

Experiment No-5

Aim: Experiment 5: To Build the pipeline of jobs using Maven / Gradle / Ant in Jenkins, create a pipeline script to Test and deploy an application over the tomcat server

Programming in Jenkins:

Continuous Integration is a software development practice where members of a team integrate their work frequently, usually each person integrates at least daily leading to multiple integrations per day. Each integration is verified by an automated build (including test) to detect integration errors as quickly as possible.” In simple way, Continuous integration (CI) is the practice of frequently building and testing each change done to your code automatically.

Jenkins is a self-contained, open-source automation server which can be used to automate all sorts of tasks related to building, testing, and delivering or deploying software.

Our first job will execute the shell commands. The freestyle project provides enough options and features to build the complex jobs that you will need in your projects.

Example 1

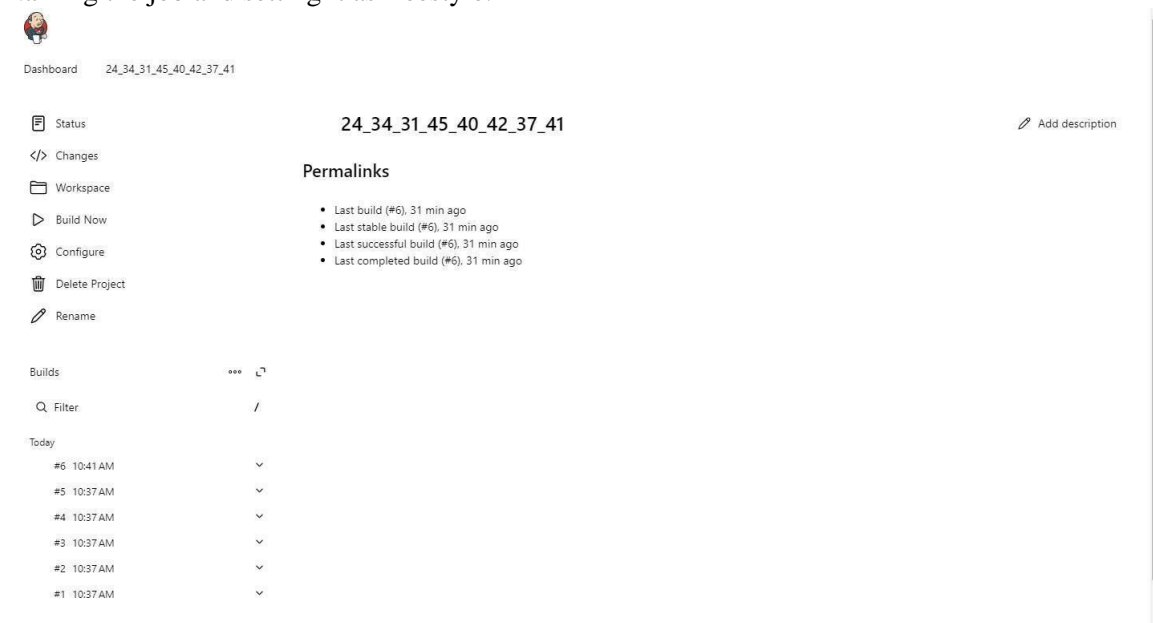
Example 1.1: Deploying a freestyle app in Jenkins

Creating a job:

Start building your software project

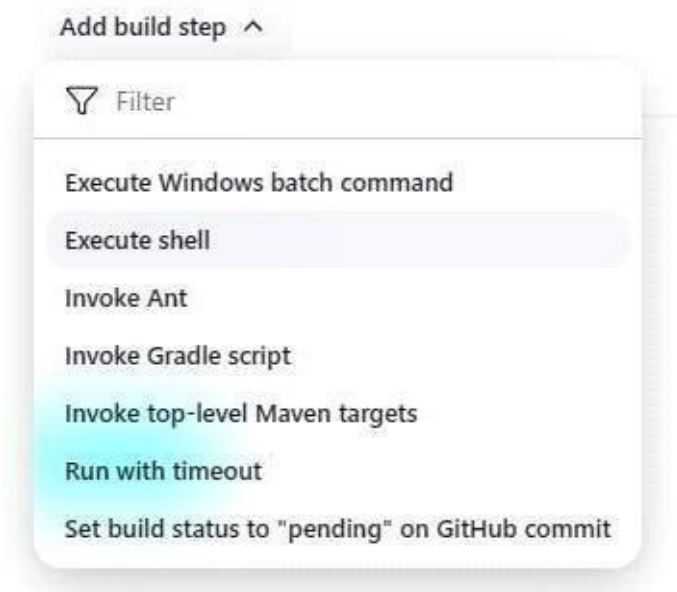


Naming the job and setting it as freestyle:

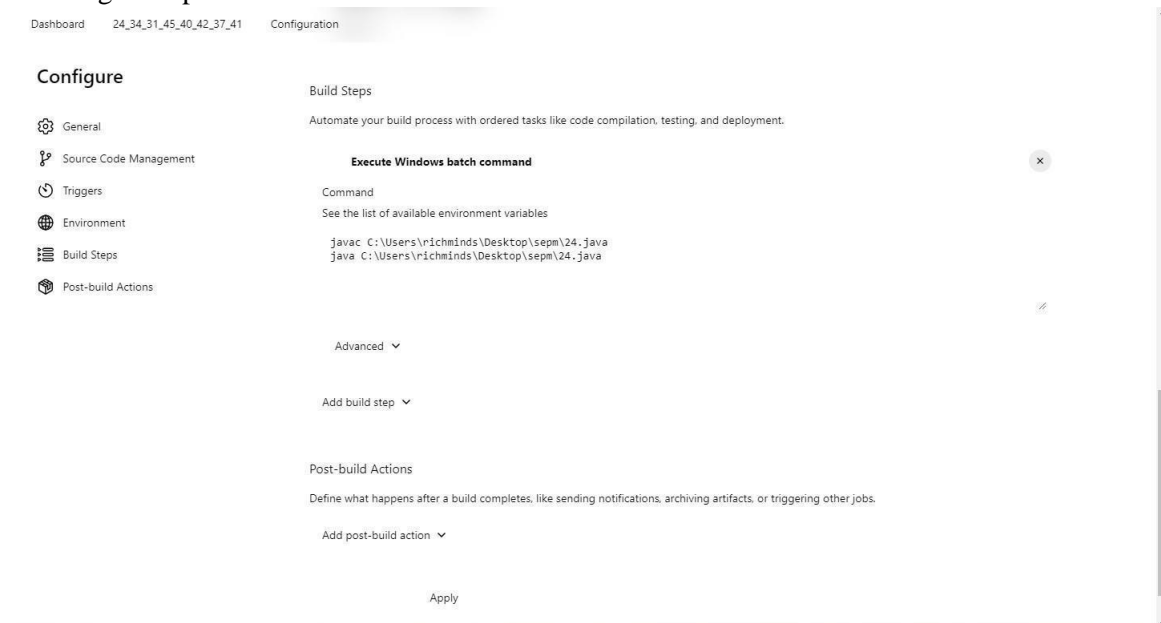


Selecting build type as “Execute shell”:

Build Steps



Entering a simple command for the shell execution:



Applying and saving the project configuration:



Building the project:



Console output (after building):



Dashboard 24_34_31_45_40_42_37_41 #1 Console Output

Status

Changes

Console Output

Edit Build Information

Delete build #1

Timings

Next Build

Console Output

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View as plain text

```
Started by user Aditya Dikonda
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\jenkins\workspace\24_34_31_45_40_42_37_41
[24_34_31_45_40_42_37_41] $ cmd /c call C:\WINDOWS\TEMP\jenkins3499849351956503998.bat

C:\ProgramData\Jenkins\jenkins\workspace\24_34_31_45_40_42_37_41>javac C:\Users\richminds\Desktop\sepm\24.java

C:\ProgramData\Jenkins\jenkins\workspace\24_34_31_45_40_42_37_41>java C:\Users\richminds\Desktop\sepm\24.java
This is T12

C:\ProgramData\Jenkins\jenkins\workspace\24_34_31_45_40_42_37_41>exit 0
Finished: SUCCESS
```

```
example1.cmd
File Edit View
echo off
echo "Hello %1... Your address is %2"
Ln 1, Col 1 47 characters
```

Example 1.2: Taking parameters through files

Contents of script example1.cmd:

Executing script example1.cmd on the terminal:

```

Microsoft Windows [Version 10.0.22621.3296]
(c) Microsoft Corporation. All rights reserved.

C:\Users\AI&DS 202>Microsoft Windows [Version 10.0.22631.3155] (c) Microsoft Corporation. All rights reserved.
'Microsoft' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\AI&DS 202>C:\Admin\Academics\TSEC\Start3\SEPM>example1.cmd
The system cannot find the path specified.

C:\Users\AI&DS 202>"Hello... Your address is "
'"Hello... Your address is "' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\AI&DS 202>C:\Admin\Academics\TSEC\Start3\SEPM>example1.cmd Tanishq
The system cannot find the path specified.

C:\Users\AI&DS 202>"Hello Tanishq... Your address is "
'"Hello Tanishq... Your address is "' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\AI&DS 202>C:\Admin\Academics\TSEC\Start3\SEPM>example1.cmd Tanishq Girgaon "Helle Tanishq... Your address is Gi
rgaon"
The system cannot find the path specified.

```

Modifying the Jenkins project to execute the script while supplying required parameters:

Build Steps



Add build step ▾

Console output after building the modified project:



Running a Java program under Jenkins

Creating a simple Java program:

Compiling and running the program on the terminal:

```

C:\Users\richminds\Desktop\sepm>javac 24.java

C:\Users\richminds\Desktop\sepm>java 24.java
This is T12

C:\Users\richminds\Desktop\sepm>

```

Creating a new freestyle project:

Dashboard > All >

Enter an item name

Example

* Required field

- Freestyle project**
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.
- Pipeline**
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.
- Multi-configuration project**
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.
- Folder**
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.
- Multibranch Pipeline**
Creates a set of Pipeline projects according to detected branches in one SCM repository.
- Organization Folder**
Creates a set of multibranch project subfolders by scanning for repositories.

If you want to create a new item from other existing, you can use this option:

OK Cancel

Configure new project:

Command

See the list of available environment variables

```
javac C:\Users\richminds\Desktop\sepm\24.java
java C:\Users\richminds\Desktop\sepm\24.java
```

Console output after building:
Console Output

[Download](#) [Copy](#) [View as plain text](#)

```
Started by user Aditya Dikonda
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\24_34_31_45_40_42_37_41
[24_34_31_45_40_42_37_41] $ cmd /c call C:\WINDOWS\TEMP\jenkins3970528995341461278.bat

C:\ProgramData\Jenkins\.jenkins\workspace\24_34_31_45_40_42_37_41>javac C:\Users\richminds\Desktop\sepm\24.java

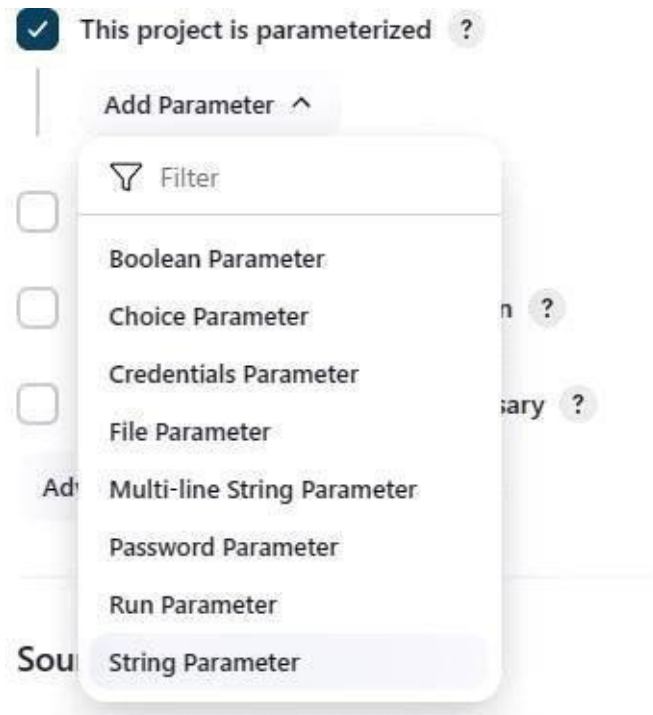
C:\ProgramData\Jenkins\.jenkins\workspace\24_34_31_45_40_42_37_41>java C:\Users\richminds\Desktop\sepm\24.java
This is T12

C:\ProgramData\Jenkins\.jenkins\workspace\24_34_31_45_40_42_37_41>exit 0
Finished: SUCCESS
```

Example 3

Example 3.1: Parameterise build Creating a new freestyle project:

Enabling parameterisation and adding a String parameter:



Configuring the string parameter as Fname:

String Parameter ?

Name ?

Fname

Default Value ?

Description ?

Plain text [Preview](#)

☐ Trim the string ?

Adding a choice parameter and configuring it as City with the following choices:

Choice Parameter

Name

City

Choices

- [Ambernath](#)
- [Badlapur](#)
- [Kalyan](#)
- [Dombivli](#)

ⓘ Requires Choices.

Description

Configuring build steps:

Build Steps

Execute Windows batch command ?

Command

See [the list of available environment variables](#)

C:\Admin\Academics\TSEC\Start3\SEPM\example3.cmd %Fname% %City%

Advanced ▾

Add build step ▾

Entering parameters for build:

Project Example3

This build requires parameters:

Fname

Siddhant

City

Bandra ▾

▶ Build

Cancel

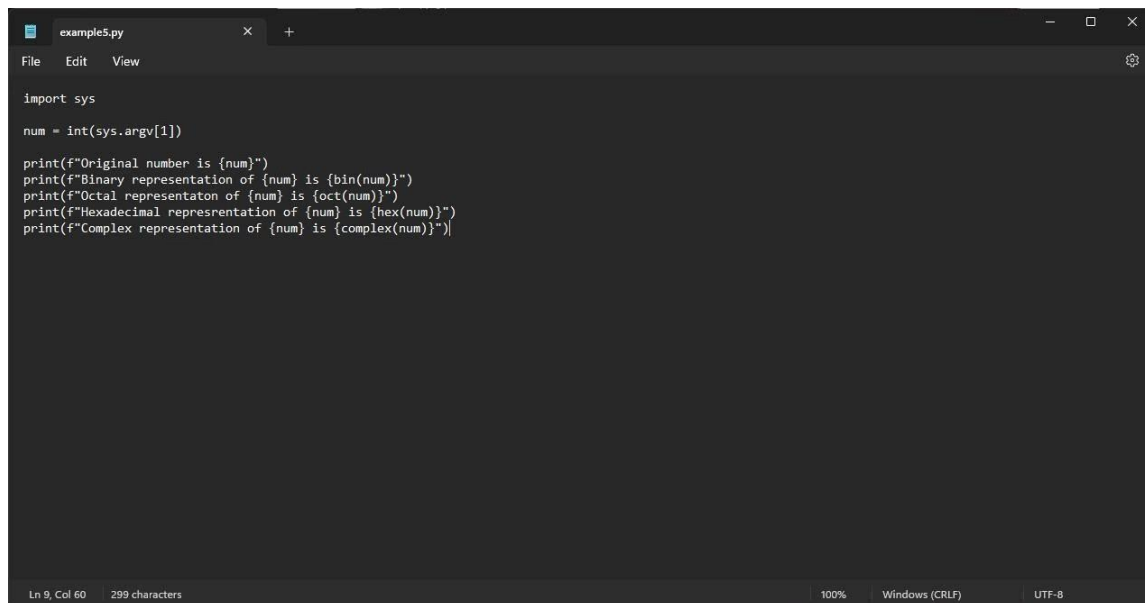
Console output after building:

✓ Console Output

```
Started by user Siddhant Chetlur
Running as SYSTEM
[EnvInject] - Loading node environment variables.
Building in workspace C:\ProgramData\jenkins\jenkins\workspace\Example3
[Example3] $ cmd /c call C:\WINDOWS\TEMP\jenkins14094536165150986151.bat

C:\ProgramData\jenkins\jenkins\workspace\Example3>C:\Admin\Academics\TSEC\Start3\SEPM\example3.cmd Siddhant Bandra
Hello your name is Siddhant and your city is Bandra
Finished: SUCCESS
```

Example 5

A screenshot of a code editor window titled 'example5.py'. The editor has a dark theme and shows a Python script. The script imports the 'sys' module, takes a command-line argument 'num', and prints its original, binary, octal, hexadecimal, and complex representations. The status bar at the bottom indicates 'Ln 9, Col 60', '299 characters', '100%', 'Windows (CRLF)', and 'UTF-8'.

```
import sys

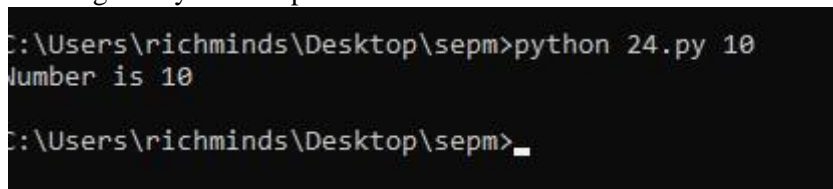
num = int(sys.argv[1])

print(f"Original number is {num}")
print(f"Binary representation of {num} is {bin(num)}")
print(f"Octal representation of {num} is {oct(num)}")
print(f"Hexadecimal representation of {num} is {hex(num)}")
print(f"Complex representation of {num} is {complex(num)}")
```

Example 5.1: Running a Python program Creating

a simple Python script:

Running the Python script on the terminal:

A screenshot of a terminal window showing the execution of a Python script. The command 'python 24.py 10' is entered, and the output 'Number is 10' is displayed. The prompt 'C:\Users\richminds\Desktop\sepm>' is visible.


```
C:\Users\richminds\Desktop\sepm>python 24.py 10
Number is 10

C:\Users\richminds\Desktop\sepm>
```


Creating a new freestyle project:

Enter an item name


» Required field

**Freestyle project**


Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

**Pipeline**


Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

**Multi-configuration project**


Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

**Folder**

Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

**Multibranch Pipeline**

Creates a set of Pipeline projects according to detected branches in one SCM repository.

**Organization Folder**

Creates a set of multibranch project subfolders by scanning for repositories.

If you want to create a new item from other existing, you can use this option:

OK

Parameterising the project with a string parameter as follows:

☒ This project is parameterized ?

String Parameter ?

Name ?

Default Value ?

Description ?

Plain text [Preview](#)

☐ Trim the string ?

Add Parameter ▾

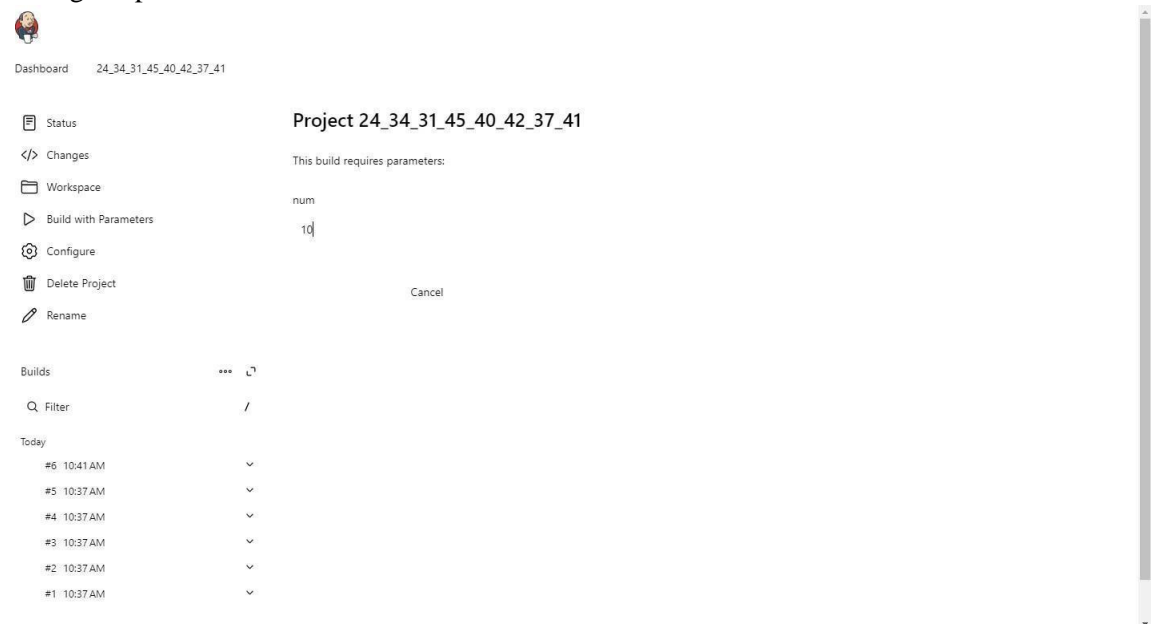
Configuring the build steps:

Command

See the list of available environment variables

```
python C:\Users\richminds\Desktop\sepm\24.py
```

Setting the parameter for the build:



Conclusion: Thus, we have successfully studied Continuous Integration and installed, configured, and understood programming with Jenkins.