

DAY-2

DEVOPS

STEP -1 :INSTALL DOCKER

1) sudo apt update

```
ajay@Sparky:~$ sudo apt update
[ajay] password for ajay:
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release
Get:3 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease
Get:5 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [6976 B]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [120 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [131.9 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-backports InRelease [120 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-updates/main amd64 Components [212 B]
Get:11 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]
Get:12 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [212 B]
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [364 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]
Get:15 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [508 B]
Get:16 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]
Get:17 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [191.0 kB]
Get:18 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Components [216 B]
Get:19 http://archive.ubuntu.com/ubuntu noble-backports/multiverse amd64 Components [212 B]
Fetched 976 kB in 3s (319 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
56 packages can be upgraded. Run 'apt list --upgradable' to see them.
ajay@Sparky:~$
```

2) sudo apt install -y docker.io

```
ajay@Sparky:~$ sudo apt install -y docker.io
56 packages can be upgraded. Run 'apt list --upgradable' to see them.
ajay@Sparky:~$ sudo apt install -y docker.io
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base iptables libip4tc2
  libip6tc2 libnetfilter-contrack3 libnftnl libnftables1 libnftnl1
  nftables pigz runc ubuntu-fan
Suggested packages:
  ifupdown aufs-tools btrfs-progs cgroupfs-mount | cgroup-lite debootstrap
  docker-buildx docker-compose-v2 docker-doc rinse zfs-fuse | zfsutils
  firewallld
The following NEW packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base docker.io iptables
  libip4tc2 libip6tc2 libnetfilter-contrack3 libnftnl libnftables1
  libnftnl1 nftables pigz runc ubuntu-fan
0 upgraded, 16 newly installed, 0 to remove and 56 not upgraded.
Need to get 39.6 MB of archives.
After this operation, 386 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu noble/universe amd64 pigz amd64 2.8-1 [65.6 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble/main amd64 libip4tc2 amd64 1.8.10-3ubuntu2 [22.3 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble/main amd64 libip6tc2 amd64 1.8.10-3ubuntu2 [22.7 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble/main amd64 libnftnl1 amd64 1.0.2-2build1 [14.8 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble/main amd64 libnetfilter-contrack3 amd64 1.0.9-6build1 [45.2 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble/main amd64 libnftnl1 amd64 1.2.6-2build1 [66.0 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble/main amd64 iptables amd64 1.8.10-3ubuntu2 [381 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble/main amd64 libnftables1 amd64 1.0.9-1build1 [358 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble/main amd64 nftables amd64 1.0.9-1build1 [69.8 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble/main amd64 bridge-utils amd64 1.7.1-1ubuntu2 [33.9 kB]
Get:11 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 runc amd64 1.1.12-8ubuntu3.1 [8599 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 containerd amd64 1.7.24-8ubuntu1~24.04.1 [37.0 MB]
Get:13 http://archive.ubuntu.com/ubuntu noble/main amd64 dnsmasq-base amd64 2.98-2build2 [375 kB]
Get:14 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 docker.io amd64 26.1.3-8ubuntu1~24.04.1 [32.4 MB]
Get:15 http://archive.ubuntu.com/ubuntu noble/universe amd64 ubuntu-fan all 0.12.16 [35.2 kB]
Fetched 79.6 MB in 22s (3641 kB/s)
Preconfiguring packages ...
Selecting previously unselected package pigz.
(Reading database ... 42940 files and directories currently installed.)
Preparing to unpack .../08-pigz_2.8-1_amd64.deb ...
```

STEP 2: ENABLE AND DISABLE

1) sudo systemctl enable docker

2) sudo systemctl start docker

```
docker --version
```

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

```

jay@Sparkjazz: ~$ sudo apt-get install ubuntu-fan
Selecting previously unselected package ubuntu-fan.
Preparing to unpack .../lib-systemd-journal_249.8-1ubuntu1_amd64.deb ...
Unpacking lib-systemd-journal (249.8-1ubuntu1) ...
Setting up libsystemd0:amd64 (249.8-1ubuntu1) ...
Setting up libsystemd-journal:amd64 (249.8-1ubuntu1) ...
Setting up dnsmasq-base (2.90-2ubuntu2) ...
Setting up dnsmasq (2.90-2ubuntu2) ...
Setting up bridge-utils (1.7.11-ubuntu2) ...
Setting up pigz (2.8-1) ...
Setting up libnftnl0:amd64 (1.0.9-3build1) ...
Setting up containerd (1.7.24-0ubuntu1~24.04.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /usr/lib/systemd/system/containerd.service.
Setting up libnftables1:amd64 (1.0.9-1build1) ...
Setting up nftables (1.0.9-1build1) ...
Setting up libnetfilter-comtrack3:amd64 (1.0.9-5build1) ...
Setting up iptables (1.8.10-3ubuntu2) ...
update-alternatives: using /usr/sbin/iptables-legacy to provide /usr/sbin/iptables (iptables) in auto mode
update-alternatives: using /usr/sbin/iptables-legacy to provide /usr/sbin/iptables (iptables) in auto mode
update-alternatives: using /usr/sbin/iptables-nft to provide /usr/sbin/iptables (iptables) in auto mode
update-alternatives: using /usr/sbin/iptables-nft to provide /usr/sbin/ip6tables (ip6tables) in auto mode
update-alternatives: using /usr/sbin/iptables-nft to provide /usr/sbin/iptables (iptables) in auto mode
update-alternatives: using /usr/sbin/iptables-nft to provide /usr/sbin/ip6tables (ip6tables) in auto mode
Setting up docker.io (20.10.23~3-0ubuntu1~24.04.1) ...
info: Selecting GID from range 100 to 999 ...[#####.....]
info: Adding group `docker' (GID 189) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /usr/lib/systemd/system/docker.service.
Setting up docker-compose (2.20.1-0ubuntu1~24.04.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker-compose.service → /usr/lib/systemd/system/docker-compose.service.
Setting up ubuntu-fan (0.12.16) ...
Processing triggers for man-db (2.12.0-2ubuntu1) ...
Processing triggers for dbus (1.14.18-0ubuntu1) ...
Processing triggers for libc-bin (2.39-0ubuntu8.4) ...
jay@Sparkjazz: ~$ curl -L "https://github.com/docker/compose/releases/latest/download/docker-compose-$(uname -s)-$(uname -m)" -o /usr/local/bin/docker-compose
% Total    % Received    % Xferd   Average Speed   Time    Time     Time
Dload Upload   Total   Spent    Left   Speed
0 0 0 0 0 0 --::--::--::--::--::--::--::--::--::--::--::--::--::--::--::--::-- 0
0 0 0 0 0 0 --::--::--::--::--::--::--::--::--::--::--::--::--::--::--::-- 0
39 71.4M 39 28.3M 0 0 3642k 0 0:00:20 0:00:07 0:00:13 5025k

```

```

ajay@sparkajay:~/docker-python.app$ sudo chmod +x /usr/local/bin/docker-comp
ose
[sudo] password for ajay:
ajay@Sparkajay:~/docker-python.app$

```

```
ajay@Sparkajay:~/docker-python.app$ docker-compose --version
Docker Compose version v2.34.0
ajay@Sparkajay:~/docker-python.app$
```

Create a project directory

```
~$ mkdir ~/docker-python-app
~$ cd ~/docker-python-app
```

Create the python Application File

Create a file

```

ajay@Sparkajay:~/docker-python.app$ nano app.py
ajay@Sparkajay:~/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)

```

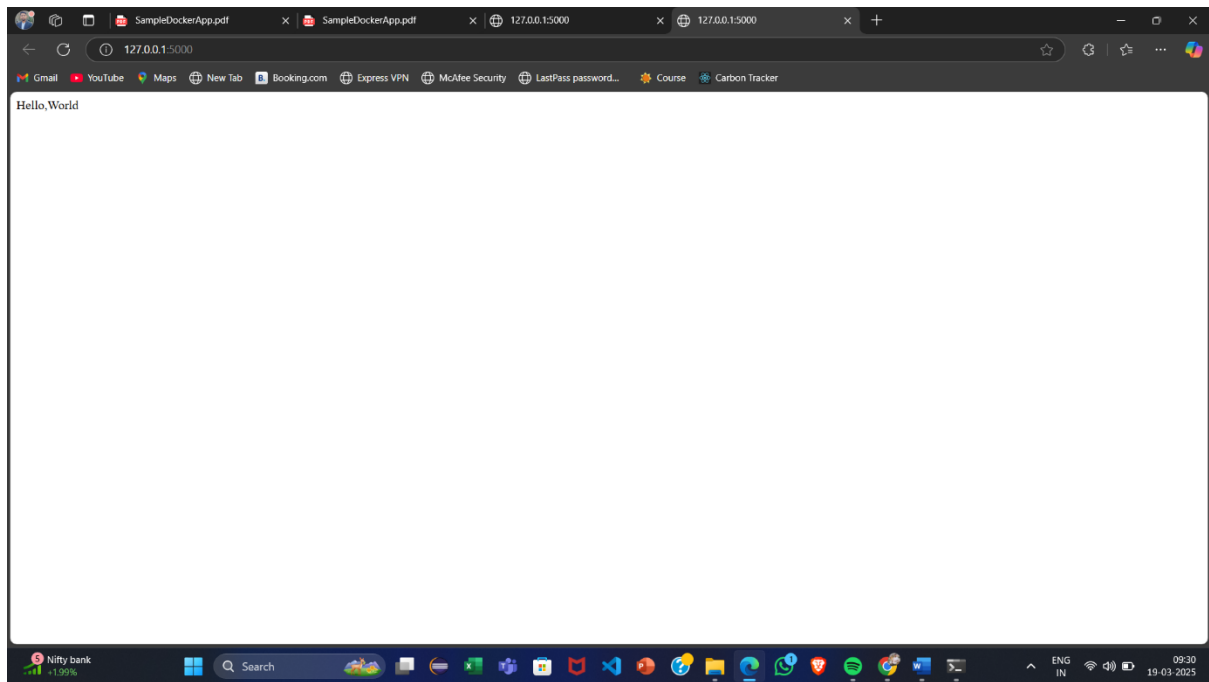
To Run an Docker

```

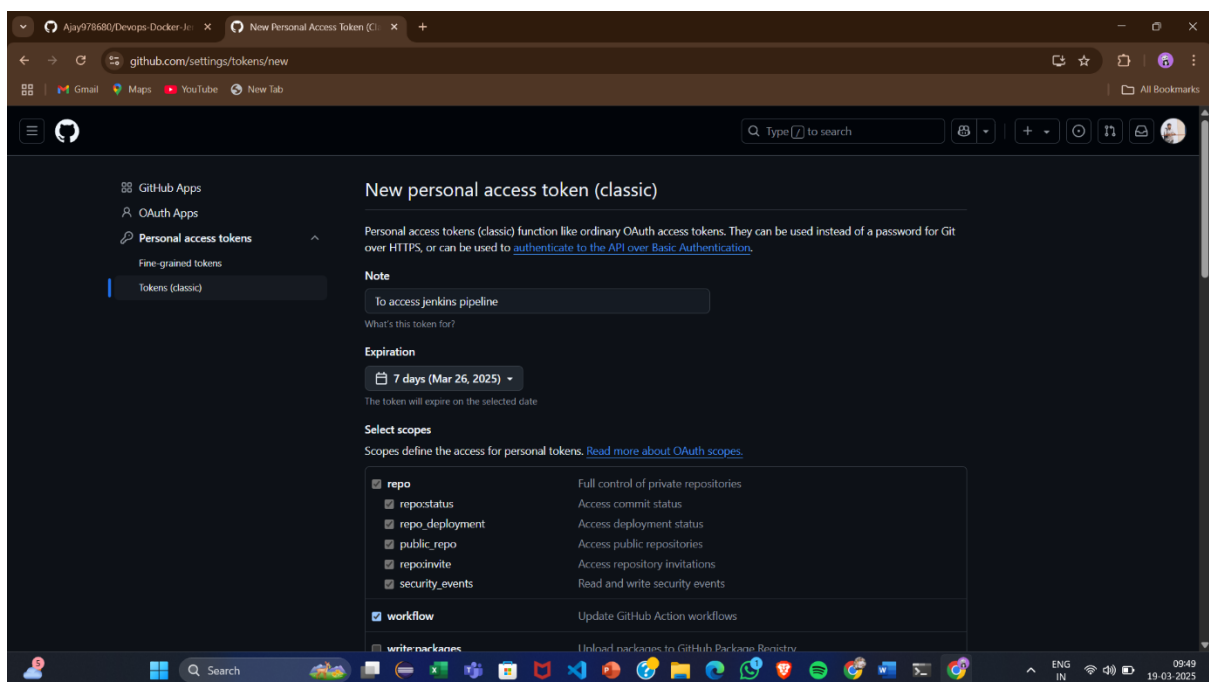
ajay@Sparkajay: ~/docker-py x + v
.cache/ .landscape/ .local/ docker-python-app/
ajay@Sparkajay:~$ cd ~/docker-python-app/
ajay@Sparkajay:~/docker-python-app$ sudo docker build -t test .
[sudo] password for ajay:
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/

Sending build context to Docker daemon 5.12kB
Step 1/7 : FROM python:3.11
--> 18c0f2265fd9
Step 2/7 : WORKDIR /app
--> Using cache
--> c74d97a78594
Step 3/7 : COPY requirement.txt .
--> Using cache
--> 2a5c15421a54
Step 4/7 : RUN pip install --no-cache-dir -r requirement.txt
--> Using cache
--> 06bbd2f65533
Step 5/7 : COPY . .
--> Using cache
--> 9989397a7c24
Step 6/7 : EXPOSE 5000
--> Using cache
--> 361a5a037a46
Step 7/7 : CMD ["python", "app.py"]
--> Using cache
--> bf910b007332
Successfully built bf910b007332
Successfully tagged test:latest
ajay@Sparkajay:~/docker-python-app$ sudo docker run -d -p 5000:5000 test
0d629dbb040053f18917bfe6c80e9cf18e9c71d5de671ee7db8a687ec9de084c
ajay@Sparkajay:~/docker-python-app$ sudo docker logs 0d629dbb040053f18917bfe6c80e9cf18e9c71d5de671ee7db8a687ec9de084c
* Serving Flask app 'app'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5000
* Running on http://172.17.0.2:5000
Press CTRL+C to quit

```



Devops Jenkins-Docker



Personal Token : **ghp_EXgb7xbvrbM3qG6KapplueB7SCEllw1b8BES**

Start Jenkins

```
ajay@Sparkajay:~$ sudo systemctl enable jenkins
Synchronizing state of jenkins.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable jenkins
ajay@Sparkajay:~$ sudo systemctl start jenkins
```


Dashboard > ajay > My Views > All > New Item


New Item


Enter an item name


DeclarativePipelineDemo

Select an item type

 **Freestyle project**
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.

 **Pipeline**
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

 **Multi-configuration project**
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

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

OK

Pipeline script from SCM

SCM ?

Git

Repositories ?

Repository URL ?

https://github.com/Ajay978680/Devops-Docker-Jenkins-Demo.git

Credentials ?

- none -

+ Add

Advanced

Add Repository

Save

Apply

Click on Add Credentials and Fill the details

The screenshot shows the Jenkins 'Add New Item' dialog for a Git repository. At the top, there is a dropdown menu set to 'Git'. Below it, the 'Repositories' section is expanded, showing a form for adding a new repository. The 'Repository URL' field contains 'https://github.com/Ajay978680/Devops-Docker-Jenkins-Demo.git'. The 'Credentials' dropdown is set to '- none -'. There are buttons for '+ Add', 'Advanced', and 'Add Repository'. Below the repository form, there is a section for 'Branches to build'.

In First Time, it Will have Password, in that we will give github token for it.

Clone the Git Repo in Terminal:

```
ajay@Sparkajay:~/docker-python-app$ ls
Dockerfile app.py docker-compose.yml requirement.txt
ajay@Sparkajay:~/docker-python-app$ git clone "https://github.com/Ajay978680/Devops-Docker-Jenkins-Demo.git"
Cloning into 'Devops-Docker-Jenkins-Demo'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
ajay@Sparkajay:~/docker-python-app$ ls
Devops-Docker-Jenkins-Demo Dockerfile app.py docker-compose.yml requirement.txt
ajay@Sparkajay:~/docker-python-app$ mv Dockerfile app.py docker-compose.yml requirement.txt Devops-Docker-Jenkins-Demo/
ajay@Sparkajay:~/docker-python-app$ ls
Devops-Docker-Jenkins-Demo
ajay@Sparkajay:~/docker-python-app$
```

And move all other file to github repo folder.

Git fetch – Remote repo Change and haven't pulled in local.

Working to Push on GitHub Repo:

```
ajay@Sparkajay:~/docker-python-app/Devops-Docker-Jenkins-Demo$ git add .
ajay@Sparkajay:~/docker-python-app/Devops-Docker-Jenkins-Demo$ git commit -m "Initial commit"
Author identity unknown

*** Please tell me who you are.

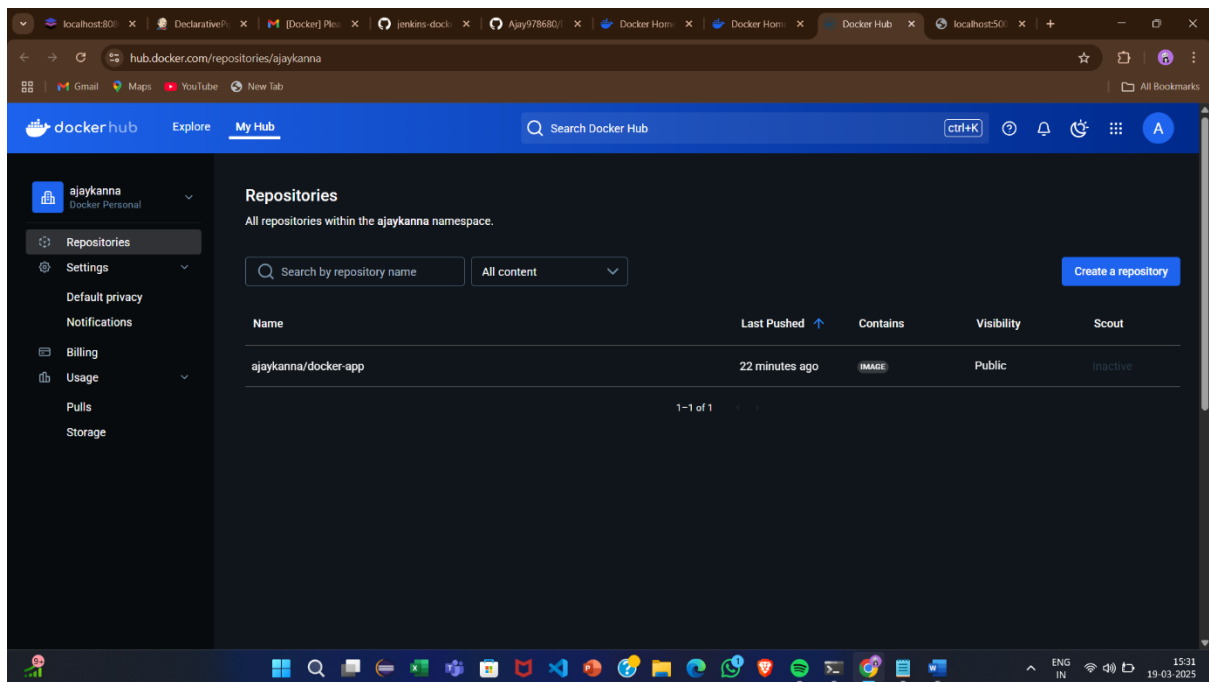
Run

git config --global user.email "you@example.com"
git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: empty ident name (for <ajay@Sparkajay.>) not allowed
ajay@Sparkajay:~/docker-python-app/Devops-Docker-Jenkins-Demo$ git config --global user.email "sparkajay001@gmail.com"
ajay@Sparkajay:~/docker-python-app/Devops-Docker-Jenkins-Demo$ git config --global user.name "Ajay978680"
ajay@Sparkajay:~/docker-python-app/Devops-Docker-Jenkins-Demo$ git commit -m "Initial commit"
[main 3b56509] Initial commit
4 files changed, 26 insertions(+)
create mode 100644 Dockerfile
create mode 100644 app.py
create mode 100644 docker-compose.yml
create mode 100644 requirement.txt
ajay@Sparkajay:~/docker-python-app/Devops-Docker-Jenkins-Demo$ git push https://Ajay978680:ghp_EXgb7xbvrbM3qG6KapluE87SCELLw1b8BE5@github.com/Ajay978680/De
vops-Docker-Jenkins-Demo.git
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 8 threads
Compressing objects: 100% (5/5), done.
Writing objects: 100% (6/6), 775 bytes | 387.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Ajay978680/Devops-Docker-Jenkins-Demo.git
39cb3aa..3b56509  main -> main
```

Then create, Build now again and Click the repository in docker:



Click the container that we create in Jenkins:

The screenshot shows the Docker Hub interface for the repository 'ajaykanna/docker-app'. The page is viewed from a web browser with multiple tabs open. The left sidebar shows the user's profile 'ajaykanna' and navigation options like 'Repositories', 'Settings', 'Default privacy', 'Notifications', 'Billing', 'Usage', 'Pulls', and 'Storage'. The main content area shows the repository details, including the name 'ajaykanna/docker-app', the last push time '23 minutes ago', and the repository size '366.6 MB'. There are links to 'Add a description' and 'Add a category'. Below this, the 'Tags' section shows a table with one tag, 'latest', which is an 'Image' type, pulled 'less than 1 day' ago, and pushed '23 minutes' ago. A 'See all' link is provided. On the right, there are 'Docker commands' and a 'Public view' button. A 'buildcloud' advertisement is also visible on the right side of the page. The bottom of the image shows the Windows taskbar with various application icons and the system clock indicating 15:31 on 19-03-2025.

Repositories / docker-app / General

Using 0 of 1 private repositories. [Get more](#)

ajaykanna/docker-app ⓘ

Last pushed 23 minutes ago · Repository size: 366.6 MB

[Add a description](#) ⓘ

[Add a category](#) ⓘ

[General](#) [Tags](#) [Image Management](#) [Collaborators](#) [Webhooks](#) [Settings](#)

Tags

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
latest		Image	less than 1 day	23 minutes

[See all](#)

Docker commands [Public view](#)

To push a new tag to this repository:

```
docker push ajaykanna/docker-app:tagname
```

buildcloud

Build with
Docker Build Cloud

Accelerate image build times with access to cloud-based builders and shared cache.

Docker Build Cloud executes builds on optimally-dimensioned cloud infrastructure with dedicated per-organization isolation.

Get faster builds through shared caching across your team, native multi-platform support, and encrypted data transfer - all without managing infrastructure.

15:31
19-03-2025