CUI Abbottabad

Department of Computer Science

SOFTWARE TESTING

Lecture 11

Manual Vs Automation Testing and Regression Testing

CONTENT…

- Manual Testing
- Automation Testing
- Test selection guidelines for automation
- Characteristics of automated test cases
- Steps in automated test cases
- Regression testing

MANUAL TESTING

- Manual testing is a software testing process in which test cases are executed manually without the use of any automated tool.
- All test cases are executed manually by the tester according to the end user's perspective.
- Ensures whether the application is working, as mentioned in the requirement document or not.
- Test cases are planned and implemented to complete almost 100% of the software application.
- Test case reports are also generated manually.

HOW TO PERFORM MANUAL TESTING

- First, tester observes all documents related to software, to select testing areas.
- Tester analyses requirement documents to cover all requirements stated by the customer.
- Tester develops the test cases according to the requirement document.
- All test cases are executed manually by using Black box testing and white box testing.
- If bugs occurred then the testing team informs the development team.
- The Development team fixes bugs and handed software to the testing team for a retest.

AUTOMATION TESTING

- Defined as “automatic testing of the software in which developer/tester write the test script with the help of testing tools and run it on the software”.
- It does not require any human intervention and automatically enters test data into the System under Test, compare expected and actual results and generate detailed test reports.
  - May requires manual effort when creating initial scripts.
- Automation testing process spends more time in keeping the test scripts whereas enhancing the complete test coverage.

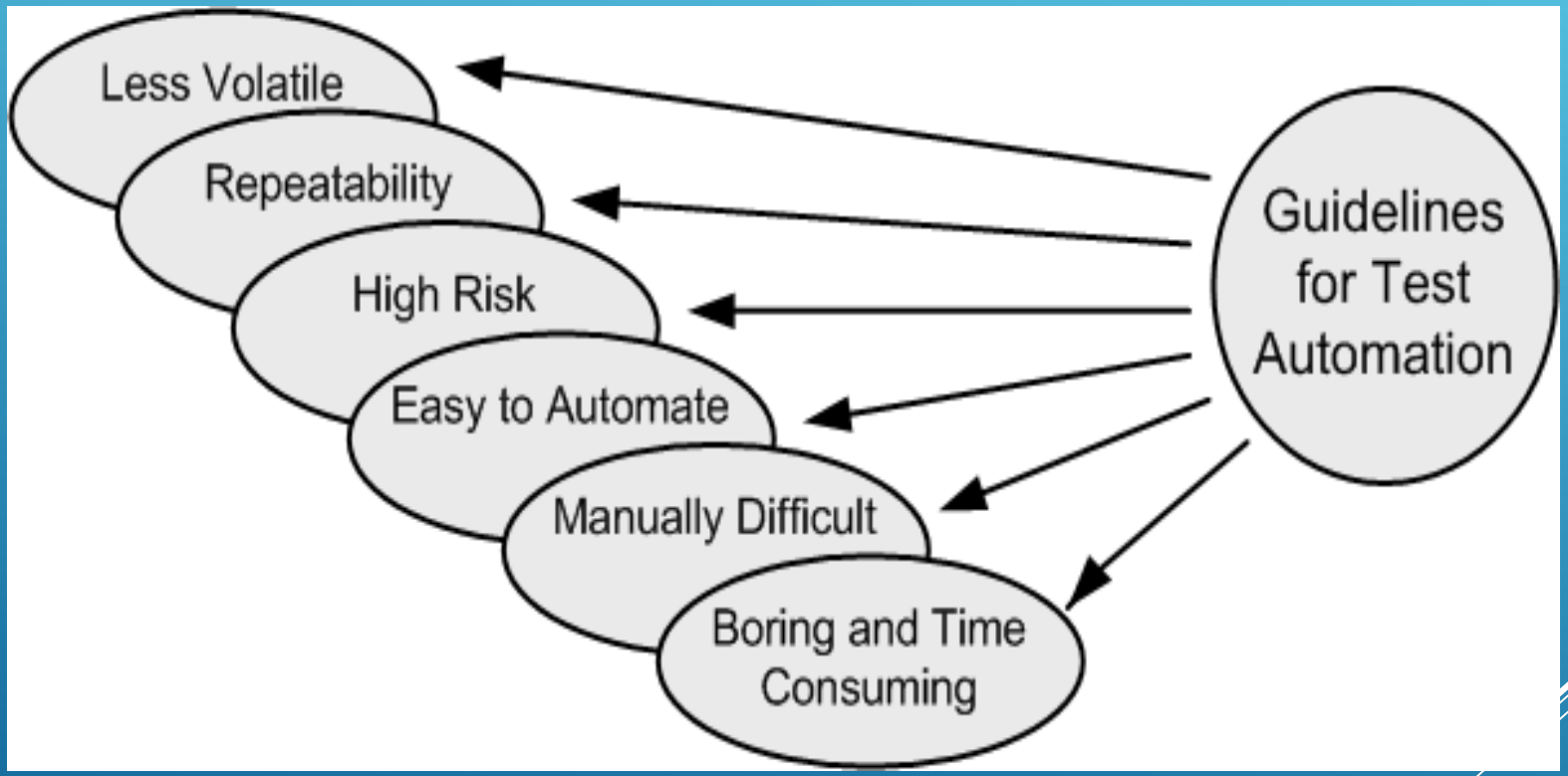
WHICH TEST CASES SHOULD WE AUTOMATE?

- High Risk – Business Critical test cases
- Test cases to be executed repeatedly
- Tedious or difficult test cases
- Time-consuming test cases

HOW TO AUTOMATE TEST CASES?

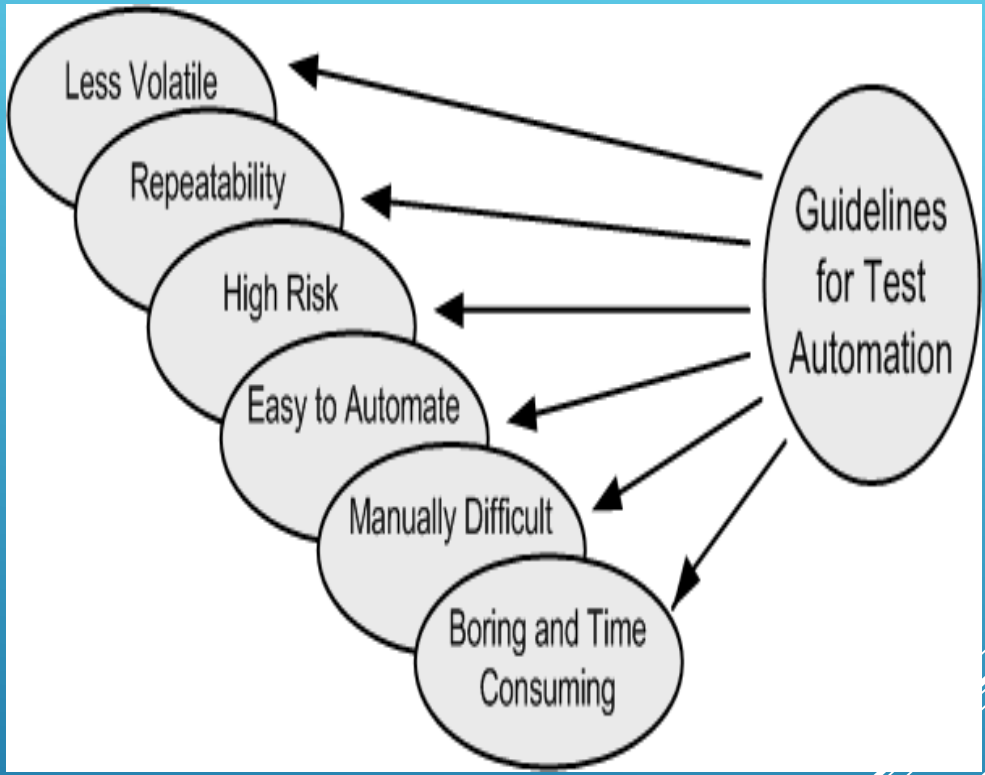
- Define the scope of automation
- Test tool selection
- Test plan design and development
- Test environment setup
- Test script and its execution
- Test Results and reports
- Maintenance

TEST SELECTION GUIDELINES FOR TEST AUTOMATION



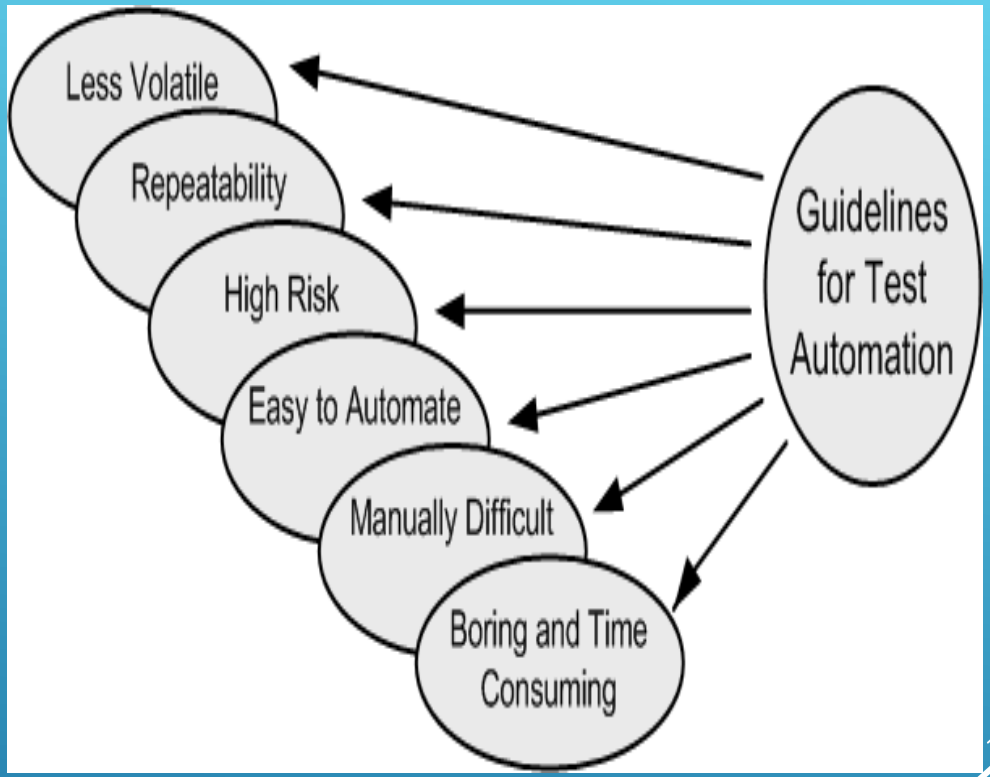
Less Volatile

Unlikely to change over time



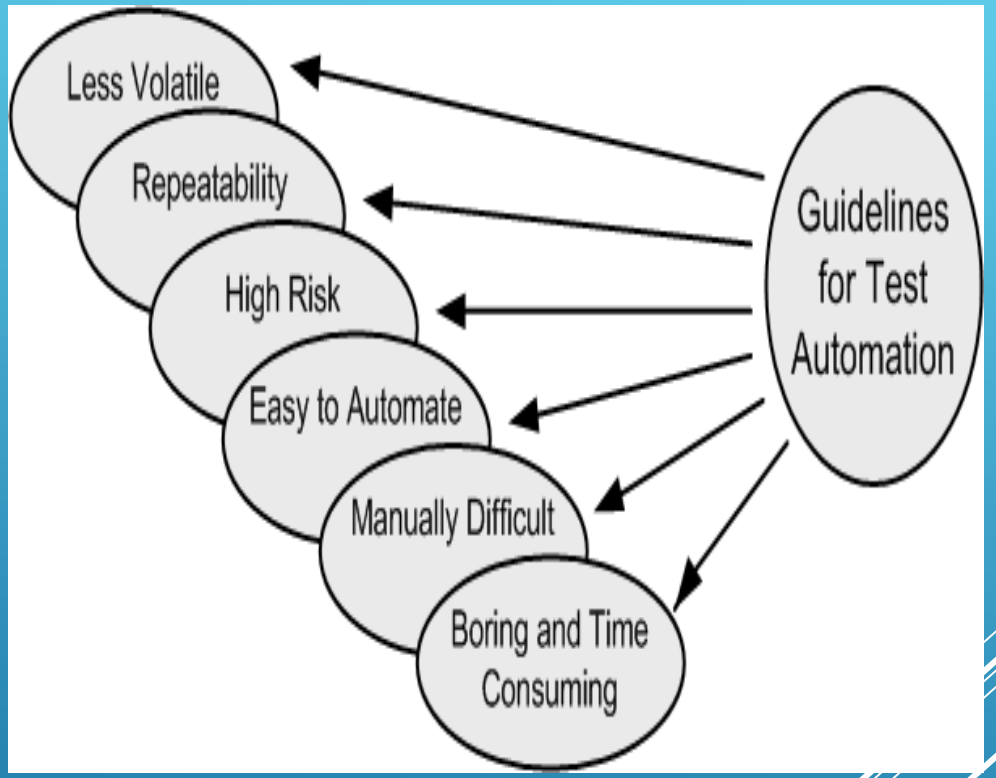
Repeatability

One time test cases should not be considered for automated test case



High Risk

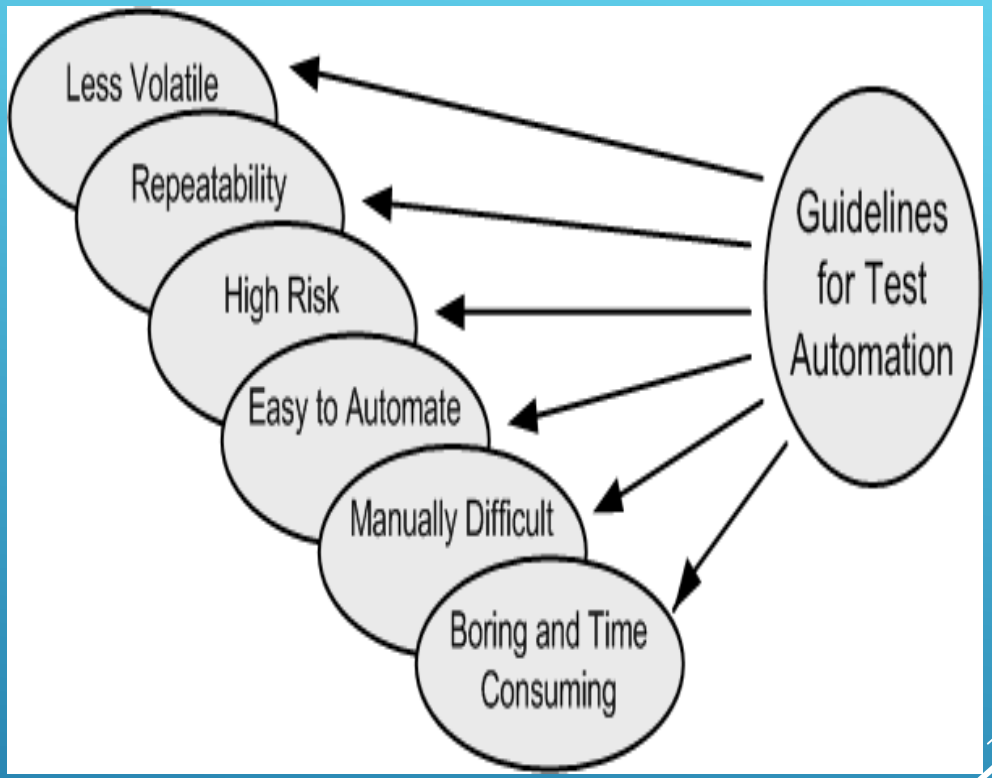
Due to repeatability, these test Cases are right candidate for automation



Easy to automate

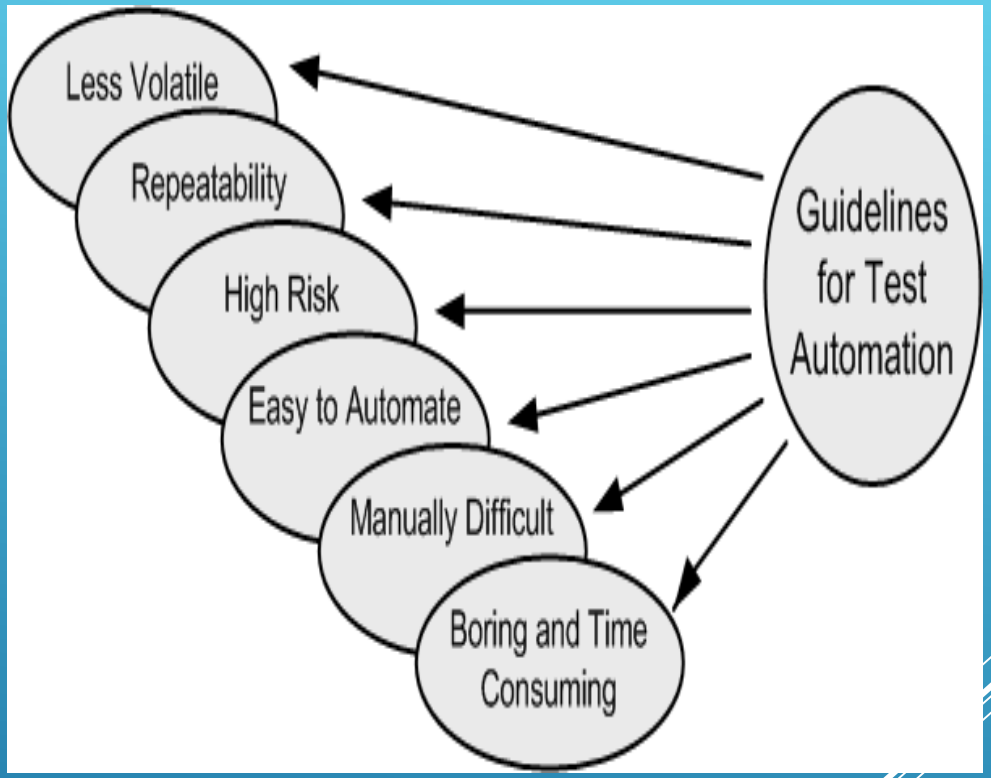
Should be automated if

are easy to be…



Manually Difficult

For complex problems too



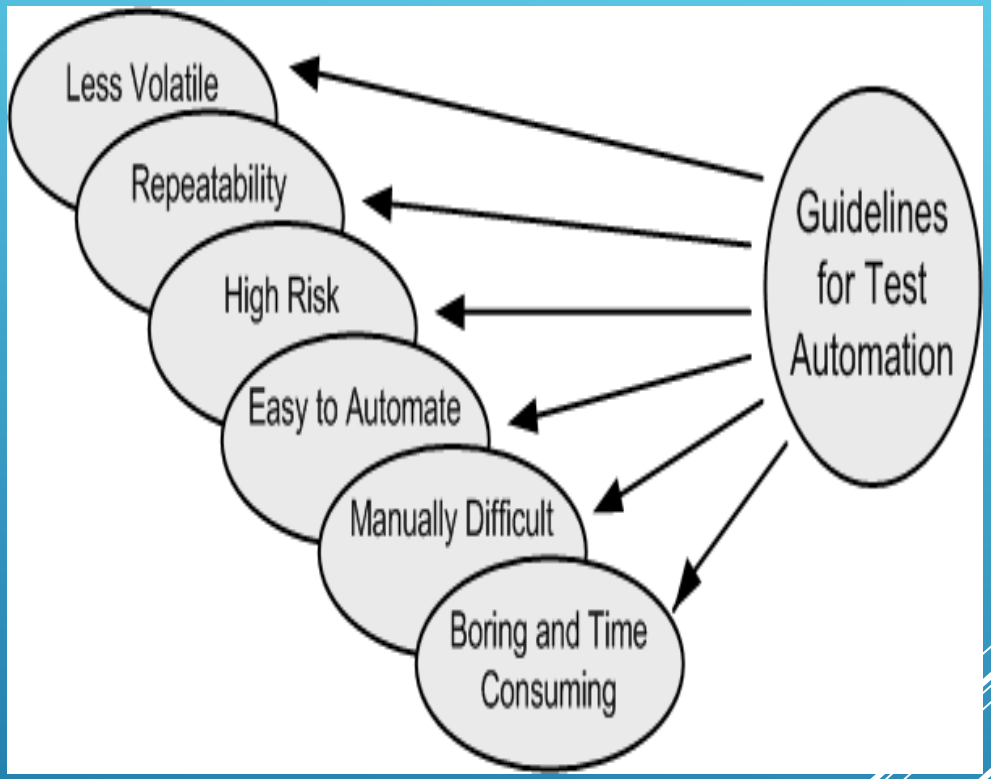
Boring and Time consuming

The tester's time should

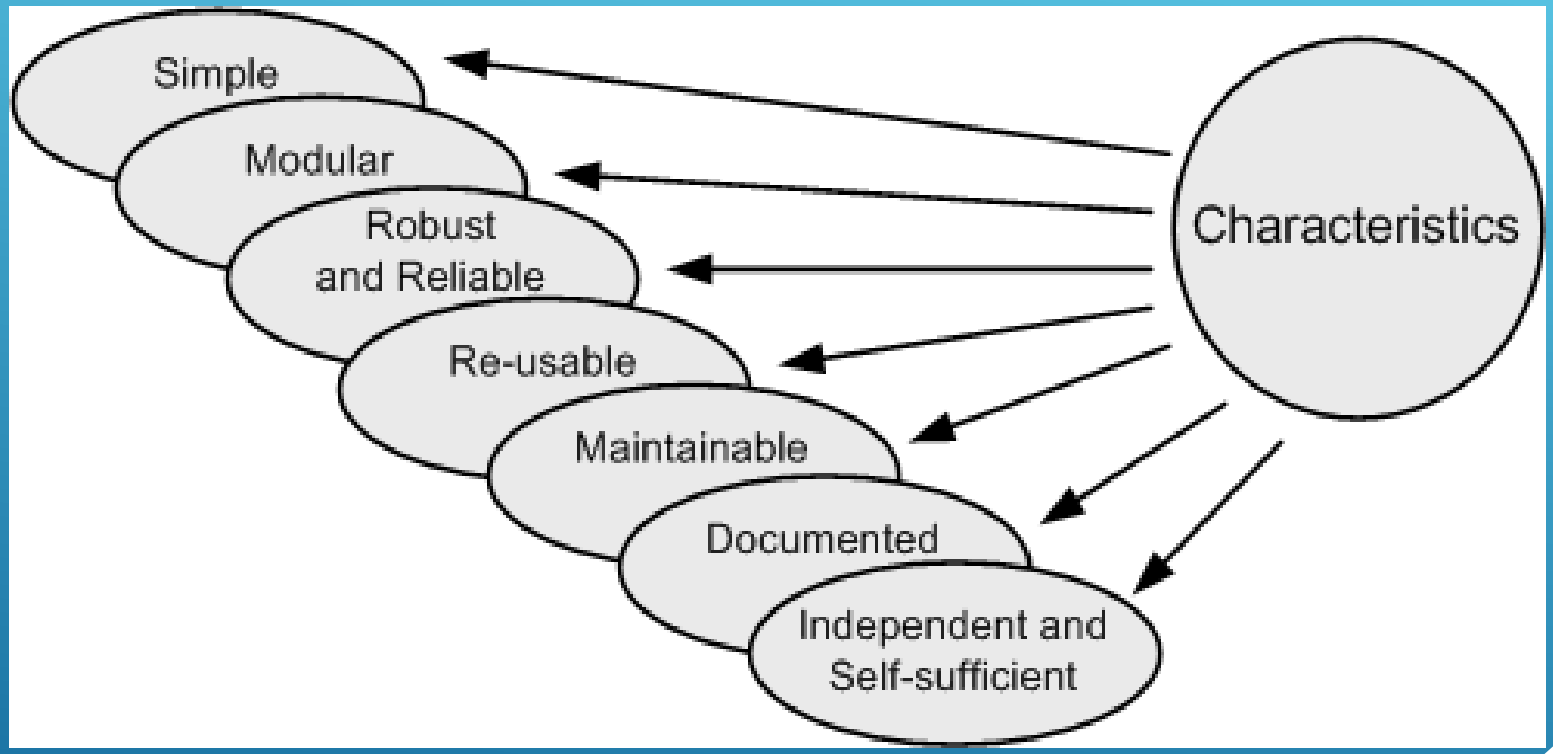
be utilized in the development

of more creative and

effective test cases



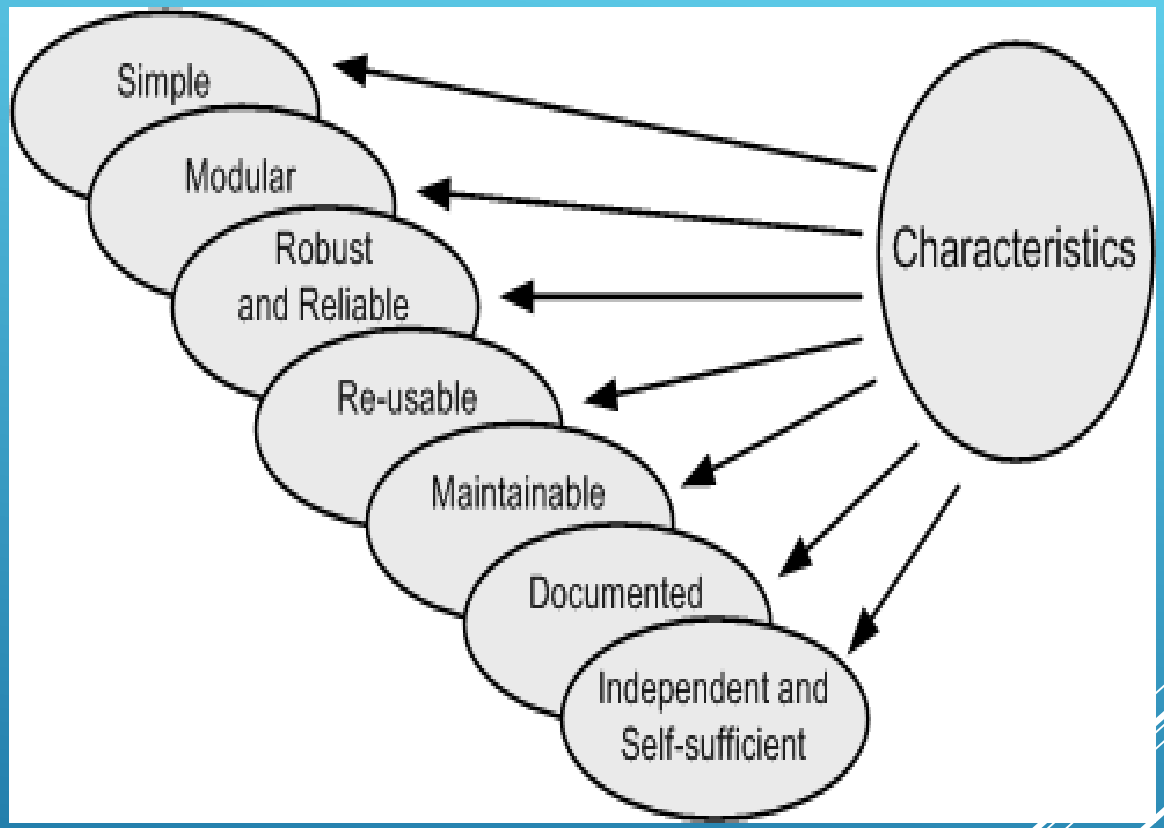
CHARACTERISTICS OF AUTOMATED TEST CASES



Simple

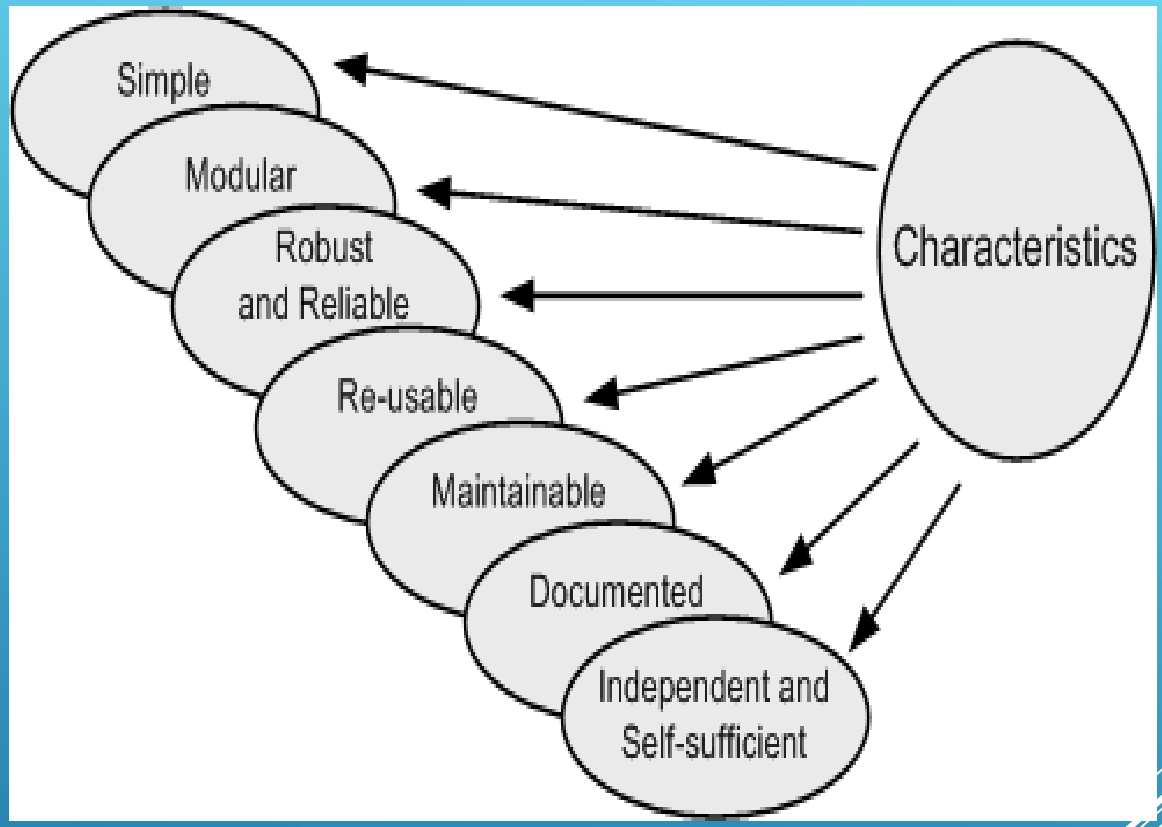
The test case should

have a single objective



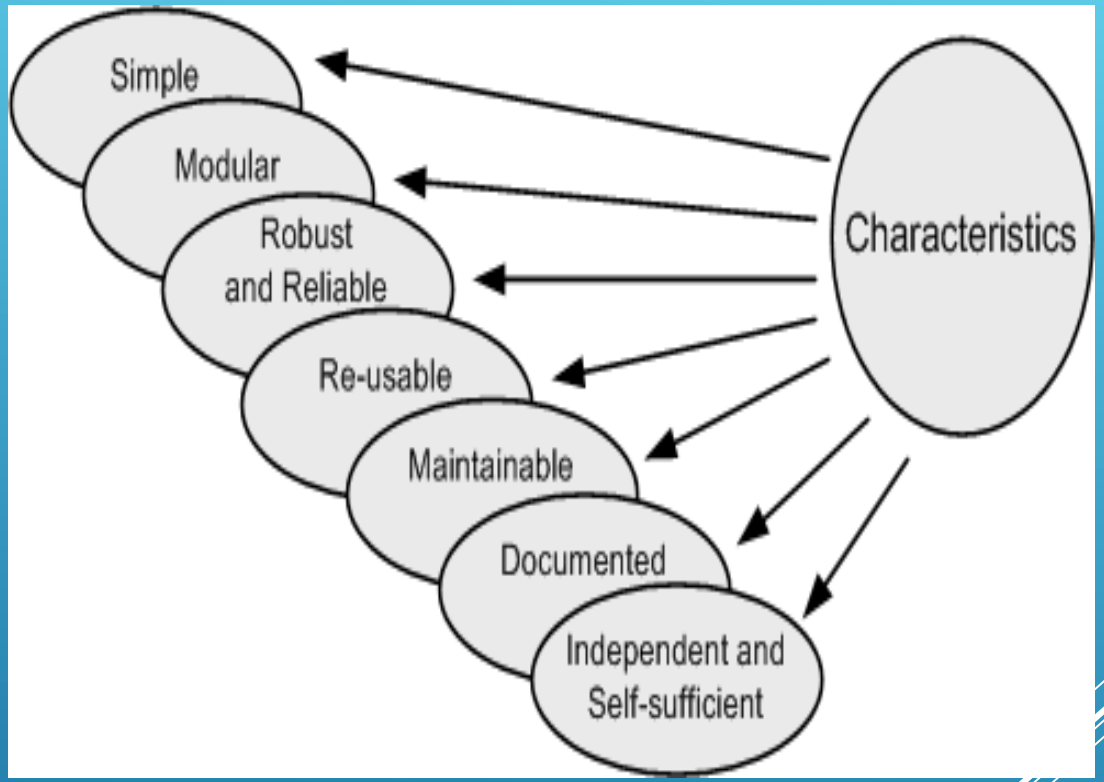
Modular

The test steps are building blocks from reusable libraries that are put together to form multistep test cases



Robust and reliable

Can ignore trivial failures



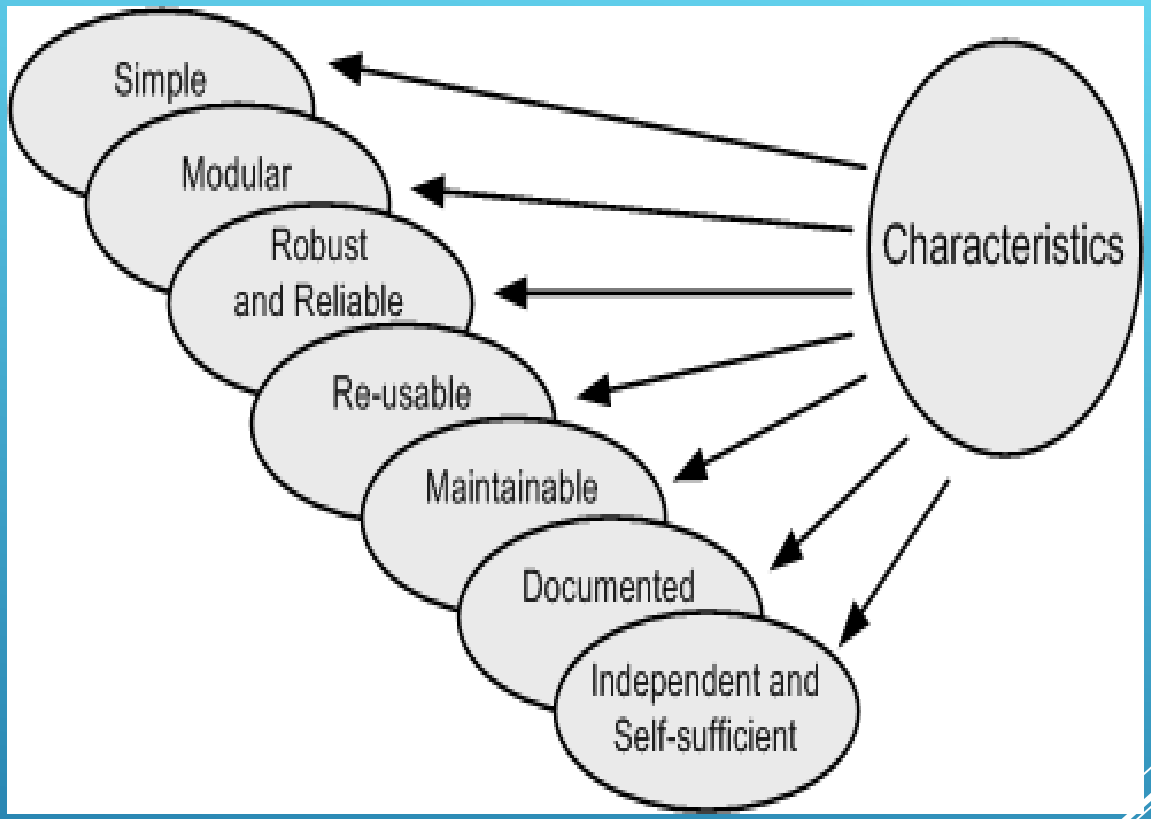
Re-usable

The test steps are

built to be configurable,

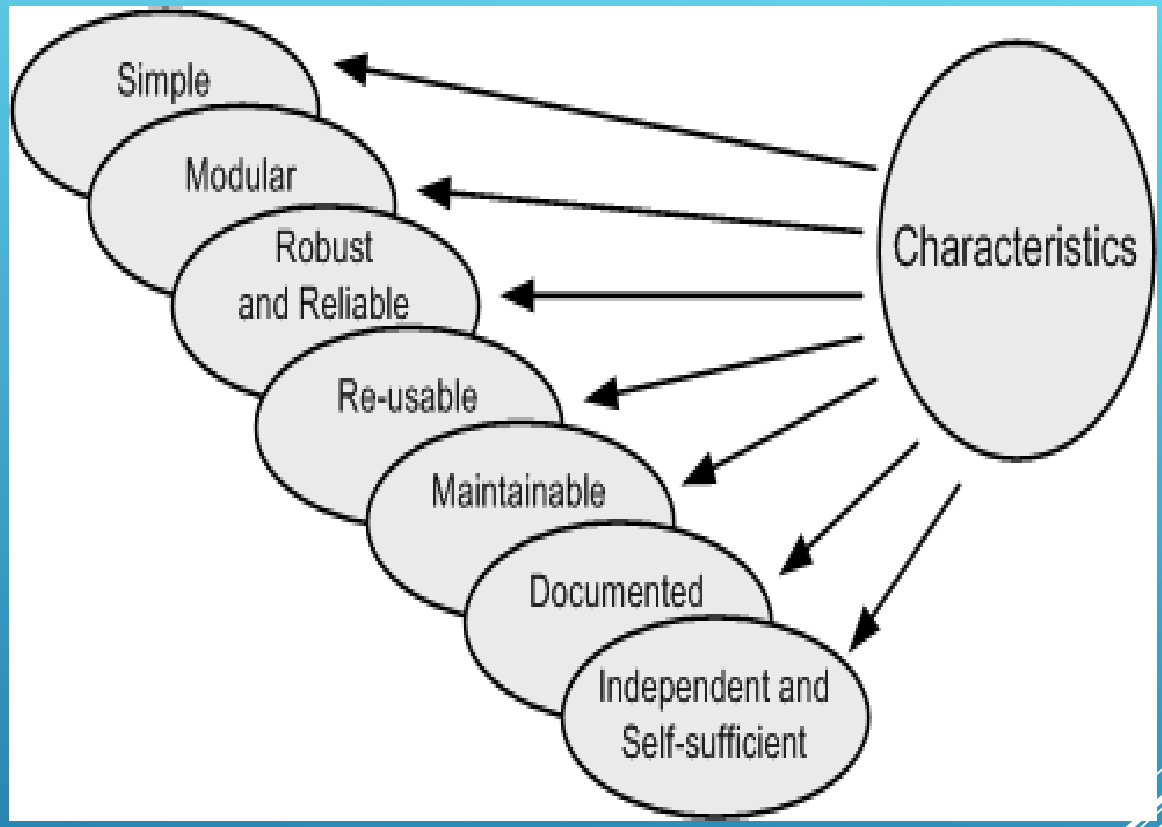
that is, variables

should not be hard coded



Maintainable

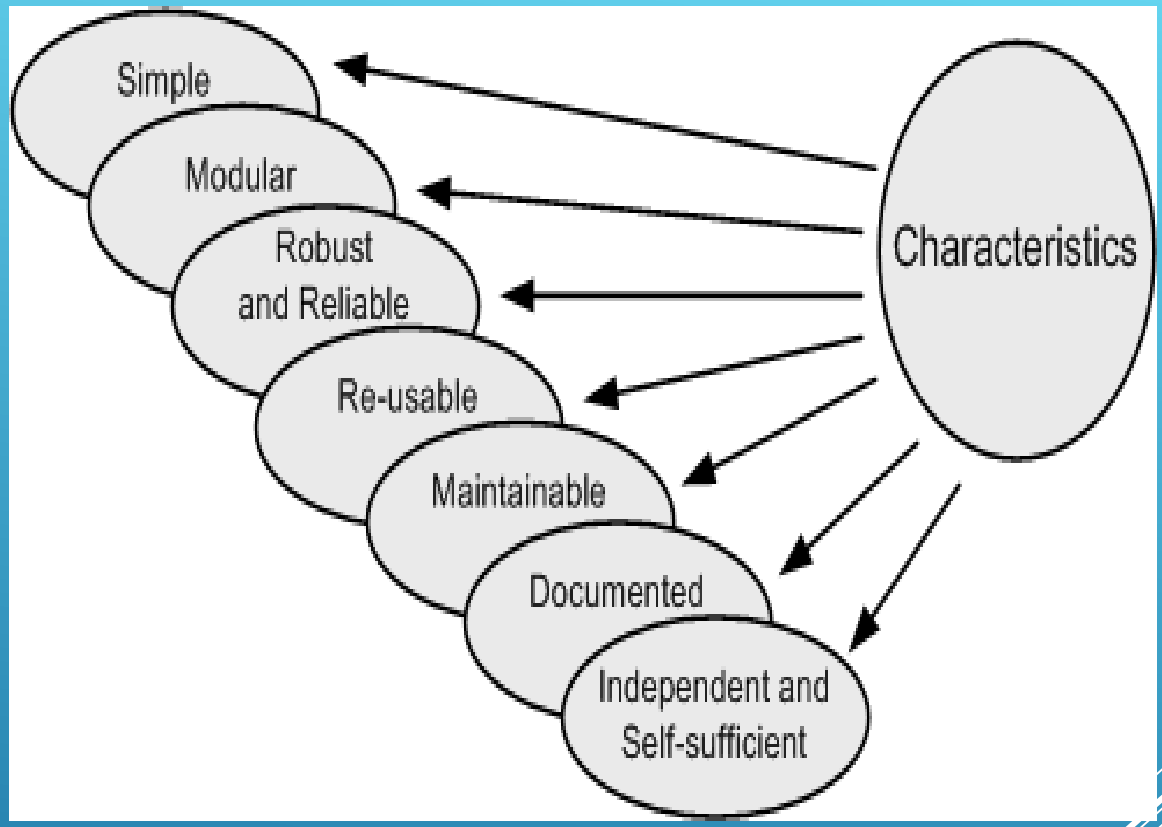
All the test cases should be controlled with a version control system



Documented

All descriptions should

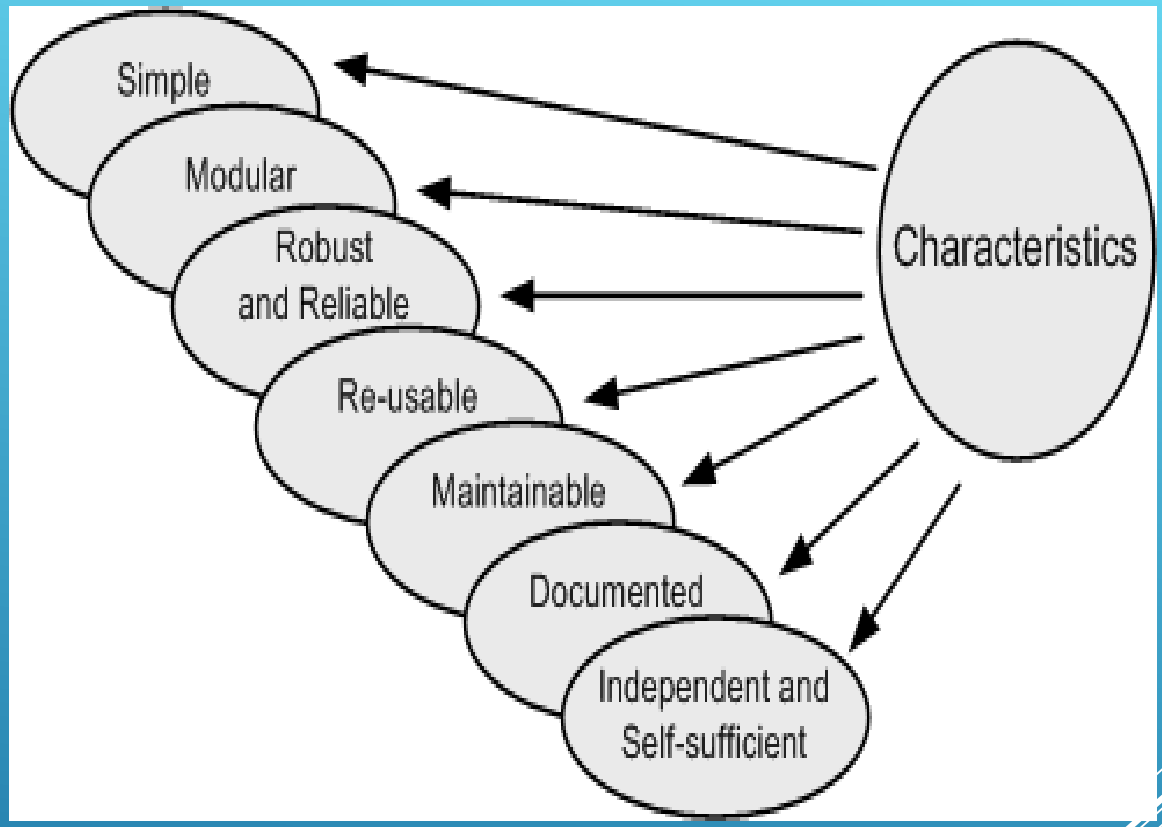
be clearly written



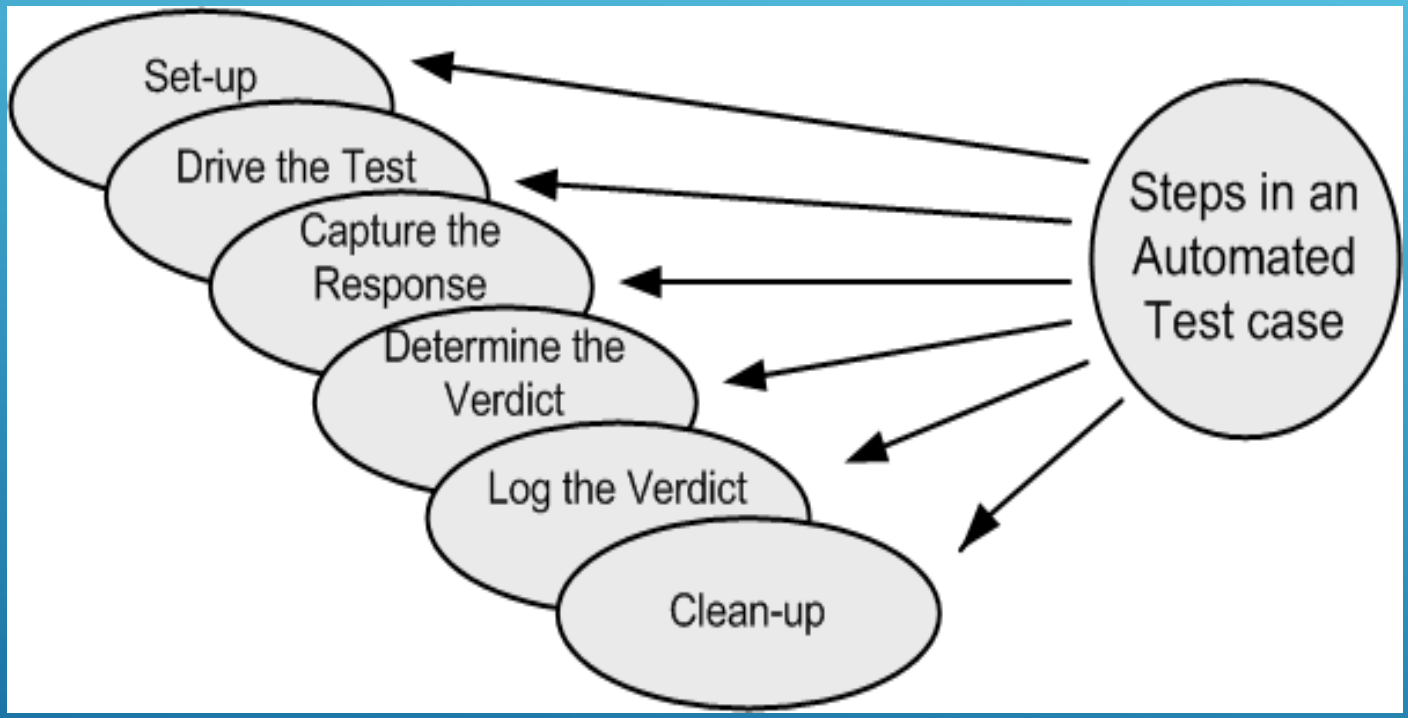
Independent and Self-sufficient

Design each test case

as a cohesive entity



SIX MAJOR STEPS IN AUTOMATED TEST CASE



MANUAL TEST CASE

- It is important to remember that test automation cannot replace manual testing.
- Human creativity, variability, and observability cannot be mimicked through automation
- Certain categories of tests, such as usability, interoperability, robustness, and compatibility, are often not suited for automation
- It is too difficult to automate all the test cases; usually 50% of all the system-level test cases can be automated
- There will always be a need for some manual testing, even if all the system-level test cases are automated.

REGRESSION TESTING

- Regression testing is a black box testing technique.
- When new changes are made in the existing system or a new feature is added to the application, it is essential to test the application modules that are impacted by this new requirement.
- Regression testing is making sure that the product works fine with new functionality, bug fixes, or any change in the existing feature.
- Test cases are re-executed to check the previous functionality of the application is working fine, and the new changes have not produced any bugs.

WHEN CAN WE PERFORM REGRESSION TESTING?

- When new functionality added to the application.
- When there is a Change Requirement.
- When the defect is fixed.
- When there is a performance issue fix.
- When there is an environment change.

REGRESSION TESTING TECHNIQUES

Retest All: All the test cases are executed again that were previously written to make sure that everything works fine, and there are no bugs introduced because of change and a new feature in code.

- Expensive

Test case Selection: A selected test-case suite will execute rather than an entire test-case suit. Select test suite on basis of code change.

- Reusable Test cases.
- Obsolete Test cases.

Test case Prioritization: Prioritize the test case depending on business impact, critical and frequently functionality used. Selection of test cases will reduce the regression test suite.

REFERENCES

Book:

Software testing and quality assurance (Indian) by Kashira Sagar Naik and Priyadarshi Tripathy