

# PROJECT-1

**Course:** DevOps

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**Batch No:** 115 (9am-10am)

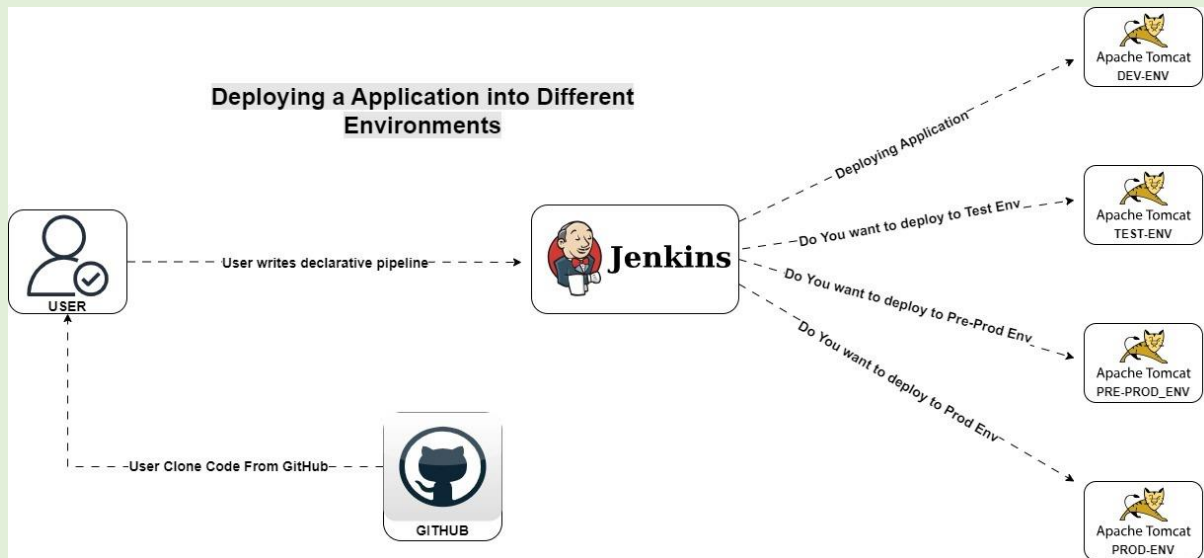
**Mail id:** [rajavamsyvanguri@gmail.com](mailto:rajavamsyvanguri@gmail.com)

**Trainer Name:** Mr. Madhukar Reddy

**Date:** 04-12-23

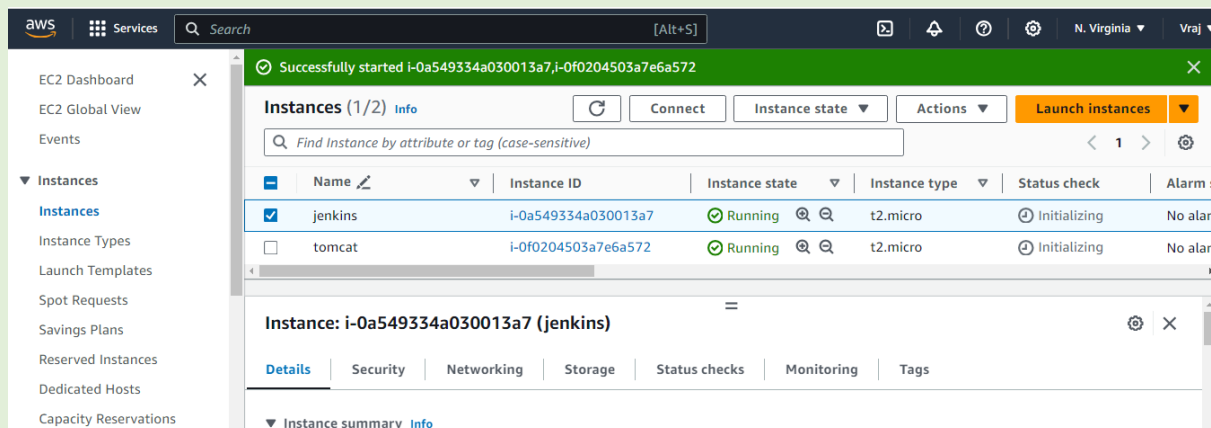
## Topic: Deploying an Application into Different Environments

### ARCHITECTURE:

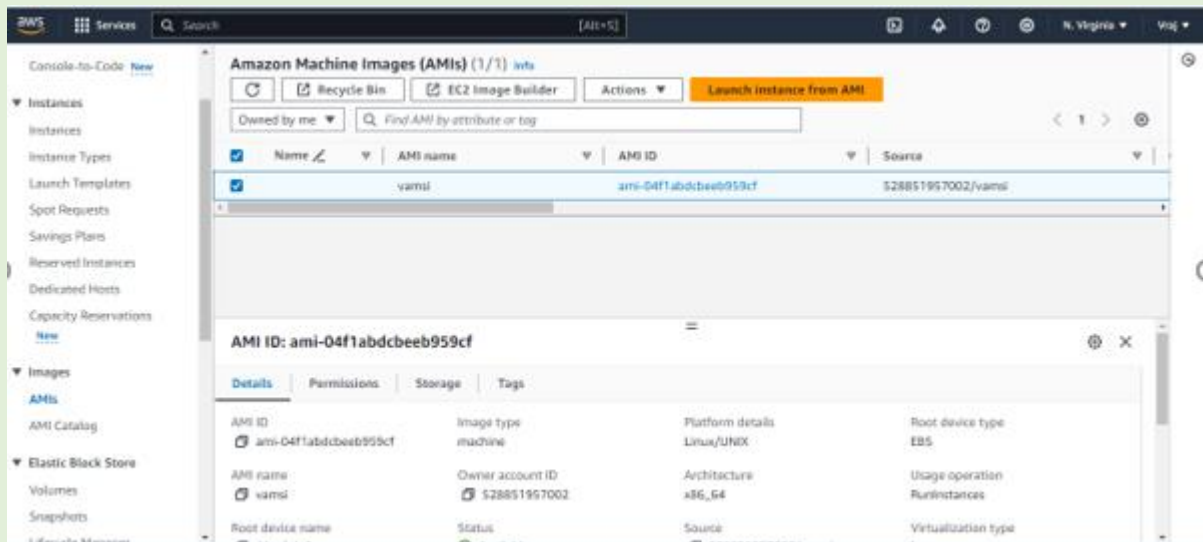


The above figure shows that the design of project that what we should develop.

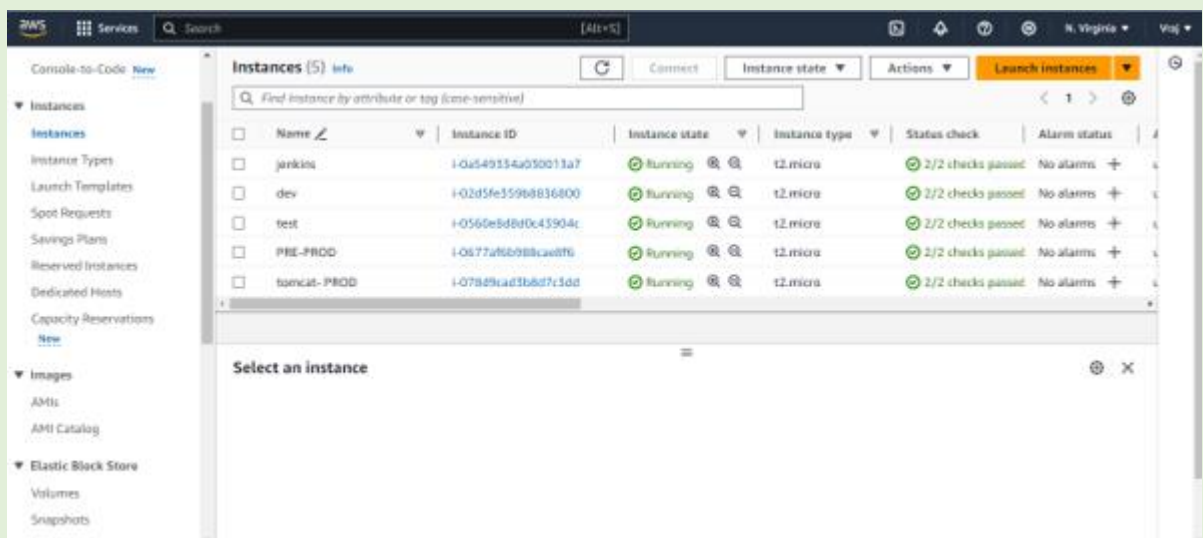
### AWS:



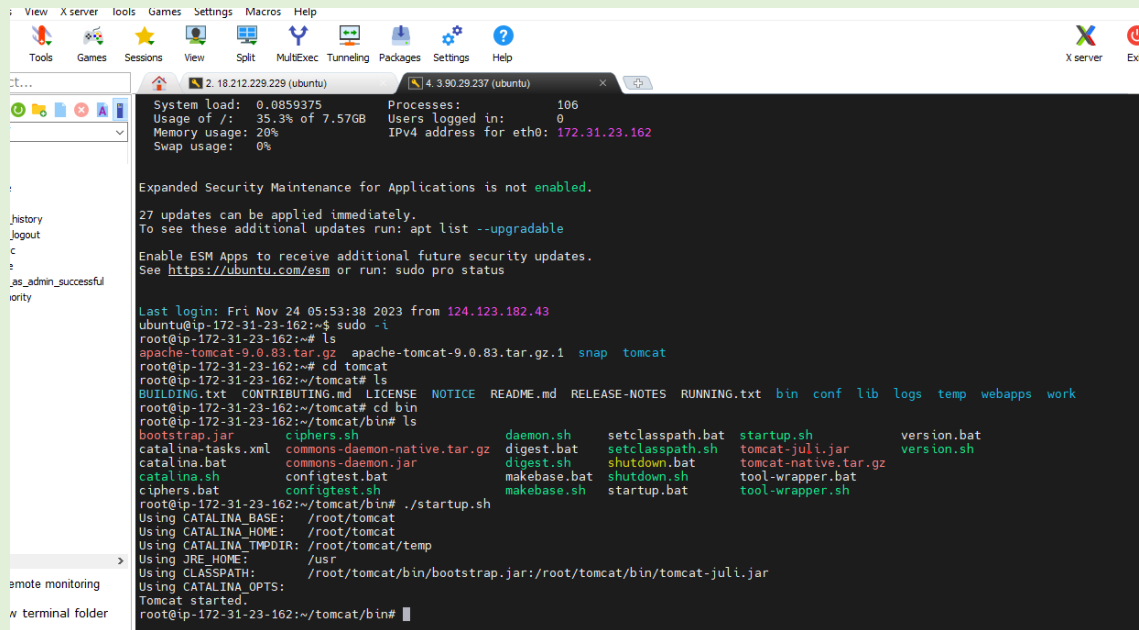
By using the AWS EC2, two instances are created as Jenkins and tomcat. Where the Jenkins instance is used to create JENKINS and Tomcat instance is used to create tomcat server.



Now create the AMI using the tomcat server. And launch 3 instances using the AMI, which are as same as main tomcat server. Were these instances are used to create the 4 environments as Development, Test, Pre-Production, Production.



## SERVER CONECTIONS:



```
System load:  0.0859375      Processes:    106
Usage of /:   35.3% of 7.57GB Users logged in:  0
Memory usage: 20%           IPv4 address for eth0: 172.31.23.162
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

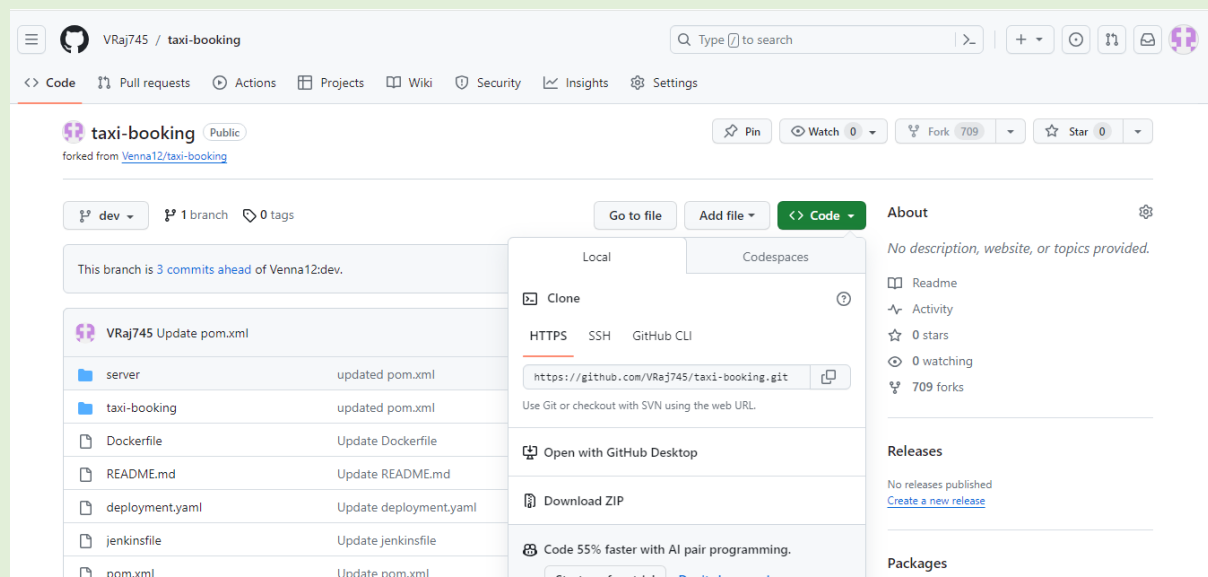
27 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

Last login: Fri Nov 24 05:53:38 2023 from 124.123.182.43
ubuntu@ip-172-31-23-162:~$ sudo -i
root@ip-172-31-23-162:~# ls
apache-tomcat-9.0.83.tar.gz  apache-tomcat-9.0.83.tar.gz.1  snap  tomcat
root@ip-172-31-23-162:~# cd tomcat
root@ip-172-31-23-162:~/tomcat# ls
BUILDING.txt  CONTRIBUTING.md  LICENSE  NOTICE  README.md  RELEASE-NOTES  RUNNING.txt  bin  conf  lib  logs  temp  webapps  work
root@ip-172-31-23-162:~/tomcat# cd bin
root@ip-172-31-23-162:~/tomcat/bin# ls
bootstrap.jar  ciphers.sh  commons-daemon-native.tar.gz  daemon.sh  setclasspath.bat  startup.sh  version.bat
catalina-tasks.xml  commons-daemon.jar  digest.bat  digest.sh  shutdown.bat  tomcat-juli.jar  version.sh
catalina.bat  commons-daemon-native.tar.gz  digest.sh  shutdown.bat  tomcat-native.tar.gz  tool-wrapper.bat
ciphers.sh  configtest.bat  makebase.bat  startup.bat  tool-wrapper.sh
root@ip-172-31-23-162:~/tomcat/bin# ./startup.sh
Using CATALINA_BASE:   /root/tomcat
Using CATALINA_HOME:   /root/tomcat
Using CATALINA_TMPDIR: /root/tomcat/temp
Using JRE_HOME:        /usr
Using CLASSPATH:        /root/tomcat/bin/bootstrap.jar:/root/tomcat/bin/tomcat-juli.jar
Tomcat started.
root@ip-172-31-23-162:~/tomcat/bin#
```

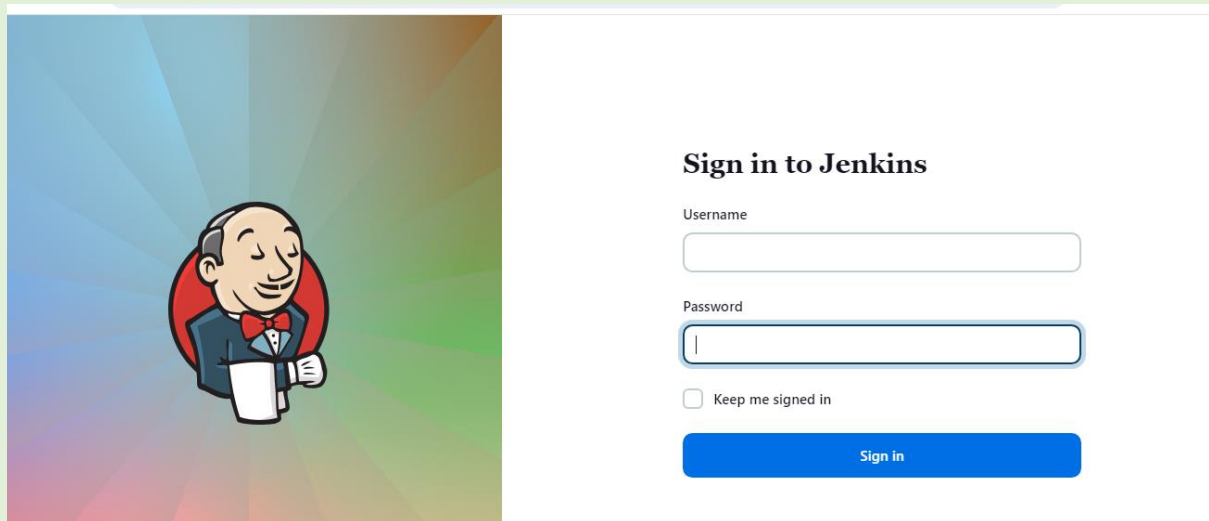
Above fig shows that the connections of instances in mobaxterm, which is used to install the Jenkins, tomcat and required packages and more. And start the tomcat server by using going to the location `cd tomcat/bin` and give command `./startup.sh` to all the environments.

## GITHUB:

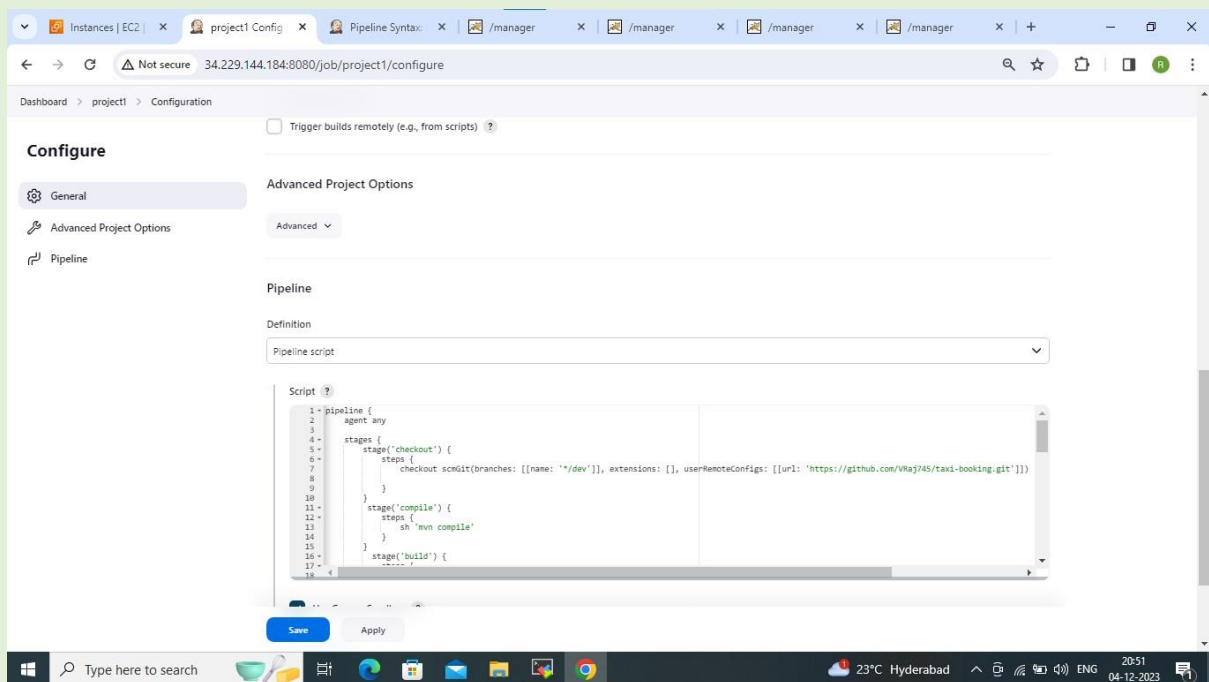


Above fig shows that the git repository that which is used to deploy the webapp in the tomcat server in different environments. It is forked by the <https://github.com/VRaj745/taxi-booking.git>.

## JENKINS:



This is the Sign page for Jenkins.



Above shows the pipeline job creation in the Jenkins.

## PIPELINE SCRIPT TO DEPLOY AN APPLICATION IN DIFFERENT ENVIRONMENTS:

```
pipeline {  
    agent any
```

```
stages {
    stage('checkout') {
        steps {
            checkout scmGit(branches: [[name: '*/dev']], extensions: [],
userRemoteConfigs: [[url: 'https://github.com/VRaj745/taxi-booking.git']])

        }
    }
    stage('compile') {
        steps {
            sh 'mvn compile'
        }
    }
    stage('build') {
        steps {
            sh ' mvn package'
        }
    }
    stage('deploy to dev') {
        input {
            message 'shall we proceed to'
            ok 'yes'
            parameters {
                string defaultValue: 'Raja', name: 'Development ENV'
            }
        }
        steps {
            deploy adapters: [tomcat9(credentialsId: '382b4c63-96d0-4f29-
a66f-b453cde0283e', path: '', url: 'http://3.208.8.159:8080')], contextPath:
'Development', war: '**/*.war'

        }
    }
    stage('deploy to test') {
```

```

    input {
        message 'Shall we proceed to'
        ok 'yes'
        parameters {
            string defaultValue: 'Vamsy', name: 'Test ENV'
        }
    }

    steps {
        deploy adapters: [tomcat9(credentialsId: '382b4c63-96d0-4f29-
a66f-b453cde0283e', path: '', url: 'http://3.87.98.235:8080')], contextPath:
'Test', war: '**/*.war'
    }
}

stage('deploy to pre-prod') {
    input {
        message 'Shall we proceed to'
        ok 'yes'
        parameters {
            string defaultValue: 'Krishna', name: 'Pre-Production ENV'
        }
    }

    steps {
        deploy adapters: [tomcat9(credentialsId: '382b4c63-96d0-4f29-
a66f-b453cde0283e', path: '', url: 'http://3.93.199.136:8080')], contextPath:
'Pre-Production', war: '**/*.war'
    }
}

stage('deploy to prod') {
    input {
        message 'Shall we proceed to'
        ok 'yes'
        parameters {
            string defaultValue: 'Raja', name: 'Production ENV'

```

Dashboard

project1

Pipeline Syntax

Declarative Directive Generator

Declarative Online Documentation

Steps Reference

Global Variables Reference

Online Documentation

Examples Reference

IntelliJ IDEA GDS

options you care about. (Most parameters are optional and can be omitted in your script, leaving them at default values.)

Steps

Sample Step

deploy: Deploy war/ear to a container

deploy

WAR/EAR files

\*\*\*.war

War/ear files to deploy. Relative to the workspace root. You can also specify Ant style GLOBs, like "\*\*/\*.war"

(from [Deploy to container Plugin](#))

Context path

/Production

Containers

Tomcat 9.x Remote

Credentials

deployer:\*\*\*\*\*

+ Add +

Tomcat URL

http://52.91.152.120:8080

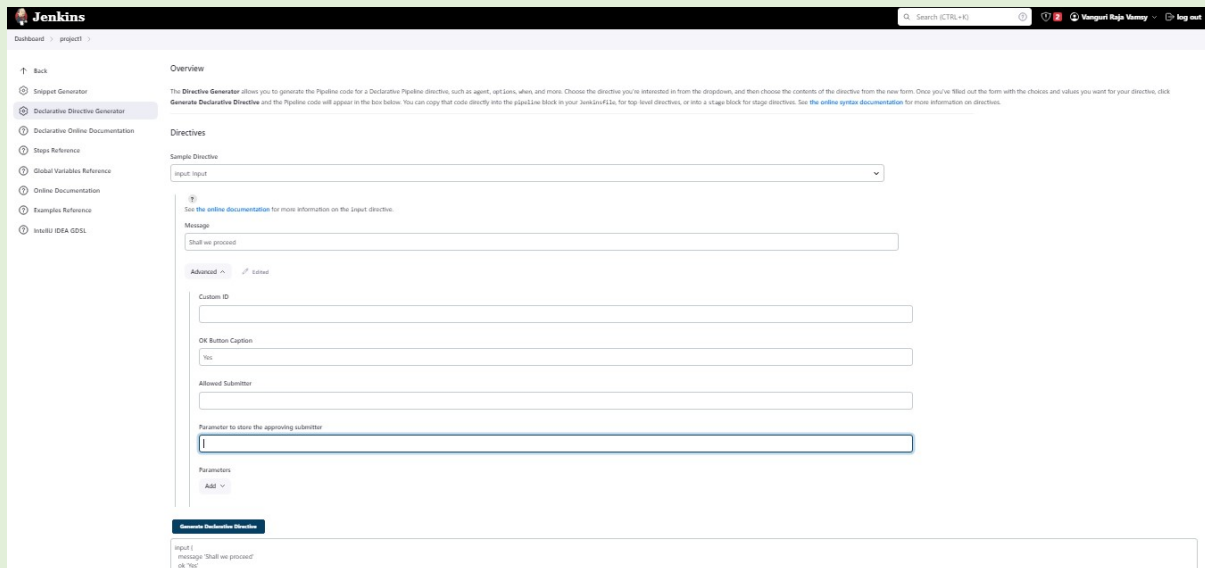
Advanced

Add Container

☒ Deploy on failure

Generate Pipeline Script

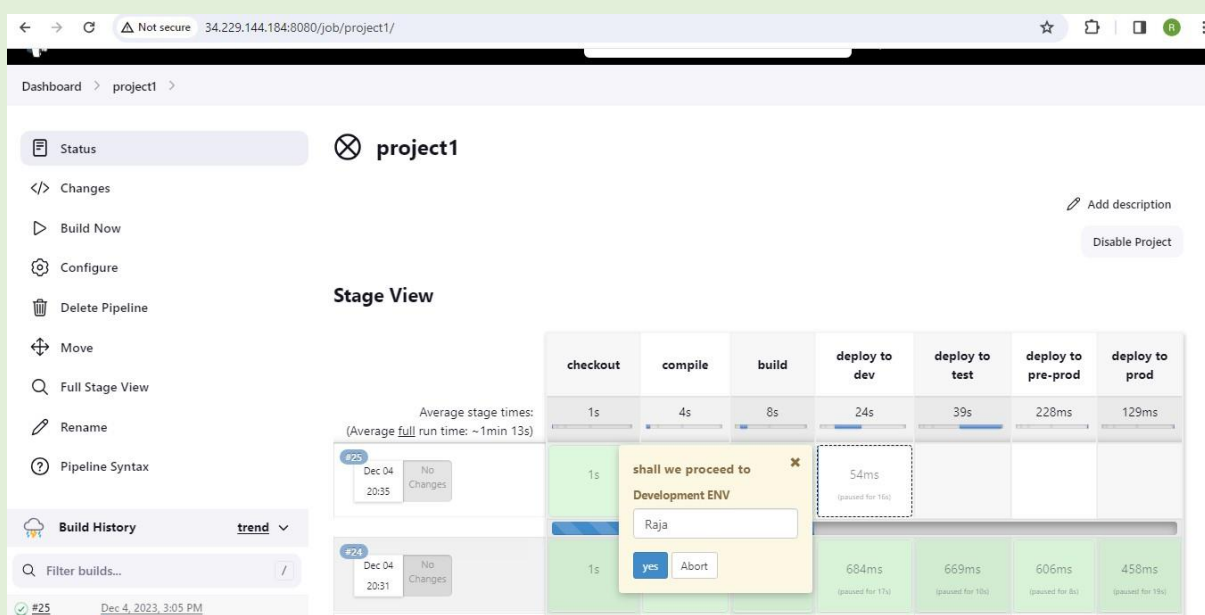
deploy adapters: `Tomcat9(credentialsId: "82b4c18-9640-4f29-a66f-b453cde0285a", path: "", url: "http://52.91.152.120:8080", contextPath: "Production", war: "**/*.war"`



In the above figure, we used the **‘input’** directives to create the permission block for authorized process to deploy in specific environment.

- Click on Declarative Directive Generator
- Now select simple directive: input
- ->add >> message: Shall we proceed
- >>Advanced>> OK button caption: Yes
- ->click on >>Generate Declarative Directive.

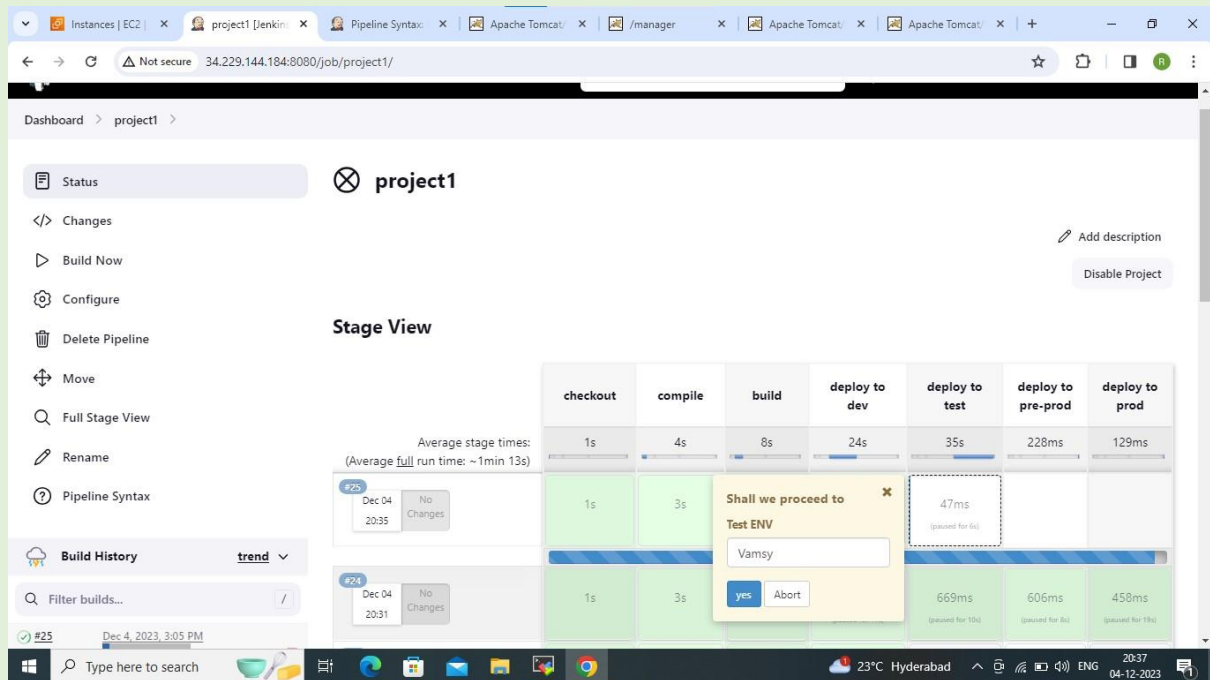
And also used the string parameter to specify some names of environment and more.





Above figure shows that the output of our pipeline job in the stage view. In this we can also see that dialogue box which is called as permission box is appeared and asking for the permission to deploy the webapp into Development Environment. And also we have the two buttons that is Yes/Abort.

This process will be done in every stage of environment. That shows in the below figures.



Instances | EC2 | project1 [Jenkins] | Pipeline Syntax | Apache Tomcat | /manager | Apache Tomcat | Apache Tomcat

← → ↻ ⚠ Not secure 34.229.144.184:8080/job/project1/ ☆ 📁 📄 📶

Dashboard > project1 >

Status

Changes

Build Now

Configure

Delete Pipeline

Move

Full Stage View

Rename

Pipeline Syntax

⊗ project1

Add description

Disable Project

### Stage View

Average stage times:  
(Average full run time: ~1min 13s)

	checkout	compile	build	deploy to dev	deploy to test	deploy to pre-prod	deploy to prod
#25 Dec 04 20:35 No Changes	1s	3s	8s	24s	35s	212ms	129ms
#24 Dec 04 20:31 No Changes	1s	3s	8s	606ms	458ms		

Shall we proceed to Pre-Production ENV  
Krishna  
yes Abort

51ms

606ms (passed for 3s)  
458ms (passed for 19s)

Build History trend

Filter builds... /

#25 Dec 4, 2023, 3:05 PM

Type here to search

23°C Hyderabad 20:38 04-12-2023

Instances | EC2 | project1 [Jenkins] | Pipeline Syntax | Apache Tomcat | /manager | Apache Tomcat | Apache Tomcat

← → ↻ ⚠ Not secure 34.229.144.184:8080/job/project1/ ☆ 📁 📄 📶

Dashboard > project1 >

Status

Changes

Build Now

Configure

Delete Pipeline

Move

Full Stage View

Rename

Pipeline Syntax

⊗ project1

Add description

Disable Project

### Stage View

Average stage times:  
(Average full run time: ~1min 13s)

	checkout	compile	build	deploy to dev	deploy to test	deploy to pre-prod	deploy to prod
#25 Dec 04 20:35 No Changes	1s	3s	8s	24s	35s	302ms	122ms
#24 Dec 04 20:31 No Changes	1s	3s	8s	684ms	458ms		

Shall we proceed to Production ENV  
Raja  
yes Abort

45ms

684ms (passed for 17s)  
458ms (passed for 19s)

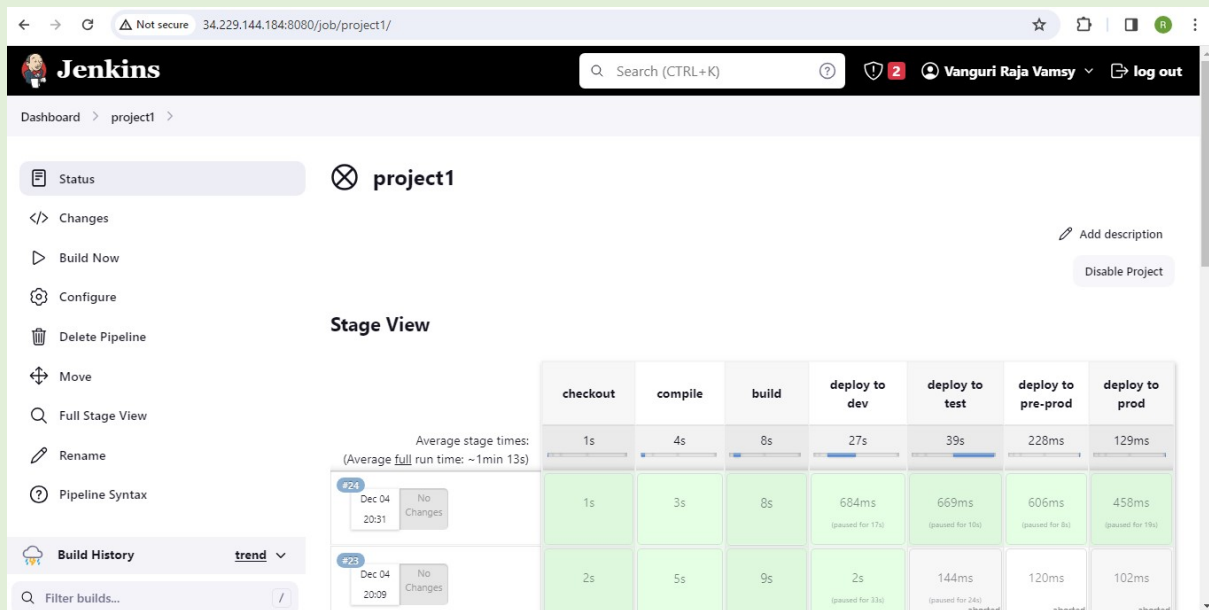
Build History trend

Filter builds... /

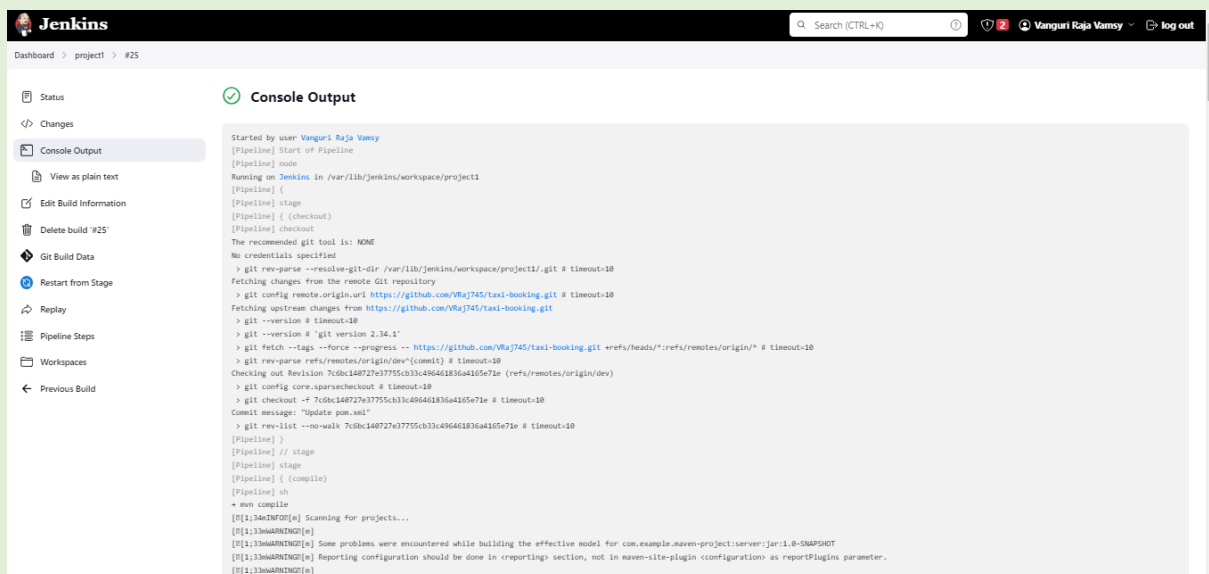
#25 Dec 4, 2023, 3:05 PM

Type here to search

23°C Hyderabad 20:39 04-12-2023



This shows the creation and building the pipeline job and it shows the complete execution of the job in stage view.

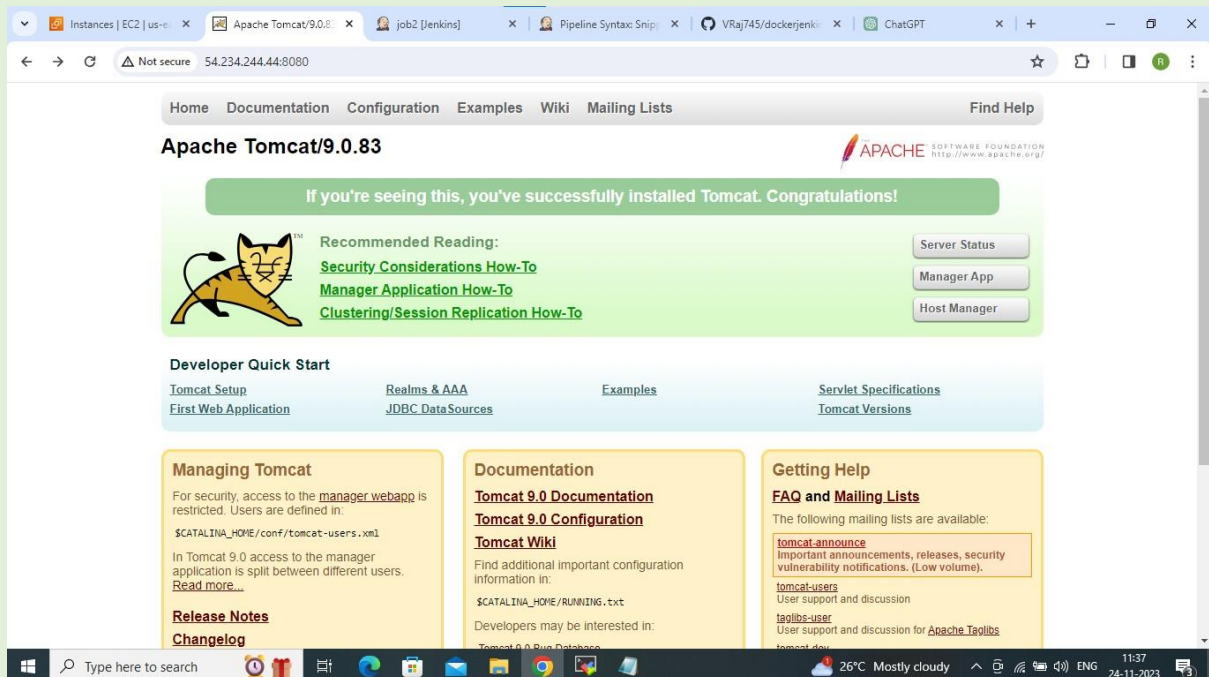


```
Dashboard > project1 > #25

[Pipeline] // within
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (deploy to pre-prod)
[Pipeline] input
Input requested
Approved by Vanguri Raja Vansy
[Pipeline] within
[Pipeline] {
[Pipeline] deploy
[DeployPublisher][INFO] Attempting to deploy 1 war file(s)
[DeployPublisher][INFO] Deploying /var/lib/jenkins/workspace/project1/taxi-booking/target/taxi-booking-1.0.1.war to container Tomcat 9.x Remote with context Pre-Production
[DeployPublisher][INFO] Deploying /var/lib/jenkins/workspace/project1/taxi-booking/target/taxi-booking-1.0.1.war
[DeployPublisher][INFO] Undeploying /var/lib/jenkins/workspace/project1/taxi-booking/target/taxi-booking-1.0.1.war
[DeployPublisher][INFO] Deploying /var/lib/jenkins/workspace/project1/taxi-booking/target/taxi-booking-1.0.1.war
[Pipeline] }
[Pipeline] // within
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (deploy to prod)
[Pipeline] input
Input requested
Approved by Vanguri Raja Vansy
[Pipeline] within
[Pipeline] {
[Pipeline] deploy
[DeployPublisher][INFO] Attempting to deploy 1 war file(s)
[DeployPublisher][INFO] Deploying /var/lib/jenkins/workspace/project1/taxi-booking/target/taxi-booking-1.0.1.war to container Tomcat 9.x Remote with context Production
[DeployPublisher][INFO] Deploying /var/lib/jenkins/workspace/project1/taxi-booking/target/taxi-booking-1.0.1.war
[DeployPublisher][INFO] Undeploying /var/lib/jenkins/workspace/project1/taxi-booking/target/taxi-booking-1.0.1.war
[DeployPublisher][INFO] Deploying /var/lib/jenkins/workspace/project1/taxi-booking/target/taxi-booking-1.0.1.war
[Pipeline] }
[Pipeline] // within
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

Above figures shoes the **console output** of the pipeline job.

## TOMCAT:



Above fig shows that the open page of the TOMCAT server. By clecking on the manager app button, it takes us into the login page, by giving the credentials we move into the below webpage. The process is common for all the environments but in the webpage we can see the change the name of the webapp for each environment server.

## Development:

The screenshot shows the Tomcat Web Application Manager interface. At the top, there's a message bar with 'Message: OK'. Below it, the 'Manager' section has links for 'List Applications', 'HTML Manager Help', 'Manager Help', and 'Server Status'. The 'Applications' table lists several applications, with the 'Development' application highlighted in green. The table has columns for Path, Version, Display Name, Running status, Sessions, and Commands.

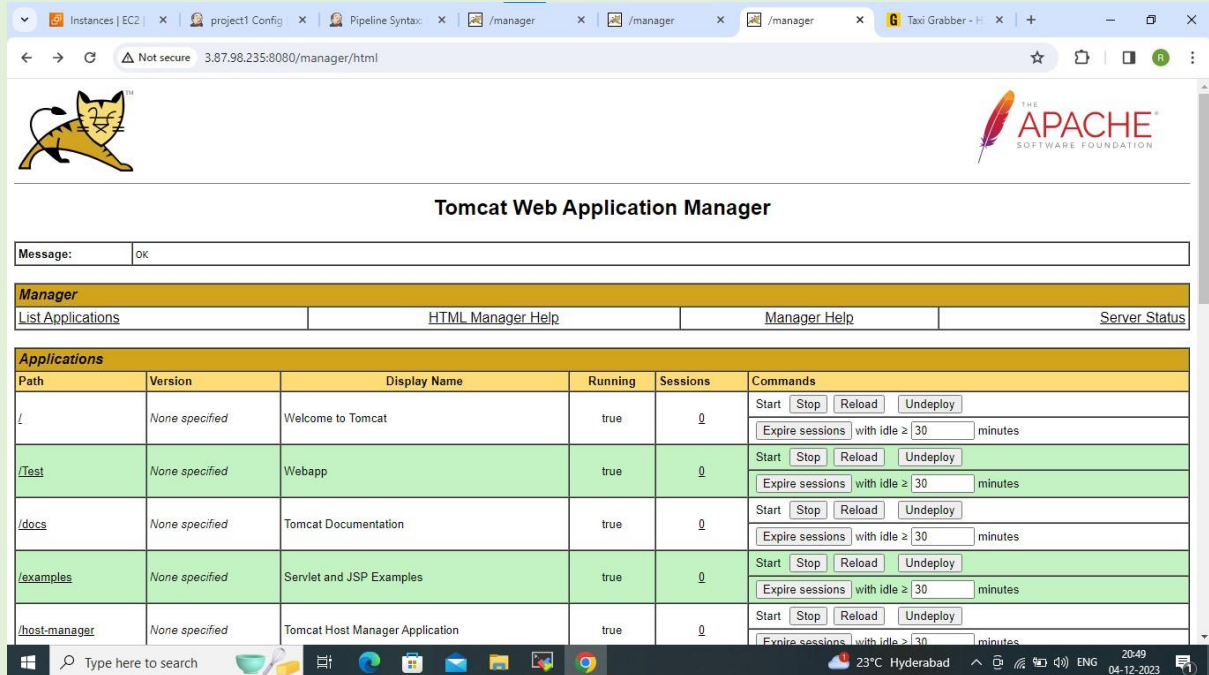
Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/Development	None specified	Webapp	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/dev	None specified	Webapp	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

In this page we can see the deployed webapp in the list as Development.

The screenshot shows the Taxi Grabber web application running in the Development environment. The page has a yellow header with the 'TAXI GRABBER' logo and a navigation menu with links for HOME, SERVICES, DRIVERS, CARS, GARAGE, LOCATIONS, and PAGES. Below the header, there's a large black area with the text 'CALL US 24/7' and the phone number '8121-416-416' in large yellow font. A yellow button labeled 'READ MORE ABOUT US' is at the bottom. The page also features contact information at the top: 'Taxi 8121-416-416', 'Garage 8121-416-416', and 'Contact 8121-416-416'.

This the output for the deploy of webapp in the Development Environment.

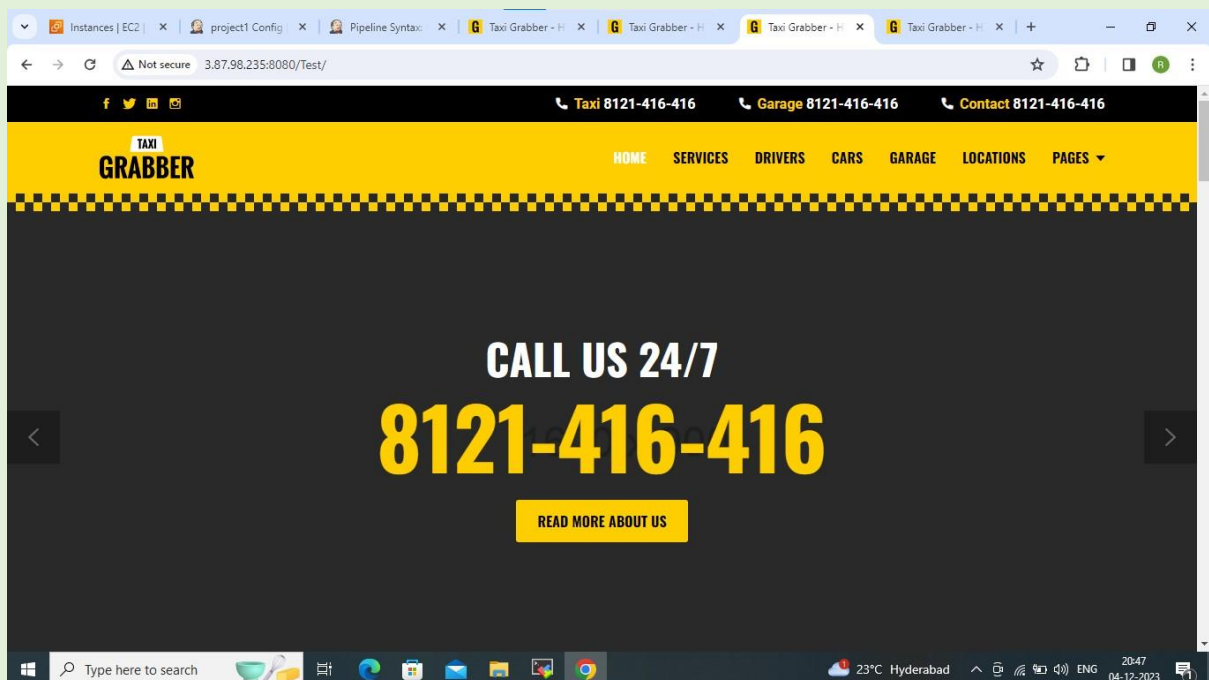
## Test:



The screenshot shows the Tomcat Web Application Manager interface. At the top, there's a message box with "Message: OK". Below it, a navigation bar includes links for "List Applications", "HTML Manager Help", "Manager Help", and "Server Status". The main section is titled "Applications" and contains a table with the following data:

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/Test	None specified	Webapp	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	None specified	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

In this page we can see the deployed webapp in the list as Test.

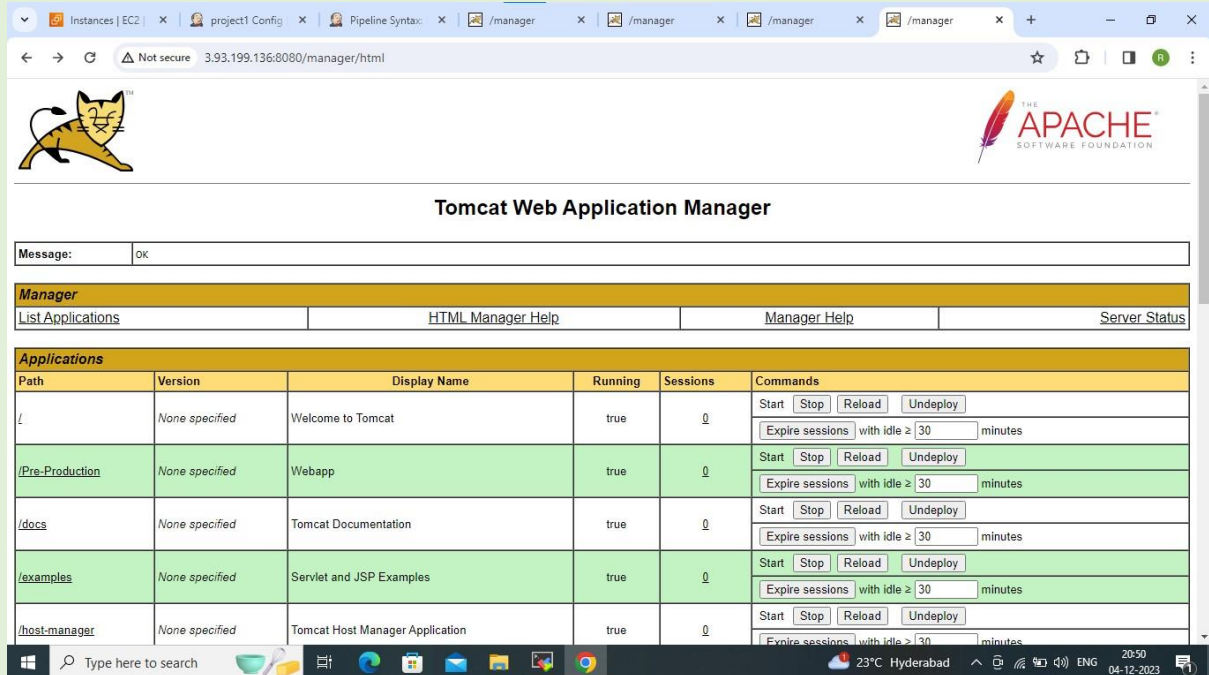


The screenshot shows the Taxi Grabber web application interface. At the top, there's a navigation bar with links for "HOME", "SERVICES", "DRIVERS", "CARS", "GARAGE", "LOCATIONS", and "PAGES". Below the navigation bar, there's a large banner with the text "CALL US 24/7" and "8121-416-416". A "READ MORE ABOUT US" button is located below the banner. The interface is designed with a yellow and black color scheme.

This the output for the deploy of webapp in the Test Environment



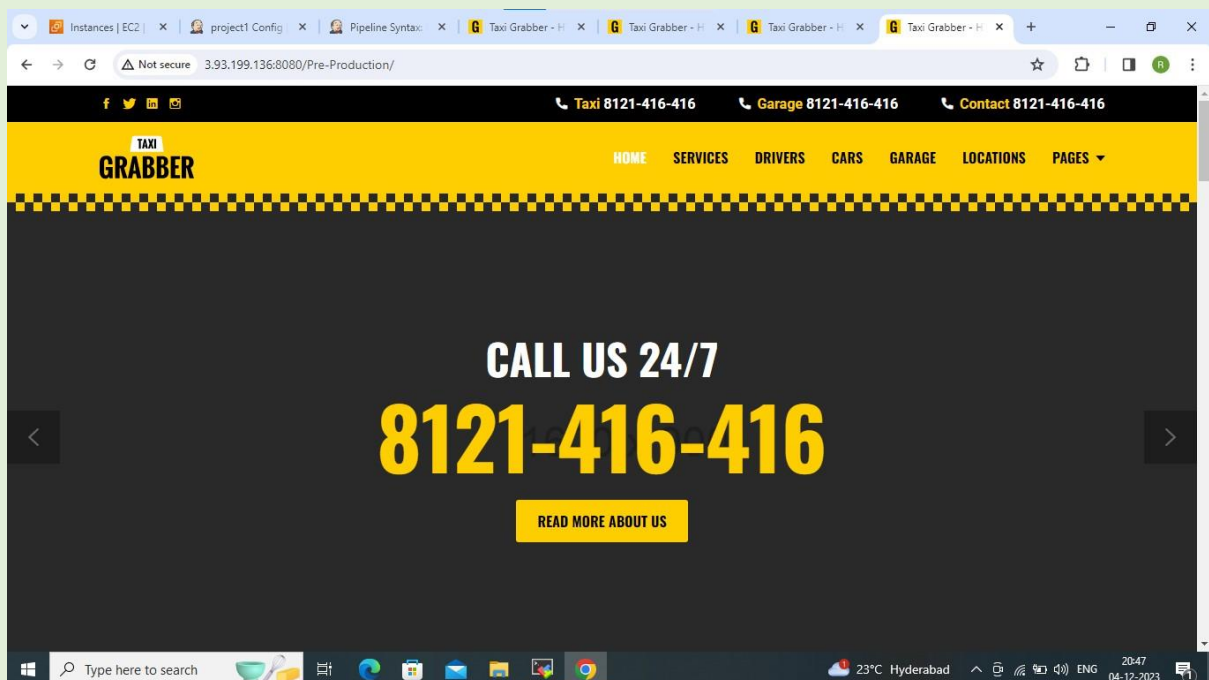
## Pre-Production:



The screenshot shows the Tomcat Web Application Manager interface. At the top, there's a message bar with "Message: OK". Below it, a navigation bar includes links for "List Applications", "HTML Manager Help", "Manager Help", and "Server Status". The main section is titled "Applications" and contains a table with the following data:

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/Pre-Production	None specified	Webapp	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	None specified	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

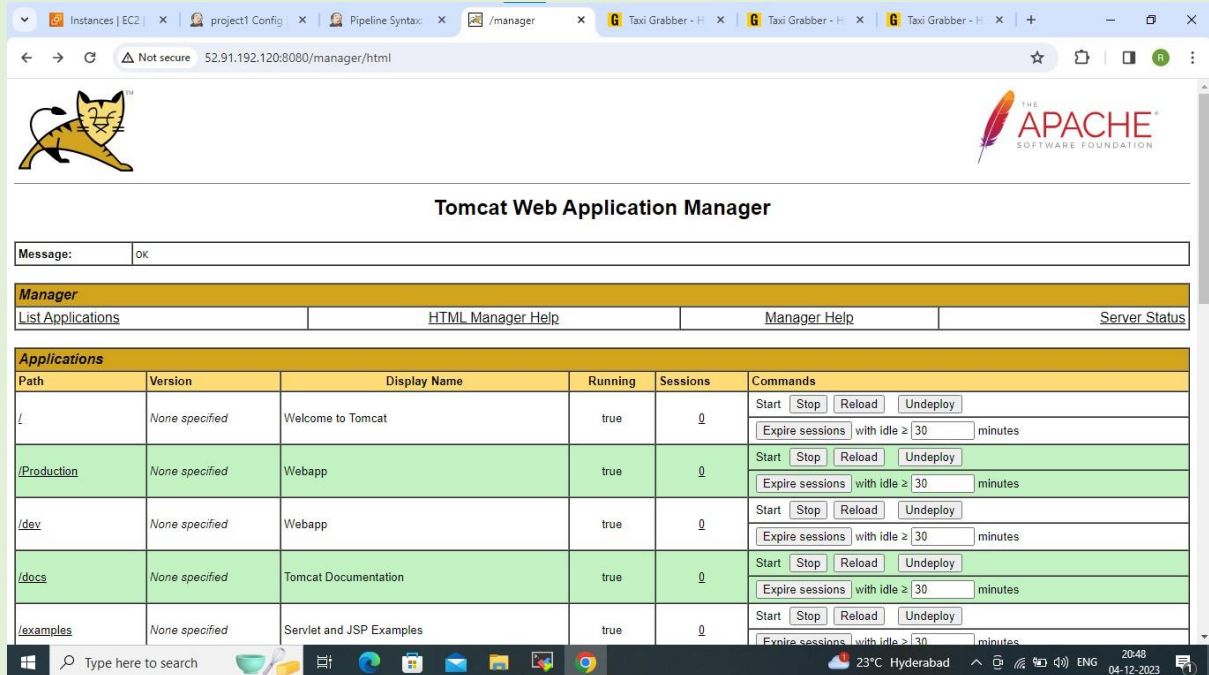
In this page we can see the deployed webapp in the list as Pre-Production.



The screenshot shows the Taxi Grabber website. The header includes social media icons, contact numbers (Taxi 8121-416-416, Garage 8121-416-416, Contact 8121-416-416), and a navigation menu (HOME, SERVICES, DRIVERS, CARS, GARAGE, LOCATIONS, PAGES). The main content area features a large yellow banner with the text "CALL US 24/7" and the phone number "8121-416-416". Below the banner is a button labeled "READ MORE ABOUT US".

This the output for the deploy of webapp in the Pre-Production Environment

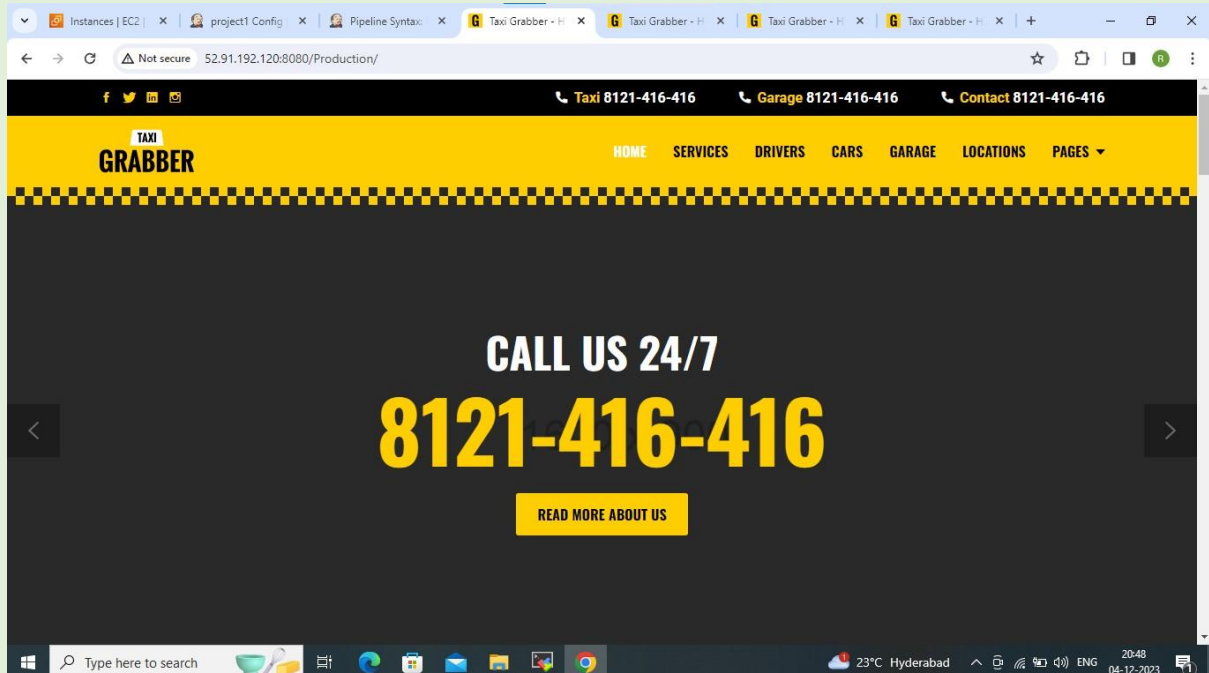
## Production:



The screenshot shows the Tomcat Web Application Manager interface in a web browser. The browser tabs include 'Instances | EC2', 'project1 Config', 'Pipeline Syntax', and several 'Taxi Grabber' instances. The address bar shows '52.91.192.120:8080/manager/html'. The page features the Apache Software Foundation logo and the title 'Tomcat Web Application Manager'. A message box at the top says 'Message: OK'. Below this, there are links for 'List Applications', 'HTML Manager Help', 'Manager Help', and 'Server Status'. The main section is titled 'Applications' and contains a table with the following data:

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/Production	None specified	Webapp	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/dev	None specified	Webapp	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

In this page we can see the deployed webapp in the list as Production.



The screenshot shows the 'TAXI GRABBER' web application running in a browser. The browser tabs include 'Instances | EC2', 'project1 Config', 'Pipeline Syntax', and several 'Taxi Grabber' instances. The address bar shows '52.91.192.120:8080/Production/'. The page has a yellow header with the 'TAXI GRABBER' logo and navigation links: 'HOME', 'SERVICES', 'DRIVERS', 'CARS', 'GARAGE', 'LOCATIONS', and 'PAGES'. Below the header, there is a large black area with the text 'CALL US 24/7' and '8121-416-416' in large yellow font. A yellow button labeled 'READ MORE ABOUT US' is positioned below the phone number. The footer of the page contains social media icons and contact information: 'Taxi 8121-416-416', 'Garage 8121-416-416', and 'Contact 8121-416-416'.

This the output for the deploy of webapp in the Production Environment

This is the Final output of the Project.