Java Application Deployment using 3 Servers

This document provides step-by-step instructions for deploying a Java-based web application using three servers:

1. **Build Server** - For compiling and building the Java code using Maven.
2. **Deployment Server** - For running the built artifact (WAR file) using Apache Tomcat.
3. **Database Server** - For hosting and managing the application database (MySQL).

Artifacts will be securely copied between servers using the `scp` command.

Step 1: Build Server Setup (Java + Maven)

1. Launch a Linux server (e.g., Ubuntu) for the build process.
2. Install Java Development Kit (JDK):

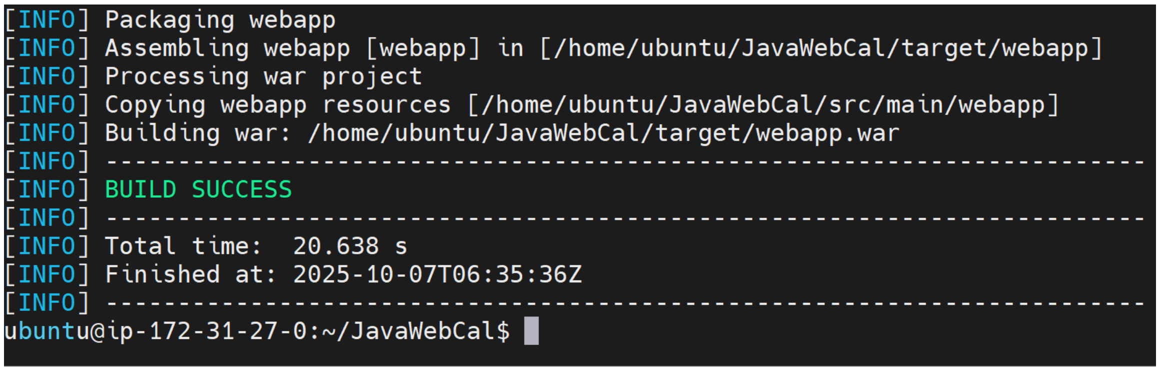
```
sudo apt update
sudo apt install openjdk-17-jdk -y
java -version
```

3. Install Maven:

```
sudo apt install maven -y
mvn -version
```

4. Clone your Java project repository:

```
git clone <your_repo_url>
cd <project_folder>
```



```
[INFO] Packaging webapp
[INFO] Assembling webapp [webapp] in [/home/ubuntu/JavaWebCal/target/webapp]
[INFO] Processing war project
[INFO] Copying webapp resources [/home/ubuntu/JavaWebCal/src/main/webapp]
[INFO] Building war: /home/ubuntu/JavaWebCal/target/webapp.war
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  20.638 s
[INFO] Finished at: 2025-10-07T06:35:36Z
[INFO] ------------------------------------------------------------------------
ubuntu@ip-172-31-27-0:~/JavaWebCal$
```

5. Build the project and generate the WAR/JAR file:

```
mvn clean package
```

6. Verify that the artifact (e.g., `target/app.war`) is created successfully.

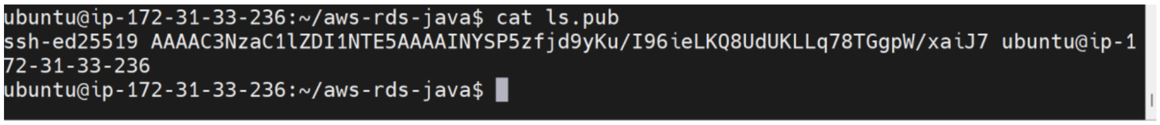
Step 2: Transfer Artifact using SCP

Use the `scp` command to securely transfer the WAR/JAR file from the Build Server to the Deployment Server.

Example:

scp /home/ubuntu/project/target/app.war
ubuntu@<deployment_server_ip>:/home/ubuntu/

Note: Ensure that SSH keys or proper credentials are configured to allow secure copy between servers.



```
ubuntu@ip-172-31-33-236:~/aws-rds-java$ cat ls.pub
ssh-ed25519 AAAAC3NzaC1lZDI1NTE5AAAAINYSP5zfjd9yKu/I96ieLKQ8UdUKLLq78TGgpW/xaiJ7 ubuntu@ip-1
72-31-33-236
ubuntu@ip-172-31-33-236:~/aws-rds-java$
```

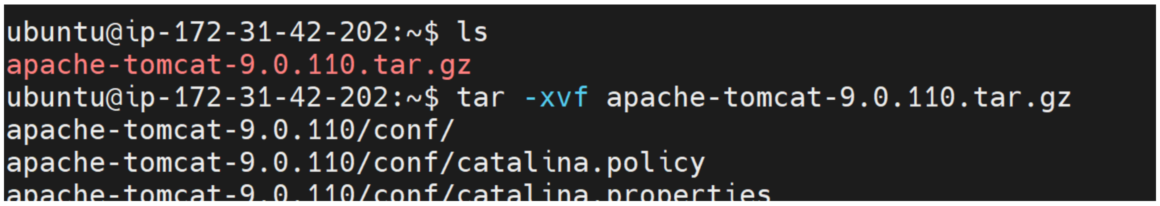
Step 3: Deployment Server Setup (Java + Tomcat)

1. Launch another Linux server for deployment.
2. Install Java:

```
  sudo apt update
  sudo apt install openjdk-17-jdk -y
  java -version
```

3. Download and install Apache Tomcat:

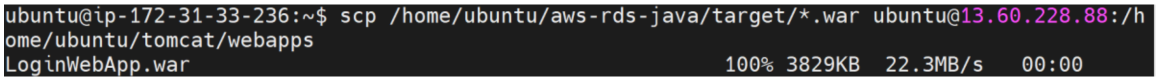
```
  wget https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.91/bin/apache-tomcat-
9.0.91.tar.gz
  tar -xvzf apache-tomcat-9.0.91.tar.gz
  mv apache-tomcat-9.0.91 tomcat
```



```
ubuntu@ip-172-31-42-202:~$ ls
apache-tomcat-9.0.110.tar.gz
ubuntu@ip-172-31-42-202:~$ tar -xvf apache-tomcat-9.0.110.tar.gz
apache-tomcat-9.0.110/conf/
apache-tomcat-9.0.110/conf/catalina.policy
apache-tomcat-9.0.110/conf/catalina.properties
```

4. Deploy the WAR file to Tomcat:

mv /home/ubuntu/app.war /home/ubuntu/tomcat9/webapps/

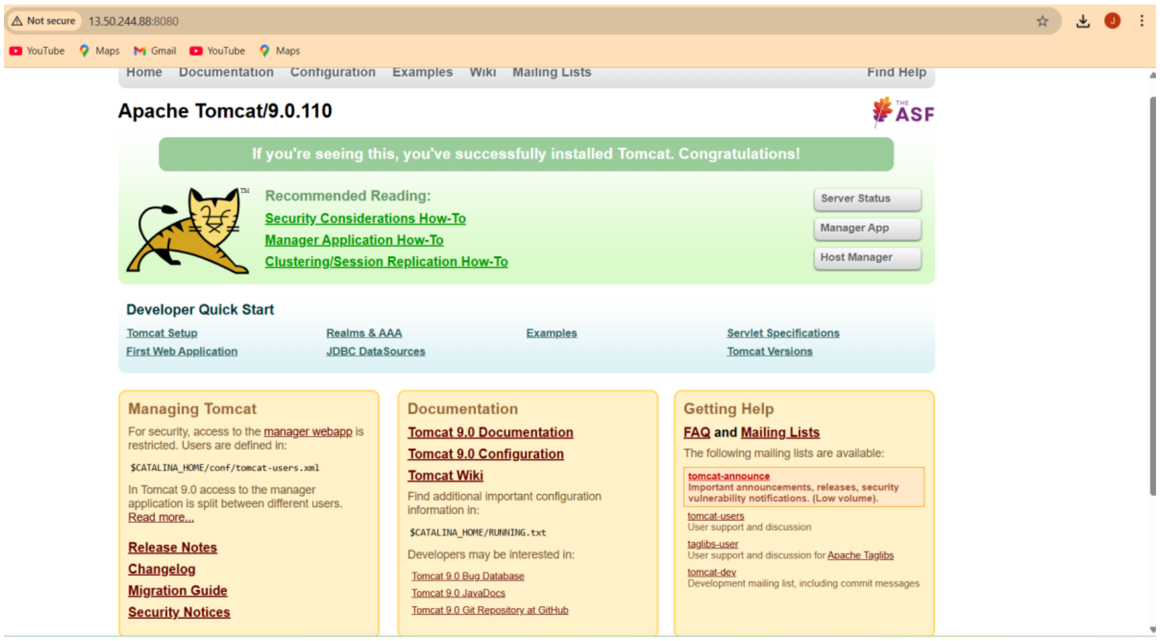


```
ubuntu@ip-172-31-33-236:~$ scp /home/ubuntu/aws-rds-java/target/*.war ubuntu@13.60.228.88:/h
ome/ubuntu/tomcat/webapps
LoginWebApp.war                                           100% 3829KB  22.3MB/s   00:00
```

5. Start Tomcat:

cd /home/ubuntu/tomcat9/bin
./startup.sh

6. Access the application in a browser:
`http://<deployment_server_ip>:8080/app`



Apache Tomcat/9.0.110

If you're seeing this, you've successfully installed Tomcat. Congratulations!

Recommended Reading:
Security Considerations How-To
Manager Application How-To
Clustering/Session Replication How-To

Developer Quick Start
Tomcat Setup
First Web Application
Realms & AAA
JDBC DataSources
Examples
Servlet Specifications
Tomcat Versions

Managing Tomcat
For security, access to the manager webapp is restricted. Users are defined in:
$CATALINA_HOME/conf/tomcat-users.xml
In Tomcat 9.0 access to the manager application is split between different users. Read more...
Release Notes
Changelog
Migration Guide
Security Notices

Documentation
Tomcat 9.0 Documentation
Tomcat 9.0 Configuration
Tomcat Wiki
Find additional important configuration information in:
$CATALINA_HOME/RUNNING.txt
Developers may be interested in:
Tomcat 9.0 Bug Database
Tomcat 9.0 JavaDocs
Tomcat 9.0 Git Repository at GitHub

Getting Help
FAQ and Mailing Lists
The following mailing lists are available:
tomcat-announce
Important announcements, releases, security vulnerability notifications. (Low volume).
tomcat-users
User support and discussion
taglibs-user
User support and discussion for Apache Taglibs
tomcat-dev
Development mailing list, including commit messages

Step 4: Database Server Setup (MySQL)

1. Launch a third Linux server for the database.
2. Install MySQL Server:
   ```bash
   sudo apt update
   sudo apt install mysql-server -y
   sudo systemctl start mysql
   sudo systemctl enable mysql
   ```
3. Secure MySQL installation:
   ```bash
   ```

```
sudo mysql_secure_installation
```
4. Login to MySQL and create a database and user:
```bash
mysql -u root -p
CREATE DATABASE appdb;
CREATE USER 'appuser'@'%' IDENTIFIED BY 'password';
GRANT ALL PRIVILEGES ON appdb.* TO 'appuser'@'%';
FLUSH PRIVILEGES;
```
5. Edit MySQL config to allow remote access:
```bash
sudo vim /etc/mysql/mysql.conf.d/mysqld.cnf
```
   Change `bind-address` from `127.0.0.1` to `0.0.0.0`.
6. Restart MySQL:

```
sudo systemctl restart mysql
```

Step 5: Connect Application to Database

1. Update your application's database configuration file (e.g., `application.properties` or `context.xml`) with the following details:
   properties
```
spring.datasource.url=jdbc:mysql://<database_server_ip>:3306/appdb
spring.datasource.username=appuser
spring.datasource.password=password
```

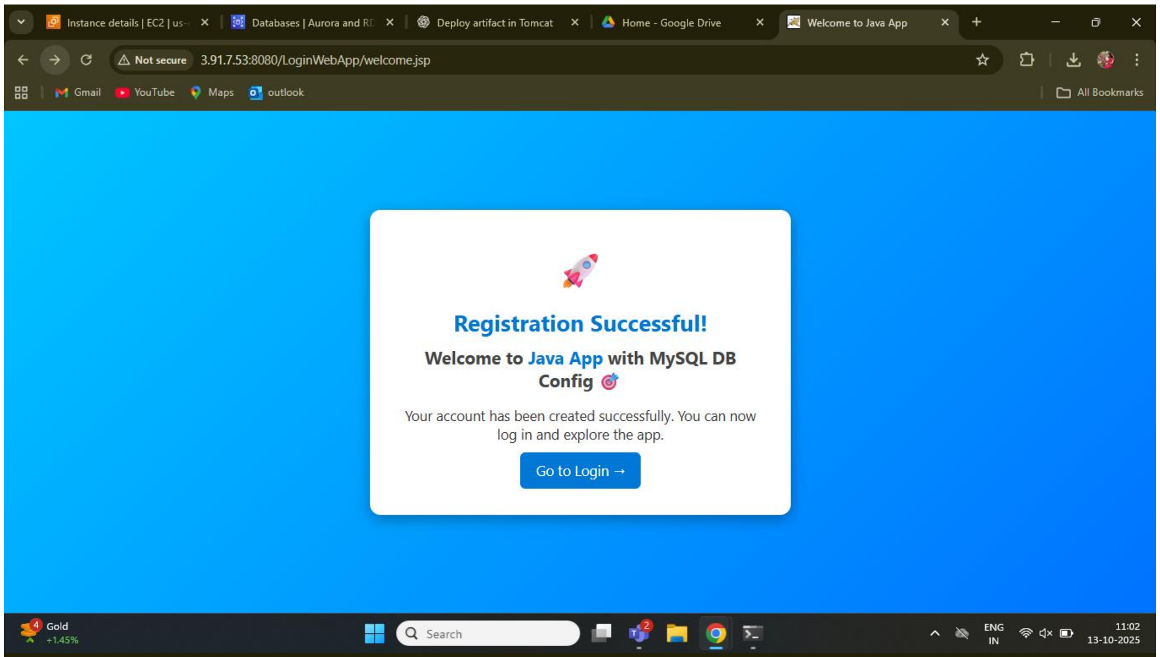
2. Redeploy the application if necessary.
3. Verify database connectivity from the Deployment Server:

```
mysql -h <database_server_ip> -u appuser -p
```

Step 6: Verification

1. Verify that the Tomcat service is running:

2. Access the application from your browse.

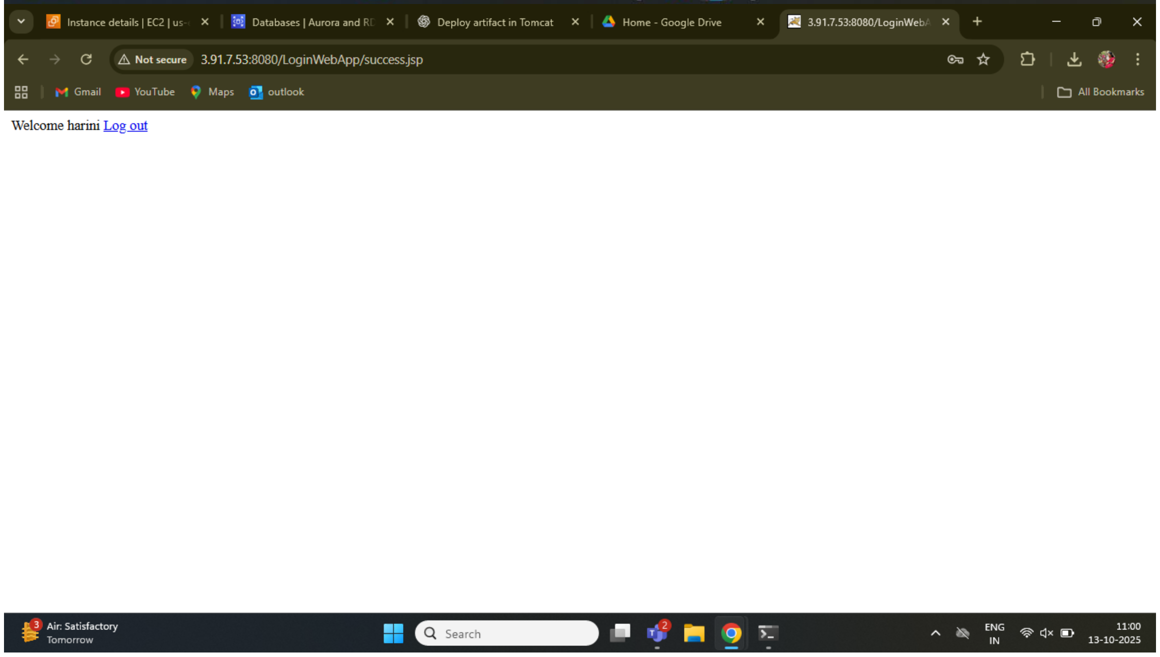


Registration Successful!

Welcome to Java App with MySQL DB Config 🎯

Your account has been created successfully. You can now log in and explore the app.

Go to Login →



Welcome harini Log out