



Parshvanath Charitable Trust's  
**A. P. SHAH INSTITUTE OF TECHNOLOGY**  
(Approved by AICTE New Delhi & Govt. of Maharashtra, Affiliated to University of Mumbai)  
(Religious Jain Minority)

## Department of Information Technology

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**Semester: V**

**Class / Branch: IT**

**Subject: DevOps Lab**

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## Experiment No. 5

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

### OUTPUT:

Dashboard > exp5\_pipeline > Configuration

### Configure

- General
- Advanced Project Options**
- Pipeline

#### Advanced Project Options

Advanced ▾

#### Pipeline

Definition

Pipeline script ▾

Script ?

```
1 pipeline{
2   agent any
3   stages{
4     stage("hello")
5     steps{
6       echo "hi myself sankalp"
7     }
8   }
9 }
```

try sample Pipeline...

Save Apply

Dashboard > exp5\_pipeline >

Configure

Delete Pipeline

Full Stage View

Rename

Pipeline Syntax

Build History

trend

Filter builds...

#3

24 Aug 2023, 14:47

#2

24 Aug 2023, 14:46

Atom feed for all

Atom feed for failures

Stage View

Average stage times:  
(Average full run time: ~581ms)

hello

57ms

#3

Aug 24 14:47

No Changes

46ms

#2

Aug 24 14:46

No Changes

69ms

Permalinks

Last build (#2), 21 sec ago

Last stable build (#2), 21 sec ago

Last successful build (#2), 21 sec ago

Last completed build (#2), 21 sec ago

REST API

Jenkins 2.401.3

Dashboard > BUILD >

Build Pipeline

Trigger a Pipeline

Pipeline History

Configure

Add Step

Delete

Manage

Pipeline #1

#1 Project1-build

24-Aug-2023 3:21:39 pm

10 sec

console re-run

#6 Project1-test

24-Aug-2023 3:28:50 pm

10 sec

console re-run

#2 Project1-deploy

24-Aug-2023 3:29:35 pm

8 ms

console re-run

#1 Project1-release

24-Aug-2023 3:31:50 pm



1 ms

console re-run

```
apsit@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Downloads/apache-tomcat-9.0.80$ ls
bin BUILDING.txt conf CONTRIBUTING.md lib LICENSE logs NOTICE README.md RELEASE-NOTES RUNNING.txt temp webapps work
apsit@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Downloads/apache-tomcat-9.0.80$ cd bin
bash: cd: bin: Permission denied
apsit@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:~/Downloads/apache-tomcat-9.0.80$ sudo su
[sudo] password for apsit:
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80# cd bin
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/bin# ls
bootstrap.jar catalina.tasks.xml commons-daemon.jar configtest.sh digest.sh setclasspath.bat shutdown.sh tomcat-juli.jar tool-wrapper.sh
catalina.bat ciphers.bat commons-daemon-native.tar.gz daemon.sh makebase.bat setclasspath.sh startup.bat tomcat-native.tar.gz version.bat
catalina.sh ciphers.sh configtest.bat digest.bat makebase.sh shutdown.bat startup.sh tool-wrapper.bat version.sh
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/bin# ./startup.sh
Using CATALINA_BASE:   /home/apsit/Downloads/apache-tomcat-9.0.80
Using CATALINA_HOME:   /home/apsit/Downloads/apache-tomcat-9.0.80
Using CATALINA_TMPDIR: /home/apsit/Downloads/apache-tomcat-9.0.80/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /home/apsit/Downloads/apache-tomcat-9.0.80/bin/bootstrap.jar:/home/apsit/Downloads/apache-tomcat-9.0.80/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/bin# cd ..
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80# cd conf
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/conf# ls
Catalina catalina.properties jaspic-providers.xml logging.properties tomcat-users.xml web.xml
catalina.policy context.xml jaspic-providers.xsd server.xml tomcat-users.xsd
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/conf# nano server.xml
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/conf#
```

```
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/conf# nano tomcat-users.xml
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/conf# cd ..
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80# cd bin
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/bin# ./shutdown.sh
Using CATALINA_BASE:   /home/apsit/Downloads/apache-tomcat-9.0.80
Using CATALINA_HOME:   /home/apsit/Downloads/apache-tomcat-9.0.80
Using CATALINA_TMPDIR: /home/apsit/Downloads/apache-tomcat-9.0.80/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /home/apsit/Downloads/apache-tomcat-9.0.80/bin/bootstrap.jar:/home/apsit/Downloads/apache-tomcat-9.0.80/bin/tomcat-juli.jar
Using CATALINA_OPTS:
NOTE: Picked up JDK_JAVA_OPTIONS:  --add-opens=java.base/java.lang=ALL-UNNAMED --add-opens=java.base/java.io=ALL-UNNAMED --add-opens=java.base/java.util=ALL-UNNAMED --add-opens
=java.base/java.util.concurrent=ALL-UNNAMED --add-opens=java.rmi/sun.rmi.transport=ALL-UNNAMED
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/bin# ./startup.sh
Using CATALINA_BASE:   /home/apsit/Downloads/apache-tomcat-9.0.80
Using CATALINA_HOME:   /home/apsit/Downloads/apache-tomcat-9.0.80
Using CATALINA_TMPDIR: /home/apsit/Downloads/apache-tomcat-9.0.80/temp
Using JRE_HOME:        /usr
Using CLASSPATH:       /home/apsit/Downloads/apache-tomcat-9.0.80/bin/bootstrap.jar:/home/apsit/Downloads/apache-tomcat-9.0.80/bin/tomcat-juli.jar
Using CATALINA_OPTS:
Tomcat started.
root@apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC:/home/apsit/Downloads/apache-tomcat-9.0.80/bin#
```

```
<user username="role1" password="<must-be-changed>" roles="role1"/>
-->
<user username="admin" password="123456" roles="manager-script"/>
</tomcat-users>
```



Server Status

Manager

List Applications

HTML Manager Help

Manager Help

Complete Server Status

Server Information

Tomcat Version	JVM Version	JVM Vendor	OS Name	OS Version	OS Architecture	Hostname	IP Address
Apache Tomcat/9.0.80	17.0.8.1+1-Ubuntu-0ubuntu122.04	Private Build	Linux	6.2.0-32-generic	amd64	apsit-HP-Pro-Tower-280-G9-PCI-Desktop-PC	127.0.1.1

JVM

Free Memory: 47.85 MiB Total Memory: 62.00 MiB Max Memory: 1906.00 MiB

Memory Pool	Type	Initial	Total	Maximum	Used
G1 Eden Space	Heap memory	25.00 MiB	32.00 MiB	-0.00 MiB	0.00 MiB
G1 Old Gen	Heap memory	95.00 MiB	28.00 MiB	1906.00 MiB	12.45 MiB (09%)
G1 Survivor Space	Heap memory	0.00 MiB	2.00 MiB	-0.00 MiB	1.38 MiB
CodeHeap 'non-nmethods'	Non-heap memory	2.43 MiB	2.43 MiB	5.57 MiB	1.20 MiB (21%)
CodeHeap 'non-profiled nmethods'	Non-heap memory	2.43 MiB	2.43 MiB	117.21 MiB	1.57 MiB (1%)
CodeHeap 'profiled nmethods'	Non-heap memory	2.43 MiB	7.37 MiB	117.21 MiB	7.34 MiB (6%)
Compressed Class Space	Non-heap memory	0.00 MiB	2.37 MiB	1024.00 MiB	2.30 MiB (0%)
Metaspace	Non-heap memory	0.00 MiB	23.93 MiB	-0.00 MiB	23.74 MiB

"http-nio-8081"

Max threads: 200 Current thread count: 10 Current threads busy: 1 Keep alive sockets count: 1  
Max processing time: 320 ms Processing time: 0.398 s Request count: 2 Error count: 1 Bytes received: 0.00 MiB Bytes sent: 0.01 MiB

Stage	Time	Bytes Sent	Bytes Recv	Client (Forwarded)	Client (Actual)	VHost	Request
S	12 ms	0 KiB	0 KiB	0:0:0:0:0:0:1	0:0:0:0:0:0:1	localhost	GET /manager/status HTTP/1.1

P: Parse and prepare request S: Service F: Finishing R: Ready K: Keepalive

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The screenshot displays the Jenkins web interface for a specific build. The top navigation bar includes the Jenkins logo, a search bar, and a notification icon. The breadcrumb trail shows the path: Dashboard > Sankalp\_DL\_EXP5 > #1. On the left, a sidebar lists various actions: Status (selected), Changes, Console Output, Edit Build Information, Delete build '#1', Git Build Data, Redeploy Artifacts, Test Result, and See Fingerprints. The main content area is titled 'Build #1 (14 Sept 2023, 15:01:57)' with a green checkmark icon. It includes a 'Keep this build forever' button, an 'Add description' link, and build timing information: 'Started 5 min 17 sec ago' and 'Took 3 min 35 sec'. The build status is 'No changes.' and it was 'Started by anonymous user'. The Git build data shows a revision hash and a repository URL. The test result is 'Test Result (no failures)'. Below this, the 'Module Builds' section lists three modules: 'Maven Project' (0.76 sec), 'Server' (1.9 sec), and 'Webapp' (0.99 sec). The bottom right corner of the interface shows 'REST API' and 'Jenkins 2.414.1'.

Jenkins

Dashboard > Sankalp\_DL\_EXP5 > #1

Status

</> Changes

Console Output

Edit Build Information

Delete build '#1'

Git Build Data

Redeploy Artifacts

Test Result

See Fingerprints

Build #1 (14 Sept 2023, 15:01:57)

Keep this build forever

Add description

Started 5 min 17 sec ago

Took 3 min 35 sec

No changes.

Started by anonymous user

Revision: 55bbd83aaaa48884f1f368b8c152d48b89e23587

Repository: <https://github.com/revdy/hello-world.git>

• refs/remotes/origin/master

Test Result (no failures)

Module Builds

Maven Project	0.76 sec
Server	1.9 sec
Webapp	0.99 sec

REST API Jenkins 2.414.1

**Conclusion:** Hence we learnt how to create and build a CI/CD pipeline in Jenkins to test and deploy an application over the tomcat server.