**Module-4**

**Automation Core Testing (Load Runner Up and Selenium IDE)**

1. **Which components have you used in Load Runner?**

Ans:- The Main components of LoadRunner are the Virtual User Generator(VuGen), Controller and Analysis.

* Virtual User Generator (VuGen)
* A tool that creates scripts for virtual users, which are then used by the Load generator
* The scripts created with VuGen can also be used with other Hp products
* Controller
* Generates user load for an application
* Monitors web, app, and database servers during load testing
* Allows users to add charts like response time charts and resource monitors
* Performs reporting and transaction reporting
* Analysis
* Assembles logs from various load generators
* Formats reports to visualize run result data and monitoring data
* Captures, replays and scripts different application and networking technologies
* Load Generator
* Creates multiple virtual users (Vusers) and assigns a script to each
* Each Vuser runs its script for the duration of the test
* Runs in the background with no user interface

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

Ans:-While running the test,

Go to the Vuser – add users and it pop up another screen – here you have your selected script with LG and quantity to add user.

Go ahead and add the user. Those user will be in DOWN status.

1. **What is Correlation?**

Ans:- Correlation in LoadRunner is the process of capturing dynamic data from a server and sending it to subsequent requests.

1. **What is the process for developing a Vuser Script?**

Ans:- Developing a Vuser Script typically involves:

Recording user actions on an application through a tool like VuGen, then replaying and refining the recorded script by adding necessary elements like parameterization and correlation to accurately simulate real user behavior, followed by integrating the script into a performance test scenario within the LoadRunner controller; essentially capturing a user’s typical actions and transforming them into a script that can be used to simulate multiple virtual users accessing the application under load.

**Key steps in the Vuser script development process:**

**Record the user actions:**

* Use the recording feature in VuGen to capture the user’s interactions with the application, including navigation, form submissions, and data input.

**Playback and review the script:**

* Play back the recorded script to identify any errors or inconsistencies and make necessary adjustments.

**Parameterize data:**

* Replace static values with parameters to allow for different input data variations during test execution, making the script more realistic.

**Correlations:**

* Identify and handle dynamic values that change with each request, ensuring the script can correctly interact with the application even when data is variable.

**Add transactions:**

* Define key business transactions within the script to measure their performance individually.

**Error handling:**

* Implement error handling mechanisms to gracefully handle unexpected situations during test executions.

1. **How Load Runner interacts with the application?**

* LoadRunner interacts with an application by simulating real user actions through scripts, essentially mimicking multiple virtual users interacting with the application simultaneously, allowing testers to evaluate its performance under heavy load by sending requests and monitoring the application’s response time and behaviour across various scenarios.

**Key points about LoadRunner’s interaction with applications:**

**Scripting in VuGen:**

The core functionality of LoadRunner is done through its scripting tool, “VuGen”, where testers record user interactions with the application, generating scripts that capture the necessary actions like clicking buttons, filling forms, or navigating pages.

**Protocols and Transactions:**

LoadRunner supports various protocols ( HTTP, Web Services, Citrix, etc.) and allows defining specific transactions within the script to measure performance for critical user flows.

**Virtual Users(Vus):**

Once the script is created, LoadRunner can generate multiple virtual users, each executing the script simultaneously, simulating a large number of concurrent users accessing the application.

**Load Generator:**

The “Load Generator” component of LoadRunner is responsible for distributing the virtual users across multiple machines to generate the desired load on the application under test.

**Controller:**

The “Controller” component manages the execution of the test scenario, controlling the number of virtual users, pacing and monitoring the test run.

**Analysis:**

After the test run, LoadRunner provides detailed performance metrics and analysis through its reporting capabilities, allowing testers to identify bottlenecks and areas for optimization.

1. **How many VUsers are required for load testing?**

* The number of users needed for load testing depends heavily on the applications and expected usage, but generally, a good starting point is to simulate between **3 to 6 times** the anticipated to accurately assess performance under high load this can be adjusted based on the specific system and its criticality.

1. **What is the relationship between Response Time and Throughput?**

* Response time and throughput are related in that generally, as the overall throughput of a system increases, the average response time for individual transactions tends to decrease, however they are not the same, and optimizing one can sometimes come at the expense of the other, meaning you can potentially improve the response time for a specific query by allocating more resources, which could reduce the overall throughput of the system.

1. **What is Automation Testing?**

* Automation testing is a software testing technique that uses tools to run testes automatically. It helps identify errors, bottlenecks and other issues before releasing software into production.

1. **Which Are the Browsers Supported By Selenium Ide?**

* Selenium IDE currently supports Google Chrome, Mozilla Firefox, and Microsoft Edge as the primary browser where it can be used as a browser extension to record and playback user actions, essentially allowing you to test your website across these browsers.

1. **What are the benefits of Automation Testing?**

* Automation testing has many benefits, including faster feedback cycles, improved accuracy, and reduced costs.
* **Faster feedback cycles**
* Automated testing allows for faster feedback on new software features.
* This allows development teams to address issues before they are released.
* **Improved accuracy**
* Automated testing can reduce development costs and improve code quality.
* It can also help companies save money by identifying and fixing bugs early.

1. **What are the advantages of Selenium?**

* Helps protect the body’s ability to fight infection
* Helps maintain reproductive health and fertility
* Help maintain thyroid function
* Helps protect respiratory function
* Is found naturally in various foods
* Allows developers and testers to write scripts in various programming languages to automate interactions with web browsers
* Supports different browsers like Chrome, Mozilla, Firefox, Safari and Internet Explorer
* Allows users to test their websites functionally on different browsers.
* Allows users to perform cross browser testing to check if the website functions consistently across different browsers and operating systems
* Allows users to automated and run tests much quicker.

1. **Why testers should opt for Selenium and not QTP?**

* Selenium, however, supports a wide range of programming languages. QTP/UFT test scripts run only on the windows environment. They cannot be run across all browsers. On the other hand, Selenium is OS independent and allows test scripts to run across all browsers.