PROJECT1: Jenkins Freestyle Project

Jenkins Freestyle Projects are used to execute some scripts to gather some information or to execute some task.

1. Pull image from docker in power shell: jenkins/jenkins Tags | Docker Hub

```
PS C:\Users\Shilpi_Harnal> docker pull jenkins/jenkins:latest
```

2. Check image name:

```
PS C:\Users\Shilpi_Harnal> docker images
```

-jenkins/jenkins

3. `PS C:\Users\Shilpi_Harnal> docker run -dp 8080:8080 jenkins/jenkins:latest`

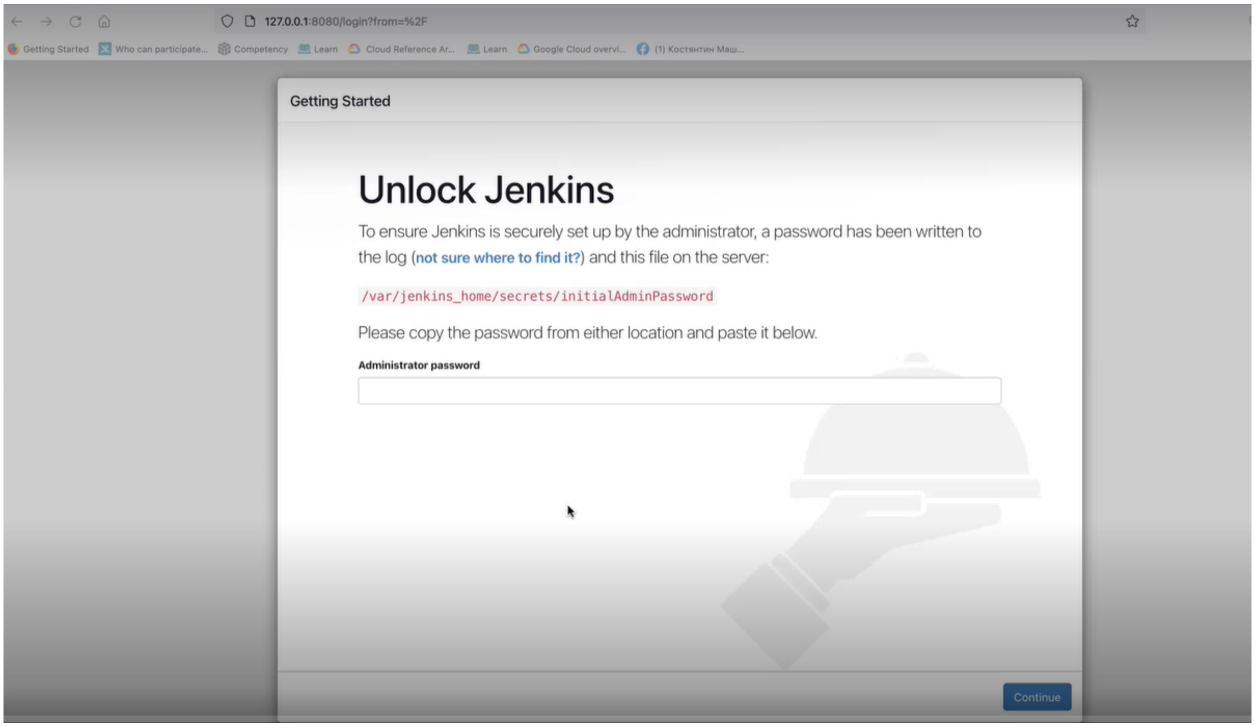
<-some id—->

4. Open browser and run === localhost:8080

It will run the URL: 127.0.0.1/8080

It will prompt for password from: /var/jenkins_home/secrets/initialAdminPassword

To access the above file we need to execute a container having jenkins/jenkins image.



Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log (not sure where to find it?) and this file on the server:

/var/jenkins_home/secrets/initialAdminPassword

Please copy the password from either location and paste it below.

Administrator password

5. Check the container id:

```
PS C:\Users\Shilpi_Harnal> docker ps
CONTAINER ID   IMAGE                 COMMAND                CREATED          STATUS
PORTS                     NAMES
```

```
d400148e1240   jenkins/jenkins:latest   "/usr/bin/tini -- /u…"   About an hour ago   Up About an hour   0.0.0.0:8080->8080/tcp, 50000/tcp   upbeat_darwin
```

6. Execute container with id:

```
PS C:\Users\Shilpi_Harnal> docker exec -it d400148e1240  bash
```

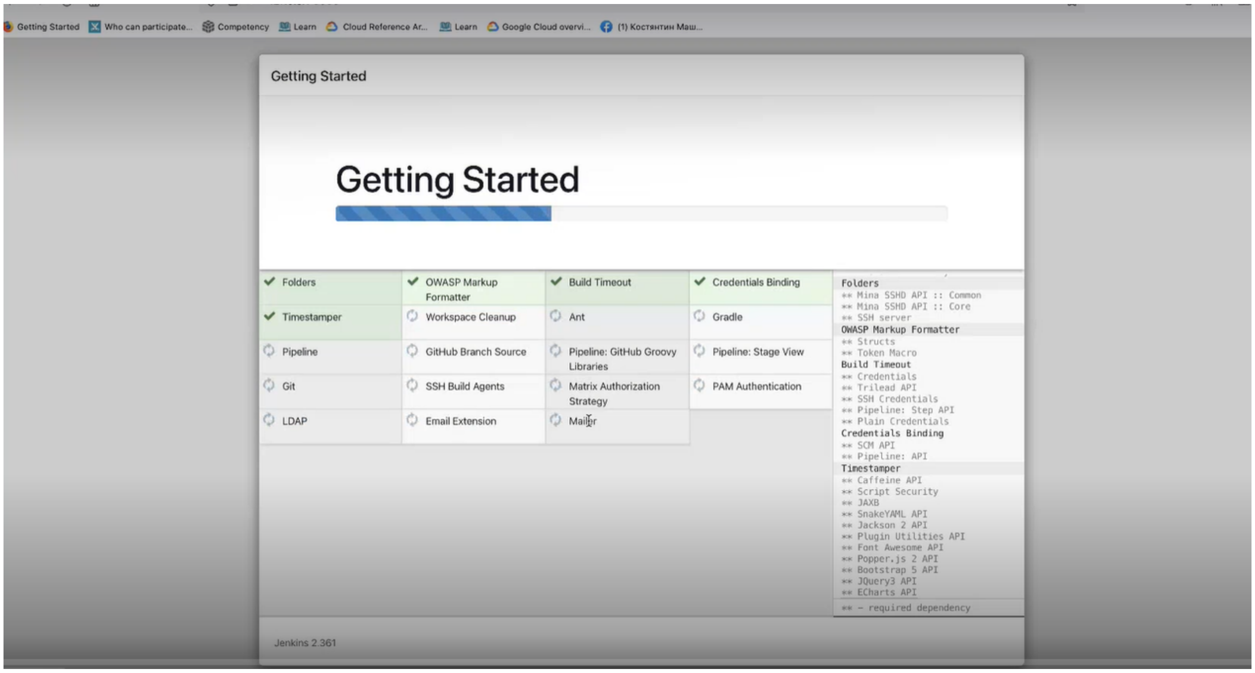
7. New prompt. Check list of files

```
jenkins@d400148e1240:/$ ls
bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
```

8. Reference to point No. 4, extract password from:
/var/jenkins_home/secrets/initialAdminPassword

```
jenkins@d400148e1240:/$ cat /var/jenkins_home/secrets/initialAdminPassword
4c58a23ad96441ae800b3eb78583f3b3
```

9. Reference to point No. 4, Go back to browser and enter password and click continue. It will start building setup that would take some time:



Getting Started

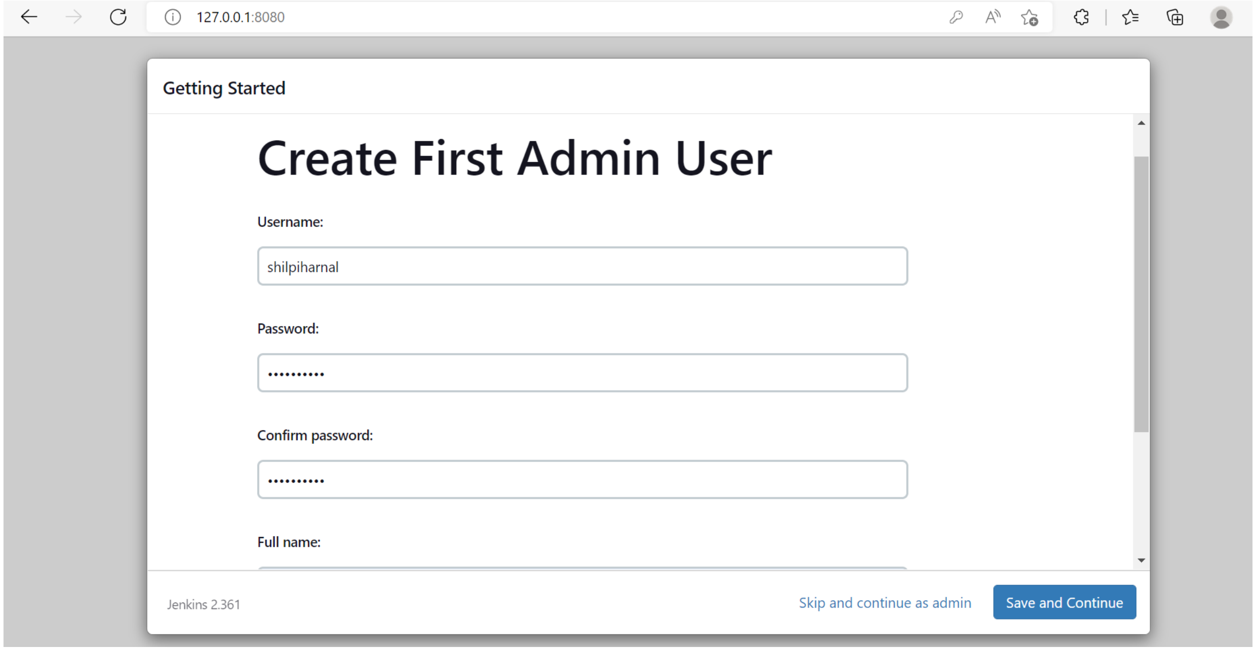
Getting Started

✓ Folders	✓ OWASP Markup Formatter	✓ Build Timeout	✓ Credentials Binding
✓ Timestamper	Workspace Cleanup	Ant	Gradle
Pipeline	GitHub Branch Source	Pipeline: GitHub Groovy Libraries	Pipeline: Stage View
Git	SSH Build Agents	Matrix Authorization Strategy	PAM Authentication
LDAP	Email Extension	Mailer	

```
Folders
** Mina SSHD API :: Common
** Mina SSHD API :: Core
** SSH server
OWASP Markup Formatter
** Structs
** Token Macro
Build Timeout
** Credentials
** Trilead API
** SSH Credentials
** Pipeline: Step API
** Plain Credentials
Credentials Binding
** SCM API
** Pipeline: API
Timestamper
** Caffeine API
** Script Security
** JAXB
** SnakeYAML API
** Jackson 2 API
** Plugin Utilities API
** Font Awesome API
** Popper.js 2 API
** Bootstrap 5 API
** JQuery3 API
** ECharts API
** - required dependency
```

Jenkins 2.361

10. Create Admin User:



Getting Started

Create First Admin User

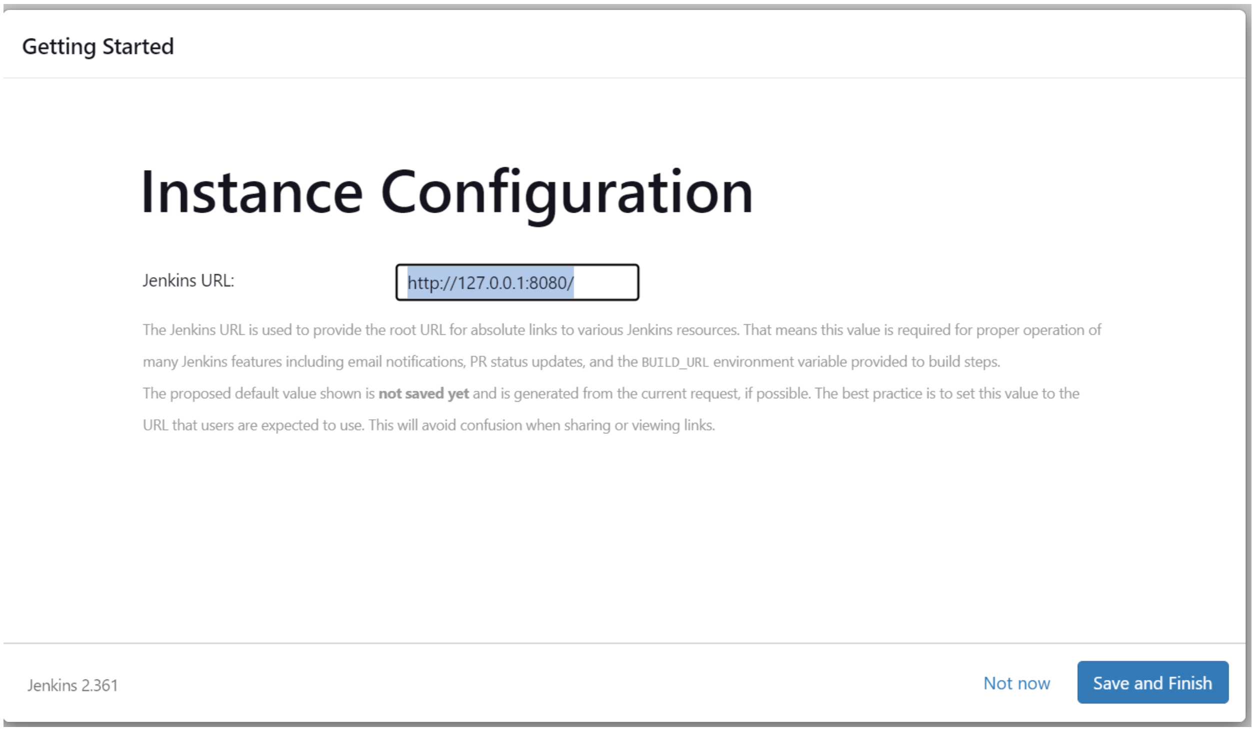
Username: shilpiharnal

Password: ••••••••••

Confirm password: ••••••••••

Full name:

11. Click Save and finish. Or you can also give any other url :



Getting Started

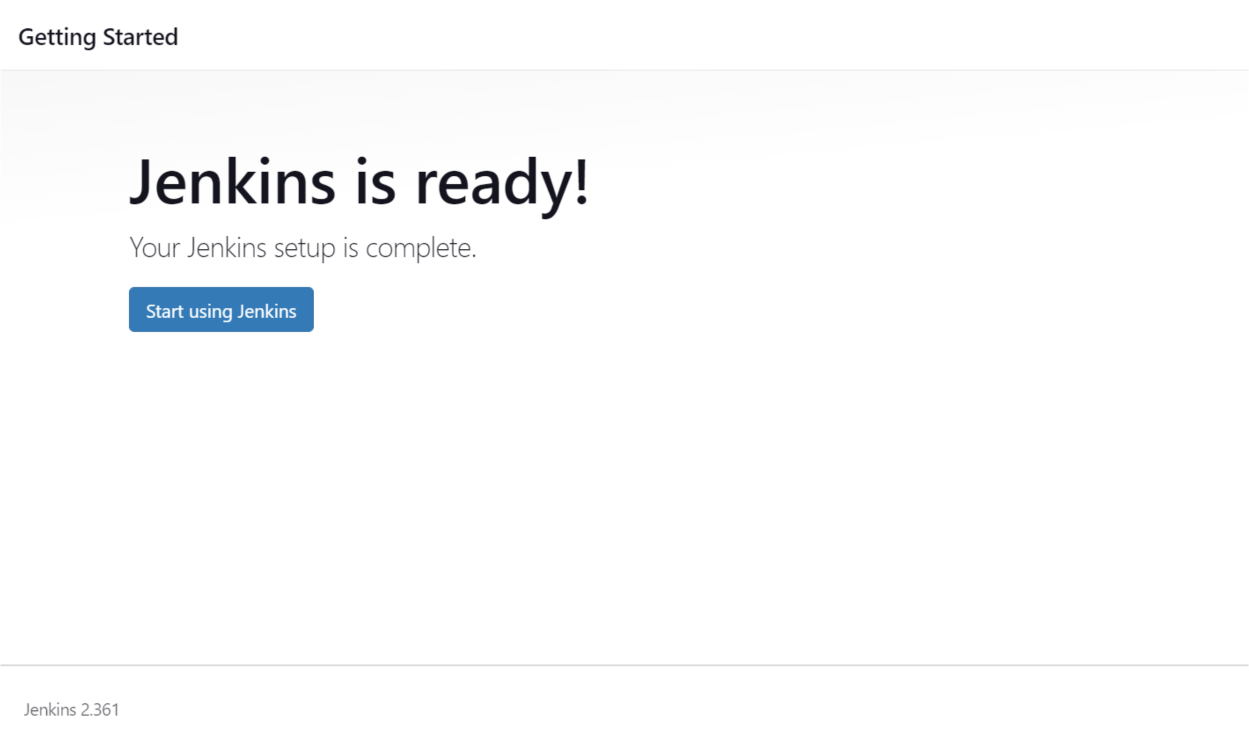
Instance Configuration

Jenkins URL: http://127.0.0.1:8080/

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the `BUILD_URL` environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

12. Click - start using Jenkins



Getting Started

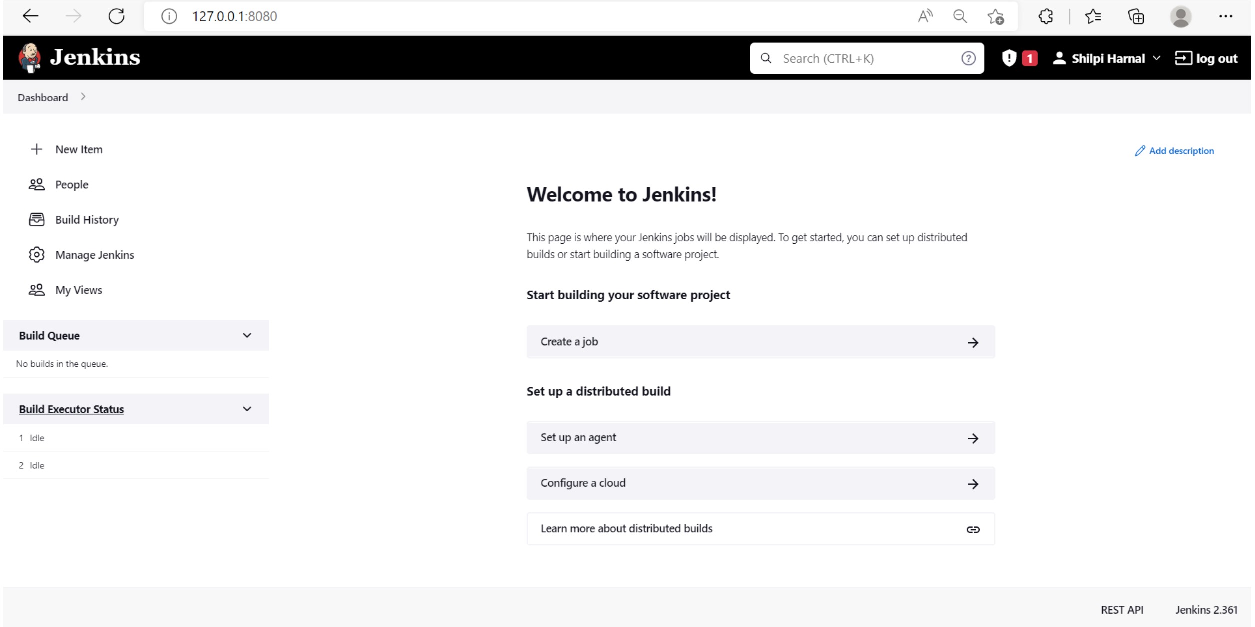
Jenkins is ready!

Your Jenkins setup is complete.

Start using Jenkins

Jenkins 2.361

13. Jenkins Dashboard:



127.0.0.1:8080

Jenkins

Search (CTRL+K)

Shilpi Harnal

log out

Dashboard

- New Item
- People
- Build History
- Manage Jenkins
- My Views

Build Queue

No builds in the queue.

Build Executor Status

1 Idle

2 Idle

Add description

Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

Create a job

Set up a distributed build

Set up an agent

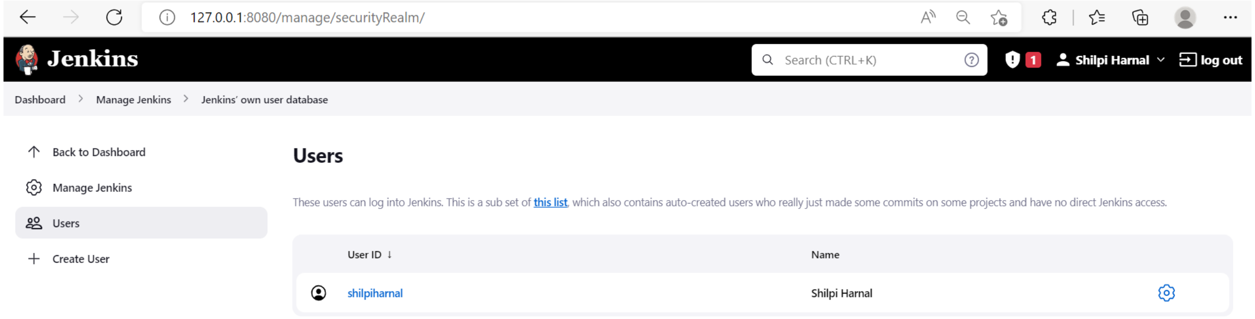
Configure a cloud

Learn more about distributed builds

REST API Jenkins 2.361

14. To check existing Users:

Manage Jenkins -> Manage Users



127.0.0.1:8080/manage/securityRealm/

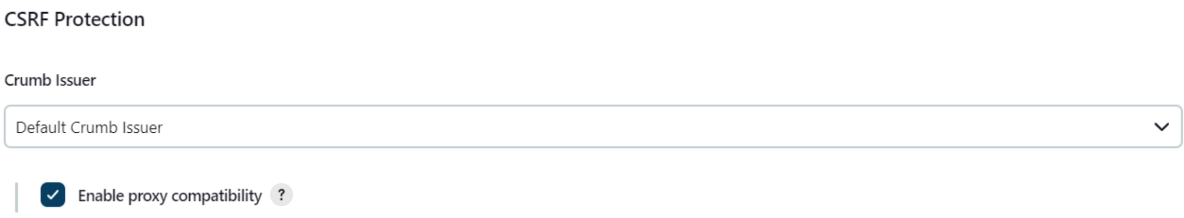
Users

These users can log into Jenkins. This is a sub set of this list, which also contains auto-created users who really just made some commits on some projects and have no direct Jenkins access.

User ID ↓	Name
shilpiharnal	Shilpi Harnal

15. Manage Jenkins -> Configure Global Security

Enable following and click SAVE to save settings:



CSRF Protection

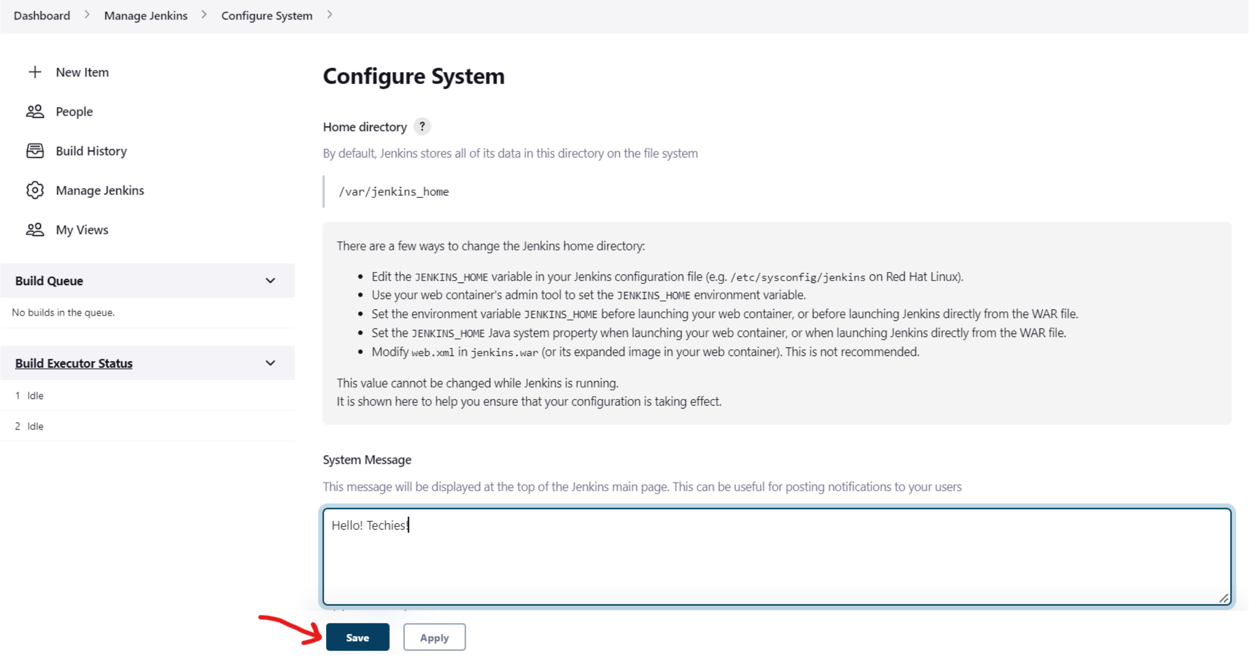
Crumb Issuer

Default Crumb Issuer

☑ Enable proxy compatibility ?

16. Manage Jenkins -> Configure System

Write a message and save.



Configure System

Home directory ?

By default, Jenkins stores all of its data in this directory on the file system

/var/jenkins_home

There are a few ways to change the Jenkins home directory:

- Edit the JENKINS_HOME variable in your Jenkins configuration file (e.g. /etc/sysconfig/jenkins on Red Hat Linux).
- Use your web container's admin tool to set the JENKINS_HOME environment variable.
- Set the environment variable JENKINS_HOME before launching your web container, or before launching Jenkins directly from the WAR file.
- Set the JENKINS_HOME Java system property when launching your web container, or when launching Jenkins directly from the WAR file.
- Modify web.xml in jenkins.war (or its expanded image in your web container). This is not recommended.

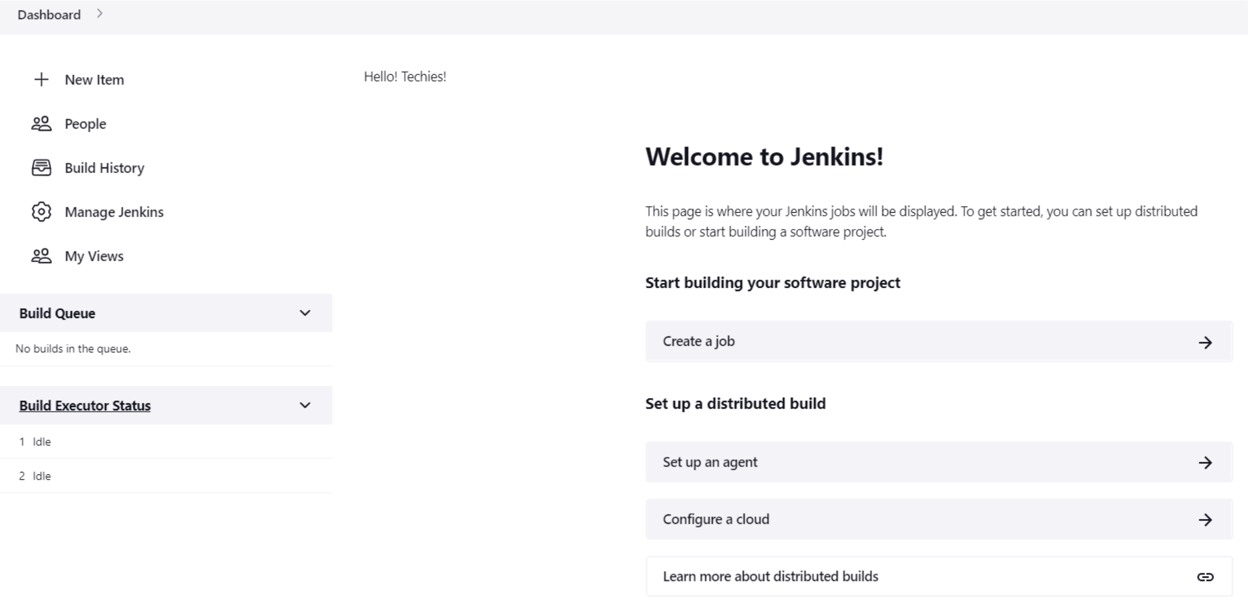
This value cannot be changed while Jenkins is running.
It is shown here to help you ensure that your configuration is taking effect.

System Message

This message will be displayed at the top of the Jenkins main page. This can be useful for posting notifications to your users

Hello! Techies

17. Next Screen:



Hello! Techies!

Build Queue

No builds in the queue.

Build Executor Status

1 Idle

2 Idle

Welcome to Jenkins!

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

Start building your software project

Create a job

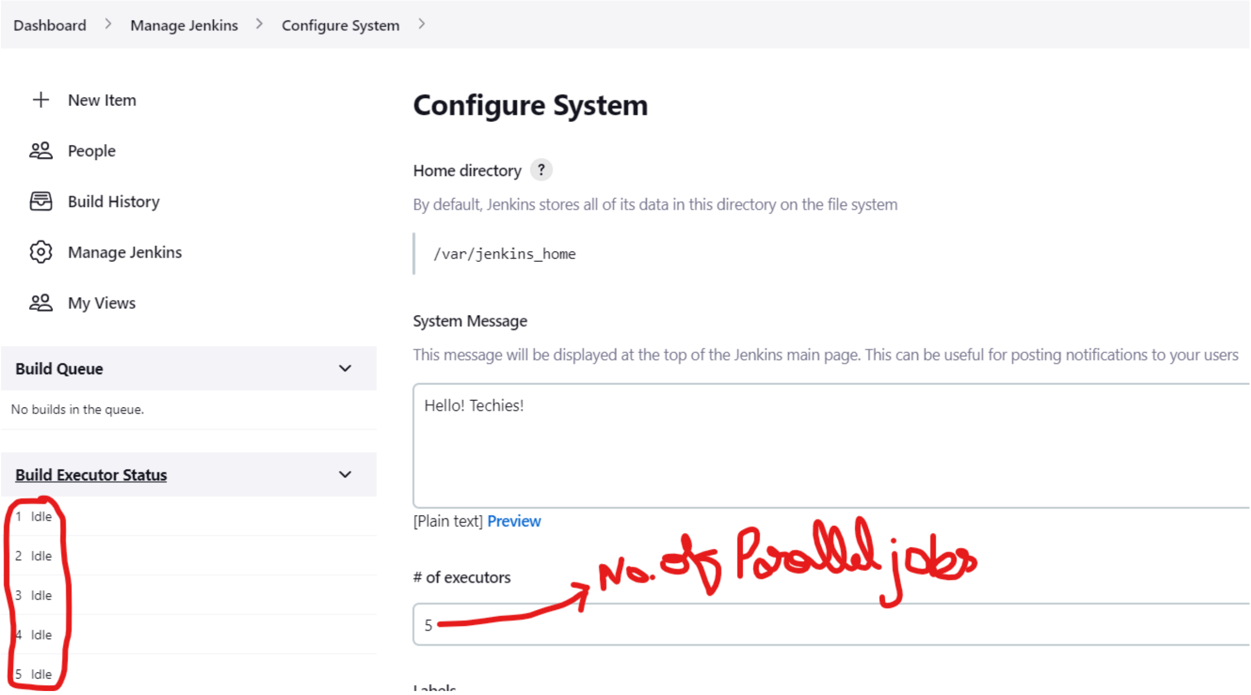
Set up a distributed build

Set up an agent

Configure a cloud

Learn more about distributed builds

18. Manage Jenkins -> Configure System



Build Queue

No builds in the queue.

Build Executor Status

1 Idle

2 Idle

3 Idle

4 Idle

5 Idle

Configure System

Home directory ?

By default, Jenkins stores all of its data in this directory on the file system

/var/jenkins_home

System Message

This message will be displayed at the top of the Jenkins main page. This can be useful for posting notifications to your users

Hello! Techies!

[Plain text] Preview

# of executors

5

No. of Parallel jobs

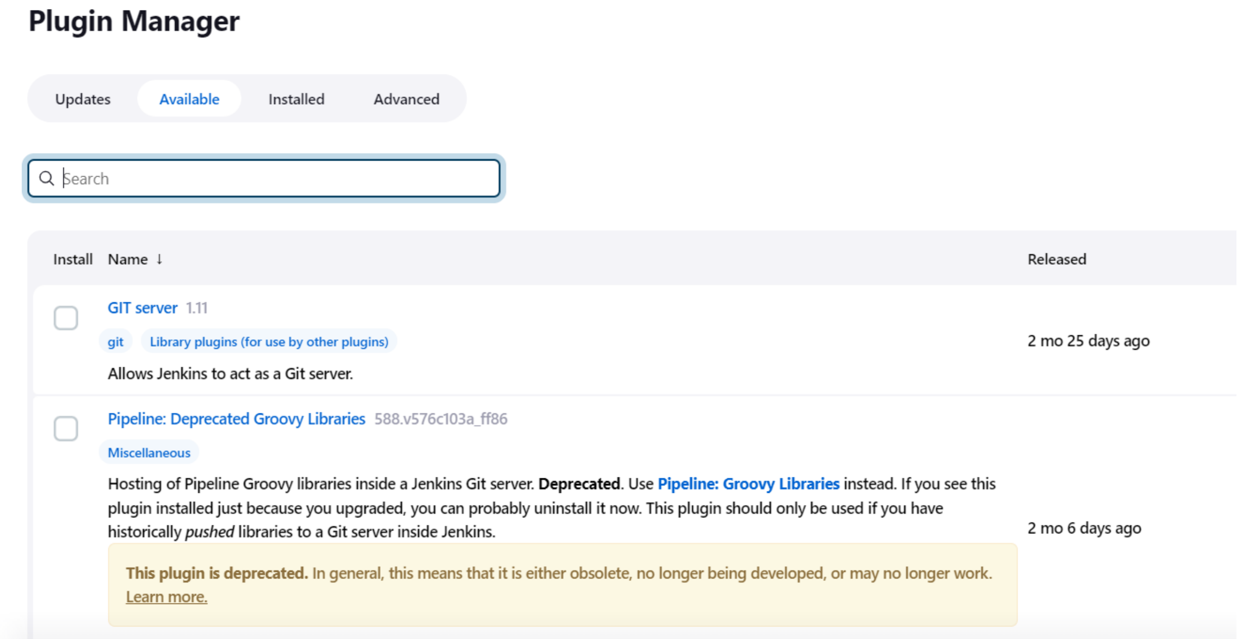
Labels

19. Manage Jenkins -> Global Tool Configuration

You can make changes and update settings there.

20. Manage Jenkins -> Plugin Manager

You can install, enable, disable and update plugins from here,

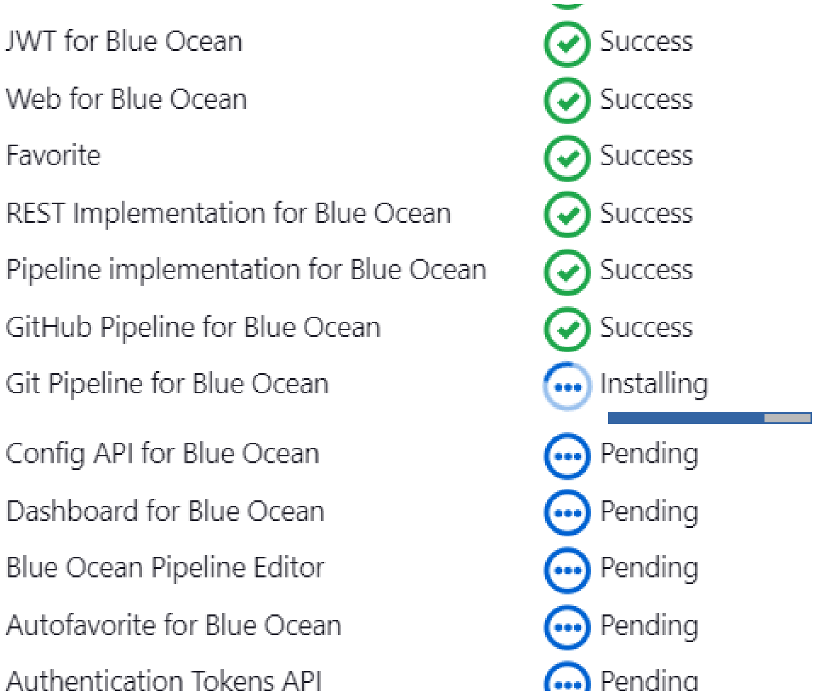


Plugin Manager

Install	Name ↓	Released
□	GIT server 1.11 git · Library plugins (for use by other plugins) Allows Jenkins to act as a Git server.	2 mo 25 days ago
□	Pipeline: Deprecated Groovy Libraries 588.v576c103a_ff86 Miscellaneous Hosting of Pipeline Groovy libraries inside a Jenkins Git server. **Deprecated**. Use Pipeline: Groovy Libraries instead. If you see this plugin installed just because you upgraded, you can probably uninstall it now. This plugin should only be used if you have historically *pushed* libraries to a Git server inside Jenkins. **This plugin is deprecated.** In general, this means that it is either obsolete, no longer being developed, or may no longer work. Learn more.	2 mo 6 days ago

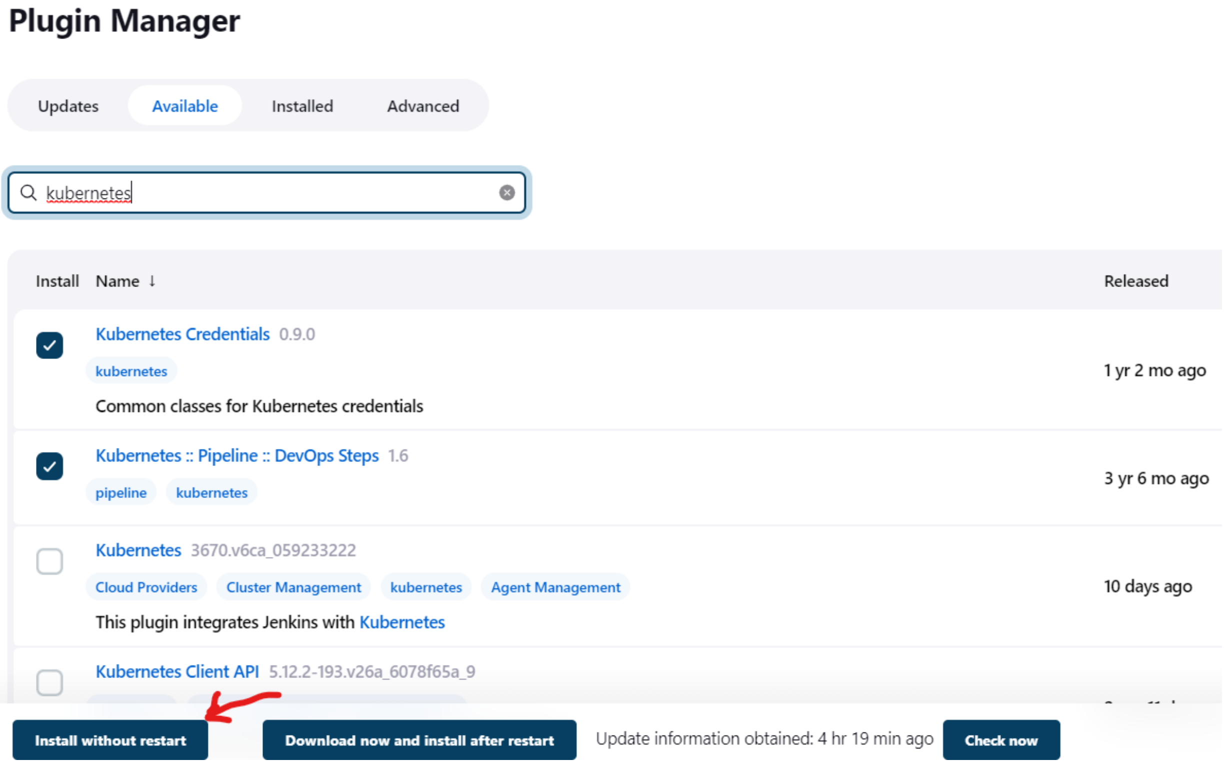
21. From available plugins search for BLUE OCEAN plugin and click INSTALL WITHOUT DOWNLOAD. It will install the same. You can also install other plugins like kubernets.

Blue ocean: to check only the output of project.



JWT for Blue Ocean	✓ Success
Web for Blue Ocean	✓ Success
Favorite	✓ Success
REST Implementation for Blue Ocean	✓ Success
Pipeline implementation for Blue Ocean	✓ Success
GitHub Pipeline for Blue Ocean	✓ Success
Git Pipeline for Blue Ocean	Installing
Config API for Blue Ocean	Pending
Dashboard for Blue Ocean	Pending
Blue Ocean Pipeline Editor	Pending
Autofavorite for Blue Ocean	Pending
Authentication Tokens API	Pending

22. Also search for kubernetes credentials and kubernetes::pipeline::Devops Steps for installation.



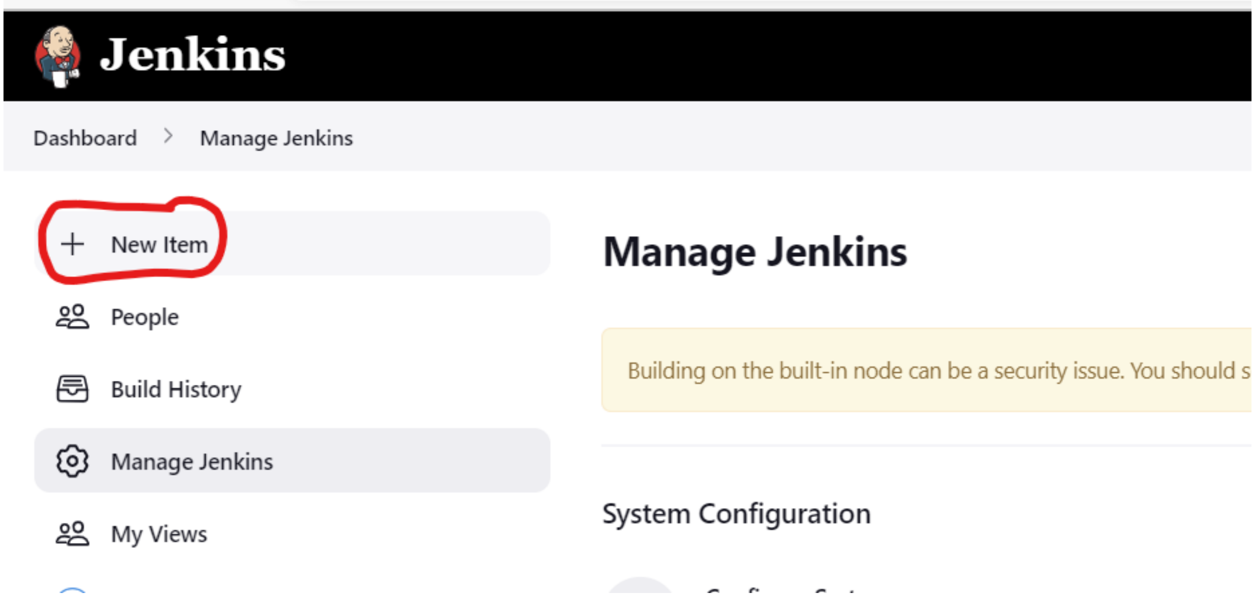
Plugin Manager

kubernetes

Install	Name ↓	Released
☑	Kubernetes Credentials 0.9.0 kubernetes Common classes for Kubernetes credentials	1 yr 2 mo ago
☑	Kubernetes :: Pipeline :: DevOps Steps 1.6 pipeline kubernetes	3 yr 6 mo ago
□	Kubernetes 3670.v6ca_059233222 Cloud Providers Cluster Management kubernetes Agent Management This plugin integrates Jenkins with Kubernetes	10 days ago
□	Kubernetes Client API 5.12.2-193.v26a_6078f65a_9	

Update information obtained: 4 hr 19 min ago

23. To create a pipeline, click NEW ITEM :

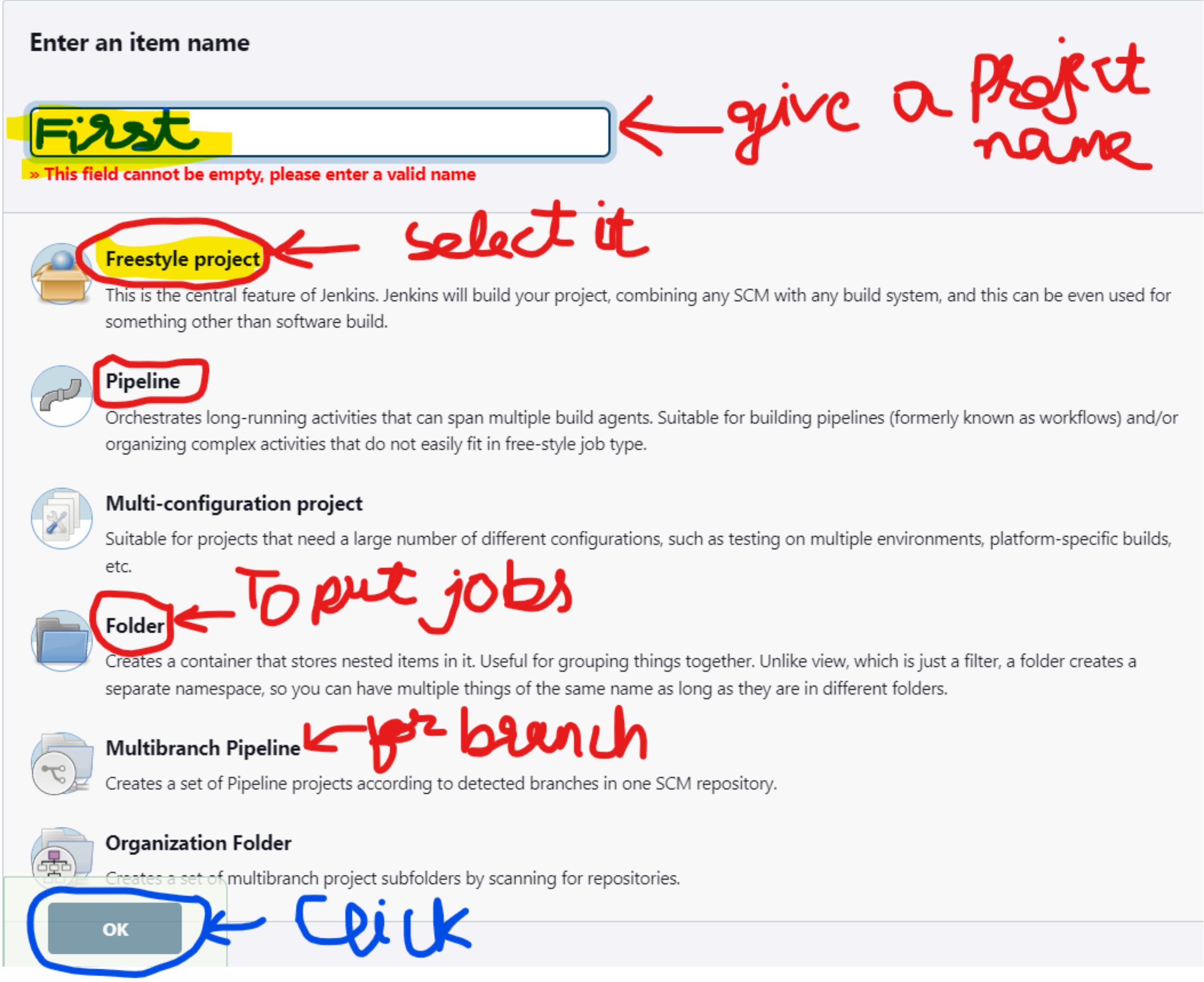


Manage Jenkins

Building on the built-in node can be a security issue. You should s

System Configuration

24. Give a NAME, select FREESTYLE PROJECT and click OK.



Enter an item name

First ← give a project name

» This field cannot be empty, please enter a valid name

Freestyle project ← select it

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

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 ← To put jobs

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 ← for branch

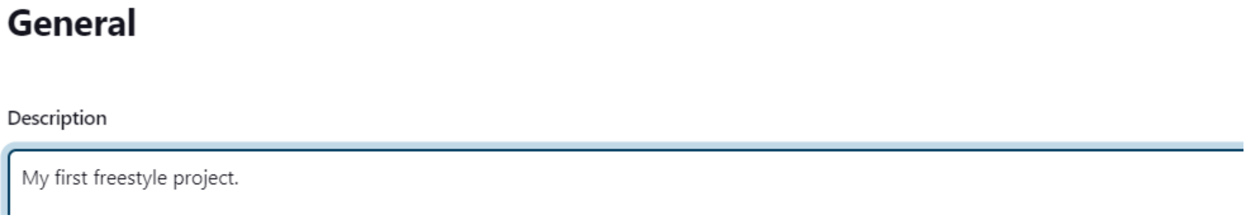
Creates a set of Pipeline projects according to detected branches in one SCM repository.

Organization Folder

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

← Click

25. Add some description

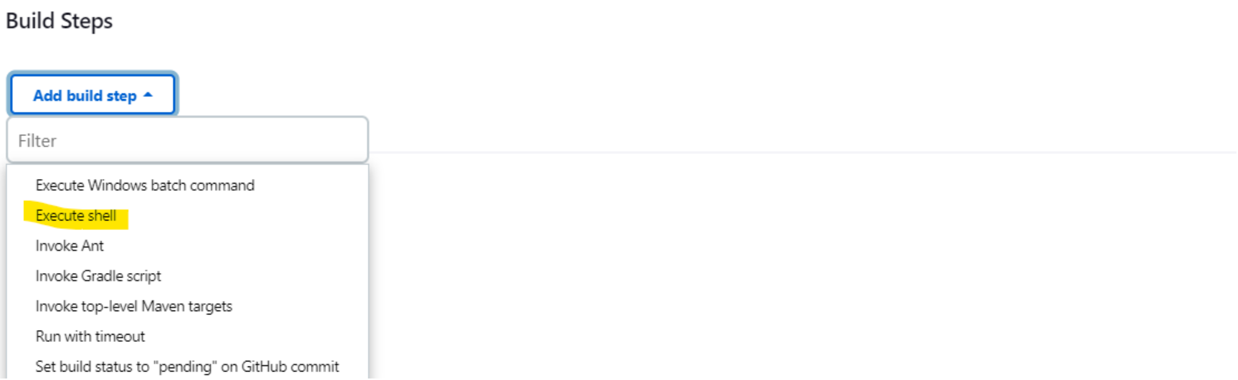


General

Description

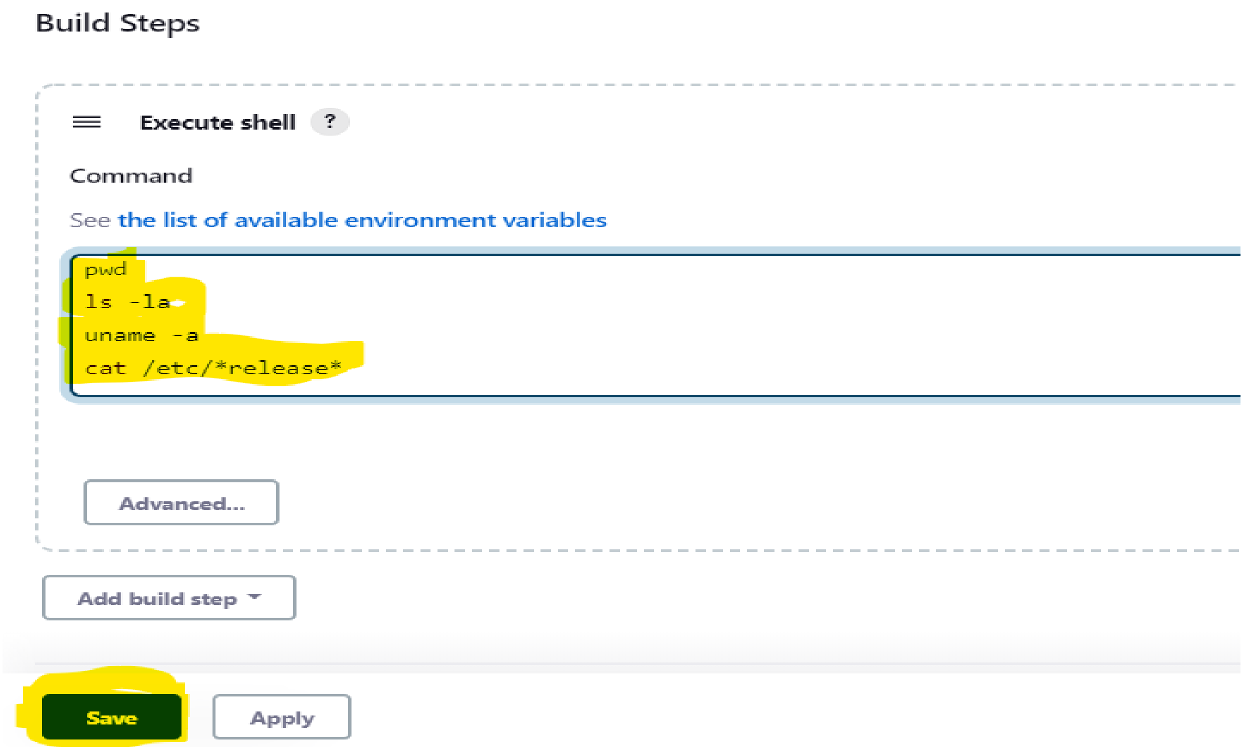
My first freestyle project.

26. Select EXECUTE SHELL and add some script to run as:


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

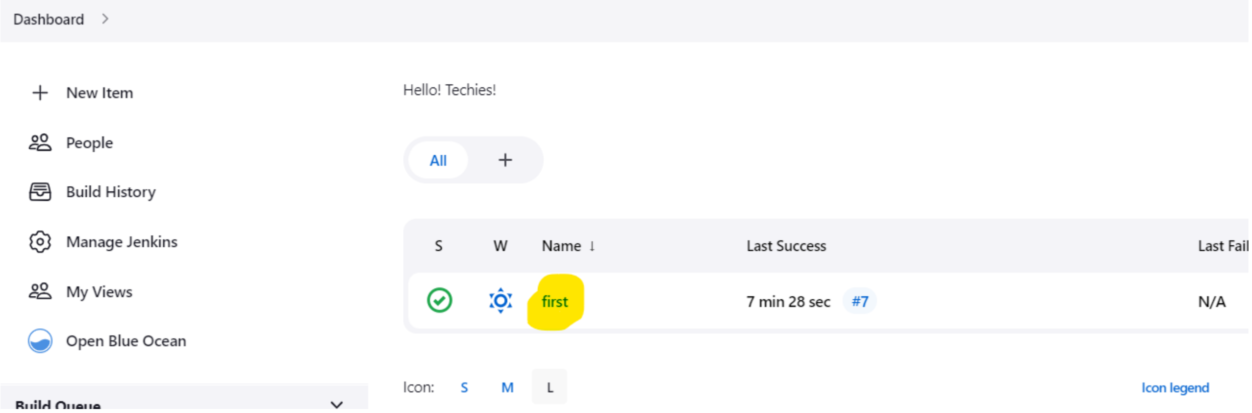
27. add some script to run as:

pwd
ls -la
uname -a
cat /etc/*release*

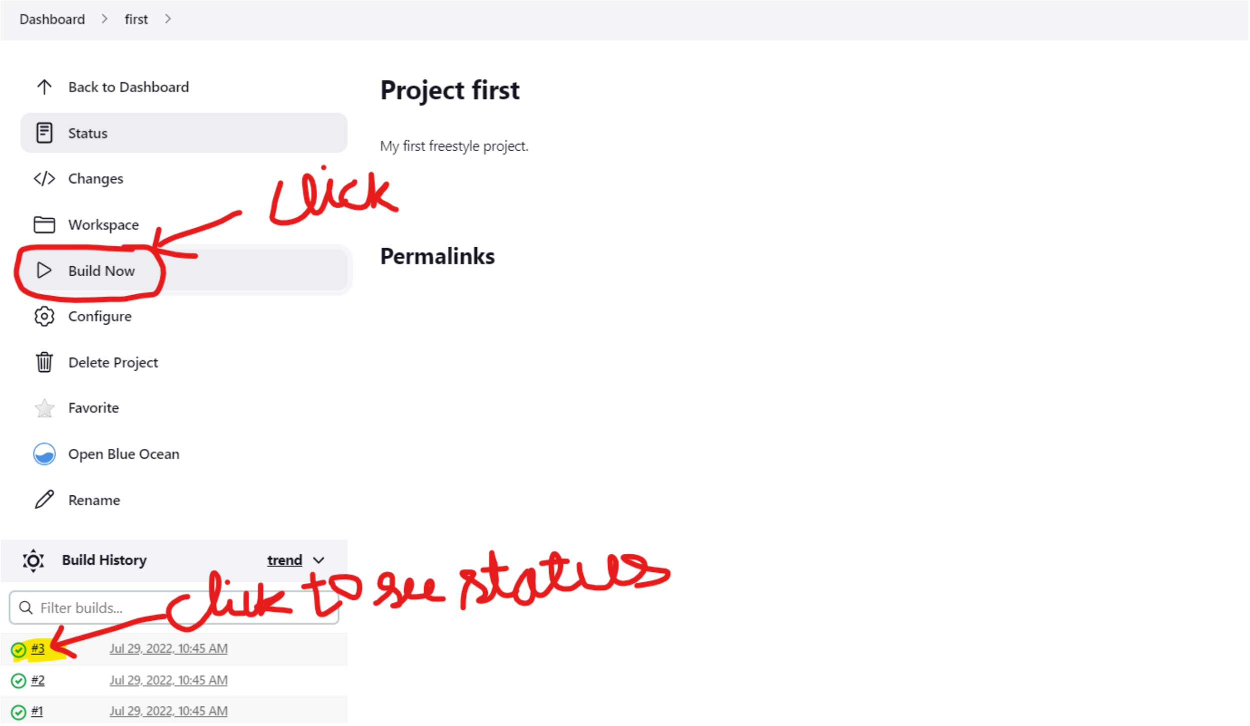


```
pwd
ls -la
uname -a
cat /etc/*release*
```

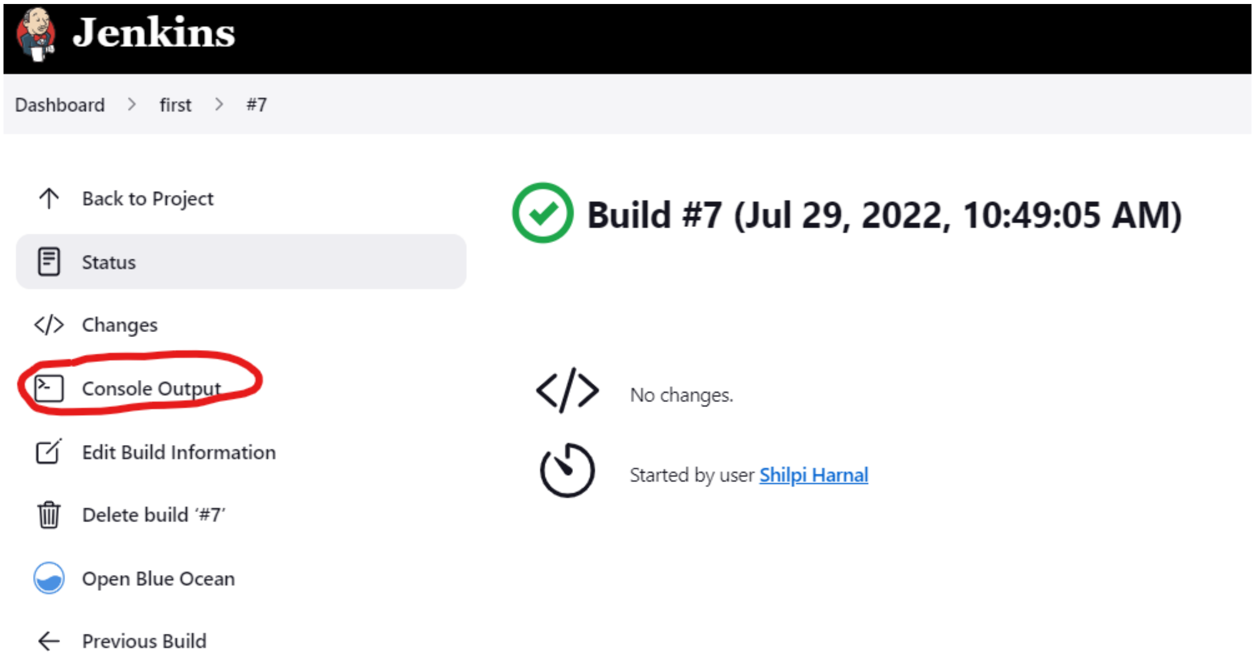
28. Back to DASHBOARD to see your created Project named as first.
Click on project name: first



Click : BUILD NOW



29. Click on any task. Here Build #7 indicates the number of times you have build the project.

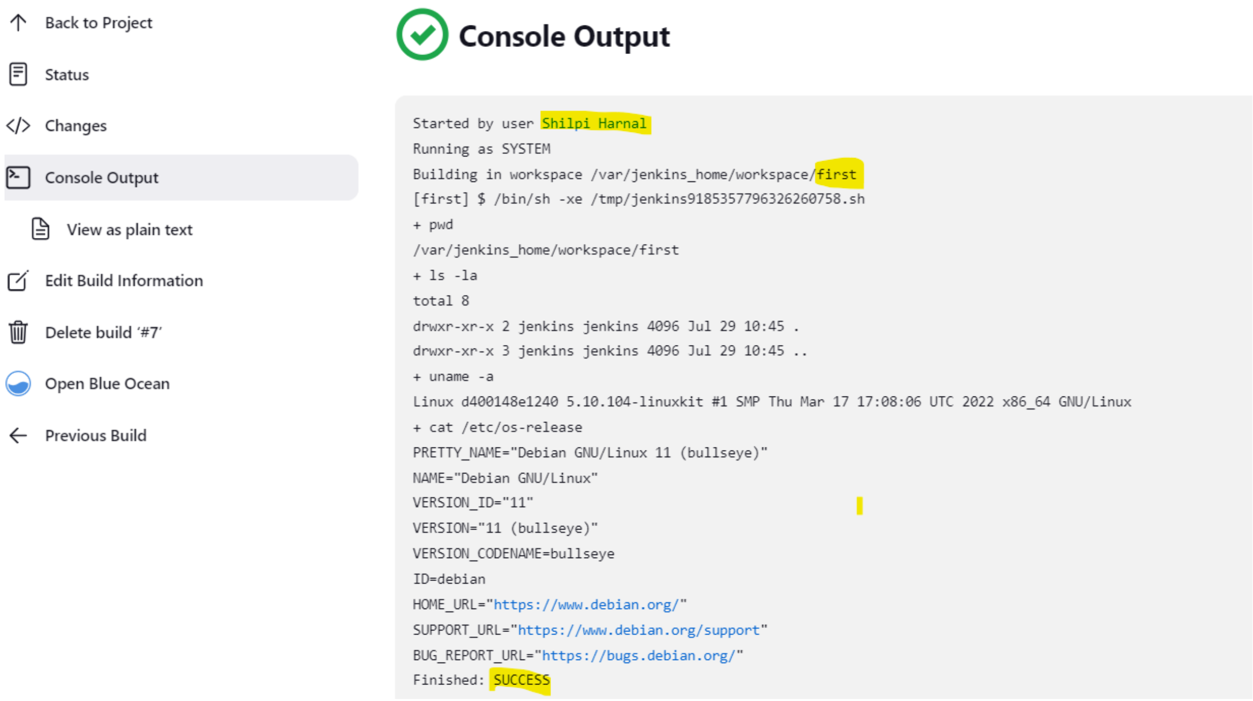


Build #7 (Jul 29, 2022, 10:49:05 AM)

No changes.

Started by user Shilpi Harnal

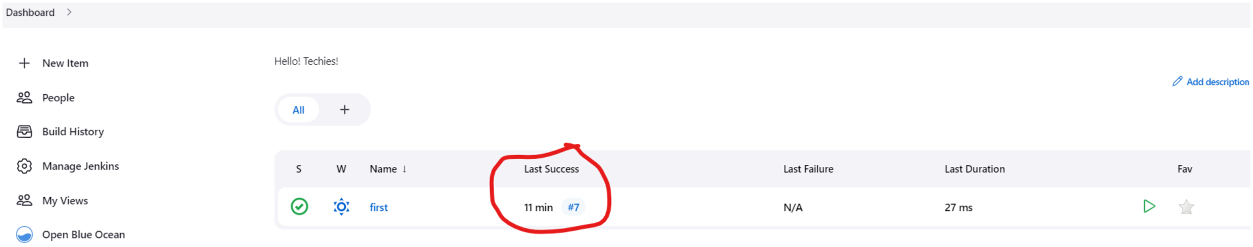
30. Click console output:



Console Output

```
Started by user Shilpi Harnal
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/first
[first] $ /bin/sh -xe /tmp/jenkins9185357796326260758.sh
+ pwd
/var/jenkins_home/workspace/first
+ ls -la
total 8
drwxr-xr-x 2 jenkins jenkins 4096 Jul 29 10:45 .
drwxr-xr-x 3 jenkins jenkins 4096 Jul 29 10:45 ..
+ uname -a
Linux d400148e1240 5.10.104-linuxkit #1 SMP Thu Mar 17 17:08:06 UTC 2022 x86_64 GNU/Linux
+ cat /etc/os-release
PRETTY_NAME="Debian GNU/Linux 11 (bullseye)"
NAME="Debian GNU/Linux"
VERSION_ID="11"
VERSION="11 (bullseye)"
VERSION_CODENAME=bullseye
ID=debian
HOME_URL="https://www.debian.org/"
SUPPORT_URL="https://www.debian.org/support"
BUG_REPORT_URL="https://bugs.debian.org/"
Finished: SUCCESS
```

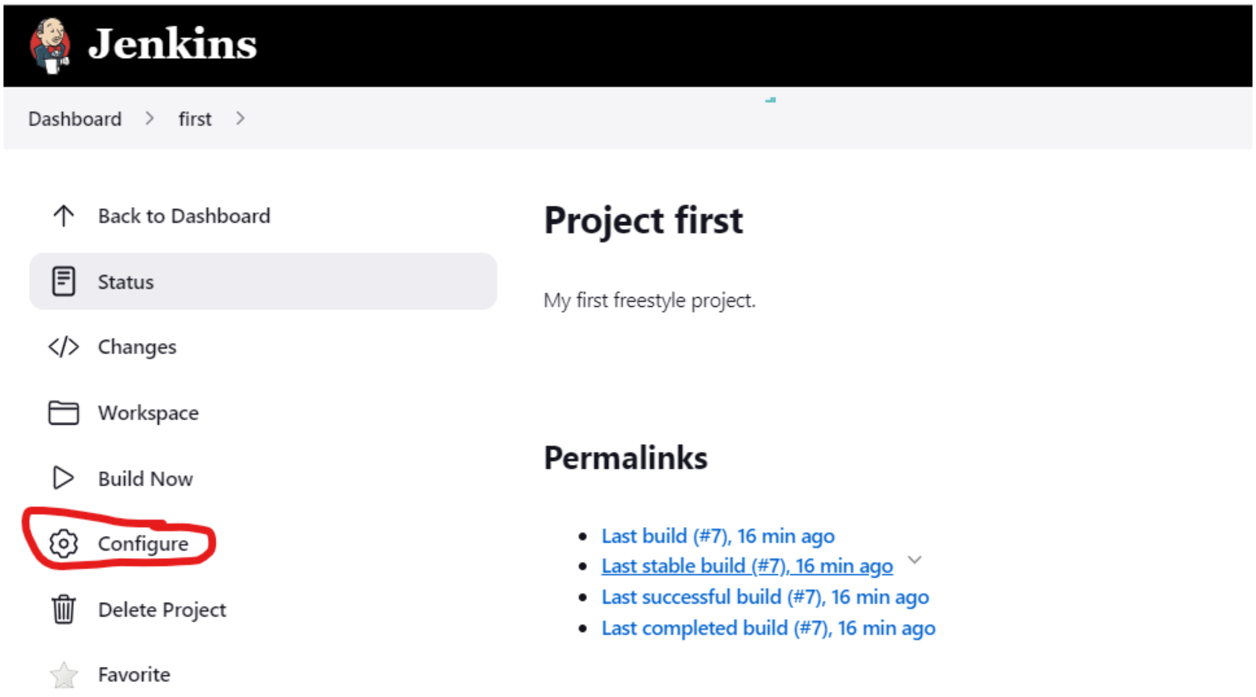
31. Back to DASHBOARD and check status as NO FAILURE



Hello! Techies!

S	W	Name ↓	Last Success	Last Failure	Last Duration		Fav
✓	☼	first	11 min #7	N/A	27 ms	▷	☆

32. Lets modify the project to add some more shell script and rebuild it
Click CONFIGURE:



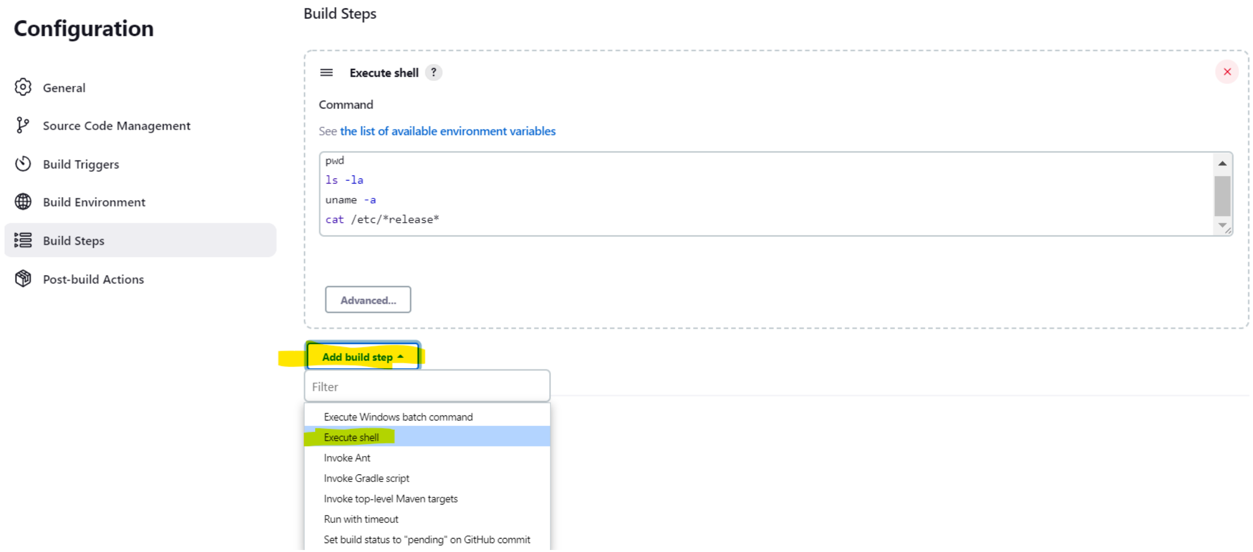
Project first

My first freestyle project.

Permalinks

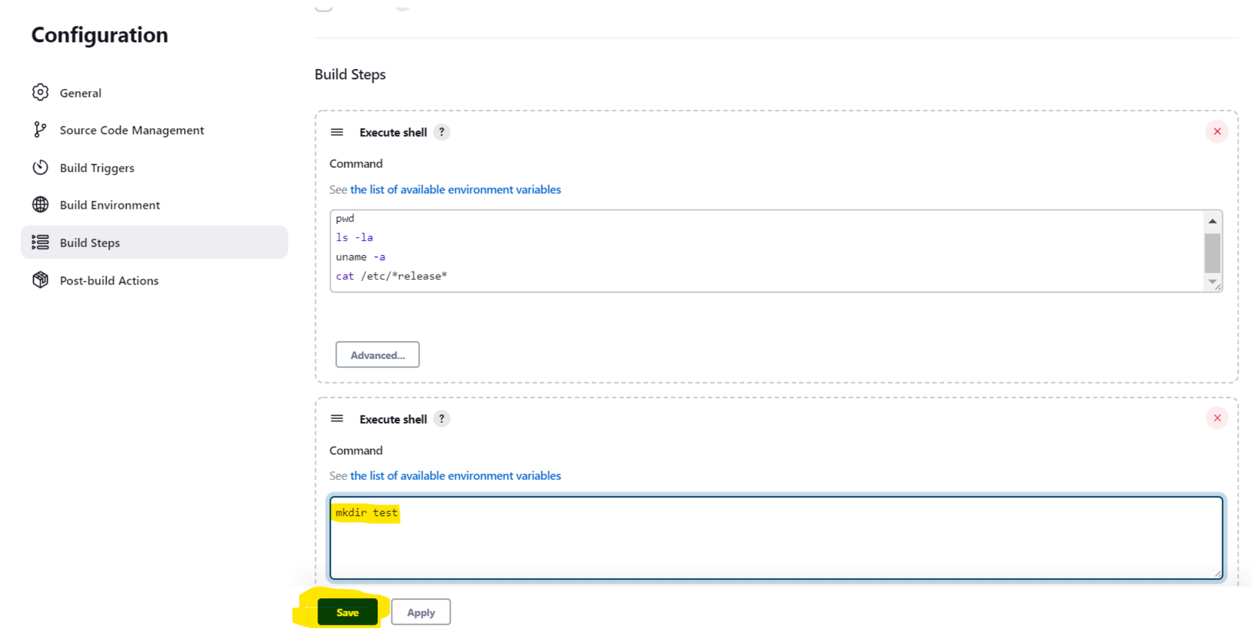
- Last build (#7), 16 min ago
- Last stable build (#7), 16 min ago
- Last successful build (#7), 16 min ago
- Last completed build (#7), 16 min ago

33. Click ADD BUILD STEP -> EXECUTE SHELL



```
pwd
ls -la
uname -a
cat /etc/*release*
```

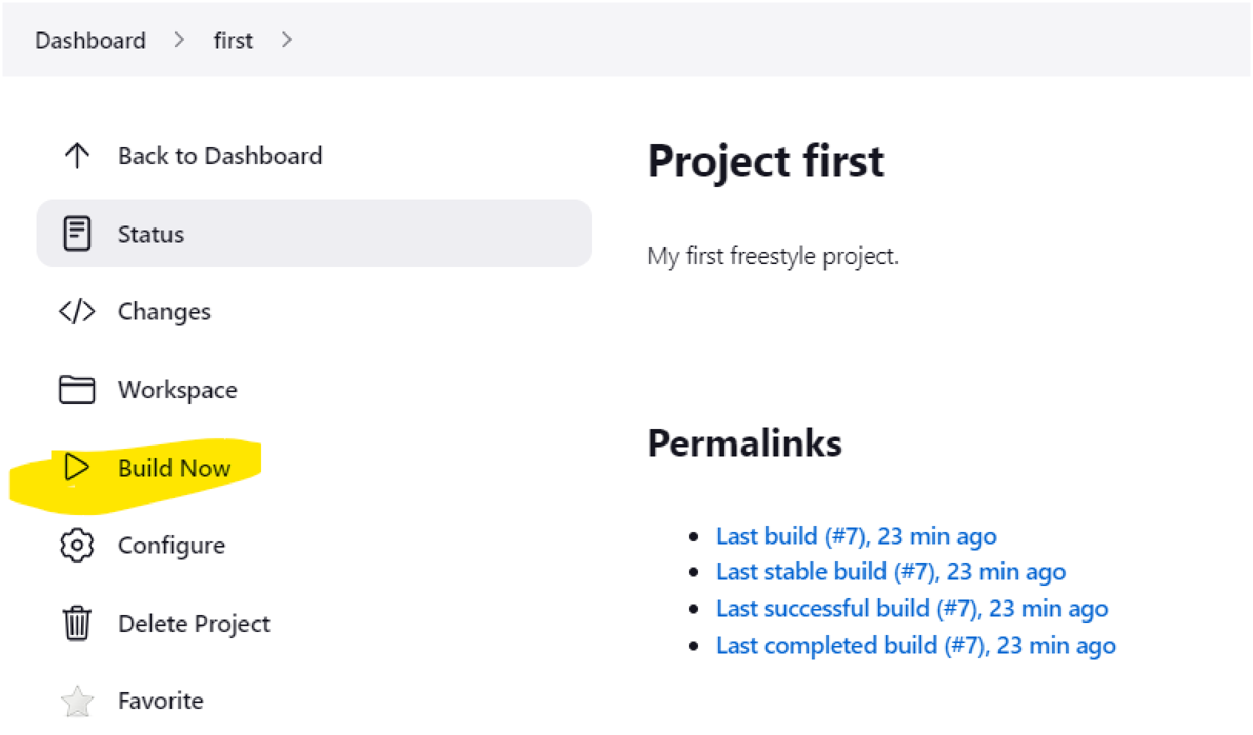
34. Add a cmd to create a directory: mkdir test



```
pwd
ls -la
uname -a
cat /etc/*release*
```

```
mkdir test
```

35. Build it again



Dashboard > first >

Back to Dashboard

Status

Changes

Workspace

Build Now

Configure

Delete Project

Favorite

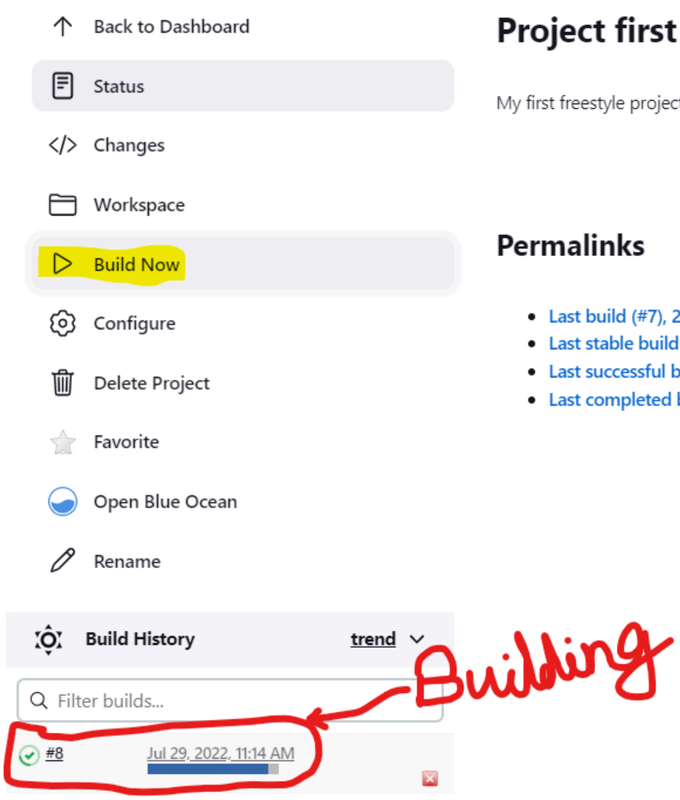
Project first

My first freestyle project.

Permalinks

- Last build (#7), 23 min ago
- Last stable build (#7), 23 min ago
- Last successful build (#7), 23 min ago
- Last completed build (#7), 23 min ago

36. New version of project is building



Back to Dashboard

Status

Changes

Workspace

Build Now

Configure

Delete Project

Favorite

Open Blue Ocean

Rename

Project first

My first freestyle project.

Permalinks

- Last build (#7), 23 min ago
- Last stable build (#7), 23 min ago
- Last successful build (#7), 23 min ago
- Last completed build (#7), 23 min ago

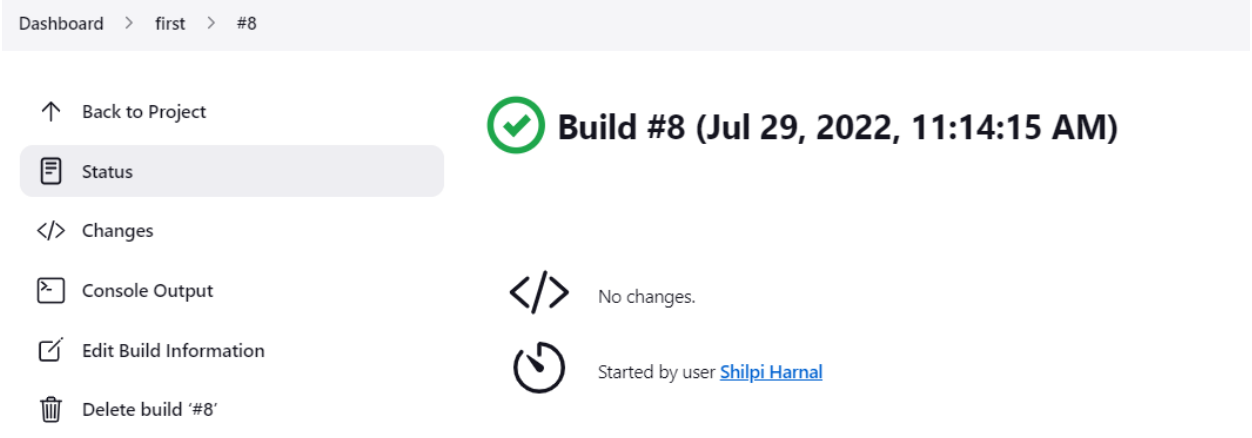
Build History trend

Filter builds...

#8 Jul 29, 2022, 11:14 AM

Building

37. Here The project is being built for the 8th time. So click #8 to see status. You can also see console output for the same.

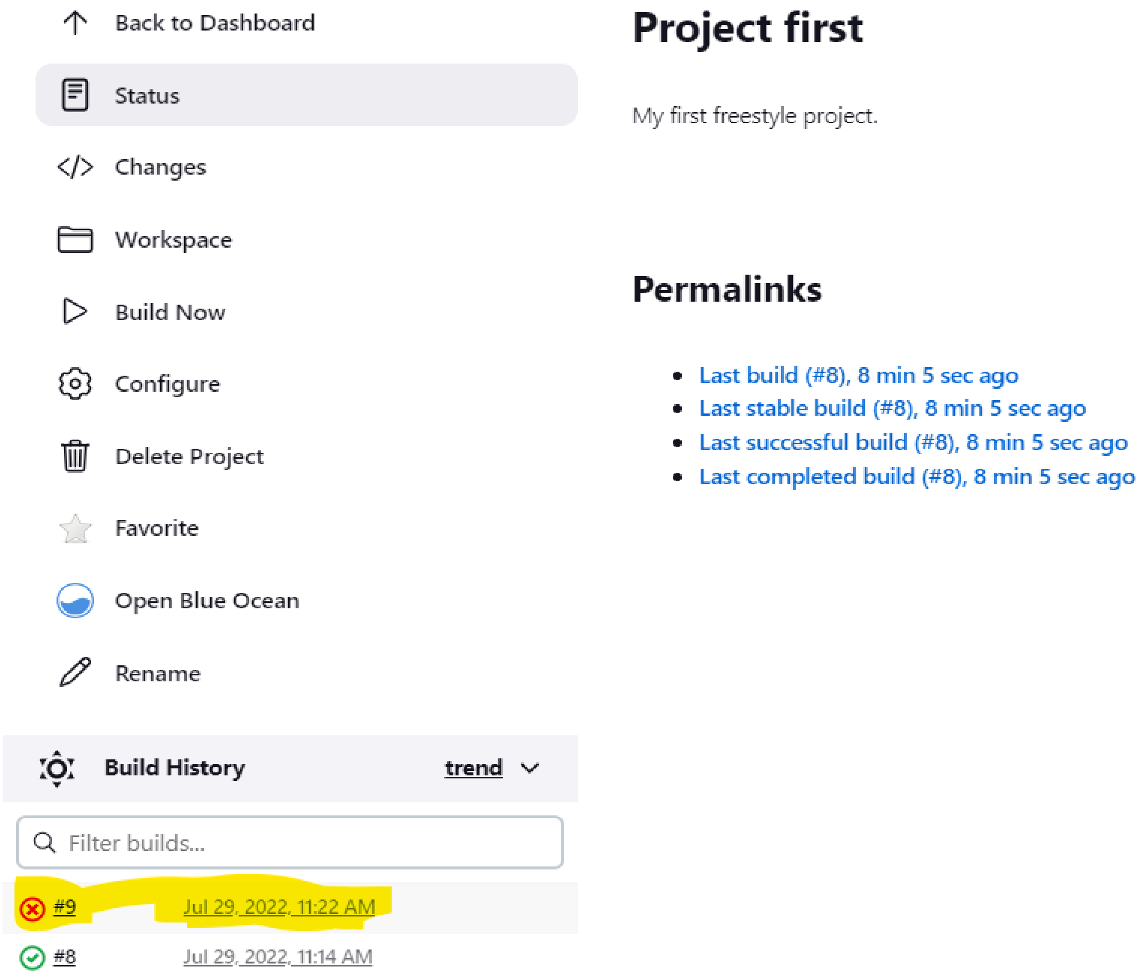


Build #8 (Jul 29, 2022, 11:14:15 AM)

No changes.

Started by user Shilpi Harnal

38. If you try to build the same project again, you will see failure as it will execute the **mkdir test** command again. And you cannot create the same directory again.



Project first

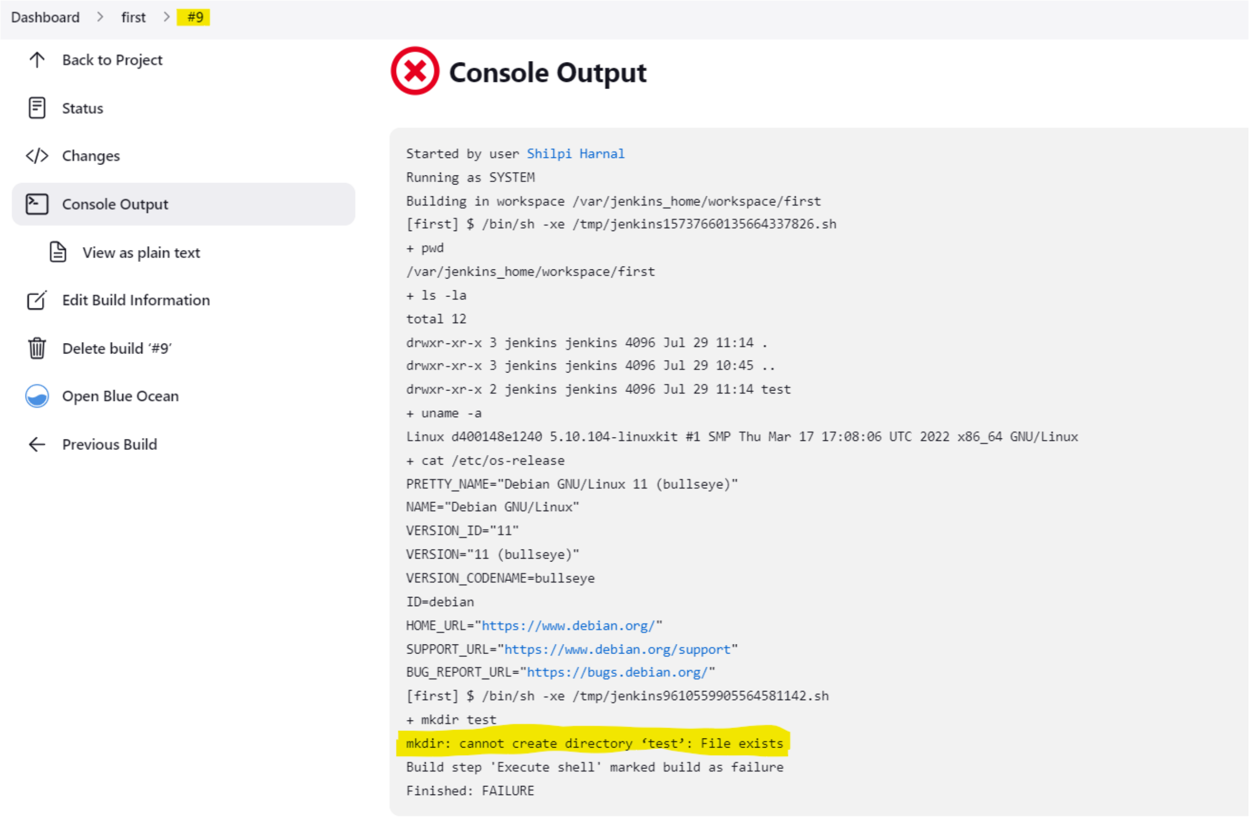
My first freestyle project.

Permalinks

- Last build (#8), 8 min 5 sec ago
- Last stable build (#8), 8 min 5 sec ago
- Last successful build (#8), 8 min 5 sec ago
- Last completed build (#8), 8 min 5 sec ago

✗ #9	Jul 29, 2022, 11:22 AM
✓ #8	Jul 29, 2022, 11:14 AM

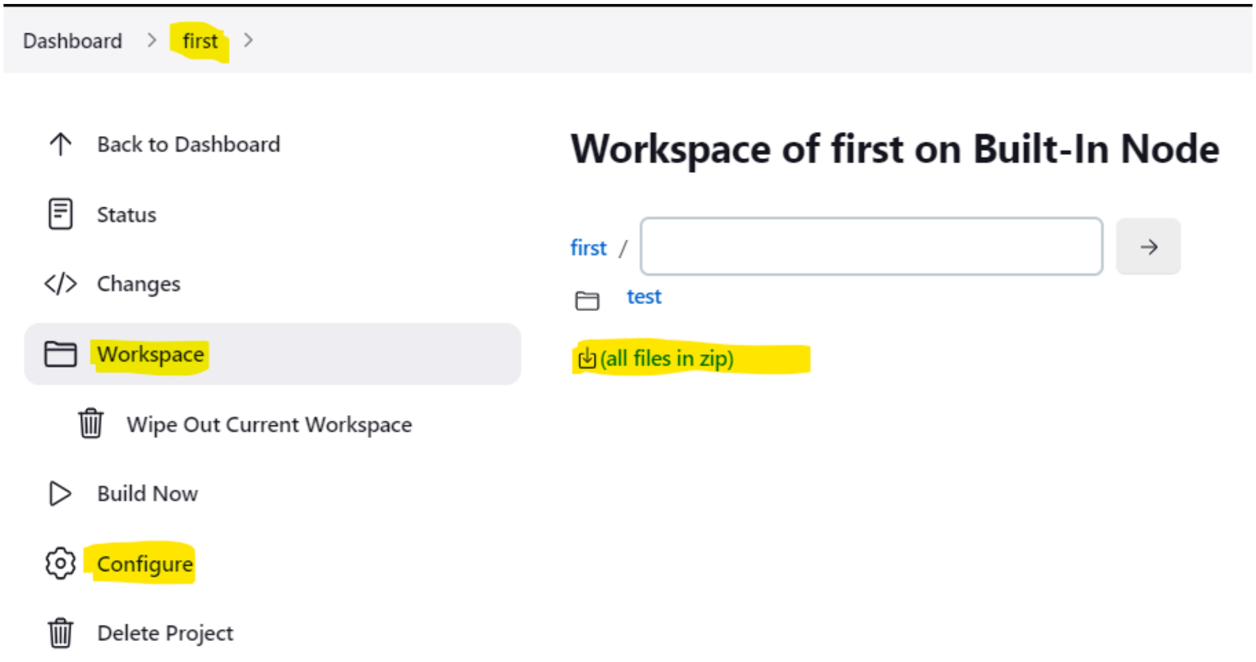
39. Click on #9 and then on CONSOLE OUTPUT to see status



Console Output

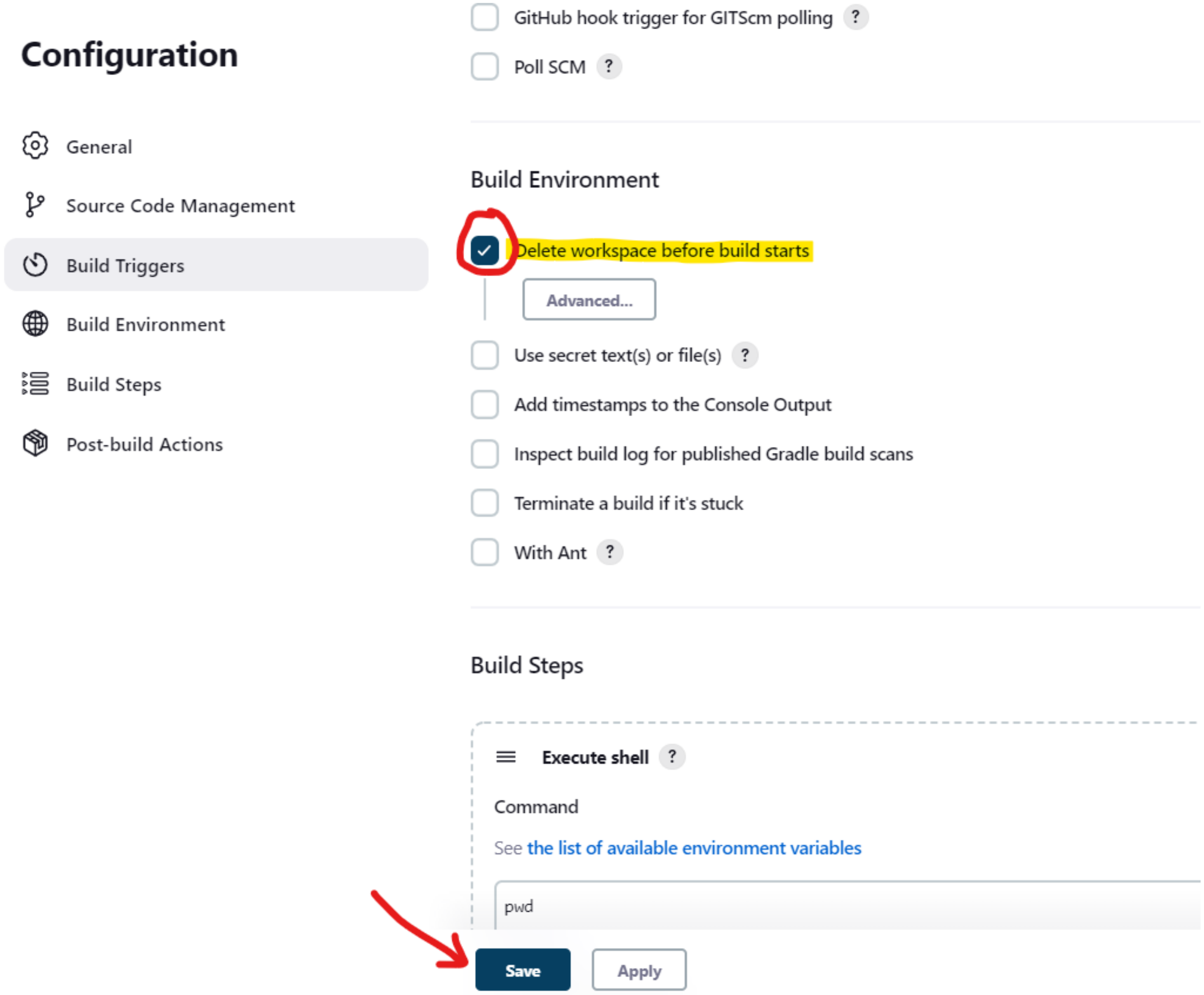
```
Started by user Shilpi Harnal
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/first
[first] $ /bin/sh -xe /tmp/jenkins15737660135664337826.sh
+ pwd
/var/jenkins_home/workspace/first
+ ls -la
total 12
drwxr-xr-x 3 jenkins jenkins 4096 Jul 29 11:14 .
drwxr-xr-x 3 jenkins jenkins 4096 Jul 29 10:45 ..
drwxr-xr-x 2 jenkins jenkins 4096 Jul 29 11:14 test
+ uname -a
Linux d400148e1240 5.10.104-linuxkit #1 SMP Thu Mar 17 17:08:06 UTC 2022 x86_64 GNU/Linux
+ cat /etc/os-release
PRETTY_NAME="Debian GNU/Linux 11 (bullseye)"
NAME="Debian GNU/Linux"
VERSION_ID="11"
VERSION="11 (bullseye)"
VERSION_CODENAME=bullseye
ID=debian
HOME_URL="https://www.debian.org/"
SUPPORT_URL="https://www.debian.org/support"
BUG_REPORT_URL="https://bugs.debian.org/"
[first] $ /bin/sh -xe /tmp/jenkins9610559905564581142.sh
+ mkdir test
mkdir: cannot create directory ‘test’: File exists
Build step 'Execute shell' marked build as failure
Finished: FAILURE
```

40. Click on the project name and then on WORKSPACE. Here you can get the option to delete all project files. But here we are not having any files in project.



Workspace of first on Built-In Node

41. To fix the failure here. **We can choose to delete the existing workspace before building it again. This option is available in Configure as shown in figure above.**



□ GitHub hook trigger for GITScm polling ?

□ Poll SCM ?

Build Environment

☑ Delete workspace before build starts

□ Use secret text(s) or file(s) ?

□ Add timestamps to the Console Output

□ Inspect build log for published Gradle build scans

□ Terminate a build if it's stuck

□ With Ant ?

Build Steps

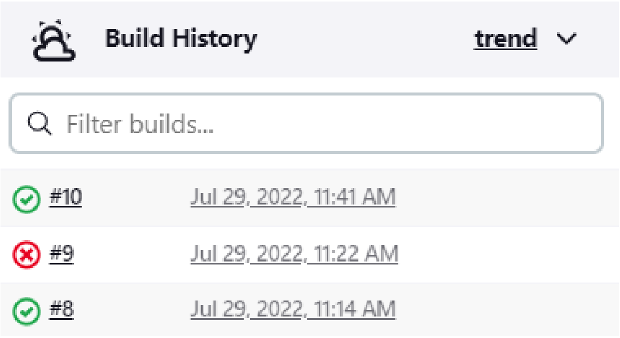
Execute shell ?

Command

See the list of available environment variables

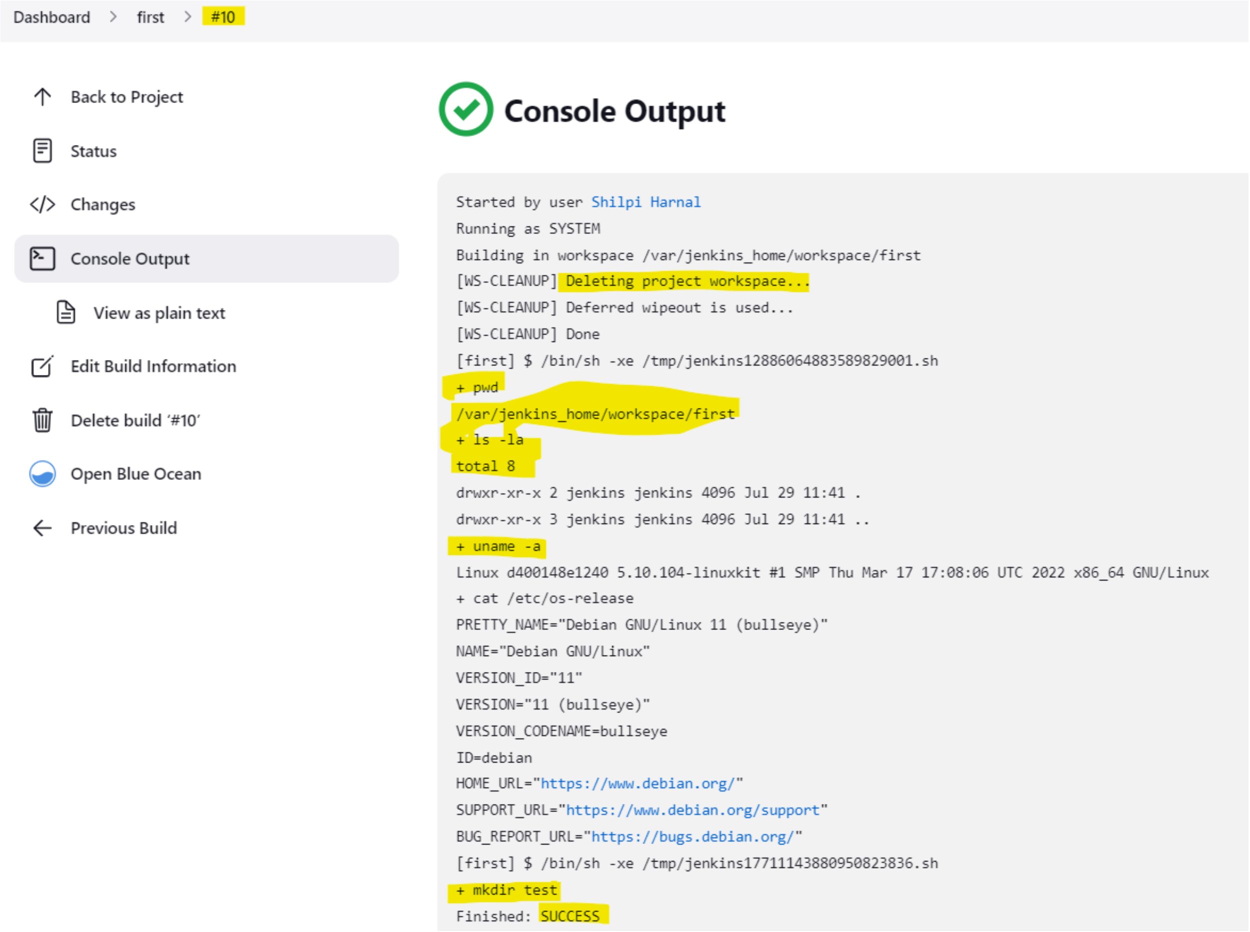
```
pwd
```

42. Click save and then BUILD AGAIN. This time it will run successfully as it will delete the earlier created test directory first and then rebuild it along with executing another shell script.



✓ #10	Jul 29, 2022, 11:41 AM
✗ #9	Jul 29, 2022, 11:22 AM
✓ #8	Jul 29, 2022, 11:14 AM

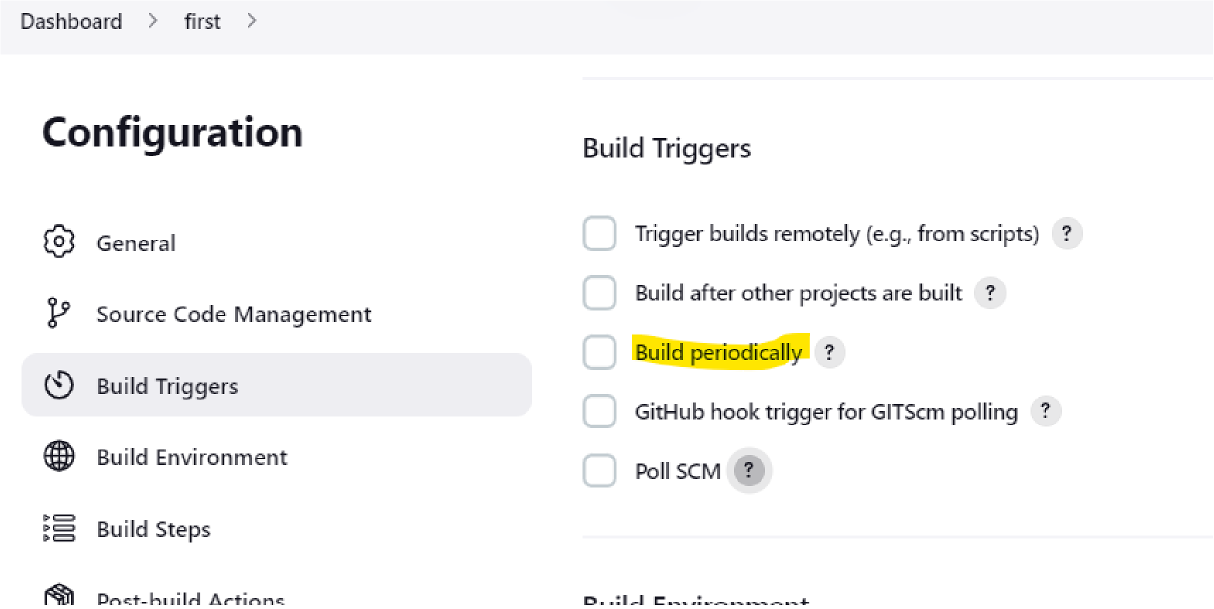
43. Click #10 and check status:



Console Output

```
Started by user Shilpi Harnal
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/first
[WS-CLEANUP] Deleting project workspace...
[WS-CLEANUP] Deferred wipeout is used...
[WS-CLEANUP] Done
[first] $ /bin/sh -xe /tmp/jenkins12886064883589829001.sh
+ pwd
/var/jenkins_home/workspace/first
+ ls -la
total 8
drwxr-xr-x 2 jenkins jenkins 4096 Jul 29 11:41 .
drwxr-xr-x 3 jenkins jenkins 4096 Jul 29 11:41 ..
+ uname -a
Linux d400148e1240 5.10.104-linuxkit #1 SMP Thu Mar 17 17:08:06 UTC 2022 x86_64 GNU/Linux
+ cat /etc/os-release
PRETTY_NAME="Debian GNU/Linux 11 (bullseye)"
NAME="Debian GNU/Linux"
VERSION_ID="11"
VERSION="11 (bullseye)"
VERSION_CODENAME=bullseye
ID=debian
HOME_URL="https://www.debian.org/"
SUPPORT_URL="https://www.debian.org/support"
BUG_REPORT_URL="https://bugs.debian.org/"
[first] $ /bin/sh -xe /tmp/jenkins17711143880950823836.sh
+ mkdir test
Finished: SUCCESS
```

44. We can also use triggers from configuration to set triggers to run project.



Build Triggers

☐ Trigger builds remotely (e.g., from scripts) ?

☐ Build after other projects are built ?

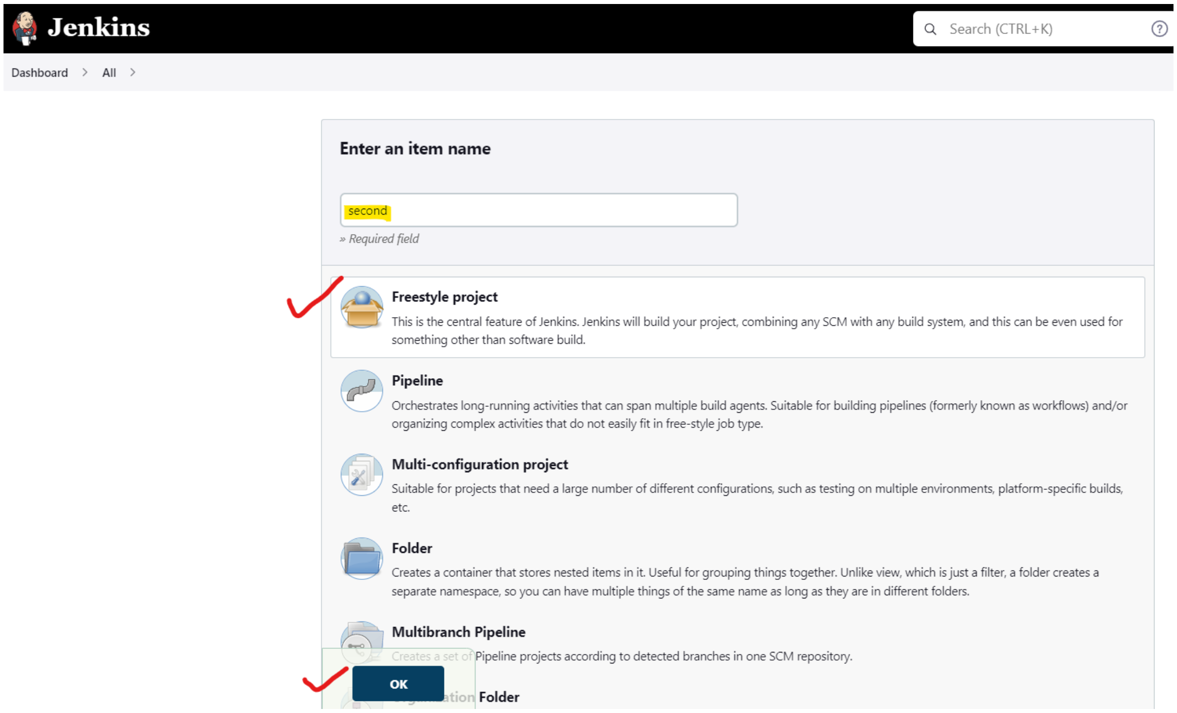
☐ Build periodically ?

☐ GitHub hook trigger for GITScm polling ?

☐ Poll SCM ?

Lets create another Jenkins Freestyle Project as second that will be executed as a trigger after the earlier created project: first is executed.

45. Go to DASHBOARD, click NEW ITEM, and add a new project as **second**:



Jenkins

Search (CTRL+K)

Dashboard > All >

Enter an item name

second

» Required field

Freestyle project
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

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.

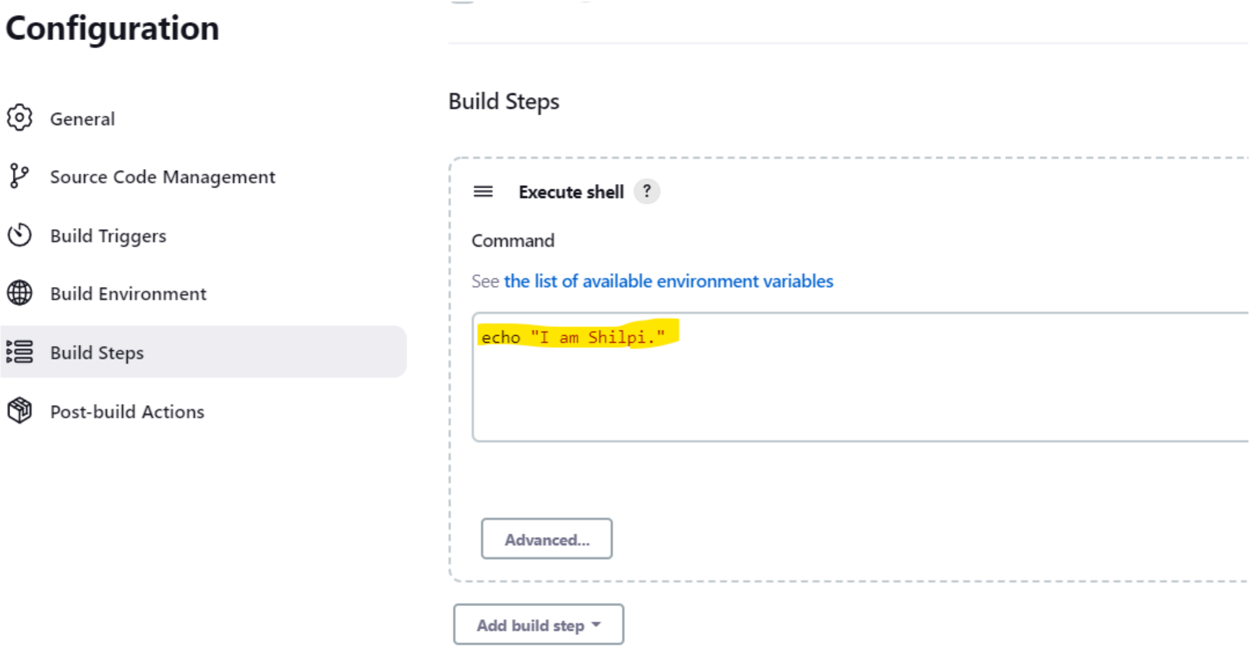
Folder
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

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

OK

Organization Folder

46. Add some script:



Build Steps

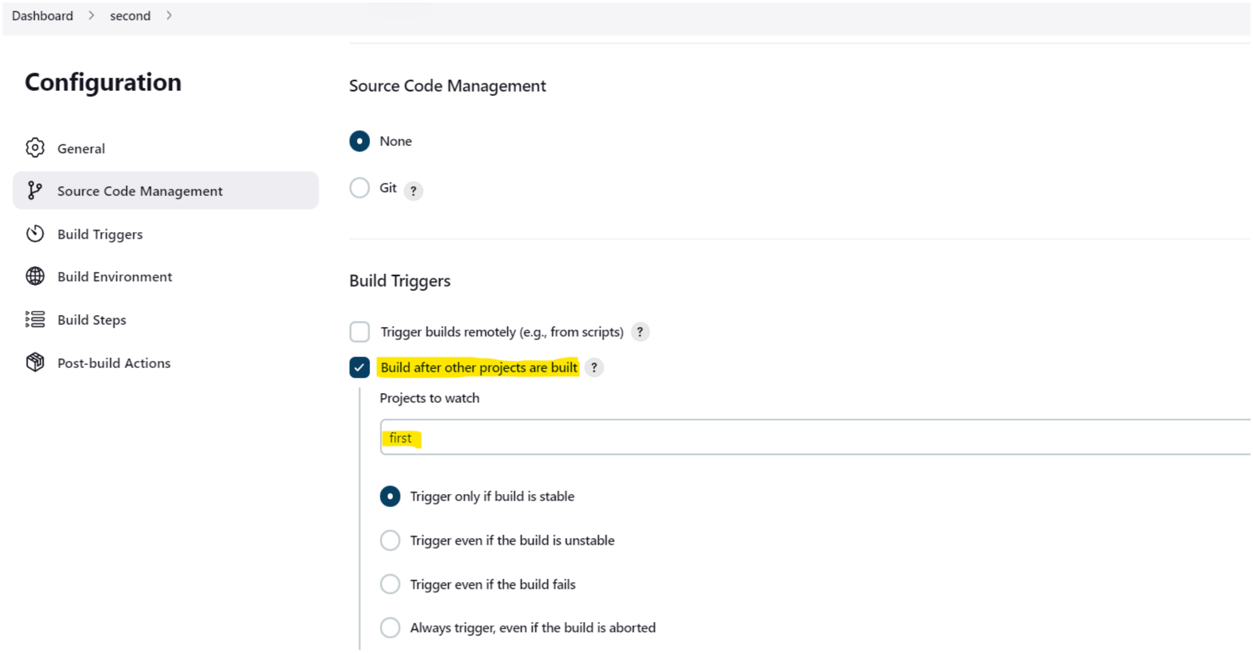
Execute shell ?

Command

See the list of available environment variables

```
echo "I am Shilpi."
```

47. Add a trigger to execute it after **first** project and SAVE.



Dashboard > second >

Configuration

- General
- Source Code Management
- Build Triggers
- Build Environment
- Build Steps
- Post-build Actions

Source Code Management

● None

○ Git ?

Build Triggers

□ Trigger builds remotely (e.g., from scripts) ?

☑ Build after other projects are built ?

Projects to watch

first

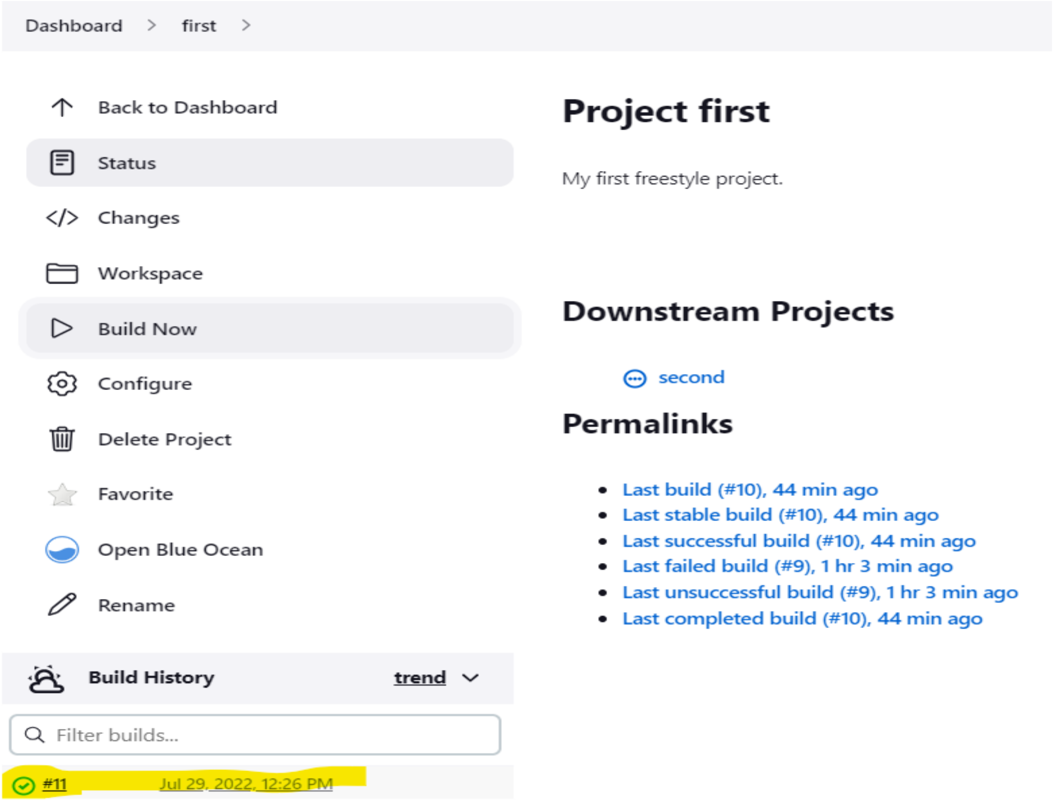
● Trigger only if build is stable

○ Trigger even if the build is unstable

○ Trigger even if the build fails

○ Always trigger, even if the build is aborted

48. Now go back to the dashboard and build the first project again and it will automatically trigger the second project.



Dashboard > first >

- Back to Dashboard
- Status
- Changes
- Workspace
- Build Now
- Configure
- Delete Project
- Favorite
- Open Blue Ocean
- Rename

Build History trend

Filter builds...

#11 Jul 29, 2022, 12:26 PM

Project first

My first freestyle project.

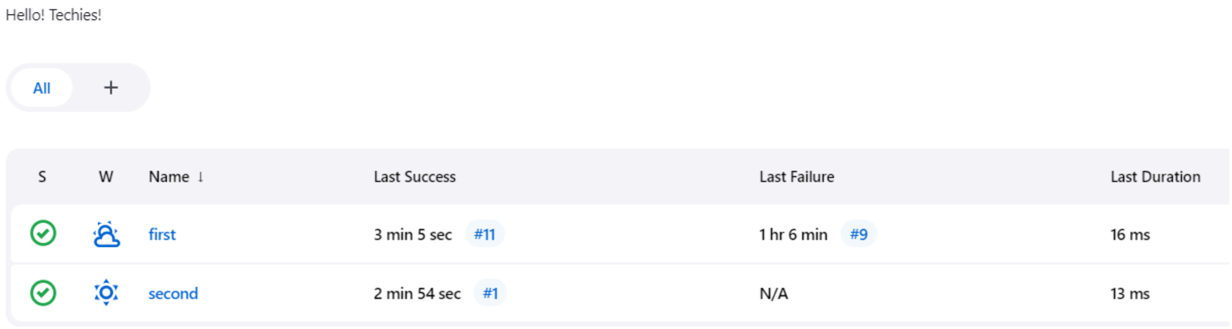
Downstream Projects

second

Permalinks

- Last build (#10), 44 min ago
- Last stable build (#10), 44 min ago
- Last successful build (#10), 44 min ago
- Last failed build (#9), 1 hr 3 min ago
- Last unsuccessful build (#9), 1 hr 3 min ago
- Last completed build (#10), 44 min ago

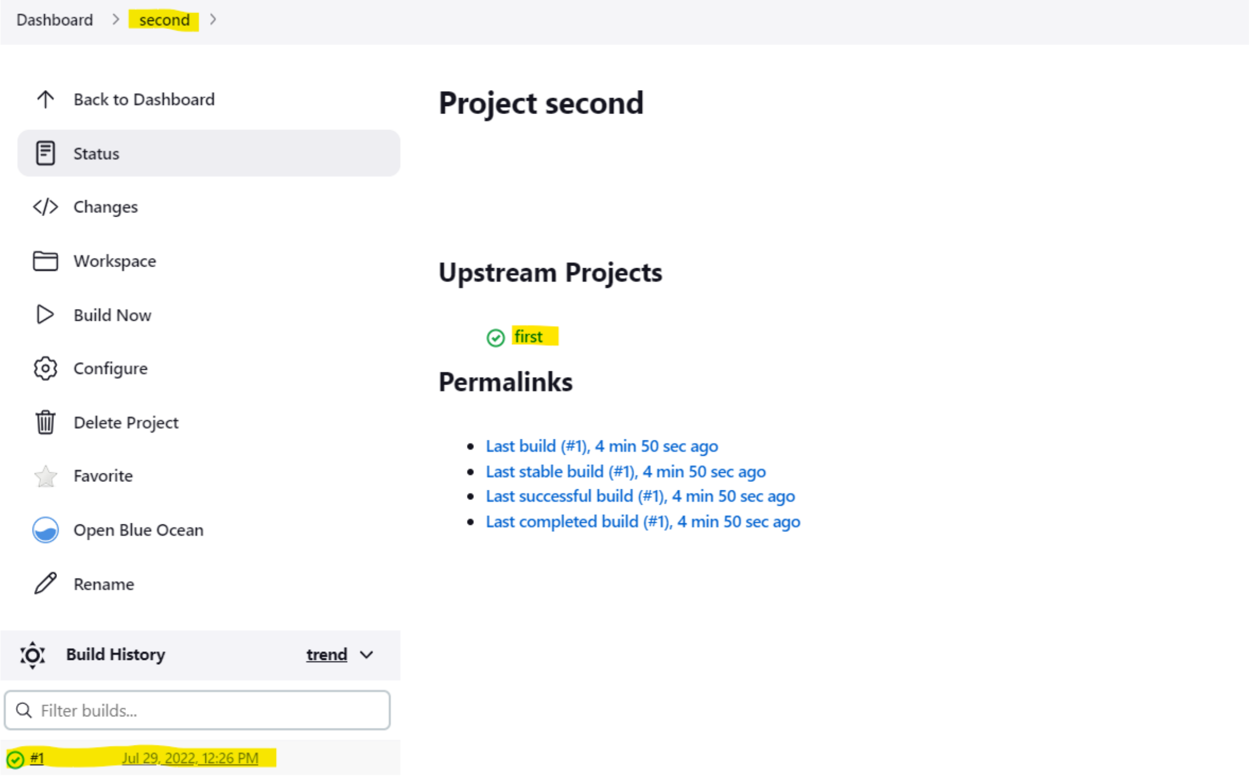
49. Check the dashboard for the status of both projects as first has triggered the second project. Earlier second was unchecked.



Hello! Techies!

S	W	Name ↓	Last Success	Last Failure	Last Duration
✓	☁	first	3 min 5 sec #11	1 hr 6 min #9	16 ms
✓	☀	second	2 min 54 sec #1	N/A	13 ms

50. Click on second, and check status as already built by first.



Project second

Upstream Projects

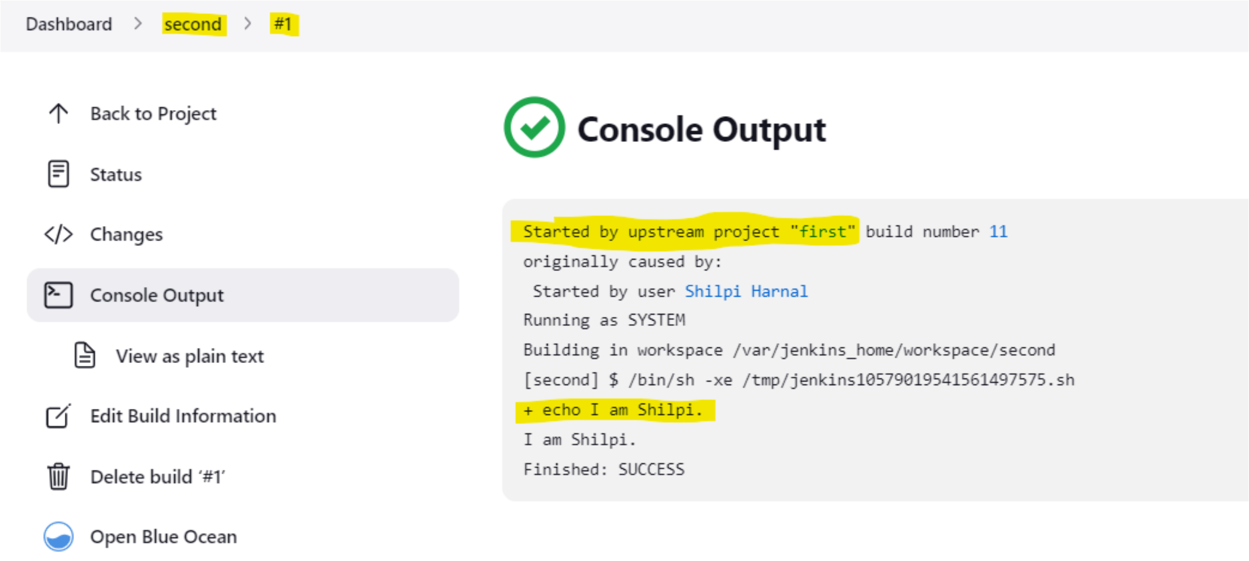
✓ first

Permalinks

- Last build (#1), 4 min 50 sec ago
- Last stable build (#1), 4 min 50 sec ago
- Last successful build (#1), 4 min 50 sec ago
- Last completed build (#1), 4 min 50 sec ago

✓ #1 Jul 29, 2022, 12:26 PM

51. To check console output of second click on #1:



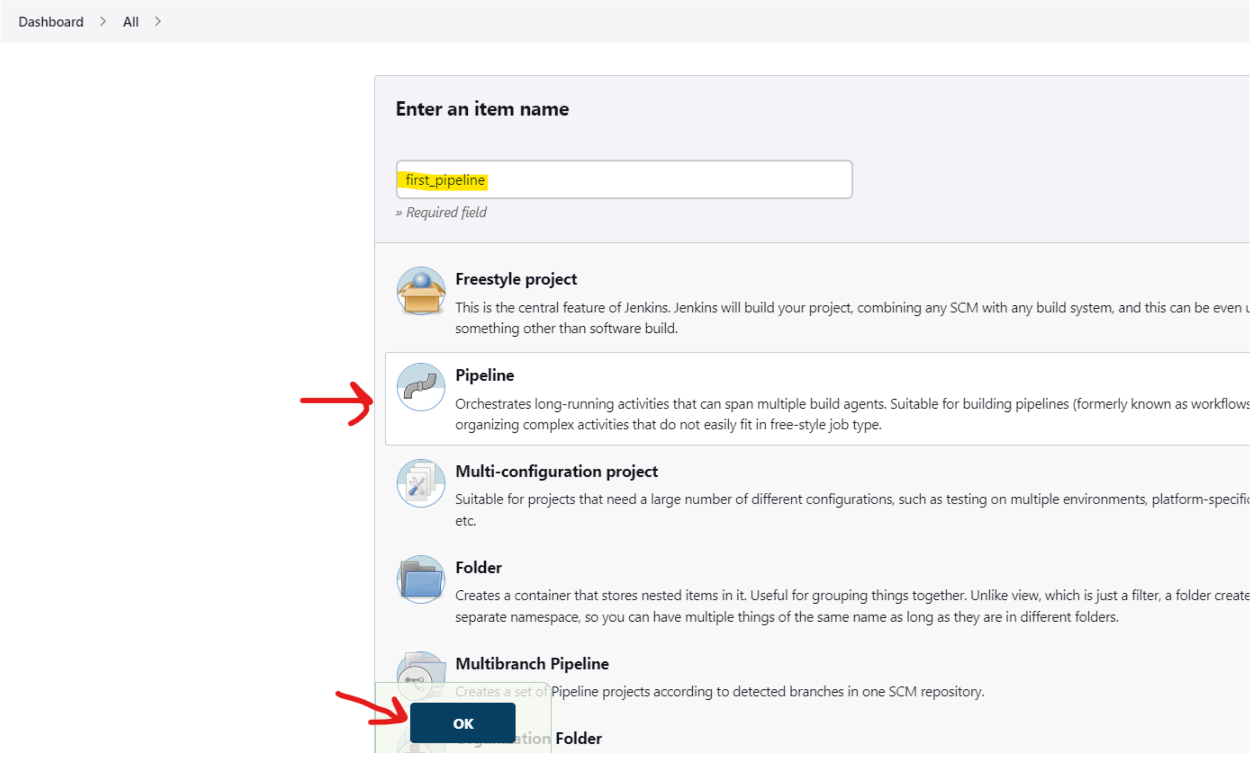
Console Output

```
Started by upstream project "first" build number 11
originally caused by:
 Started by user Shilpi Harnal
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/second
[second] $ /bin/sh -xe /tmp/jenkins10579019541561497575.sh
+ echo I am Shilpi.
I am Shilpi.
Finished: SUCCESS
```

PROJECT2: Jenkins Pipeline

Jenkins Pipeline Projects are used for CI/CD.

1. Add a new pipeline project as first_pipeline. Click save.



Enter an item name

first_pipeline

» Required field

Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even u
something other than software build.

Pipeline

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows
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-specifi
etc.

Folder

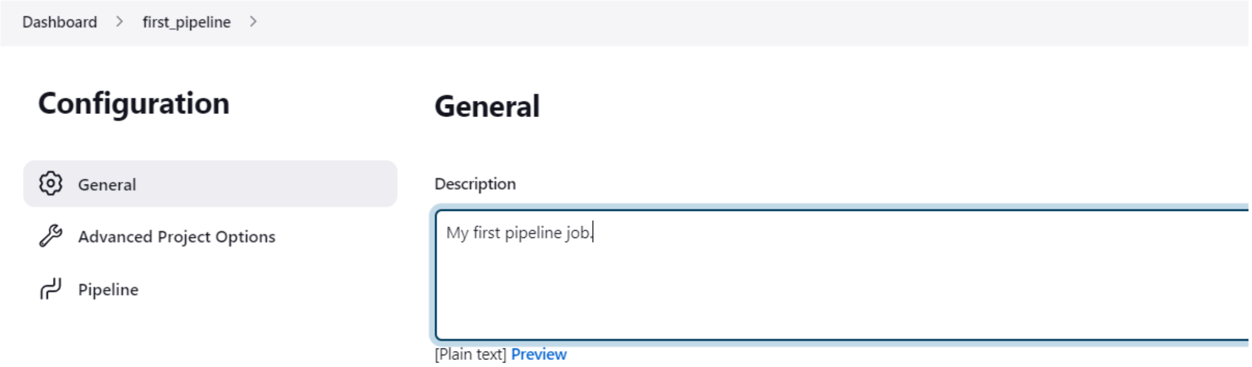
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder create
separate namespace, so you can have multiple things of the same name as long as they are in different folders.

Multibranch Pipeline

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

Organization Folder

2. Add some description.



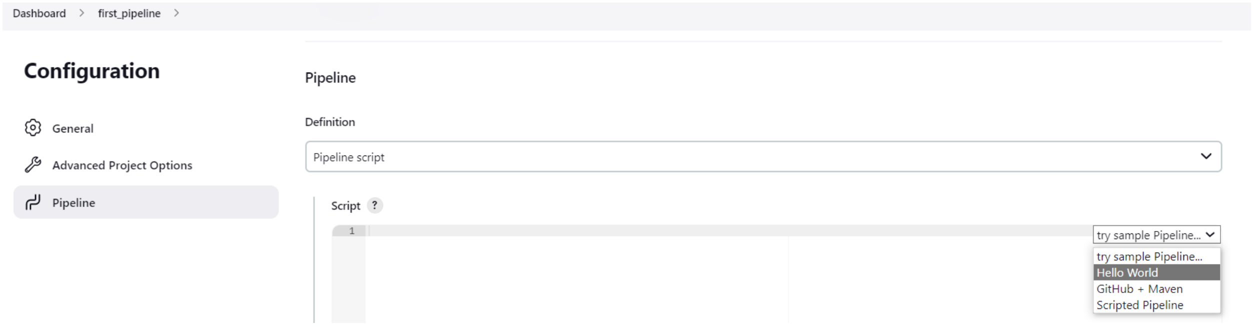
General

Description

My first pipeline job.

[Plain text] Preview

3. Add sample pipeline script.

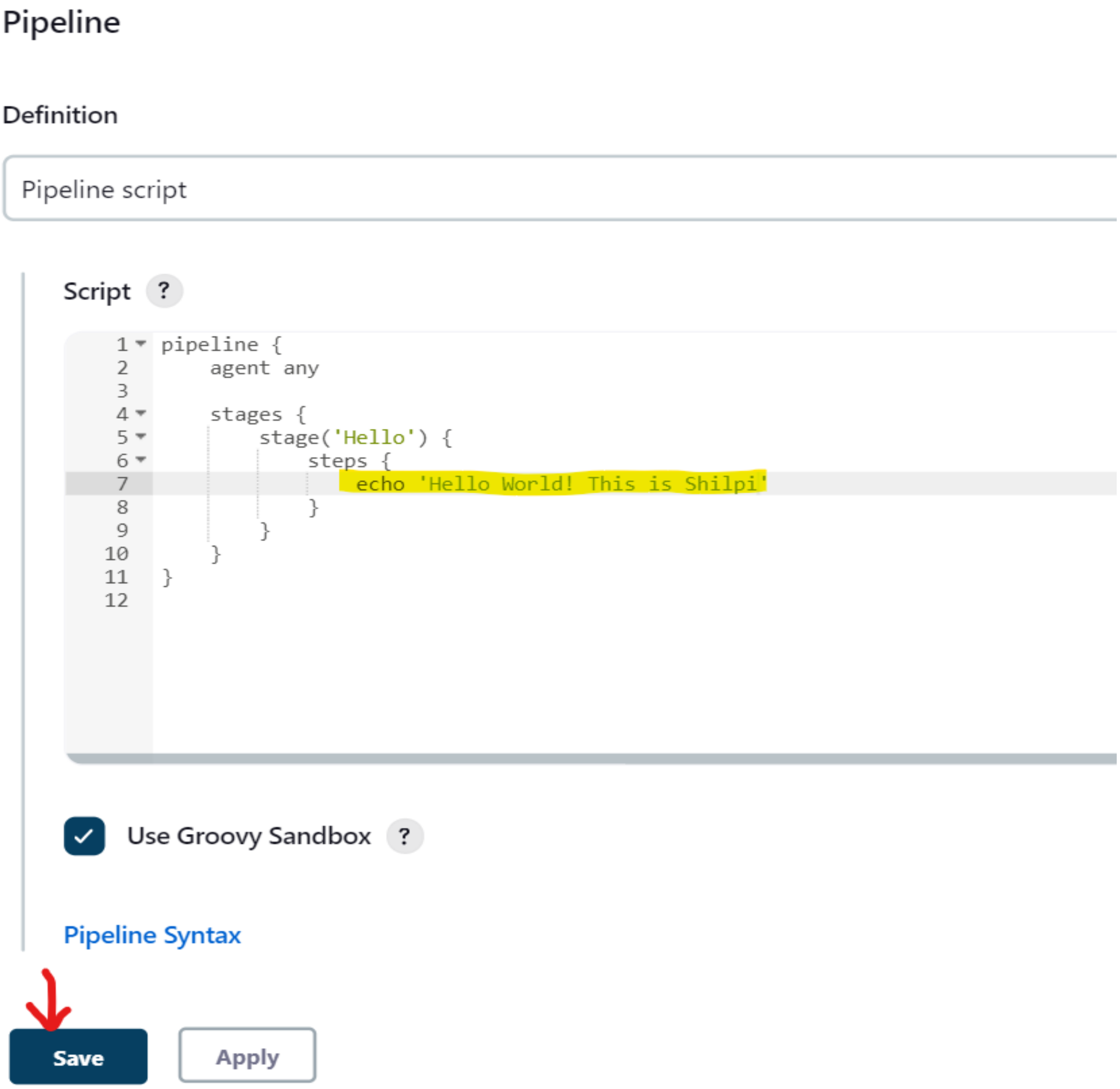


Pipeline

Definition: Pipeline script

Script ?

4. Sample pipeline script:



Pipeline

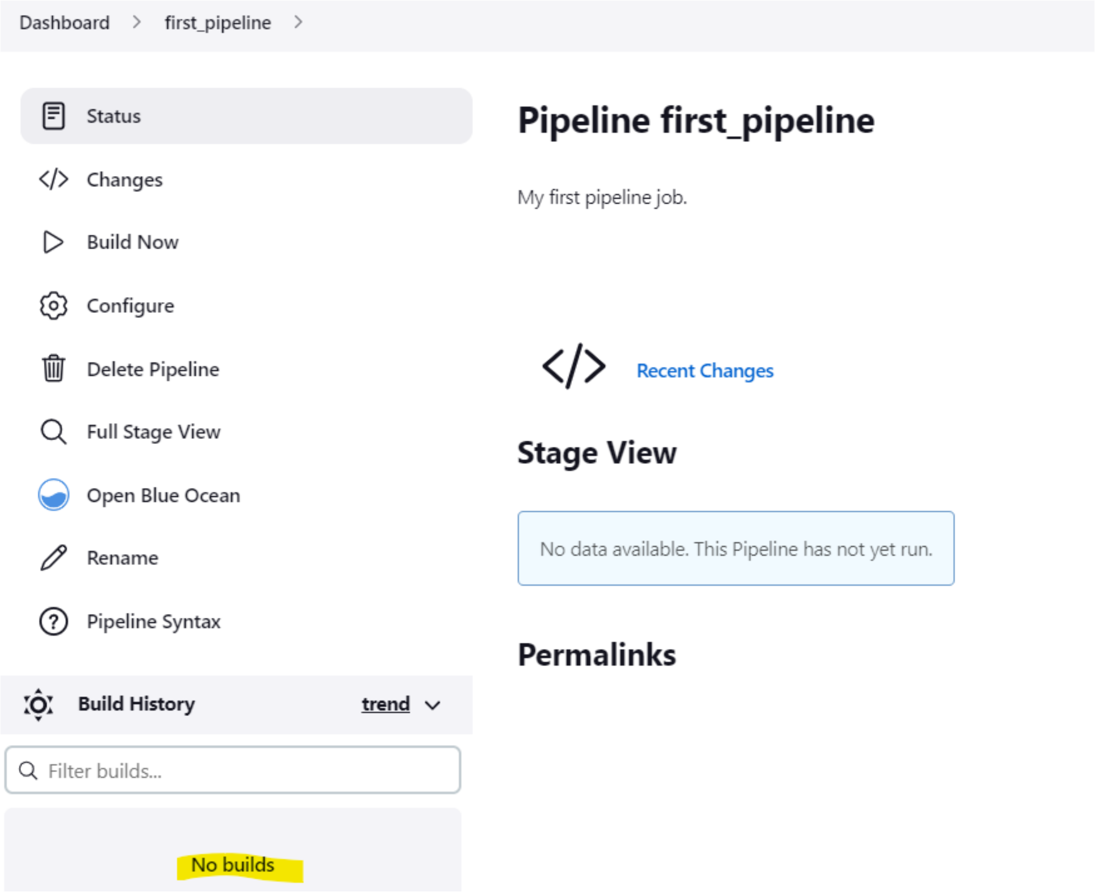
Definition: Pipeline script

Script ?

```
pipeline {
    agent any

    stages {
        stage('Hello') {
            steps {
                echo 'Hello World! This is Shilpi'
            }
        }
    }
}
```

☑ Use Groovy Sandbox ?

5. Initial pipeline is created, with no build yet.



Pipeline first_pipeline

My first pipeline job.

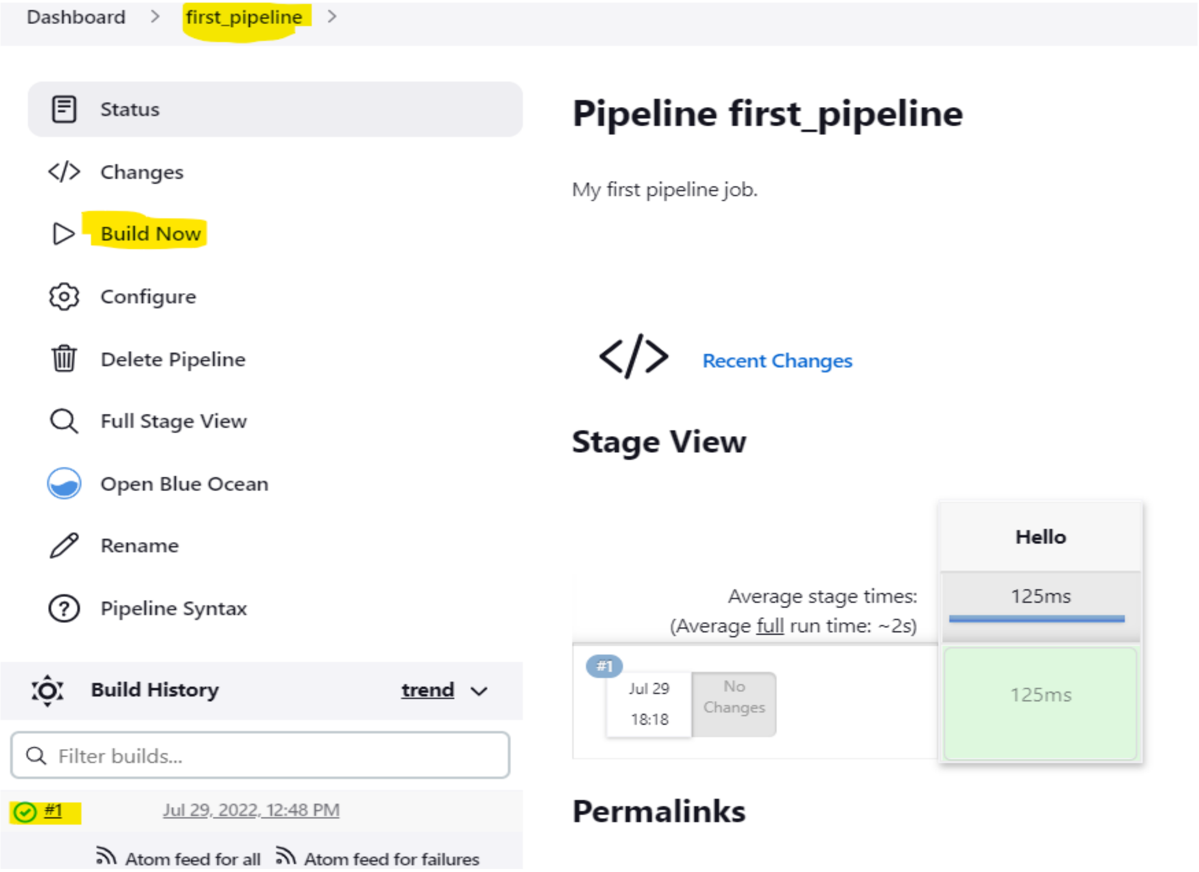
Stage View

No data available. This Pipeline has not yet run.

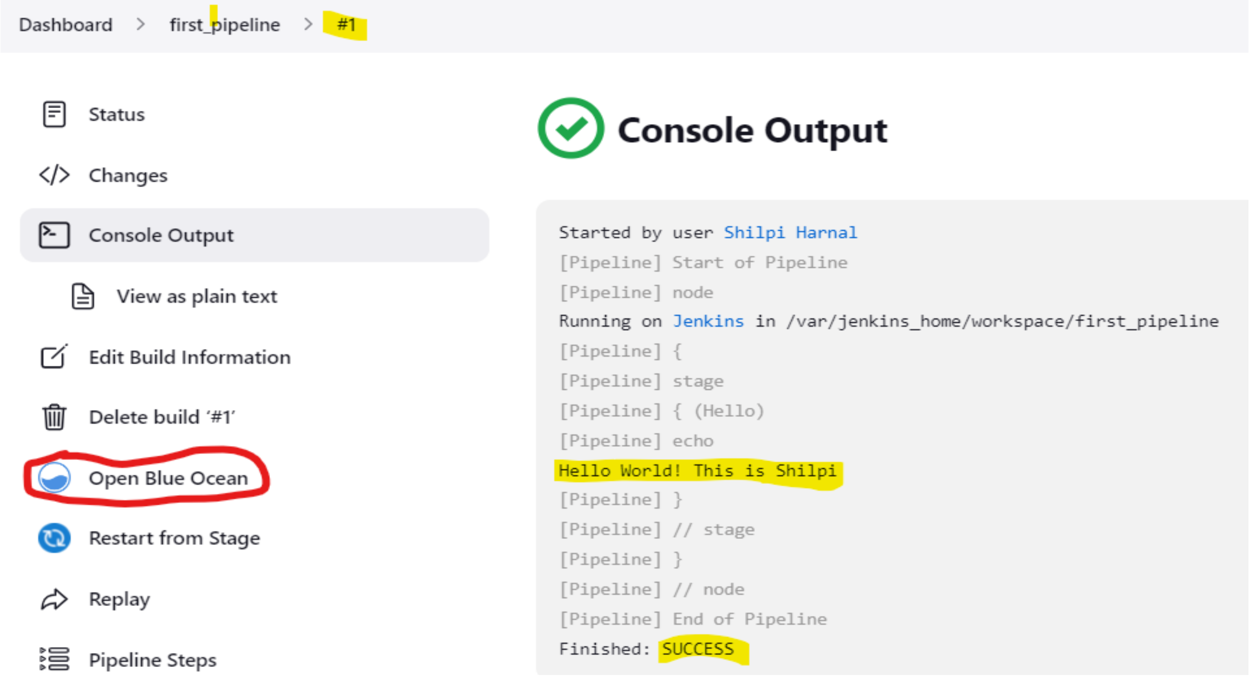
Permalinks

No builds

6. Build it Now and rest is same:

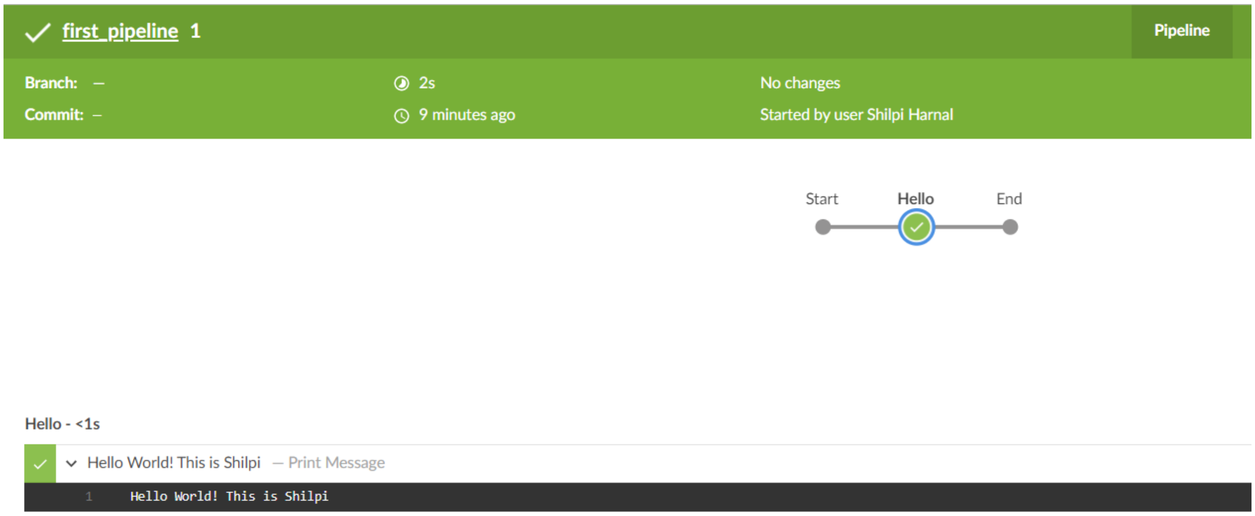


7. Click #1 to check console output.



```
Started by user Shilpi Harnal
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/jenkins_home/workspace/first_pipeline
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Hello)
[Pipeline] echo
Hello World! This is Shilpi
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

8. Click Open blue Ocean to check the output:



Branch: —

Commit: —

2s

9 minutes ago

No changes

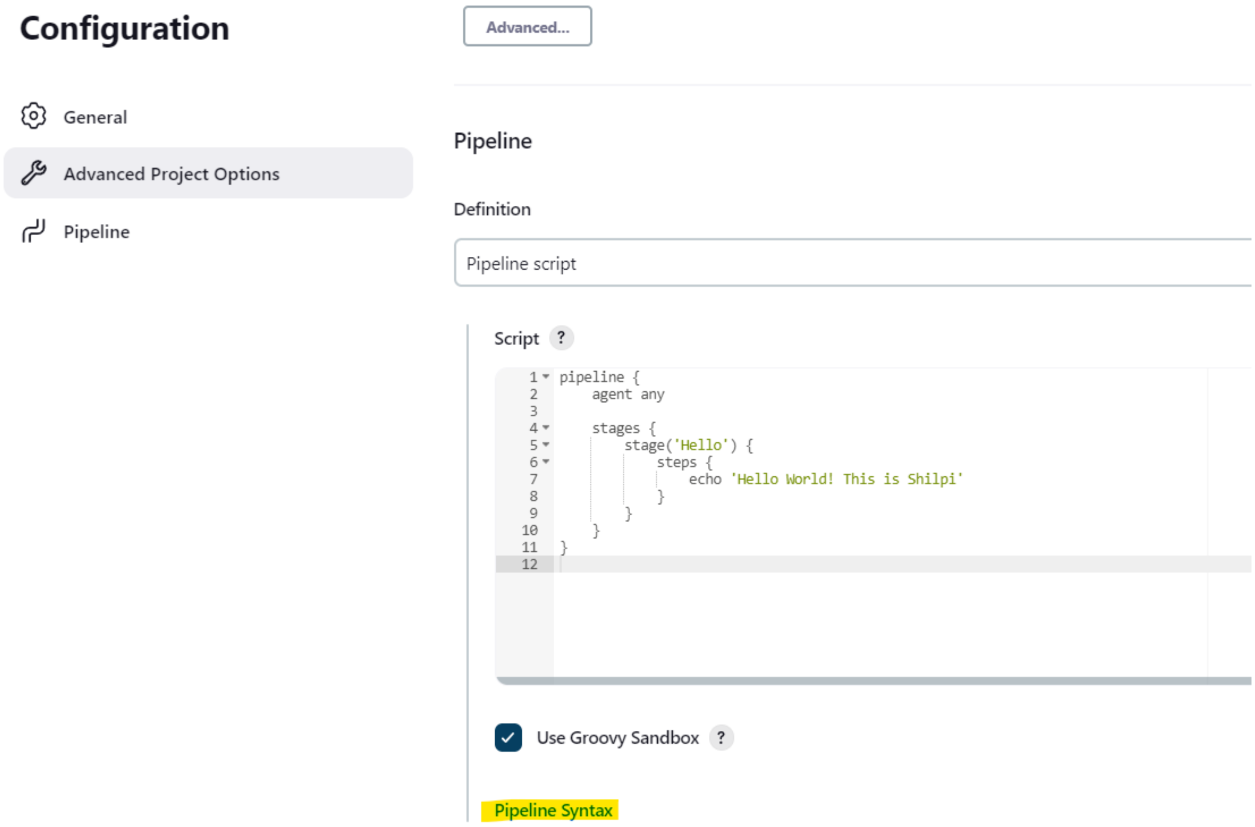
Started by user Shilpi Harnal

Hello - <1s

✓ Hello World! This is Shilpi — Print Message

```
Hello World! This is Shilpi
```

9. Go back and Lets configure pipeline to run earlier created freestyle project first that will automatically triggers project second. Click on Pipeline Syntax.



Pipeline

Definition

Pipeline script

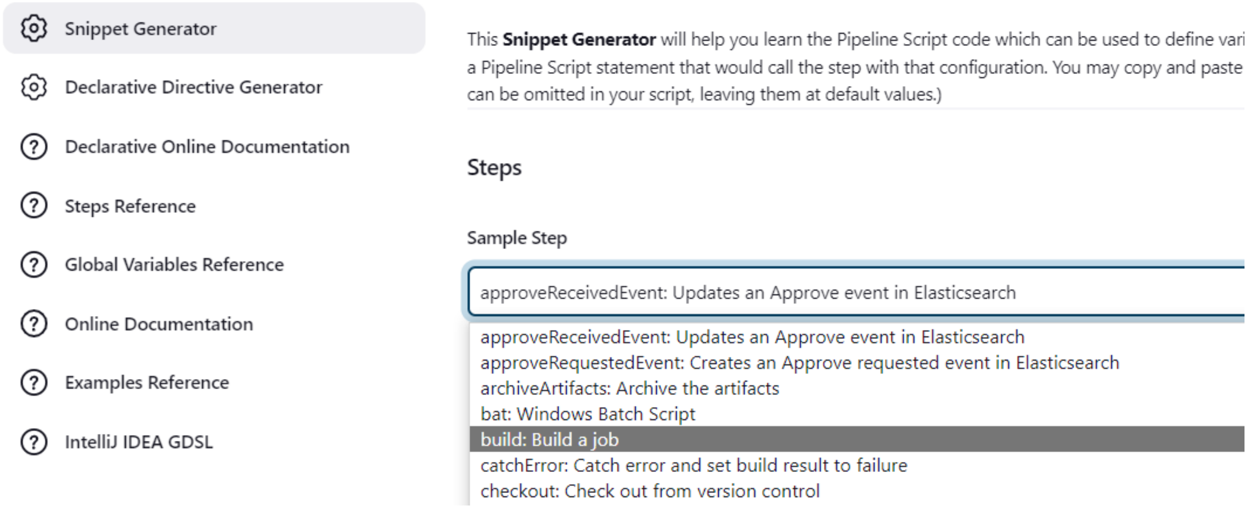
Script ?

```
pipeline {
    agent any

    stages {
        stage('Hello') {
            steps {
                echo 'Hello World! This is Shilpi'
            }
        }
    }
}

```

☑ Use Groovy Sandbox ?

Pipeline Syntax

10. From sample step: Build a job.


Snippet Generator
Declarative Directive Generator
Declarative Online Documentation
Steps Reference
Global Variables Reference
Online Documentation
Examples Reference
IntelliJ IDEA GDSL

This **Snippet Generator** will help you learn the Pipeline Script code which can be used to define vari
a Pipeline Script statement that would call the step with that configuration. You may copy and paste
can be omitted in your script, leaving them at default values.)

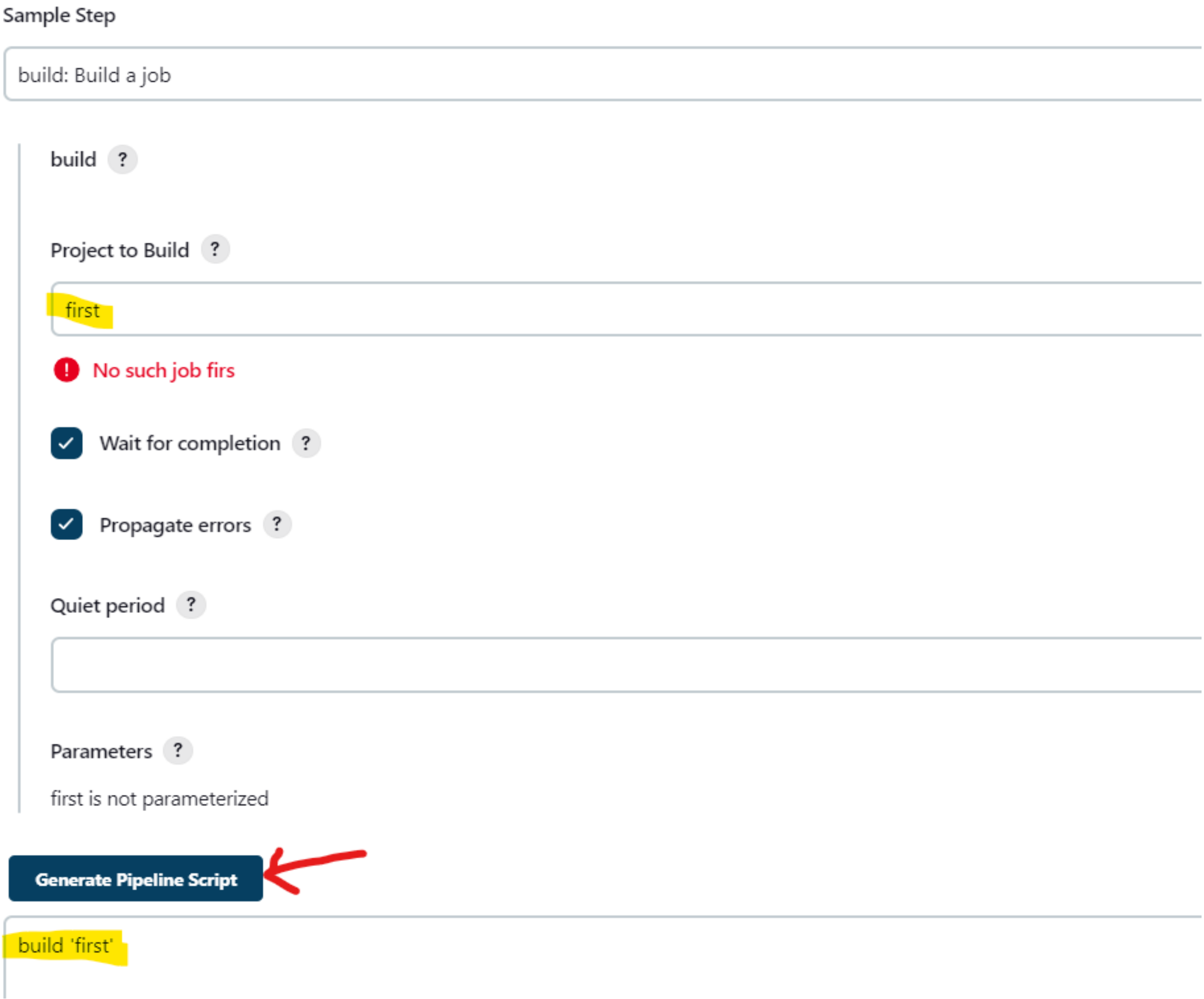
Steps

Sample Step

approveReceivedEvent: Updates an Approve event in Elasticsearch

approveReceivedEvent: Updates an Approve event in Elasticsearch
approveRequestedEvent: Creates an Approve requested event in Elasticsearch
archiveArtifacts: Archive the artifacts
bat: Windows Batch Script
build: Build a job
catchError: Catch error and set build result to failure
checkout: Check out from version control

11. Select project name to build, that is first in this case. Now click Generate Pipeline Script to check and copy the command to be added to build first project, i.e. **build 'first'**:



Sample Step

build: Build a job

build ?

Project to Build ?

first

No such job firs

☑ Wait for completion ?

☑ Propagate errors ?

Quiet period ?

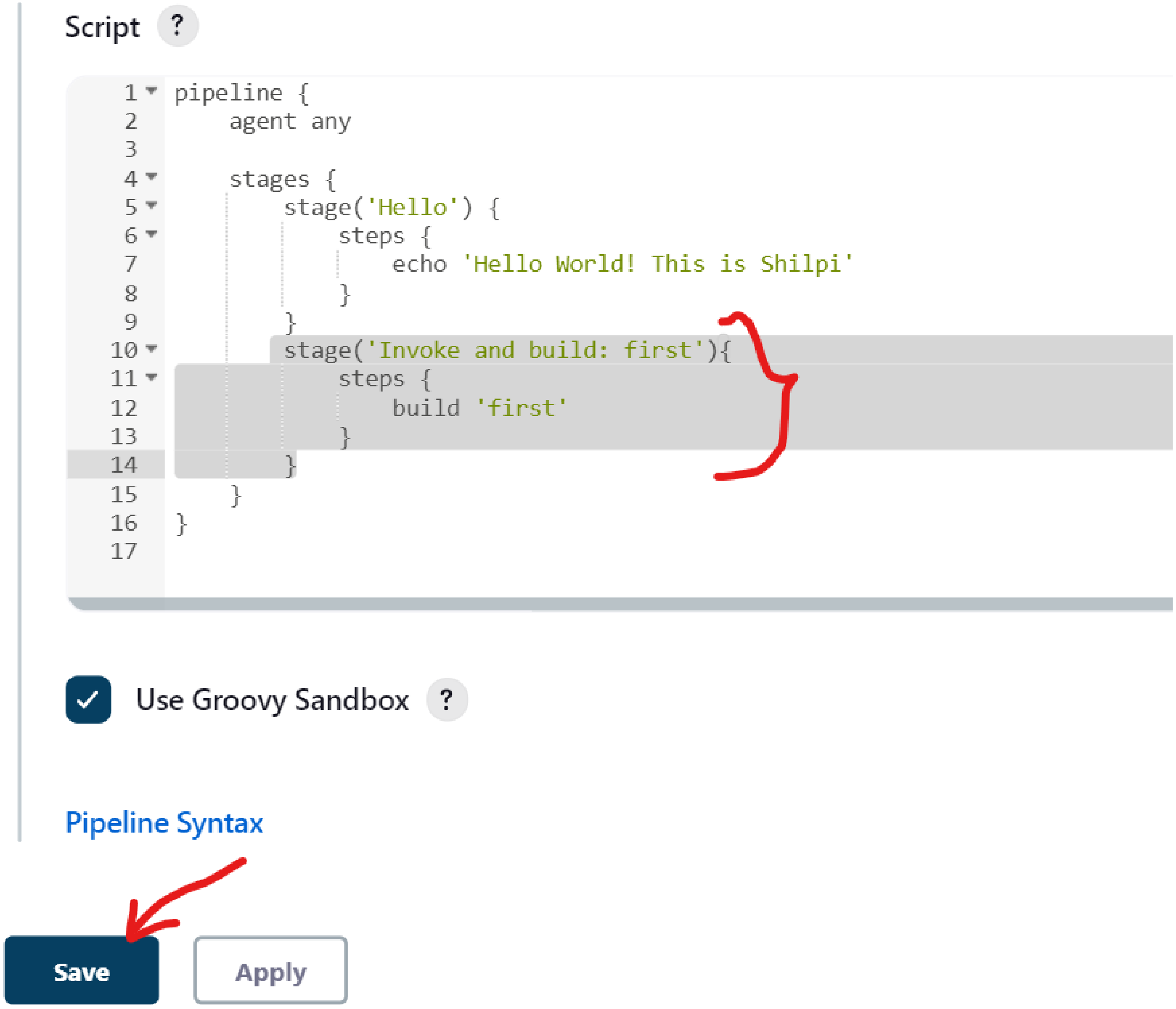
Parameters ?

first is not parameterized

```
build 'first'
```

12. Go to previous tab where we had first_pipeline script and add a new stage to build first project as:

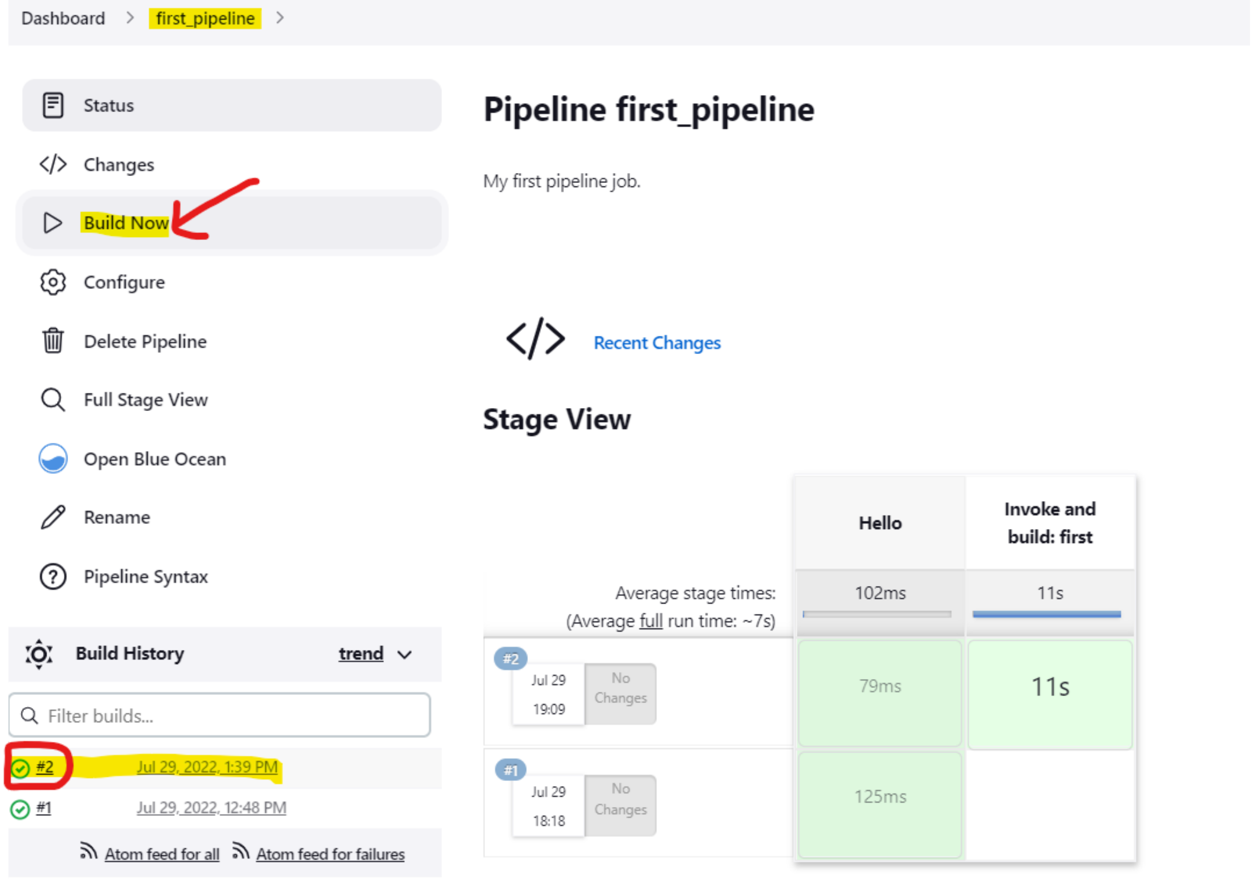
```
stage('Invoke and build: first'){
            steps {
                build 'first'
            }
        }
```



```
pipeline {
    agent any

    stages {
        stage('Hello') {
            steps {
                echo 'Hello World! This is Shilpi'
            }
        }
        stage('Invoke and build: first'){
            steps {
                build 'first'
            }
        }
    }
}

```

☑ Use Groovy Sandbox

13. Click Save and build the first_pipeline project again. That in turn builds first and that will build second.



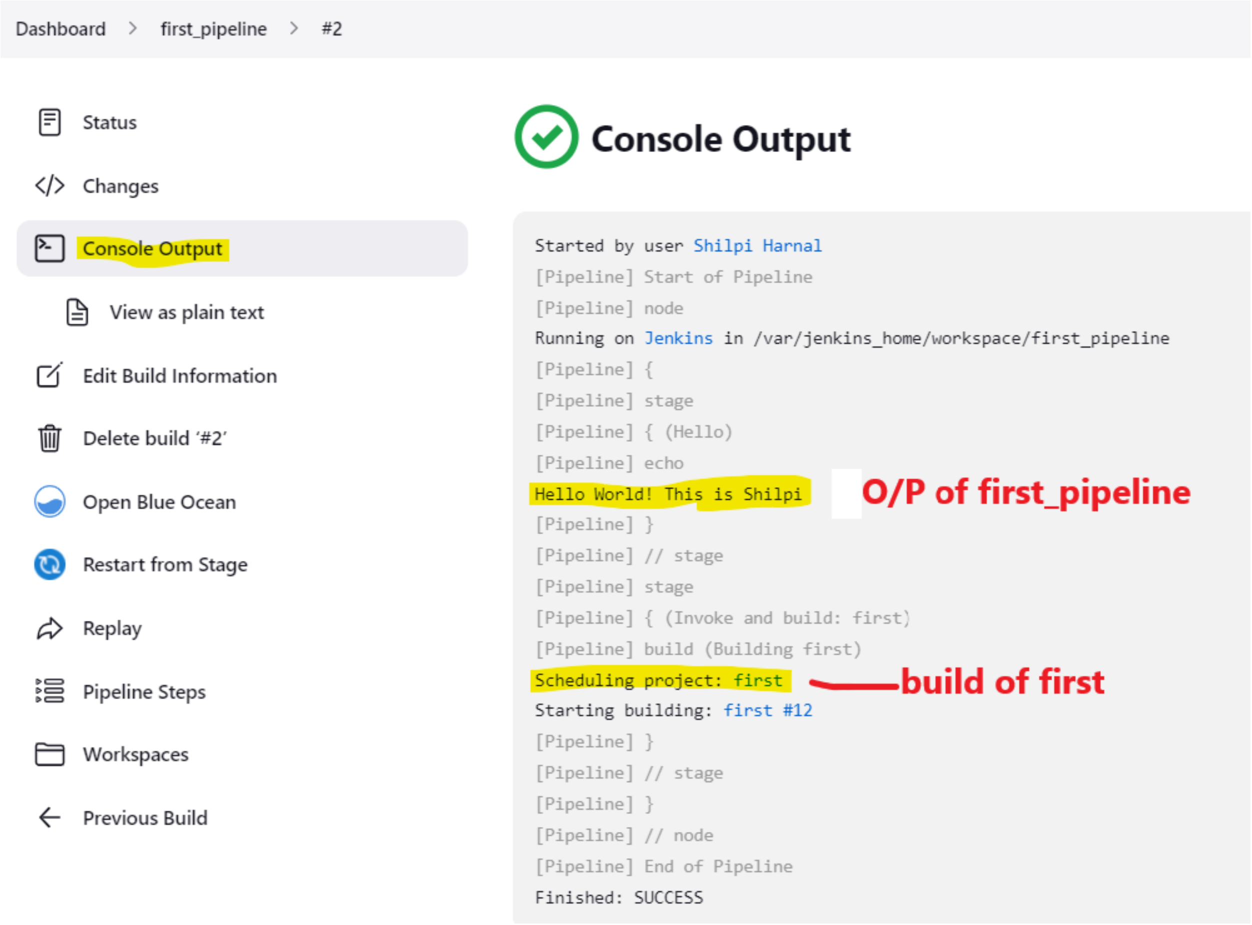
Pipeline first_pipeline

My first pipeline job.

Stage View

	Hello	Invoke and build: first
Average stage times: (Average full run time: ~7s)	102ms	11s
#2 Jul 29 19:09 No Changes	79ms	11s
#1 Jul 29 18:18 No Changes	125ms	

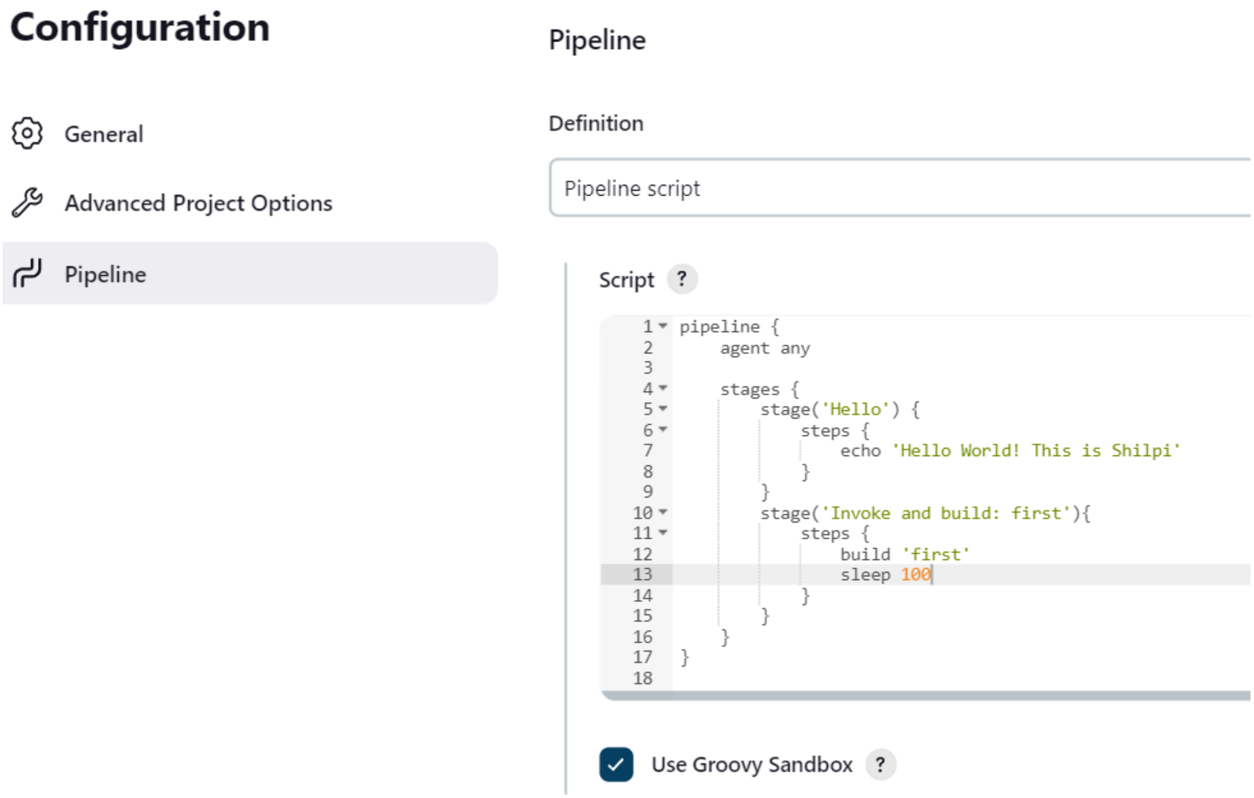
14. Click #2 to check console output.



```
Started by user Shilpi Harnal
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/jenkins_home/workspace/first_pipeline
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Hello)
[Pipeline] echo
Hello World! This is Shilpi
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Invoke and build: first)
[Pipeline] build (Building first)
Scheduling project: first
Starting building: first #12
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

15. You can go back to Dashboard and check the status of the first project pipeline that has also been executed and the second project pipeline triggered by the first.

16. Go back and Lets configure pipeline again to add some delay with sleep command as:



Configuration

Pipeline

Definition

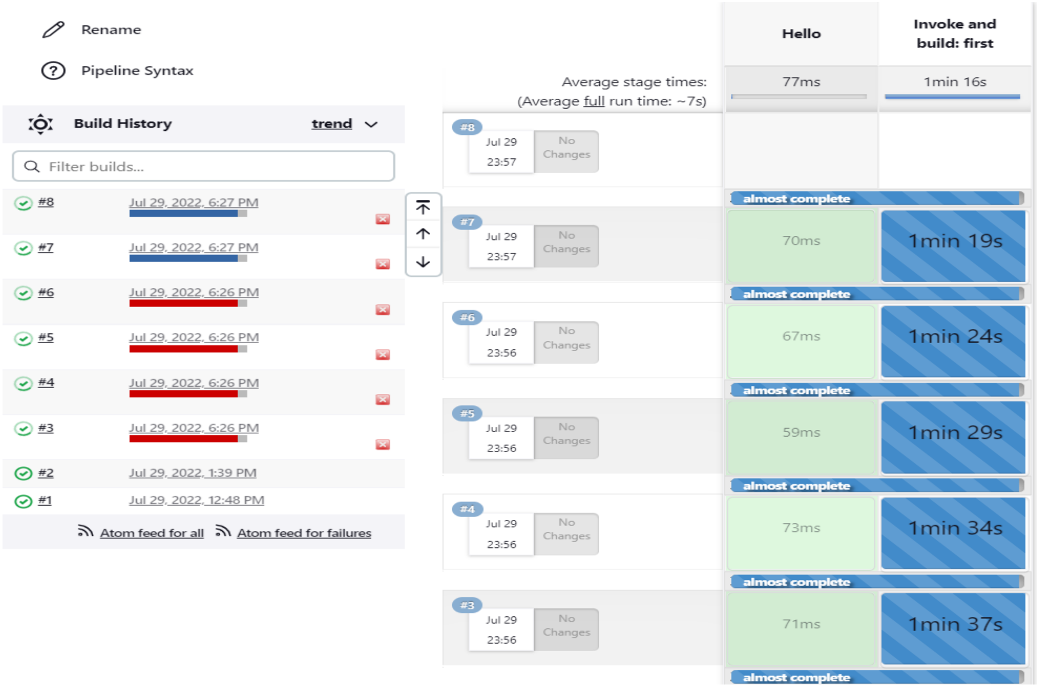
Pipeline script

Script ?

```
pipeline {
    agent any

    stages {
        stage('Hello') {
            steps {
                echo 'Hello World! This is Shilpi'
            }
        }
        stage('Invoke and build: first'){
            steps {
                build 'first'
                sleep 100
            }
        }
    }
}

```

☑ Use Groovy Sandbox ?

17. After SAVE build the pipeline again. This time it will be running with delay. Try to build multiple pipelines with multiple clicks parallely as:

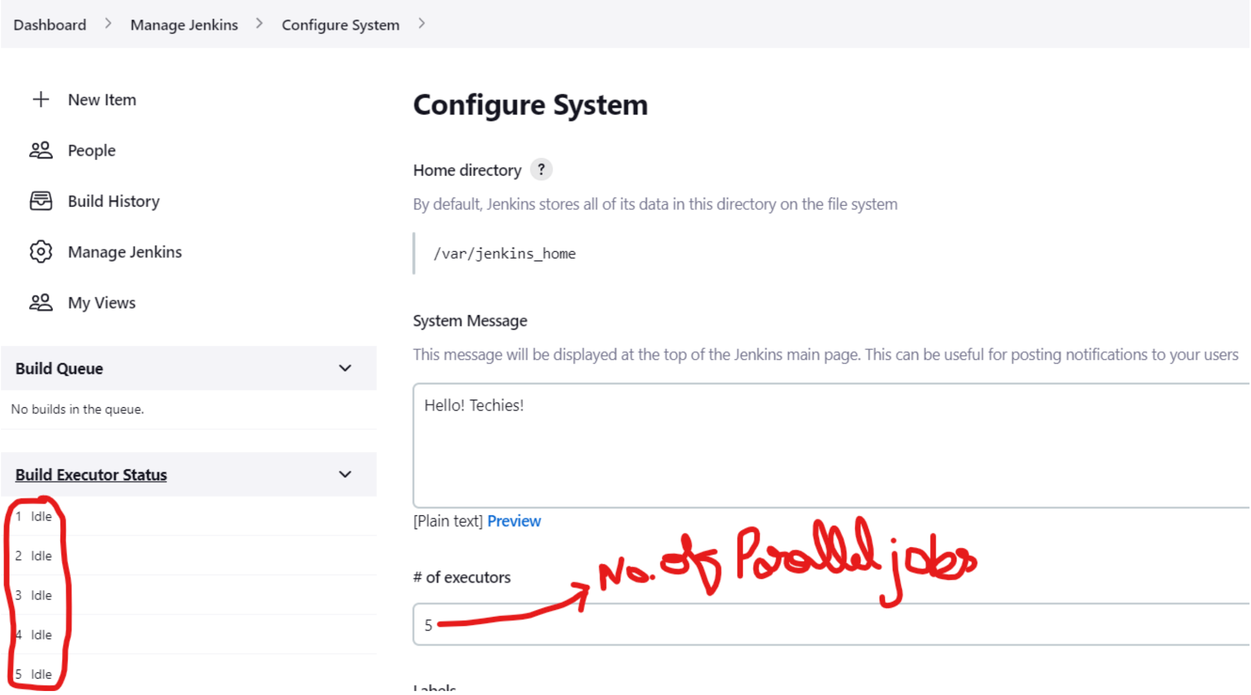


Build	Date
#8	Jul 29, 2022, 6:27 PM
#7	Jul 29, 2022, 6:27 PM
#6	Jul 29, 2022, 6:26 PM
#5	Jul 29, 2022, 6:26 PM
#4	Jul 29, 2022, 6:26 PM
#3	Jul 29, 2022, 6:26 PM
#2	Jul 29, 2022, 1:39 PM
#1	Jul 29, 2022, 12:48 PM

Average stage times:
(Average full run time: ~7s)

		Hello	Invoke and build: first
Average stage times		77ms	1min 16s
#8 Jul 29 23:57	No Changes		
		almost complete	
#7 Jul 29 23:57	No Changes	70ms	1min 19s
		almost complete	
#6 Jul 29 23:56	No Changes	67ms	1min 24s
		almost complete	
#5 Jul 29 23:56	No Changes	59ms	1min 29s
		almost complete	
#4 Jul 29 23:56	No Changes	73ms	1min 34s
		almost complete	
#3 Jul 29 23:56	No Changes	71ms	1min 37s
		almost complete	

18. But it will only execute 5 pipelines at a time because of jenkins general settings as done earlier from MANAGE JENKINS. If required, you can change the settings to a higher number.



Dashboard > Manage Jenkins > Configure System >

Configure System

Home directory ?

By default, Jenkins stores all of its data in this directory on the file system

/var/jenkins_home

System Message

This message will be displayed at the top of the Jenkins main page. This can be useful for posting notifications to your users

Hello! Techies!

[Plain text] Preview

# of executors

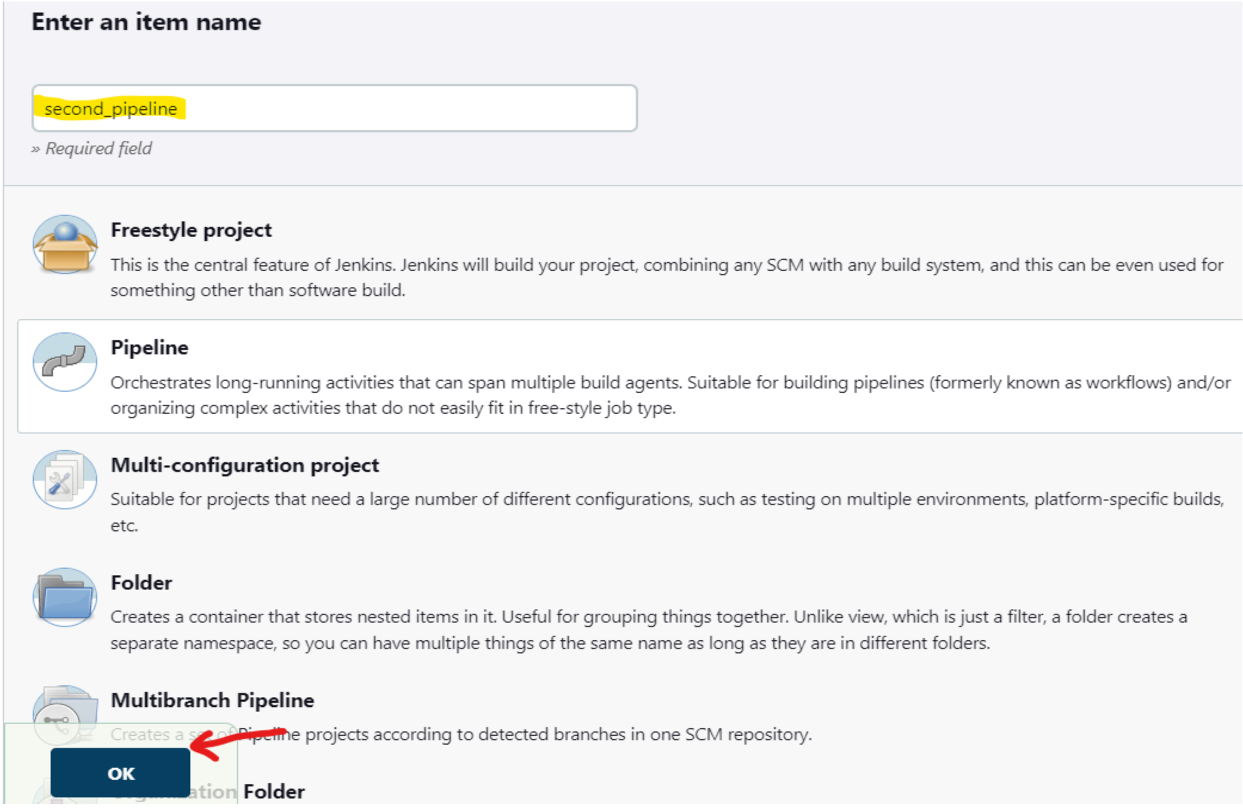
5

No. of Parallel jobs

Labels

PROJECT3: Jenkins Pipeline

1. Add a new pipeline project as second_pipeline. Click save.



Enter an item name

second_pipeline

» *Required field*

Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

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

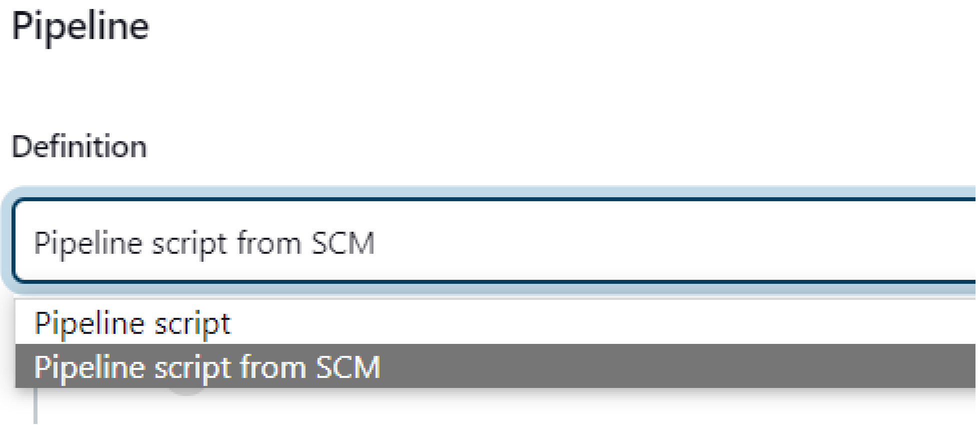
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.

Multibranch Pipeline

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

Organization Folder

2. This time, build pipeline from SCM instead of script by selecting **Pipeline script from SCM**. This means building a pipeline from git-link.

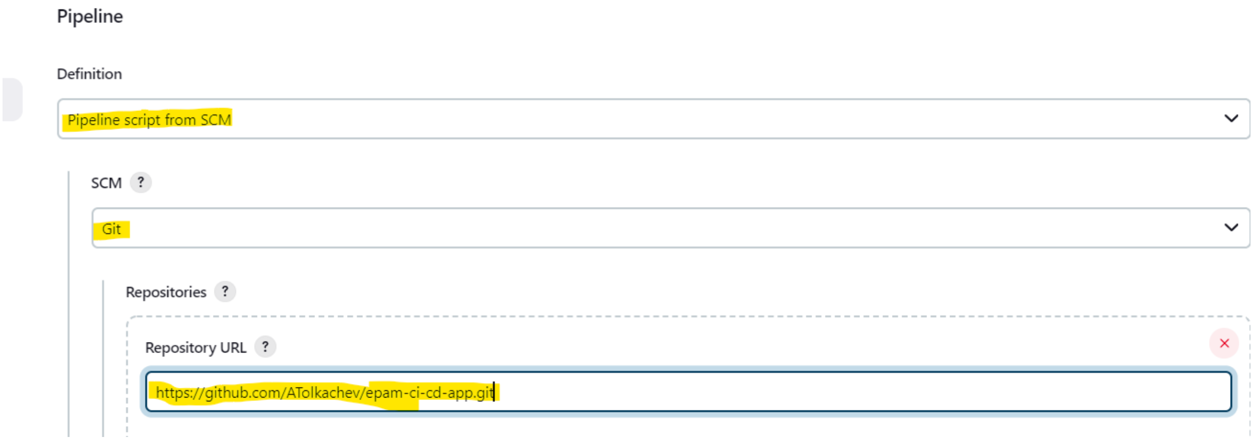


Pipeline

Definition

Pipeline script from SCM

3. Select Definition: **Pipeline script from SCM** and SCM: **Git**
Paste Repository URL: https://github.com/ATolkachev/epam-ci-cd-app.git
And **SAVE**



Pipeline

Definition

Pipeline script from SCM

SCM ?

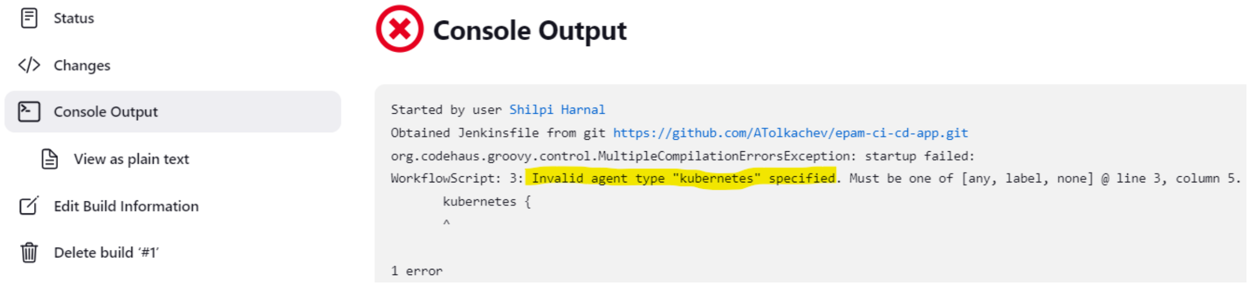
Git

Repositories ?

Repository URL ?

https://github.com/ATolkachev/epam-ci-cd-app.git

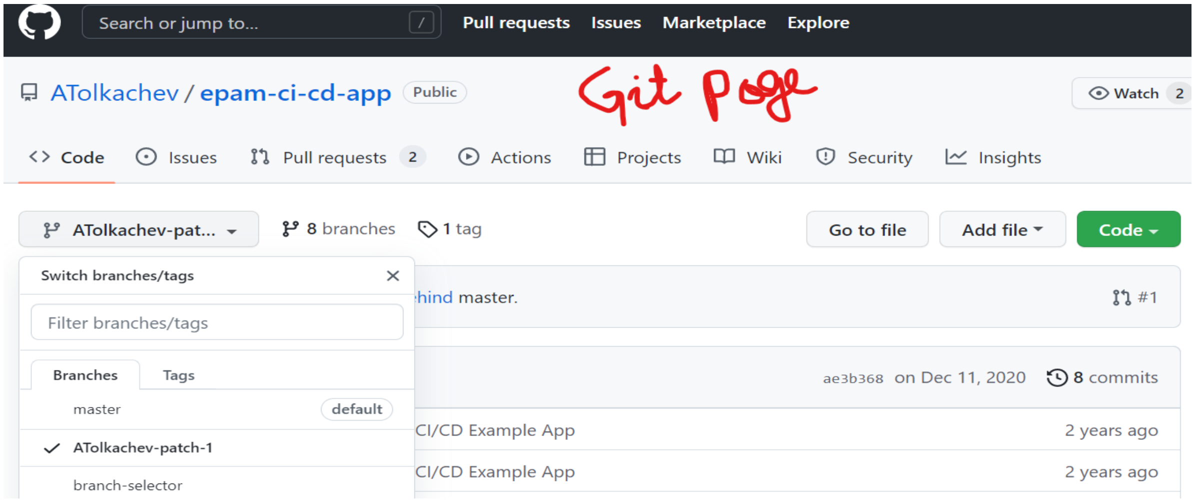
4. Build the pipeline and you will get an error because of some required plugin i.e. Kubernetives. Kubernetives plugin is required as it is mentioned in Git - Jenkinsfile but missing with Jenkins pipeline.



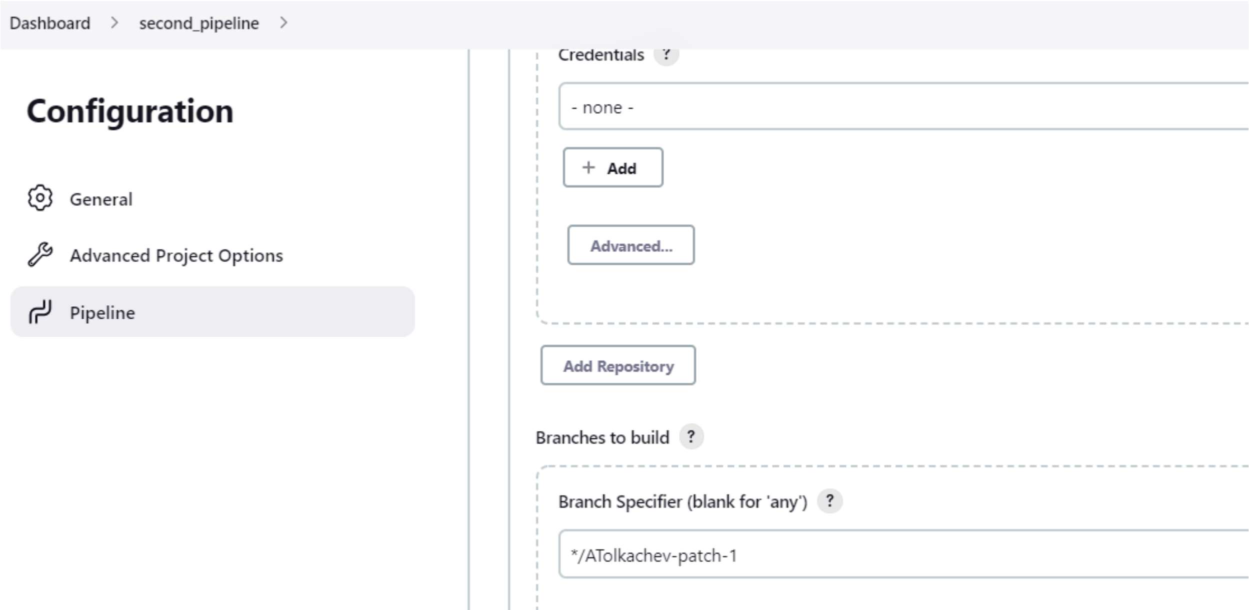
Console Output

```
Started by user Shilpi Harnal
Obtained Jenkinsfile from git https://github.com/ATolkachev/epam-ci-cd-app.git
org.codehaus.groovy.control.MultipleCompilationErrorsException: startup failed:
WorkflowScript: 3: Invalid agent type "kubernetes" specified. Must be one of [any, label, none] @ line 3, column 5.
       kubernetes {
       ^

1 error
```

5. Check Jenkinsfile path from Git as it is not having that plugin and reconfigure pipeline:



6. Click second_pipeline -> Configure
Change Branch Specifier from “*/master” to “*/ATolkachev-patch-1” and SAVE

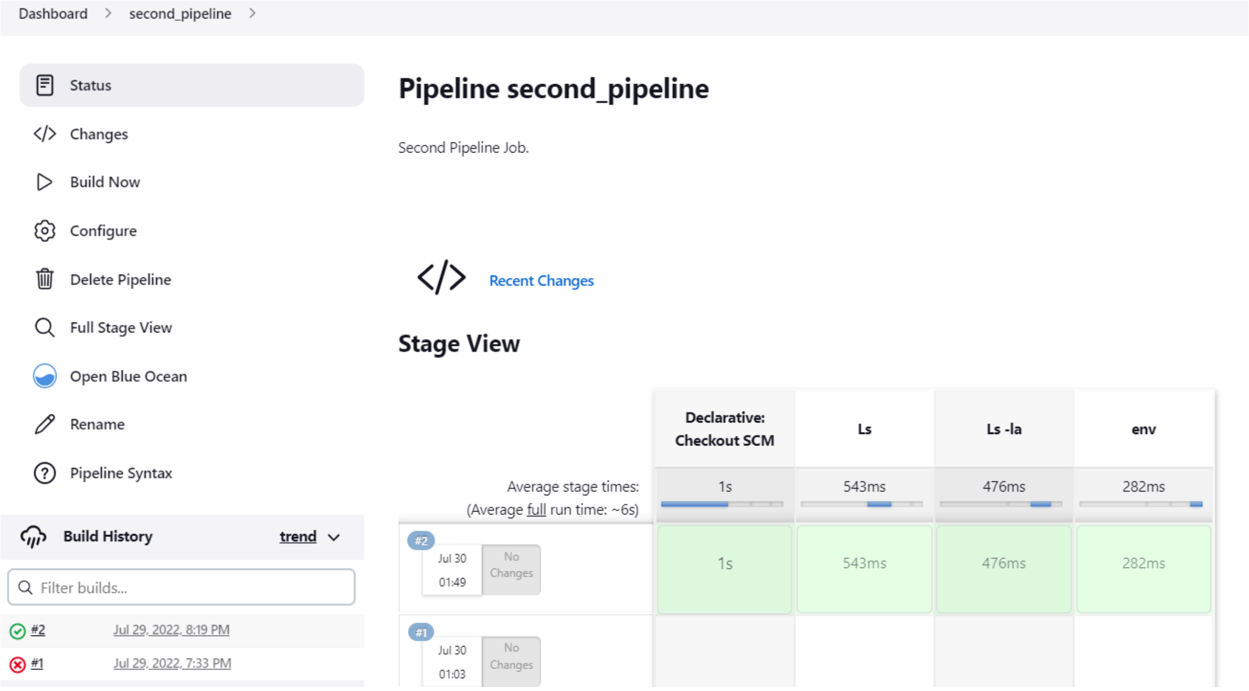


Credentials: - none -

Branches to build

Branch Specifier (blank for 'any'): */ATolkachev-patch-1

7. Rebuild the second_pipeline



Pipeline second_pipeline

Second Pipeline Job.

Build History:

#2	Jul 29, 2022, 8:19 PM
#1	Jul 29, 2022, 7:33 PM

Stage View

	Declarative: Checkout SCM	Ls	Ls -la	env
Average stage times: (Average full run time: ~6s)	1s	543ms	476ms	282ms
#2 Jul 30 01:49 No Changes	1s	543ms	476ms	282ms
#1 Jul 30 01:03 No Changes				

8. So the pipeline is now up and running from github repository.