**4. Write code to start Grid Hub and Nodes on Same Machine and Different Machines**

**REQUIREMENTS OVERVIEW:-**

**Objective:**

To set up a Selenium Grid environment that includes starting a Grid Hub and Nodes on the same machine and on different machines. This setup will allow parallel test execution across different browsers and operating systems.

**DETAILED REQUIREMENTS:-**

**1.System Requirements:**

Hardware: At least 4 GB of RAM, 2 GHz processor, 10 GB free disk space.

Software:

JDK (Java Development Kit) 8 or higher

Latest version of Selenium Server Standalone JAR

Web browsers (Chrome, Firefox,edge)

WebDriver binaries (chromedriver, geckodriver,msedgedriver)

**2.Installation Steps:**

Install JDK:

Download and install JDK from the official Oracle website.

Set JAVA\_HOME and update PATH environment variable.

Download Selenium Server Standalone:

Download the latest Selenium Server Standalone JAR file from the Selenium website.

**3.Start the Hub:**

Open a terminal or command prompt.

Navigate to the directory where the Selenium Server JAR file is located.

Run the command: java -jar selenium-server-standalone-4.21.0.jar hub

**4.Configure and Start Nodes on the Same Machine:**

Download and place WebDriver binaries.

Run commands to start nodes on the same machine and connect them to the hub.

**5.Configure and Start Nodes on Different Machines:**

Ensure JDK and Selenium Server Standalone JAR are installed on each machine.

Run commands to start nodes on different machines and connect them to the hub.

**6.Verify Hub Configuration:**

Access the hub console through a web browser to check the status and registration of nodes.

**LIST OF USECASES:-**

* UC-01: Install Java Development Kit (JDK)
* UC-02: Download Selenium Server Standalone JAR
* UC-03: Start Selenium Hub
* UC-04: Configure and Start Node 1 on the Same Machine
* UC-05: Configure and Start Node 2 on the Same Machine
* UC-06: Configure and Start Node 1 on a Different Machine
* UC-07: Configure and Start Node 2 on a Different Machine
* UC-08: Verify Hub Configuration with Nodes on Same and Different Machines