

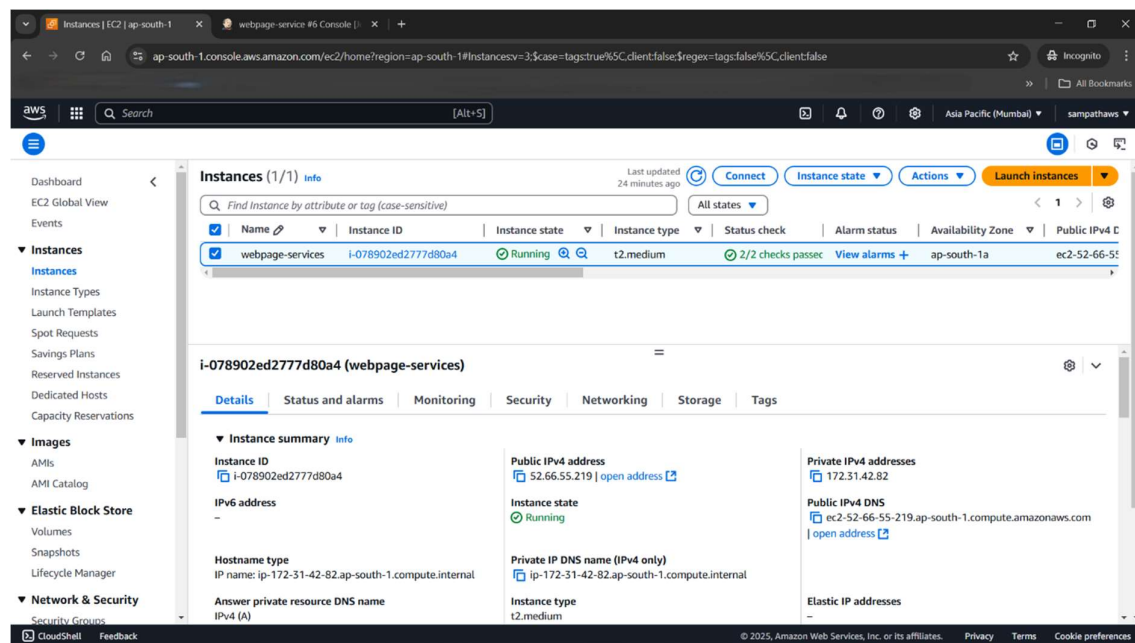
# Hosting the Same Webpage in EC2 using Jenkins CI/CD and Docker

Hosting a webpage on AWS EC2 using **Jenkins for CI/CD and Docker**. To automate the process, ensuring that every code update triggers a build and deployment to your EC2 instance.

## Requirements:-

1. **AWS Account** – Ensure you have an **EC2 instance** running **Ubuntu 22.04**.
2. **Jenkins Installed** on EC2.
3. **Docker Installed** on EC2.
4. **GitHub Repository** containing your webpage code.

## Step 1: Configure Your EC2 Instance



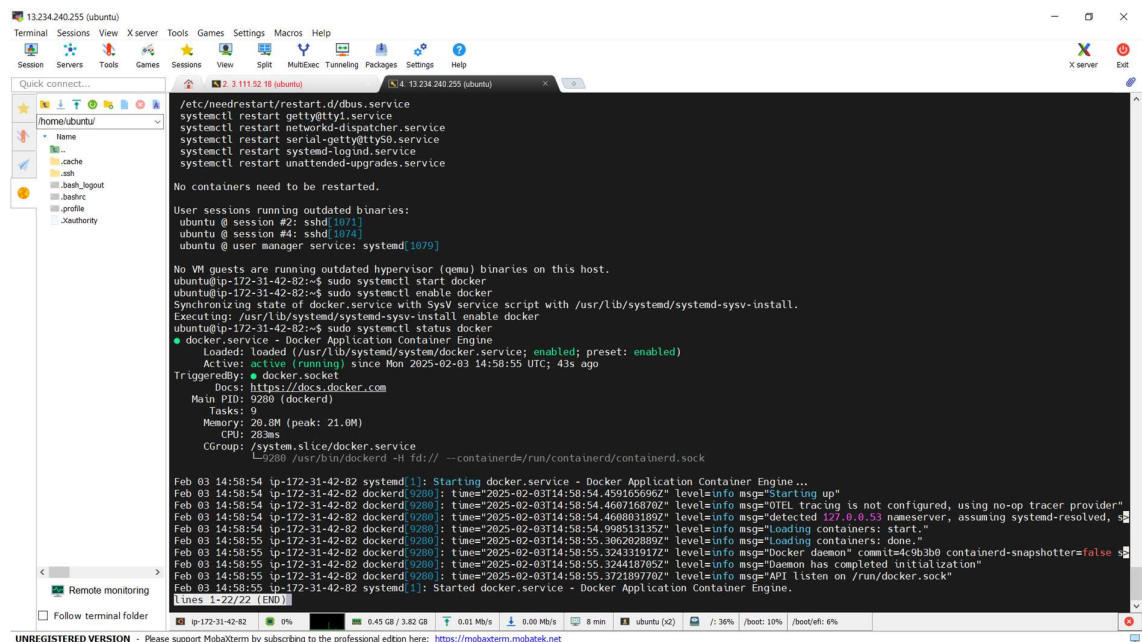
## Install Necessary Packages

- `sudo apt update`
- `sudo apt upgrade -y`
- `curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg`

- `echo "deb [arch=amd64 signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null`
- `sudo apt update`
- `sudo apt install -y docker-ce docker-ce-cli containerd.io`

## Start and Enable Docker

- `sudo systemctl start docker`
- `sudo systemctl enable docker`
- `sudo systemctl status docker`
- `sudo systemctl enable docker`



```

/etc/needrestart/restart.d/dbus.service
systemctl restart getty@tty1.service
systemctl restart networkd-dispatcher.service
systemctl restart serial-getty@ttyS0.service
systemctl restart systemd-localed.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
ubuntu@ session #2: sshd[1071]
ubuntu@ session #4: sshd[1074]
ubuntu@ user manager service: systemd[1070]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-42-82:~$ sudo systemctl start docker
ubuntu@ip-172-31-42-82:~$ sudo systemctl enable docker
Synchronizing state of docker.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable docker
ubuntu@ip-172-31-42-82:~$ sudo systemctl status docker
● docker.service - Docker Application Container Engine
   Loaded: loaded (/usr/lib/systemd/system/docker.service; enabled; preset: enabled)
   Active: active (running) since Mon 2025-02-03 14:58:55 UTC; 43s ago
   TriggeredBy: ● docker.socket
     Docs: https://docs.docker.com
    Main PID: 9280 (dockerd)
       Tasks: 9
      Memory: 20.8M (peak: 21.0M)
         CPU: 283ms
    CGroup: /system.slice/docker.service
            └─9280 /usr/bin/dockerd -H fd:// --containerd=/run/containerd/containerd.sock

Feb 03 14:58:54 ip-172-31-42-82 systemd[1]: Starting docker.service - Docker Application Container Engine...
Feb 03 14:58:54 ip-172-31-42-82 dockerd[9280]: time="2025-02-03T14:58:54.459165696Z" level=info msg="Starting up"
Feb 03 14:58:54 ip-172-31-42-82 dockerd[9280]: time="2025-02-03T14:58:54.460716870Z" level=info msg="OTEL tracing is not configured, using no-op tracer provider"
Feb 03 14:58:54 ip-172-31-42-82 dockerd[9280]: time="2025-02-03T14:58:54.460803189Z" level=info msg="detected 127.0.0.53 nameserver, assuming systemd-resolved, s
Feb 03 14:58:54 ip-172-31-42-82 dockerd[9280]: time="2025-02-03T14:58:54.498513135Z" level=info msg="loading containers: start."
Feb 03 14:58:55 ip-172-31-42-82 dockerd[9280]: time="2025-02-03T14:58:55.380202889Z" level=info msg="loading containers: done."
Feb 03 14:58:55 ip-172-31-42-82 dockerd[9280]: time="2025-02-03T14:58:55.324319177Z" level=info msg="Docker daemon" commit=49b3b0 containerd-snapshotter=false s
Feb 03 14:58:55 ip-172-31-42-82 dockerd[9280]: time="2025-02-03T14:58:55.324418705Z" level=info msg="Daemon has completed initialization"
Feb 03 14:58:55 ip-172-31-42-82 dockerd[9280]: time="2025-02-03T14:58:55.372189770Z" level=info msg="API listen on /run/docker.sock"
Feb 03 14:58:55 ip-172-31-42-82 systemd[1]: Started docker.service - Docker Application Container Engine.
[lines 1-22/22 (END)]
  
```

## Install and Configure Jenkins

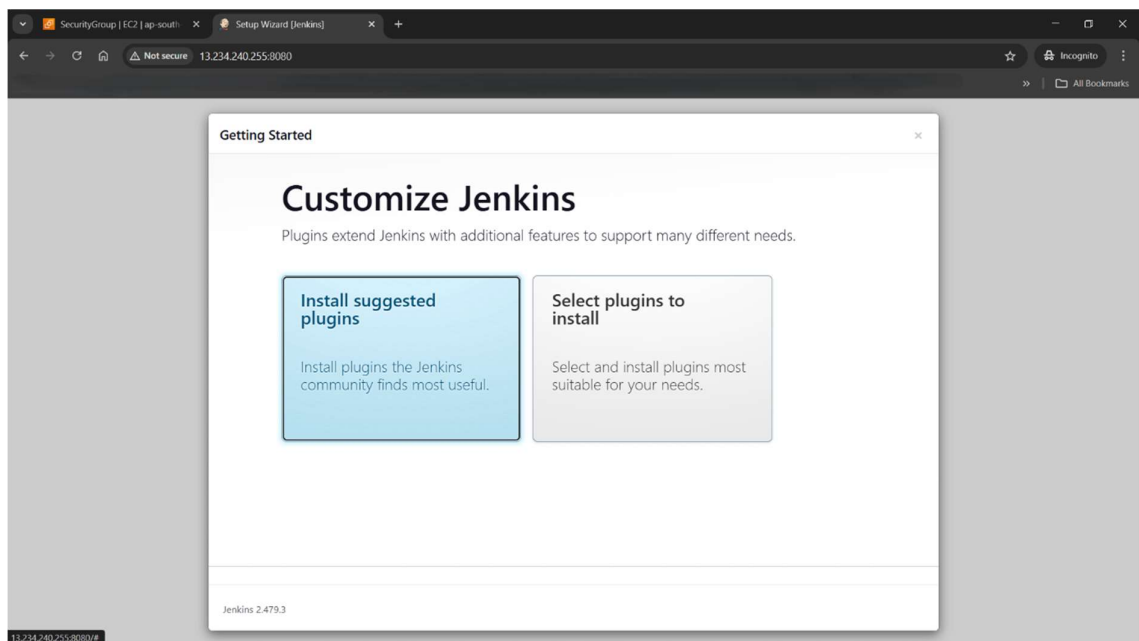
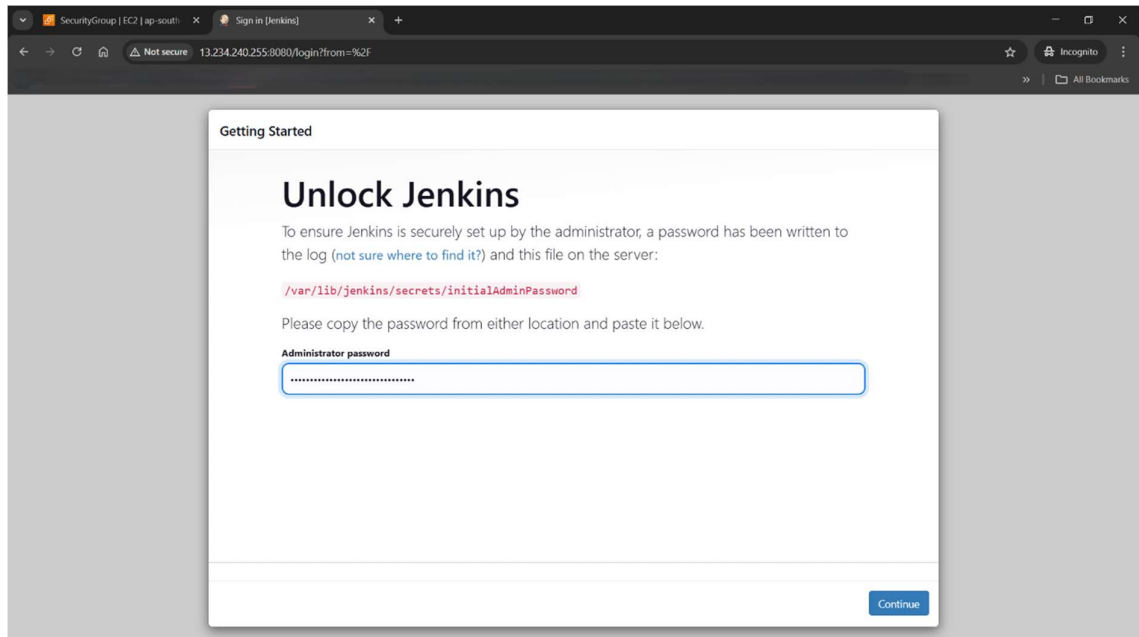
### Install Jenkins

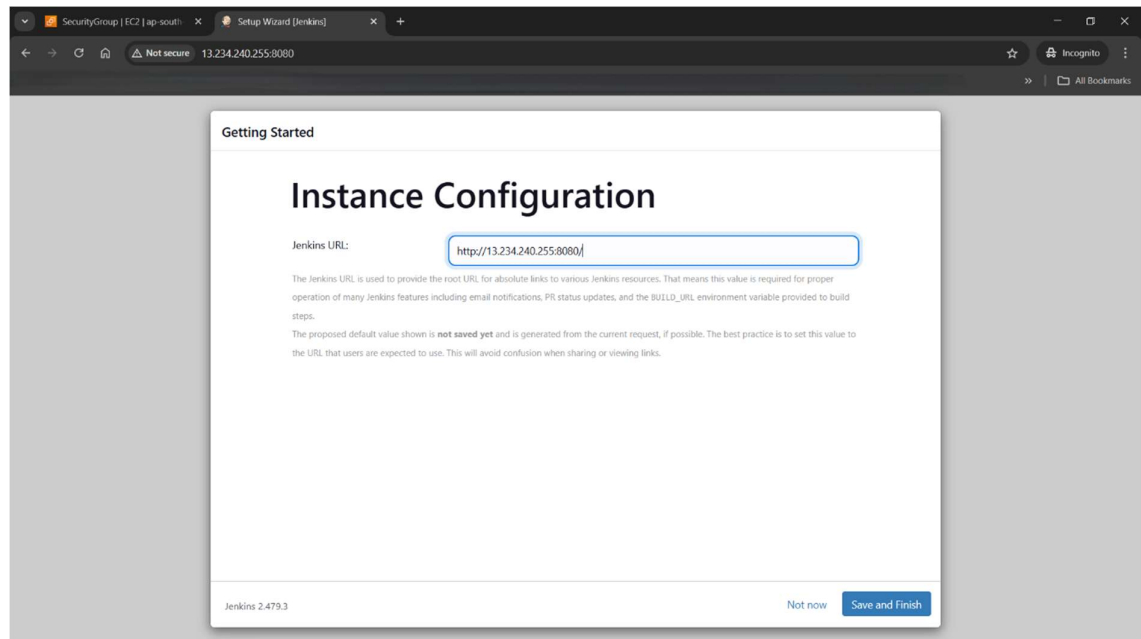
- `sudo apt update`
- `sudo apt upgrade -y`
- `sudo apt install fontconfig openjdk-17-jre -y`
- `java -version`
- `sudo wget -O /usr/share/keyrings/jenkins-keyring.asc https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key`



## Get Jenkins Admin Password

- `sudo cat /var/lib/jenkins/secrets/initialAdminPassword`
- Login to Jenkins Web UI (`http://<EC2-Public-IP>:8080`) and enter the admin password.





### Add Jenkins User to Docker Group

- `sudo usermod -aG docker jenkins`
- `sudo systemctl restart jenkins`

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### Grant Jenkins User Passwordless sudo Access

To allow the jenkins user to execute sudo commands without a password

#### Step 1: Edit the sudoers File

- `sudo visudo`

#### Step 2: Add This Line at the End

- `jenkins ALL=(ALL) NOPASSWD: ALL`

#### Step 3: Save and Exit

- Press **CTRL + X**
- Press **Y** to confirm
- Press **Enter**

## Create a Simple Webpage

- `mkdir webpage`
- `cd webpage`
- `echo "<h1>Welcome to My Webpage</h1>" > index.html`

## Create a Dockerfile

- Inside the `webpage/` directory, create a `Dockerfile`:

```
cat <<EOF > Dockerfile
```

```
FROM nginx:latest
```

```
COPY index.html /usr/share/nginx/html/index.html
```

```
EXPOSE 80
```

```
EOF
```

## Build and run the Docker Image

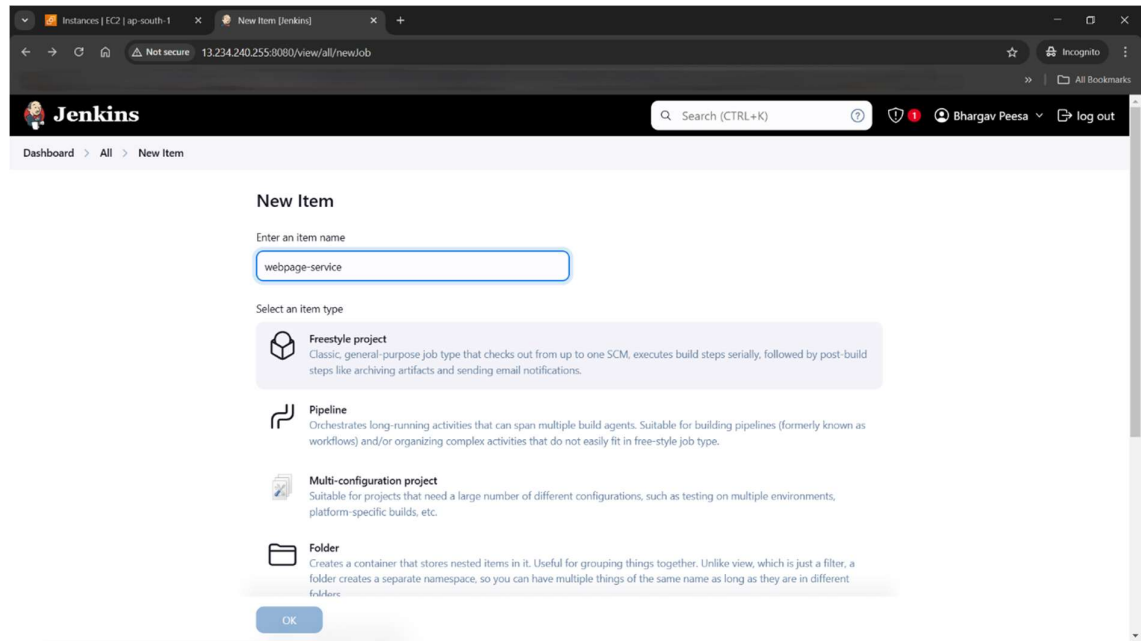
- `docker build -t my-webpage .`
  - `docker run -d -p 80:80 my-webpage`
- Access the webpage via <http://your-ec2-public-ip>



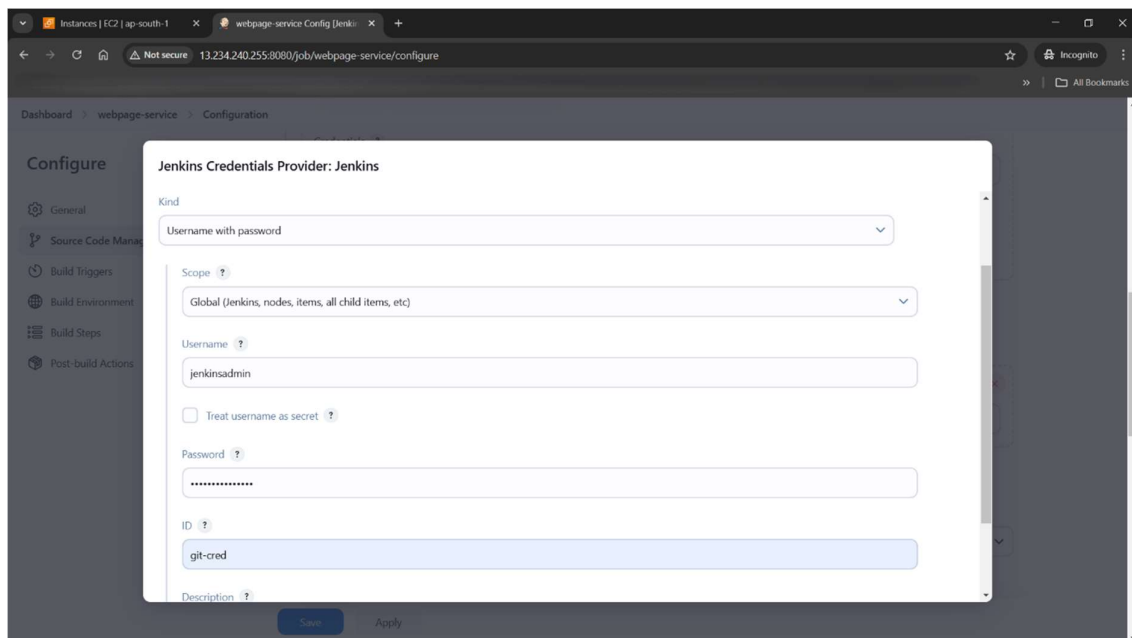
## Setup Jenkins for CI/CD - Automate Deployment with Jenkins

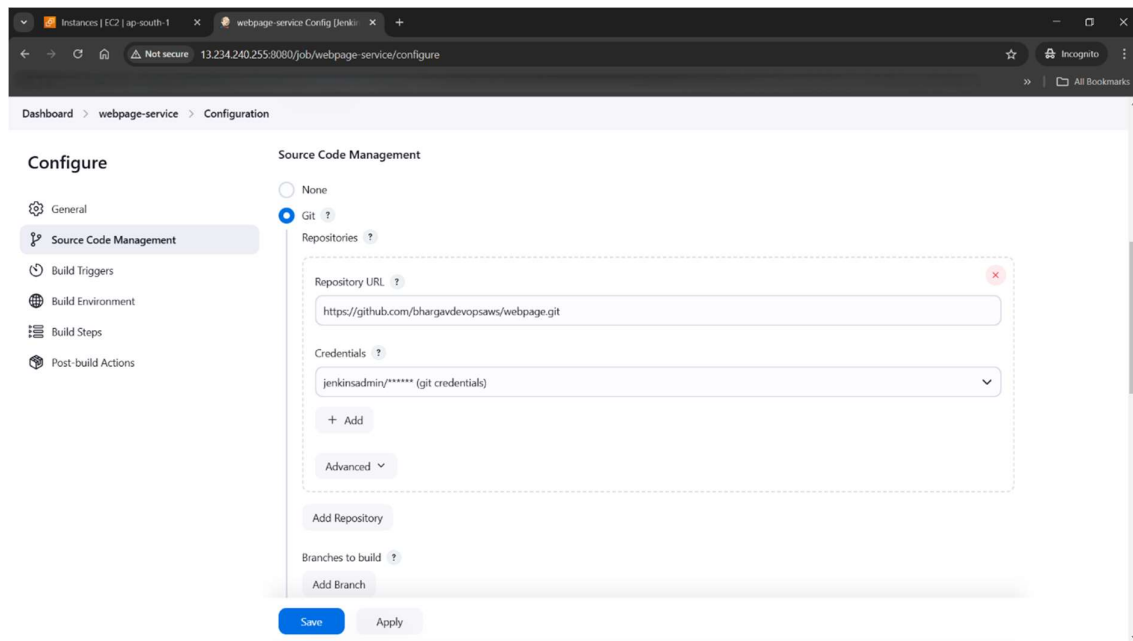
### Configure Jenkins Job

- Go to Jenkins Dashboard → New Item
- Select Freestyle Project → Give it a name → Click OK



- Under Source Code Management, choose Git and enter the repository URL where your webpage code is stored (GitHub, Bitbucket, etc.).





- Under Build Steps, select Execute Shell and enter:

```
docker stop my-webpage || true
```

```
docker rm my-webpage || true
```

```
docker rmi my-webpage || true
```

```
docker build -t my-webpage .
```

```
docker run -d -p 80:80 my-webpage
```

- Save the job and build now to trigger deployment.

### Push Webpage Code to GitHub

1. Make changes in index.html
2. Push the changes to GitHub
  - Git init
  - Git add .
  - git clone https://github.com/bhargavdevopsaws/webpage.git
  - touch webpage



- nano webpage

```
#!/bin/bash
```

```
# Stop and remove the existing container (ignore errors if it doesn't exist)
```

```
docker stop my-webpage || true
```

```
docker rm my-webpage || true
```

```
# Remove old Docker image
```

```
docker rmi my-webpage || true
```

```
# Build a new Docker image
```

```
docker build -t my-webpage .
```

```
# Run the container in detached mode (-d) and expose port 80
```

```
docker run -d -p 80:80 --name my-webpage my-webpage
```

- git commit -m "Initial commit"
- git branch -M main
- git remote add origin git remote add origin https://github.com/your-username/webpage-ci-cd.git
- touch dockerfile
- nano dockerfile

```
# Sample Dockerfile
FROM nginx:alpine
COPY . /usr/share/nginx/html
EXPOSE 80
```

- git add dockerfile
- git commit -m "Added valid Dockerfile"
- git push -u origin main

```
bharg@DESKTOP-JVVVHFL MINGW64 ~/OneDrive/Desktop/AWS-DevOps-Deployment/webpage (master|MERGING)
$ cat Dockerfile
# Sample Dockerfile
FROM nginx:alpine
COPY . /usr/share/nginx/html
EXPOSE 80

bharg@DESKTOP-JVVVHFL MINGW64 ~/OneDrive/Desktop/AWS-DevOps-Deployment/webpage (master|MERGING)
$ git add Dockerfile
warning: in the working copy of 'Dockerfile', LF will be replaced by CRLF the next time Git touches it

bharg@DESKTOP-JVVVHFL MINGW64 ~/OneDrive/Desktop/AWS-DevOps-Deployment/webpage (master|MERGING)
$ git commit -m "Added valid Dockerfile"
[master 38a8756] Added valid Dockerfile

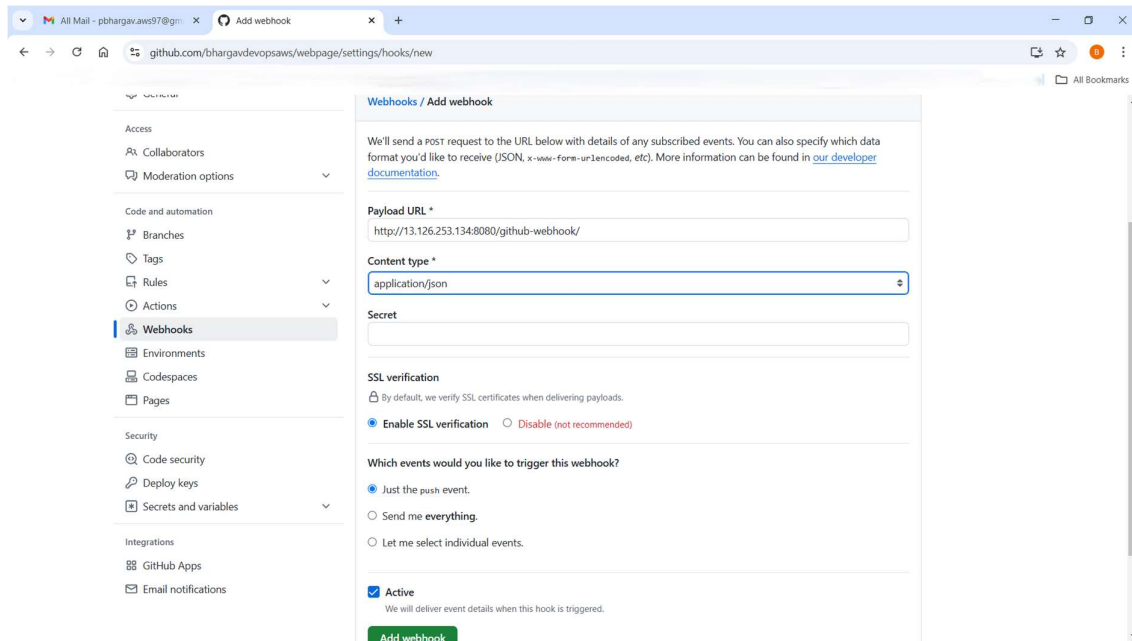
bharg@DESKTOP-JVVVHFL MINGW64 ~/OneDrive/Desktop/AWS-DevOps-Deployment/webpage (master)
$ git push origin master
Enumerating objects: 9, done.
Counting objects: 100% (9/9), done.
Delta compression using up to 4 threads
Compressing objects: 100% (6/6), done.
Writing objects: 100% (6/6), 1.38 KiB | 709.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/bhargavdevopsaws/webpage.git
   bdc3809..38a8756  master -> master

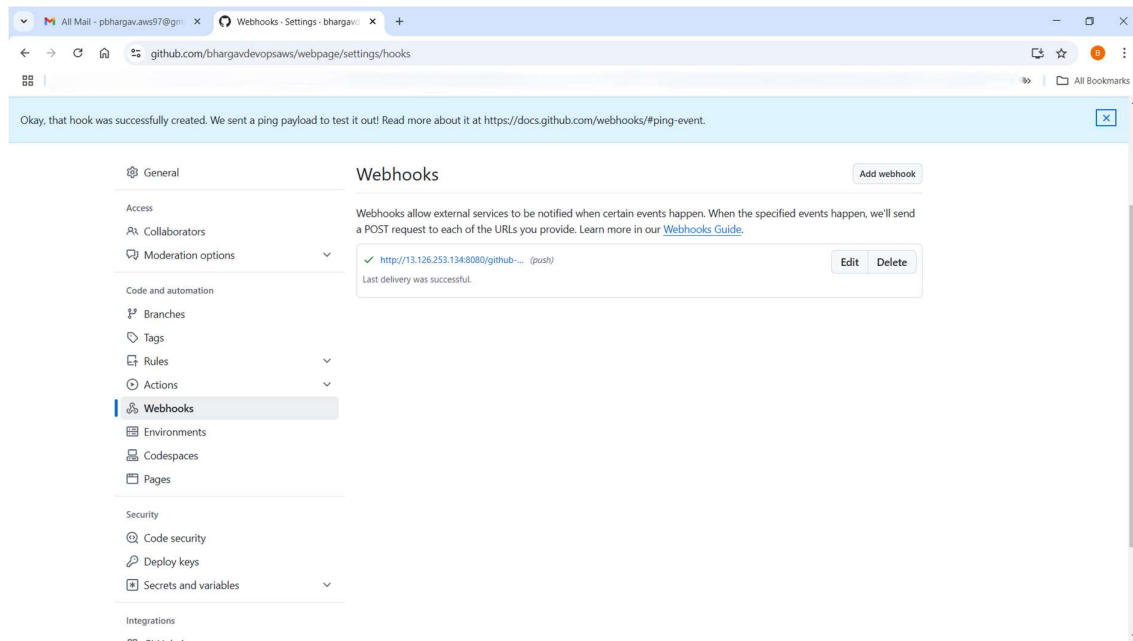
bharg@DESKTOP-JVVVHFL MINGW64 ~/OneDrive/Desktop/AWS-DevOps-Deployment/webpage (master)
$
```

## Set Up Webhook for CI/CD

To automate deployment whenever you push changes to Git:

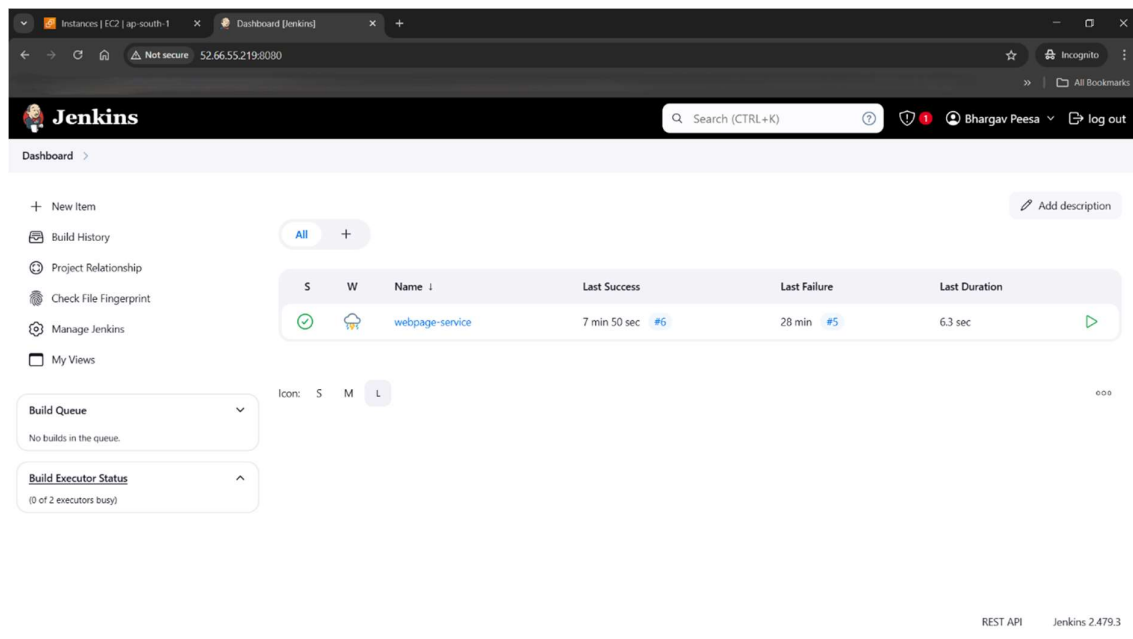
- **GitHub Webhook:**
  - Go to **GitHub Repo** → **Settings** → **Webhooks**
  - Click **Add Webhook** and set:
    - Payload URL: `http://your-ec2-public-ip:8080/github-webhook/`
    - Content type: `application/json`
    - Trigger: `Push`
  - In Jenkins, install **GitHub Integration Plugin**
  - Enable **Build when a change is pushed to GitHub** in the Jenkins job.





## Run the Pipeline

- Click "Build Now" in Jenkins.
- It will fetch the latest code, build the Docker image, and deploy the container.



Instances | EC2 | ap-south-1 x webpage-service [Jenkins] x +

← → ↻ ⚠ Not secure 52.66.55.219:8080/job/webpage-service/ ☆ Incognito ⋮

Dashboard > webpage-service >

Status

<> Changes

Workspace

Build Now

Configure

Delete Project

Rename

webpage-service

Add description

Permalinks

- Last build (#6), 9 min 43 sec ago
- Last stable build (#6), 9 min 43 sec ago
- Last successful build (#6), 9 min 43 sec ago
- Last failed build (#5), 30 min ago
- Last unsuccessful build (#5), 30 min ago
- Last completed build (#6), 9 min 43 sec ago

**Builds**

Filter /

Today

- #6 8:46 AM
- #5 8:25 AM
- #4 8:14 AM

February 3, 2025

- #3 6:18 PM
- #2 5:49 PM
- #1 5:26 PM

Instances | EC2 | ap-south-1 x webpage-service #6 [Jenkins] x +

← → ↻ ⚠ Not secure 52.66.55.219:8080/job/webpage-service/6/ ☆ Incognito ⋮

**Jenkins** Search (CTRL+K) Bhargav Peesa log out

Dashboard > webpage-service > #6

Status

<> Changes

Console Output

Edit Build Information

Delete build '#6'

Timings

Git Build Data

Previous Build

#6 (Feb 4, 2025, 8:46:33 AM)

Add description Keep this build forever

Started by user [Bhargav Peesa](#)

Started 3 min 55 sec ago  
Took 6.3 sec

This run spent:

- 7 ms waiting:
- 6.3 sec build duration;
- 6.3 sec total from scheduled to completion.

**Revision:** 38a875682ad4aeead2d98a37bca7ed2b0decc6c0

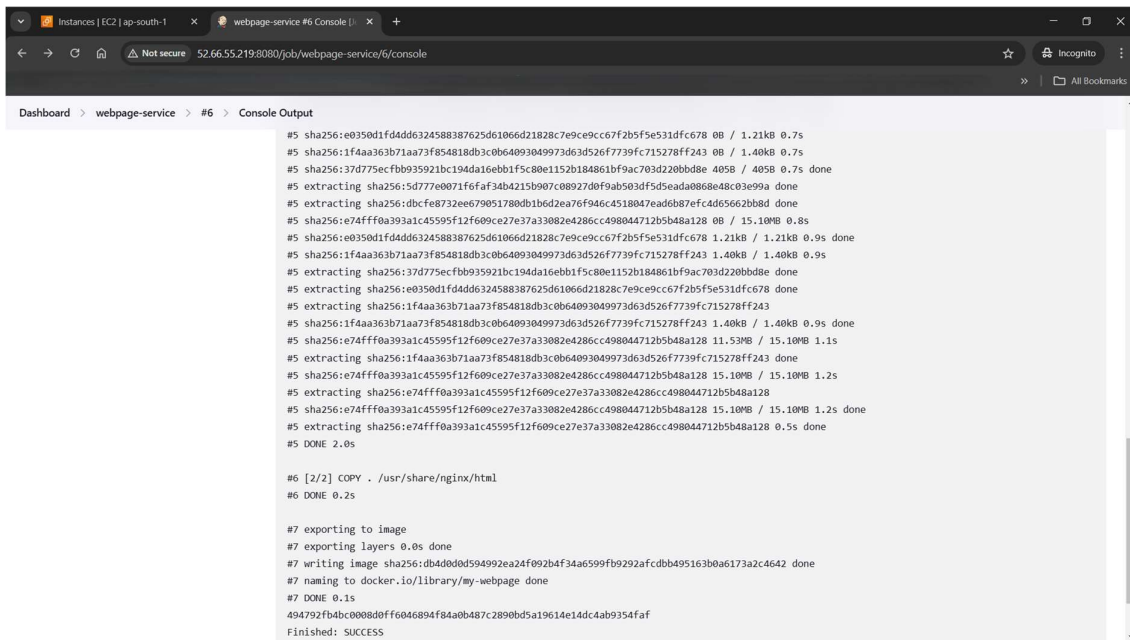
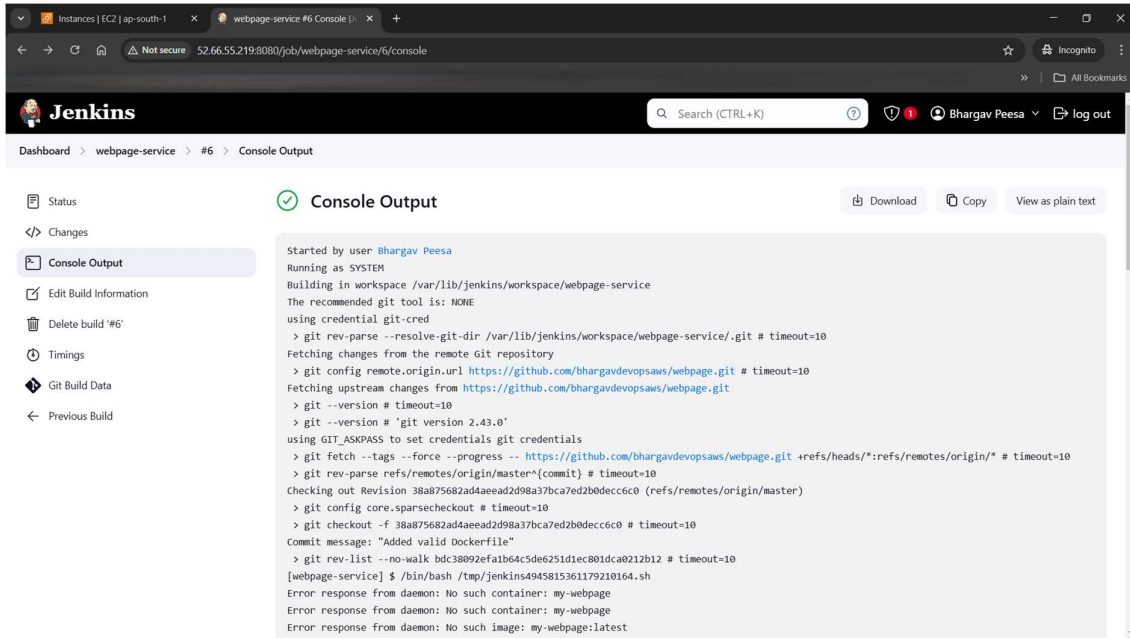
**Repository:** <https://github.com/bhargavdevopsaws/webpage.git>

- refs/remotes/origin/master

Changes

1. Create README.md ([details](#) / [githubweb](#))

REST API Jenkins 2.479.3



## Check Running Containers

- docker ps -a

