

DAY-2

DEVOPS

STEP -1 :INSTALL DOCKER

1) sudo apt update

```
bhuvan_kumar@bhuvan: ~/de x + v
bhuvan_kumar@bhuvan:~$ docker --version
Docker version 26.1.3, build 26.1.3-0ubuntu1~24.04.1
bhuvan_kumar@bhuvan:~$ sudo curl -L "https://github.com/docker/compose/releases/latest/download/docker-compose-$(uname -s)-$(uname -m)" -o /usr/
local/bin/docker-compose
[sudo] password for bhuvan_kumar:
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload  Total   Spent    Left     Speed
  0     0    0     0    0     0      0      0 --:--:--  0:00:02 --:--:--    0
  0     0    0     0    0     0      0      0 --:--:--  0:00:02 --:--:--    0
100 71.4M 100 71.4M    0     0 1316k      0  0:00:55  0:00:55 --:--:-- 2195k
bhuvan_kumar@bhuvan:~$ sudo chmod +x /usr/local/bin/docker-compose
sudo: chmod: command not found
bhuvan_kumar@bhuvan:~$ sudo chmod +x /usr/local/bin/docker-compose
bhuvan_kumar@bhuvan:~$ docker-compose -v
Docker Compose version v2.34.0
bhuvan_kumar@bhuvan:~$ mkdir ~/docker-app
bhuvan_kumar@bhuvan:~$ cd docker-app/
bhuvan_kumar@bhuvan:~/docker-app$ nano app.py
bhuvan_kumar@bhuvan:~/docker-app$ nano requirements.txt
bhuvan_kumar@bhuvan:~/docker-app$ nano Dockerfile
bhuvan_kumar@bhuvan:~/docker-app$ nano app.py
bhuvan_kumar@bhuvan:~/docker-app$ nano Dockerfile
bhuvan_kumar@bhuvan:~/docker-app$ nano docker-compose.yml
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker-compose build
WARN[0000] /home/bhuvan_kumar/docker-app/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid
potential confusion
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 149.7s (4/8)                                     doc
ker:default
[+] Building 150.5s (4/8)                                     doc
ker:default
[+] Building 451.4s (7/8)                                     doc
ker:default
=> [web internal] load build definition from Dockerfile
    0.1s
=> => transferring dockerfile: 430B
    0.0s
```

2) sudo apt install -y docker.io

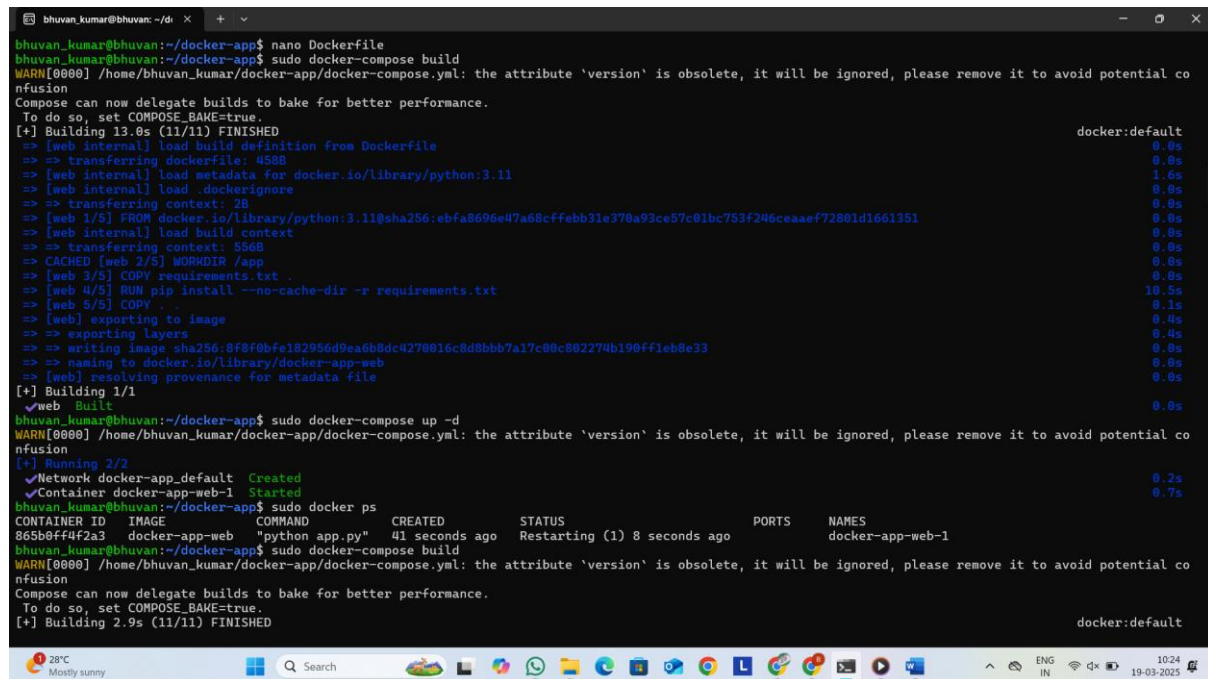
STEP 2: ENABLE AND DISABLE

1) sudo systemctl enable docker

2) sudo systemctl start docker

STEP 3:VERIFY THE INSTALLATION:

docker --version



```
bhuvan_kumar@bhuvan: ~/docker-app$ nano Dockerfile
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker-compose build
WARN[0000] /home/bhuvan_kumar/docker-app/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 13.0s (11/11) FINISHED
=> [web internal] load build definition from Dockerfile
=> == transferring dockerfile: 458B
=> [web internal] load metadata for docker.io/library/python:3.11
=> [web internal] load .dockerignore
=> == transferring context: 2B
=> [web 1/5] FROM docker.io/library/python:3.11@sha256:ebfa8696e47a68cffe5b31e378a93ce57c01bc753f246c0aef72801d1661351
=> == transferring context: 556B
=> [web 2/5] WORKDIR /app
=> [web 3/5] COPY requirements.txt .
=> [web 4/5] RUN pip install --no-cache-dir -r requirements.txt
=> [web 5/5] COPY . .
=> [web] exporting to image
=> == exporting layers
=> == writing image sha256:8f8f0bfe182956d9ea6b8dc4278016c8d8bb7a17c80c802274b190ff1eb8e33
=> == naming to docker.io/library/docker-app-web
=> [web] resolving provenance for metadata file
[+] Building 1/1
✔web Built
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker-compose up -d
WARN[0000] /home/bhuvan_kumar/docker-app/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion
[+] Running 2/2
✔Network docker-app_default Created
✔Container docker-app-web-1 Started
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS        NAMES
865b0ff4f2a3   docker-app-web  "python app.py"         41 seconds ago  Restarting (1) 8 seconds ago  PORTS        docker-app-web-1
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker-compose build
WARN[0000] /home/bhuvan_kumar/docker-app/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 2.9s (11/11) FINISHED
```

STEP 4:INSTALL DOCKER COMPOSE

```
sudo curl -L "https://github.com/docker/compose/releases/latest/download/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
```

Give execution permission:

VERIFY INSTALLATION

CREATE AN “HELLO WOLRD: APPLICATION

Create a project directory

Create the python Application File

Create a file

```
jeeva@Jeeva:~/docker-python-app$ nano app.py
jeeva@Jeeva:~/docker-python-app$ cat app.py
from flask import Flask
app=Flask(__name__)
@app.route("/")
def hello():
    return "Hello,World!"
if __name__ == "__main__":
    app.run(host="0.0.0.0",port=5000)
jeeva@Jeeva:~/docker-python-app$ nano requirements.txt
```

IN REQUIREMENTS.TXT TERMINAL WILL BE OPEN TYPE flask AND SAVE THE FILE BY CTRL+X,YES,ENTER.

STEP -5 : CREATE A DOCKER FILE

CREATE A DOCKER COMPOSE

STEP 6:BUILD AND RUN THE DOCKER CONTAINER

OPEN THE LOCALHOST:5000 IT WILL DISPLAY OUTPUT OF CODE

STEP-7 CREATE A NEW REPO IN GITHUB

<https://github.com/Jeeva-21BSR017/devops-sample.git>

STEP-8 GO TO THE LINK <https://github.com/settings/tokens/new>

STEP-9 CLICK TOKEN CLASSIC AND GENERATE TOKEN CLASSIC

STEP-10 IN GENERATE TOKEN CLASSIC GIVE THE NAME AND CLICK THE WORKFLOW AND ADMIN HOOK REPO

STEP-11 GENERATE TOKEN

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

STEP-12 START THE JENKINS

Username:admin

Password:b0e507d6b0f14097ba040a5e1dd67f6d

STEP-13 Create a new ITEM AND PIPELINE THEN CLICK THE PIPELINE THEN PIPELINE SCM THEN GIT

```
bhuvan_kumar@bhuvan: ~/docker-app$ sudo docker-compose up -d
WARN[0000] /home/bhuvan_kumar/docker-app/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential co
nfusion
[+] Running 2/2
 ✓ Network docker-app_default Created 0.2s
 ✓ Container docker-app-web-1 Started 0.7s
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED          STATUS          PORTS          NAMES
865b0ff4f2a3   docker-app-web "python app.py"         41 seconds ago   Restarting (1) 8 seconds ago   docker-app-web-1
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker-compose build
WARN[0000] /home/bhuvan_kumar/docker-app/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential co
nfusion
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 2.9s (11/11) FINISHED
=> [web internal] load build definition from Dockerfile                                docker:default
=> => transferring dockerfile: 458B                                                    0.0s
=> [web internal] load metadata for docker.io/library/python:3.11                    0.0s
=> [web internal] load .dockerignore                                                    2.7s
=> [web internal] load context: 2B                                                    0.0s
=> [web 1/5] FROM docker.io/library/python:3.11@sha256:ebfa8696e47a68cffe31e378a93ce57c81bc753f246ceaaef72801d1661351 0.0s
=> [web internal] load build context                                                  0.0s
=> => transferring context: 130B                                                       0.0s
=> CACHED [web 2/5] WORKDIR /app                                                       0.0s
=> CACHED [web 3/5] COPY requirements.txt .                                           0.0s
=> CACHED [web 4/5] RUN pip install --no-cache-dir -r requirements.txt                0.0s
=> CACHED [web 5/5] COPY . .                                                           0.0s
=> [web] exporting to image                                                            0.0s
=> => exporting layers                                                                  0.0s
=> => writing image sha256:8f8f0bfe182956d9ea6b8dc4278016c8d8bb7a17c80c802274b190ff1eb8e33 0.0s
=> => naming to docker.io/library/docker-app-web                                    0.0s
=> [web] resolving provenance for metadata file                                       0.0s
[+] Building 1/1
 ✓ web Built 0.0s
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker-compose up --build
WARN[0000] /home/bhuvan_kumar/docker-app/docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential co
nfusion
Compose can now delegate builds to bake for better performance.
To do so, set COMPOSE_BAKE=true.
[+] Building 3.0s (11/11) FINISHED
=> [web internal] load build definition from Dockerfile                                docker:default
=> [web internal] load build context                                                  0.0s
```

STEP-14 PASTE THE GITHUB LINK AND IN CREDENTIALS ADD OPTIONS THEN JENKIN.

STEP-15 PROVIDE GITHUB USERNAME AND GENERATED TOKEN PASSWORD IN PASSWORD THEN GIVE THE ID AS YOUR PREFERENCE AFTER COMPLETING CLICK ADD

STEP-16 TO PUSH INTO GITHUB

1)Clone

```
bhuvan_kumar@bhuvan: ~/d/ x + v
Installing collected packages: MarkupSafe, itsdangerous, click, blinker, Werkzeug, Jinja2, flask
Successfully installed Jinja2-3.1.6 MarkupSafe-3.0.2 Werkzeug-3.1.3 blinker-1.9.0 click-8.1.8 flask-3.1.0 itsdangerous-2.2.0
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

[notice] A new release of pip is available: 24.0 -> 25.0.1
[notice] To update, run: pip install --upgrade pip
--> Removed intermediate container 927d9a8af849
--> d8919f188a49
Step 5/7 : COPY . .
--> 0b5eb5970240
Step 6/7 : EXPOSE 5000
--> Running in 8cc29e624441
--> Removed intermediate container 8cc29e624441
--> 10492de9e5ed
Step 7/7 : CMD ["python", "app.py"]
--> Running in 0aa046bd3630
--> Removed intermediate container 0aa046bd3630
--> 7d3a030a6b5d
Successfully built 7d3a030a6b5d
Successfully tagged test:latest
bhuvan_kumar@bhuvan:~/docker-app$ docker images
permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Head "http://%2Fvar%2Frun%2Fdocker.sock/_ping": dial u
nix /var/run/docker.sock: connect: permission denied
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED        SIZE
test          latest   7d3a030a6b5d   33 seconds ago 1.03GB
docker-app-web latest    87e16282537d   7 minutes ago 1.03GB
<none>        <none>    df0ab0b0878d   14 minutes ago 1.03GB
<none>        <none>    8f8f0bf01829   27 minutes ago 1.03GB
python        3.11     18c0f2265fd9   3 months ago  1.01GB
bhuvan_kumar@bhuvan:~/docker-app$ docker run -itd -p 3000:5000 test
docker: permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Head "http://%2Fvar%2Frun%2Fdocker.sock/_ping"
: dial unix /var/run/docker.sock: connect: permission denied.
See 'docker run --help'.
bhuvan_kumar@bhuvan:~/docker-app$ sudo docker run -itd -p 3000:5000 test
b04c41dd4f5ba791461d96331e46e3a58c235fba3d375215c669a5cc8ab08ae
bhuvan_kumar@bhuvan:~/docker-app$ |
```

2)check file

3)Add to the repository

STEP-17 Open docker image app.docker.com

Jenkins

Search

Notifications

Security

admin

log out

Dashboard

New Item

Build History

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Build Executor Status

0/2

All

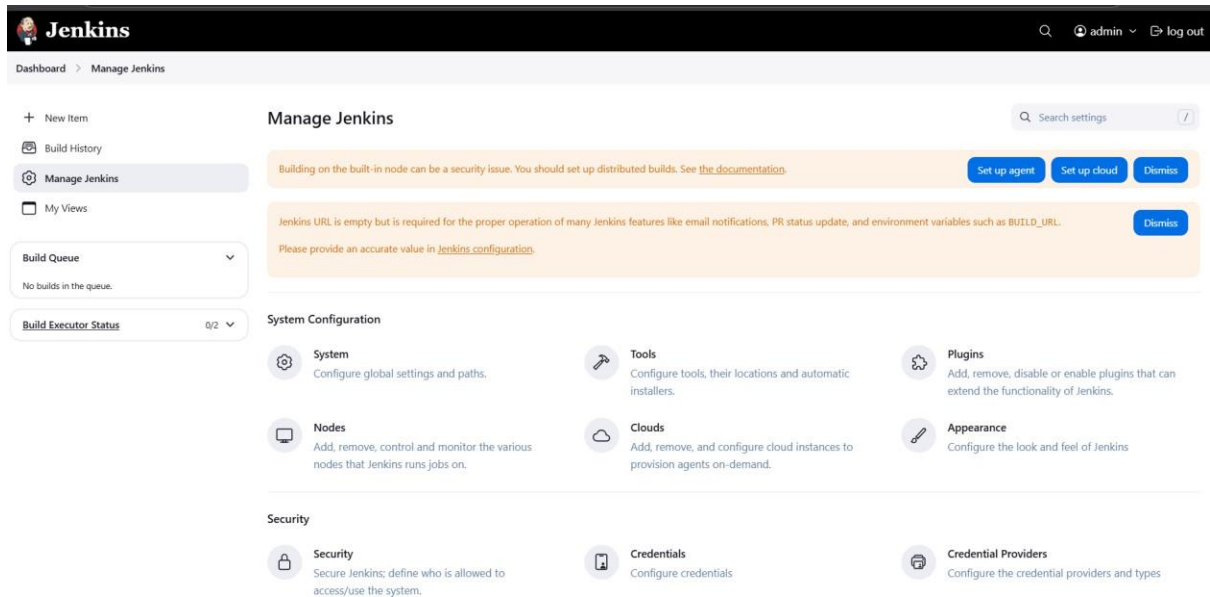
S	W	Name	Last Success	Last Failure	Last Duration
		install-ngrinx	1 day 0 hr #1	N/A	12 sec
		jenkins	N/A	N/A	N/A

Icon: S M L

600

Add description

STEP-18 OPEN MANAGE JENKINS



The screenshot shows the Jenkins 'Manage Jenkins' page. The left sidebar contains navigation links: 'New Item', 'Build History', 'Manage Jenkins' (selected), and 'My Views'. Below these are sections for 'Build Queue' (showing 'No builds in the queue') and 'Build Executor Status' (showing '0/2'). The main content area is titled 'Manage Jenkins' and includes a search bar. Two warning banners are present: one about distributed builds and another about the Jenkins URL. Below the banners, the 'System Configuration' section contains links for 'System', 'Tools', 'Plugins', 'Nodes', 'Clouds', and 'Appearance'. The 'Security' section contains links for 'Security', 'Credentials', and 'Credential Providers'.

Jenkins

Dashboard > Manage Jenkins

+ New Item

Build History

Manage Jenkins

My Views

Build Queue

No builds in the queue.

Build Executor Status 0/2

Manage Jenkins

Search settings

Building on the built-in node can be a security issue. You should set up distributed builds. See [the documentation](#).

Set up agent Set up cloud Dismiss

Jenkins URL is empty but is required for the proper operation of many Jenkins features like email notifications, PR status update, and environment variables such as BUILD_URL. Please provide an accurate value in [Jenkins configuration](#).

Dismiss

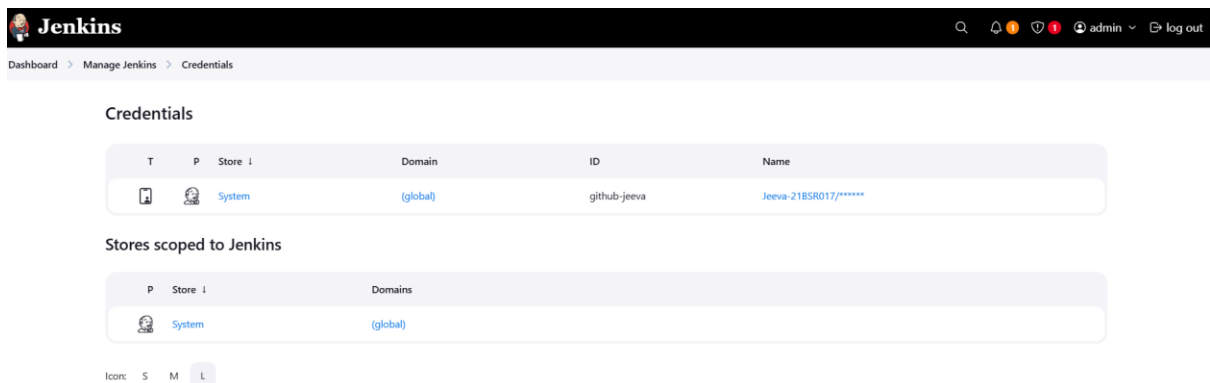
System Configuration

- System**
Configure global settings and paths.
- Tools**
Configure tools, their locations and automatic installers.
- Plugins**
Add, remove, disable or enable plugins that can extend the functionality of Jenkins.
- Nodes**
Add, remove, control and monitor the various nodes that Jenkins runs jobs on.
- Clouds**
Add, remove, and configure cloud instances to provision agents on-demand.
- Appearance**
Configure the look and feel of Jenkins.

Security

- Security**
Secure Jenkins; define who is allowed to access/use the system.
- Credentials**
Configure credentials
- Credential Providers**
Configure the credential providers and types

STEP-19 OPEN CREDENTIALS



The screenshot shows the Jenkins 'Credentials' page. The left sidebar contains navigation links: 'Dashboard > Manage Jenkins > Credentials'. The main content area is titled 'Credentials' and features a table with columns: 'T', 'P', 'Store', 'Domain', 'ID', and 'Name'. A single credential is listed with 'System' as the store and 'global' as the domain. Below the table, the 'Stores scoped to Jenkins' section shows a table with columns 'P', 'Store', and 'Domains', listing 'System' and 'global'. At the bottom, there are icons for 'Icons', 'S', 'M', and 'L'.

Jenkins

Dashboard > Manage Jenkins > Credentials

Credentials

T	P	Store	Domain	ID	Name
		System	global	github-jeeva	Jeeva-218SR017/*****

Stores scoped to Jenkins

P	Store	Domains
	System	global

Icons: S M L

STEP-20 OPEN SYSTEM

Jenkins

admin

log out

Dashboard


Manage Jenkins

Credentials

System

System

+ Add domain

Domain	Description
 Global credentials (unrestricted)	Credentials that should be available irrespective of domain specification to requirements matching.

Icon:

S

M

L

STEP-21 OPEN MANAGE JENKINS

Jenkins

admin

log out

Dashboard

Manage Jenkins

Credentials



System

Global credentials (unrestricted)

Global credentials (unrestricted)

+ Add Credentials

Credentials that should be available irrespective of domain specification to requirements matching.

ID	Name	Kind	Description
 github-jeeva	Jeeva-21BSR017/*****	Username with password	

Icon:

S

M

L

STEP-22 OPEN GLOBAL CREDENTIALS

Jenkins

admin

log out

Dashboard

Manage Jenkins

Credentials

System

Global credentials (unrestricted)

New credentials

Kind

Username with password

Scope

Global (Jenkins, nodes, items, all child items, etc)

Username

jeeva31

☐ Treat username as secret

Password

ID

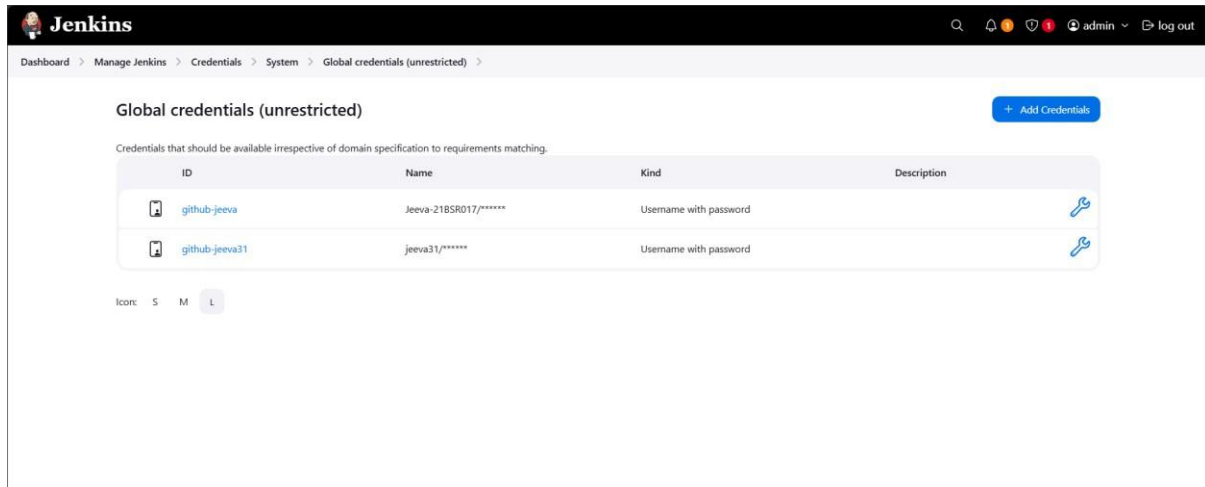
github-jeeva31

Description

Create

STEP-23 OPEN MANAGE JENKINS

=>IT DISPLAYS THE GITHUB CREDENTIALS ID AND DOCKER CREDENTIALS ID



STEP 24:OPEN UBUNTU AND CREATE nano Jenkinsfile

STEP 25:

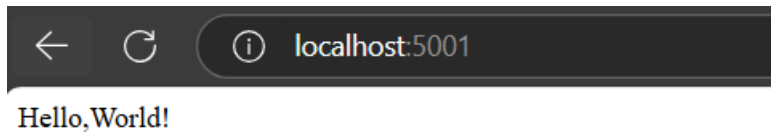
```
if [ "$(docker ps -aq -f name=$CONTAINER_NAME)" ]; then
    docker stop $CONTAINER_NAME || true
    docker rm $CONTAINER_NAME || true
fi
'''
}
}
}

stage('Run Docker Container') {
    steps {
        sh 'docker run -d -p 5001:5000 --name $CONTAINER_NAME
$DOCKER_IMAGE'
    }
}
}
```

```
post {  
  success {  
    echo "Build, push, and container execution successful!"  
  }  
  failure {  
    echo "Build or container execution failed."  
  }  
}  
}
```

STEP 26:IN JENKINS BUILD NOW THE Jenkins

STEP 27:IN LOCALHOST:5001 IT DISPLAYS THE OUTPUT.



Jenkins

Dashboard > jenkins > #14

Console Output

Download Copy View as plain text

```
Started by user admin
Obtained Jenkinsfile from git https://github.com/Jeeva-21BSR017/devops-sample.git
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/jenkins@2
[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
Cloning the remote Git repository
Cloning repository https://github.com/Jeeva-21BSR017/devops-sample.git
> git init /var/lib/jenkins/workspace/jenkins@2 # timeout=10
Fetching upstream changes from https://github.com/Jeeva-21BSR017/devops-sample.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --tags --force --progress -- https://github.com/Jeeva-21BSR017/devops-sample.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git config remote.origin.url https://github.com/Jeeva-21BSR017/devops-sample.git # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
> git rev-parse origin/main^{commit} # timeout=10
Checking out Revision 9975cf218faf9c4967952ffb453a2650ca874a49 (origin/main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 9975cf218faf9c4967952ffb453a2650ca874a49 # timeout=10
Commit message: "ci"
```

STEP-28 : IN DOCKERHUB THE PROCESS ARE TO DONE AND THEN THE LINUX IMAGE HAS TO BE DISPLAY.

