



PARSHVANATH CHARITABLE TRUST'S
A. P. SHAH INSTITUTE OF TECHNOLOGY
Department of Information Technology
(NBA Accredited)



Department of Information Technology

Academic Year: 2025-26

Semester: V

Class / Branch: TEIT/Div C

Subject: DevOps Lab

Date of Submission: 27/09/25 Name of Instructor: Prof. Sujata Oak

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Date of performance : 27/09/25

Experiment No. 5

Aim: To create and build a CI/CD pipeline in Jenkins to test and deploy an application over the tomcat server.

```
/etc/apparmor.d/abstractions/ubuntu-browsers.d/java
/usr/share/bash-completion/completions/java
/usr/lib/jvm/java-17-openjdk-amd64/bin/java
root@Vinay:/home/vinay#
```

JDK installations

JDK installations ^

 Edited

Add JDK

≡ **JDK**

Name

java_home

JAVA_HOME

/usr/lib/jvm/java-17-openjdk-amd64/

☐ Install automatically ?

Add JDK

Git installations

≡ **Git**

Name

Default

Path to Git executable ?

git

☒ Install automatically ?

Add Installer ▾

Add Git ▾

Gradle installations

Maven installations

Maven installations ^

 Edited

Add Maven

Maven

Name

Maven1atest

☒ Install automatically ?

Install from Apache

Version

3.9.11

Add Installer v

Add Maven

Save

Apply



Jenkins

CICD_Pipeline_demo

#1

Console Output

Status

Changes

Console Output

Edit Build Information

Delete build "1"

Timings

Click Build Data

Console Output

Download

```
Started by user Vinay Suryarao
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/CICD_Pipeline_demo
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/vinay-suryarao/hello-world2025.git
> git init /var/lib/jenkins/workspace/CICD_Pipeline_demo # timeout=10
Fetching upstream changes from https://github.com/vinay-suryarao/hello-world2025.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --tags --force --progress -- https://github.com/vinay-suryarao/hello-world2025.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git config remote.origin.url https://github.com/vinay-suryarao/hello-world2025.git # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision fa3785e9777df4866e05a298b20f5cc2498df496 (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f fa3785e9777df4866e05a298b20f5cc2498df496 # timeout=10
Commit message: "Update index.jsp"
First time build. Skipping changelog.
Finished: SUCCESS
```

Jenkins

CICD_Pipeline_demo

Configuration

Configure

General

Source Code Management

Triggers

Environment

Build Steps

Post-build Actions

With Ant

Build Steps

Automate your build process with ordered tasks like code compilation, testing, and deployment.

Invoke top-level Maven targets

Maven Version

Mavenlatest

Goals

clean compile package

Advanced

Add build step

Post-build Actions

Define what happens after a build completes, like sending notifications, archiving artifacts, or triggering other jobs.

Add post-build action

Save

Apply

Console Output

Progress (3): 459/527 kB | 472 kB | 16/29 kB

Downloaded from central: <https://repo.maven.apache.org/maven2/org/sonatype/sisu/sisu-guice/2.1.7/sisu-guice-2.1.7-noaop.jar> (472 kB at 211 kB/s)

Progress (2): 459/527 kB | 29 kB

Downloaded from central: <https://repo.maven.apache.org/maven2/org/sonatype/plexus/plexus-sec-dispatcher/1.3/plexus-sec-dispatcher-1.3.jar> (29 kB)

Progress (1): 475/527 kB

Progress (1): 492/527 kB

Progress (1): 508/527 kB

Progress (1): 524/527 kB

Progress (1): 527 kB

Downloaded from central: <https://repo.maven.apache.org/maven2/org/apache/maven/maven-core/3.0/maven-core-3.0.jar> (527 kB at 226 kB/s)

[INFO] Packaging webapp

[INFO] Assembling webapp [webapp] in [/var/lib/jenkins/workspace/CICD_Pipeline_demo/webapp/target/webapp]

[INFO] Processing war project

[INFO] Copying webapp resources [/var/lib/jenkins/workspace/CICD_Pipeline_demo/webapp/src/main/webapp]

[INFO] Building war: /var/lib/jenkins/workspace/CICD_Pipeline_demo/webapp/target/webapp.war

[INFO]

[INFO] Reactor Summary for Maven Project 1.0-SNAPSHOT:

[INFO]

[INFO] Maven Project SUCCESS [1.446 s]

[INFO] Server SUCCESS [15.624 s]

[INFO] Webapp SUCCESS [7.850 s]

[INFO]

[INFO] BUILD SUCCESS

[INFO]

[INFO] Total time: 25.011 s

[INFO] Finished at: 2025-09-10T17:08:50+05:30

[INFO]

Finished: SUCCESS

Post-build Actions

Define what happens after a build completes, like sending notifications, archiving artifacts, or triggering other jobs.

Archive the artifacts ?

Files to archive ?

**/*.war

Advanced ▾

Add post-build action ▾

Save

Apply

```
[INFO] Processing war project
[INFO] Copying webapp resources [/var/lib/jenkins/workspace/CICD_Pipeline_demo/webapp/src/main/webapp]
[INFO] Building war: /var/lib/jenkins/workspace/CICD_Pipeline_demo/webapp/target/webapp.war
[INFO] -----
[INFO] Reactor Summary for Maven Project 1.0-SNAPSHOT:
[INFO]
[INFO] Maven Project ..... SUCCESS [ 0.119 s]
[INFO] Server ..... SUCCESS [ 1.048 s]
[INFO] Webapp ..... SUCCESS [ 0.428 s]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1.680 s
[INFO] Finished at: 2025-09-10T17:14:37+05:30
[INFO] -----
Archiving artifacts
Finished: SUCCESS
```

```

root@Vinay:/home/vinay# sudo groupadd tomcat
root@Vinay:/home/vinay# sudo useradd -s /bin/false -g tomcat -d /opt/tomcat tomcat
root@Vinay:/home/vinay# cd
root@Vinay:~# cd /tmp
root@Vinay:/tmp# curl -O https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.109/bin/apache-tomcat-9.0.109.tar.gz
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload   Total   Spent    Left   Speed
100 12.4M  100 12.4M    0     0  5836k      0  0:00:02  0:00:02 --:--:-- 5836k
root@Vinay:/tmp#

```

```

root@Vinay:/tmp# cd /opt/tomcat
root@Vinay:/opt/tomcat# sudo chgrp -R tomcat /opt/tomcat
root@Vinay:/opt/tomcat# sudo chmod -R g+r conf
root@Vinay:/opt/tomcat# sudo chmod g+x conf
root@Vinay:/opt/tomcat#

```

```

root@Vinay:/tmp# cd /opt/tomcat
root@Vinay:/opt/tomcat# sudo chgrp -R tomcat /opt/tomcat
root@Vinay:/opt/tomcat# sudo chmod -R g+r conf
root@Vinay:/opt/tomcat# sudo chmod g+x conf
root@Vinay:/opt/tomcat# cd ..
root@Vinay:/opt# sudo chown -R root:root tomcat/
root@Vinay:/opt# cd
root@Vinay:~# cd /opt/tomcat/conf

```

```

-->
<Connector port="8090" protocol="HTTP/1.1"
    connectionTimeout="20000"
    redirectPort="8443"
    maxParameterCount="1000"
/>

<!-- A "Connector" using the shared thread pool-->
<!--
<Connector executor="tomcatThreadPool"

```



```

root@Vinay:/opt# cd
root@Vinay:~# cd /opt/tomcat/conf
root@Vinay:/opt/tomcat/conf# nano server.xml
root@Vinay:/opt/tomcat/conf# nano server.xml
root@Vinay:/opt/tomcat/conf# cd
root@Vinay:~# cd /opt/tomcat/conf
root@Vinay:/opt/tomcat/conf# nano tomcat-users.xml

```

```

<role rolename="manager-gui"/>
<role rolename="manager-script"/>
<role rolename="manager-jmx"/>
<role rolename="manager-status"/>
<user username="admin" password="admin" roles="manager-gui, manager-
script, manager-jmx, manager-status"/>
<user username="deployer" password="deployer" roles="manager-script"/>
<user username="tomcat" password="s3cret" roles="manager-gui"/>
</tomcat-users>

```

```

root@Vinay:~# cd /opt/tomcat/webapps/manager/META-INF
root@Vinay:/opt/tomcat/webapps/manager/META-INF# nano context.xml~
root@Vinay:/opt/tomcat/webapps/manager/META-INF# nano context.xml

```

```

GNU nano 7.2 context.xml
<?xml version="1.0" encoding="UTF-8"?>

<Context antiResourceLocking="false" privileged="true" >
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcesso
    sameSiteCookies="strict" />
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
    allow="127\.\d+\.\d+\.\d+|::1|0:0:0:0:0:0:0:1" />
  <Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|
</Context>

```

```

root@Vinay:/opt/tomcat/bin# ./startup.sh
Using CATALINA_BASE:   /opt/tomcat
Using CATALINA_HOME:   /opt/tomcat
Using CATALINA_TMPDIR: /opt/tomcat/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /opt/tomcat/bin/bootstrap.jar:/opt/tomcat/bin/tomcat-juli
.jar
Using CATALINA_OPTS:
Tomcat started.
root@Vinay:/opt/tomcat/bin#

```

Jenkins

Manage Jenkins

Plugins

Plugins

Updates

Available plugins

Installed plugins

Advanced settings

Download progress

Deploy to Container

Install

Install	Name	Released	Health
<input checked="" type="checkbox"/>	<div>Deploy to container 1.17</div> <div>Artifact Uploader</div> <div>This plugin allows you to deploy a war to a container after a successful build. Glassfish 3.x remote deployment</div>	4 mo 0 days ago	91

Jenkins

Manage Jenkins

Plugins

Plugins

Updates

Available plugins

Installed plugins

Advanced settings

Download progress

Download progress

Preparation

Checking internet connectivity

Checking update center connectivity

Success

commons-lang3 v3.x Jenkins API

Icons API

Folders

Success

Success

Success

Deploy war/ear to a container

WAR/EAR files ?

**/*.war

Context path ?

Containers

Add Container

☐ Deploy on failure

Add post-build action

Save

Apply

Jenkins Credentials Provider: Jenkins

Kind

Username with password

Scope ?

Global (Jenkins, nodes, items, all child items, etc)

Username ?

admin

☐ Treat username as secret ?

Password ?

ID ?

tomcat

Description ?

tomcat

Containers

Tomcat 9.x Remote

Credentials

admin/***** (tomcat)

+ Add

Tomcat URL ?

http://localhost:8090/

Advanced ▾

Add Container ▾

☐ Deploy on failure

Add post-build action ▾

Save

Apply

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[Find Help](#)

Apache Tomcat/9.0.109



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](#)

[Server Status](#)

[Manager App](#)

[Host Manager](#)

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 Run 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](#)

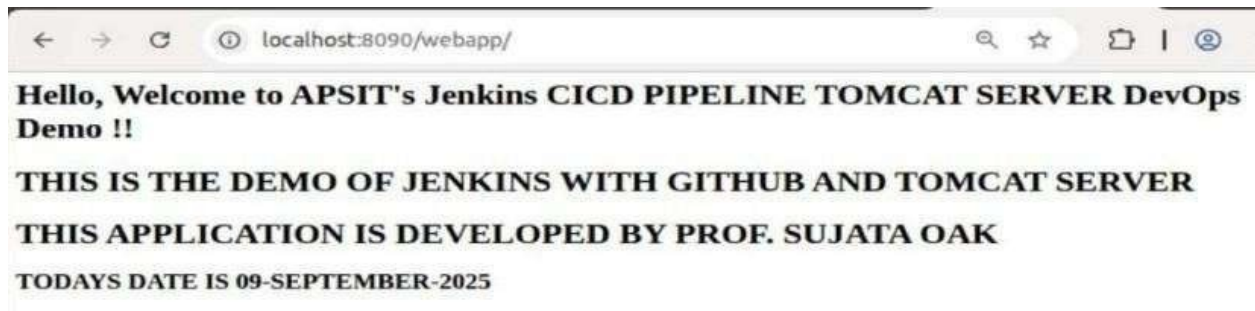
User support and discussion

[taglibs-user](#)

User support and discussion for [Apache Taglibs](#)

[tomcat-dev](#)

Development mailing list, including commit messages



Conclusion: By implementing Jenkins pipelines for Tomcat deployment, software teams achieve full automation of the build, test, and deployment lifecycle of web applications. This experiment demonstrates the practical application of CI/CD concepts in a real-world scenario.