefox, on Windows 7.

- Assume that the signup page has these input fields—username, email address, and password. The tester will get a Windows 7 desktop and follow the steps, consecutively, on latest versions of Chrome and Firefox:

Example Scenario:

Steps:

1. Enter the URL in the address bar (www.example.com/signup)

2. Enter an invalid string in each input field (email, username, and password)

3. Check whether the input strings were validated against corresponding regexes and any pre-existing values in the database

4. Enter 'valid' strings in each input field; click Sign Up

5. Check whether "Welcome, '{'username'}'" page showed up

6. Check whether the system database created a new userID for '{'username'}'

7. Mark the test 'passed' if it did, 'failed' if the signup feature broke anywhere during the test.

Example Scenario:

- That's a very basic system test. In the real world, testers are more likely to be checking all user workflows on www.example.com for breakage, on as many OS-browser combinations as needed to meet the benchmarked compatibility standards.

- Depending on the number of manual testers (and thoroughness of test cases), it may take anywhere between hours to weeks to be sure that the web app is fully functional.

- Modern developers and product teams don't have that kind of time to allot for testing, but they can't set aside exhaustive testing in a hurry to release either. This is why they super-charge their testing with automation.

How to decide which types of test cases to automate?

When should a test case be automated?

A test case should be automated if:

- The task is going to be repeated.

- It's going to save time.

- The requirements, the test, or the task are low risk, stable, and unlikely to change often.

- The test is subject to human error.

- The test is time consuming.

- The test has significant downtime between steps.

- The test is repetitive.

Which type of test cases should be automated?

- Unit testing should take the top priority, followed by integration testing and functional testing. The types of test cases that should be automated have a lot of complex manual scenarios, especially those that require a lot of data or environment setup.

Feature	Critical / Freq.	Legal	Data / Env.	Reuse
Login	☑	☑	☑	☑
Bill Pay	☑	☐	☑	☐
Bank-to-Bank Transfer	☑	☑	☐	☐
Spend Analyzer	☐	☐	☑	☐
Disclosures	☐	☑	☐	☐
Manage Alerts	☑	☐	☑	☑
Registered Devices	☑	☐	☑	☐
Account Nicknames	☐	☐	☐	☐

How to decide which types of test cases to automate?

Three types of test cases to automate first

1. Unit Testing

- Unit testing is the fastest method of testing and, therefore, should be the highest priority for your automation. That is because it's easier to debug. These are highly reusable tests. They are low cost to fix, and there's a whole host of frameworks that you can use to implement this regardless of your programming language.

2. Integration Testing

- Integration testing, where we're testing our interfaces or modules, should also take high priority. These tests help us ensure that everything is working as expected. When automated, integration tests will run more quickly for us and be able to give us that feedback.

Three types of test cases to automate first

3. Functional Testing

- With functional testing, there are a whole host of tools and frameworks that you can use that will match your development code base. So, you should take an approach that values it as an upfront concern. Running those tests will help identify flaky ones. And we don't want flaky tests.
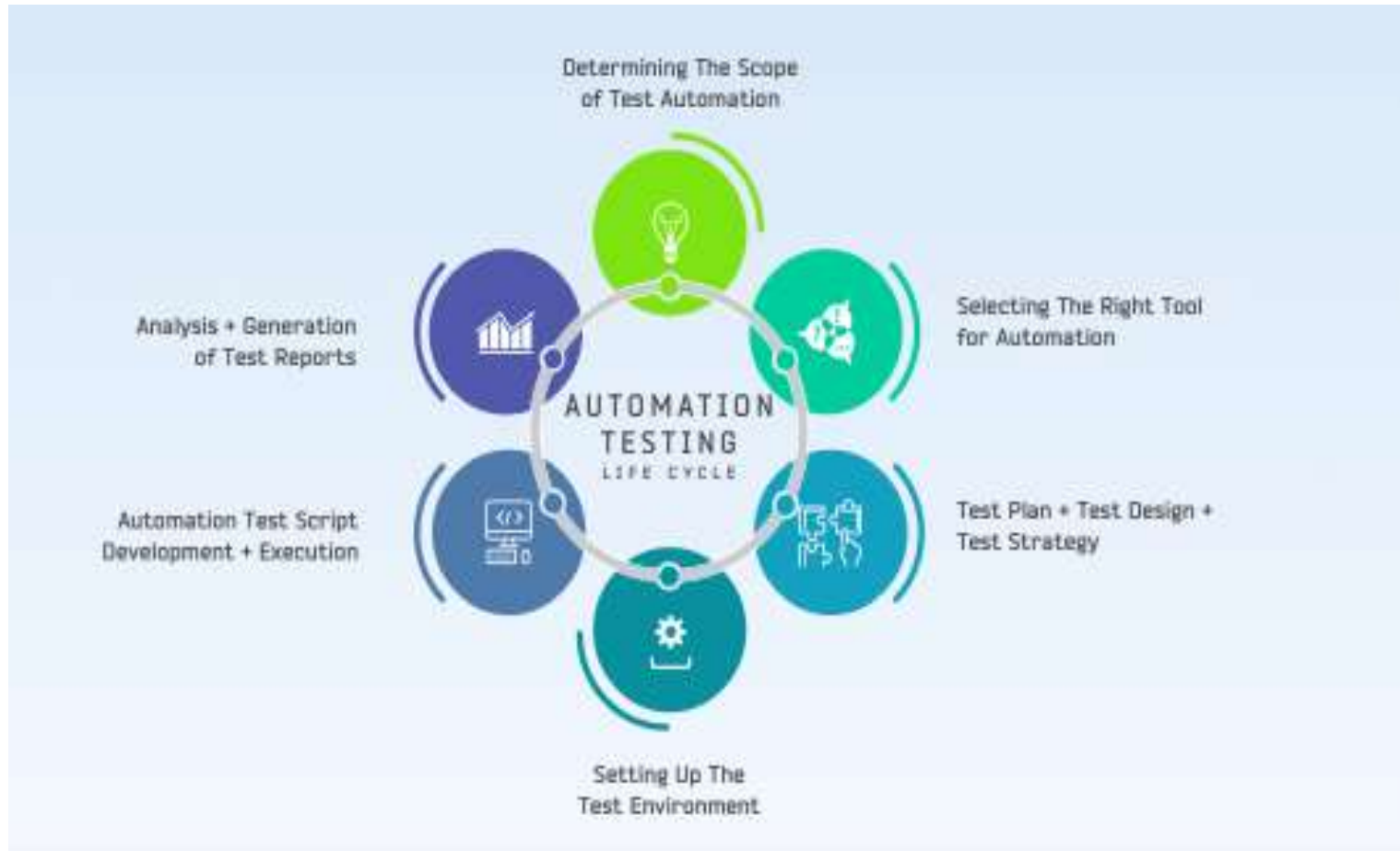
When do we go for Automation?

Types of Testing

1) **Functional Testing** – on operations which perform as per the expectations.

2) **Regression Testing** – on the behaviour of the system which has not been changed.

3) **Exception or Negative Testing** –thereby forcing error conditions in the system.

4) **Stress Testing** – to determine the absolute capacities of the application and operational infrastructure.

5) **Performance Testing** – to provide assurance that the performance of the system will be adequate for both batch runs and online transactions in relation to business projections and requirements.

6) **Load Testing** – to determine the points at which the capacity and performance of the system become degraded to the situation that hardware or software upgrades would be required.

Automation Testing Life Cycle

Which test case to Automate?

- Automation Testing has a lot of benefits and is well suitable for areas that require testing over and over again, but can we achieve 100% test automation?

- Well, it's difficult to achieve 100% test automation, and hence, it's very important to determine which test case can be automated.

1) Repetitive Test or Regression Test

2) Complex Test

3) Smoke Test

4) Data Driven Test

5) Performance Test

How do you perform automation testing?

The below-mentioned steps are followed in the automation testing process:

1. Test Tool Selection

2. Define Scope Of Automation

3. Planning, Design & Development

4. Test Execution

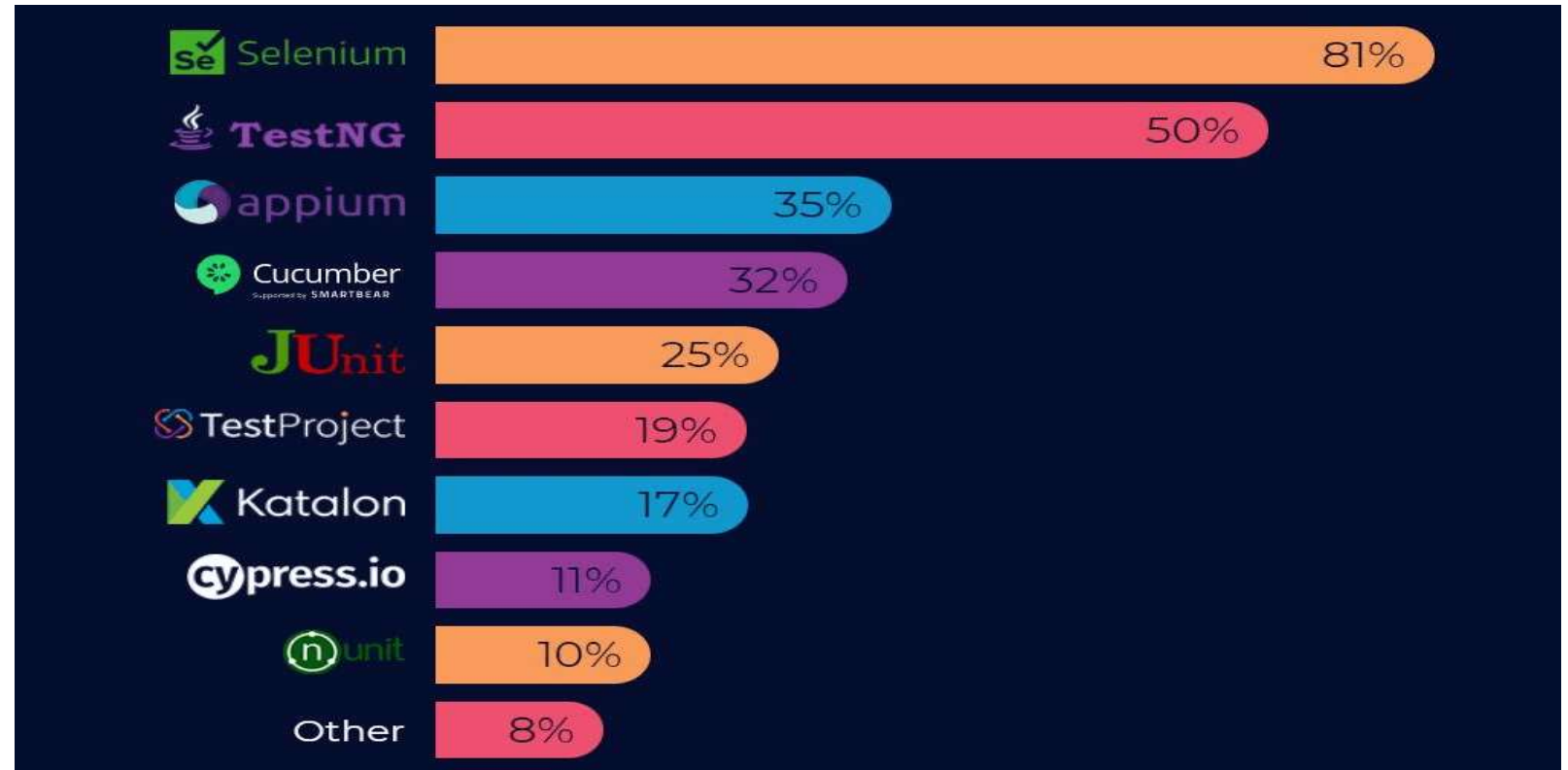5. Maintenance

Different Approaches to Automation Testing

There are three main approaches that you can consider while performing automation testing.

1. Code-Driven Testing

2. Graphical User Interface Testing

3. Framework Approach

      - Data Driven Framework

      - Keyword Driven Framework

      - Modular Testing Framework

      - Hybrid Testing Framework

Automation tools

1) Selenium

2) Appium

3) TestComplete

4) Telerik Test Studio

5) Kobiton

6) Test Project

7) Ranorex

8) UFT

Quiz

1) Automation testing is the process of carrying out test activities using ....

a) Tools

b) Scripts

c) software

d) All of the mentioned

Answer : Option d)

Quiz

2) Which is disadvantage of Automation Testing?

a) Maintenance is economical

b) Maintenance is costly

c) More manpower required

d) Less productivity

Answer : Option b)

Quiz

3) Which testing takes top priority to be with automation process?

a) Functional Testing

b) Non-Functional Testing

c) Unit Testing

d) Integration Testing

Answer : Option c)

Quiz

4) How many types of framework approaches are there for automation testing?

a) 3

b) 5

c) 4

d) 2

Answer : Option c)

Quiz

5) Any kind of test which you think should not be automated?

a) Usability Testing

b) Load Testing

c) Performance Testing

d) Smoke Testing

Answer : Option a)

THANK YOU

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