1. Install Jenkins on one of the server on your setup (Local VM / Ec2 / WSL).

   Once Jenkins is installed , try install plugins with and without restart option.

   Please verify plugins installed successfully.

```
root@FARDIN:~# sudo apt update
Hit:1 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:2 https://apt.releases.hashicorp.com jammy InRelease
Hit:3 https://baltocdn.com/helm/stable/debian all InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:6 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:7 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
7 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

```
root@FARDIN:~# sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
  docutils-common libimagequant0 libraqm0 python3-botocore python3-certifi python3-chardet python3-colorama python3-dateutil
  python3-docutils python3-idna python3-jmespath python3-olefile python3-pil python3-pyasn1 python3-pygments python3-requests
  python3-roman python3-rsa python3-s3transfer python3-urllib3 sgml-base xml-core
Use 'sudo apt autoremove' to remove them.
Get more security updates through Ubuntu Pro with 'esm-apps' enabled:
  imagemagick libopenexr25 libmagickcore-6.q16-6-extra libmagickwand-6.q16-6
  imagemagick-6.q16 libmagickcore-6.q16-6 imagemagick-6-common
Learn more about Ubuntu Pro at https://ubuntu.com/pro
The following packages will be upgraded:
  docker-buildx-plugin docker-ce docker-ce-cli docker-ce-rootless-extras docker-compose-plugin dpkg libcups2
7 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Need to get 90.5 MB of archives.
After this operation, 4413 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 dpkg amd64 1.21.1ubuntu2.3 [1239 kB]
Get:2 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-buildx-plugin amd64 0.13.0-1~ubuntu.22.04~jammy [29.5 MB]
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 libcups2 amd64 2.4.1op1-1ubuntu4.8 [264 kB]
Get:4 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-ce-cli amd64 5:25.0.4-1~ubuntu.22.04~jammy [13.7 MB]
Get:5 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-ce amd64 5:25.0.4-1~ubuntu.22.04~jammy [24.3 MB]
Get:6 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-ce-rootless-extras amd64 5:25.0.4-1~ubuntu.22.04~jammy [9320
 kB]
Get:7 https://download.docker.com/linux/ubuntu jammy/stable amd64 docker-compose-plugin amd64 2.24.7-1~ubuntu.22.04~jammy [12.1 MB]
Fetched 90.5 MB in 10s (8712 kB/s)
(Reading database ... 34897 files and directories currently installed.)
Preparing to unpack .../dpkg_1.21.1ubuntu2.3_amd64.deb ...
```

Install jdk

```
root@FARDIN:~# sudo apt install default-jdk default-jre
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  docutils-common libimagequant0 libraqm0 python3-botocore python3-certifi python3-chardet python3-colorama python3-dateutil
  python3-docutils python3-idna python3-jmespath python3-olefile python3-pil python3-pyasn1 python3-pygments python3-requests
  python3-roman python3-rsa python3-s3transfer python3-urllib3 sgml-base xml-core
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
  alsa-topology-conf alsa-ucm-conf at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service default-jdk-headless
  default-jre-headless fonts-dejavu-core fonts-dejavu-extra gsettings-desktop-schemas java-common libasound2 libasound2-data
  libatk-bridge2.0-0 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0 libatk1.0-data libatspi2.0-0 libdconf1 libdrm-amdgpu1
  libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libfontenc1 libgif7 libgl1 libgl1-amber-dri libgl1-mesa-dri libglapi-mesa libglvnd0
  libglx-mesa0 libglx0 libice-dev libllvm15 libnspr4 libnss3 libpciaccess0 libpcsclite1 libpthread-stubs0-dev libsensors-config
  libsensors5 libsm-dev libx11-dev libx11-xcb1 libxau-dev libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0
  libxcb-shape0 libxcb-sync1 libxcb-xfixes0 libxcb1-dev libxcomposite1 libxdmcp-dev libxfixes3 libxft2 libxi6 libxinerama1
  libxkbfile1 libxrandr2 libxshmfence1 libxt-dev libxtst6 libxv1 libxxf86dga1 libxxf86vm1 openjdk-11-jdk openjdk-11-jdk-headless
  openjdk-11-jre openjdk-11-jre-headless session-migration x11-utils x11proto-dev xorg-sgml-doctools xtrans-dev
Suggested packages:
  libasound2-plugins alsa-utils libice-doc pcscd lm-sensors libsm-doc libx11-doc libxcb-doc libxt-doc openjdk-11-demo
  openjdk-11-source visualvm libnss-mdns fonts-ipafont-gothic fonts-ipafont-mincho fonts-wqy-microhei | fonts-wqy-zenhei
  fonts-indic mesa-utils
The following NEW packages will be installed:
  alsa-topology-conf alsa-ucm-conf at-spi2-core ca-certificates-java dconf-gsettings-backend dconf-service default-jdk
  default-jdk-headless default-jre default-jre-headless fonts-dejavu-core fonts-dejavu-extra gsettings-desktop-schemas java-common
  libasound2 libasound2-data libatk-bridge2.0-0 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0 libatk1.0-data
  libatspi2.0-0 libdconf1 libdrm-amdgpu1 libdrm-intel1 libdrm-nouveau2 libdrm-radeon1 libfontenc1 libgif7 libgl1 libgl1-amber-dri
  libgl1-mesa-dri libglapi-mesa libglvnd0 libglx-mesa0 libglx0 libice-dev libllvm15 libnspr4 libnss3 libpciaccess0 libpcsclite1
  libpthread-stubs0-dev libsensors-config libsensors5 libsm-dev libx11-dev libx11-xcb1 libxau-dev libxcb-dri2-0 libxcb-dri3-0
```

Setup GPG keys of the Jenkins repository

```
root@FARDIN:/mnt/f/jenkins# wget -q -O - https://pkg.jenkins.io/debian/jenkins.io.key | sudo gpg --dearmor -o /etc/apt/trusted.gpg.d/
jenkins.gpg
root@FARDIN:/mnt/f/jenkins# █
```

```
root@FARDIN:/mnt/f/jenkins# sudo apt update
Hit:1 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:2 https://baltocdn.com/helm/stable/debian all InRelease
Hit:3 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:4 http://archive.ubuntu.com/ubuntu jammy InRelease
Hit:5 http://archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:6 https://apt.releases.hashicorp.com jammy InRelease
Hit:7 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
root@FARDIN:/mnt/f/jenkins# █
```

```
root@FARDIN:/etc/apt/sources.list.d# docker container stop 08d17a04fd43
08d17a04fd43
root@FARDIN:/etc/apt/sources.list.d# systemctl start jenkins.service
root@FARDIN:/etc/apt/sources.list.d# systemctl status jenkins.service
● jenkins.service - Jenkins Continuous Integration Server
     Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
     Active: active (running) since Tue 2024-03-12 14:25:05 IST; 8s ago
   Main PID: 14353 (java)
      Tasks: 52 (limit: 4543)
     Memory: 1.1G
     CGroup: /system.slice/jenkins.service
             └─14353 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --http>

Mar 12 14:24:41 FARDIN jenkins[14353]: ad24d8bca14e446098c381b78ed83175
Mar 12 14:24:41 FARDIN jenkins[14353]: This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Mar 12 14:24:41 FARDIN jenkins[14353]: *******************************************************
Mar 12 14:24:41 FARDIN jenkins[14353]: *******************************************************
Mar 12 14:24:41 FARDIN jenkins[14353]: *******************************************************
Mar 12 14:25:00 FARDIN jenkins[14353]: 2024-03-12 08:55:00.714+0000 [id=52]        INFO        h.m.DownloadService$Downloadable#load>
Mar 12 14:25:00 FARDIN jenkins[14353]: 2024-03-12 08:55:00.724+0000 [id=52]        INFO        hudson.util.Retrier#start: Performed >
Mar 12 14:25:05 FARDIN jenkins[14353]: 2024-03-12 08:55:05.853+0000 [id=32]        INFO        jenkins.InitReactorRunner$1#onAttaine>
Mar 12 14:25:05 FARDIN jenkins[14353]: 2024-03-12 08:55:05.875+0000 [id=23]        INFO        hudson.lifecycle.Lifecycle#onReady: J>
Mar 12 14:25:05 FARDIN systemd[1]: Started Jenkins Continuous Integration Server.
lines 1-19/19 (END)
```

```
root@FARDIN:~# sudo more /var/lib/jenkins/secrets/initialAdminPassword
ad24d8bca14e446098c381b78ed83175
root@FARDIN:~# █
```
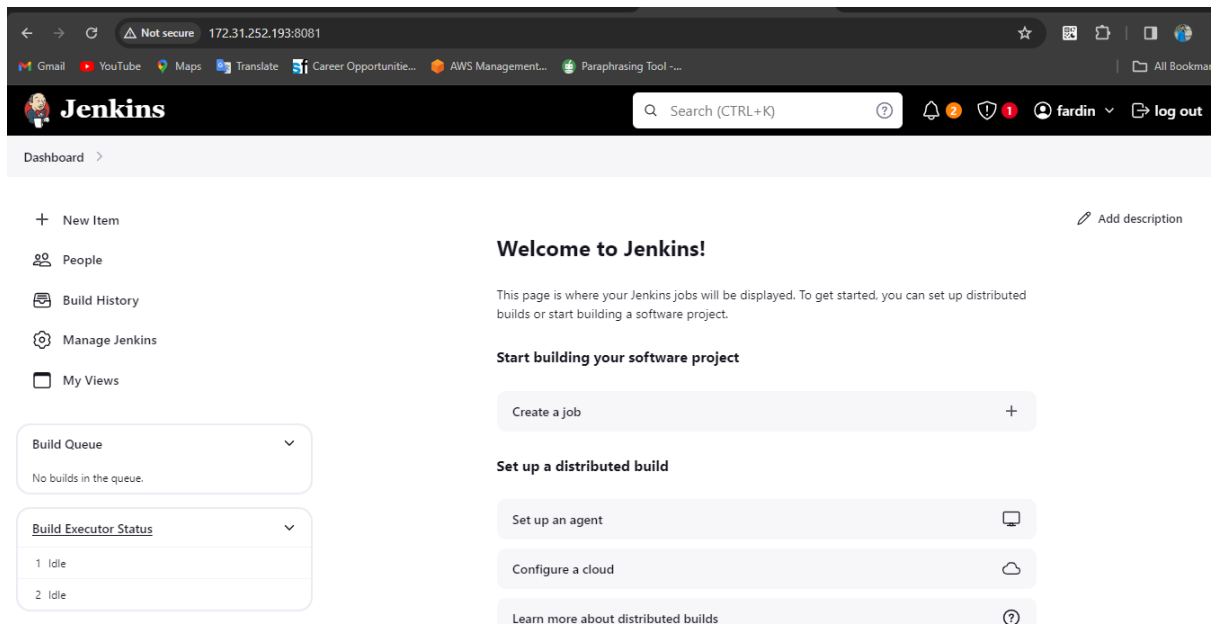
2. Create any 4 local Jenkins users on your Jenkins server. Also create 2 Jenkins roles named developers & delivery.

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
fardin	Fardin Pathan

Create User

Username

Bob

Password

•••

Confirm password

•••

Full name

Bob

Create User

Users

+ Create User

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		
alice	Alice	⚙	🗑
bob	Bob	⚙	🗑
fardin	Fardin Pathan	⚙	
manager	manager	⚙	🗑
wood	wood	⚙	🗑

Manage Roles

Global roles

Role	Overall		Credentials					Agent							Job								Run		
	Administer	Read	Create	Delete	ManageDomains	Update	View	Build	Configure	Connect	Create	Delete	Disconnect	Provision	Build	Cancel	Configure	Create	Delete	Discover	Move	Read	Workspace	Delete	Replay
admin	✓																								
developers																									
delivery																									

Role to add

Once roles are created, assign developers role to 3 users and delivery role to project Manager user

Manage Roles

Assign Roles

Permission Templates

Role Strategy Macros

Assign Roles

Global roles

User/Group	admin	delivery	developers
Anonymous			
Authenticated Users			
Fardin Pathan	✓		
Bob			✓
Alice			✓
manager		✓	
wood			✓

3. Create a Jenkins job named YOURNAME_Job_01 on a Jenkins Server.

  This job should run below given shell script in the job.

  Please check the console output of job and make sure it is successful.

```bash
#!/bin/bash
# This is a simple "Hello World" script
echo "Hello World!"
```

Status

</> Changes

Console Output

View as plain text

Edit Build Information

Delete build '#1'

Open Blue Ocean

✅ Console Output

```
Started by user Fardin Pathan
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/Fardin_job_01
[Fardin_job_01] $ /bin/bash /tmp/jenkins16101718724764896347.sh
Hello World!
[WS-CLEANUP] Deleting project workspace...
[WS-CLEANUP] Deferred wipeout is used...
[WS-CLEANUP] done
Finished: SUCCESS
```

Prepare well formatted document with screenshots.

4. Create a Jenkins job named YOURNAME_Job_02 that runs a shell script on a local server Jenkins.

The script should take in two parameters, e.g. num1, num2 from Jenkins.

This shell is taking 2 command line arguments as numbers.

Try to execute script locally to understand it more.

sh your_script_name.sh 11 12

#] vim your_script_name.sh

#!/bin/bash

#Define a variable named "name"
        name="John Doe"

#Print the value of the variable

```bash
echo "My name is $name"

#except the value from the user for two numbers and store the values in variables

num1 = $1
num2 = $2

#Use an if statement to check if the first number is greater than the second number

if [ $num1 -gt $num2 ]; then
        echo "$num1 is greater than $num2"
else
        echo "$num2 is greater than $num1"
fi

#Use a for loop to print the numbers from 1 to the value of the first number

for i in $(seq 1 $num1); do
        echo $i
done

#Print a message indicating that the script is finished
echo "Script finished."
```

Once script is tested locally

```
root@FARDIN:~# vim fardin.sh
root@FARDIN:~# chmod +x fardin.sh
root@FARDIN:~# ./fardin.sh 12 13
My name is John Doe
13 is greater than 12
1
2
3
4
5
6
7
8
9
10
11
12
Script finished.
```

Enter an item name

Fardin_job_02

» *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 etc.

OK

Folder

```bash
#!/bin/bash

#Define a variable named "name"
name="John Doe"

#Print the value of the variable
echo "My name is $name"

#except the value from the user for two numbers and store the values in variables
num1 = $1
num2 = $2

#Use an if statement to check if the first number is greater than the second number
if [ $num1 -gt $num2 ]; then
echo "$num1 is greater than $num2"
else
echo "$num2 is greater than $num1"
fi

              #Use a for loop to print the numbers from 1 to the value of the first number
```

Save   Apply

☑ This project is parameterized ?

≡ **String Parameter** ?   ⊗

Name ?

| num1 |

Default Value ?

| 12 |

Description ?

≡ **String Parameter** ?   ⊗

Name ?

| num2 |

Default Value ?

| 13 |

Description ?

Status

Changes

Workspace

Build with Parameters

Configure

Delete Project

Favorite

Open Blue Ocean

Rename

create 2 parameters in Jenkins and pass those parameters to the shell script.

Project Fardin_job_02
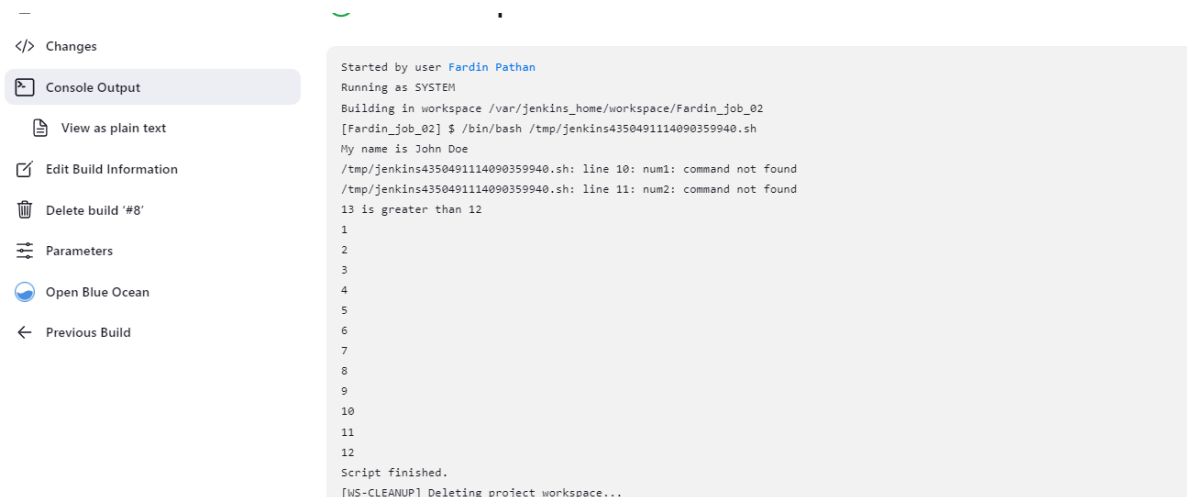
This build requires parameters:

num1

```
12
```

num2

```
13
```

▷ Build   Cancel

Run the Jenkins job and check the console out for detailed job logs.

```
Started by user Fardin Pathan
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/Fardin_job_02
[Fardin_job_02] $ /bin/bash /tmp/jenkins4350491114090359940.sh
My name is John Doe
/tmp/jenkins4350491114090359940.sh: line 10: num1: command not found
/tmp/jenkins4350491114090359940.sh: line 11: num2: command not found
13 is greater than 12
1
2
3
4
5
6
7
8
9
10
11
12
Script finished.
[WS-CLEANUP] Deleting project workspace...
```

5. Create a Jenkins job named YOURNAME_Job_03 that runs a shell script on a local server using Jenkins parameters.

The script should take in three parameters, liKE NAME, LAST_NAME, SHOW.

Print the NAME and LAST_NAME if value of SHOW is true.

#!/bin/bash

Define a variable and except the value from the user and store the values in variables

NAME=$1

LAST_NAME=$2

SHOW=$3

Use an if statement to check if the value SHOW is TRUE.

if [[$SHOW == "true"]]

then

echo " $NAME $LAST_NAME"

else

echo " Not allowed to show the Names "

fi

Print a message indicating that the script is finished

echo "Script finished."

```
root@FARDIN:~# vim fardin1.sh
root@FARDIN:~# chmod +x fardin1.sh
root@FARDIN:~# ./fardin1.sh john Doe true
 john Doe
Script finished.
root@FARDIN:~#
```

Enter an item name

```
Fardin_job_03
```
» *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
for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific etc.

OK

✓ This project is parameterized ?

≡ **String Parameter** ?   ✕

Name ?
```
NAME
```

Default Value ?
```
Fardin
```

Description ?

Save   **Apply**

String Parameter ?

Name ?

```
LAST_NAME
```

Default Value ?

```
Pathan
```

Description ?

```

```

Save   **Apply**

Configure

- ⚙ General
- ⑂ Source Code Management
- ⏱ Build Triggers
- 🌐 Build Environment
- ☰ Build Steps
- 📦 Post-build Actions

Choice Parameter ?

Name ?

```
SHOW
```

Choices ?

```
true
false
```

Description ?

```

```

- 📄 Status
- </> Changes
- ⌨ Console Output
  - 📄 View as plain text
- 📝 Edit Build Information
- 🗑 Delete build '#30'
- ⚙ Parameters
- 🔵 Open Blue Ocean
- ← Previous Build

✓ Console Output

```
Started by user Fardin Pathan
Running as SYSTEM
Building in workspace /var/jenkins_home/workspace/Fardin_job_03
[Fardin_job_03] $ /bin/sh -xe /tmp/jenkins534993019475298056.sh
+ bash /fardin1.sh Fardin Pathan true
 Fardin Pathan
Script finished.
[WS-CLEANUP] Deleting project workspace...
[WS-CLEANUP] Deferred wipeout is used...
[WS-CLEANUP] done
Finished: SUCCESS
```