AUTOMATION PROJECT

Step 1: Create EC2 Instance for Tomcat

1. **Launch EC2 Instance**:
    - Go to AWS EC2 Dashboard.
    - Click on **Launch Instance**.
    - Choose **Amazon Linux 2 AMI**.
    - Select instance type (e.g., t2.micro for free tier).
    - Configure security group:
        - Add rule for SSH (port 22) with source **My IP**.
        - Add rule for HTTP (port 80) with source **Anywhere**.
        - Add rule for Tomcat (port 8080) with source **Anywhere**.
    - Launch and download the key pair (.pem file).
2. **Connect to EC2 Instance**:
3. ssh -i "your-key.pem" ec2-user@your-ec2-public-ip

Step 2: Install Java 17 Amazon Corretto

sudo yum update -y

sudo yum install java-17-amazon-corretto-devel -y

java -version

Step 3: Install Tomcat 9

sudo wget https://downloads.apache.org/tomcat/tomcat-9/v9.0.65/bin/apache-tomcat-9.0.65.tar.gz

sudo tar -xvzf apache-tomcat-9.0.65.tar.gz

sudo mv apache-tomcat-9.0.65 tomcat9

Step 4: Configure Tomcat Users

sudo nano /opt/tomcat9/conf/tomcat-users.xml

Add the following lines inside <tomcat-users> tag:

<role rolename="manager-gui"/>

<role rolename="manager-script"/>

<user username="tomcat" password="tomcat" roles="manager-gui,manager-script"/>

Step 5: Delete Restrictions in Context.xml

sudo nano /opt/tomcat9/webapps/manager/META-INF/context.xml

Comment out the following block:

<!--

<Valve className="org.apache.catalina.valves.RemoteAddrValve"

allow="127\.*|::1|0:0:0:0:0:0:0:1" />

-->

Step 6: Start Tomcat

sudo chmod 777 bin

sudo bin/startup.sh

- Access Tomcat Manager at http://your-ec2-public-ip:8080/manager using tomcat/tomcat credentials.

Step 7: Create EC2 Instance for Jenkins

1. **Launch a New EC2 Instance**
    - Same steps as Tomcat instance but name it Jenkins.
    - Open ports 22 (SSH) and 8080 (Jenkins) in the security group.
2. **Connect to Jenkins EC2**:
3. ssh -i "your-key.pem" ec2-user@your-ec2-public-ip
4. **Install Java 17, Git, and Maven**:
5. sudo yum update -y
6. sudo yum install git -y

7. sudo yum install maven -y
8. sudo amazon-linux-extras enable corretto8
9. sudo yum install java-17-amazon-corretto-devel -y
10. **Install Jenkins**:
11. sudo wget -O /etc/yum.repos.d/jenkins.repo https://pkg.jenkins.io/redhat-stable/jenkins.repo
12. sudo rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io.key
13. sudo yum install jenkins -y
14. sudo systemctl start jenkins
15. sudo systemctl enable jenkins
16. **Retrieve Jenkins Initial Admin Password**:
17. sudo cat /var/lib/jenkins/secrets/initialAdminPassword
    - Access Jenkins UI at http://your-ec2-public-ip:8080 and complete setup using the retrieved password.
18. **Install Plugins**:
    - Go to **Manage Jenkins** > **Manage Plugins**.
    - Install **Maven Integration Plugin** and **Deploy to Container Plugin**.

Step 8: Create Jenkins Job and Deploy to Tomcat

1. **Create a New Job**:
    - Click on **New Item**.
    - Choose **Freestyle Project**.
    - Under **Source Code Management**, select **Git** and enter your repository URL.
    - Under **Build**, choose **Invoke top-level Maven targets** and enter:
    - clean package
2. **Deploy to Tomcat**:

- Install **Deploy to Container Plugin**.
- Under **Post-Build Actions**, select **Deploy war/ear to a container**.
- Enter Tomcat URL: http://your-tomcat-ec2-ip:8080/manager/text.
- Enter Tomcat credentials (tomcat/tomcat).
- Deploy WAR file from target/*.war.

3. **Build and Deploy**:
   - Click **Build Now** and verify deployment at http://your-tomcat-ec2-ip:8080/your-app.

This completes the full setup of Tomcat, Jenkins, and CI/CD deployment.