

Jenkin Installation set up:

Downloading:

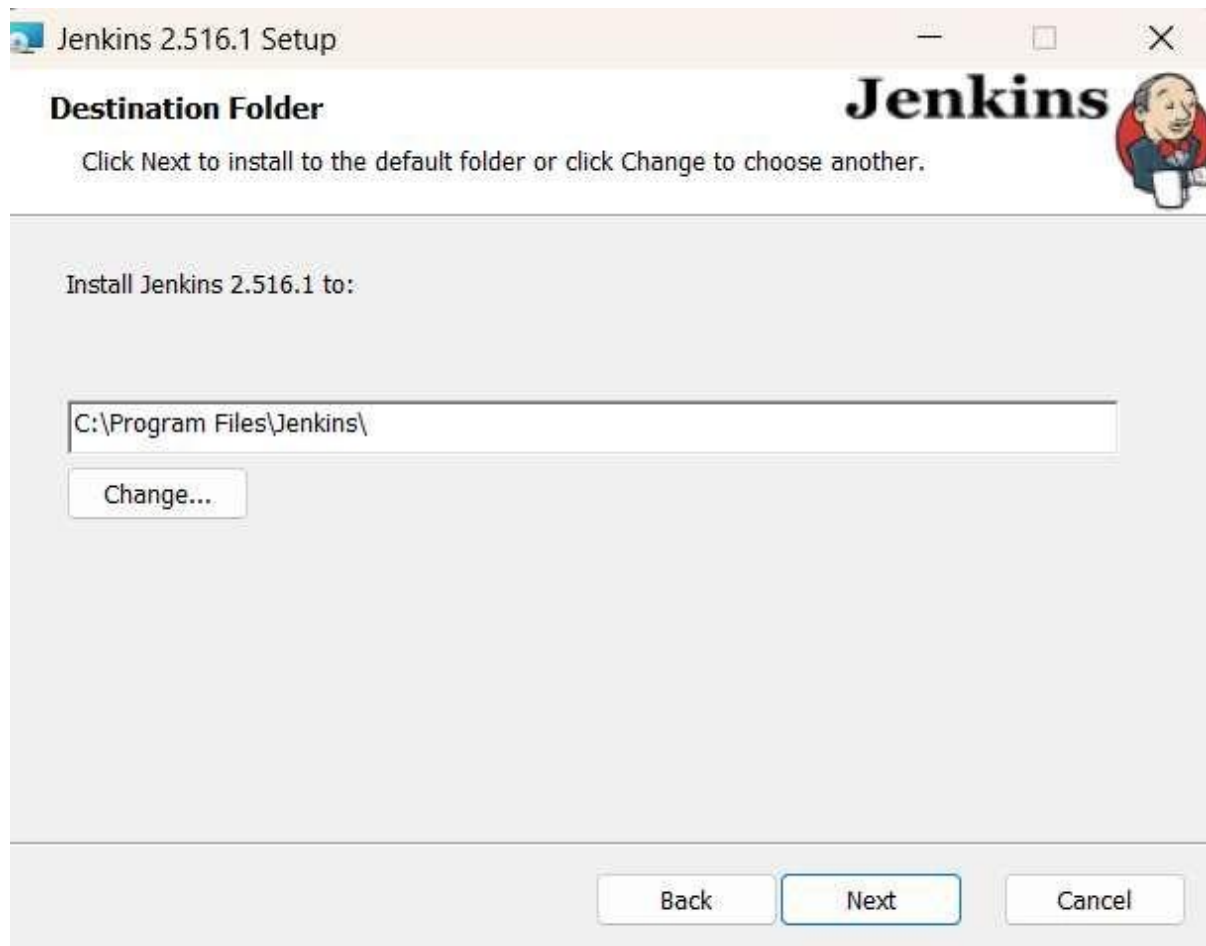
1. Type Jenkins in browser
2. Click on Jenkins.io website and click on download
3. Scroll down and select windows from “Download Jenkins 2.504.3LTS for:”
4. It download Jenkins.msi

Installation:

5. After Downloading double click on .msi file.



6. It gives the default folder to install select next



7. Select “Run service as a local system“ click next.



The screenshot shows the 'Jenkins 2.516.1 Setup' window. The title bar includes the Jenkins logo and the text 'Jenkins 2.516.1 Setup'. The main heading is 'Service Logon Credentials' with the instruction 'Enter service credentials for the service.' Below this, a paragraph states: 'Jenkins 2.516.1 installs and runs as an independent Windows service. To operate in this manner, you must supply the user account credentials for Jenkins 2.516.1 to run successfully.'

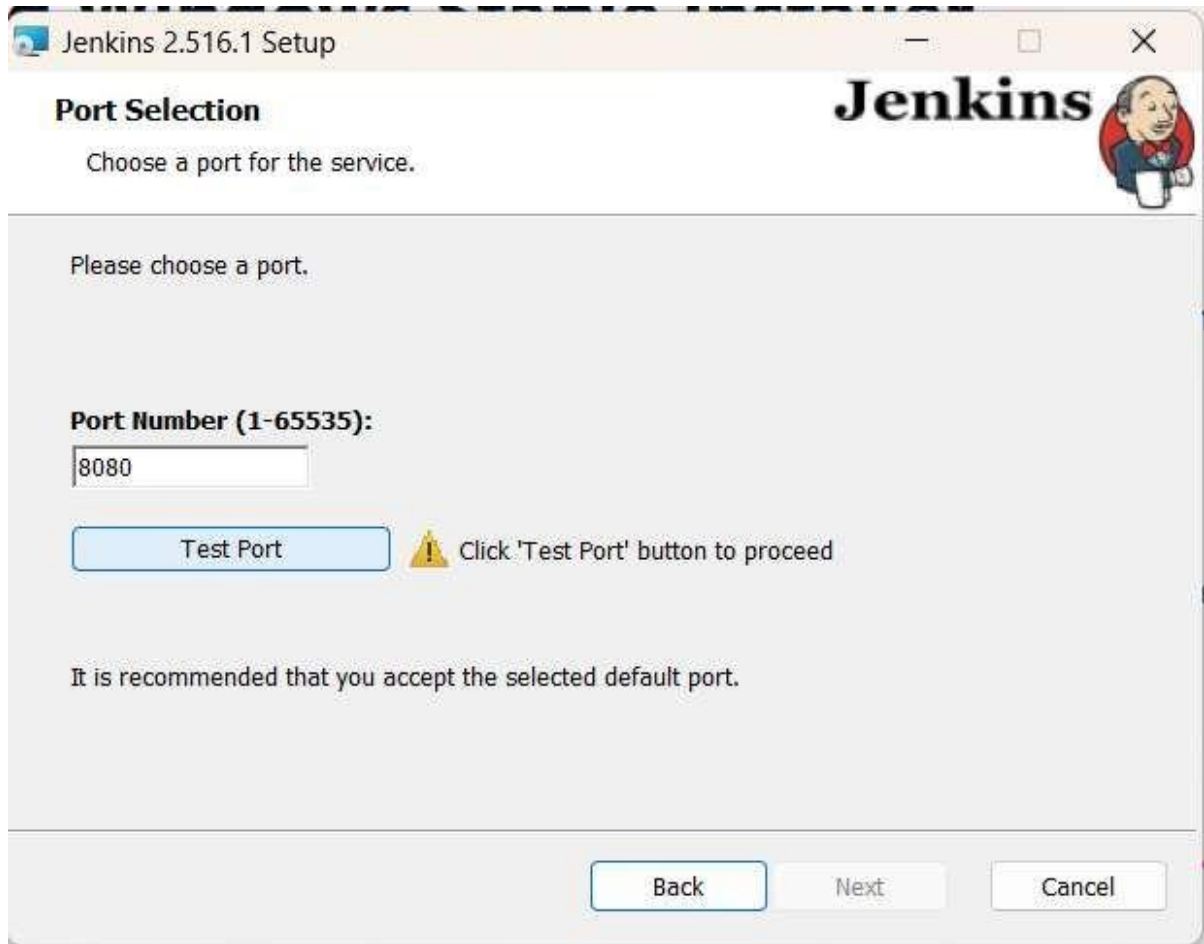
Logon Type:

- ☒ Run service as LocalSystem (not recommended)
- ☐ Run service as local or domain user:

Below the radio buttons are two input fields: 'Account:' and 'Password:'. A 'Test Credentials' button is located below these fields.

At the bottom right, there are three buttons: 'Back', 'Next' (highlighted with a blue border), and 'Cancel'.

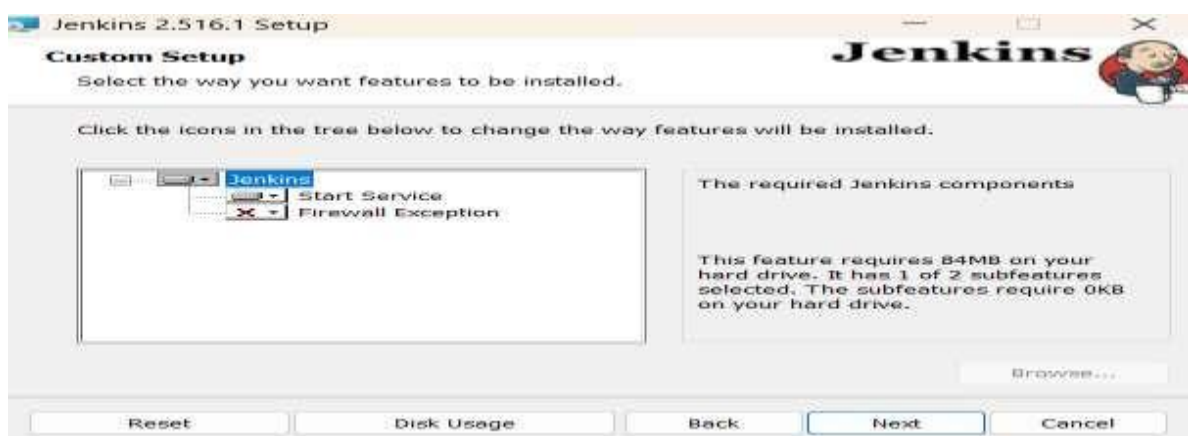
8. It gives default port number 8080. Click on test port if available it gives tick mark.



9. It gives the path automatically ,otherwise select the proper java path by clicking change button (“C:\Program Files\Java\jdk-17) Click next.



10. click next again



11. Click Install



12. click finish



13. type localhost:8080 in browser

14. Goto the location "C:\programData\Jenkins\.jenkins\secrets" for initial password



15. Open Initial Admin Password using notepad copy the password and paste in the above Adminstarte password. And click on continue.



The screenshot shows the 'Getting Started' window for Jenkins. The title is 'Unlock Jenkins'. Below the title, it says: '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:'. Below this, a file path is shown in red: `C:\ProgramData\Jenkins\jenkins\secrets\initialAdminPassword`. Then it says: 'Please copy the password from either location and paste it below.' There is a text input field labeled 'Administrator password' with a masked password '*****'. At the bottom right, there is a blue 'Continue' button.

16. Click on install suggested plugins.



The screenshot shows the 'Getting Started' window for Jenkins. The title is 'Customize Jenkins'. Below the title, it says: 'Plugins extend Jenkins with additional features to support many different needs.' There are two main options: 'Install suggested plugins' (highlighted with a blue border) and 'Select plugins to install'. Under 'Install suggested plugins', it says: 'Install plugins the Jenkins community finds most useful.' Under 'Select plugins to install', it says: 'Select and install plugins most suitable for your needs.' At the bottom left, it says 'Jenkins 2.516.1'.

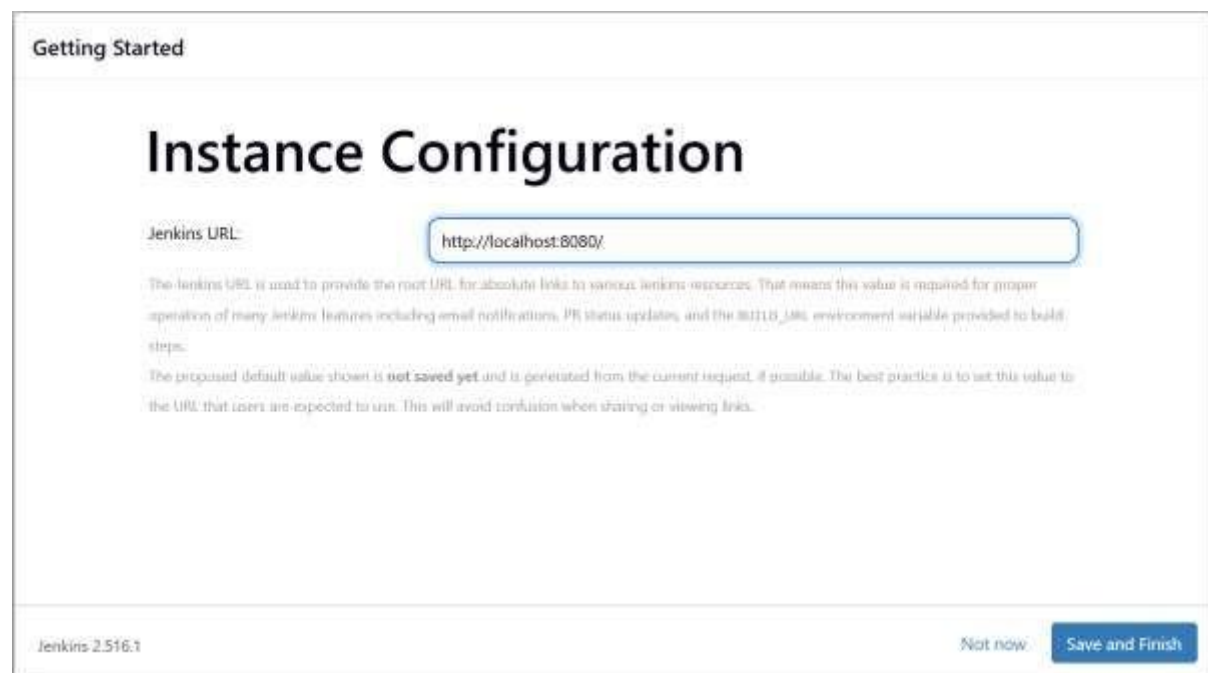
17. Then create first admin user by giving username and password



The screenshot shows the 'Getting Started' section of the Jenkins installation wizard. The main heading is 'Create First Admin User'. Below this, there are three input fields: 'Username', 'Password', and 'Confirm password'. At the bottom of the form, there is a 'Jenkins 2.516.1' label on the left, a 'Skip and continue as admin' link in the middle, and a 'Save and Continue' button on the right.

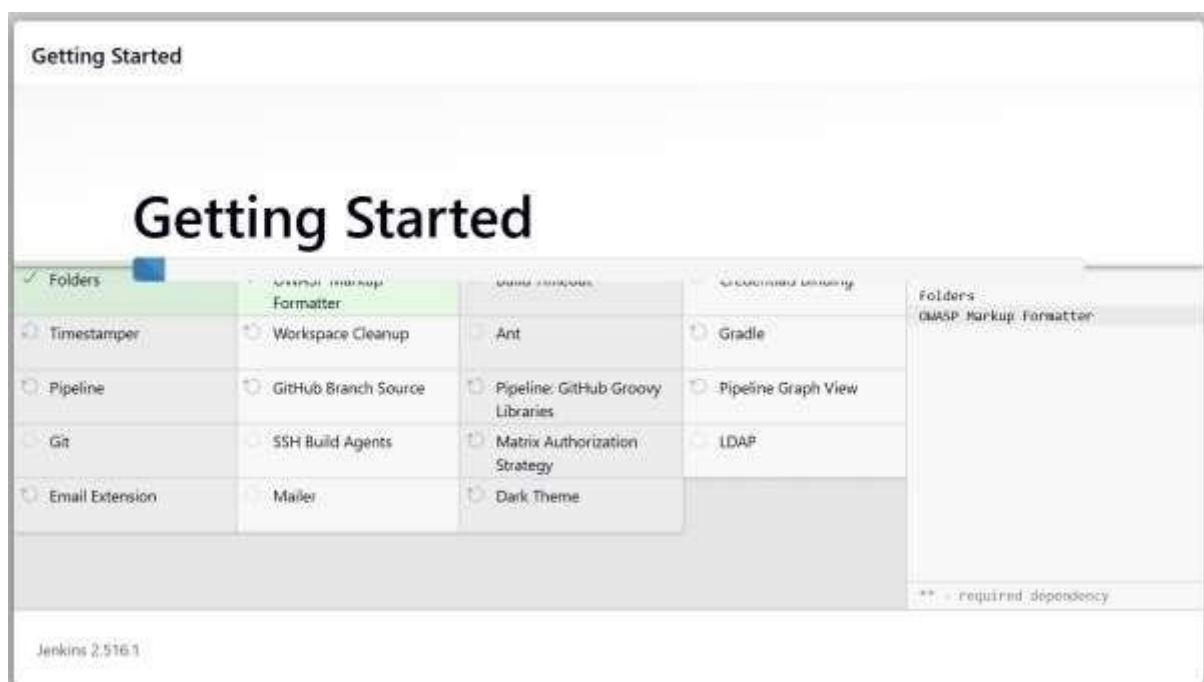
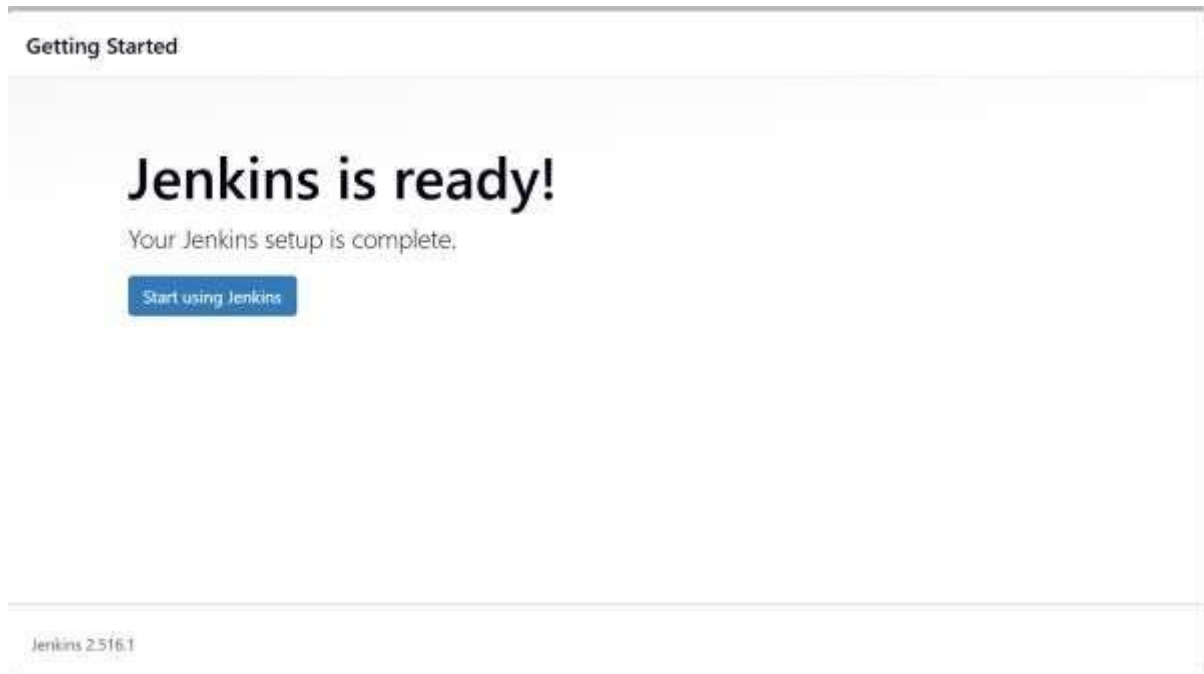
18. click on save and continue.

19. It gives Url, just click on save and finish



The screenshot shows the 'Getting Started' section of the Jenkins installation wizard. The main heading is 'Instance Configuration'. Below this, there is a 'Jenkins URL' label and a text input field containing 'http://localhost:8080/'. Below the input field, there is a paragraph of text explaining the purpose of the Jenkins URL. At the bottom of the form, there is a 'Jenkins 2.516.1' label on the left, a 'Not now' link in the middle, and a 'Save and Finish' button on the right.

20. Click on start using Jenkins. Redirects to the Jenkins page.



Steps to Create a Job:

1. Click on create new item

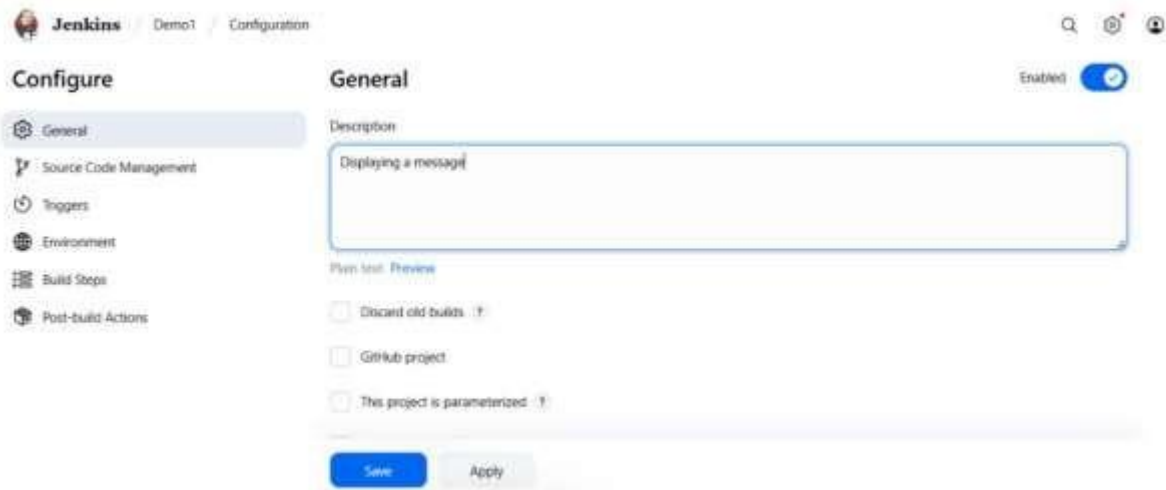


2. Give the name

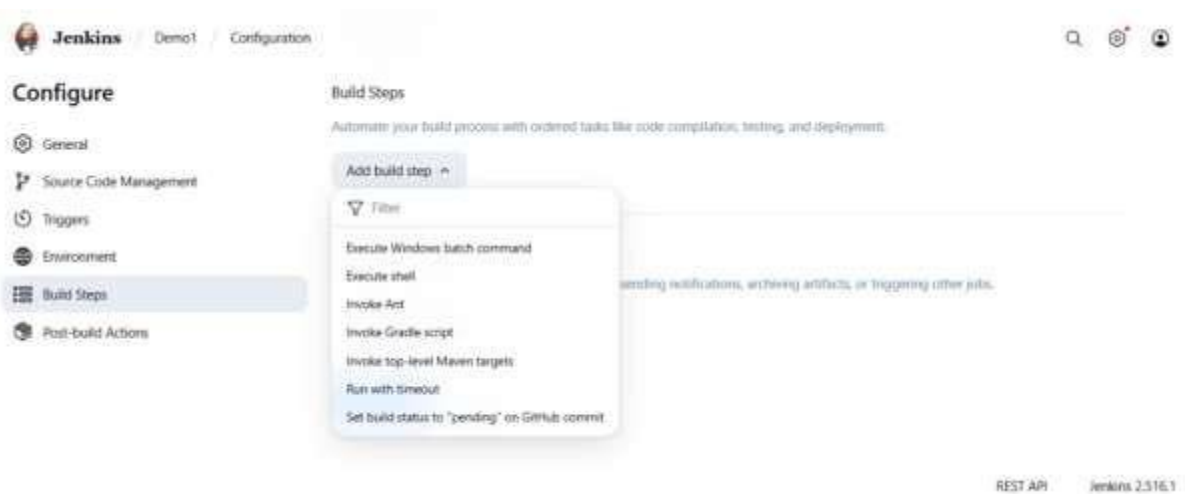


3. Select the free style project and click on ok.

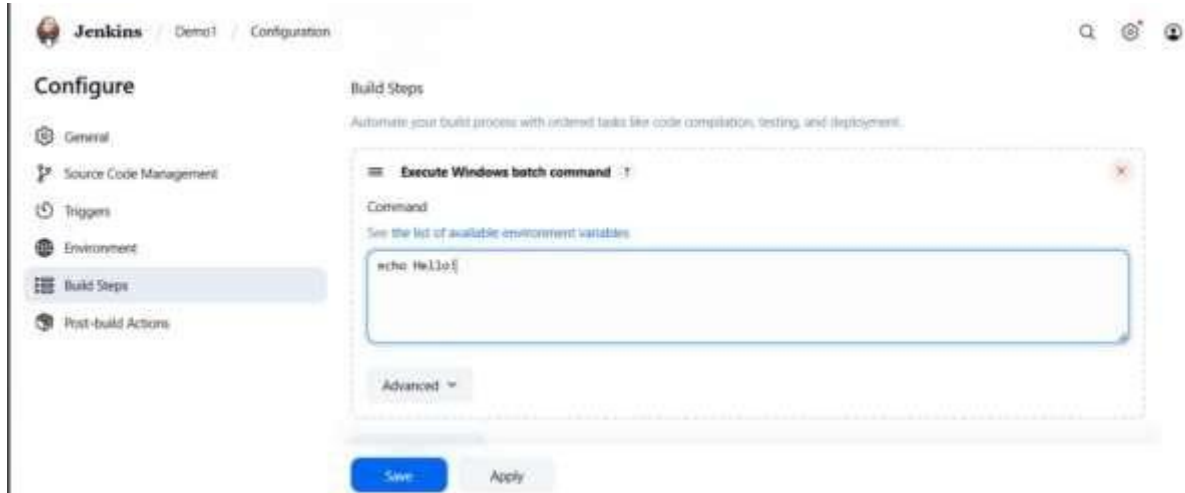
4. In the configuration give general description



5. Scroll Down go to build steps : execute windows batch commands

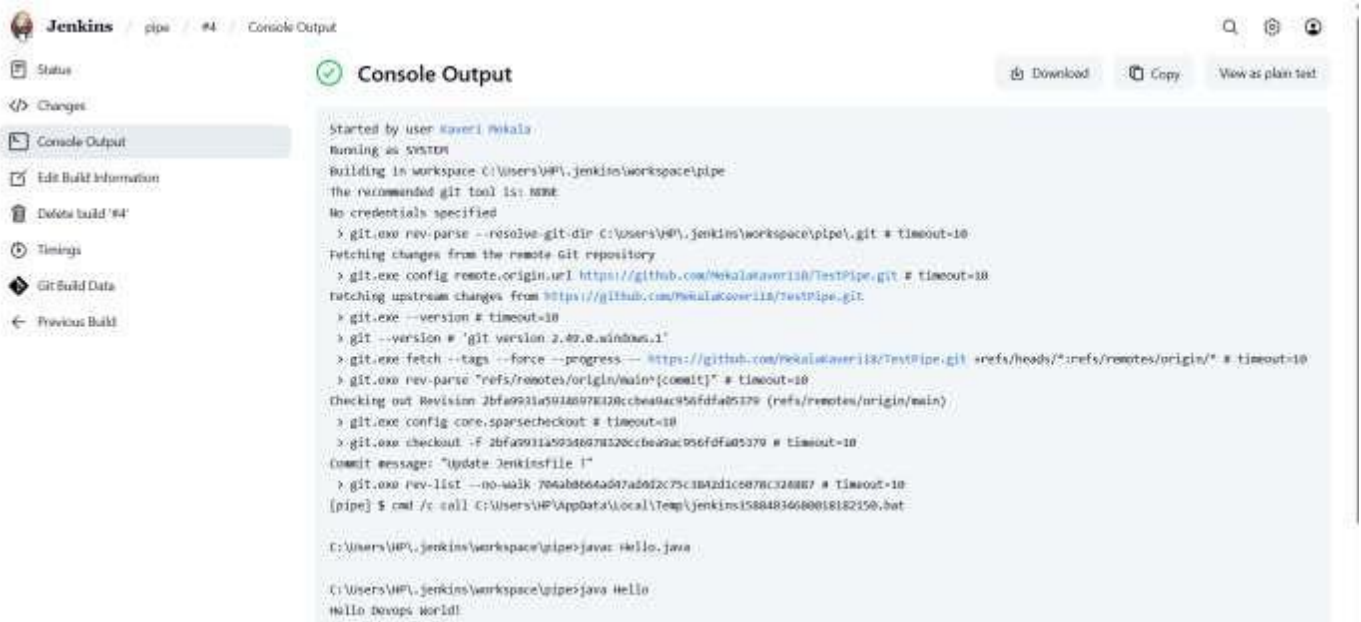


6. click save



7. Then build now





Jenkins / pipe / #4 / Console Output

Download Copy View as plain text

Console Output

```
Started by user kaveri @kalis
Running as SYSTEM
Building in workspace C:\Users\HP\jenkins\workspace\pipe
The recommended git tool is: none
No credentials specified
> git.exe rev-parse --resolve-git-dir C:\Users\HP\jenkins\workspace\pipe\.git # timeout=10
Fetching changes from the remote Git repository
> git.exe config remote.origin.url https://github.com/keralakaveri138/TestPipe.git # timeout=10
Ratching upstream changes from https://github.com/keralakaveri138/TestPipe.git
> git.exe --version # timeout=10
> git --version # 'git version 2.40.0.windows.1'
> git.exe fetch --tags --force --progress -- https://github.com/keralakaveri138/TestPipe.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git.exe rev-parse 'refs/remotes/origin/main:{commit}' # timeout=10
Checking out Revision 2bfa9911a59346078128cbe99ac956fda05379 (refs/remotes/origin/main)
> git.exe config core.sparsecheckout # timeout=10
> git.exe checkout -f 2bfa9911a59346078128cbe99ac956fda05379 # timeout=10
Commit message: "Update Jenkinsfile 1"
> git.exe rev-list --no-walk 706ab8664a07a062c75c1b42d1c0878c328887 # timeout=10
[pipe] $ cmd /c call C:\Users\HP\AppData\Local\Temp\jenkins15884834600018182150.bat

C:\Users\HP\jenkins\workspace\pipe>java: Hello, java

C:\Users\HP\jenkins\workspace\pipe>java Hello
Hello Devops World!
```



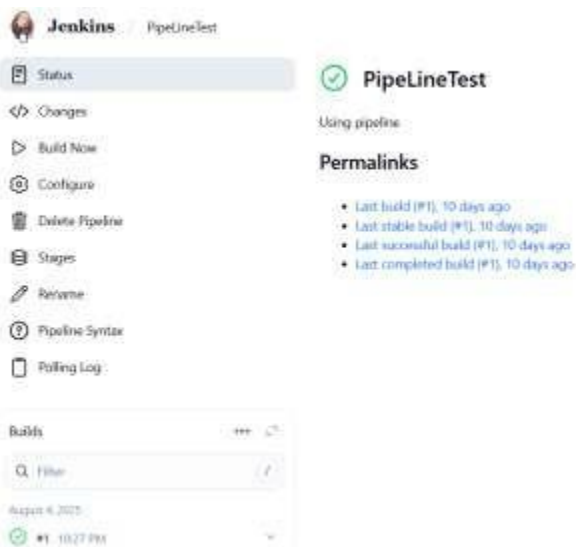
The screenshot shows the Jenkins interface for a pipeline named 'PipelineTest' with build #1. The 'Console Output' tab is selected, displaying the following log:

```
Started by an SCM change
Resume disabled by user, switching to high-performance, low-durability mode.
[Pipeline] start of Pipeline
[Pipeline] node
Running on Jenkins in C:\Users\user\jenkins\workspace\PipelineTest
[Pipeline] {
[Pipeline] stage
[Pipeline] { (hello)
[Pipeline] echo
hello world
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] end of Pipeline
Finished: SUCCESS
```

At the bottom right, it shows 'Build API' and 'Jenkins 2.516.1'.

Stages

August 4, 2025



The screenshot shows the Jenkins interface for 'PipeLineTest'. The 'Status' tab is selected, showing a green checkmark and the text 'Using pipeline'. Below this, the 'Permalinks' section lists:

- Last build (#1), 10 days ago
- Last stable build (#1), 10 days ago
- Last successful build (#1), 10 days ago
- Last completed build (#1), 10 days ago

At the bottom, there is a 'Builds' section with a search bar and a list of builds. The first build is #1, dated August 6, 2025, at 10:27 PM, with a green checkmark.



```
Started by an SCM change
Obtained Jenkinsfile from git https://github.com/MekalaKaveri18/TestingFact.git
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in C:\Users\HP\.jenkins\workspace\TestFact
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Declarative: Checkout SCM)
[Pipeline] checkout
Selected git installation does not exist, using Default
The recommended git tool is: NONE
No credentials specified
> git.exe rev-parse --resolve-git-dir C:\Users\HP\.jenkins\workspace\TestFact\.git # timeout=10
Fetching changes from the remote Git repository
> git.exe config remote.origin.url https://github.com/MekalaKaveri18/TestingFact.git # timeout=10
Fetching upstream changes from https://github.com/MekalaKaveri18/TestingFact.git
> git.exe --version # timeout=10
> git --version # "git version 2.49.0.windows.1"
> git.exe fetch --tags --force --progress -- https://github.com/MekalaKaveri18/TestingFact.git --no-fs/heads --no-fs/remotes/origin/* # timeout=10
> git.exe rev-parse "refs/remotes/origin/main" # timeout=10
Checking out Revision 486cd55032d70b4d0000f1b2d73ac1b8a215 (refs/remotes/origin/main)
> git.exe config core.sparsecheckout # timeout=10
> git.exe checkout -f 486cd55032d70b4d0000f1b2d73ac1b8a215 # timeout=10
Commit message: "correct manifest.txt"
```

Started by an SCM change

Obtained Jenkinsfile from git <https://github.com/MekalaKaveri18/TestingFact.git>

[Pipeline] Start of Pipeline

[Pipeline] node

Running on Jenkins

in C:\Users\HP\.jenkins\workspace\TestFact

[Pipeline] {

[Pipeline] stage

[Pipeline] { (Declarative: Checkout SCM)

[Pipeline] checkout

Selected Git installation does not exist. Using Default

The recommended git tool is: NONE

No credentials specified

```
> git.exe rev-parse --resolve-git-dir C:\Users\HP\.jenkins\workspace\TestFact\.git #
timeout=10
```

Fetching changes from the remote Git repository

```
> git.exe config remote.origin.url https://github.com/MekalaKaveri18/TestingFact.git #
timeout=10
```


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Fetching upstream changes from <https://github.com/MekalaKaveri18/TestingFact.git>

```
> git.exe --version # timeout=10
```

```
> git --version # 'git version 2.49.0.windows.1'
```

```
> git.exe fetch --tags --force --progress -- https://github.com/MekalaKaveri18/TestingFact.git  
+refs/heads/*:refs/remotes/origin/* # timeout=10
```

```
> git.exe rev-parse "refs/remotes/origin/main^{commit}" # timeout=10
```

Checking out Revision 406cd55932d788ab030098f1b29d73ac1b88a215
(refs/remotes/origin/main)

```
> git.exe config core.sparsecheckout # timeout=10
```

```
> git.exe checkout -f 406cd55932d788ab030098f1b29d73ac1b88a215 # timeout=10
```

Commit message: "correct manifest.txt"

```
> git.exe rev-list --no-walk 0b16e1914be29e74b483e18bce395bd1c3f207e8 # timeout=10
```

```
[Pipeline] }
```

```
[Pipeline] // stage
```

```
[Pipeline] withEnv
```

```
[Pipeline] {
```

```
[Pipeline] stage
```

```
[Pipeline] { (compile)
```

```
[Pipeline] bat
```

```
C:\Users\HP\.jenkins\workspace\TestFact>javac Factorial.java TestFact.java
```

```
[Pipeline] }
```

```
[Pipeline] // stage
```

```
[Pipeline] stage
```

```
[Pipeline] { (Test)
```

```
[Pipeline] bat
```

```
C:\Users\HP\.jenkins\workspace\TestFact>java TestFact.java
```

All tests passed

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```
[Pipeline] }
```

```
[Pipeline] // stage
```

```
[Pipeline] stage
```

```
[Pipeline] { (Run)
```

```
[Pipeline] bat
```

```
C:\Users\HP\.jenkins\workspace\TestFact>java Factorial.java
```

```
Factorial of 5 is 120
```

```
[Pipeline] }
```

```
[Pipeline] // stage
```

```
[Pipeline] stage
```

```
[Pipeline] { (Package JAR)
```

```
[Pipeline] bat
```

```
C:\Users\HP\.jenkins\workspace\TestFact>jar cfm factorial.jar manifest.txt Factorial.class
```

```
[Pipeline] }
```

```
[Pipeline] // stage
```

```
[Pipeline] stage
```

```
[Pipeline] { (Archive JAR)
```

```
[Pipeline] archiveArtifacts
```

```
Archiving artifacts
```

```
[Pipeline] }
```

```
[Pipeline] // stage
```

```
[Pipeline] stage
```

```
[Pipeline] { (Declarative: Post Actions)
```

```
[Pipeline] echo
```

```
Build,test,run and jar creation successful and artifact is ready!
```

```
[Pipeline] }
```

[Pipeline] // stage

[Pipeline] }

[Pipeline] // withEnv

[Pipeline] }

[Pipeline] // node

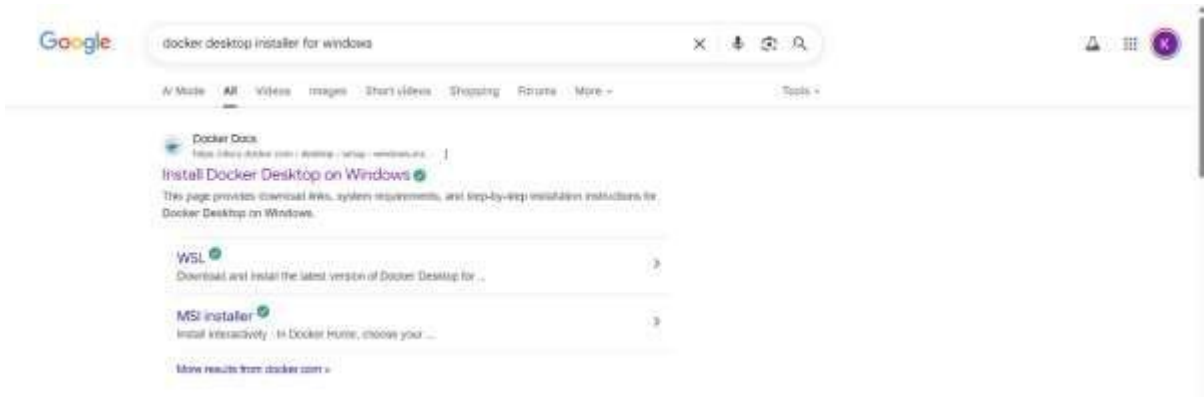
[Pipeline] End of Pipeline

Finished: SUCCESS

The screenshot displays the Jenkins interface for a pipeline named 'TestFact'. On the left, a sidebar contains navigation links: Status, Changes, Build Now, Configure, Delete Pipeline, Stages, Rename, Pipeline Syntax, and Git Polling Log. The main area shows the pipeline's status as 'Testing' with a green checkmark. Below this, a section titled 'Permalinks' lists various build links, including 'Last build (#13)', 'Last stable build (#13)', 'Last successful build (#13)', 'Last failed build (#11)', 'Last unsuccessful build (#11)', and 'Last completed build (#13)'. A 'Builds' section shows a list of builds for August 5, 2025, with build #13 at 4:58 PM marked as successful. The 'Stages' section shows a timeline of the pipeline's execution, including stages like 'Checkout SCM', 'compile', 'Test', 'Run', 'Package JAR', 'Archive JAR', and 'Post Actions', all of which are marked as successful with green checkmarks.

Steps to Install Docker Desktop:

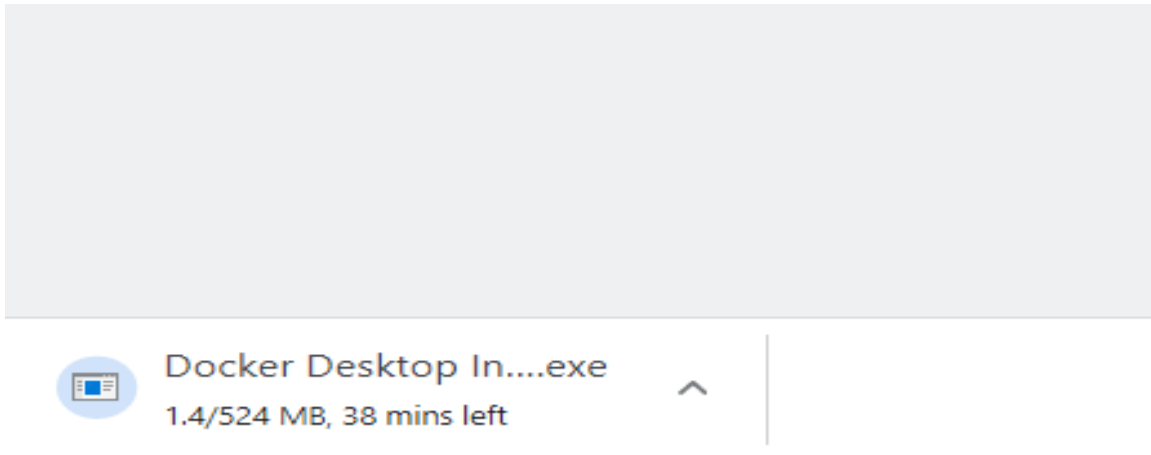
1) Open the web browser & type dockerdcs.com



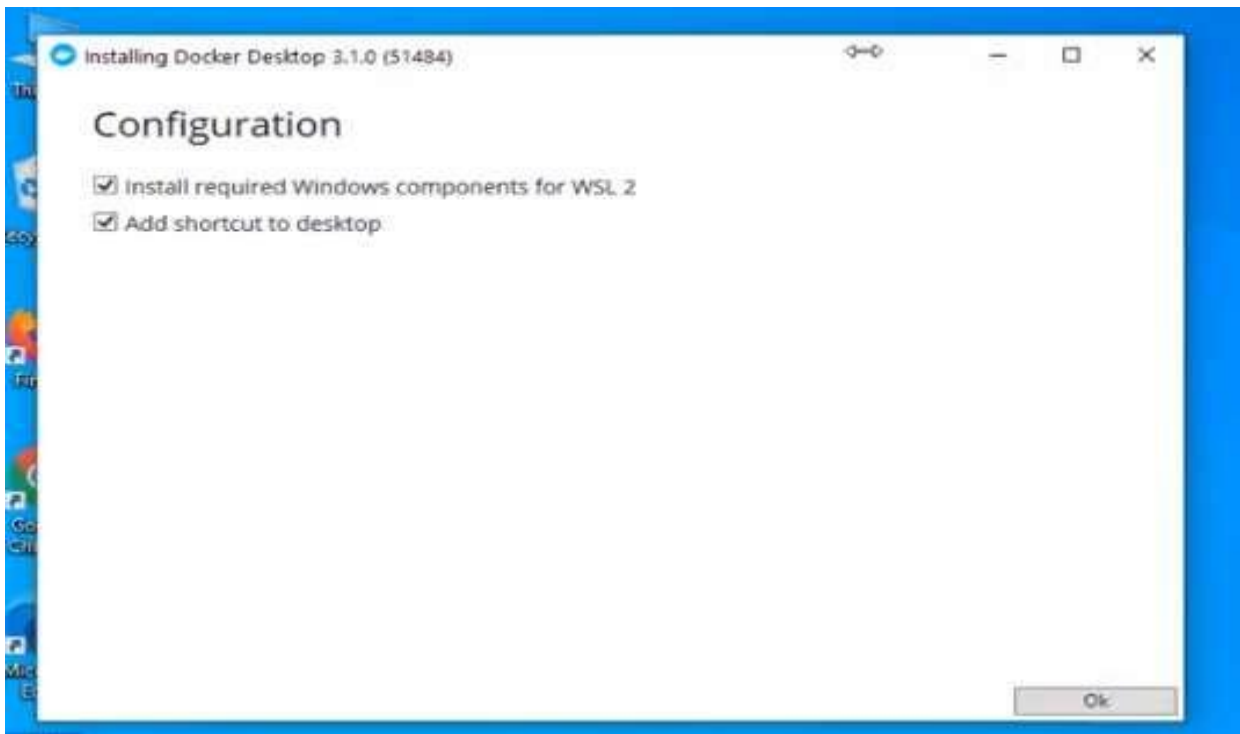
2) Click on getdocker, download docker for windows with latest version.



3) The download will begin automatically. The duration will depend on your internet speed.

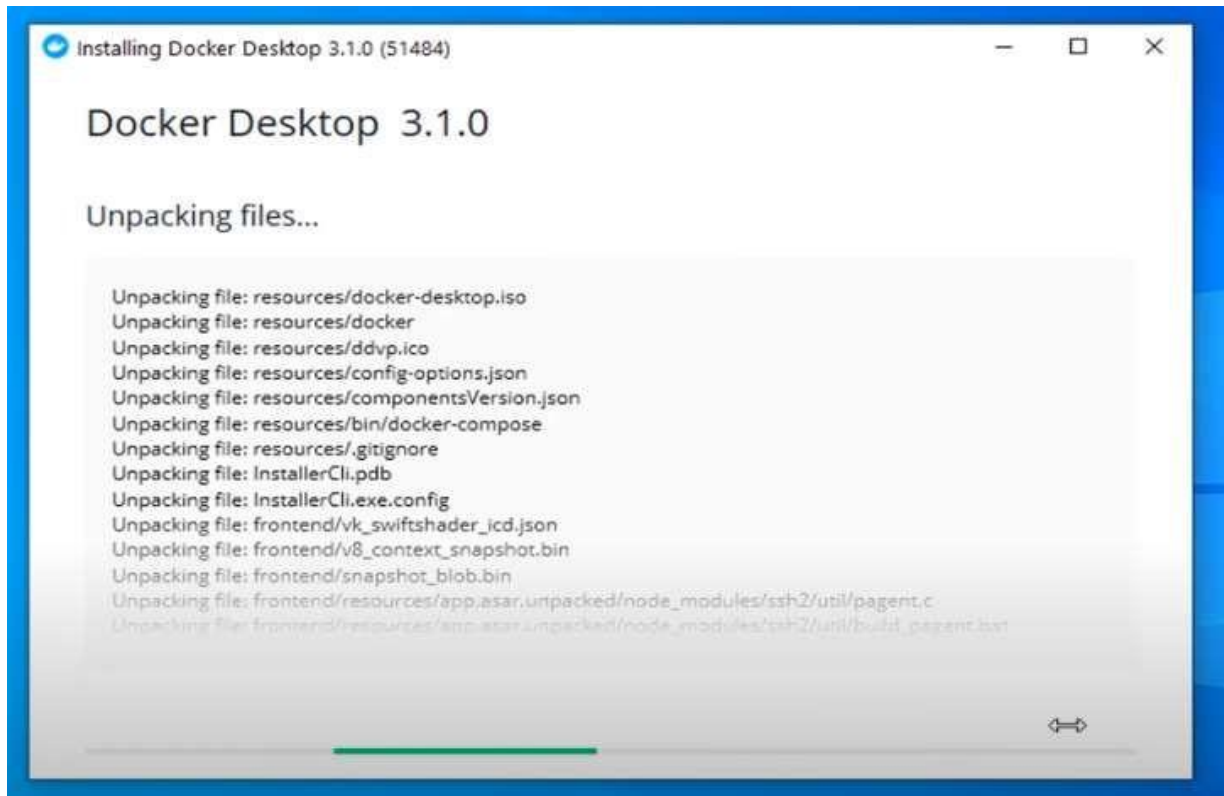


4)After installation open Docker Desktop click continue.

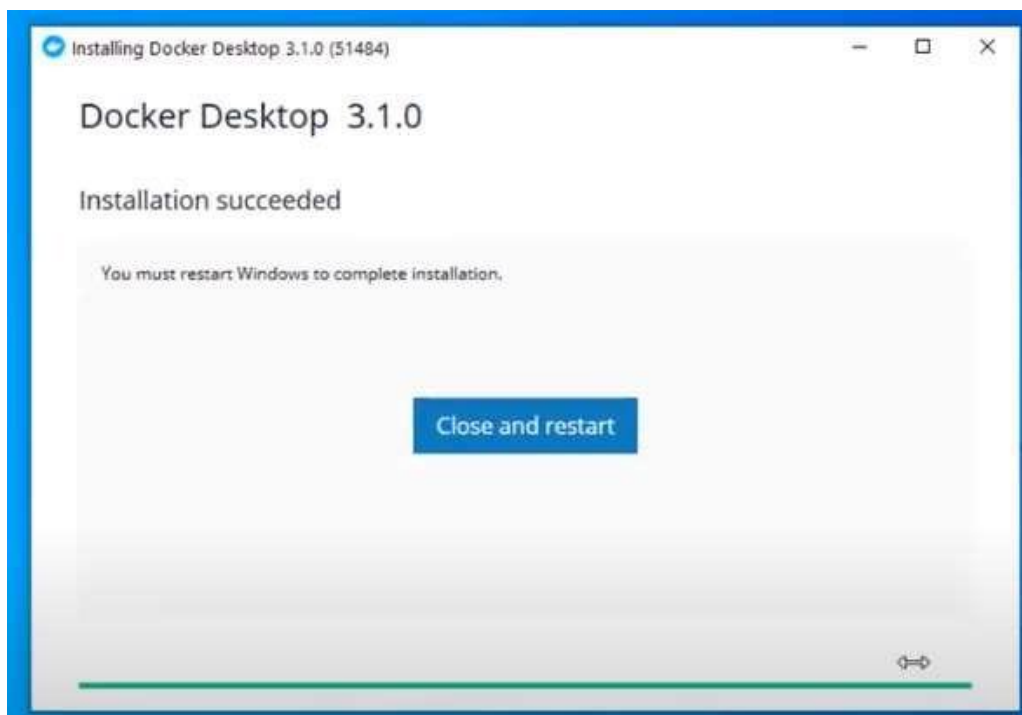


5)Docker Desktop will start after accepting terms and Conditions.

6) After clicking ok the installation will start.



7) Then click close and Restart the system.



8) Restart pc to install wsl2 or update using wsl—update

```
C:\Users\HP>wsl --update
Checking for updates.
Updating Windows Subsystem for Linux to version: 2.5.10.
[***** 15.1% ]
```

9) Now the docker will open where we can see images, containers, volumes, dockerhub etc...

Docker Commands:

docker -- version: Shows the Docker client and server versions.

docker ps: Lists all running containers.

docker ps -a: Used to list all containers (running and stopped).

docker run <image_name>: Creates and runs a new container from a specified image.

docker pull <image_name>: Pulls an image from a registry (e.g., Docker Hub).

docker images: Lists all local Docker images.

docker rmi <image_id_or_name>: Removes a local Docker image.

docker rm <container_id_or_name>: Removes a stopped container.

docker rm -f <container_id_or_name> to force removal of a running container.

```
PS C:\Users\HP> docker --version
```

Docker version 28.3.2, build 578ccf6

```
PS C:\Users\HP> docker ps
```

| CONTAINER ID | IMAGE | COMMAND |
|---------------|--|--------------------------------------|
| CREATED | STATUS | PORTS |
| NAMES | | |
| b6a70903da0b | nginx:1.27.0-alpine | "/docker-entrypoint..." 3 months ago |
| Up 41 seconds | 0.0.0.0:4001-4002->4001-4002/tcp, 80/tcp, 0.0.0.0:8980->8980/tcp | algokit_sandbox_proxy |

```
PS C:\Users\HP> docker ps -a
```

| CONTAINER ID | IMAGE | COMMAND | NAMES |
|-------------------|--------------|--------------------|-------------------------------------|
| CREATED | STATUS | PORTS | |
| unruffled_lamport | 09b9437b7301 | postgres:16-alpine | "docker-entrypoint.s..." 3 days ago |
| Exited (1) | 3 days ago | | reverent_blackwell |

```
PS C:\Users\HP> docker pull hello-world
```

Using default tag: latest

latest: Pulling from library/hello-world

e6590344b1a5: Pull complete

Digest:

sha256:ec153840d1e635ac434fab5e377081f17e0e15afab27beb3f726c3265039cfff

Status: Downloaded newer image for hello-world:latest

`docker.io/library/hello-world:latest`

PS C:\Users\HP> `docker run hello-world`

Hello from Docker!

This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:

1. The Docker client contacted the Docker daemon.
2. The Docker daemon pulled the "hello-world" image from the Docker Hub.

(amd64)

3. The Docker daemon created a new container from that image which runs the

executable that produces the output you are currently reading.

4. The Docker daemon streamed that output to the Docker client, which sent it

to your terminal.

To try something more ambitious, you can run an Ubuntu container with:

`$ docker run -it ubuntu bash`

Share images, automate workflows, and more with a free Docker ID:

<https://hub.docker.com/>

For more examples and ideas, visit:

<https://docs.docker.com/get-started/>

```
PS C:\Users\HP> docker ps-a
```

```
docker: unknown command: docker ps-a
```

Run 'docker --help' for more information

```
PS C:\Users\HP> docker ps -all
```

| CONTAINER ID | IMAGE | COMMAND | CREATED |
|--------------------------|-------------------|----------|---------------|
| STATUS | PORTS | NAMES | |
| 6eb8e54b89ab | hello-world | "/hello" | 4 minutes ago |
| Exited (0) 4 minutes ago | unruffled_lamport | | |

```
PS C:\Users\HP> docker ps -a
```

| CONTAINER ID | IMAGE | COMMAND | CREATED |
|--------------------------|-------------------|----------|---------------|
| STATUS | PORTS | NAMES | |
| 6eb8e54b89ab | hello-world | "/hello" | 5 minutes ago |
| Exited (0) 5 minutes ago | unruffled_lamport | | |

| | | | |
|---------------------------|--------------------|--------------------------|----------------|
| 09b9437b7301 | postgres:16-alpine | "docker-entrypoint.s..." | 34 minutes ago |
| Exited (1) 34 minutes ago | reverent_blackwell | | |

| | | | |
|-----------------------|--|------------------------|--------------|
| b6a70903da0b | nginx:1.27.0-alpine | "docker-entrypoint..." | 3 months ago |
| Up 24 minutes | 0.0.0.0:4001-4002->4001-4002/tcp, 80/tcp, 0.0.0.0:8980->8980/tcp | | |
| algokit_sandbox_proxy | | | |

fc271fbb4869 algorand/indexer:latest "docker-entrypoint.s..." 3
months ago Up 25 seconds
algokit_sandbox_indexer

8f9e7ac2c3d3 algorand/conduit:latest "docker-entrypoint.sh" 3
months ago Up About a minute
algokit_sandbox_conduit

550651d39aa6postgres:16-alpine "docker-entrypoint.s..." 3
months ago Exited (255) 8 days ago 0.0.0.0:5443->5432/tcp
algokit_sandbox_postgres

ae65eeb4e3e8 algorand/algod:latest "/node/run/run.sh" 3
months ago Exited (255) 8 days ago 4160/tcp, 8080/tcp,
9100/tcp, 0.0.0.0:9392->9392/tcp, 127.0.0.1:32768->7833/tcp
algokit_sandbox_algod

PS C:\Users\HP> docker images

| REPOSITORY | TAG | IMAGE ID | CREATED | SIZE |
|------------------|---------------|--------------|---------------|--------|
| postgres | 16-alpine | 7c8c4bf31976 | 3 months ago | 394MB |
| algorand/algod | latest | 8f6395c74402 | 3 months ago | 893MB |
| <none> | <none> | 3b057e1c2c6d | 5 months ago | 394MB |
| <none> | <none> | 75680de7201f | 5 months ago | 893MB |
| hello-world | latest | ec153840d1e6 | 6 months ago | 20.4kB |
| algorand/indexer | latest | b913032bcfb7 | 6 months ago | 159MB |
| algorand/conduit | latest | 1ab136352864 | 7 months ago | 160MB |
| nginx | 1.27.0-alpine | 208b70eefac1 | 13 months ago | 66.9MB |

```
PS C:\Users\HP> docker rm  
3aa84471950d8793a333a888fef92c7a7841c4a6d286e9c7bec2782246  
1875a2
```

```
3aa84471950d8793a333a888fef92c7a7841c4a6d286e9c7bec2782246  
1875a2
```

```
PS C:\Users\HP> docker rmi hello-world
```

```
Error response from daemon: conflict: unable to delete hello-  
world:latest (must be forced) - container 6eb8e54b89ab is using its  
referenced image ec153840d1e6
```

```
PS C:\Users\HP> docker rm hello-world:latest
```

```
Error response from daemon: No such container: hello-world:latest
```

```
PS C:\Users\HP> docker rmi hello-world:latest
```

```
Error response from daemon: conflict: unable to delete hello-  
world:latest (must be forced) - container 6eb8e54b89ab is using its  
referenced image ec153840d1e6
```

```
PS C:\Users\HP> docker rm  
b9c2cea9e73765ee5bab915427ead91cc9541d153cf281b8d1e395f1b9  
65227a
```

```
b9c2cea9e73765ee5bab915427ead91cc9541d153cf281b8d1e395f1b9  
65227a
```

Week-7

Develop a simple containerized application using Docker (through Jenkins CI/CD pipeline)

Pre-requisites:

- Install JDK and set jdk path in environment variables
- Install Git Client and set git path in environment variables
- Install Docker Desktop
- Install Docker plugin in Jenkins
- Open Jenkins Dashboard, then go to Manage Jenkins → Plugins.
- Go to Available plugins and search for Docker.
- Select Docker and click Install.
- Configure Docker in Jenkins:
- Open Jenkins Dashboard, then go to Manage Jenkins → Tools.
- Scroll down to the Docker Installations section.
- If Docker Desktop is already installed, no additional tool configuration is needed. Click Save.
- Otherwise, click Add Docker, give it a name (for example, Docker), check Install automatically, then click Add Installer and select one of the available installers. Finally, click Save.

Steps:

1. Write a Python web application code for a simple user registration form.
2. Write/Create Dockerfile

```
FROM python:3.9-slim-buster
WORKDIR /app
COPY . /app
RUN pip install --no-cache-dir -r requirements.txt
EXPOSE 5000
CMD ["python","app.py"]
```

3. Write/Create **Jenkinsfile**

```
pipeline {
  agent any
  stages {
    stage('Build') {
      steps {
        echo "Build Docker Image"
        bat "docker build -t mypythonflaskapp ."
      }
    }
  }
}
```

```
    }  
  }  
  stage('Run') {  
    steps {  
      echo "Run application in Docker Container"  
      bat "docker rm -f mycontainer || exit 0"  
      //forcibly removes the Docker container named mycontainer  
      //If the container does not exist, this command will fail and return anerror  
      //To avoid this error, exit 0, tells the shell to exit with a success status  
  
      bat "docker run -d -p 5000:5000 --name mycontainer mypythonflaskapp"  
      //with -d runs the container in detached mode,  
      //meaning it runs in the background, and you get your terminal back  
      // immediately.  
      //Without -d, app runs in the foreground, terminal shows container logs  
      and is “blocked” by the container process.  
    }  
  }  
}  
post {  
  success {  
    echo 'Pipeline completed successfully!'  
  }  
  failure {  
    echo 'Pipeline failed. Please check the logs.'  
  }  
}
```

4. Write **requirements.txt**

flask

5. Commit and Check in your project to the SCM repository using git commands.
6. git init
7. git add .
8. git commit -m "Initial commit - Flask app with Docker and Jenkins"
9. git remote add origin < <https://github.com/MekalaKaveri18/application.git> >
10. git push -u origin main
11. Project folder structure should be as follows:

SamplePythonFlaskApp

- app.py

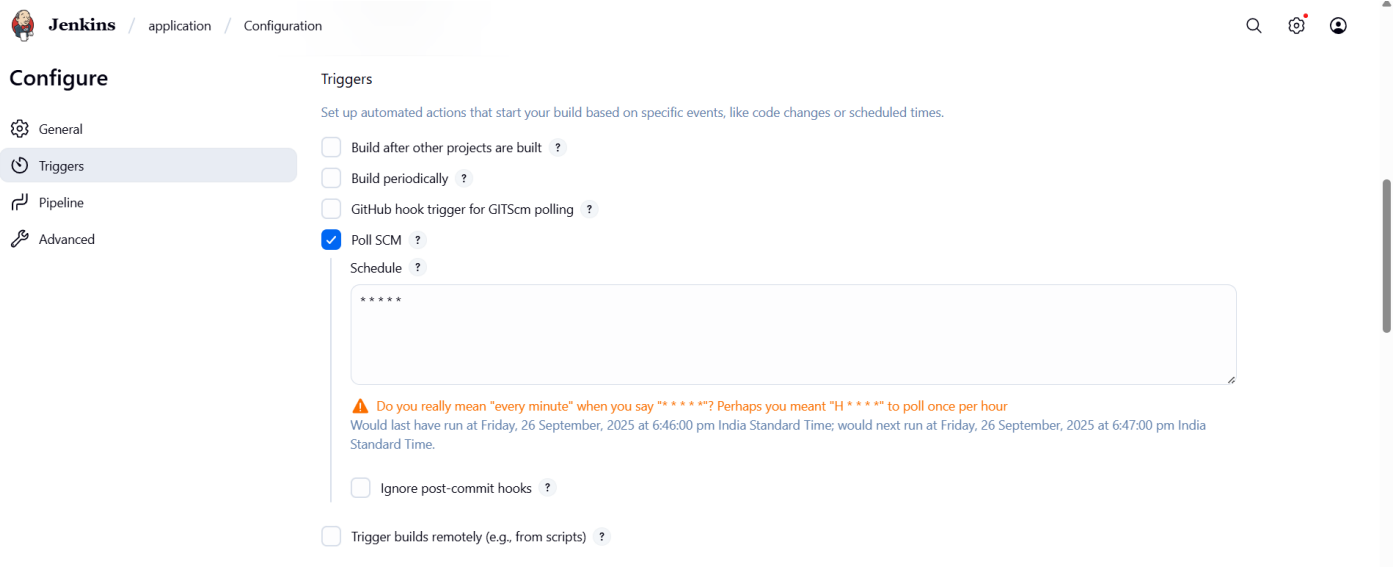
- templates
 - registration.html
 - success.html
- requirements.txt
- Dockerfile
- Jenkinsfile

12. Create CI/CD pipeline in Jenkins

Open **Jenkins Dashboard**, then click **New Item**, select **Pipeline**, and click **Ok**.
Configure the pipeline by adding a **description**.

Configure the pipeline

Give description then Check Poll SCM and schedule polling for 5minutes – to automate the process of source code change management and build the application



Configure Pipeline section

Select Define Pipeline Script from SCM, as pipeline script is written in Jenkinsfile which is in SCM.

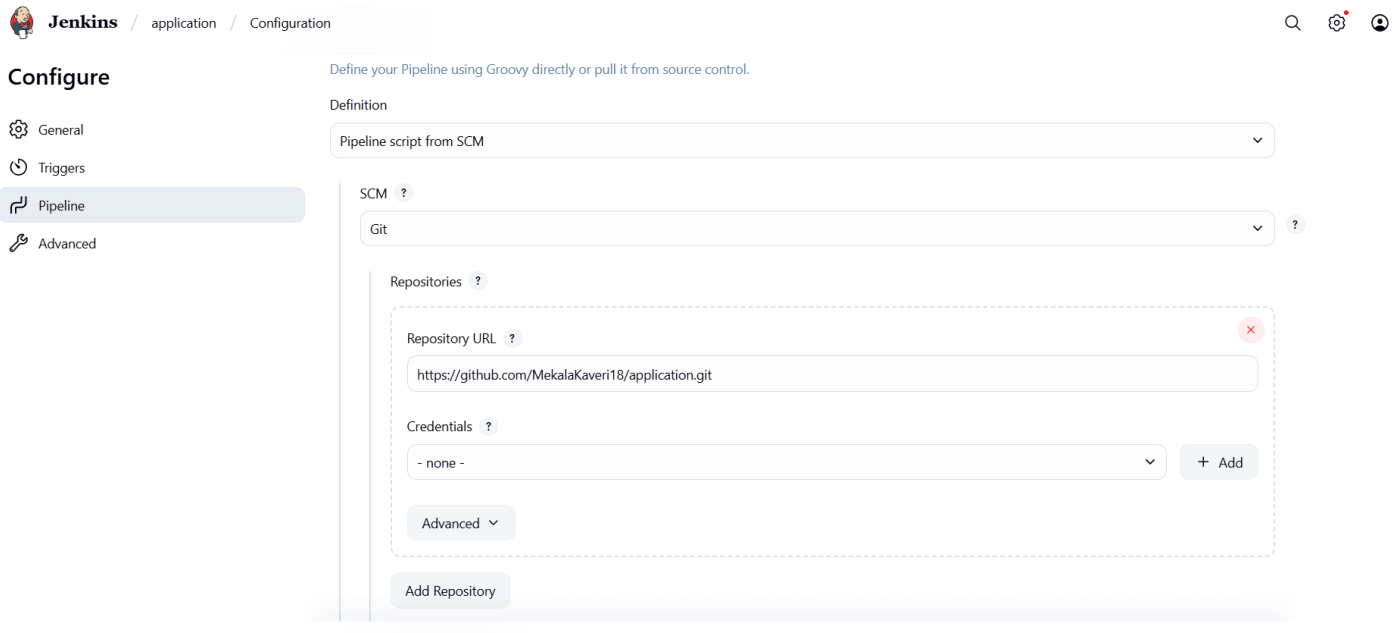
Select SCM as Git

Specify the git repo url <https://github.com/MekalaKaveri18/application.git>

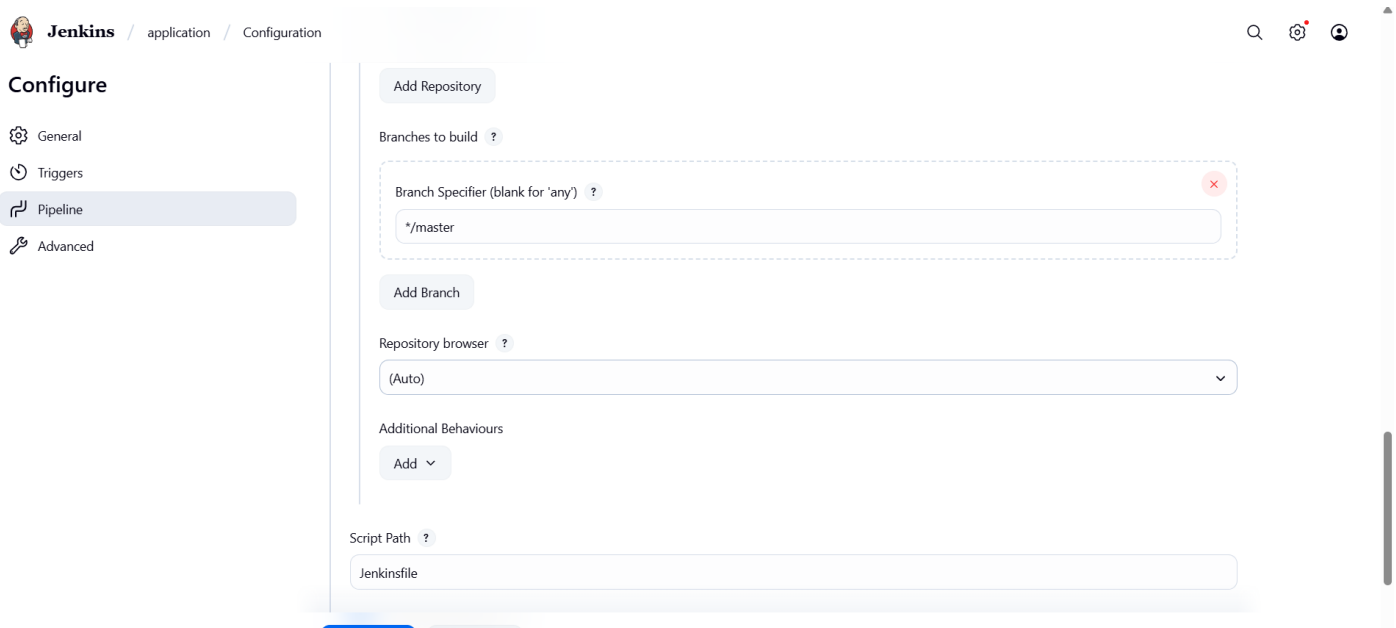
Specify the branch as master

Specify the Script Path as Jenkinsfile

Click on Apply/Save – saves the pipeline job after configuration



The screenshot shows the Jenkins Pipeline Configuration page. The left sidebar has a 'Configure' section with options: General, Triggers, Pipeline (selected), and Advanced. The main area is titled 'Define your Pipeline using Groovy directly or pull it from source control.' Under 'Definition', 'Pipeline script from SCM' is selected. Below this, 'SCM' is set to 'Git'. A 'Repositories' section contains a 'Repository URL' field with the value 'https://github.com/MekalaKaveri18/application.git', a 'Credentials' dropdown set to '- none -', and an 'Add Repository' button. There is also an 'Advanced' dropdown.



This screenshot continues the Jenkins Pipeline Configuration page. It shows the 'Add Repository' button at the top. Below it, 'Branches to build' is set to '*/master' in the 'Branch Specifier (blank for 'any')' field. There is an 'Add Branch' button. The 'Repository browser' is set to '(Auto)'. Under 'Additional Behaviours', there is an 'Add' button. At the bottom, the 'Script Path' is set to 'Jenkinsfile'.

13.Run and Monitor Pipeline Job

- Go to the **Pipeline dashboard** and click **Build Now** to trigger the pipeline manually for the first run.
- Jenkins will then execute the stages defined inside the Jenkinsfile:
- The **Build** stage builds the Docker image.
- The **Run** stage starts the container on port 5000.
- After that, click the build number (for example, #1).
- Then click **Console Output** to view pipeline logs in real time.
- Finally, click **Pipeline Overview** to see the graphical representation of the

stages executed in the pipeline.

- **Output:**

Registration Form

Name:

Roll No:

Email:

Year:

Welcome to the event.....

Your Details

Name

Kaveri Mekala

roll no

1252

email

kaverimekala18@gmail.com

year

4th

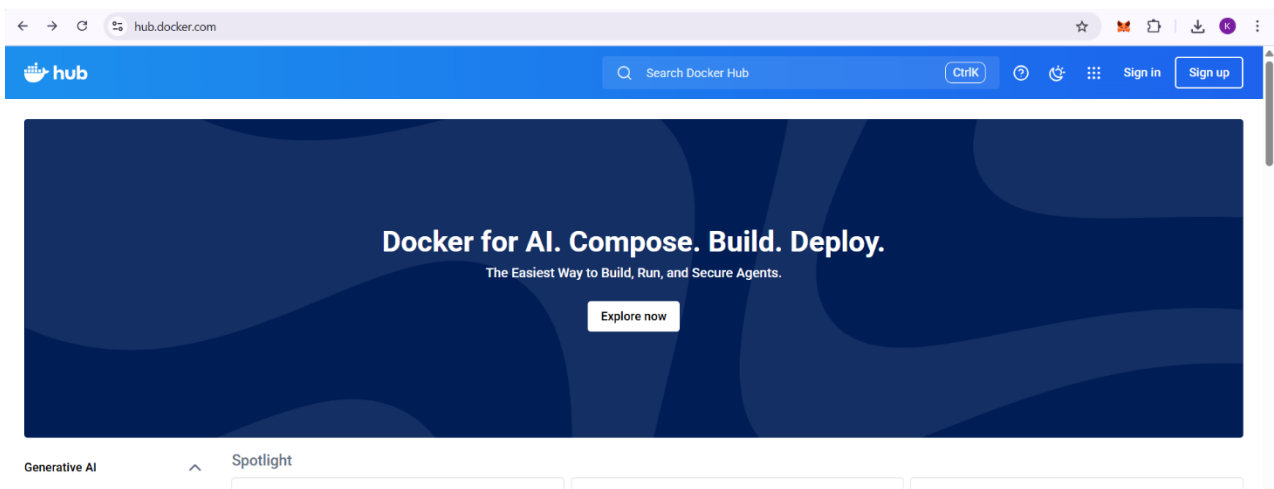
Integrate Kubernetes and Docker

Create a application with app.py, template/form.html, result.html,docker file, requirements.txt

Then push into github and build the docker image using docker build command.

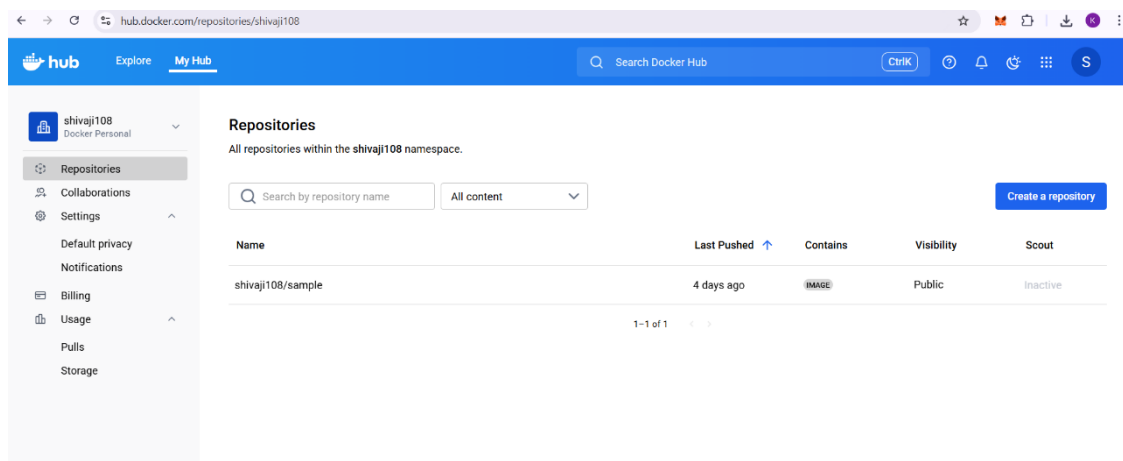
To push the image into the docker hub

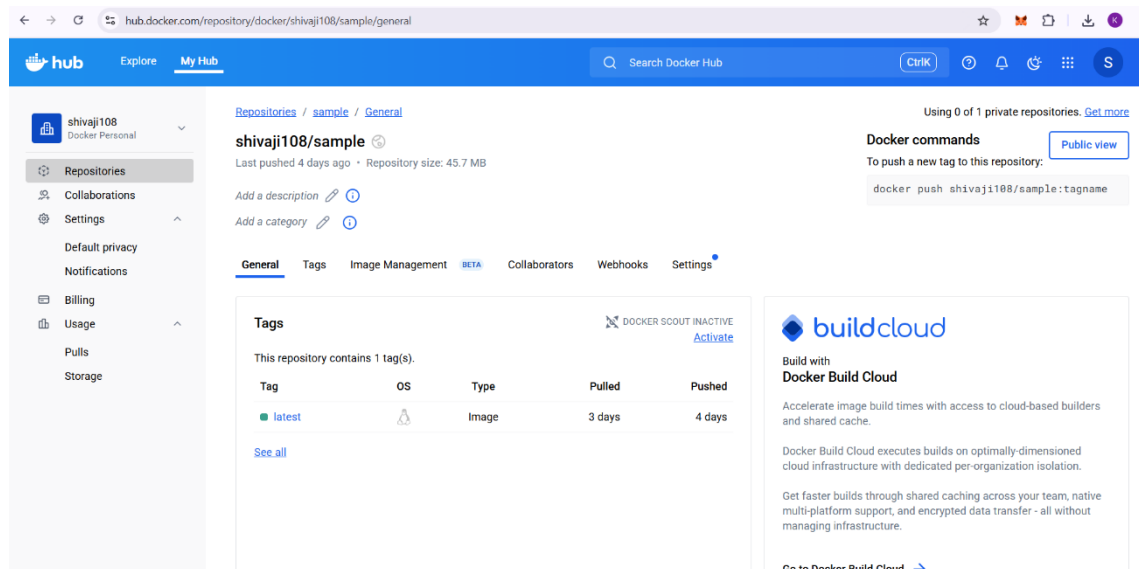
1.Create a login in docker hub(hub.docker.com)



2.After the email verification. Login into the docker hub

3.Click on Repositories then click on create repo then give repo name and click on create.





4. Go to Docker desktop and give the following commands in terminals.

PS C:\Users\HP> docker login

Authenticating with existing credentials... [Username: shivaji108]

i Info → To login with a different account, run 'docker logout' followed by 'docker login'

Login Succeeded

The docker tag command creates a new tag, or alias, that refers to an existing image. To push an image to a registry like Docker Hub, it needs to be tagged with the format <username>/<repository>:<tag>

PS C:\Users\HP> docker tag mypythonflaskapp:latest shivaji108/sample:latest

The docker push command uploads a local Docker image to a remote registry, making it accessible to others or to a Kubernetes cluster.

PS C:\Users\HP> docker push shivaji108/sample:latest

The push refers to repository [docker.io/shivaji108/sample]

5bc1815354a5: Pushed

cbf3c05eca57: Pushed

fe33a435e1c2: Pushed

067ea27560c1: Mounted from library/python

7fb1037e08b3: Mounted from library/python

14cbeede8d6e: Mounted from library/python

ae2d55769c5e: Mounted from library/python

e2ef8a51359d: Mounted from library/python

latest: digest:

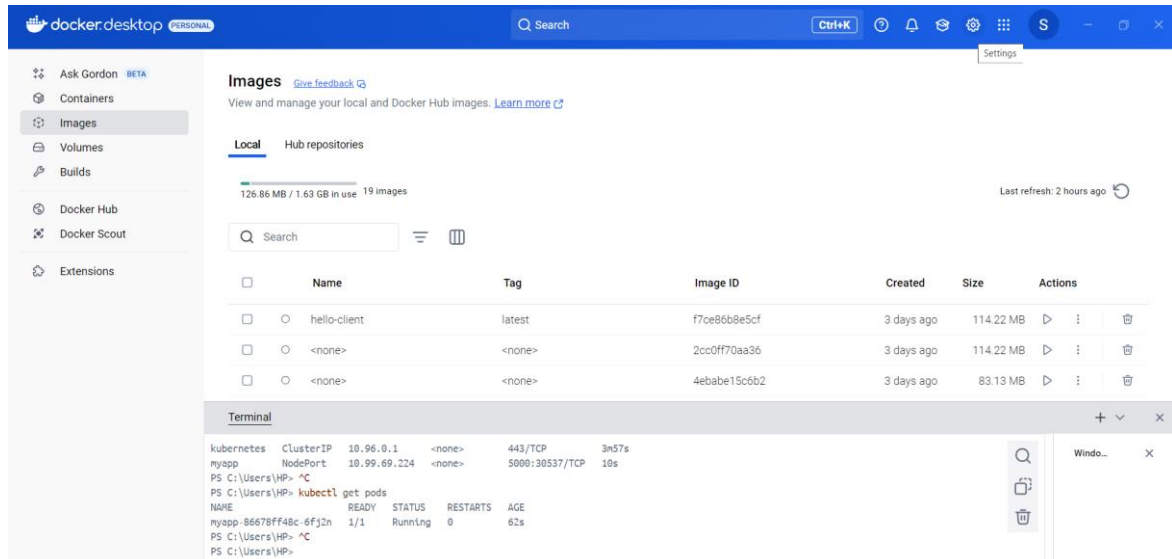
sha256:8c1713aa5cfd8852feb6ebb76d6b586088bd2a13e261eb0bc1972eb56b027201

size: 1996

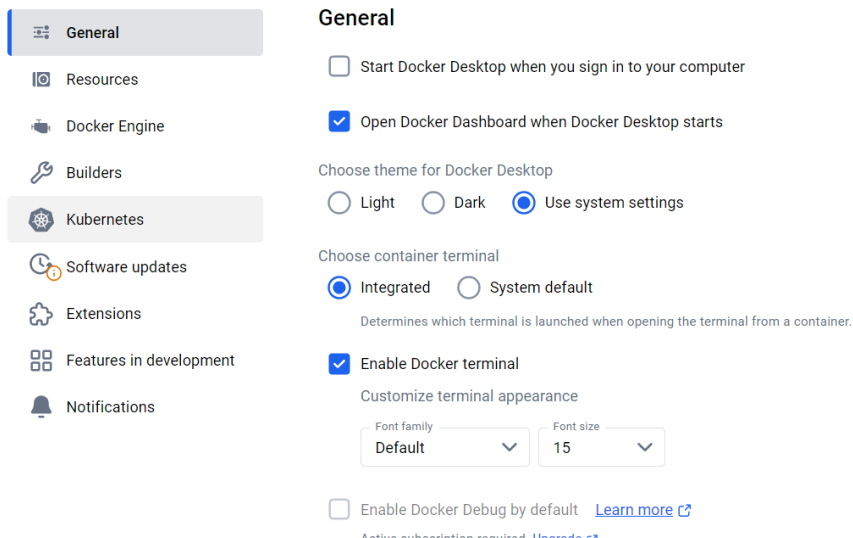
Steps:

Open the Docker Desktop

Click on settings

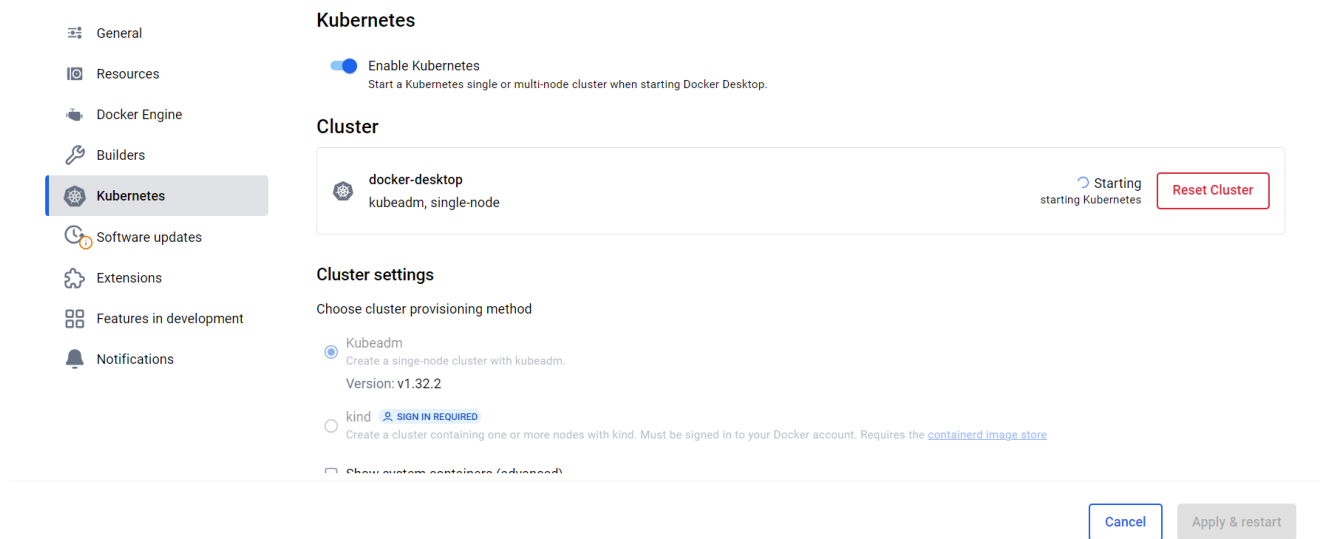


Select the Kubernetes tab



Enable the Kubernetes

Click Apply and Restart



Click install to start the Kubernetes

Docker desktop will set up a single-node Kubernetes cluster

```
PS C:\Users\HP> kubectl version
```

Client Version: v1.32.2

Kustomize Version: v5.5.0

Server Version: v1.32.2

```
PS C:\Users\HP> kubectl get nodes
```

| NAME | STATUS | ROLES | AGE | VERSION |
|----------------|--------|---------------|-------|---------|
| docker-desktop | Ready | control-plane | 6m16s | v1.32.2 |

This command lists all the nodes (worker machines) in your Kubernetes cluster and shows their status

```
PS C:\Users\HP> kubectl cluster-info
```

Kubernetes control plane is running at https://kubernetes.docker.internal:6443

CoreDNS is running at

https://kubernetes.docker.internal:6443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.

This command displays the address of the Kubernetes control plane and core services like CoreDNS, which is used for service discovery within the cluster.

```
PS C:\Users\HP> kubectl create deployment myapp --image=shivaji108/sample:latest
deployment.apps/myapp created
```

This command creates a new Deployment object. A Deployment manages a set of replica Pods and handles updates and self-healing.

```
PS C:\Users\HP> kubectl get deployments
```

| NAME | READY | UP-TO-DATE | AVAILABLE | AGE |
|-------|-------|------------|-----------|-----|
| myapp | 1/1 | 1 | 1 | 53s |

This command lists the deployments in the current namespace and shows their status, including how many replicas are ready and available.

```
PS C:\Users\HP> kubectl get pods
```

| NAME | READY | STATUS | RESTARTS | AGE |
|------------------------|-------|---------|----------|-----|
| myapp-86678ff48c-zwq7r | 1/1 | Running | 0 | 82s |

It list the pods that are running.

```
PS C:\Users\HP> kubectl expose deployment myapp --type=NodePort --port=5000
service/myapp exposed
```

This command creates a new Service to expose a deployment to network traffic.

--type=NodePort makes the service accessible on a static port on the node's IP address.

--port=5000 specifies the port the service will listen on internally within the cluster.

```
PS C:\Users\HP> kubectl get svc
```

| NAME | TYPE | CLUSTER-IP | EXTERNAL-IP | PORT(S) | AGE |
|------------|-----------|---------------|-------------|----------------|-----|
| kubernetes | ClusterIP | 10.96.0.1 | <none> | 443/TCP | 24m |
| myapp | NodePort | 10.109.196.24 | <none> | 5000:32094/TCP | 12s |

An alias for kubectl get services, this command lists all the Services in the cluster.

Output:



Registration Form

Name:

Roll No:

Email:

Year:



Welcome to the event.....

Your Details

Name

Kaveri Mekala

roll no

1252

email

kaverimekala18@gmail.com

year

4th

PS C:\Users\HP> **kubectl scale deployment myapp --replicas=6**
deployment.apps/myapp scaled

This command changes the desired number of replicas for a deployment, scaling the application up or down

PS C:\Users\HP> **kubectl get pods**

| NAME | READY | STATUS | RESTARTS | AGE |
|------------------------|-------|---------|----------|-----|
| myapp-86678ff48c-5lnch | 1/1 | Running | 0 | 31s |
| myapp-86678ff48c-b8wd5 | 1/1 | Running | 0 | 31s |
| myapp-86678ff48c-dw8s9 | 1/1 | Running | 0 | 31s |
| myapp-86678ff48c-qs4bl | 1/1 | Running | 0 | 31s |
| myapp-86678ff48c-vj7kt | 1/1 | Running | 0 | 31s |
| myapp-86678ff48c-zwq7r | 1/1 | Running | 0 | 17m |

G. Narayanamma Institute Technology and Science (For Women)

Devops Lab

IV-IT-A 2025-2026

- General
- Resources
- Docker Engine
- Builders
- Kubernetes**
- Software updates
- Extensions
- Features in development
- Notifications

Kubernetes

☒ Enable Kubernetes
Start a Kubernetes single or multi-node cluster when starting Docker Desktop.

Cluster

docker-desktop
kubeadm, single-node

Starting
starting Kubernetes

Reset Cluster

Cluster settings

Choose cluster provisioning method

- ☒ Kubeadm
Create a single-node cluster with kubeadm.
Version: v1.32.2
- ☐ kind [SIGN IN REQUIRED](#)
Create a cluster containing one or more nodes with kind. Must be signed in to your Docker account. Requires the [containerd image store](#)
- ☐ Show custom containers (advanced)

Cancel **Apply & restart**

Jenkins / deploy / Configuration

Configure

- General**
- Triggers
- Pipeline
- Advanced

General

Enabled ☒

Description

Kubernetes

Plain text [Preview](#)

- ☐ Discard old builds ?
- ☐ Do not allow concurrent builds
- ☐ Do not allow the pipeline to resume if the controller restarts


☒ GitHub project

Project url ?

<https://github.com/MekalaKaveri18/deployment.git/>

Advanced ▾

Save **Apply**

 **Jenkins** / Manage Jenkins / System

Global properties

☐ Disable deferred wipeout on this node ?

☐ Disk Space Monitoring Thresholds

☒ Environment variables

List of variables ?

Name

KUBECONFIG

Value

C:\Users\HP\kube\config


Add

☐ Tool Locations


Matrix


Save


Apply


 **Jenkins** / deploy / Configuration

Configure

 General

 Triggers

 Pipeline

 Advanced

☒ Poll SCM ?

Schedule ?

⚠ Do you really mean "every minute" when you say "*****"? Perhaps you meant "H * * * *" to poll once per hour

Would last have run at Sunday, 12 October, 2025 at 9:37:00 am India Standard Time; would next run at Sunday, 12 October, 2025 at 9:38:00 am India Standard Time.

☐ Ignore post-commit hooks ?

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


Pipeline

Define your Pipeline using Groovy directly or pull it from source control.

Definition

Pipeline script from SCM

SCM ?

 Jenkins / deploy / Configuration

Configure

General

Triggers

Pipeline

Advanced

SCM ?

Git

Repositories ?

Repository URL ?

https://github.com/MekalaKaveri18/deployment.git

Credentials ?

MekalaKaveri18/*****

+ Add

Advanced

Add Repository


Branches to build ?

Branch Specifier (blank for 'any') ?

*/main

Save

Apply

 Jenkins / deploy / Configuration

Configure

General

Triggers

Pipeline

Advanced

(Auto)

Additional Behaviours

Add

Script Path ?

Jenkinsfile

☒ Lightweight checkout ?

[Pipeline Syntax](#)

Advanced

Advanced

Save

Apply

REST API Jenkins 2.516.1

Started by an SCM change

Obtained Jenkinsfile from git

<https://github.com/MekalaKaveri18/deployment.git>

[Pipeline] Start of Pipeline

[Pipeline] node

Running on Jenkins

in C:\ProgramData\Jenkins\jenkins\workspace\deploy

[Pipeline] {

[Pipeline] stage

[Pipeline] { (Declarative: Checkout SCM)

[Pipeline] checkout

Selected Git installation does not exist. Using Default

The recommended git tool is: NONE

using credential 096e4648-f842-4a49-8853-af67e453d532

```
> C:\Program Files\Git\bin\git.exe rev-parse --resolve-git-dir  
C:\ProgramData\Jenkins\jenkins\workspace\deploy\.git # timeout=10
```

Fetching changes from the remote Git repository

```
> C:\Program Files\Git\bin\git.exe config remote.origin.url  
https://github.com/MekalaKaveri18/deployment.git # timeout=10
```

Fetching upstream changes from

<https://github.com/MekalaKaveri18/deployment.git>

```
> C:\Program Files\Git\bin\git.exe --version # timeout=10
```

```
> git --version # 'git version 2.51.0.windows.1'
```

using GIT_ASKPASS to set credentials

```
> C:\Program Files\Git\bin\git.exe fetch --tags --force --progress --  
https://github.com/MekalaKaveri18/deployment.git  
+refs/heads/*:refs/remotes/origin/* # timeout=10
```

```
> C:\Program Files\Git\bin\git.exe rev-parse  
"refs/remotes/origin/main^{commit}" # timeout=10
```

Checking out Revision c0b4d14c1edb3dcc7328e5132d2a7c21baa9d816
(refs/remotes/origin/main)

> C:\Program Files\Git\bin\git.exe config core.sparsecheckout # timeout=10

> C:\Program Files\Git\bin\git.exe checkout -f
c0b4d14c1edb3dcc7328e5132d2a7c21baa9d816 # timeout=10

Commit message: "Update service.yaml"

> C:\Program Files\Git\bin\git.exe rev-list --no-walk
8b90ee8c9b69ebb9b04b006417eeef1cf1954d3d # timeout=10

[Pipeline] }

[Pipeline] // stage

[Pipeline] withEnv

[Pipeline] {

[Pipeline] stage

[Pipeline] { (Build Docker Image)

[Pipeline] echo

Build Docker Image

[Pipeline] bat

C:\ProgramData\Jenkins\jenkins\workspace\deploy>docker build -t
kubedemoapp:v1 .

#0 building with "default" instance using docker driver

#1 [internal] load build definition from Dockerfile

#1 transferring dockerfile: 186B 0.0s done

#1 DONE 0.0s

#2 [internal] load metadata for docker.io/library/python:3.9-slim-buster

#2 DONE 0.4s

#8 7.358 Downloading zipp-3.23.0-py3-none-any.whl (10 kB)

#8 7.682 Installing collected packages: zipp, markupsafe, itsdangerous, click, blinker, werkzeug, jinja2, importlib-metadata, flask

#8 9.203 Successfully installed blinker-1.9.0 click-8.1.8 flask-3.1.2 importlib-metadata-8.7.0 itsdangerous-2.2.0 jinja2-3.1.6 markupsafe-3.0.3 werkzeug-3.1.3 zipp-3.23.0

#8 9.205 WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead:

<https://pip.pypa.io/warnings/venv>

#8 9.455

#8 9.455 [notice] A new release of pip is available: 23.0.1 -> 25.2

#8 9.455 [notice] To update, run: pip install --upgrade pip

#8 DONE 9.7s

#9 exporting to image

#9 exporting layers

#9 exporting layers 1.6s done

#9 exporting manifest

sha256:dff46c7c04275d84927a4c5f1de7360130d8721c5480c2953f71650320d2227e 0.0s done

#9 exporting config

sha256:c0365ba60813bad9f18f4606941dee044cae338c0c524ea5753b0ab61766707f 0.0s done

#9 exporting attestation manifest

sha256:a54542dee728ea59851f1d9ec988bd16cd94d9c52fab32504cd495d2ad5460b

#9 exporting attestation manifest

sha256:a54542dee728ea59851f1d9ec988bd16cd94d9c52fab32504cd495d2ad5460b 0.3s done

#9 exporting manifest list

sha256:5937823b9e70734c266729533d16d94c9119c948da740fe552c0ebadc522251A1252

e782cb

#9 exporting manifest list

sha256:5937823b9e70734c266729533d16d94c9119c948da740fe552c0ebadc5

e782cb 0.1s done

#9 naming to docker.io/library/kubedemoapp:v1 done

#9 unpacking to docker.io/library/kubedemoapp:v1

#9 unpacking to docker.io/library/kubedemoapp:v1 1.3s done

#9 DONE 3.6s

[Pipeline] }

[Pipeline] // stage

[Pipeline] stage

[Pipeline] { (Docker Login)

[Pipeline] bat

C:\ProgramData\Jenkins\.jenkins\workspace\deploy>docker login -u

shivaji108 -p Kaveri@1729

WARNING! Using --password via the CLI is insecure. Use --password-stdin.

Login Succeeded

[Pipeline] }

[Pipeline] // stage

[Pipeline] stage

[Pipeline] { (push Docker image to docker hub)

[Pipeline] echo

push Docker image to docker hub

[Pipeline] bat

C:\ProgramData\Jenkins\.jenkins\workspace\deploy>docker tag

kubedemoapp:v1 shivaji108/sample:kubering1

[Pipeline] bat

C:\ProgramData\Jenkins\jenkins\workspace\deploy>docker push
shivaji108/sample:kubering1

The push refers to repository [docker.io/shivaji108/sample]

824416e23423: Waiting

84c8c79126f6: Waiting

8b91b88d5577: Waiting

27e93becc0ce: Waiting

2e1c130fa3ec: Waiting

648e56f234c2: Waiting

93c337da394f: Waiting

3d6c2229f924: Waiting

8d53da260408: Waiting

8b91b88d5577: Waiting

27e93becc0ce: Waiting

2e1c130fa3ec: Waiting

648e56f234c2: Waiting

93c337da394f: Waiting

3d6c2229f924: Waiting

8d53da260408: Waiting

824416e23423: Waiting

84c8c79126f6: Waiting

2e1c130fa3ec: Waiting

648e56f234c2: Waiting

93c337da394f: Waiting

3d6c2229f924: Waiting

8d53da260408: Layer already exists

93c337da394f: Waiting

93c337da394f: Waiting

93c337da394f: Waiting

93c337da394f: Already exists

27e93becc0ce: Pushed

3d6c2229f924: Pushed

kubering1: digest:

sha256:5937823b9e70734c266729533d16d94c9119c948da740fe552c0ebadc5
e782cb size: 856

[Pipeline] }

[Pipeline] // stage

[Pipeline] stage

[Pipeline] { (Deploy to Kubernetes)

[Pipeline] bat

C:\ProgramData\Jenkins\.jenkins\workspace\deploy>kubectl apply -f
deployment.yaml --validate=false

deployment.apps/kuberdemoapp-deployment unchanged

[Pipeline] bat

C:\ProgramData\Jenkins\.jenkins\workspace\deploy>kubectl apply -f
service.yaml

service/kubedemoapp-service unchanged

[Pipeline] }

[Pipeline] // stage

[Pipeline] }

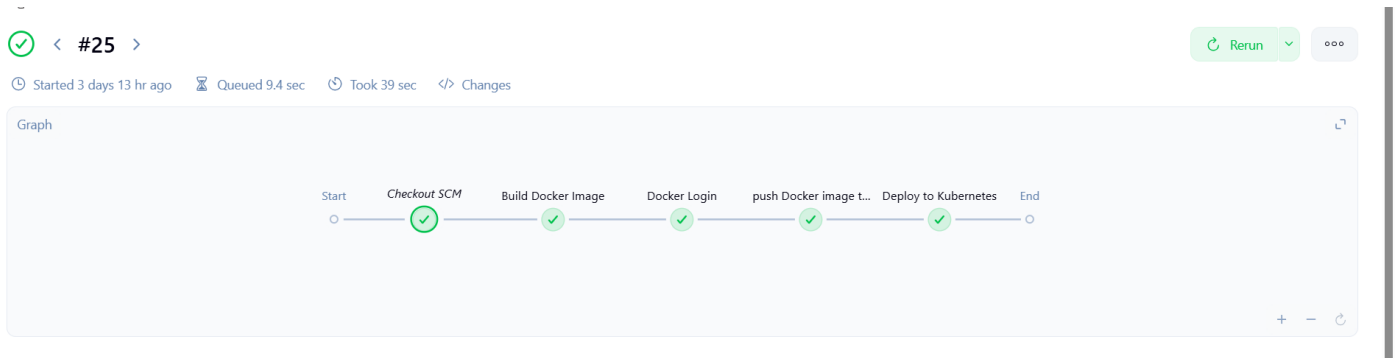
[Pipeline] // withEnv

[Pipeline] }

[Pipeline] // node

[Pipeline] End of Pipeline

Finished: SUCCESS



Output:



Registration Form

Name:

Roll No:

Email:

Year:

localhost:30537/submit

Welcome to the event.....

Your Details

Name

Kaveri Mekala

roll no

1252

email

kaverimekala18@gmail.com

year

4th

docker desktop PERSONAL

Containers Give feedback

Container CPU usage 0.65% / 1200% (12 CPUs available)

Container memory usage 203.12MB / 7.4GB

Show charts

Search

Only show running containers

| | Name | Container ID | Image | Port(s) | CPU (%) | Last started | Actions |
|--------------------------|------------------------|--------------|--------------|-----------|---------|--------------|---------|
| <input type="checkbox"/> | quizzical_ramanujan | 05082db0578b | wetvappic | 5001:5001 | 0% | 1 month ago | |
| <input type="checkbox"/> | amazing_monulty | 12db5026b439 | wetvappic | 5001:5001 | 0% | 1 month ago | |
| <input type="checkbox"/> | k8s_kubedemoapp_kubede | 2a5eb6cc9c84 | 3885599b8f0a | | 0.2% | 4 days ago | |
| <input type="checkbox"/> | k8s_week9kubenetes_my | 356803b903c5 | 3885599b8f0a | | 0.1% | 4 days ago | |
| <input type="checkbox"/> | mycontainer | 52e2c5e5545a | myvnlacq | 5001:5001 | 0% | 4 days ago | |
| <input type="checkbox"/> | k8s_kubedemoapp_kubede | ae674c6f390f | 3885599b8f0a | | 0.1% | 4 days ago | |
| <input type="checkbox"/> | jolly_termi | e37ab4d2c8ab | myfirst | | 0% | 1 month ago | |
| <input type="checkbox"/> | k8s_kubedemoapp_kubede | e5eadbc2330f | 3885599b8f0a | | 0.12% | 4 days ago | |
| <input type="checkbox"/> | k8s_kubedemoapp_kubede | e9a52cafdc79 | 3885599b8f0a | | 0.13% | 4 days ago | |

Showing 9 items