**Selenium Test Life Cycle**  
  
Selenium Test Life Cycle Phases :  
   
i) Test Planning  
  
ii) Generating Basic Tests  
  
iii) Enhancing Tests  
  
iv) Running and Debugging Tests  
  
v) Analyzing Test Results and Reporting Defects  
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**i) Test Planning**  
   
> Get Application Environment (UI Design Technology, Database) Details from development team.  
  
> Analyze the AUT (Application Under Test) in terms of Object Identification.  
  
    Using Recording feature in Selenium IDE  
  
    Using Firebug and Firepath plug ins(Mozilla Firefox) we can inspect elements.  
  
> Select Test Cases for Automation  
  
    Tests that we have to execute on every build (Sanity Tests)  
  
    Tests that we have to execute on every modified build(Regression Tests)  
  
    Tests that we have to execute with multiple sets of Test Data(Data Driven Tests).  
  
> Select Testing Framework(JUnit/TestNG) and Implement.  
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**ii) Generating Basic Tests**  
   
In UFT:  
    1) Object Repository based Test Design (Recording, Keyword driven methodology)  
  
    2) Descriptive Programming/Programmatic Descriptions  
  
In Selenium:      
  
1) Selenium IDE  
      
    a) Using Recording  
  
    b) Type Test steps using Element locators and Selenium IDE/Selenese Commands.  
  
2) Selenium WebDriver  
  
    Using Element Locators and WebDriver methods.  
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**iii) Enhancing Test cases**  
  
**1) Inserting Verification Points**  
UFT:  
  
Using UFT Checkpoints Or Using VBScript Conditional Statements  
  
Selenium IDE:  
  
    Using Assert/Verify Commands  
  
Selenium WebDriver  
  
    a) Using Java Conditional Statements  
  
    b) Using TestNG Assertion Methods  
  
**2) Parameterization**  
Replacing constant (fixed) values using Parameters(Variables/Function Parameter etc...)  
  
We use Parameterization in Data driven Testing.   
  
What is Data Driven Testing?  
  
Testing same Functionalities using multiple sets of Test Data.  
  
Why Data Driven Testing?  
  
For Positive and Negative Testing.  
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Using Loop Statements and any files.  
  
**3) Synchronization**  
What is Synchronization?  
  
How to Synchronize Selenium with AUT?  
  
**4) Error Handling**  
Handling expected and unexpected errors.  
  
**5) Adding Comments (Optional)**  
Etc...  
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**iv) Running and Debugging Tests**  
   
Running/Executing Tests (Mandatory)  
  
Single Test Run  
  
Test Batch Run/Batch Testing.  
  
    Using Testing Framework(JUnit/TestNG) we can conduct batch Testing.  
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**Debugging Tests (Optional)**  
   
What is debugging?  
  
Locating and isolating Errors thru Step by Step execution.  
  
When Debugging is Required?  
  
Scenario 1: Test case is not showing any errors and providing correct output-Debugging is not required.  
  
Scenario 2: Test case is showing errors-Debugging is Optional.  
  
Scenario 3: Test case is not showing any errors and not providing correct output-Debugging is Required.  
  
x = a \* b  
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**v) Analyzing Test Results and Reporting Defects**  
  
**Analyzing Test Results**  
   
    Selenium doesn't provide detailed Test Reports(Summary only).  
  
    Using either JUnit or TestNG we can get detailed Test Reports.  
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Status of Test Results in Functional Test Automation  
  
1) Pass (If expected = Actual)  
  
2) Fail (If expected Not equal Actual)  
  
3) Done (If there is no verification in a Test case)  
  
4) Warning (if any interruption during Test execution)  
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**Reporting Defects:**  
   
Selenium doesn't integrate with any tool for Test management /Defect management.  
  
Functional Test Automation Vs. Defect management  
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Selenium            Manual  
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Selenium            Bugzilla/Jira etc...  
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Selenium Tools - Open Source  
  
Eclipse IDE - Open Source  
  
Java - Open Source  
  
JUnit / TestNG Framework -Open Source  
  
Bugzilla for Defect management - Open Source.