

# Project - 3

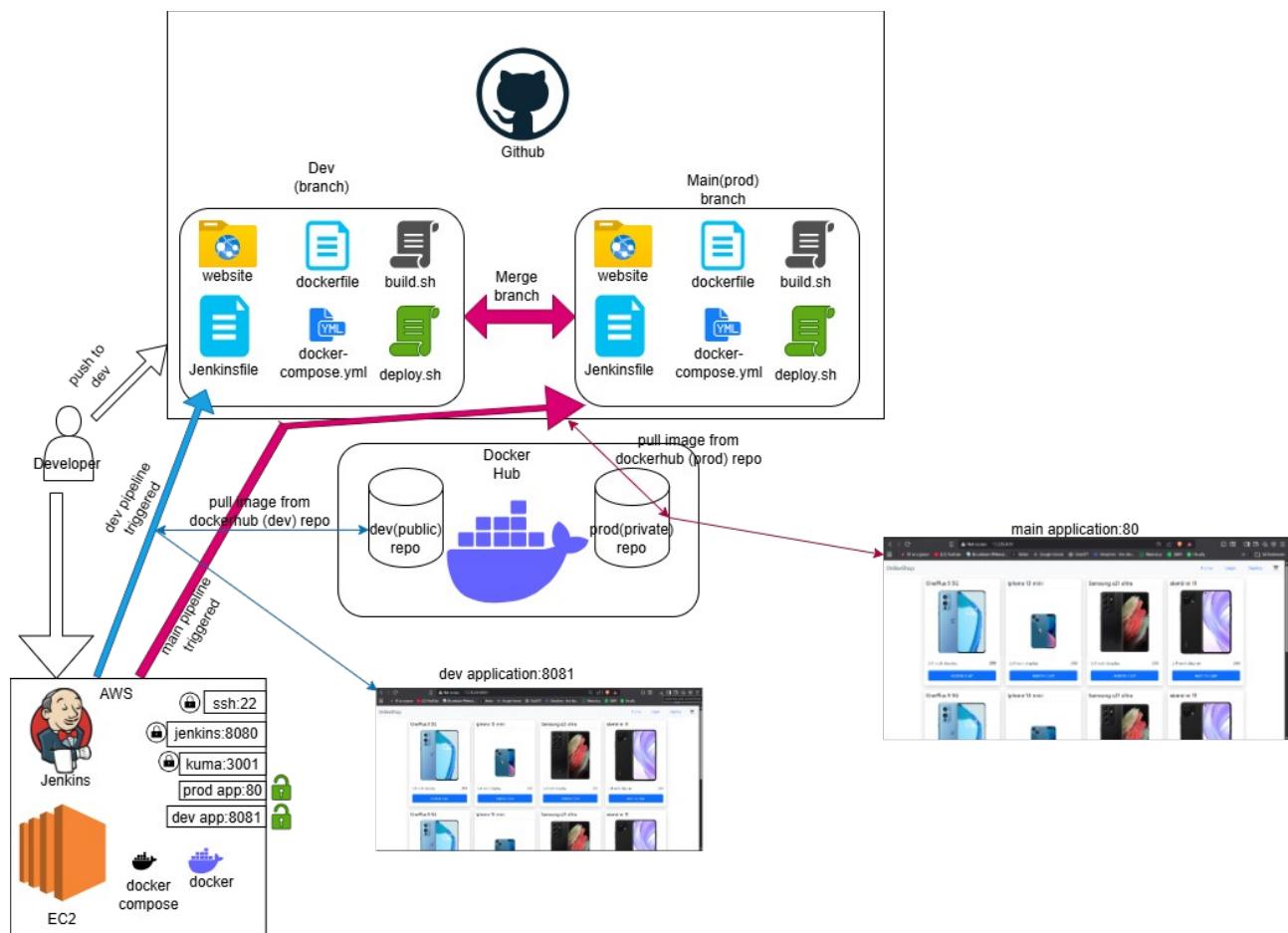
## Application Deployment

### Project Overview

This project demonstrates a **complete end-to-end DevOps CI/CD pipeline** for deploying a static web application using **Docker, Jenkins, GitHub, Docker Hub, AWS EC2, and Monitoring (Uptime Kuma)**.

The pipeline automatically builds, pushes, and deploys Docker images based on the Git branch (dev or main) and includes **production-grade security and monitoring practices**.

### Project Architecture:



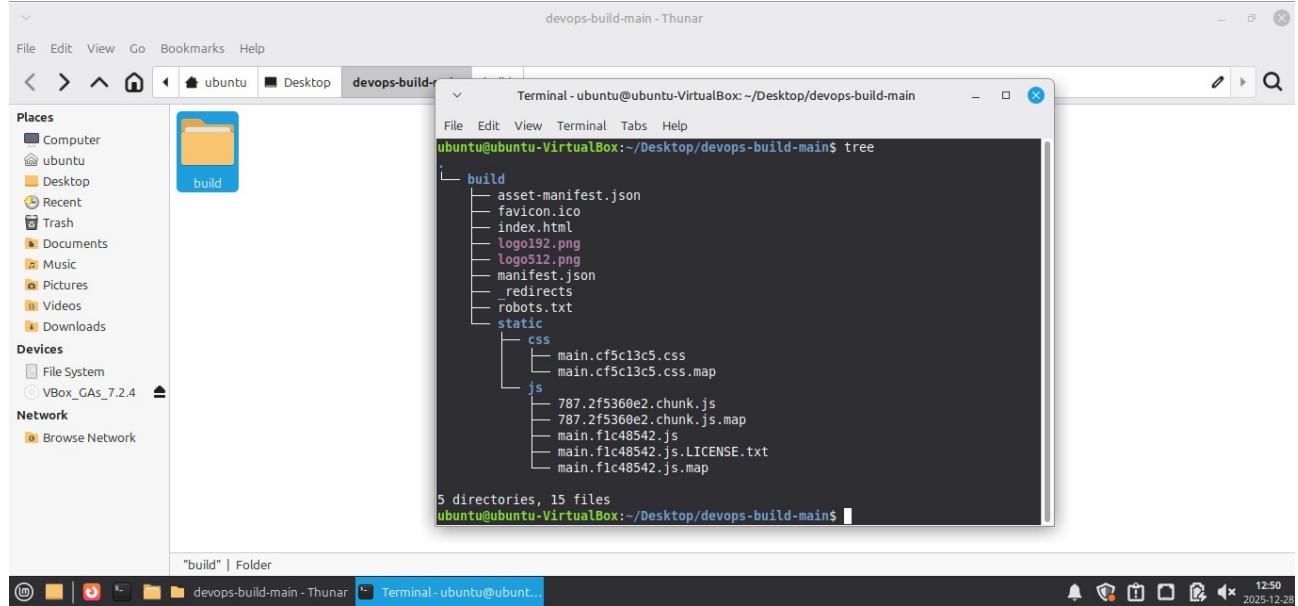
## Resource Required:

Hardware	Software	Required softwares
I3 - 8gb ram – 250gb ssd	Virtualbox (Linux mint 22.2 xfce os installed)	git
		docker
		docker-compose
Aws account	EC2	git
		docker
		docker-compose
		jenkins
Github account	Repository	Main (branch)
		Dev (branch)
Dockerhub account	Repository	Dev( public)
	Repository	Prod (private)

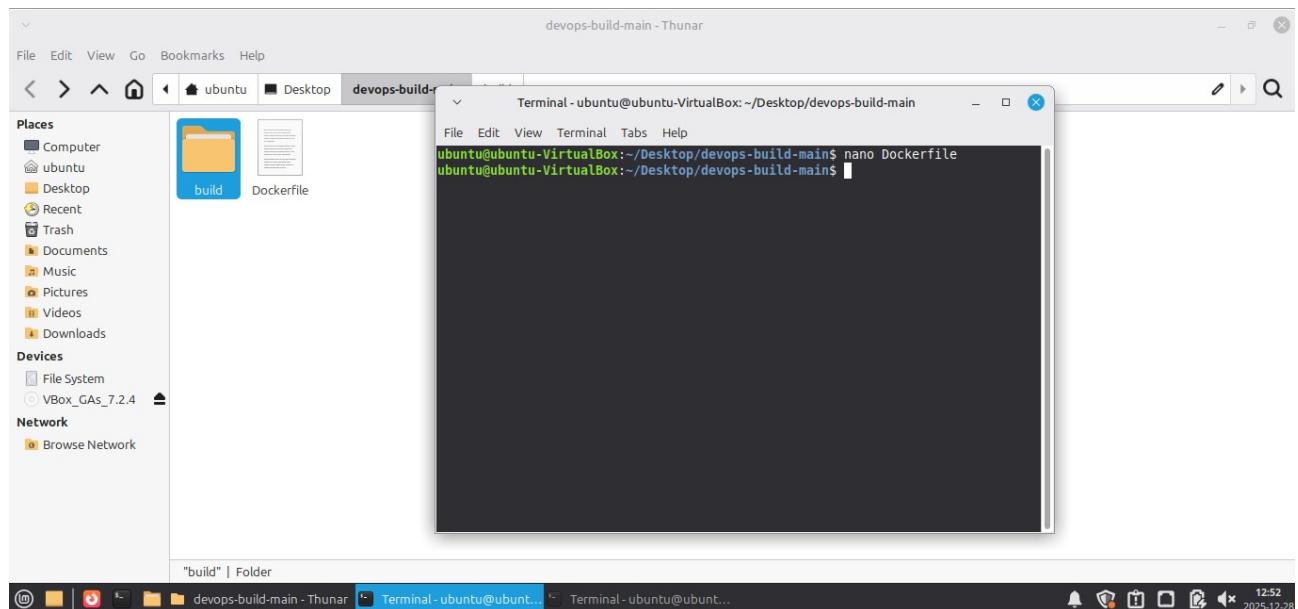
## Workflow of the Project:

1. You push code to **dev** branch in github repo
2. Jenkins detects the change by periodic scan
3. Jenkins looks for **Jenkinsfile**
4. Jenkinsfile identifies the branch
5. Jenkins runs **build.sh** via Jenkinsfile
6. build.sh file select the dockerhub dev repo , build docker image and push the image to dockerhub.
7. Jenkins runs **deploy.sh** via Jenkinsfile
8. deploy.sh detect dev repo and select image and set port:8081 and pull the image from dockerhub, it stops old container and start new container everytime it triggered.
9. DEV application is LIVE in **http://<public ip>:8081**
10. dev **MERGED** into **main** (PRODUCTION)
11. GitHub updates main branch
12. Jenkins detects main branch change
13. Jenkins reads Jenkinsfile again and runs **build.sh (PROD)**
14. build.sh detects prod repo in dockerhub and Builds Docker image and Pushes image to **private** prod repo.
15. Jenkins runs **deploy.sh (PROD)** , it select the latest image and set port :80 and pull the image from dockerhub ,replaces old prod containers.
16. PROD application is LIVE in **http://<public ip>**
17. set uptime-kuma (open-source) monitoring tool to track jenkins up/down and get notifications on email.

## Project Process and Screenshots:



## Dockerfile Creation:



### Dockerfile

```
FROM nginx:alpine
RUN rm -rf /usr/share/nginx/html/*
COPY build/ /usr/share/nginx/html/
EXPOSE 80
CMD ["nginx", "-g", "daemon off;"]
```

```
# Use lightweight nginx image
# Remove default nginx website
# Copy build files to nginx directory
# Expose HTTP port
# Start nginx
```

Tested the Dockerimage locally.

```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker build -t devops-static:v1 .
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 2.619MB
Step 1/5 : FROM nginx:alpine
--> 04da2b0513cd
Step 2/5 : RUN rm -rf /usr/share/nginx/html/*
--> Running in 029e4ab56260
--> Removed intermediate container 029e4ab56260
--> 5d86ec5f3b3b
Step 3/5 : COPY build/ /usr/share/nginx/html/
--> d4762c4b3e5d
Step 4/5 : EXPOSE 80
--> Running in 1d24cdc04313
--> Removed intermediate container 1d24cdc04313
--> 8f393afcc2b0
Step 5/5 : CMD ["nginx", "-g", "daemon off;"]
--> Running in 9c760f256cde
--> Removed intermediate container 9c760f256cde
--> 5d8ab91f4044
Successfully built 5d8ab91f4044
Successfully tagged devops-static:v1
```

```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
https://docs.docker.com/go/buildx/
Sending build context to Docker daemon 2.619MB
Step 1/5 : FROM nginx:alpine
--> 04da2b0513cd
Step 2/5 : RUN rm -rf /usr/share/nginx/html/*
--> Running in 029e4ab56260
--> Removed intermediate container 029e4ab56260
--> 5d86ec5f3b3b
Step 3/5 : COPY build/ /usr/share/nginx/html/
--> d4762c4b3e5d
Step 4/5 : EXPOSE 80
--> Running in 1d24cdc04313
--> Removed intermediate container 1d24cdc04313
--> 8f393afcc2b0
Step 5/5 : CMD ["nginx", "-g", "daemon off;"]
--> Running in 9c760f256cde
--> Removed intermediate container 9c760f256cde
--> 5d8ab91f4044
Successfully built 5d8ab91f4044
Successfully tagged devops-static:v1
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker run -d -p 8080:80 devops-static:v1
cd04fa3fba2e4c1494f1fd912036cbdb23c1499d745496c7dc0d95f9a5f9b35
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

React App — Mozilla Firefox

React App http://localhost:8080

OnlineShop

Home Login SignUp

OnePlus 9 5G



Never Settle

5.4 inch display 399

Add to Cart

Iphone 13 mini



5.4 inch display 399

Add to Cart

Samsung s21 ultra



5.4 inch display 399

Add to Cart

xiomni mi 11



5.4 inch display 399

Add to Cart

React App — Mozilla Firefox

React App http://localhost:8080/login

OnlineShop

Home Login SignUp



Login Into your account

Email address

Password

React App — Mozilla Firefox

React App http://localhost:8080/signup

Sign Up your account

User Name

Email address

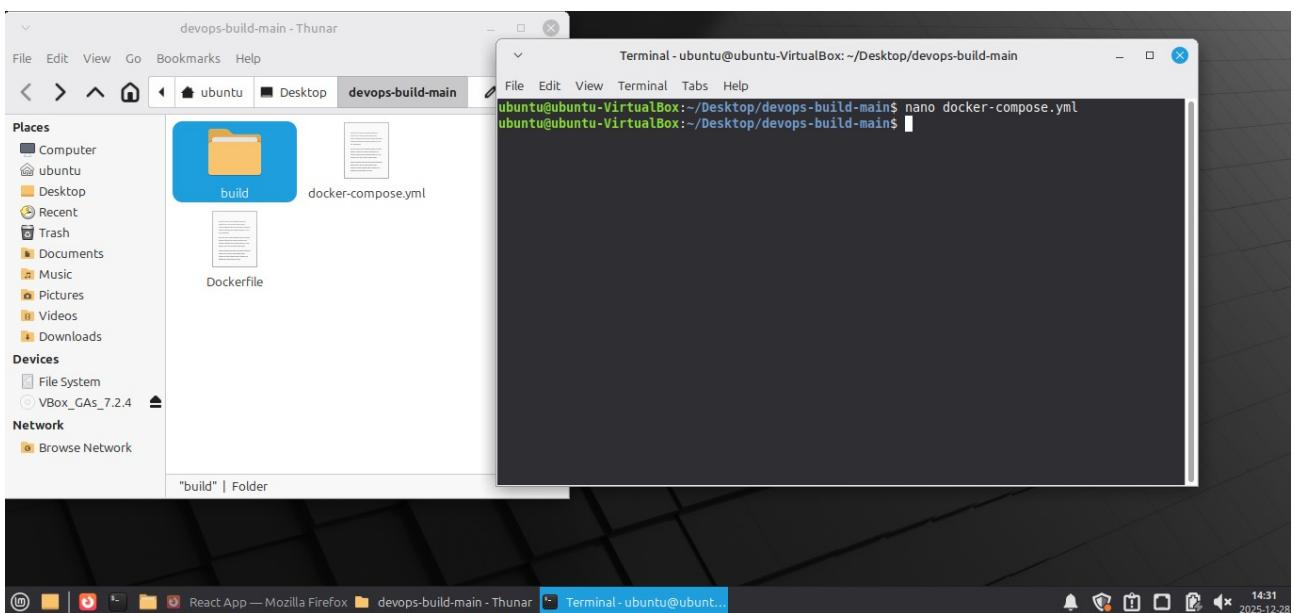
Password



```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
cd04fa3fba2e devops-static:v1 "/docker-entrypoint..." About an hour ago Up About an hour 0.0.0.0
:8080->80/tcp, [::]:8080->80/tcp friendly_tu
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
devops-static v1 5d8ab91f4044 About an hour ago 56.4MB
nginx alpine 04da2b0513cd 10 days ago 53.7MB
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
cd04fa3fba2e devops-static:v1 "/docker-entrypoint..." About an hour ago Up About an hour 0.0.0.0
:8080->80/tcp, [::]:8080->80/tcp friendly_tu
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
devops-static v1 5d8ab91f4044 About an hour ago 56.4MB
nginx alpine 04da2b0513cd 10 days ago 53.7MB
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker stop cd04
cd04
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

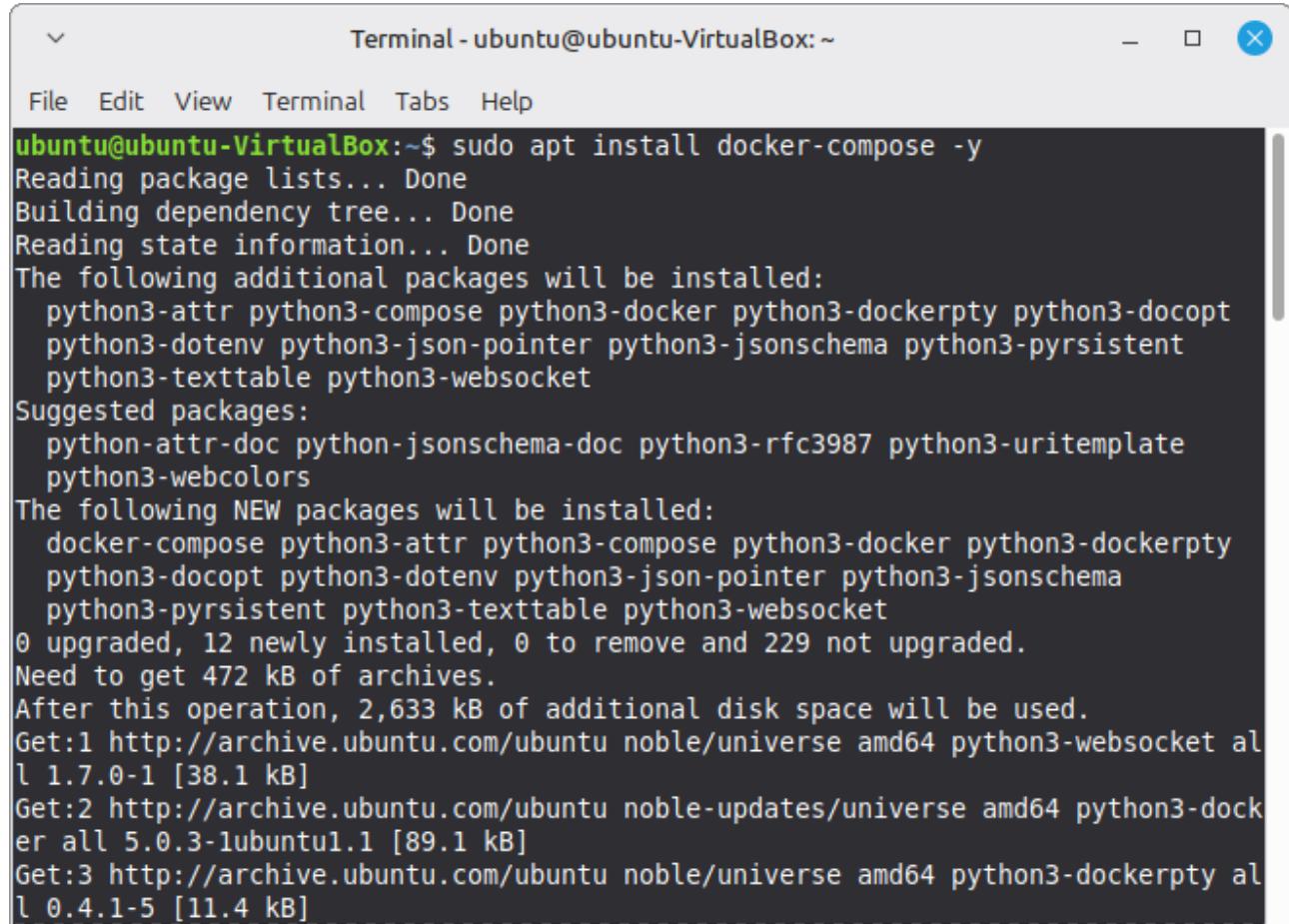
## Docker-compose file creation:



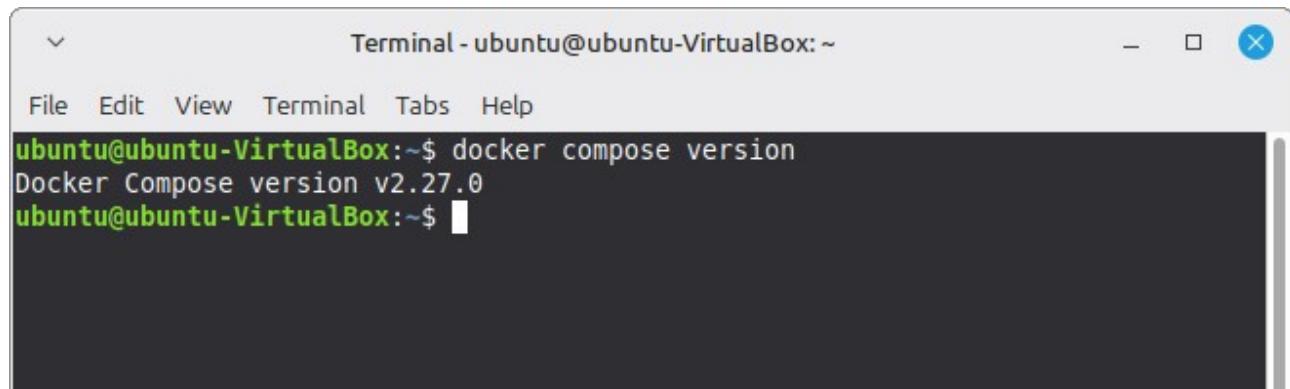
## Docker-compose.yml

```
services:  
  web:  
    image: ${IMAGE_NAME}  
    container_name: devops-web-${BRANCH_NAME}  
    ports:  
      - "${HOST_PORT}:80"  
    restart: always
```

install docker-compose locally:



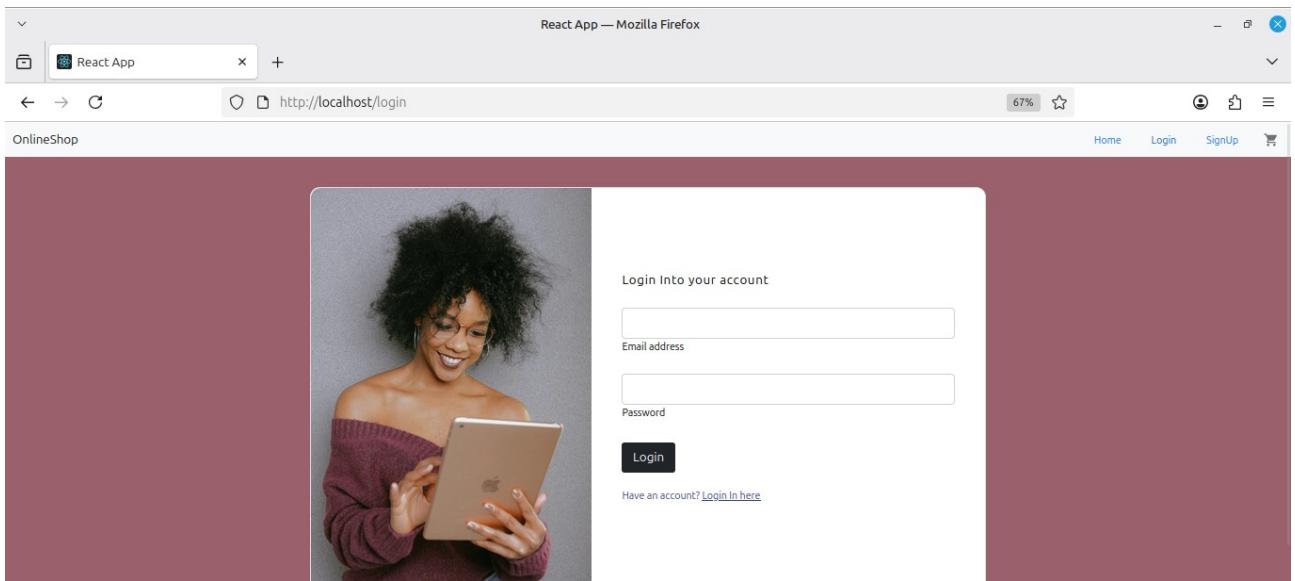
```
Terminal - ubuntu@ubuntu-VirtualBox:~  
File Edit View Terminal Tabs Help  
ubuntu@ubuntu-VirtualBox:~$ sudo apt install docker-compose -y  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  python3-attr python3-compose python3-docker python3-dockerpty python3-docopt  
  python3-dotenv python3-json-pointer python3-jsonschema python3-persistent  
  python3-texttable python3-websocket  
Suggested packages:  
  python-attr-doc python-jsonschema-doc python3-rfc3987 python3-uritemplate  
  python3-webcolors  
The following NEW packages will be installed:  
  docker-compose python3-attr python3-compose python3-docker python3-dockerpty  
  python3-docopt python3-dotenv python3-json-pointer python3-jsonschema  
  python3-persistent python3-texttable python3-websocket  
0 upgraded, 12 newly installed, 0 to remove and 229 not upgraded.  
Need to get 472 kB of archives.  
After this operation, 2,633 kB of additional disk space will be used.  
Get:1 http://archive.ubuntu.com/ubuntu noble/universe amd64 python3-websocket all 1.7.0-1 [38.1 kB]  
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 python3-docker all 5.0.3-1ubuntu1.1 [89.1 kB]  
Get:3 http://archive.ubuntu.com/ubuntu noble/universe amd64 python3-dockerpty all 0.4.1-5 [11.4 kB]
```

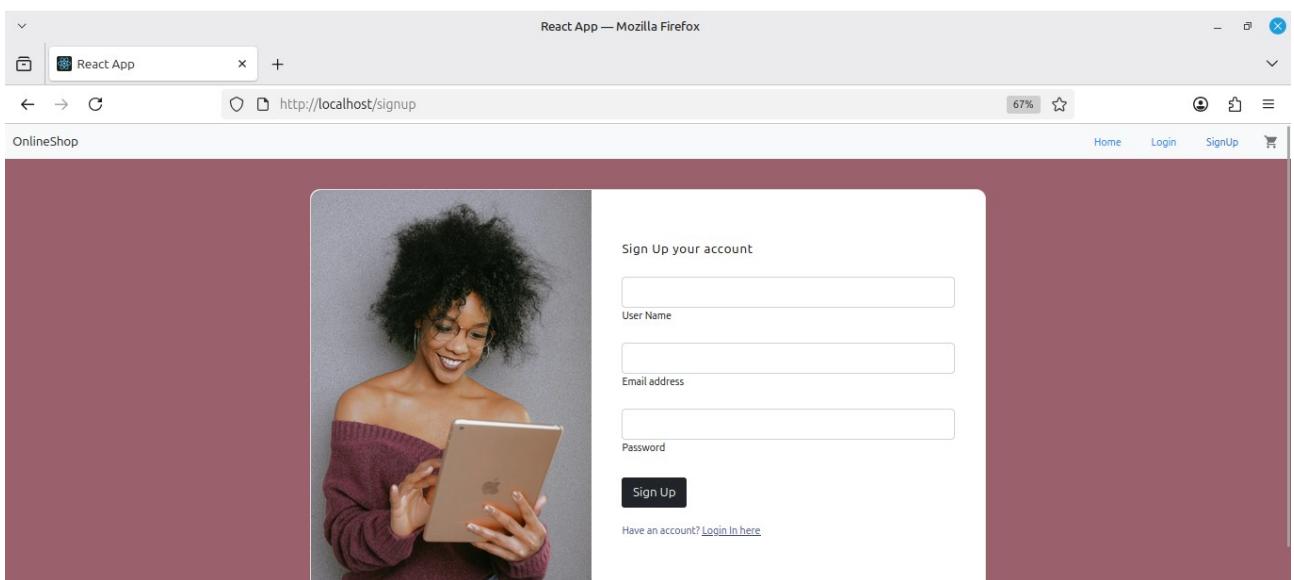
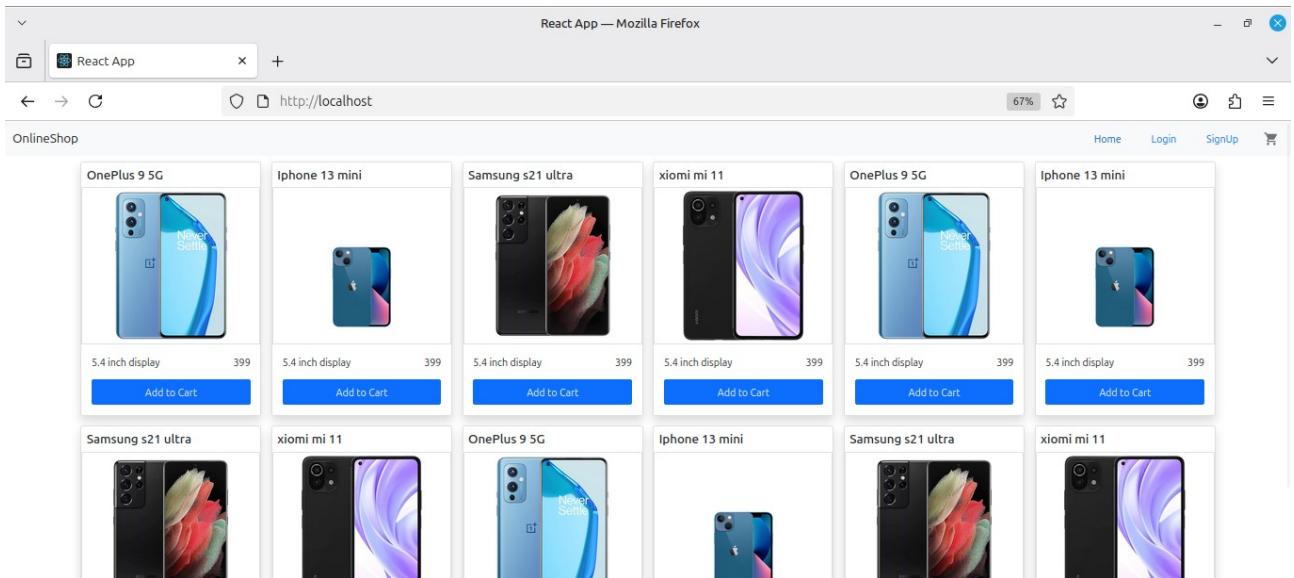


```
Terminal - ubuntu@ubuntu-VirtualBox:~  
File Edit View Terminal Tabs Help  
ubuntu@ubuntu-VirtualBox:~$ docker compose version  
Docker Compose version v2.27.0  
ubuntu@ubuntu-VirtualBox:~$ █
```

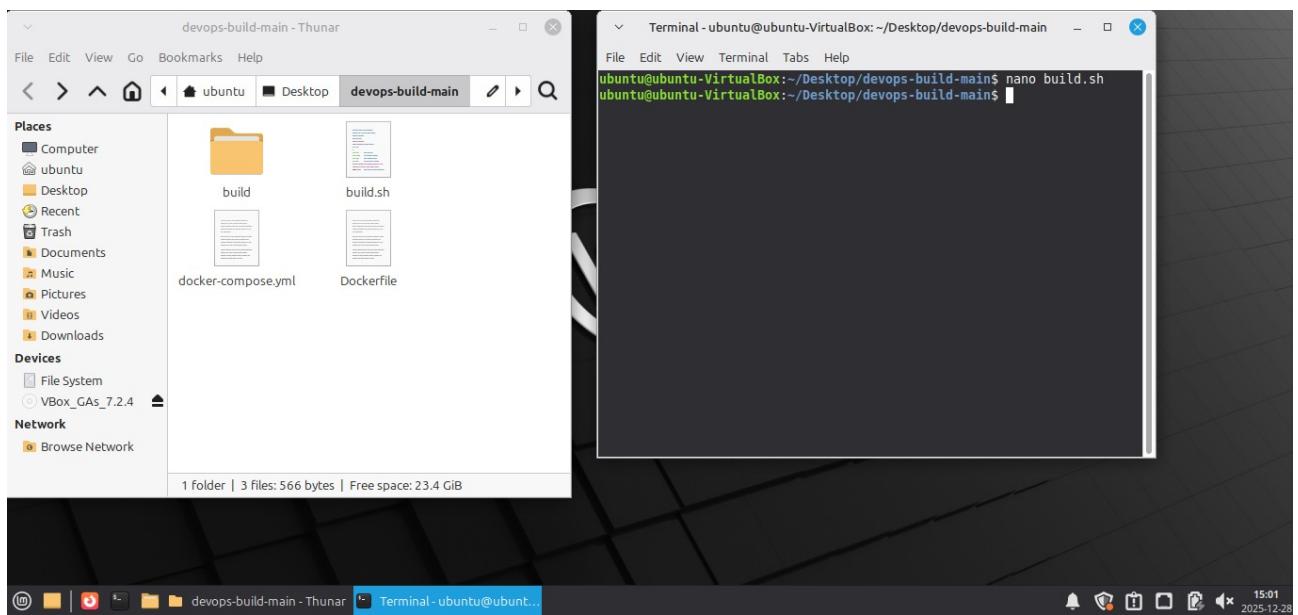
```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker compose up -d
WARN[0000] /home/ubuntu/Desktop/devops-build-main/docker-compose.yml: `version` is obsolete
[+] Running 2/2
✓ Network devops-build-main_default  Created          0.1s
✓ Container devops-web               Started         0.7s
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker compose up -d
WARN[0000] /home/ubuntu/Desktop/devops-build-main/docker-compose.yml: `version` is obsolete
[+] Running 2/2
✓ Network devops-build-main_default  Created          0.1s
✓ Container devops-web               Started         0.7s
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker ps
CONTAINER ID IMAGE      COMMAND             CREATED           STATUS    PORTS          NAMES
93bf43606787  devops-static:v1 "docker-entrypoint..."  57 seconds ago Up 56 seconds  0.0.0.0:80->80/tcp, [::]:80->80/tcp   devops-web
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```





## build.sh script creation:



## build.sh

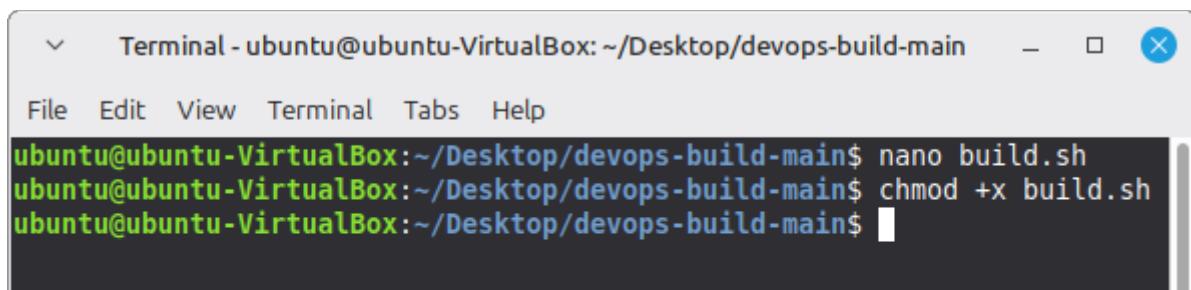
```
#!/bin/bash
set -e

if [ "$BRANCH_NAME" = "dev" ]; then
    IMAGE_NAME=prabusr/dev:latest
elif [ "$BRANCH_NAME" = "main" ]; then
    IMAGE_NAME=prabusr/prod:latest
else
    echo "Unknown branch: $BRANCH_NAME"
    exit 1
fi

echo "Building image: $IMAGE_NAME"

docker build -t $IMAGE_NAME .
docker push $IMAGE_NAME

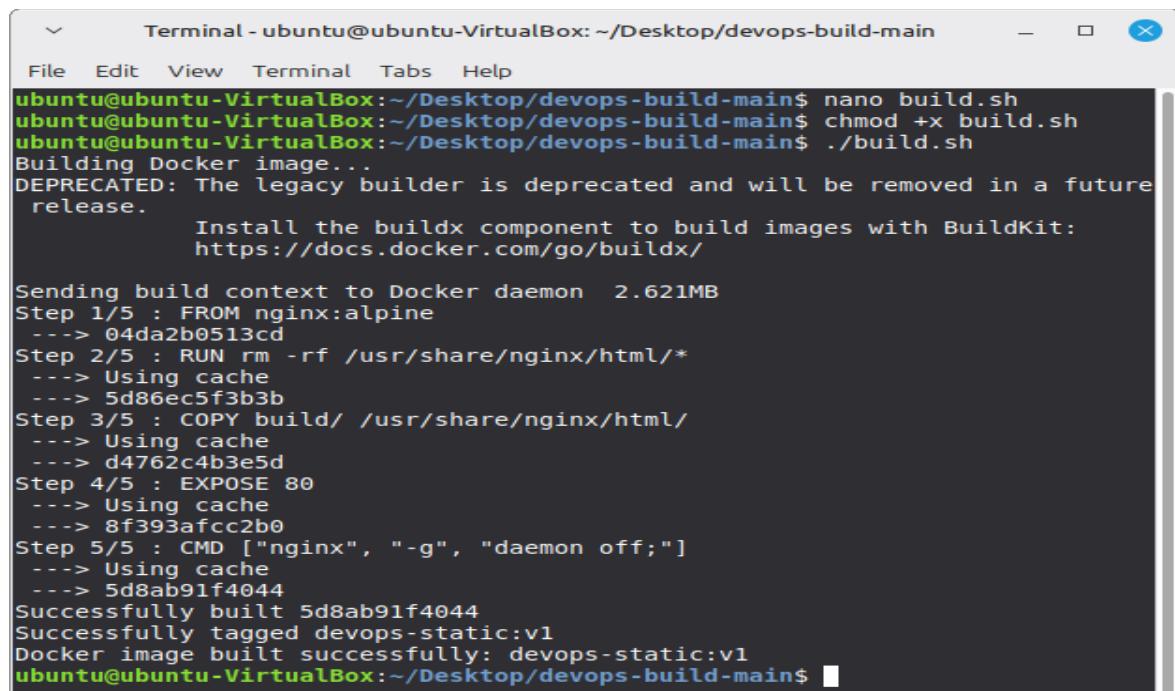
echo "Image pushed successfully"
```



A screenshot of a terminal window titled "Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main". The window shows the following command sequence:

```
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ nano build.sh
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ chmod +x build.sh
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

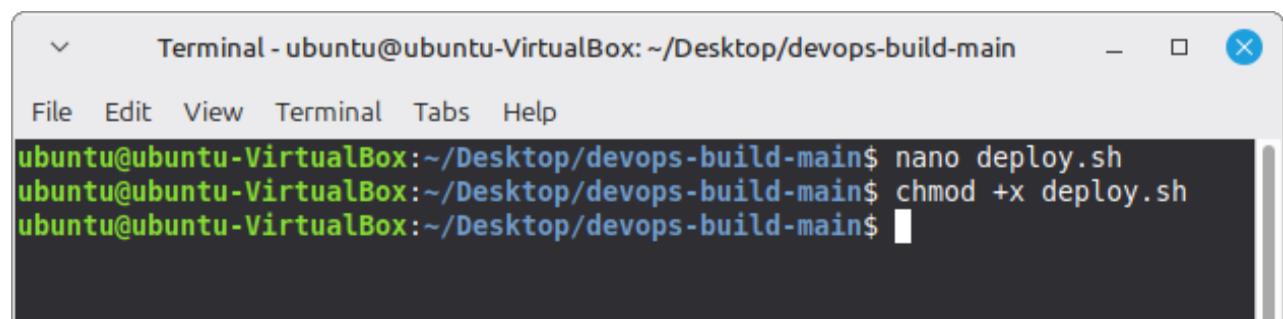
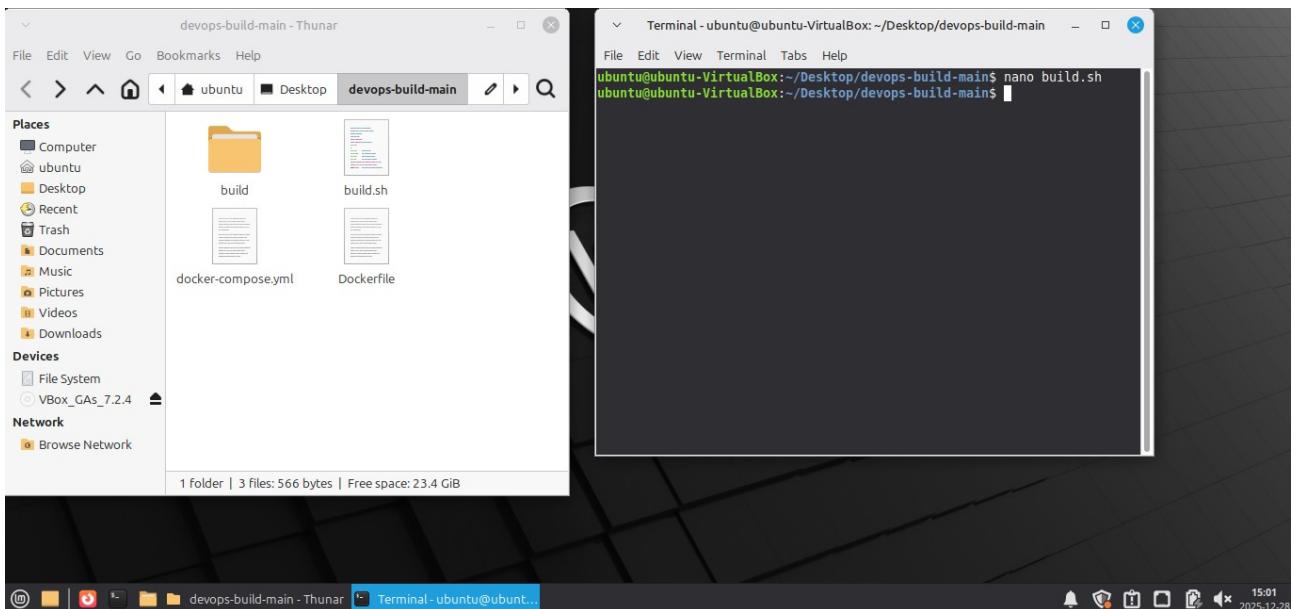
deploy.sh file creation:



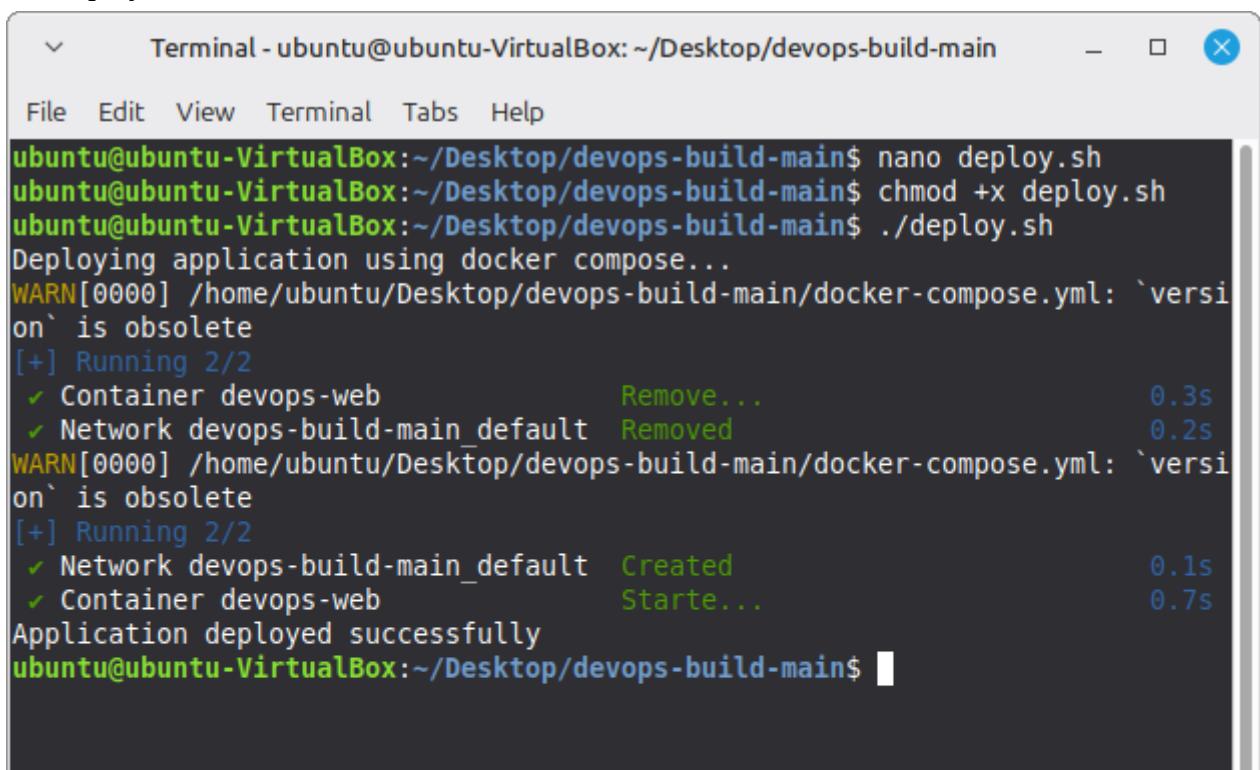
A screenshot of a terminal window titled "Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main". The window shows the following command sequence and its output:

```
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ nano build.sh
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ chmod +x build.sh
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ ./build.sh
Building Docker image...
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/

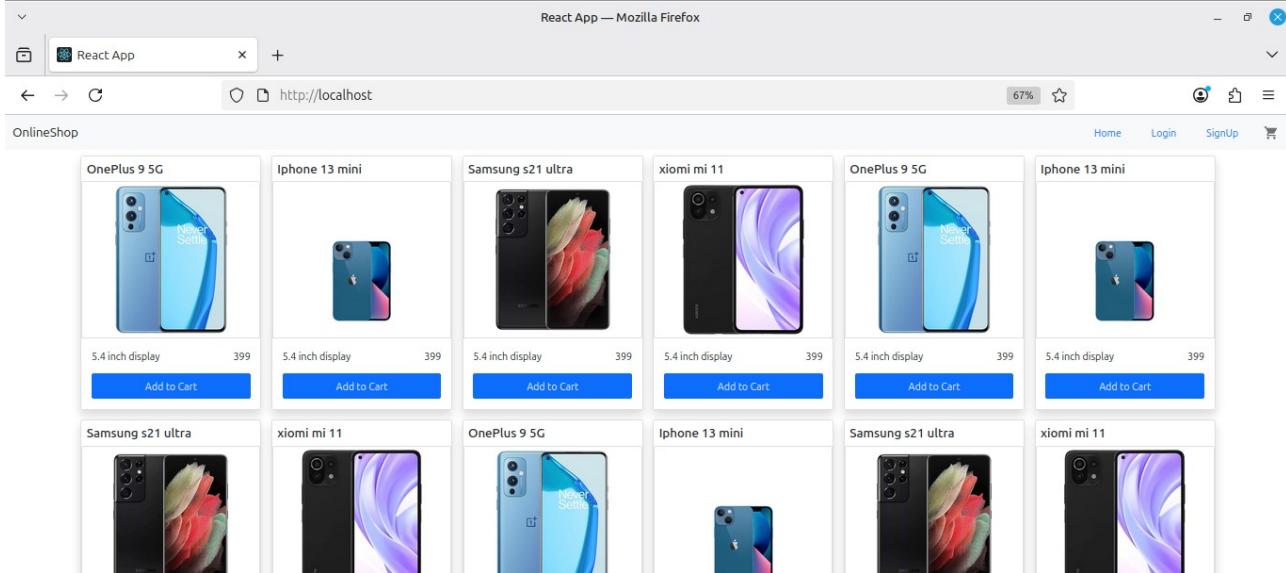
Sending build context to Docker daemon  2.621MB
Step 1/5 : FROM nginx:alpine
--> 04da2b0513cd
Step 2/5 : RUN rm -rf /usr/share/nginx/html/*
--> Using cache
--> 5d86ec5f3b3b
Step 3/5 : COPY build/ /usr/share/nginx/html/
--> Using cache
--> d4762c4b3e5d
Step 4/5 : EXPOSE 80
--> Using cache
--> 8f393afcc2b0
Step 5/5 : CMD ["nginx", "-g", "daemon off;"]
--> Using cache
--> 5d8ab91f4044
Successfully built 5d8ab91f4044
Successfully tagged devops-static:v1
Docker image built successfully: devops-static:v1
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```



test deploy.sh



## deploy script worked in browserlocalhost



```
Terminal - ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ nano deploy.sh
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ chmod +x deploy.sh
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ ./deploy.sh
Deploying application using docker compose...
WARN[0000] /home/ubuntu/Desktop/devops-build-main/docker-compose.yml: `version` is obsolete
[+] Running 2/2
✓ Container devops-web          Remove...          0.3s
✓ Network devops-build-main default  Removed          0.2s
WARN[0000] /home/ubuntu/Desktop/devops-build-main/docker-compose.yml: `version` is obsolete
[+] Running 2/2
✓ Network devops-build-main_default Created          0.1s
✓ Container devops-web           Start...          0.7s
Application deployed successfully
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED            STATUS              PORTS               NAMES
76a4c693b252        devops-static:v1   "/docker-entrypoint..."   About a minute ago   Up About a minute   0.0.0.0:80->80/tcp, [::]:80->80/tcp   devops-web
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

## .gitignore , .dockerignore file creation:

```
Terminal - ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ nano .gitignore
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ nano .dockerignore
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:   git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
:
hint:   git branch -m <name>
Initialized empty Git repository in /home/ubuntu/Desktop/devops-build-main/
git/
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git branch -M main
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

## .gitignore

Docker

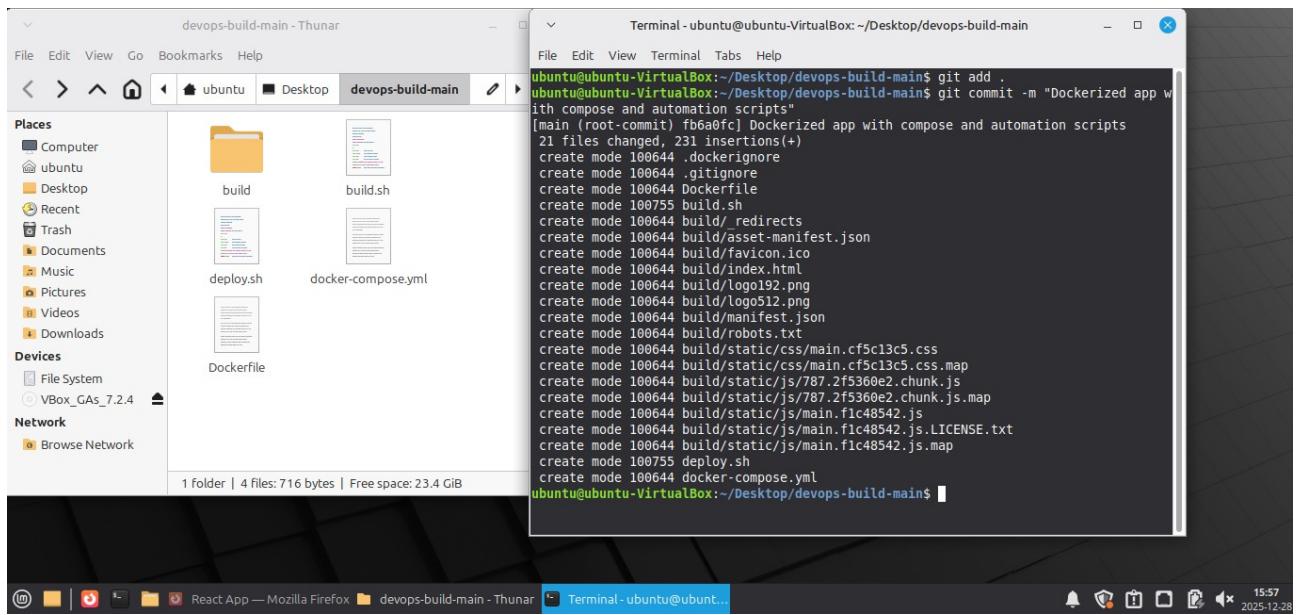
## \*.log

```
.DS_Store          # OS files
.env               # Environment files
node_modules/      # Node artifacts (if any)
```

## .dockerignore

```
.git
.gitignore
node_modules
*.log
```

git add and committed:



connect project dir to github and push:

The screenshot shows a terminal window titled "Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main". The terminal content is as follows:

```
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git remote add origin https://github.com/prabuSR/devops-build.git
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git push -u origin main
Username for 'https://github.com': prabuSR
Password for 'https://prabuSR@github.com':
Enumerating objects: 27, done.
Counting objects: 100% (27/27), done.
Delta compression using up to 2 threads
Compressing objects: 100% (25/25), done.
Writing objects: 100% (27/27), 720.60 KiB | 2.55 MiB/s, done.
Total 27 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/prabuSR/devops-build.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

dev branch created and pushed:

The screenshot shows a terminal window titled "Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main". The terminal content is as follows:

```
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git checkout -b dev
Switched to a new branch 'dev'
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git push -u origin dev
Username for 'https://github.com': prabuSR
Password for 'https://prabuSR@github.com':
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'dev' on GitHub by visiting:
remote:     https://github.com/prabuSR/devops-build/pull/new/dev
remote:
To https://github.com/prabuSR/devops-build.git
 * [new branch]      dev -> dev
branch 'dev' set up to track 'origin/dev'.
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git checkout -b dev
Switched to a new branch 'dev'
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git push -u origin dev
Username for 'https://github.com': prabuSR
Password for 'https://prabuSR@github.com':
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'dev' on GitHub by visiting:
remote:     https://github.com/prabuSR/devops-build/pull/new/dev
remote:
To https://github.com/prabuSR/devops-build.git
 * [new branch]      dev -> dev
branch 'dev' set up to track 'origin/dev'.
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git branch
* dev
  main
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

The screenshot shows a GitHub repository page for 'devops-build'. The repository is public and has 0 stars. It features sections for 'Start coding with Codespaces', 'Add collaborators to this repository', and 'Quick setup — if you've done this kind of thing before'. The 'Quick setup' section includes links for 'Set up in Desktop', 'HTTPS', and 'SSH', and a URL 'https://github.com/prabuSR/devops-build.git'. A note at the bottom says 'Get started by creating a new file or uploading an existing file. We recommend every repository include a README, LICENSE, and .gitignore.' Below this, there's a link to '...or create a new repository on the command line'.

The screenshot shows the GitHub repository page for `prabuSR/devops-build`. The main branch is `main`, which has 1 branch and 0 tags. The repository contains several files: `build`, `.dockerignore`, `.gitignore`, `Dockerfile`, `build.sh`, `deploy.sh`, and `docker-compose.yml`. All files were committed 12 minutes ago. The repository has 1 commit in total. The sidebar includes sections for About, Activity, Releases, and Packages, all of which are currently empty.

This screenshot is identical to the one above, but it includes a modal dialog titled "Switch branches/tags". The modal has a search bar and two tabs: "Branches" (selected) and "Tags". It lists two branches: `main` (which is checked) and `dev`. There is also a link to "View all branches". The rest of the repository page and sidebar are visible in the background.

The screenshot shows a GitHub repository page for 'devops-build'. The repository has 2 branches and 0 tags. The 'dev' branch is selected. The main branch contains several commits, all of which are Dockerized app with compose and automation scripts, pushed 16 minutes ago. The repository has 0 stars, 0 forks, and no releases or packages published.

created dev and prod repository in dockerhub:

The screenshot shows the Docker Hub interface for the user 'prabusr'. It displays two repositories: 'prabusr/prod' (Private, Inactive) and 'prabusr/dev' (Public, Inactive). The 'prabusr' profile is also visible on the left.

```
Terminal - ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker login
Authenticating with existing credentials... [Username: prabusr]
Info → To login with a different account, run 'docker logout' followed by 'docker login'

Login Succeeded
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

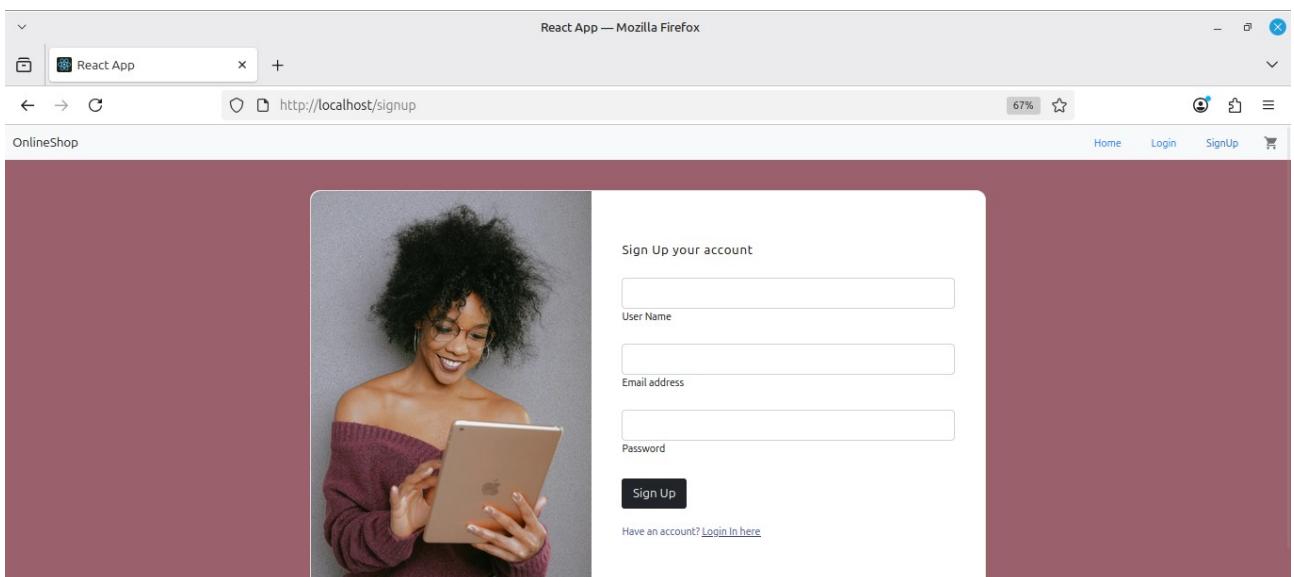
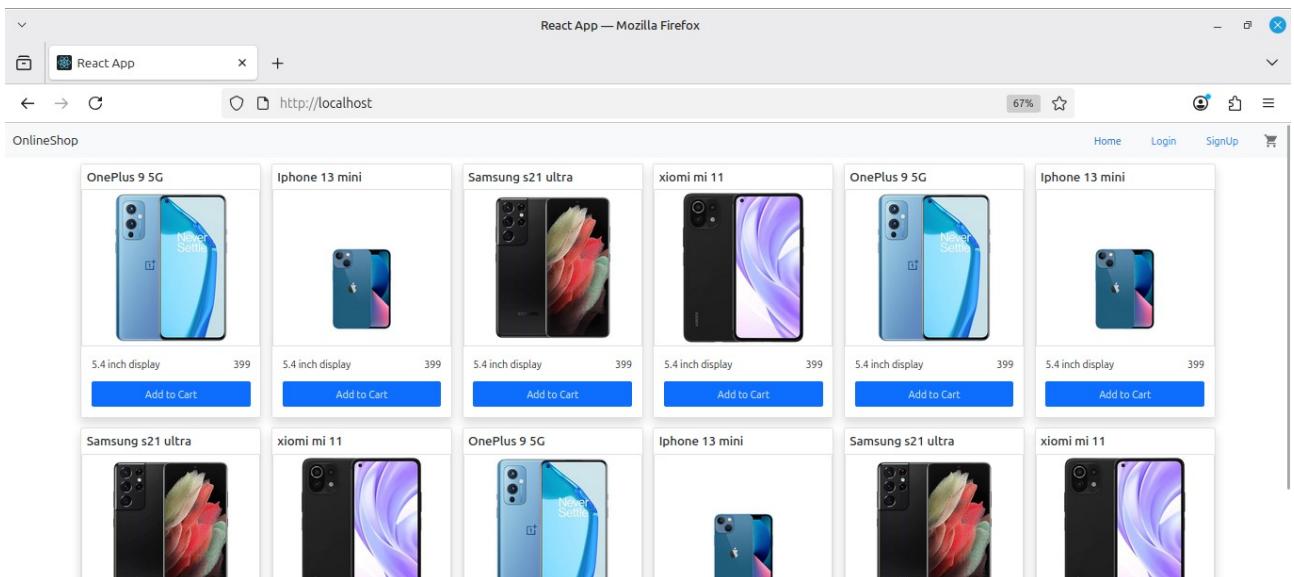
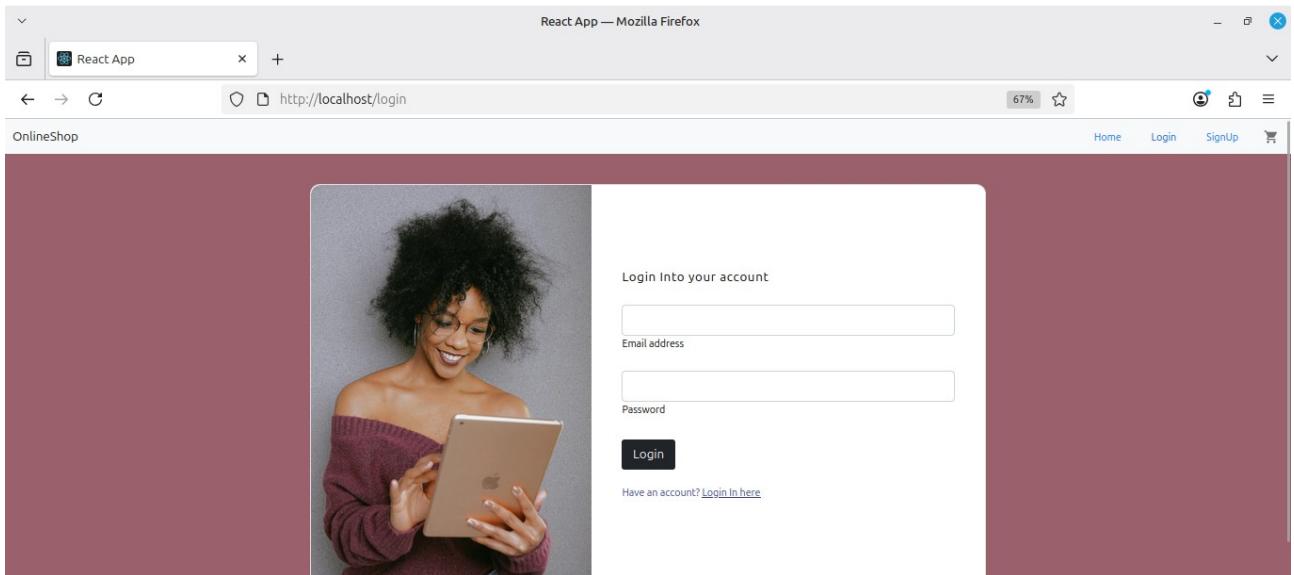
```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ ./build.sh
Building Docker image: prabusr/dev:latest
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
Install the buildx component to build images with BuildKit:
https://docs.docker.com/go/buildx/
Sending build context to Docker daemon 2.623MB
Step 1/5 : FROM nginx:alpine
--> 04da2b0513cd
Step 2/5 : RUN rm -rf /usr/share/nginx/html/*
--> Using cache
--> 5d86ec5f3b3b
Step 3/5 : COPY build/ /usr/share/nginx/html/
--> Using cache
--> d4762c4b3e5d
Step 4/5 : EXPOSE 80
--> Using cache
--> 8f393afcc2b0
Step 5/5 : CMD ["nginx", "-g", "daemon off;"]
--> Using cache
--> 5d8ab91f4044
Successfully built 5d8ab91f4044
Successfully tagged prabusr/dev:latest
The push refers to repository [docker.io/prabusr/dev]
2b2bfa7694ad: Pushed
022754f83dd3: Pushed
e6fe11fa5b7f: Mounted from library/nginx
67ea0b046e7d: Mounted from library/nginx
ed5fa8595c7a: Mounted from library/nginx
```

```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
Step 2/5 : RUN rm -rf /usr/share/nginx/html/*
--> Using cache
--> 5d86ec5f3b3b
Step 3/5 : COPY build/ /usr/share/nginx/html/
--> Using cache
--> d4762c4b3e5d
Step 4/5 : EXPOSE 80
--> Using cache
--> 8f393afcc2b0
Step 5/5 : CMD ["nginx", "-g", "daemon off;"]
--> Using cache
--> 5d8ab91f4044
Successfully built 5d8ab91f4044
Successfully tagged prabusr/dev:latest
The push refers to repository [docker.io/prabusr/dev]
2b2bfa7694ad: Pushed
022754f83dd3: Pushed
e6fe11fa5b7f: Mounted from library/nginx
67ea0b046e7d: Mounted from library/nginx
ed5fa8595c7a: Mounted from library/nginx
8ae63eb1f31f: Mounted from library/nginx
b3e3d1bbb64d: Mounted from library/nginx
48078b7e3000: Mounted from library/nginx
fd1e40d7f74b: Mounted from library/nginx
7bb20cf5ef67: Mounted from library/nginx
latest: digest: sha256:dc4e074b0646d24dea8d7aecbd7b170c9e75633e9ce35101fc6f5407a0b2b8
c3 size: 2406
Docker image pushed to Docker Hub (dev repo)
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

```
Terminal - ubuntu@ubuntu-VirtualBox: ~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker compose down
WARN[0000] /home/ubuntu/Desktop/devops-build-main/docker-compose.yml: `version` is obsolete
[+] Running 2/2
✓ Container devops-web Removed 0.5s
✓ Network devops-build-main default Re... 0.2s
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker compose up -d
WARN[0000] /home/ubuntu/Desktop/devops-build-main/docker-compose.yml: `version` is obsolete
[+] Running 2/2
✓ Network devops-build-main_default Cr... 0.1s
✓ Container devops-web Started 0.7s
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
5acf0901cae prabusr/dev:latest "/docker-entrypoint..." 19 seconds ago Up 18 seconds 0.0.0.0:80->80/tcp, [::]:80->80/tcp devops-web
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

The screenshot shows the Docker Hub interface. On the left, there's a sidebar with a user profile for 'prabusr' and sections for 'Repositories', 'Hardened Images', 'Collaborations', 'Settings', 'Default privacy', 'Notifications', 'Billing', 'Usage', 'Pulls', and 'Storage'. The main area displays a repository named 'prabusr/dev'. The repository page includes a 'Search Docker Hub' bar, a 'Docker commands' section with a button to 'Push a new tag', and a 'Public view' button. Below these are tabs for 'General', 'Tags', 'Image Management (BETA)', 'Collaborators', 'Webhooks', and 'Settings'. The 'General' tab is selected, showing a table for 'Tags'. The table has columns: Tag, OS, Type, Pulled, and Pushed. It contains one entry: 'latest' (OS: Alpine, Type: Image, Pulled: less than 1 day, Pushed: 6 minutes). There's also a link to 'See all'. To the right of the repository details, there's an advertisement for 'buildcloud' which says 'Build with Docker Build Cloud' and 'Accelerate image build times with access to cloud-based builders and shared cache.' It also mentions 'Docker Build Cloud executes builds on optimally-dimensioned cloud infrastructure with dedicated per-organization isolation.'

test docker-compose yml file after update docker repo image and pull from dockerhub dev output in browser



create AWS EC2 Instance with t3.micro (free tier account):

The screenshot shows the AWS EC2 Instances page. A single instance, "ubuntu EC2" (Instance ID: i-Off71e66588416769), is listed as "Running" with the instance type "t3.micro". The status check is "Initializing" and the alarm status is "View alarms +". The instance was last updated less than a minute ago.

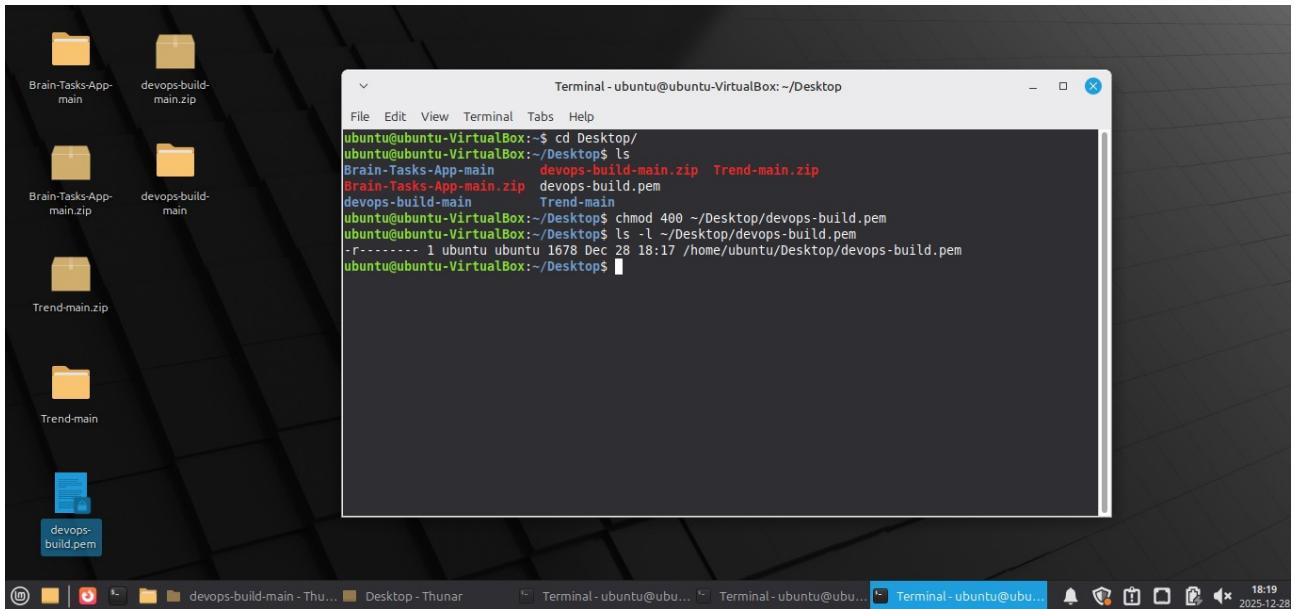
The screenshot shows the AWS Security Groups Inbound rules configuration page. It lists five security group rules (SGRs) with their respective details:

- sgr-06cae3a60ac75722d: Custom TCP on port 8081 from 0.0.0.0/0
- sgr-0c4284b08d1df4e3a: Custom TCP on port 3001 from 103.187.217.156/32
- sgr-048b7bc90613a1fde: HTTP on port 80 from 0.0.0.0/0
- sgr-0eb089084bfecefba: Custom TCP on port 8080 from 0.0.0.0/0, labeled "for Jenkins"
- sgr-027e62c4407f63a58: SSH on port 22 from 103.187.217.156/32

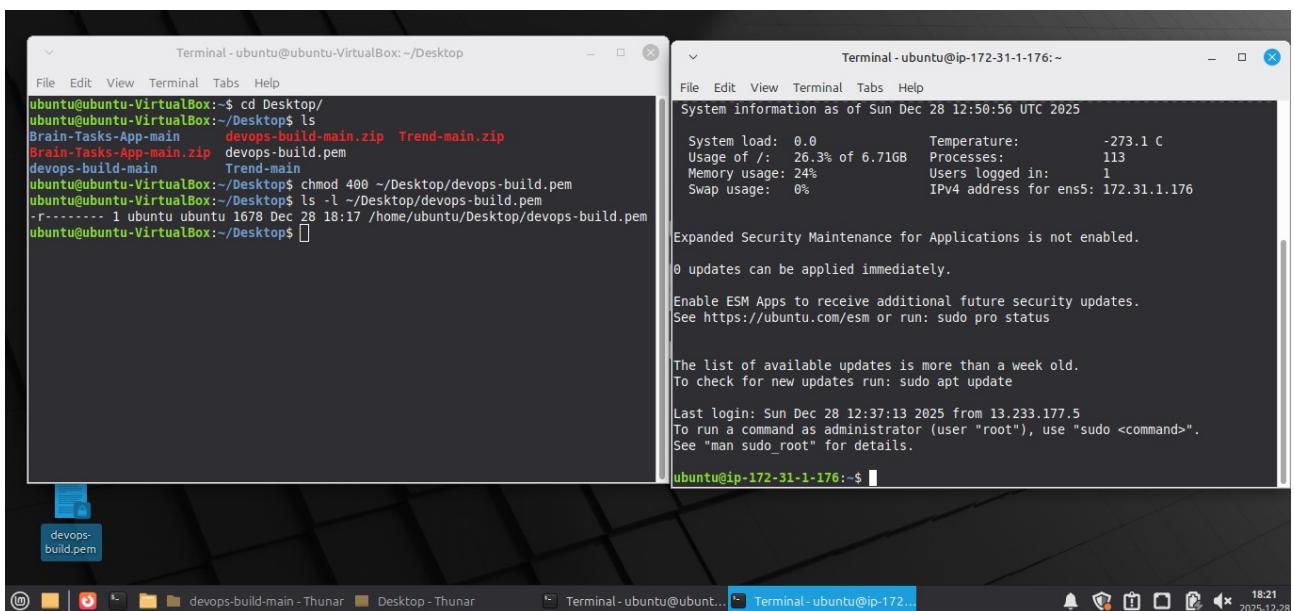
## Security Group Rules

Purpose	Port	Access
SSH	22	My IP only
Jenkins	8080	My IP only
Monitoring (kuma)	3001	My IP only
PROD App	80	Public
DEV App	8081	Public

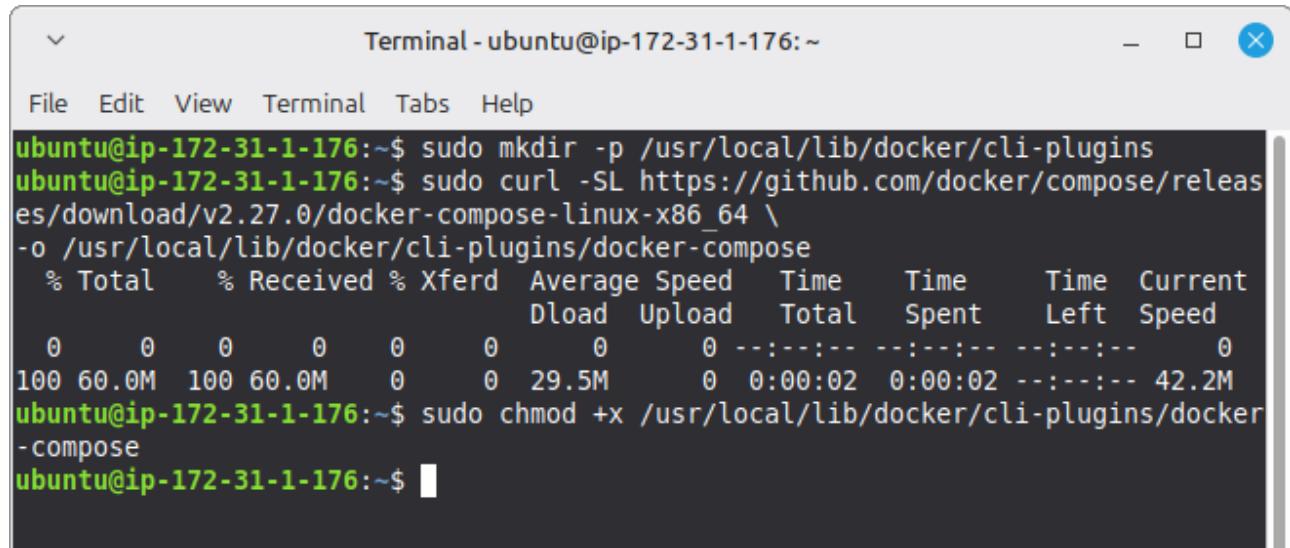
Configure ec2 key.pem file in local to connect via CLI:



Connect ec2 instance via pem key:

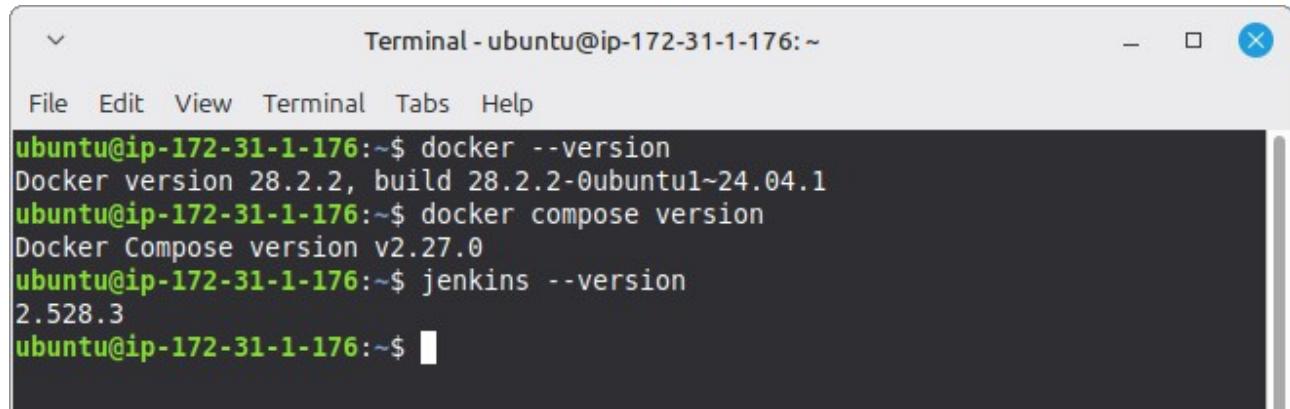


Install Docker-compose in ec2 instance:

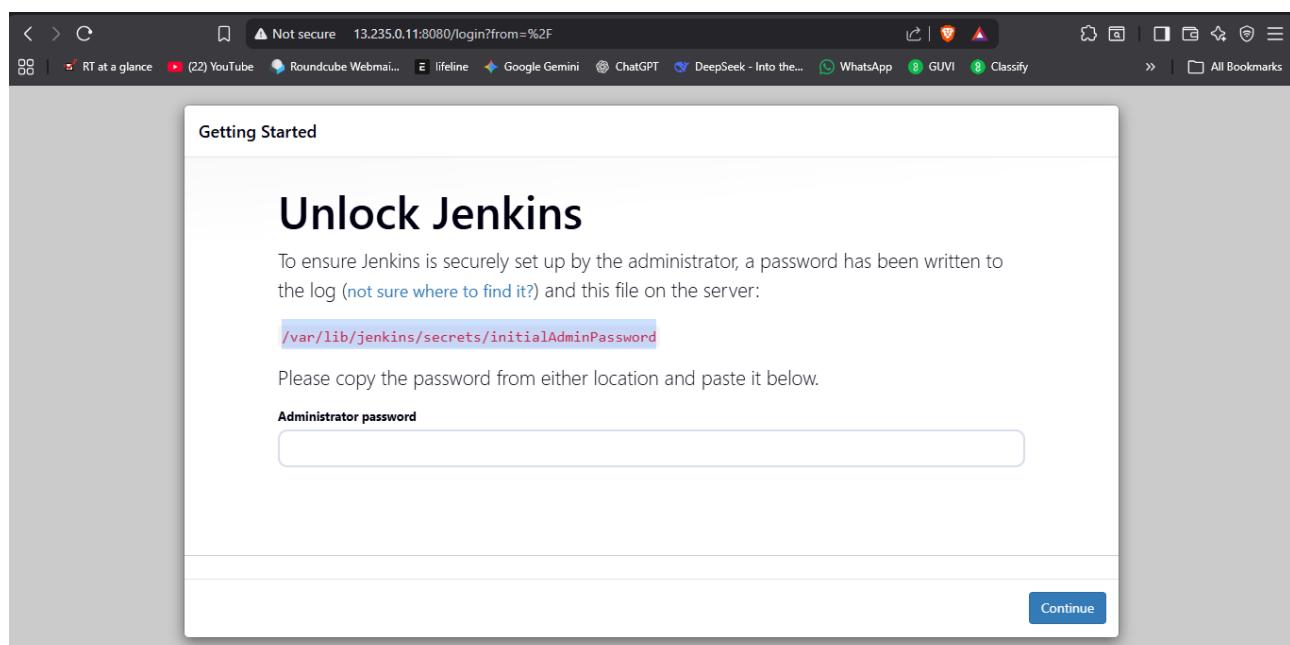


```
Terminal - ubuntu@ip-172-31-1-176:~  
File Edit View Terminal Tabs Help  
ubuntu@ip-172-31-1-176:~$ sudo mkdir -p /usr/local/lib/docker/cli-plugins  
ubuntu@ip-172-31-1-176:~$ sudo curl -SL https://github.com/docker/compose/releases/download/v2.27.0/docker-compose-linux-x86_64 \  
-o /usr/local/lib/docker/cli-plugins/docker-compose  
% Total    % Received % Xferd  Average Speed   Time     Time     Time  Current  
          Dload  Upload Total   Spent   Left Speed  
0       0      0      0      0      0      0      0 ---:---:---:---:---:--- 0  
100  60.0M  100  60.0M      0      0  29.5M      0  0:00:02  0:00:02 ---:--- 42.2M  
ubuntu@ip-172-31-1-176:~$ sudo chmod +x /usr/local/lib/docker/cli-plugins/docker-  
compose  
ubuntu@ip-172-31-1-176:~$
```

software installed in ec2:



```
Terminal - ubuntu@ip-172-31-1-176:~  
File Edit View Terminal Tabs Help  
ubuntu@ip-172-31-1-176:~$ docker --version  
Docker version 28.2.2, build 28.2.2-0ubuntu1~24.04.1  
ubuntu@ip-172-31-1-176:~$ docker compose version  
Docker Compose version v2.27.0  
ubuntu@ip-172-31-1-176:~$ jenkins --version  
2.528.3  
ubuntu@ip-172-31-1-176:~$
```



The screenshot shows a web browser window with the URL `13.235.0.11:8080/login?from=%2F`. The page title is "Getting Started". The main content is titled "Unlock Jenkins" and instructs the user to copy the password from the log file `/var/lib/jenkins/secrets/initialAdminPassword`. A text input field is provided for pasting the password, and a "Continue" button is at the bottom right.

Getting Started

## Unlock Jenkins

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

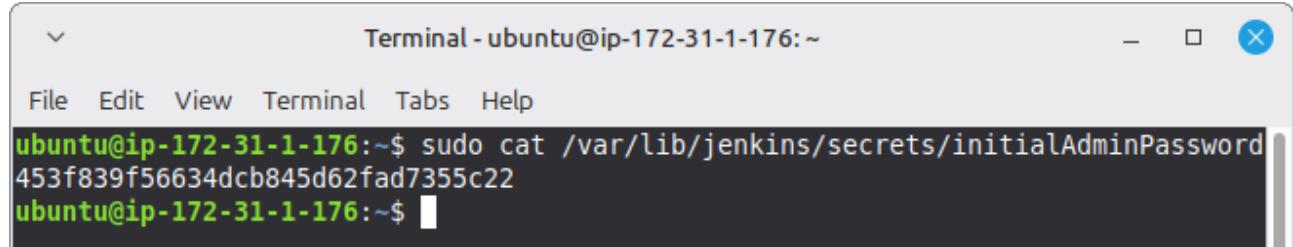
`/var/lib/jenkins/secrets/initialAdminPassword`

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

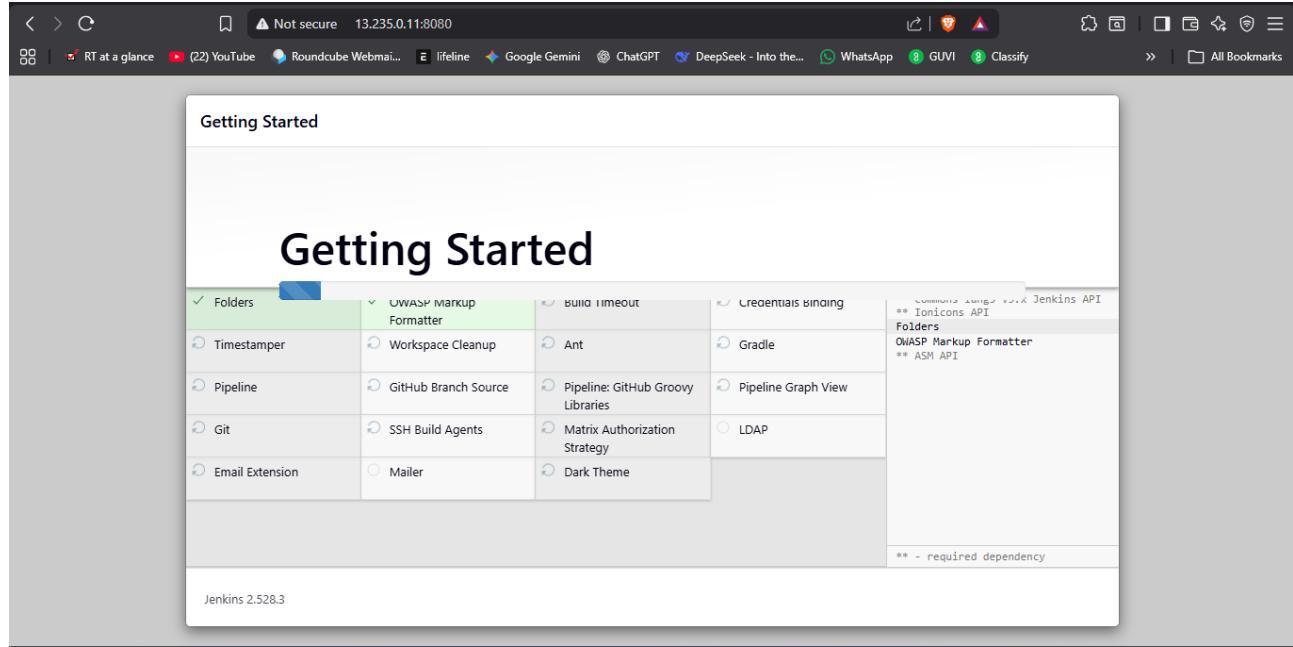
Administrator password

Continue

get secret key of jenkins

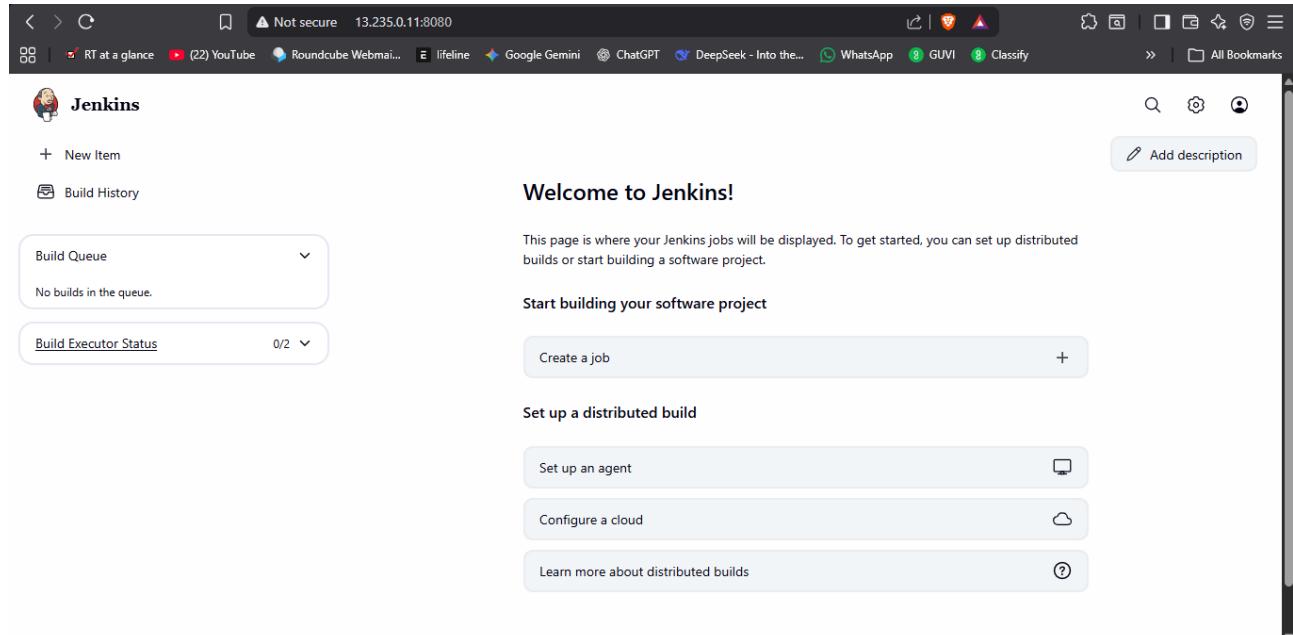


```
Terminal - ubuntu@ip-172-31-1-176:~  
File Edit View Terminal Tabs Help  
ubuntu@ip-172-31-1-176:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword  
453f839f56634dcb845d62fad7355c22  
ubuntu@ip-172-31-1-176:~$
```



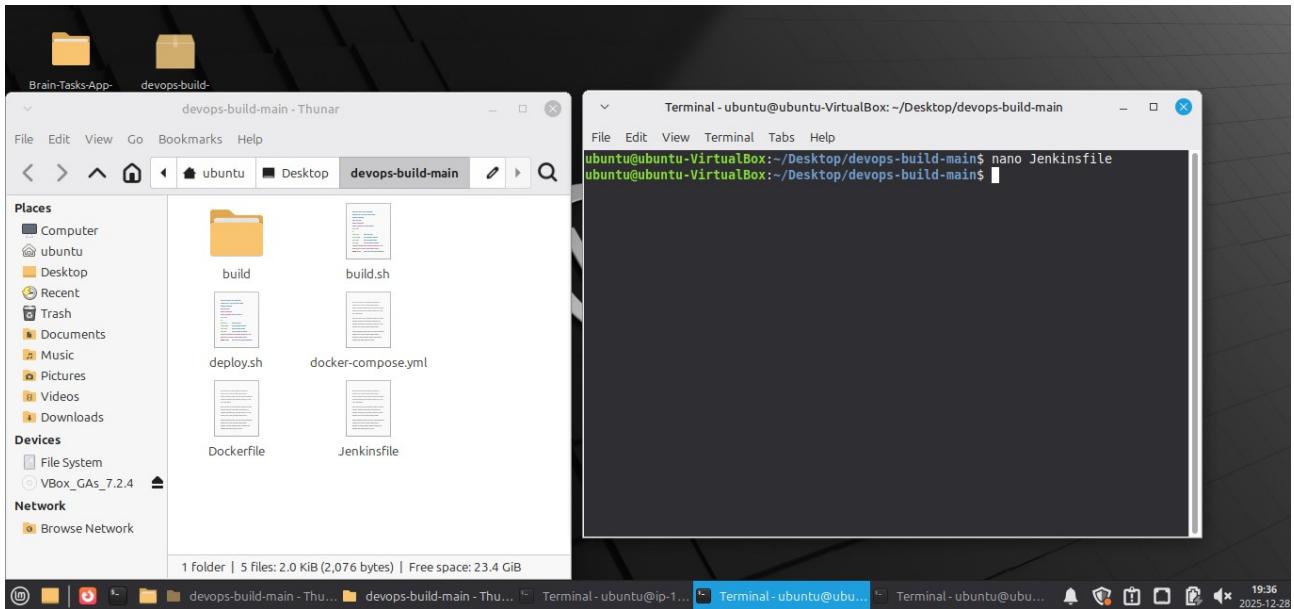
The screenshot shows the Jenkins 'Getting Started' page at the URL <http://13.235.0.11:8080>. The page displays a grid of Jenkins modules and their dependencies. A tooltip for the 'OWASP Markup Formatter' module indicates it has a required dependency on 'Ionicons API'. The Jenkins version shown is 2.528.3.

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



The screenshot shows the Jenkins dashboard at the URL <http://13.235.0.11:8080>. The dashboard features a 'Welcome to Jenkins!' message, a 'Build Queue' section showing 'No builds in the queue.', and a 'Build Executor Status' section indicating '0/2'. There are links for 'Create a job' and 'Set up a distributed build'. A sidebar on the right includes links for 'Set up an agent', 'Configure a cloud', and 'Learn more about distributed builds'.

## Jenkinsfile creation in local:



### Jenkinsfile

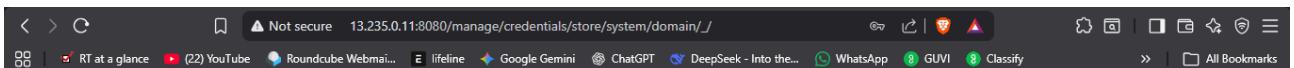
```
pipeline {  
    agent any  
  
    environment {  
        DOCKERHUB_CREDS = credentials('dockerhub-creds')  
    }  
  
    stages {  
  
        stage('Checkout') {  
            steps {  
                checkout scm  
            }  
        }  
  
        stage('Build & Push Image') {  
            steps {  
                sh ""  
                echo "Branch: $BRANCH_NAME"  
                docker login -u $DOCKERHUB_CREDS_USR -p $DOCKERHUB_CREDS_PSW  
                chmod +x build.sh  
                ./build.sh  
                ""  
            }  
        }  
    }  
}
```

```

stage('Deploy') {
    steps {
        sh ""
        chmod +x deploy.sh
        ./deploy.sh
        ...
    }
}
}

post {
    success {
        echo "Pipeline completed successfully for $BRANCH_NAME"
    }
    failure {
        echo "Pipeline failed for $BRANCH_NAME"
    }
}
}

```



Jenkins / 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
2b141c38-be85-46e8-89b6-62bdd461bd73	prabusr/***** (dockerhub-creds)	Username with password	dockerhub-creds

Icon: S M L

Jenkins / All / New Item

Enter an item name  
devops-build-pipeline

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

OK

 Jenkins / devops-build-pipeline / Configuration

Scan Multibranch Pipeline Triggers

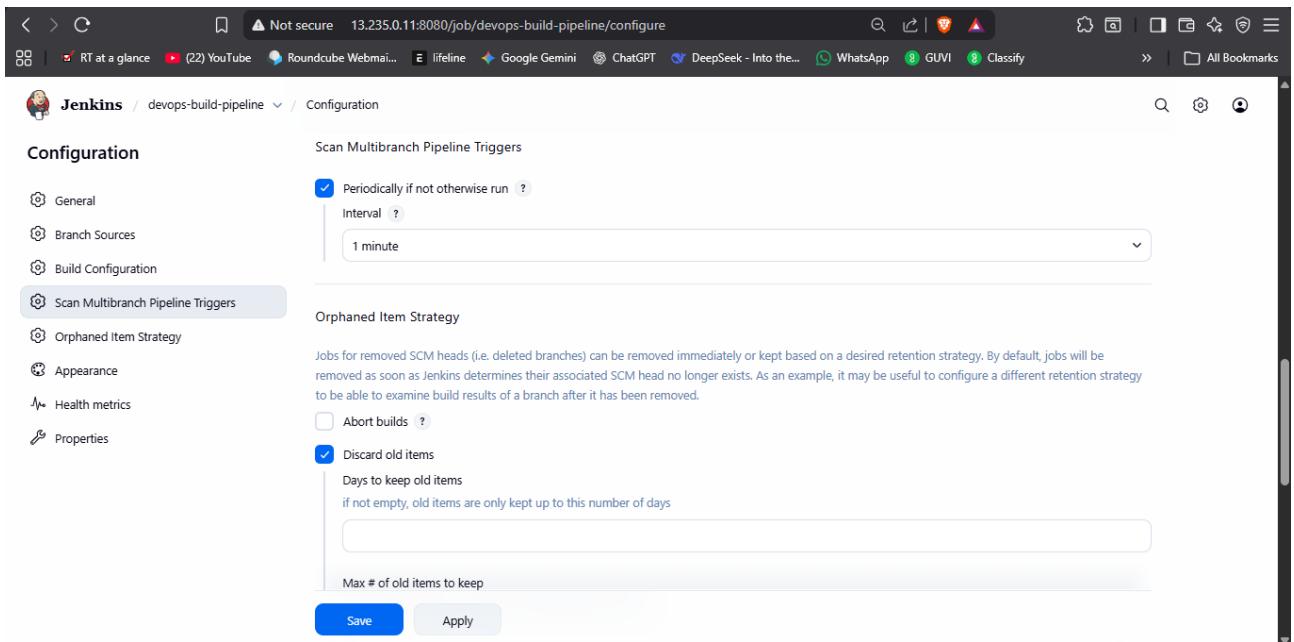
Periodically if not otherwise run ?  
Interval ?  
1 minute

Orphaned Item Strategy

Jobs for removed SCM heads (i.e. deleted branches) can be removed immediately or kept based on a desired retention strategy. By default, jobs will be removed as soon as Jenkins determines their associated SCM head no longer exists. As an example, it may be useful to configure a different retention strategy to be able to examine build results of a branch after it has been removed.

Abort builds ?  
 Discard old items  
Days to keep old items  
if not empty, old items are only kept up to this number of days  
Max # of old items to keep

**Save** **Apply**



 Jenkins

+ New Item **Add description**

Build History **All** +

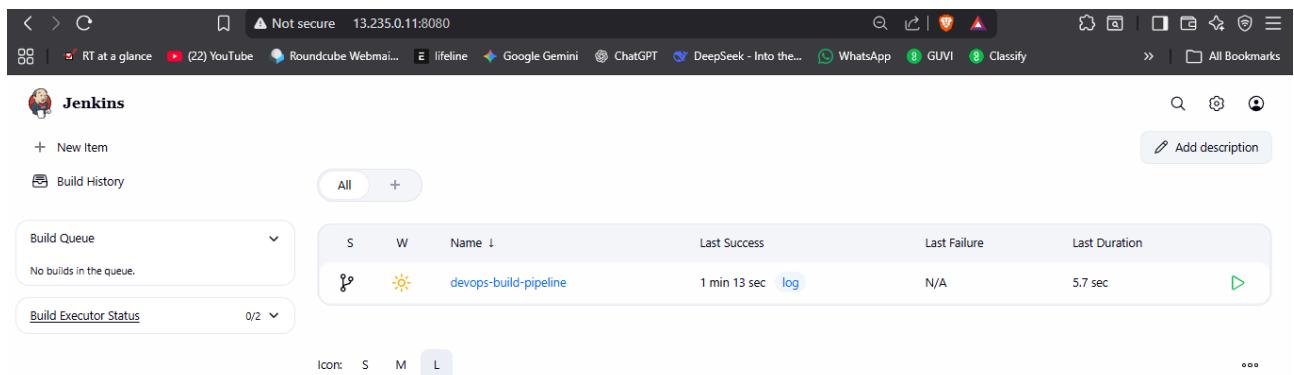
Build Queue **All** **L**

No builds in the queue.

Build Executor Status 0/2

S	W	Name ↓	Last Success	Last Failure	Last Duration
		devops-build-pipeline	1 min 13 sec <a href="#">log</a>	N/A	5.7 sec 

Icon: S M L



pushed Jenkinsfile to github dev branch:

```
Terminal - ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main
File Edit View Terminal Tabs Help
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ nano Jenkinsfile
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git add Jenkinsfile
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git commit -m "Add Jenkins
file for multibranch pipeline"
[dev bd89836] Add Jenkinsfile for multibranch pipeline
 1 file changed, 45 insertions(+)
 create mode 100644 Jenkinsfile
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$ git push origin dev
Username for 'https://github.com': prabuSR
Password for 'https://prabuSR@github.com':
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 2 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 609 bytes | 203.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/prabuSR/devops-build.git
 bc254de..bd89836  dev -> dev
ubuntu@ubuntu-VirtualBox:~/Desktop/devops-build-main$
```

jenkins permission to docker

```
ubuntu@ip-172-31-1-176:~$ sudo usermod -aG docker jenkins
```

```
Terminal - ubuntu@ip-172-31-1-176:~
File Edit View Terminal Tabs Help
ubuntu@ip-172-31-1-176:~$ docker ps
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS              NAMES
ATUS                ports
1f7592e7d926        prabusr/dev:latest   "/docker-entrypoint...."   18 minutes ago   Up      18 minutes   0.0.0.0:80->80/tcp, [::]:80->80/tcp   devops-web
ubuntu@ip-172-31-1-176:~$
```

This branch is 4 commits ahead of [main](#).

[Contribute](#)

**prabuSR** Add Jenkinsfile for multibranch pipeline · bd89836 · 1 minute ago · 5 Commits

**build** Dockerized app with compose and automation scripts · 3 hours ago

**.dockerignore** Dockerized app with compose and automation scripts · 3 hours ago

**.gitignore** Dockerized app with compose and automation scripts · 3 hours ago

**Dockerfile** Dockerized app with compose and automation scripts · 3 hours ago

**Jenkinsfile** Add Jenkinsfile for multibranch pipeline · 1 minute ago

**build.sh** Make build.sh branch-aware for dev/prod · 44 minutes ago

**deploy.sh** Make deploy.sh branch-aware for dev/prod · 23 minutes ago

**docker-compose.yml** Make docker-compose image configurable via env · 29 minutes ago

**README**

[Publish Docker Container](#) [Configure](#)

**dev** had recent pushes 58 seconds ago

[Pin](#) [Watch](#) 0 [Fork](#) 0 [Star](#) 0

**main** 2 Branches 0 Tags

[Go to file](#)

**prabuSR** Dockerized app with compose and automation scripts · fb8a0fc · 3 hours ago · 1 Commit

**build** Dockerized app with compose and automation scripts · 3 hours ago

**.dockerignore** Dockerized app with compose and automation scripts · 3 hours ago

**.gitignore** Dockerized app with compose and automation scripts · 3 hours ago

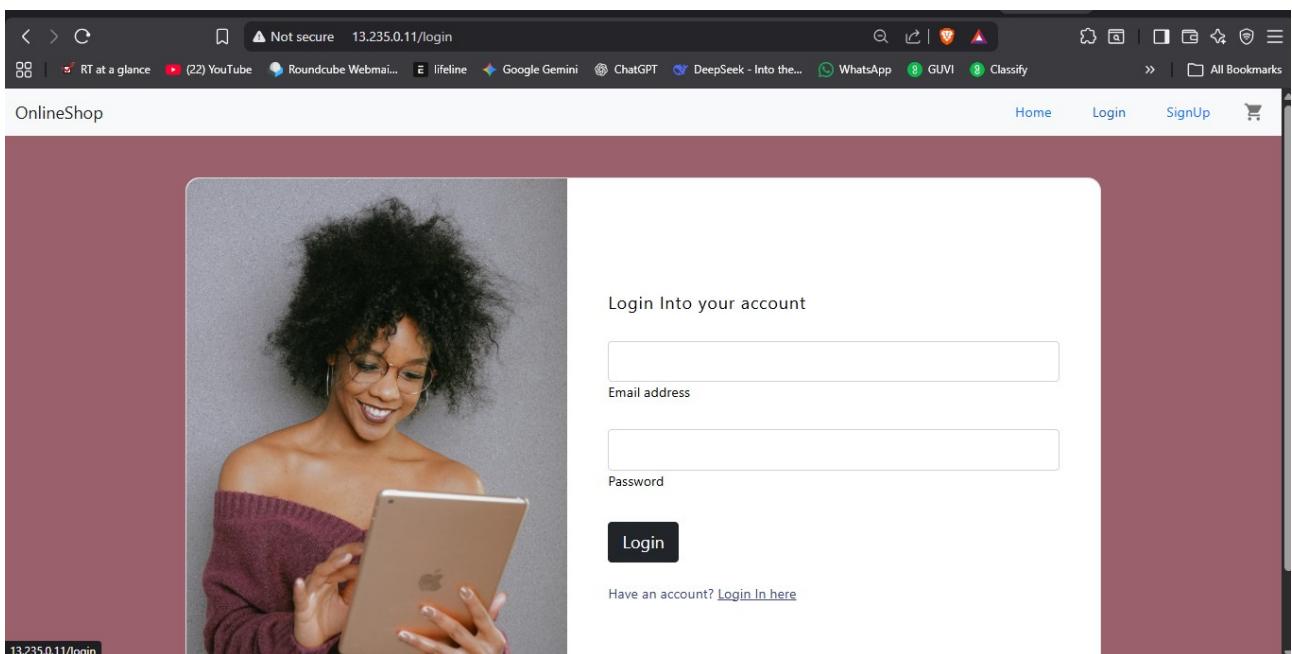
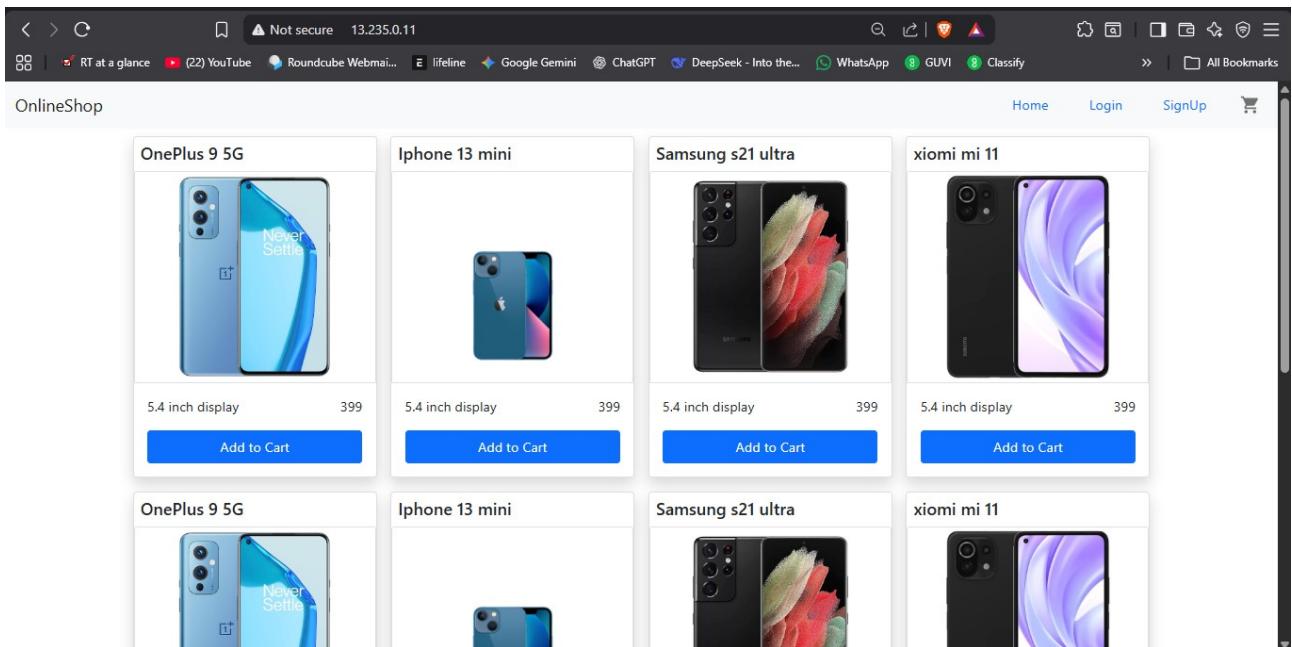
**Dockerfile** Dockerized app with compose and automation scripts · 3 hours ago

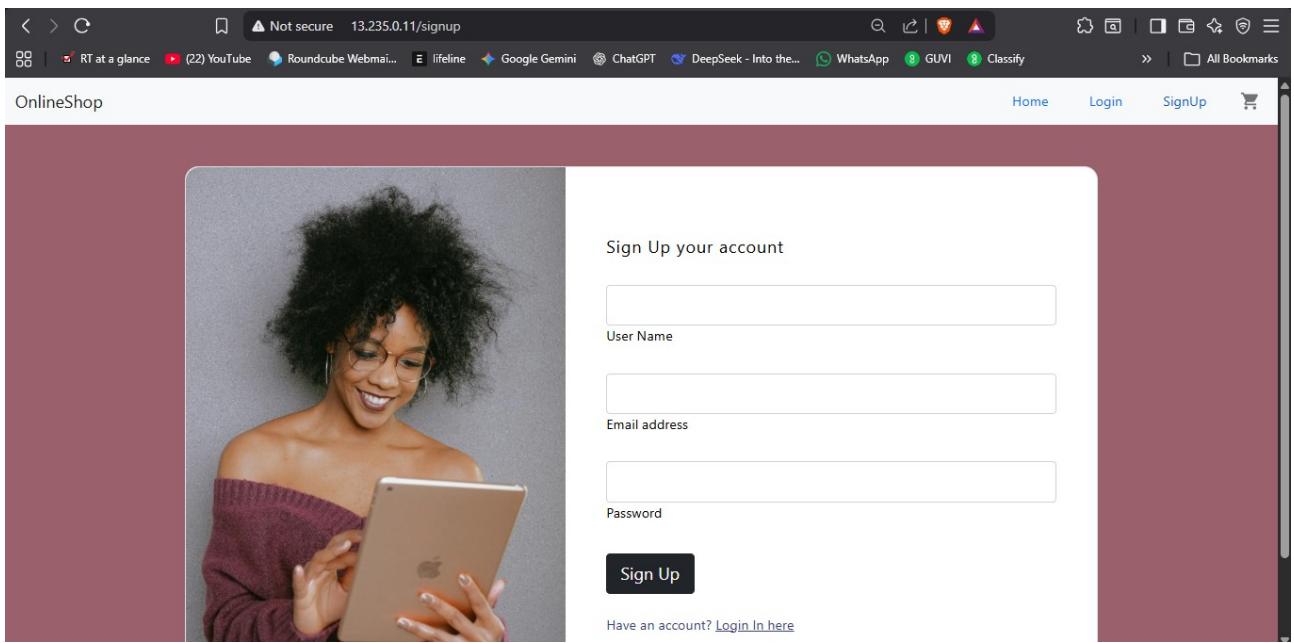
**build.sh** Dockerized app with compose and automation scripts · 3 hours ago

**deploy.sh** Dockerized app with compose and automation scripts · 3 hours ago

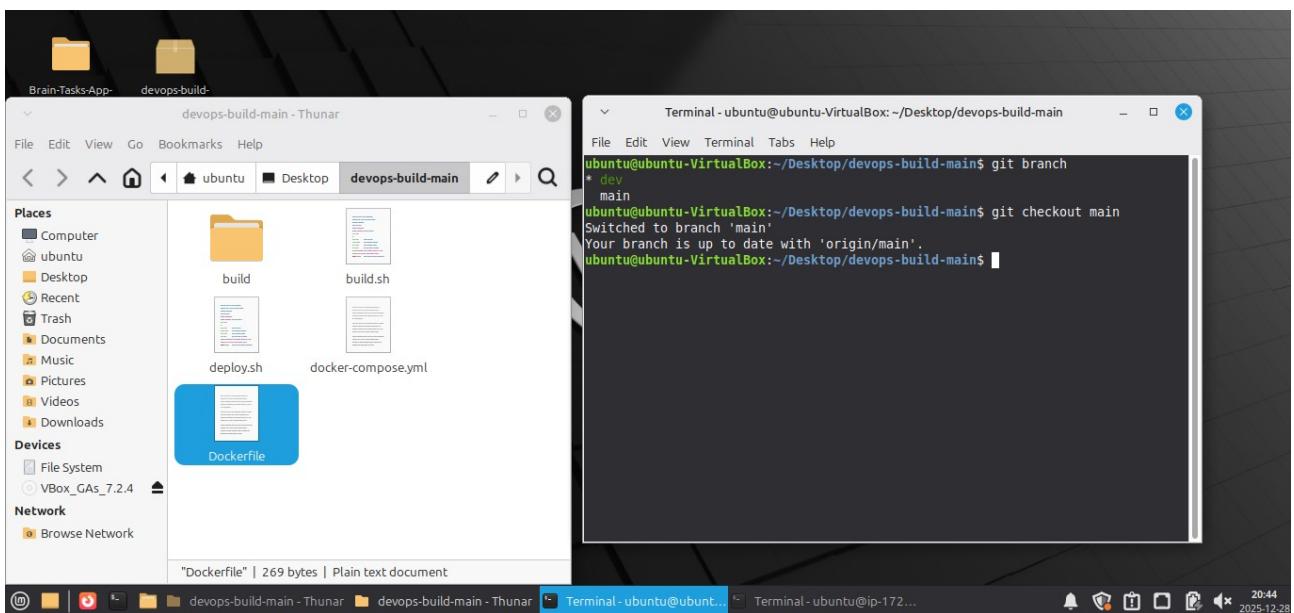
**docker-compose.yml** Dockerized app with compose and automation scripts · 3 hours ago

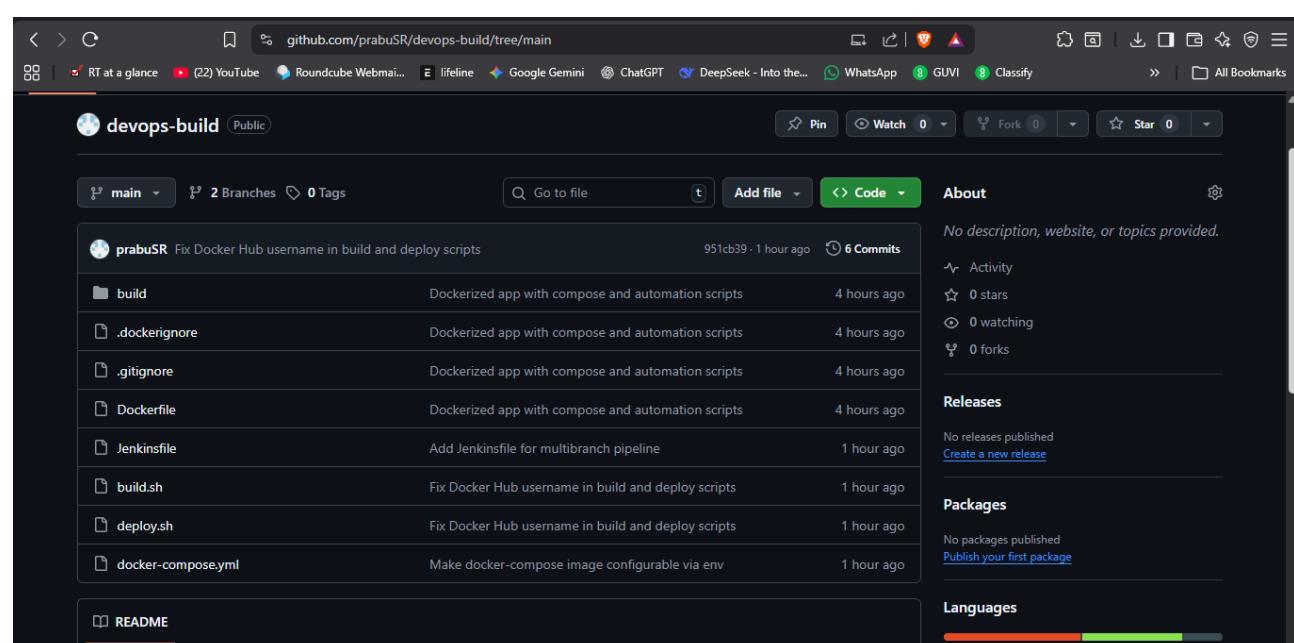
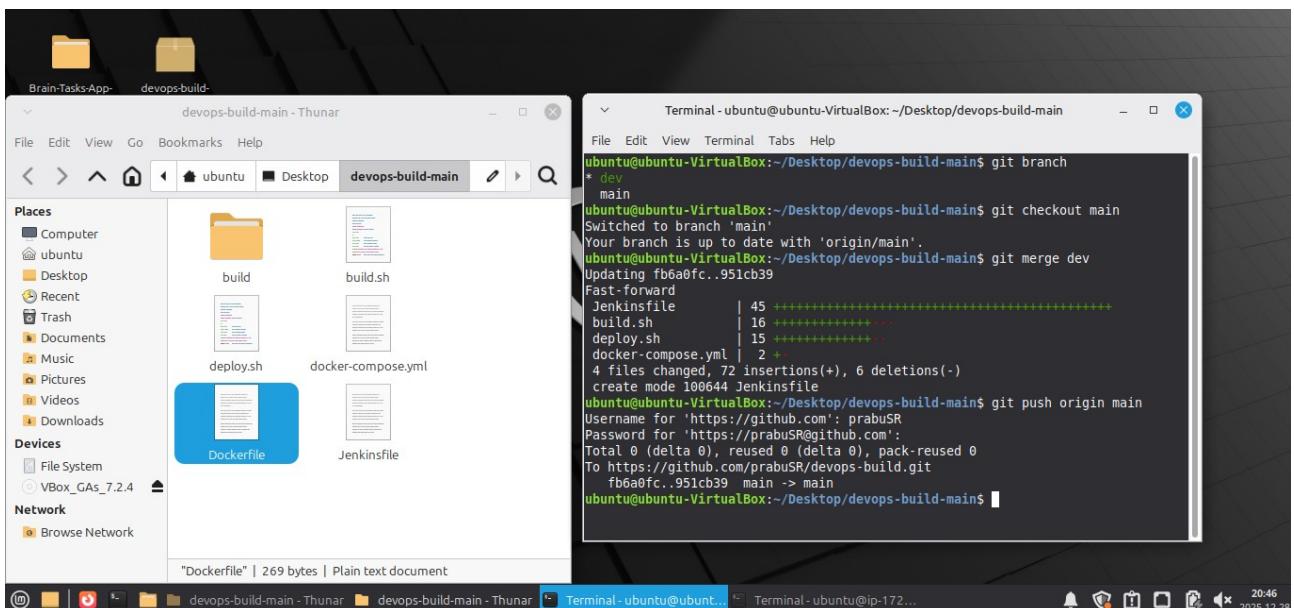
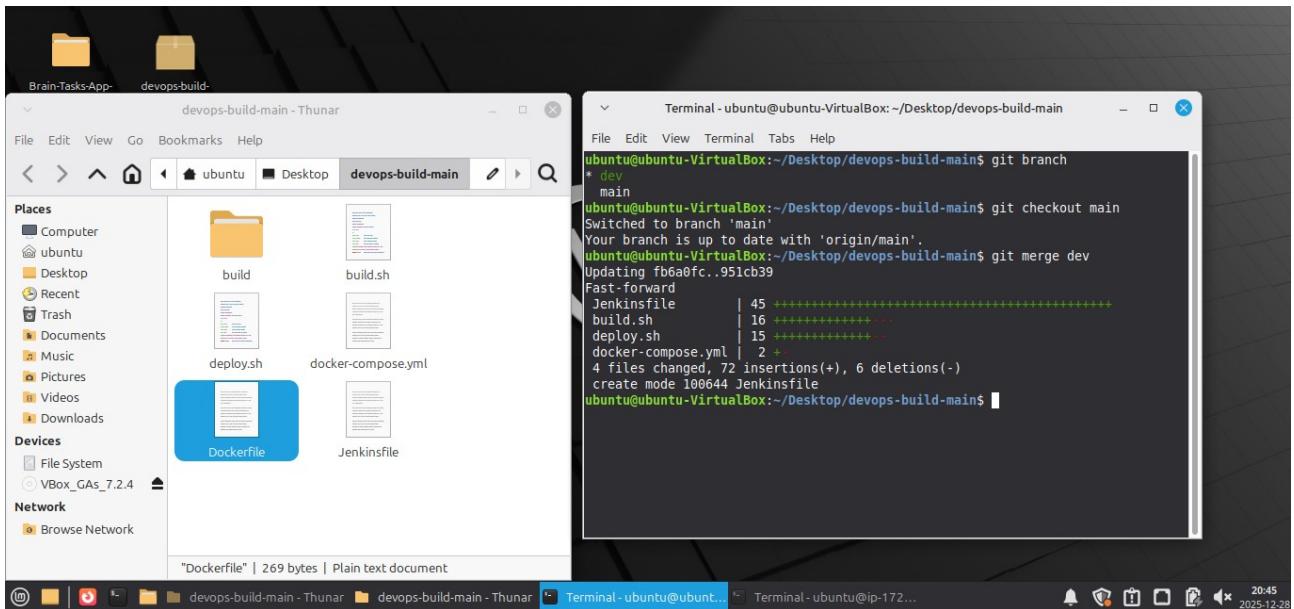
pipeline dev success result in browser:





merge dev to main repo in github





both dev, main pipeline success docker ps status

```
Terminal - ubuntu@ip-172-31-1-176:~  
File Edit View Terminal Tabs Help  
ubuntu@ip-172-31-1-176:~$ docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
dc47e033bb36 prabusr/prod:latest "/docker-entrypoint..." 46 seconds ago Up 45 seconds 0.0.0.0:80->80/tcp, [::]:80->80/tcp devops-web-main  
57f5002dde43 prabusr/dev:latest "/docker-entrypoint..." 19 minutes ago Up 19 minutes 0.0.0.0:8081->80/tcp, [::]:8081->80/tcp devops-web-dev  
ubuntu@ip-172-31-1-176:~$
```

hub Explore My Hub

Repositories / prod / General

prabusr/prod

Last pushed 2 minutes ago • Repository size: 22.6 MB • ⭐0 • ↘ 0

Prod images for devops-build project

Add a category

General Tags Image Management BETA Collaborators Webhooks Settings

Tags

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
latest	Android	Image	less than 1 day	2 minutes

See all

Docker commands

To push a new tag to this repository:

```
docker push prabusr/prod:tagname
```

Using 1 of 1 private repositories.

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.

pipeline main success result in browser in port:8081

OnlineShop

Home Login SignUp

<b>OnePlus 9 5G</b>  5.4 inch display 399 <a href="#">Add to Cart</a>	<b>Iphone 13 mini</b>  5.4 inch display 399 <a href="#">Add to Cart</a>	<b>Samsung s21 ultra</b>  5.4 inch display 399 <a href="#">Add to Cart</a>	<b>xomi mi 11</b>  5.4 inch display 399 <a href="#">Add to Cart</a>
<b>OnePlus 9 5G</b>  5.4 inch display 399 <a href="#">Add to Cart</a>	<b>Iphone 13 mini</b>  5.4 inch display 399 <a href="#">Add to Cart</a>	<b>Samsung s21 ultra</b>  5.4 inch display 399 <a href="#">Add to Cart</a>	<b>xomi mi 11</b>  5.4 inch display 399 <a href="#">Add to Cart</a>

The screenshot shows the Jenkins interface for the 'devops-build-pipeline' job. On the left, there's a sidebar with various management options like 'Status', 'Configure', and 'Build History'. The main area displays a table of build branches. The 'Branches (2)' section lists:

S	W	Name	Last Success	Last Failure	Last Duration
		dev	23 min #10	28 min #9	18 sec
		main	4 min 53 sec #3	36 min #2	19 sec

Below the table, there are icons for 'Icon: S M L' and a 'Build Queue' section which indicates 'No builds in the queue.'

## Console output of dev pipeline:

```

Started by user admin
> git rev-parse --resolve-git-dir /var/lib/jenkins/caches/git-8e43479792e3e1cbc8fdf3130dbbe513/.git # timeout=10
Setting origin to https://github.com/prabuSR/devops-build.git
> git config remote.origin.url https://github.com/prabuSR/devops-build.git # timeout=10
Fetching origin...
Fetching upstream changes from origin
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git config --get remote.origin.url # timeout=10
> git fetch --no-tags --force --progress -- origin +refs/heads/*:refs/remotes/origin/* # timeout=10
Seen branch in repository origin/dev
Seen branch in repository origin/main
Seen 2 remote branches
Obtained Jenkinsfile from 951cb39ecb47628d6459d7265517503a37a30651
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/devops-build-pipeline_dev
[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 rev-parse --resolve-git-dir /var/lib/jenkins/workspace/devops-build-pipeline_dev/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/prabuSR/devops-build.git # timeout=10
Fetching without tags
Fetching upstream changes from https://github.com/prabuSR/devops-build.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --no-tags --force --progress -- https://github.com/prabuSR/devops-build.git +refs/heads/*:refs/remotes/origin/* # timeout=10
Checking out Revision 951cb39ecb47628d6459d7265517503a37a30651 (dev)
> git config core.sparsecheckout # timeout=10
> git checkout -f 951cb39ecb47628d6459d7265517503a37a30651 # timeout=10
Commit message: "Fix Docker Hub username in build and deploy scripts"
> git rev-list --no-walk 951cb39ecb47628d6459d7265517503a37a30651 # timeout=10
[Pipeline] }
```

```
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] withCredentials
Masking supported pattern matches of $DOCKERHUB_CREDS or $DOCKERHUB_CREDS_PSW
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Checkout)
[Pipeline] checkout
Selected Git installation does not exist. Using Default
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/devops-build-pipeline_dev/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/prabuSR/devops-build.git # timeout=10
Fetching without tags
Fetching upstream changes from https://github.com/prabuSR/devops-build.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --no-tags --force --progress -- https://github.com/prabuSR/devops-build.git +refs/heads/*:refs/remotes/origin/* # timeout=10
Checking out Revision 951cb39ecb47628d6459d7265517503a37a30651 (dev)
> git config core.sparsecheckout # timeout=10
> git checkout -f 951cb39ecb47628d6459d7265517503a37a30651 # timeout=10
Commit message: "Fix Docker Hub username in build and deploy scripts"
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Build & Push Image)
[Pipeline] sh
+ echo Branch: dev
Branch: dev
+ docker login -u prabusr -p *****
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
Login Succeeded
+ chmod +x build.sh
+ ./build.sh
Building image: prabusr/dev:latest
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 2.625MB
Step 1/5 : FROM nginx:alpine
--> 04da2b0513cd
Step 2/5 : RUN rm -rf /usr/share/nginx/html/*
--> Using cache
--> 4dbfca7941c8
Step 3/5 : COPY build/ /usr/share/nginx/html/
--> Using cache
--> 65b4d433ecb0
Step 4/5 : EXPOSE 80
--> Using cache
--> 719bca809487
Step 5/5 : CMD ["nginx", "-g", "daemon off;"]
--> Using cache
--> 9ddbc25f7ef
Successfully built 9ddbc25f7ef
Successfully tagged prabusr/dev:latest
The push refers to repository [docker.io/prabusr/dev]
d92c924b6e4f: Preparing
dcf81fc100d4: Preparing
e6fe11fa5b7f: Preparing
67ea0b046e7d: Preparing
ed5fa8595c7a: Preparing
8ae63eb1f31f: Preparing
b3e3d1bbb64d: Preparing
48078b7e3000: Preparing
fd1e40d7f74b: Preparing
7bb20cf5ef67: Preparing
```

```
8ae63eb1f31f: Waiting
b3e3d1bbb64d: Waiting
48078b7e3000: Waiting
fd1e40d7f74b: Waiting
7bb20cf5ef67: Waiting
d92c924b6e4f: Layer already exists
e6fe11fa5b7f: Layer already exists
67ea0b046e7d: Layer already exists
ed5fa8595c7a: Layer already exists
dcf81fc100d4: Layer already exists
b3e3d1bbb64d: Layer already exists
48078b7e3000: Layer already exists
8ae63eb1f31f: Layer already exists
7bb20cf5ef67: Layer already exists
fd1e40d7f74b: Layer already exists
latest: digest: sha256:ee4269dc84fea5657d066d76db271ff40b68584299b7f890fba6b169043f517d size: 2406
Image pushed successfully
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy)
[Pipeline] sh
+ chmod +x deploy.sh
+ ./deploy.sh
Deploying image: prabusr/dev:latest
time="2025-12-28T14:51:05Z" level=warning msg="/var/lib/jenkins/workspace/devops-build-pipeline_dev/docker-compose.yml: `version` is
obsolete"
Container devops-web Stopping
Container devops-web Stopped
Container devops-web Removing
Container devops-web Removed
Network devops-build-pipeline_dev_default Removing
Network devops-build-pipeline_dev_default Removed
time="2025-12-28T14:51:06Z" level=warning msg="/var/lib/jenkins/workspace/devops-build-pipeline_dev/docker-compose.yml: `version` is
obsolete"
web Pulling
web Pulled
time="2025-12-28T14:51:09Z" level=warning msg="/var/lib/jenkins/workspace/devops-build-pipeline_dev/docker-compose.yml: `version` is
obsolete"
Network devops-build-pipeline_dev_default Creating
Network devops-build-pipeline_dev_default Created
Container devops-web Creating
Container devops-web Created
Container devops-web Starting
Container devops-web Started
Deployment complete
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions)
[Pipeline] echo
Pipeline completed successfully for dev
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withCredentials
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

## Console output of main pipeline:

```
Branch indexing
> git rev-parse --resolve-git-dir /var/lib/jenkins/caches/git-8e43479792e3e1cbc8fdf3130dbbe513/.git # timeout=10
Setting origin to https://github.com/prabuSR/devops-build.git
> git config remote.origin.url https://github.com/prabuSR/devops-build.git # timeout=10
Fetching origin...
Fetching upstream changes from origin
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git config --get remote.origin.url # timeout=10
> git fetch --no-tags --force --progress -- origin +refs/heads/*:refs/remotes/origin/* # timeout=10
Seen branch in repository origin/dev
Seen branch in repository origin/main
Seen 2 remote branches
Obtained Jenkinsfile from 1d100a624b6960c216b485210f235243d75436a2
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/devops-build-pipeline_main
[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 rev-parse --resolve-git-dir /var/lib/jenkins/workspace/devops-build-pipeline_main/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/prabuSR/devops-build.git # timeout=10
Fetching without tags
Fetching upstream changes from https://github.com/prabuSR/devops-build.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --no-tags --force --progress -- https://github.com/prabuSR/devops-build.git +refs/heads/*:refs/remotes/origin/* # timeout=10
Checking out Revision 1d100a624b6960c216b485210f235243d75436a2 (main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 1d100a624b6960c216b485210f235243d75436a2 # timeout=10
Commit message: "Merge branch 'dev'"
> git rev-list --no-walk bc5f6e1a6645db1cb12211d95b1ff318de7ca811 # timeout=10
[Pipeline] }
[Pipeline] // stage
[Pipeline] withEnv
[Pipeline] {
[Pipeline] withCredentials
Masking supported pattern matches of $DOCKERHUB_CREDS or $DOCKERHUB_CREDS_PSW
[Pipeline] {
[Pipeline] stage
[Pipeline] { (Checkout)
[Pipeline] checkout
Selected Git installation does not exist. Using Default
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /var/lib/jenkins/workspace/devops-build-pipeline_main/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/prabuSR/devops-build.git # timeout=10
Fetching without tags
Fetching upstream changes from https://github.com/prabuSR/devops-build.git
> git --version # timeout=10
> git --version # 'git version 2.43.0'
> git fetch --no-tags --force --progress -- https://github.com/prabuSR/devops-build.git +refs/heads/*:refs/remotes/origin/* # timeout=10
Checking out Revision 1d100a624b6960c216b485210f235243d75436a2 (main)
> git config core.sparsecheckout # timeout=10
> git checkout -f 1d100a624b6960c216b485210f235243d75436a2 # timeout=10
Commit message: "Merge branch 'dev'"
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
```

```
[Pipeline] { (Build & Push Image)
[Pipeline] sh
+ echo Branch: main
Branch: main
+ docker login -u prabusr -p *****
WARNING! Using --password via the CLI is insecure. Use --password-stdin.
Login Succeeded
+ chmod +x build.sh
+ ./build.sh
Building image: prabusr/prod:latest
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 2.625MB
Step 1/5 : FROM nginx:alpine
--> 04da2b0513cd
Step 2/5 : RUN rm -rf /usr/share/nginx/html/*
--> Using cache
--> 4dbfca7941c8
Step 3/5 : COPY build/ /usr/share/nginx/html/
--> Using cache
--> 65b4d433ecb0
Step 4/5 : EXPOSE 80
--> Using cache
--> 719bca809487
Step 5/5 : CMD ["nginx", "-g", "daemon off;"]
--> Using cache
--> 9ddbc25f7ef
Successfully built 9ddbc25f7ef
Successfully tagged prabusr/prod:latest
The push refers to repository [docker.io/prabusr/prod]
d92c924b6e4f: Preparing
dcf81fc100d4: Preparing
e6fe11fa5b7f: Preparing
67ea0b046e7d: Preparing
ed5fa8595c7a: Preparing
8ae63eb1f31f: Preparing
b3e3d1bbb64d: Preparing
48078b7e3000: Preparing
fd1e40d7f74b: Preparing
7bb20cf5ef67: Preparing
8ae63eb1f31f: Waiting
b3e3d1bbb64d: Waiting
48078b7e3000: Waiting
fd1e40d7f74b: Waiting
7bb20cf5ef67: Waiting
e6fe11fa5b7f: Layer already exists
dcf81fc100d4: Layer already exists
ed5fa8595c7a: Layer already exists
67ea0b046e7d: Layer already exists
d92c924b6e4f: Layer already exists
8ae63eb1f31f: Layer already exists
48078b7e3000: Layer already exists
fd1e40d7f74b: Layer already exists
b3e3d1bbb64d: Layer already exists
7bb20cf5ef67: Layer already exists
latest: digest: sha256:ee4269dc84fea5657d066d76db271ff40b68584299b7f890fba6b169043f517d size: 2406
Image pushed successfully
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Deploy)
[Pipeline] sh
+ chmod +x deploy.sh
+ ./deploy.sh
Deploying image: prabusr/prod:latest on port 80
Container devops-web-main Stopping
Container devops-web-main Stopped
```

```

Container devops-web-main Removing
Container devops-web-main Removed
Network devops-build-pipeline_main_default Removing
Network devops-build-pipeline_main_default Removed
web Pulling
web Pulled
Network devops-build-pipeline_main_default Creating
Network devops-build-pipeline_main_default Created
Container devops-web-main Creating
Container devops-web-main Created
Container devops-web-main Starting
Container devops-web-main Started
Deployment successful
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Declarative: Post Actions)
[Pipeline] echo
Pipeline completed successfully for main
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withCredentials
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS

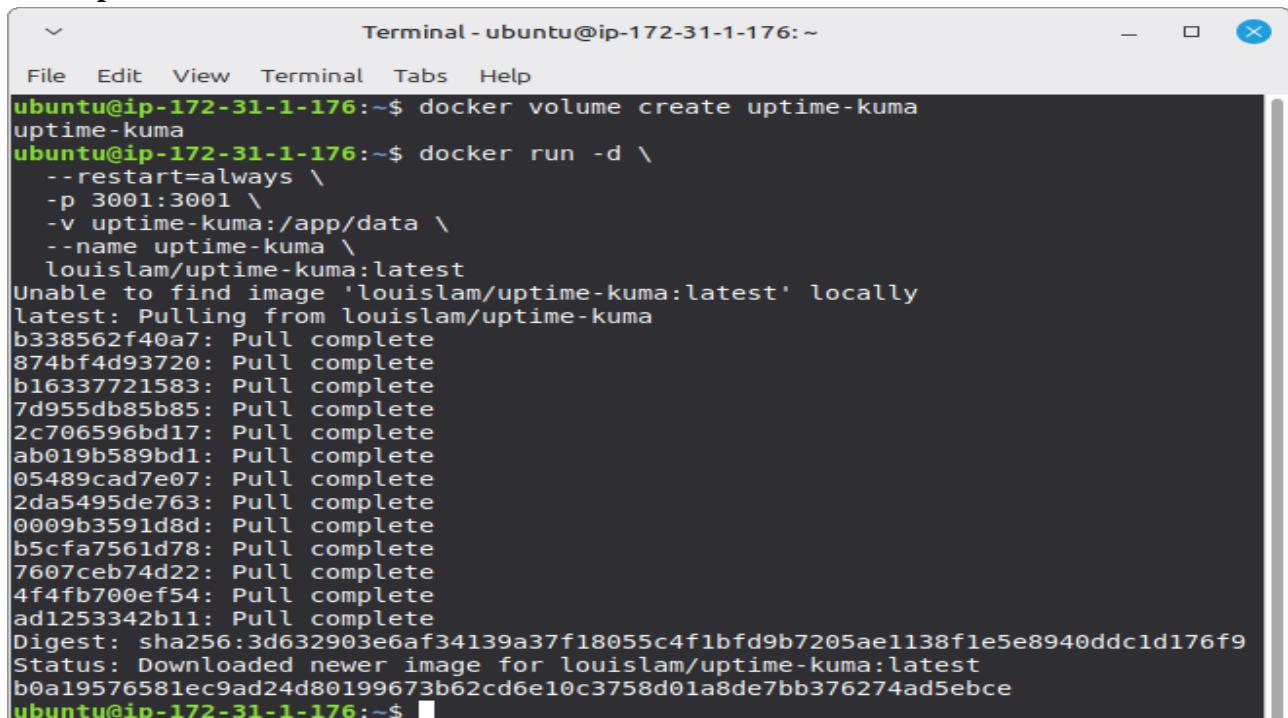
```

## Monitoring Jenkins Pipeline using - Uptime Kuma (Open-source)

- HTTP health checks
- Real-time status dashboard
- Email (SMTP) notifications

Alerts triggered **only when application is down or recovered from down status.**

### Run Uptime Kuma on EC2:



```

Terminal - ubuntu@ip-172-31-1-176:~ - - X
File Edit View Terminal Tabs Help
ubuntu@ip-172-31-1-176:~$ docker volume create uptime-kuma
ubuntu@ip-172-31-1-176:~$ docker run -d \
--restart=always \
-p 3001:3001 \
-v uptime-kuma:/app/data \
--name uptime-kuma \
louislam/uptime-kuma:latest
Unable to find image 'louislam/uptime-kuma:latest' locally
latest: Pulling from louislam/uptime-kuma
b338562f40a7: Pull complete
874bf4d93720: Pull complete
b16337721583: Pull complete
7d955db85b85: Pull complete
2c706596bd17: Pull complete
ab019b589bd1: Pull complete
05489cad7e07: Pull complete
2da5495de763: Pull complete
0009b3591d8d: Pull complete
b5cfa7561d78: Pull complete
7607ceb74d22: Pull complete
4f4fb700ef54: Pull complete
ad1253342b11: Pull complete
Digest: sha256:3d632903e6af34139a37f18055c4f1bfd9b7205ae1138f1e5e8940ddc1d176f9
Status: Downloaded newer image for louislam/uptime-kuma:latest
b0a19576581ec9ad24d80199673b62cd6e10c3758d01a8de7bb376274ad5ebce
ubuntu@ip-172-31-1-176:~$ █

```

```
Terminal - ubuntu@ip-172-31-1-176:~  
File Edit View Terminal Tabs Help  
ubuntu@ip-172-31-1-176:~$ docker ps  
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES  
b0a19576581e louislam/uptime-kuma:latest "/usr/bin/dumb-init ..." 18 minutes ago Up 2 minutes (healthy) 0.0.0.0:3001->3001/tcp, [::]:3001->3001/tcp uptime-kum  
a  
dc47e033bb36 prabusr/prod:latest "/docker-entrypoint..." 26 minutes ago Up 2 minutes 0.0.0.0:80->80/tcp, [::]:80->80/tcp devops-web  
-main  
57f5002ddea3 prabusr/dev:latest "/docker-entrypoint..." 46 minutes ago Up 2 minutes 0.0.0.0:8081->80/tcp, [::]:8081->80/tcp devops-web  
-dev  
ubuntu@ip-172-31-1-176:~$
```

Not secure 13.235.0.11:3001/setup

RT at a glance (22) YouTube Roundcube Webmai... lifeline Google Gemini ChatGPT DeepSeek - Into the... WhatsApp GUVI Classify All Bookmarks

## Uptime Kuma

Create your admin account

Language English

Username

Password

Repeat Password

Create

Not secure 13.235.0.11:3001/dashboard

RT at a glance (22) YouTube Roundcube Webmai... lifeline Google Gemini ChatGPT DeepSeek - Into the... WhatsApp GUVI Classify All Bookmarks

## Uptime Kuma

+ Add New Monitor

Quick Stats

Up	Down	Maintenance	Unknown	Pause
0	0	0	0	0

No Monitors, please [add one](#)

Name	Status	DateTime	Message
No important events			

**Add New Monitor**

**General**

Monitor Type: HTTP(s)

Friendly Name: Prod Application

URL: http://http://13.235.0.11/

Heartbeat Interval (Check every 60 seconds): 60

Retries: 31

**Notifications**  
Not available, please setup.

**Proxy**  
Not available, please setup.

**HTTP Options**

Method: GET

**Save**

**Add New Monitor**

**General**

Monitor Type: HTTP(s)

Friendly Name: Dev Application

URL: http://13.235.0.11:8081

Heartbeat Interval (Check every 60 seconds): 60

Retries: 30

**Notifications**  
Not available, please setup.

**Proxy**  
Not available, please setup.

**HTTP Options**

Method: GET

**Save**

use **app password** for email:

**Google Account**

**App passwords**

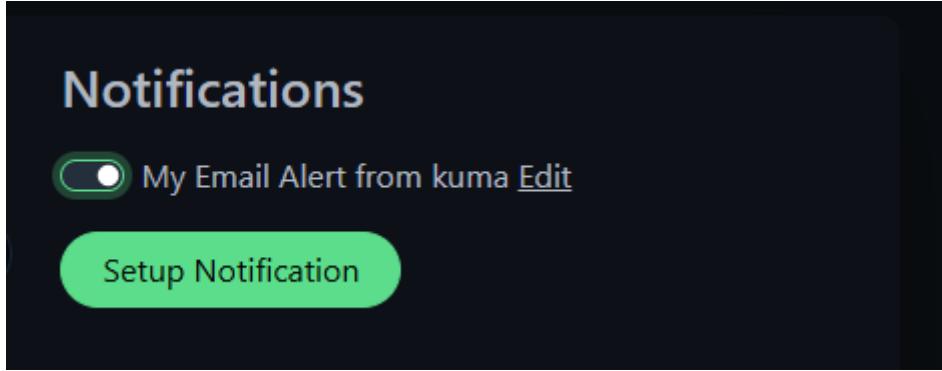
you should check to see if your app needs this in order to sign in.  
[Learn more](#)

**Your app passwords**

App name	Created on	Last used on	Action
jenkins	Created on Nov 21	last used on Nov 22	[trash]
devops	Created on 10:19 PM		[trash]

To create a new app specific password, type a name for it below...

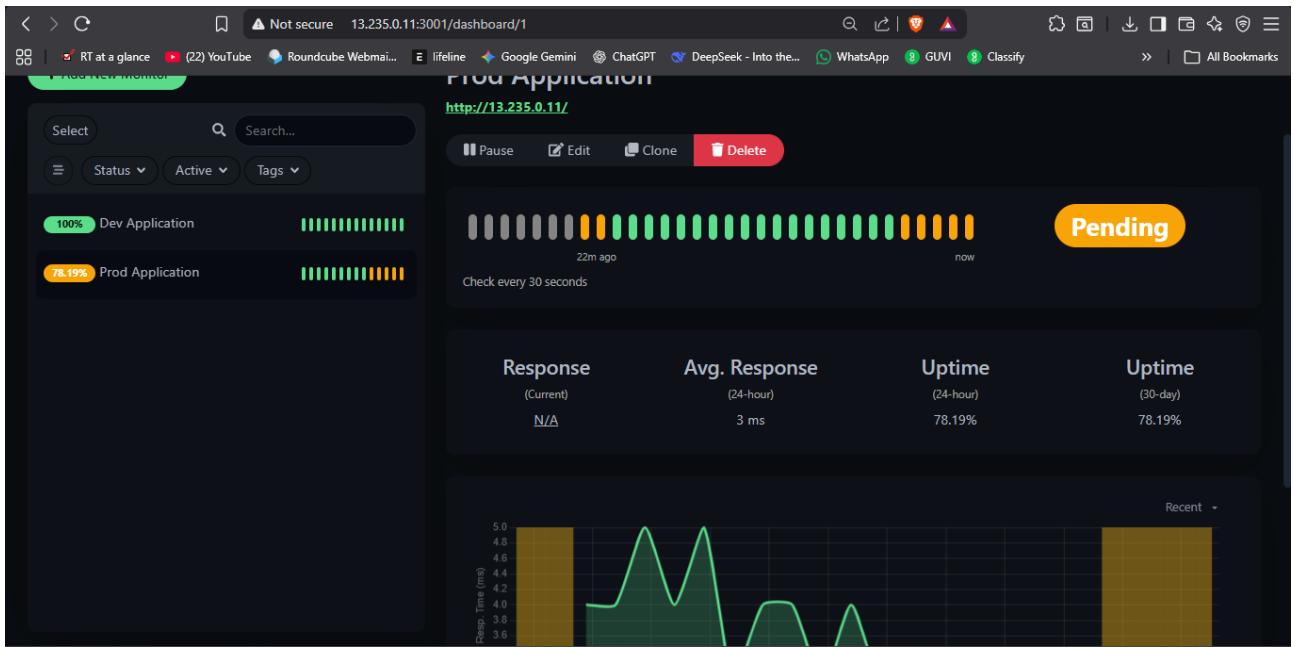
**App name**



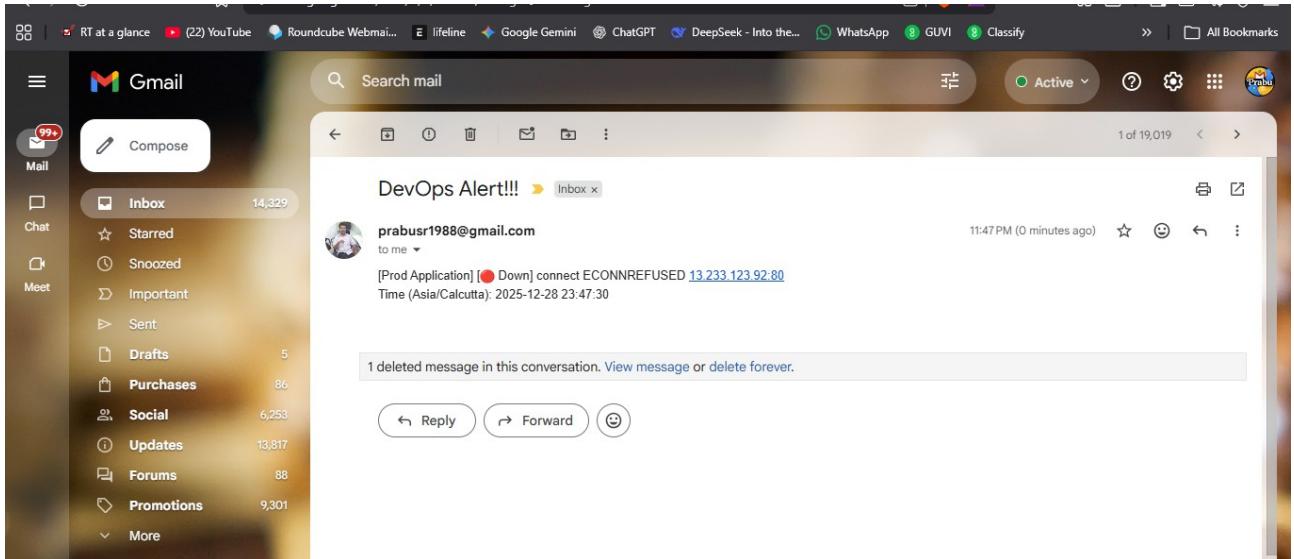
A screenshot of the Uptime Kuma dashboard. On the left, there's a summary section with two cards: 'Dev Application' at 62.16% and 'Prod Application' at 29.84%. Both cards have a progress bar below them. The main area is titled 'Edit' and shows the configuration for the 'Dev Application' monitor. It includes sections for 'General' (Monitor Type: HTTP(s), Friendly Name: Dev Application, URL: http://13.233.123.92:8081), 'Notifications' (a green button to 'Setup Notification'), 'Proxy' (status: Not available, please setup), and 'HTTP Options' (Heartbeat Interval: 60). A 'Save' button is at the bottom. The top navigation bar shows the URL as 13.233.123.92:3001/edit/2 and includes links for New Update, Status Pages, and Dashboard.

All set now, i am going to test the monitoring tool by stopping main container.

A screenshot of a terminal window titled 'Terminal - ubuntu@ip-172-31-1-176:~'. The user runs 'docker ps' to list containers, showing three entries: 'uptime-kum' (healthy), 'devops-web' (up 2 minutes), and 'devops-web-main' (up 2 minutes). Then, the user runs 'docker stop devops-web-main' to stop the main web container.

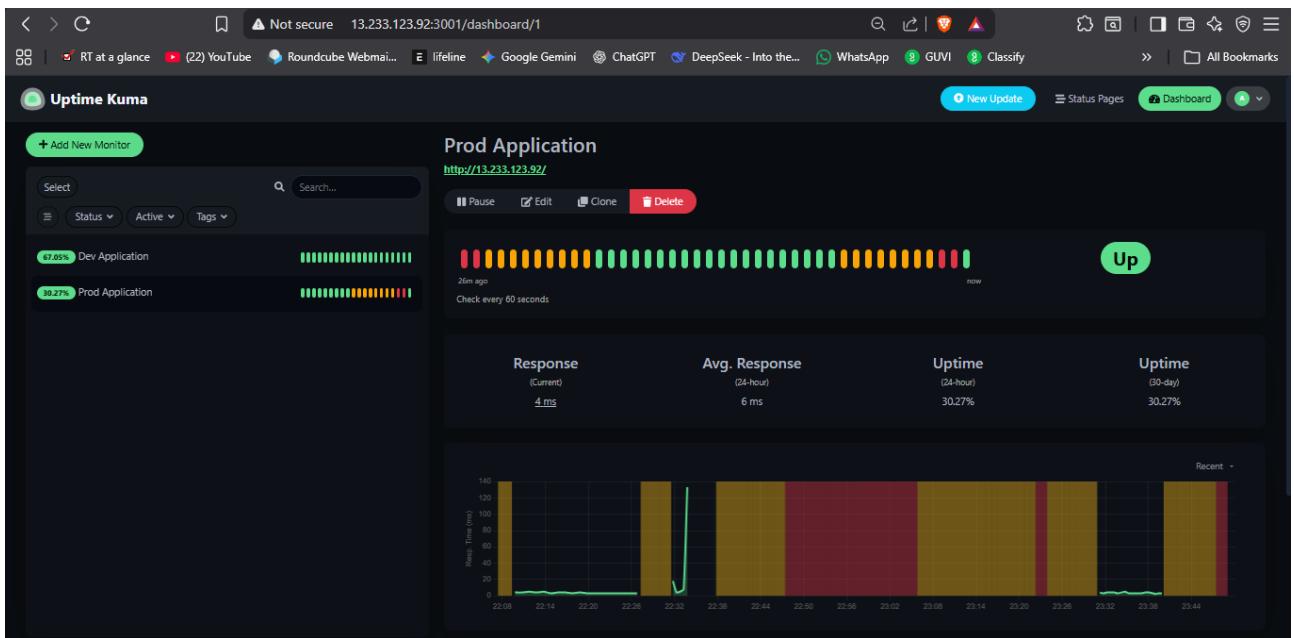


i received notifications mail

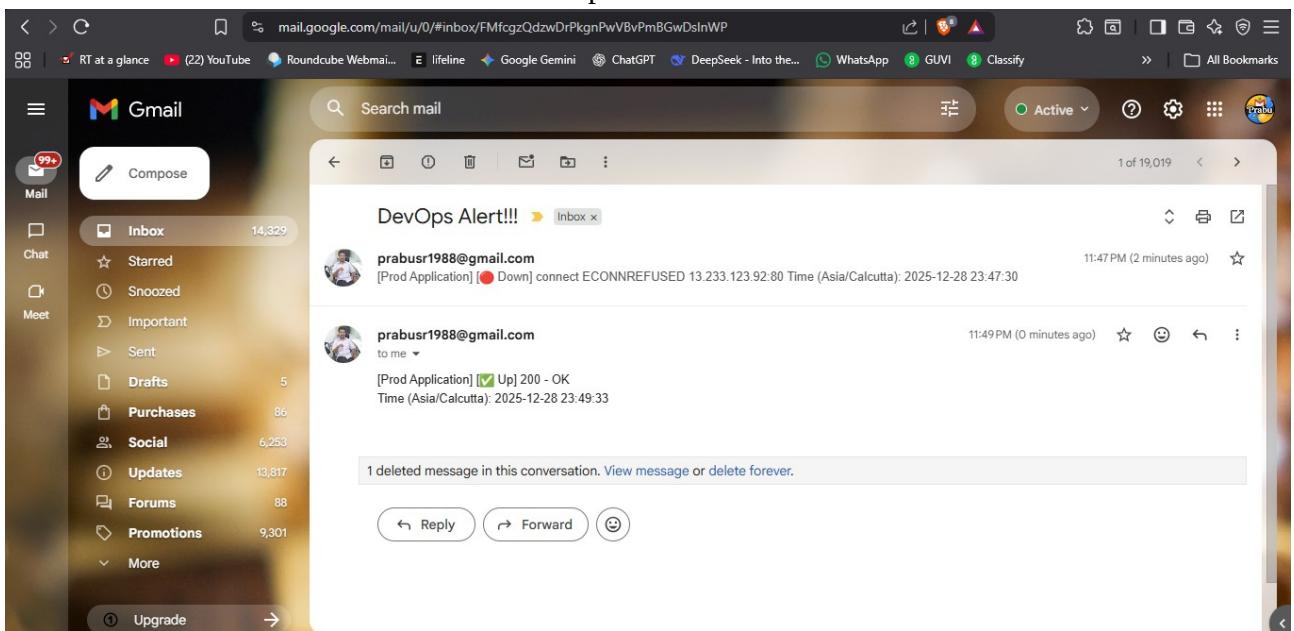


now again i start the main container

```
ubuntu@ip-172-31-1-176:~$ docker ps
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS              PORTS                               NAMES
6ba19576581e        louislam/uptime-kuma:latest   "/usr/bin/dumb-init ..."   18 minutes ago    Up 2 minutes (healthy)   0.0.0.0:3001->3001/tcp, [::]:3001->3001/tcp   uptime-kum
dc47e033bb36        prabusr/prod:latest      "/docker-entrypoint..."   26 minutes ago    Up 2 minutes          0.0.0.0:80->80/tcp, [::]:80->80/tcp       devops-web
-main
57f5002ddea3        prabusr/dev:latest      "/docker-entrypoint..."   46 minutes ago    Up 2 minutes          0.0.0.0:8081->80/tcp, [::]:8081->80/tcp       devops-web
-dev
ubuntu@ip-172-31-1-176:~$ docker stop devops-web-main
devops-web-main
ubuntu@ip-172-31-1-176:~$ docker start devops-web-main
devops-web-main
ubuntu@ip-172-31-1-176:~$
```



i received notifications when recovered and up.



## Monitored Endpoints

- Production: <http://13.233.123.92>
- Development: <http://13.233.123.92:8081>

## Application URLs:

Service	URL
Production App	<a href="http://13.233.123.92">http://13.233.123.92</a>
Development App	<a href="http://13.233.123.92:8081">http://13.233.123.92:8081</a>
Jenkins	<a href="http://13.233.123.92:8080">http://13.233.123.92:8080</a>
Monitoring	<a href="http://13.233.123.92:3001">http://13.233.123.92:3001</a>

## Conclusion

This project successfully demonstrates the design and implementation of a **complete end-to-end DevOps CI/CD pipeline** using industry-standard tools and best practices. The application was containerized using Docker and deployed on an AWS EC2 instance with clear separation between **development and production environments** through a branch-based deployment strategy.

A **Jenkins Multibranch Pipeline** was implemented to automatically detect code changes in GitHub, build Docker images, push them to separate Docker Hub repositories for development and production, and deploy them using Docker Compose. This approach ensured consistent, repeatable, and automated deployments with minimal manual intervention.

Security best practices were followed by restricting administrative access (SSH, Jenkins, and monitoring dashboards) to a specific IP address, while allowing public access only to the application endpoints. Additionally, **open-source monitoring using Uptime Kuma** was configured to continuously monitor application health and send real-time notifications during downtime, ensuring high availability and rapid incident response.

Overall, this project reflects real-world DevOps workflows by integrating version control, automation, containerization, cloud infrastructure, security, and monitoring into a single cohesive pipeline. It provides a strong foundation for scalable, reliable, and production-ready application deployments.

\*\*\* Thank you \*\*\*