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Roll No. 98

Batch : T22

EXPERIMENT NO :05

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.

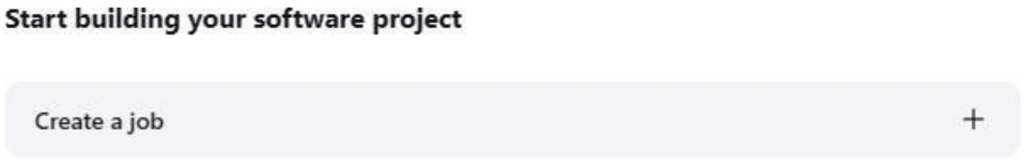
Jenkins is a self-contained, open-source automation server which can be used to automate all sorts of tasks related to building, testing, and delivering or deploying software.

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.

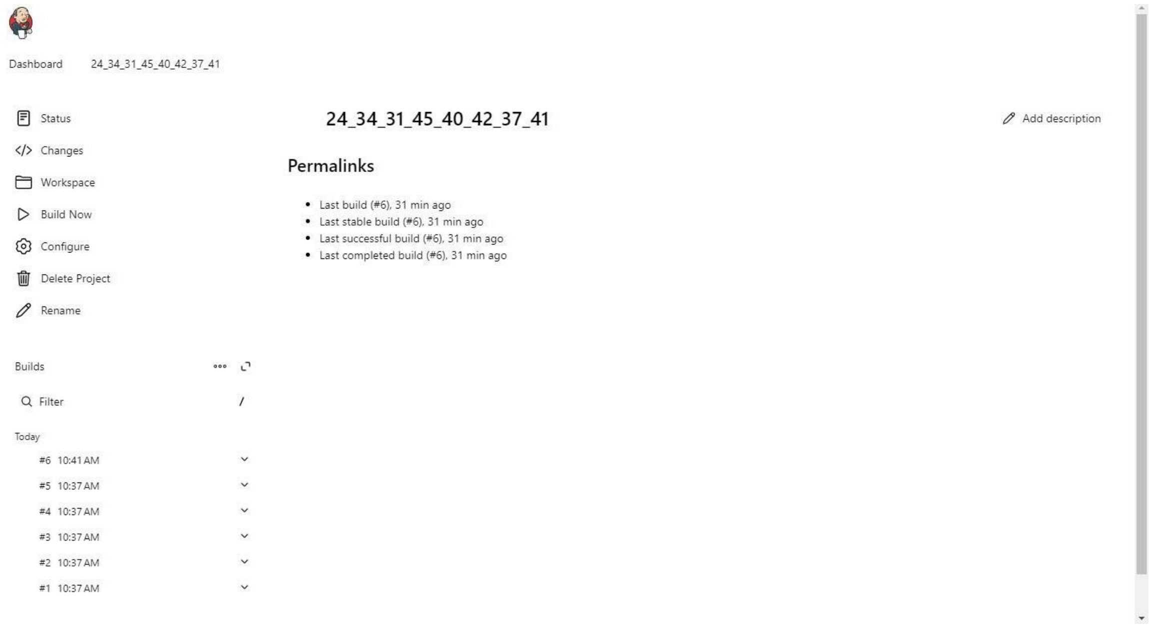
Example 1

Example 1.1: Deploying a freestyle app in

Jenkins Creating a job:



Naming the job and setting it as freestyle:



Dashboard 24_34_31_45_40_42_37_41

Status
Changes
Workspace
Build Now
Configure
Delete Project
Rename

Builds

Filter /

Today

#6 10:41 AM
#5 10:37 AM
#4 10:37 AM
#3 10:37 AM
#2 10:37 AM
#1 10:37 AM

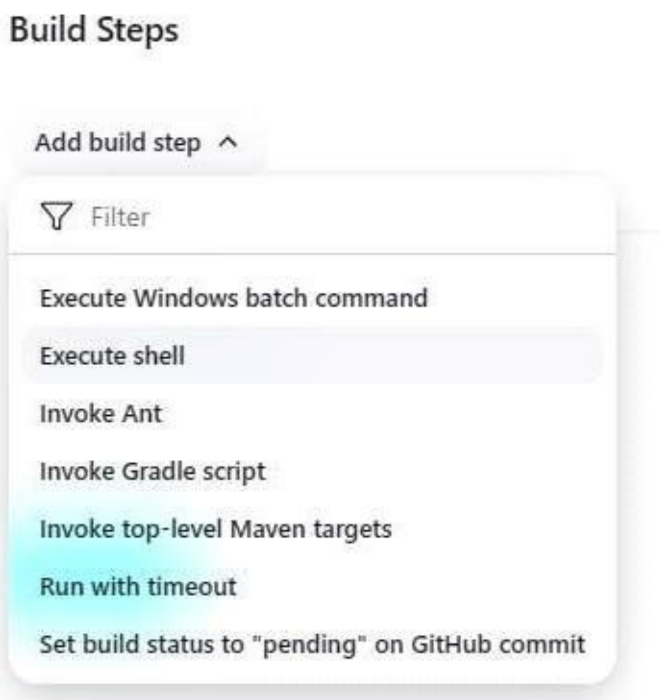
24_34_31_45_40_42_37_41

Add description

Permalinks

- Last build (#6), 31 min ago
- Last stable build (#6), 31 min ago
- Last successful build (#6), 31 min ago
- Last completed build (#6), 31 min ago

Selecting build type as “Execute shell”:



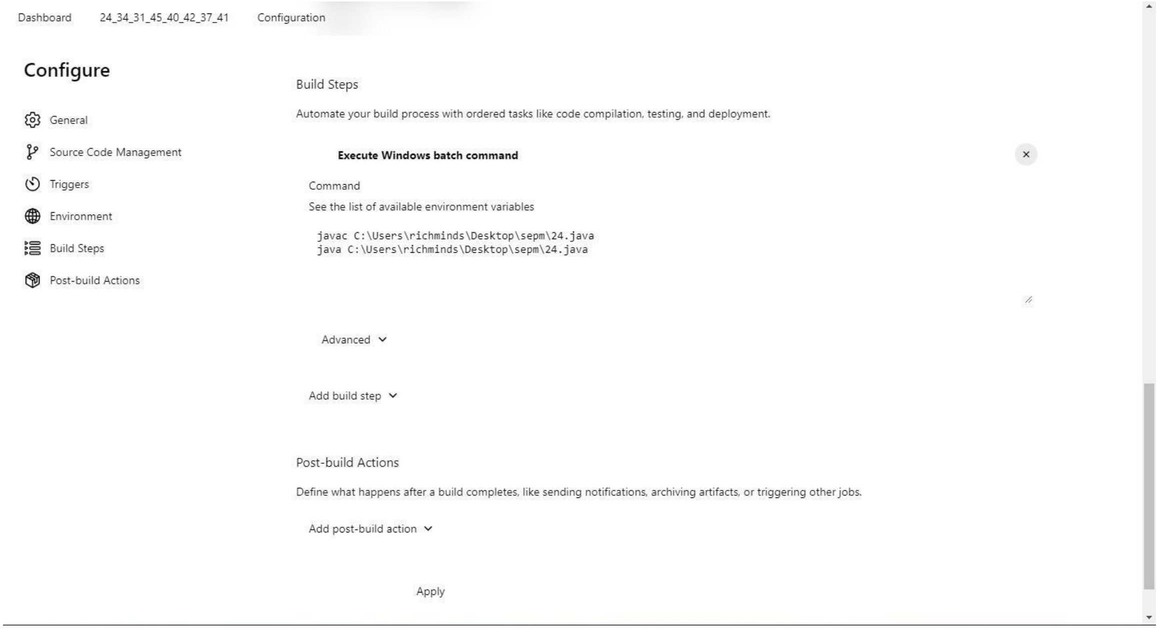
Build Steps

Add build step

Filter

Execute Windows batch command
Execute shell
Invoke Ant
Invoke Gradle script
Invoke top-level Maven targets
Run with timeout
Set build status to "pending" on GitHub commit

Entering a simple command for the shell execution:



Build Steps

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

Execute Windows batch command

Command

See the list of available environment variables

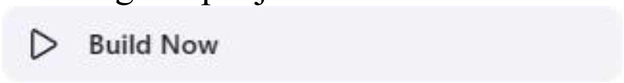
```
javac C:\Users\richminds\Desktop\sepm\24.java
java C:\Users\richminds\Desktop\sepm\24.java
```

Post-build Actions

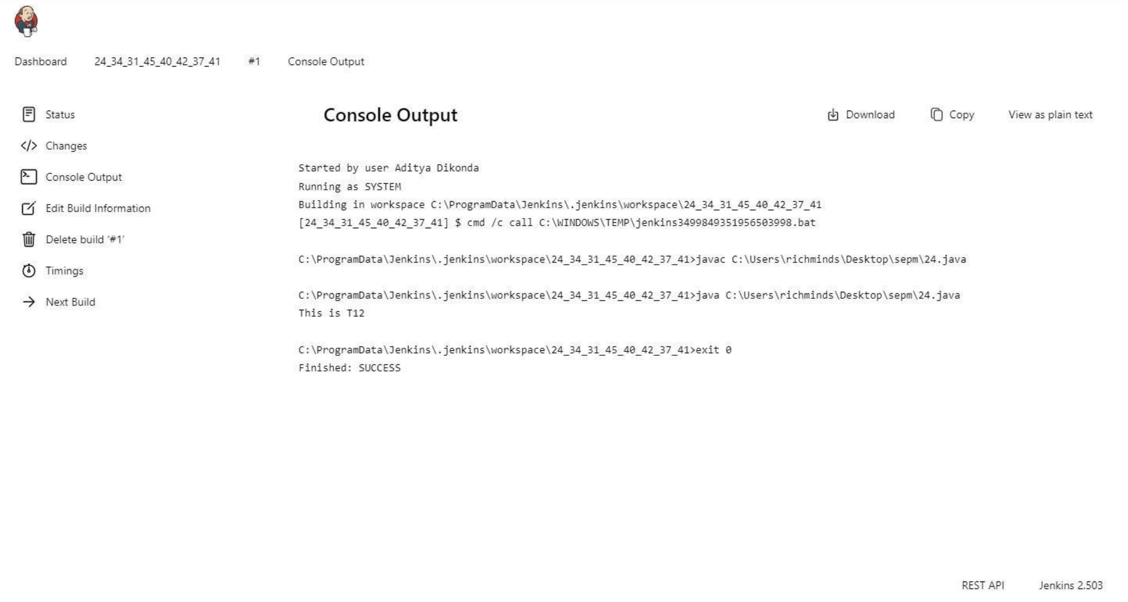
Define what happens after a build completes, like sending notifications, archiving artifacts, or triggering other jobs.

Applying and saving the project configuration:

Building the project:

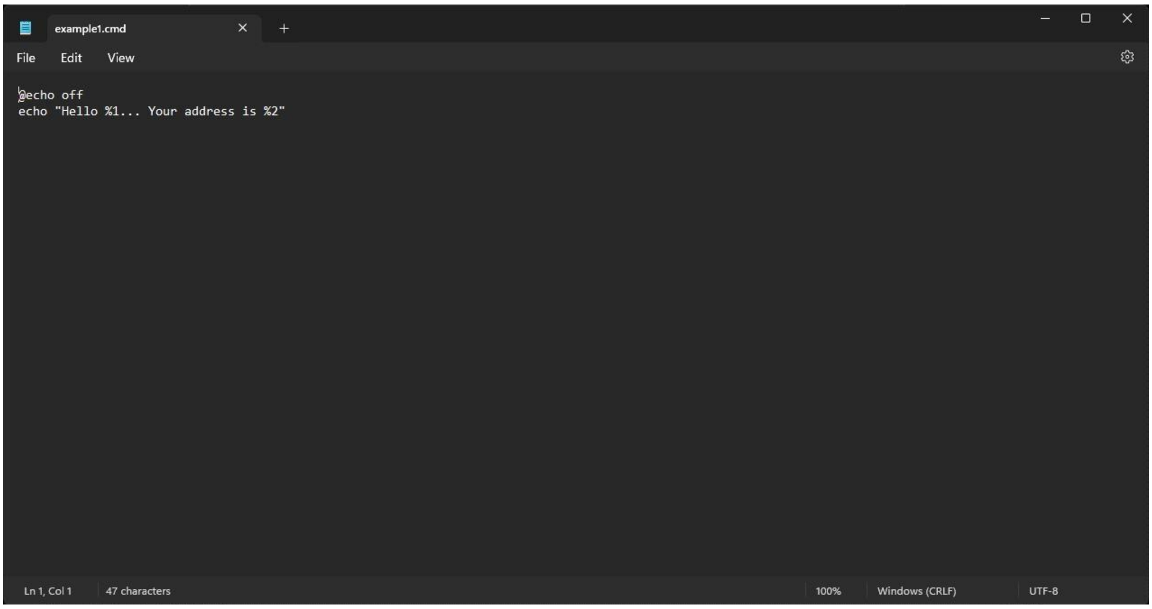


Console output (after building):



Console Output

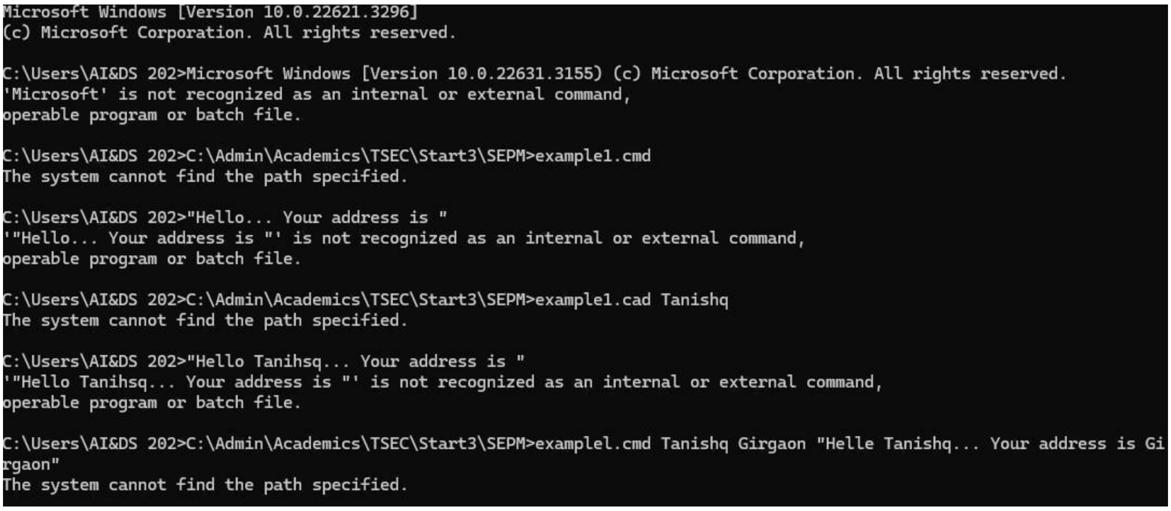
```
Started by user Aditya Dikonda
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\24_34_31_45_40_42_37_41
[24_34_31_45_40_42_37_41] $ cmd /c call C:\WINDOWS\TEMP\jenkins3499849351956503998.bat

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
```



```
@echo off
echo "Hello %1... Your address is %2"
```

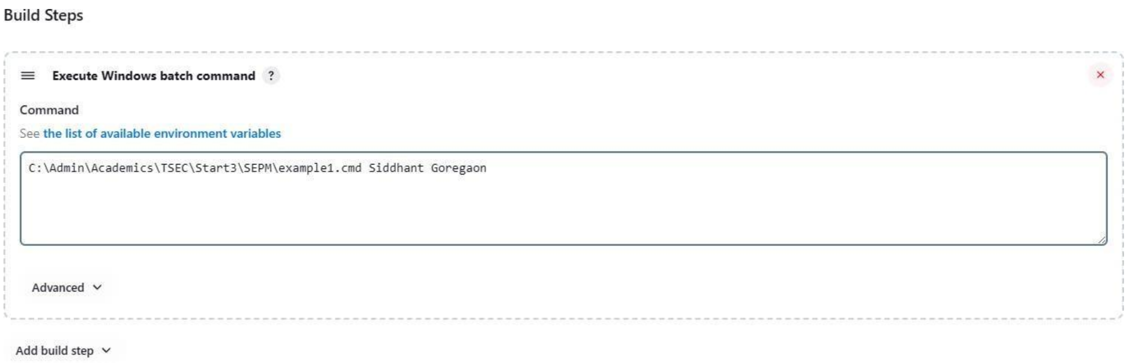
Example 1.2: Taking parameters through files Contents of script example1.cmd:

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.cad Tanishq
The system cannot find the path specified.

C:\Users\AI&DS 202>"Hello Tanihsq... Your address is "
'"Hello Tanihsq... 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>examplel.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

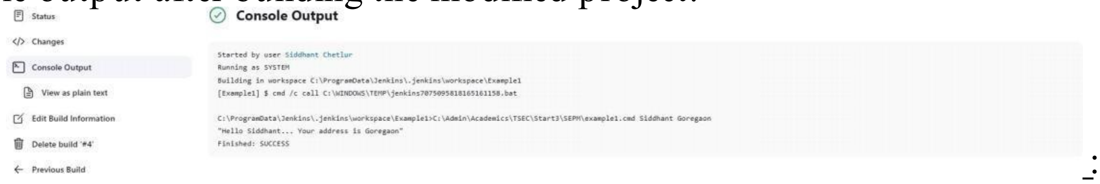
Execute Windows batch command

Command

See the list of available environment variables

```
C:\Admin\Academics\TSEC\Start3\SEPM\example1.cmd Siddhant Goregaon
```

Console output after building the modified project:



Console Output

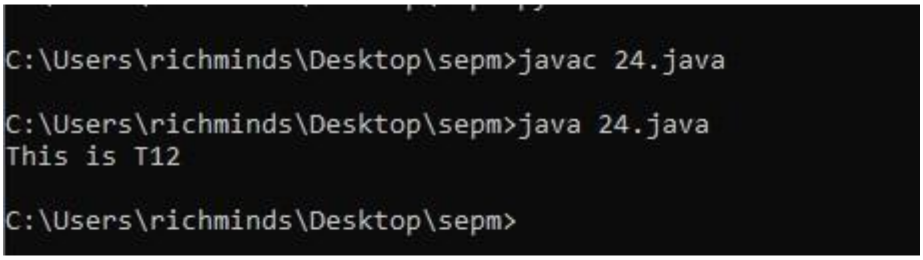
```
Started by user Siddhant Chetlur
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\Example1
[Example1] $ cmd /c call C:\WINDOWS\TEMP\jenkins7075095818165161158.bat

C:\ProgramData\Jenkins\.jenkins\workspace\Example1>C:\Admin\Academics\TSEC\Start3\SEPM\example1.cmd Siddhant Goregaon
"Hello Siddhant... Your address is Goregaon"
Finished: SUCCESS
```

:

Running a Java program under Jenkins

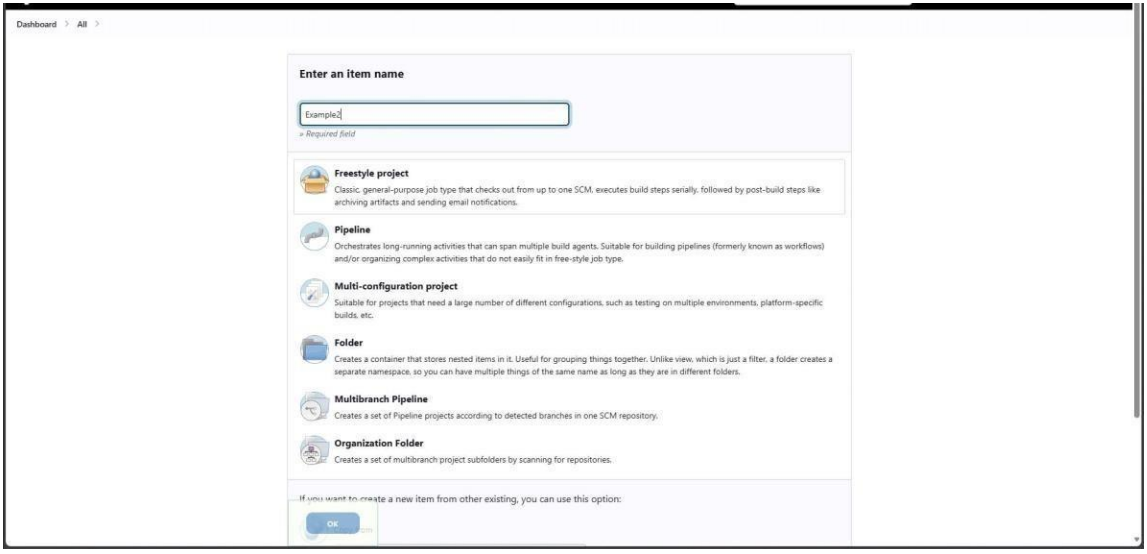
Creating a simple Java program:

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:



Enter an item name

Example2

» 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.

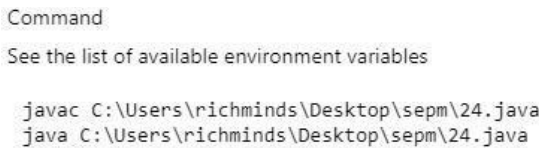
Folder
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

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.

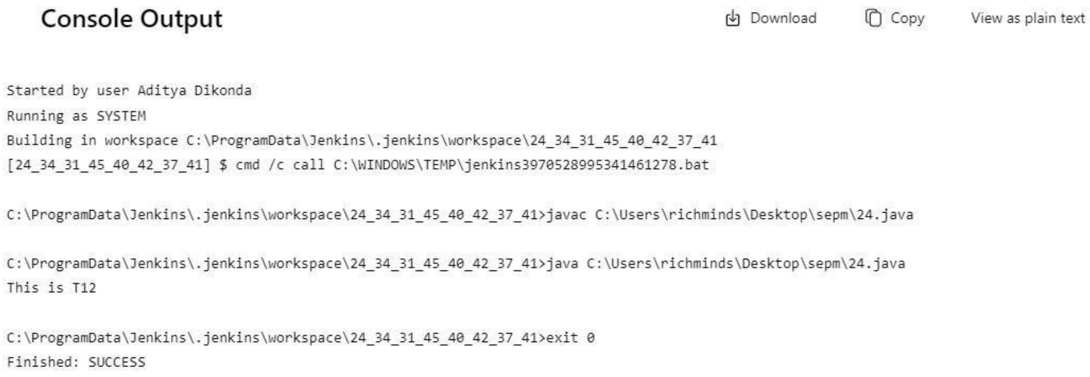
If you want to create a new item from other existing, you can use this option:

Configure new project:



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

Console output after building:



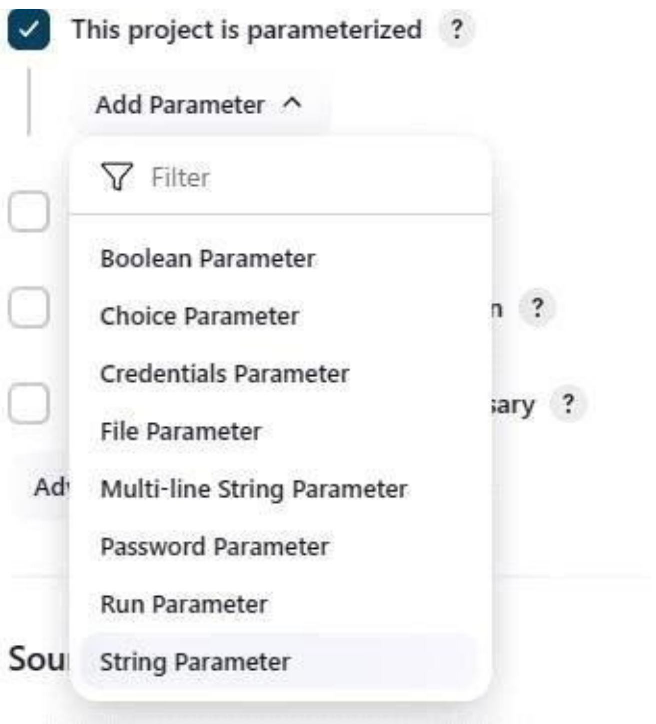
```
Started by user Aditya Dikonda
Running as SYSTEM
Building in workspace C:\ProgramData\Jenkins\.jenkins\workspace\24_34_31_45_40_42_37_41
[24_34_31_45_40_42_37_41] $ cmd /c call C:\WINDOWS\TEMP\jenkins3970528995341461278.bat

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:



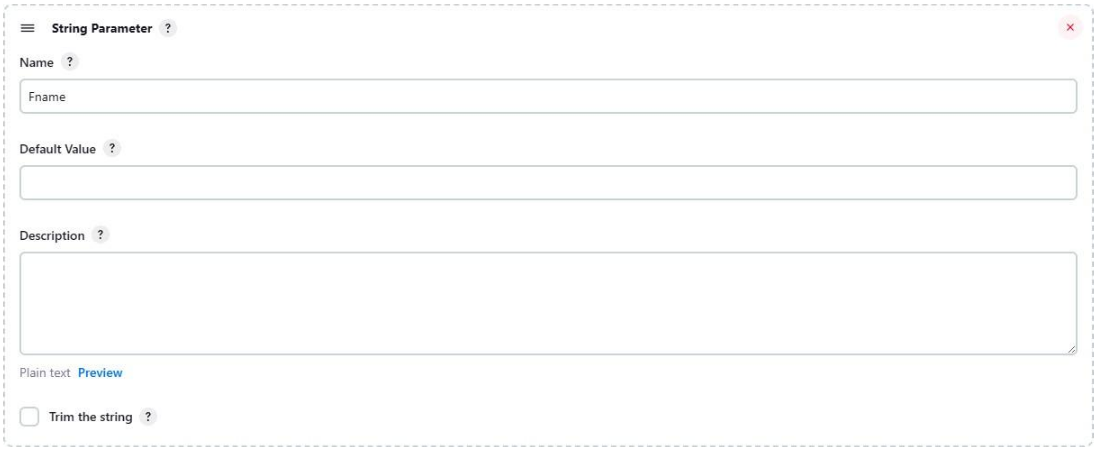
☑ This project is parameterized ?

Add Parameter ^

Filter

- Boolean Parameter
- Choice Parameter
- Credentials Parameter
- File Parameter
- Multi-line String Parameter
- Password Parameter
- Run Parameter
- String Parameter

Configuring the string parameter as Fname:



String Parameter ?

Name ?

Fname

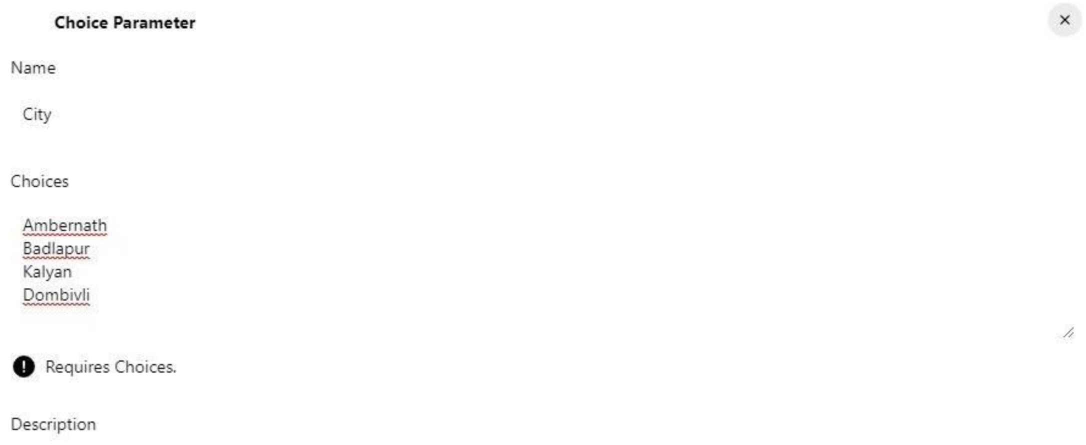
Default Value ?

Description ?

Plain text Preview

□ Trim the string ?

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



Choice Parameter

Name

City

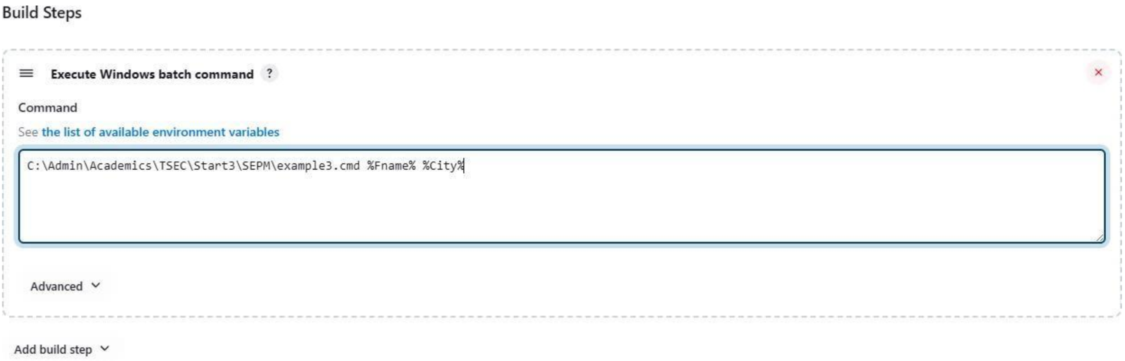
Choices

Ambernath
Badlapur
Kalyan
Dombivli

Requires Choices.

Description

Configuring build steps:



Build Steps

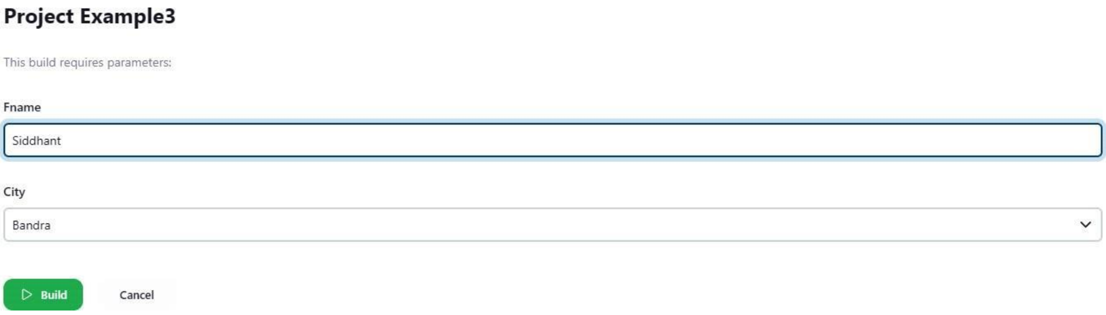
Execute Windows batch command

Command

See the list of available environment variables

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

Entering parameters for build:



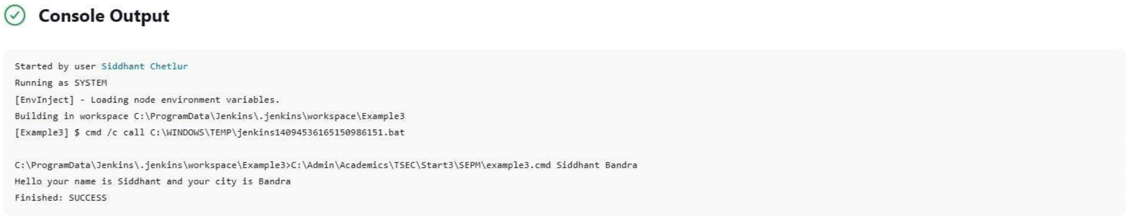
Project Example3

This build requires parameters:

Fname: Siddhant

City: Bandra

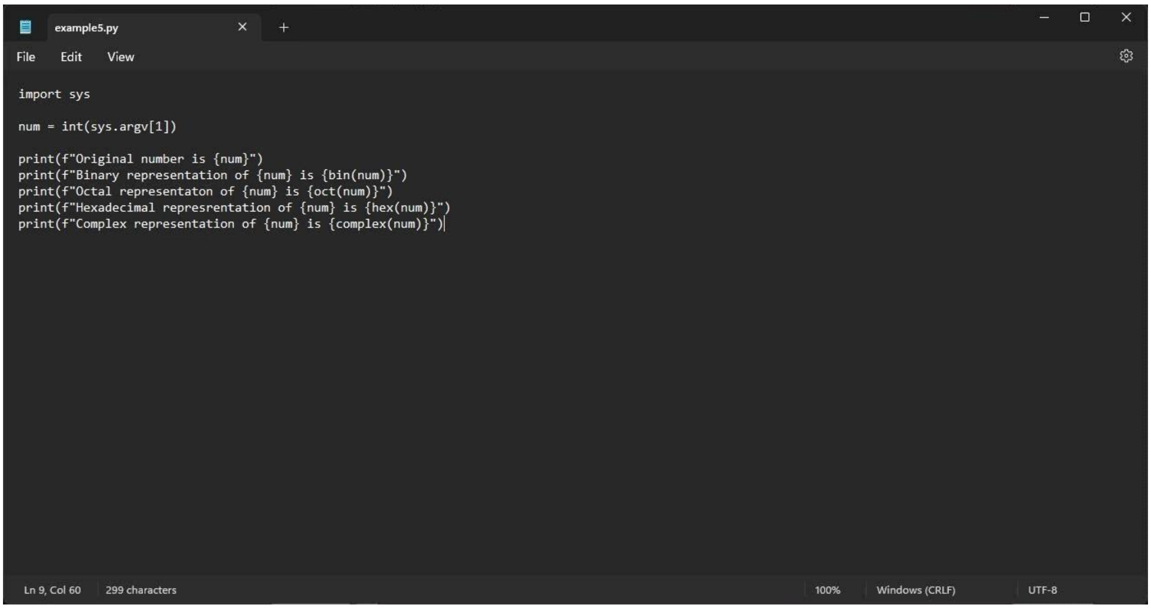
Console output after building:



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\jenkins1409453616515098615l.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
```

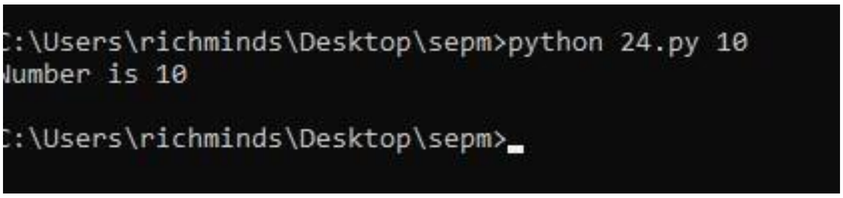
<u>Example 5</u>



```
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 representaton of {num} is {oct(num)}")
print(f"Hexadecimal represrentation of {num} is {hex(num)}")
print(f"Complex representation of {num} is {complex(num)}")
```

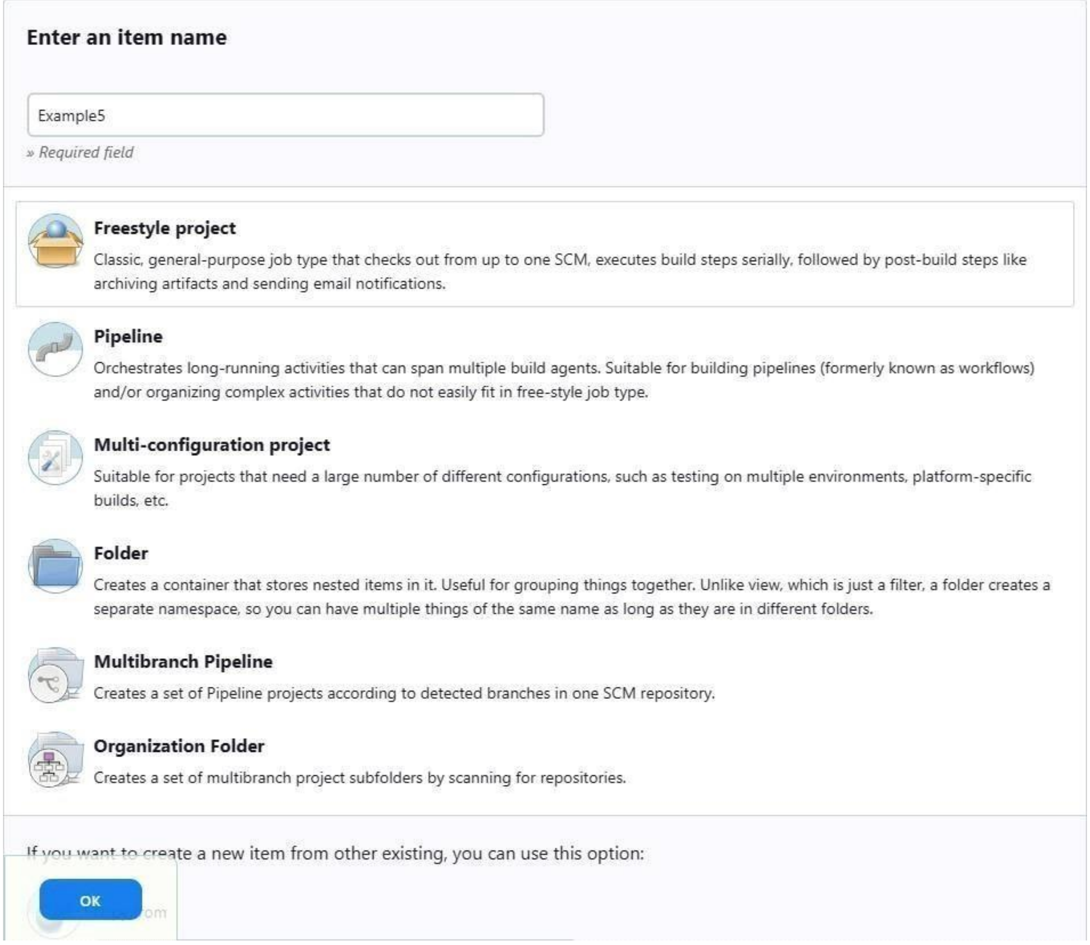
Example 5.1: Running a Python program Creating a simple Python script:

Running the Python script on the terminal:



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

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

Creating a new freestyle project:



Enter an item name

Example5

» Required field

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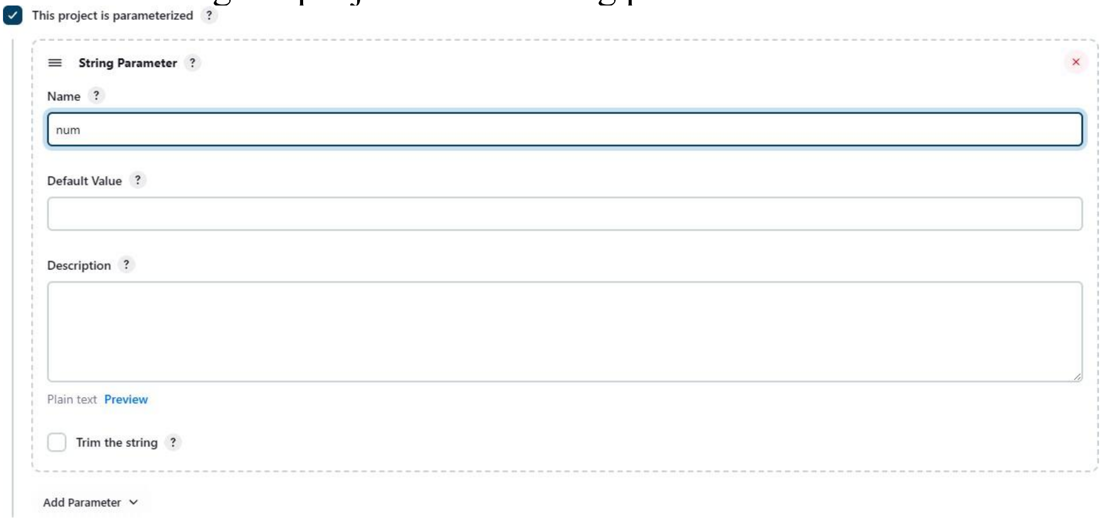
Multibranch Pipeline
Creates a set of Pipeline projects according to detected branches in one SCM repository.

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:

Parameterising the project with a string parameter as follows:



☑ This project is parameterized

String Parameter

Name: num

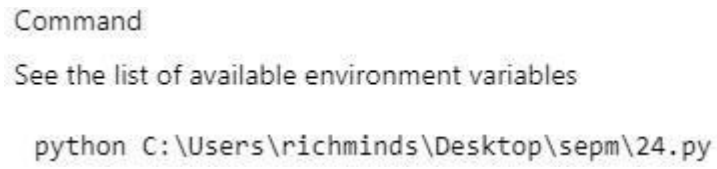
Default Value:

Description:

Plain text Preview

☐ Trim the string

Configuring the build steps:

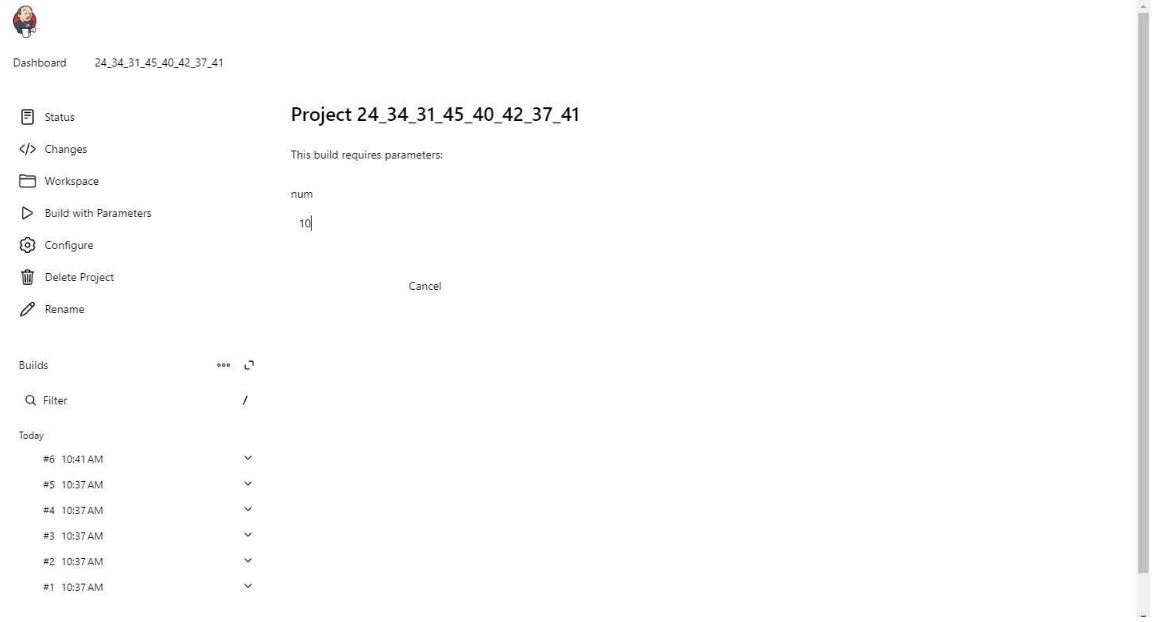


Command

See the list of available environment variables

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

Setting the parameter for the build:



Project 24_34_31_45_40_42_37_41

This build requires parameters:

num

10

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