In this article we will be covering a very basic of automation, this would be a must read for those who are just starting their career and also would be helpful for those who have already on the way in their journey through learning and work.

The basic idea of this article would be to cover those aspects of automation which most of us neglect while dealing with. We will start with very basic by defining "What the Software Testing is?" and end the article with understanding "How to work with test objects" and how important is it to understand, no matter which tool are you working with. We will also cover following:

- ➢ Automation Fundamental Concepts

- ➢ Why Test Automation?

- ➢ Regression Testing & Automation?

- ➢ False Expectations from Automation?

- ➢ Before you thing of Automation

- ➢ Automation Frameworks?

- ➢ Testing Process with Automation tools

Let's start with understanding of **what is software Testing?**

Even the most carefully planned and designed software, cannot possibly be free of defects and to find these defects is called software testing, which requires creating and executing many tests based on the results expected form the software.

For Automation Geeks| By Bharat Kakkar

◈ **Software testing** is the process used to help identify the **correctness**, **completeness**, **security**, and **quality** of developed computer software.

What is Test Automation? And Fundamentals of Automation

◈ Software Test Automation is the process of automating the steps of manual test cases using an automation tool or a utility to shorten the testing life cycle with respect to time.

❖ This is important to understand that automation is not using an automation tool however, it is an agenda to shorten the manual intervention by any means. It may be a small excel macro to help you speeding up the work or it may be a small utility, developed in any programing language to help you do the things faster.

◈ When application undergoes regression, some of the steps might be missed out or skipped which can be avoided in Automation.

❖ It is a human psychology to ignore few things while repeating the same steps over and over, as our brain assumes that the skipped steps were obvious and can't be wrong.

◈ Automation helps to avoid human errors and also expedite the testing process.

❖ More the precision more is the tendency to make a human error for an example for a human it is easy to assume that 105.62595484623254124 is equal to 105.62595484823254124

◈ To implement the Test Automation detailed planning and effort is required, this is very much required for a successful automation.

◈ Automation saves time and effort which results in reduction of the Test life cycle

◈ **Benefits of Automation**

❖ Consistency of Test Execution

❖ Reducing cycle time of regression test cycles

❖ Data driven testing

❖ Repeatability

❖ Coverage

❖ Reliability

❖ Reusability of test wares

◈ Automation life cycle is a subset of the entire test life cycle.

◈ Automation planning can be initiated in parallel to the test planning phase.

Factors to be considered in automation planning

❖ Stability of AUT (Application under test)
❖ No of regression cycles to be performed
❖ Compatibility of App platform with testing tools
❖ Cost benefit analysis (ROI)
❖ Availability of skilled resources

Why Test Automation?

❖ Make the testing procedures systematic, consistent and 100% reproducible
❖ Minimize the error-prone manual testing
❖ Save effort of QA Engineer: fast, in the night and short testing cycle
❖ Some testing activities are difficult to be done manually

➡ **More Cost Effective**

When Automation is applicable?

❖ Regression Testing Cycles are long and iterative.
❖ If the application is planned to have multiple releases / builds
❖ If it's a long running application where in small enhancements / Bug Fixes keeps happening
❖ Test Repeatability is required

📋 It is important to understand that automation is not something which can be implemented anywhere and not everything is worth automating. So, chose the automation criteria wisely. So, the obvious question would be

What to Automate?

Following should be considered while deciding the areas to be automated within the application:

❖ Areas not too complex to automate, when manual efforts are too less
❖ Areas which are regression worthy or part of smoke test.
❖ Areas having a defined input/output (or feasible to calculate) and you can code
❖ Part of application that has to be tested on different environments
❖ Application's module which has scope of retesting (multiple data values for same action)
❖ Feature that doesn't have a finite lifetime.

❖ Where Precision is important. While humans are good at noticing oddities, they're bad at painstaking or precise checking of results. If bugs lurk in the 7th decimal place of precision, humans will miss it, whereas a tool might not.

When Automation is Not applicable?

❖ Not too many regressions.
❖ Application is not stable, too much maintenance effort.
❖ Cost of the supporting tool doesn't justify the investment.
❖ There are not too many candidates for smoke testing.
❖ Size of application is too small vs Availability of resource.
❖ A process where you cannot escape from manual intervention.

False Expectations for Test Automation

❖ Immediate Test Effort Reduction will be there
❖ Immediate Schedule Reduction
❖ One Test Tool Fits All
❖ Tool Ease of Use
❖ 100% Test Coverage can be achieved

This should be reflected well in you test planning documentation.

Some Questions Before Involvement

Here are few questions which one must ask himself before getting himself involved in any automation project. It is advised to really work hard to find answer to at least following

◈ **Scope the test automation**
  ❖ Which part should be automated
  ❖ What is the priority
  ❖ Which part can't or not worth automating
◈ **To buy or not?**
  ❖ Use commercial tool
  ❖ Write program/script by ourselves
◈ **How to do automation?**
  ❖ How to organize these binaries with test data
  ❖ How to deploy them to each test machine
  ❖ How to gather test result and generate report
◈ **What would be the best suitable framework for you?**
  You may refer to article named " Designing an Automation framework"
  http://technodivine.com/home/?p=72

📜 Aforesaid is really important as it helps to analyze the **R**eturn **O**n **I**nvestment. Achieving which with good score is the most important goal of any automation project.

About Automation Frameworks

◈ **What is a Framework?**
   ❖ Framework is an abstraction in which solution providing generic functionality can be selectively changed by user code.

   📜 Every tool has its own framework which is often referred to as a default framework of the tool.

◈ **Automation Design Patterns**
   ❖ Means a "Template" or a general reusable solution to a commonly occurring problem within a given context.

◈ **Generic Frameworks**
   ❖ The Data-Driven Testing Framework.
   ❖ The Keyword-Driven or Table-Driven Testing Framework.
   ❖ Modular Framework.
   ❖ The Hybrid Test Automation Framework.

We will continue the same in next part of this Article .. keep watching.