# Software Testing

# Module-4 Assignment (Manual Testing)

# Automation Core TESTING (HP Load Runner Up And Selenium IDE)

## **Which components have you used in Load Runner?**

* Some of the main components of LoadRunner include:

1. Virtual User Generator (VUGen): VUGen is used to create virtual users that simulate real user behavior. It records user actions and generates scripts that can be used to simulate user behavior during a load test.
2. Controller: The Controller is used to manage the load testing scenarios. It defines the number of virtual users, the load distribution, and the duration of the test.
3. Load Generators: Load Generators are used to generate load on the system under test. They run the virtual user scripts and generate the load as per the Controller's configuration.
4. Analysis: The Analysis component is used to analyze the results of the load test. It provides graphs and reports that show the system's performance under different loads.
5. Protocol Support: LoadRunner supports a wide range of protocols, including HTTP, HTTPS, SAP, Oracle, and many others. The protocol support varies depending on the version of LoadRunner being used.

## **How can you set the number of Vusers in Load Runner?**

* You can set the number of Vusers in the controller section while creating your scenarios. Many other advanced options like ramp-up, ramp-down of Vusers are also available in the Controller section.

1. Open LoadRunner Controller and create a scenario with the required scripts.
2. In the "Scenario" tab, select "Run-Time Settings" and choose the "General" section.
3. In the "General" section, set the "Vuser Ramp-up" option to the desired value. This option controls the rate at which Vusers are added to the scenario during the test run.
4. Set the "Number of Vusers" option to the desired total number of Vusers for the scenario.
5. Save the Run-Time settings and start the scenario

* When the scenario starts, LoadRunner will add Vusers to the test run according to the ramp-up rate specified in the Run-Time settings until the total number of Vusers is reached. By adjusting the Vuser ramp-up rate and the total number of Vusers, you can control the load on the system being tested.

## **What is Correlation?**

* Correlation, as the name suggests, is a mechanism of defining a relationship between two variables or entities. A Dictionary defines it as “statistical relation between two or more variables such that systematic changes in the other accompany systematic changes in the value of one variable.”

## **What is the process for developing a Vuser Script?**

* Process for developing a Vuser script is below

1. Record the Script: Usually, this is the first step of scripting where every user action is recorded into a script.
2. Replay and Verify: Once the script is recorded, reply the script to ensure its working right. Verify any impact through application frontend or database.
3. Enhance the Script: Once recording has been verified, enhance script by adding checkpoints, validating data, adding transactions and rendezvous points.
4. Replay and Verify: As earlier, re-play your script and verify that everything is working as intended.
5. Configure Runtime Settings: Configure and control pacing duration, think time variation, proxy settings and whether you wish to ignore any external resources.
6. Use for Load Scenarios: Formulate load scenarios based on test objectives. Use load distribution and geo-wide agents to make real like scenarios.

## **How Load Runner interacts with the application?**

* Protocol is used in Load Runner to interact with the application.
* In LoadRunner, a protocol is a set of rules and procedures that define how virtual users communicate with the application being tested. LoadRunner supports multiple protocols for testing different types of applications, such as web, mobile, and desktop.
* Here are some examples of protocols in LoadRunner:

1. HTTP/HTTPS: This protocol is used for testing web applications that use the HTTP or HTTPS protocol.
2. Web Services: This protocol is used for testing SOAP and RESTful web services.
3. SAP: This protocol is used for testing SAP applications.
4. Oracle: This protocol is used for testing Oracle applications.
5. Citrix: This protocol is used for testing applications that are accessed through a Citrix client.
6. Java over HTTP: This protocol is used for testing Java applications that communicate over HTTP.
7. .NET over HTTP: This protocol is used for testing .NET applications that communicate over HTTP.

* When creating a LoadRunner script, you need to select the appropriate protocol based on the application being tested. The protocol defines the communication between the virtual users and the application server, allowing LoadRunner to accurately simulate real-world load on the application.

## **How many Vusers are required for load testing?**

* The number of VUsers required depends on your system under test, network configurations, hardware settings, memory, operating system, software applications objective of a performance test. There cannot be any generic value for Vuser.

## **What is the relationship between Response time and Throughput?**

* There is an inverse relationship between response time and throughput. As the system's workload increases, the response time typically increases while the throughput decreases. This is because as the system becomes busier, it may take longer to respond to each individual request, and it may not be able to process as many requests simultaneously.

|  |  |
| --- | --- |
| Response Time | Throughput |
| Response time refers to the amount of time it takes for a system to respond to a request or to complete a task. It is usually measured in seconds, milliseconds, or microseconds. Response time is an important metric because it directly affects the user experience. A system with a fast response time is generally more desirable than a slow one. | Throughput, on the other hand, refers to the amount of work that can be completed by a system over a given period of time. It is usually measured in transactions per second (TPS), requests per second (RPS), or bytes per second (BPS). Throughput is an important metric because it represents the system's ability to handle a large number of requests or transactions in a given time frame |

## **What is the difference between hits/second and requests/second?**

* Hits per second is a more accurate measure of server performance, as it takes into account the actual content that is being served to clients. However, requests per second can be a useful metric for identifying issues such as high levels of traffic or requests for non-existent files, which can put strain on the server and lead to slower response times.

|  |  |
| --- | --- |
| Hits/Second | Requests/Second |
| Hits per second (HPS) refers to the number of times a web server sends a file to a client in response to a request. A hit can be any type of file, such as an HTML page, an image, a video, or a script. For example, if a client requests a web page that contains five images, the server would register six hits: one for the HTML page and one for each of the five images | Requests per second (RPS), on the other hand, refers to the number of requests that a server receives from clients in a given time period. A request can be for any type of file, and may result in one or more hits depending on the content of the file. |

## **To test the performance testing on “** [**https://www.saucedemo.com/**](https://www.saucedemo.com/) **”**

1. To record all side menu
2. To record minimum 10 Vusers on this website
3. Save all (script, design, graph)

* <https://drive.google.com/drive/folders/1QD-1Ttkxdtf2L3dCISoxvNHM1vtHK17W?usp=share_link>
* 

## **Create a normal script of above website with correlate using hp default website.**

* Username : JoJo
* Password : bean
* <https://drive.google.com/drive/folders/1IuAGfZxa5UWvpITfg6t5toBuAz9yDHmK?usp=share_link>
* 

## **What is automation testing?**

* **Automation Testing** is a software testing technique that performs using special automated testing software tools to execute a test case suite. On the contrary, Manual Testing is performed by a human sitting in front of a computer carefully executing the test steps.
* The automation testing software can also enter test data into the System Under Test, compare expected and actual results and generate detailed test reports. Software Test Automation demands considerable investments of money and resources.

## **Which are the browsers supported by selenium IDE?**

* Selenium IDE supports the following web browsers:

1. Mozilla Firefox
2. Google Chrome

* it is worth noting that browser support can change over time as new versions are released or as the Selenium IDE extension is updated. It is always a good idea to check the official Selenium IDE documentation for the latest information on supported browsers.

## **What are the benefits of automation testing?**

* **Following are the Test Automation benefits:**

1. 70% faster than the manual testing
2. Wider test coverage of application features
3. Reliable in results
4. Ensure Consistency
5. Saves Time and Cost
6. Improves accuracy
7. Human Intervention is not required while execution
8. Increases Efficiency
9. Better speed in executing tests
10. Re-usable test scripts
11. Test Frequently and thoroughly
12. More cycle of execution can be achieved through automation
13. Early time to market

## **Why testers should opt for selenium and not QTP?**

* Both Selenium and QTP are popular tools used for automated testing. There are several reasons why testers may choose Selenium over QTP:
* The choice between Selenium and QTP ultimately depends on the specific needs and requirements of the testing project, as well as the expertise and experience of the testers involved.

|  |  |  |
| --- | --- | --- |
| Activity | Selenium | QTP |
| Cost | Selenium is open-source and free | while QTP is a commercial tool that requires a license and can be expensive. |
| Cross-platform and cross-browser support | Selenium supports multiple operating systems (Windows, macOS, Linux) and web browsers (Chrome, Firefox, Safari, Edge, etc.) | while QTP is limited to Windows and Internet Explorer |
| Flexibility and customization | Selenium is highly customizable and flexible, allowing testers to create their own test frameworks and integrate with other tools and technologies. | QTP is more limited in terms of customization and integration. |
| Community support | Selenium has a large and active community of developers and users who contribute to the project, provide support, and share knowledge and best practices. | QTP has a smaller community in comparison. |
| Test script portability | Selenium scripts can be easily ported across different platforms and browsers | while QTP scripts are often platform-dependent and may require significant modifications when switching to a different platform or browser. |

## **To validate the saucedemo website: “ “** [**https://www.saucedemo.com/**](https://www.saucedemo.com/) **”**

1. To use assert
2. To use click and wait
3. To use locators
4. To use other command

* <https://drive.google.com/file/d/1fRk6webxhX30fAbcd6d1_hMjxziXxCSJ/view?usp=share_link>
* <https://drive.google.com/file/d/1f9dGKhr1zqQD5zlTIiYnKEDI3t07_z5k/view?usp=share_link>
* 

