Maven Installation

Step 1: Launch an EC2 Instance

- Log in to your AWS Management Console.
- Navigate to EC2 Dashboard > Click on Launch Instance.
- Configure:
- AMI: Choose Amazon Linux
- Instance Type: Select t2.micro (Free Tier eligible).
- Key Pair: Create or select an existing key pair.
- Security Group: Allow SSH (Port 22) access.
- Storage: Keep default or adjust as per need.
- Click Launch and connect via SSH: ssh -i your-key.pem ec2-user@your-ec2-public-ip

Step 2: Install Java (Required for Maven)

- Update the package manager:
  `sudo yum update -y`
- Install Java:
  `sudo yum install java-11-amazon-corretto -y  Amazon Linux`
- Verify Java installation:
  `java -version`

Step 3: Install Apache Maven

- Download Maven:
  `wget https://dlcdn.apache.org/maven/maven-3/3.9.5/binaries/apache-maven-3.9.5-bin.tar.gz`
- Extract Maven:
  `tar -xvzf apache-maven-3.9.5-bin.tar.gz`
- Move Maven to `/opt` directory:
  `sudo mv apache-maven-3.9.5 /opt/maven`
- Set up environment variables:
  ```
  echo "export M2_HOME=/opt/maven" | sudo tee -a /etc/profile
  echo "export PATH=\$M2_HOME/bin:\$PATH" | sudo tee -a /etc/profile
  source /etc/profile
  ```
- Verify Maven installation:
  `mvn -version`

Step 4: Install Git and Configure SSH Authentication

- Install Git:

```
sudo yum install git -y
```

- Verify installation:
  ```
  git --version
  ```
- Configure Git user details:
  ```
  git config --global user.name "Your Name"
  git config --global user.email "your-email@example.com"
  ```
- Generate SSH Key:
  ```
  ssh-keygen -t rsa -b 4096 -C "your-email@example.com"
  ```
- Copy public key:
  ```
  cat ~/.ssh/id_rsa.pub
  ```
- Add the SSH key to GitHub:
- Go to GitHub > Settings > SSH and GPG keys.
- Click New SSH Key and paste the copied key.
- Save it.
- Test connection:
  ```
  ssh -T git@github.com
  ```
- Expected output:
  ```
  Hi <your-github-username>! You've successfully authenticated, but
  GitHub does not provide shell access.
  ```

Step 5: Create a pom.xml File for a Maven Project

- Navigate to Your Project Directory
  ```
  mkdir my-maven-project
  cd my-maven-project
  ```
- Initialize a Maven Project
  ```
  mvn archetype:generate -DgroupId=com.example -DartifactId=my-maven-
  project -DarchetypeArtifactId=maven-archetype-quickstart -
  DinteractiveMode=false
  ```
- Navigate to the Generated Project Directory
  ```
  cd my-maven-project
  ```
- Verify the `pom.xml` File
  ```
  ls
  ```
- You should see `pom.xml` along with `src/` and other project files.
- Manually Create a `pom.xml` File (If Needed)
  ```
  nano pom.xml
  ```
- Paste the following basic `pom.xml` content:
  ```
  <project xmlns="http://maven.apache.org/POM/4.0.0"
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
        http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  ```

```
<groupId>com.example</groupId>
<artifactId>my-maven-project</artifactId>
<version>1.0-SNAPSHOT</version>
<packaging>jar</packaging>



<name>My Maven Project</name>
<description>A simple Maven project</description>



<dependencies>
      <dependency>
            <groupId>junit</groupId>
            <artifactId>junit</artifactId>
            <version>4.13.2</version>
            <scope>test</scope>
      </dependency>
</dependencies>



<build>
      <plugins>
            <plugin>
                  <groupId>org.apache.maven.plugins</groupId>
                  <artifactId>maven-compiler-plugin</artifactId>
                  <version>3.8.1</version>
                  <configuration>
                  <source>11</source>
                  <target>11</target>
                  </configuration>
            </plugin>
      </plugins>
</build>
</project>
```

- Save and exit (`CTRL+X`, then `Y` to save and `Enter` to confirm).
- Build the Maven Project

```
mvn clean package
```

Step 6: Push a Maven Project to GitHub

- Initialize Git in the Maven project directory:

```
cd your-maven-project
git init
```

- Add a GitHub remote repository:

```
git remote add origin git@github.com:your-username/your-repo.git
```

- Add project files:

```
git add .
```

```
git commit -m "Initial commit"
```

- Push the project to GitHub:
```
git push -u origin main
```