**Selenium java**

It is an open source Automation tool which acts a testing suite for web based application.

**Components:**

1. Selenium RC (Remote Control)
2. Selenium Grid
3. Selenium IDE
4. Selenium Web Driver

**Selenium Remote Control (RC)**

1. One of the earlier
2. Allowed testers to execute tests in multiple browsers by injecting JavaScript into the browser
3. controlling it from a remote machine.
4. Selenium RC had limitations
5. such as slower execution speed,
6. browser-specific quirks,
7. dependency on the availability of JavaScript in browsers.
8. With the introduction of WebDriver, Selenium RC has become obsolete

**Selenium Grid**:

1. used for running tests in parallel across multiple browsers
2. It allows testers to distribute test execution across a network of machines (nodes) to reduce test execution time and increase test coverage.
3. Selenium Grid consists of a hub and multiple nodes.
4. The hub acts as a central point for distributing test execution requests, while nodes are instances of Web Driver running on different machines and configurations.

* Testers can configure Selenium Grid to execute tests on specific browsers, versions, operating systems, and devices, making it an essential tool for cross-platform and cross-browser testing.

**Selenium IDE (Integrated Development Environment)**:

1. Selenium IDE is a Firefox browser plugin used for recording, editing, and debugging Selenium tests without the need for programming knowledge.
2. It provides a user-friendly interface for creating test cases through point-and-click interactions. Testers can record their interactions with the web application and replay them to automate testing workflows.
3. Selenium IDE generates test scripts in various programming languages like Java, Python, etc., allowing users to export recorded tests for further customization and execution using Web Driver.

**Selenium Web Driver**:

* Selenium Web Driver is the most crucial component of Selenium.
* It provides a programming interface for creating and executing test cases.
* Web Driver directly communicates with the web browser and controls its behavior.
* It supports various programming languages such as Java, Python, C#, etc.
* Web Driver allows testers to interact with web elements on a web page, simulate user actions like clicks, typing text, selecting options, etc.
* It supports multiple browsers such as Chrome, Firefox, Safari, Edge, etc., making it a versatile choice for cross-browser testing.
* Web Driver offers a rich set of APIs for navigating web pages, locating elements by various strategies (X Path, CSS selectors, etc.), and performing actions on those elements.

**Our Code <==> Convert to json format through json wire protocol <==> Browser Drivers <==> Real browser**

**Setting selenium environment**

1. **Install Java and configure Javapath**
2. **Install IDE (Eclipse, IntelliJ IDEA)**
3. **Create new Java project**
4. **Download and configure selenium JARS**
5. **Download and configure browser drivers**
6. **Create first test scripts and execute**

**Selenium.dev in browser**

**Open downloads**

**Use appropriate browser driver documents to run the code through selenium**

**Open documentation**

**There is an elements there the functions like get post all are find there were testing has done through that methods**

**There will have many formats for code to check the code runs**

**1. For this first download JDK (JAVA) in windows and OS from Oracle.com**

**Set Path os the java in environment variables**

**2. Install IDE (Eclipse, IntelliJ IDEA)**

An Integrated Development Environment (IDE) is a software application that provides comprehensive facilities to computer programmers for software development.

It typically combines several development tools into a single interface, making it easier for developers to write, test, and debug code efficiently.

IDEs offer features such as code editors, syntax highlighting, debugging tools, version control integration, project management, and more.

* Eclipse is a free version so all of them mostly used this kit
* IntelliJ IDEA is available in free and pro versions

**Download Eclipse from Eclipse.org**

**Open Download packages and select version from that(Eclipse IDE for Java Developer)**

**Launch it in system and save the path in system environment**