

2. Jenkins with Docker

Docker File -> Docker Image -> Docker Containers -> Docker Hub using JenKins FreeStyle using GitHub

Objective:

The objective of this Jenkins pipeline script is to automate the building, tagging, pushing, and deployment of a Dockerized Nginx web application. Specifically, it aims to:

1. Ensure Docker is installed and running on the Jenkins build server.
2. Stop and remove any existing Nginx container to prevent conflicts.
3. Build a new Docker image from the latest changes in the repository.
4. Tag and push the image to Docker Hub (mohamedathikr/jenkins_docker) for version control and deployment.
5. Ensure port 80 is free before running the new container.
6. Deploy the newly built image as an Nginx container and verify its status.
7. Handle errors gracefully and notify the user in case of failure.

Procedure:

Steps to Automate Docker Build & Deployment with Jenkins

Follow these steps to ensure your **Jenkins pipeline** successfully builds, pushes, and deploys a Docker container with Nginx.

◆ **Step 1: Install & Configure Jenkins**

1. **Install Jenkins** (if not already installed):

```
sudo apt update  
sudo apt install openjdk-11-jdk -y  
wget -q -O - https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee  
/etc/apt/trusted.gpg > /dev/null  
echo "deb https://pkg.jenkins.io/debian-stable binary/" | sudo tee  
/etc/apt/sources.list.d/jenkins.list > /dev/null  
sudo apt update  
sudo apt install jenkins -y
```

2. Start Jenkins & Enable at Boot:

```
sudo systemctl start jenkins
```

```
sudo systemctl enable jenkins
```

3. Get Jenkins Admin Password:

```
sudo cat /var/lib/jenkins/secrets/initialAdminPassword
```

- **Log in to Jenkins UI** (`http://<your-server-ip>:8080`)
 - **Install recommended plugins** during setup.
-

◆ **Step 2: Install Docker & Grant Jenkins Access**

1. Install Docker:

```
sudo apt install docker.io -y
```

```
sudo systemctl start docker
```

```
sudo systemctl enable docker
```

2. Give Jenkins permission to use Docker:

```
sudo usermod -aG docker jenkins
```

```
sudo systemctl restart jenkins
```

3. Verify Jenkins can run Docker commands:

```
sudo su - jenkins
```

```
docker --version
```

◆ **Step 3: Configure Docker Hub Authentication in Jenkins**

1. Go to Jenkins Dashboard → Manage Jenkins → Manage Credentials

2. Add New Credentials:

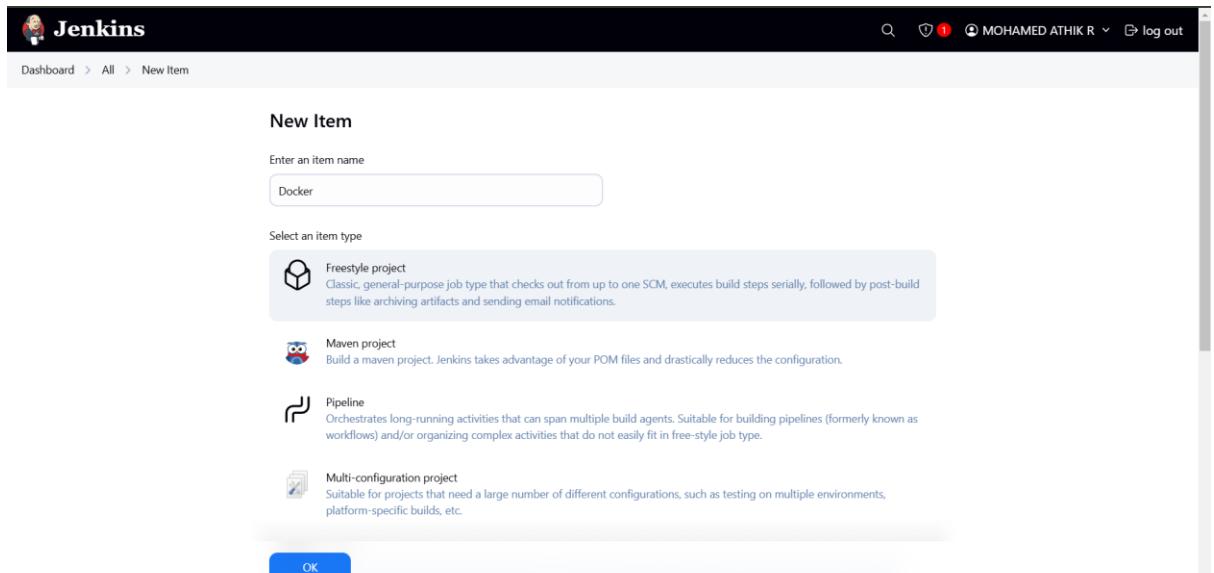
- **Username:** mohamedathikr
 - **Password or Token:** Use a **Docker Hub Access Token** instead of a password.
 - **ID:** docker-hub-credentials (you'll use this in the script)
-

◆ **Step 4: Create a New Jenkins Job**

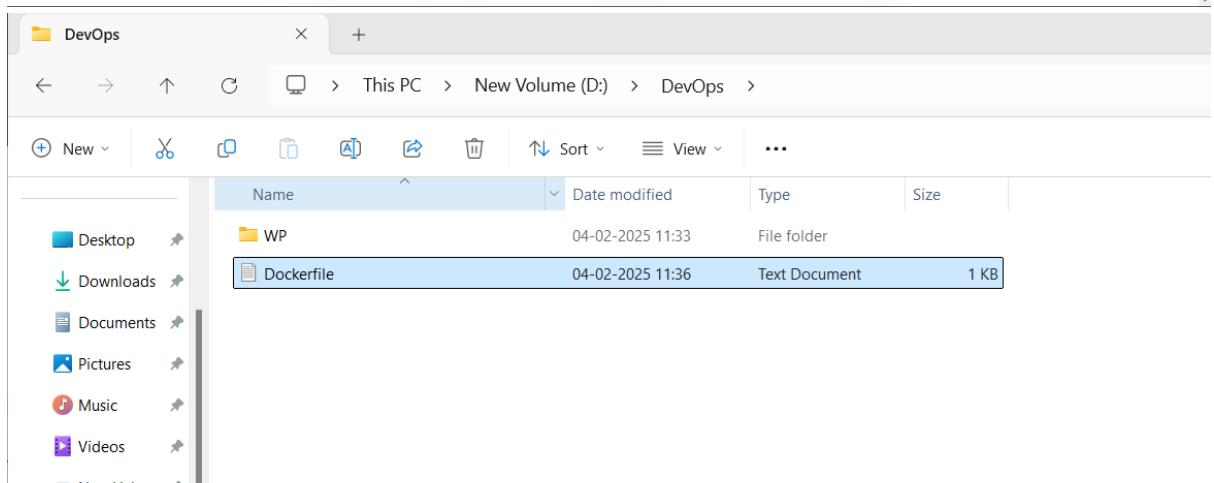
1. Go to Jenkins Dashboard → New Item
2. Select "Freestyle Project" → Enter Name (e.g., Docker Deployment)
3. Under "Source Code Management," choose Git and add your repository:

https://github.com/ATHIK05/DevOps_GUVI_TASK02.git

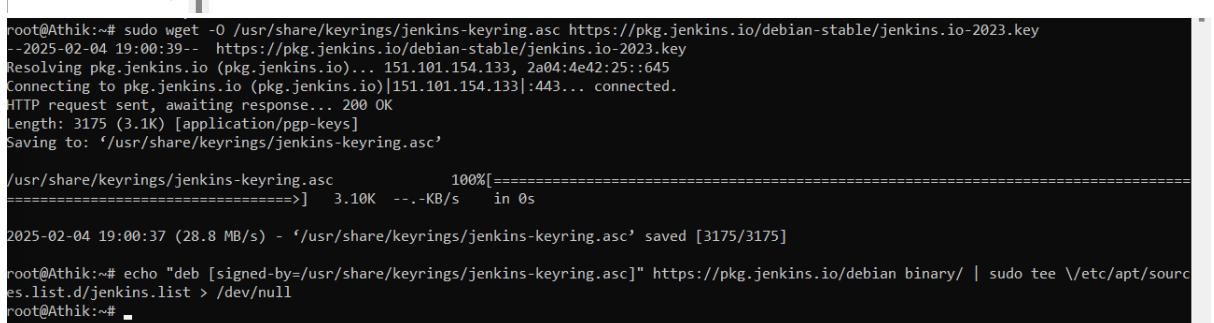
Docker Image into Hub using Jenkins FreeStyle



The screenshot shows the Jenkins 'New Item' creation dialog. In the 'Select an item type' section, the 'Freestyle project' option is selected, highlighted with a light gray background. Other options like 'Maven project', 'Pipeline', and 'Multi-configuration project' are also listed. An 'OK' button is visible at the bottom of the dialog.



The screenshot shows a Windows File Explorer window. The path is 'This PC > New Volume (D:) > DevOps >'. Inside the DevOps folder, there is a 'WP' folder and a file named 'Dockerfile'. The 'Dockerfile' file is selected and highlighted with a blue border. The file was created on 04-02-2025 at 11:36 and is a 1 KB Text Document.



```

root@Athik:~# sudo wget -O /usr/share/keyrings/jenkins-keyring.asc https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
--2025-02-04 19:00:39- https://pkg.jenkins.io/debian-stable/jenkins.io-2023.key
Resolving pkg.jenkins.io (pkg.jenkins.io)... 151.101.154.133, 2a04:4e42:25::645
Connecting to pkg.jenkins.io (pkg.jenkins.io)|151.101.154.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3175 (3.1K) [application/pgp-keys]
Saving to: '/usr/share/keyrings/jenkins-keyring.asc'

/usr/share/keyrings/jenkins-keyring.asc          100%[=====]> 3.10K  --.-KB/s  in 0s
2025-02-04 19:00:37 (28.8 MB/s) - '/usr/share/keyrings/jenkins-keyring.asc' saved [3175/3175]

root@Athik:~# echo "deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] https://pkg.jenkins.io/debian binary/" | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null
root@Athik:~#

```

The image shows two overlapping web pages from Docker. The top page is the 'Settings' section of Docker Desktop, showing various configuration options like 'General', 'Resources', and 'Docker Engine'. The bottom page is the 'Create repository' interface on Docker Hub, where a user is creating a new private repository named 'mohamedathikr'.

Docker Desktop Settings (Top):

- General (selected)
- Resources
- Docker Engine
- Builders
- Kubernetes
- Software updates
- Extensions
- Features in development

Configurable options include:

- Use containerd for pulling and storing images
- Send usage statistics
- Use Enhanced Container Isolation
- Show CLI hints
- SBOM indexing
- Enable background SBOM indexing

Docker Hub - Create Repository (Bottom):

Namespace: mohamedathikr

Repository Name:

Short description:

Visibility:

- Public Appears in Docker Hub search results
- Private Only visible to you

Pushing images:

You can push a new image to this repository using the CLI:

```
docker tag local-image:tagname new-repo:tagname  
docker push new-repo:tagname
```

Make sure to replace `tagname` with your desired image repository tag.

Buttons: Cancel, Create

Cookie banner at the bottom:

By clicking "Accept All Cookies", you agree to the storing of cookies on your device to enhance site navigation, analyze site usage, and assist in our marketing efforts.

Cookies Settings, Reject All, Accept All Cookies

 docker hub Explore **Repositories** Organizations Usage

mohamedathikr / [Repositories](#) / [jenkins_docker](#) / [General](#)

mohamedathikr/jenkins_docker 

Created less than a minute ago

[Add a description](#)  

[Add a category](#)  

General Tags Builds Collaborators Webhooks Settings

Tags  INCOMPLETE

Pushed images appear here.

Dashboard > Docker > Configuration

Configure

Source Code Management

Connect and manage your code repository to automatically pull the latest code for your builds.

None

Git 

Repositories 

Repository URL  

Credentials  

+ Add

Advanced 

Add Repository

Branches to build 

Save **Apply**

ATHIK05 / DevOps_GUVI_TASK02

Type to search

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

DevOps_GUVI_TASK02 Public

main Branch Tags

Go to file Add file Code

ATHIK05 Create sample da4d30b · 9 hours ago 7 Commits

Dockerfile Update Dockerfile 10 hours ago

index.html Add files via upload 11 hours ago

sample Create sample 9 hours ago

About No description, website, or topics provided.

Activity 0 stars 1 watching 0 forks

Releases No releases published Create a new release

Packages No packages published Publish your first package

Languages HTML 94.9% Dockerfile 5.1%

Add a README

Add a README

github.com/ATHIK05/DevOps_GUVI_TASK02/_/4c0a5a2a1418307f0719dbe51eec4bae39841...

Files

main Dockerfile index.html sample

DevOps_GUVI_TASK02 / Dockerfile

ATHIK05 Update Dockerfile 4c0a5a2 · 10 hours ago History

Code Blame 8 lines (6 loc) · 225 Bytes

```
1 # Use the official Nginx image from Docker Hub
2 FROM nginx:latest
3
4 # Copy the entire WP folder into the Nginx web server directory
5 COPY ./index.html /usr/share/nginx/html
6
7 # Expose port 80 for the web server
8 EXPOSE 81
```

Dashboard > Docker > Configuration

Add build step ▾

Configure

- General
- Source Code Management
- Triggers
- Environment
- Build Steps
- Post-build Actions**

Post-build Actions

Define what happens after a build completes, like sending notifications, archiving artifacts, or triggering other jobs.

E-mail Notification ? X

Recipients
Whitespace-separated list of recipient addresses. May reference build parameters like \$PARAM. E-mail will be sent when a build fails, becomes unstable or returns to stable.

rathikmohamed786@gmail.com

Send e-mail for every unstable build

Send separate e-mails to individuals who broke the build

Add post-build action ▾

Save **Apply**

REST API Jenkins 2.495

The screenshot shows the Jenkins configuration interface for a Docker job. The 'Post-build Actions' section is active, displaying an 'E-mail Notification' step. The 'Recipients' field contains the email address 'rathikmohamed786@gmail.com'. Two checkboxes are present: one checked for 'Send e-mail for every unstable build' and one unchecked for 'Send separate e-mails to individuals who broke the build'. At the bottom, there are 'Save' and 'Apply' buttons.

Dashboard > Docker >

</> Changes

Workspace

Build Now

Configure

Delete Project

GitHub Hook Log

Rename

Builds

...

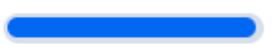


Filter

/

Today

(✓) #11 7:14 PM



(✓) #10 9:13 AM



(✗) #9 9:10 AM



(✗) #8 9:04 AM



(✗) #7 9:02 AM



(✗) #6 8:43 AM

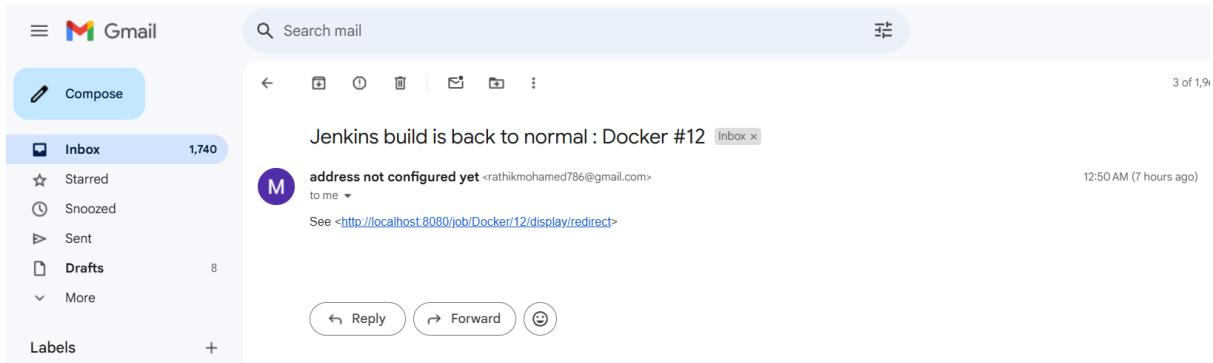
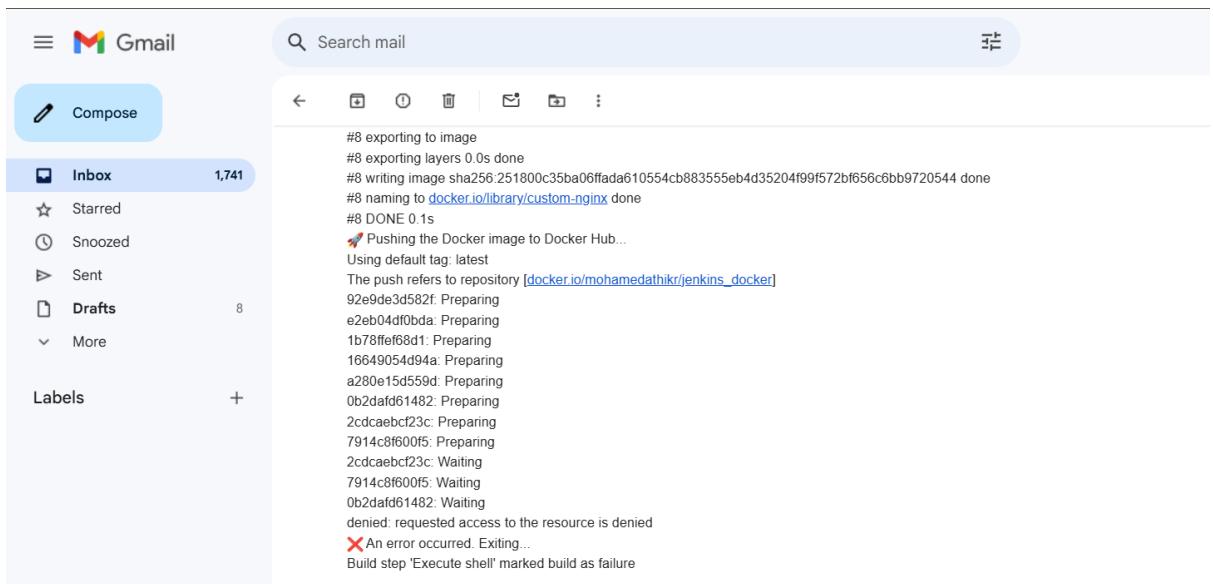


(✗) #5 8:29 AM



localhost:8080/job/Docker/GitHubPollLog





Dashboard > Docker >

</> Changes

Workspace

Build Now

Configure

Delete Project

GitHub Hook Log

Rename

Builds

...



Filter

/

Today

✓ #12 7:19 PM



✗ #11 7:14 PM



✓ #10 9:13 AM



✗ #9 9:10 AM



✗ #8 9:04 AM



✗ #7 9:02 AM



✗ #6 8:43 AM



✗ #5 8:29 AM



Dashboard > Docker > #12 > Console Output

```
Login Succeeded
✖ Pushing the Docker image to Docker Hub...
Using default tag: latest
The push refers to repository [docker.io/mohamedathikr/jenkins_docker]
92e9de3d582f: Preparing
e2eb04df0bda: Preparing
1b78ffef68d1: Preparing
16649054d94a: Preparing
a280e15d595d: Preparing
0b2dafd61482: Preparing
2cdcacbcf23c: Preparing
7914c8f600f5: Preparing
0b2dafd61482: Waiting
7914c8f600f5: Waiting
2cdcacbcf23c: Waiting
16649054d94a: Mounted from library/nginx
1b78ffef68d1: Mounted from library/nginx
a280e15d595d: Mounted from library/nginx
e2eb04df0bda: Mounted from library/nginx
0b2dafd61482: Mounted from library/nginx
92e9de3d582f: Pushed
2cdcacbcf23c: Pushed
7914c8f600f5: Pushed
latest: digest: sha256:3955b9fd1ac3f42f1200bba04bdec9719c9d3f887a997d84633968023e0a5922 size: 1986
✖ Running the container on port 80...
c9db70c319476c1b43e5987a23f4ca744f6c5dc229fc1a175b73fc8d6679e5c7
✅ Container is running successfully!
Sending e-mails to: rathikmohamed786@gmail.com
Finished: SUCCESS
```

 dockerhub [Explore](#) [Repositories](#) [Organizations](#) [Usage](#) [!\[\]\(76135476e4c66624fcd079eb06e6e2d1_img.jpg\) Search](#)

mohamedathikr / [Repositories](#) / [jenkins_docker](#) / [General](#)

mohamedathikr/jenkins_docker 

Last pushed 1 minute ago • Repository size: 69.6 MB

[Add a description](#)  

[Add a category](#)  

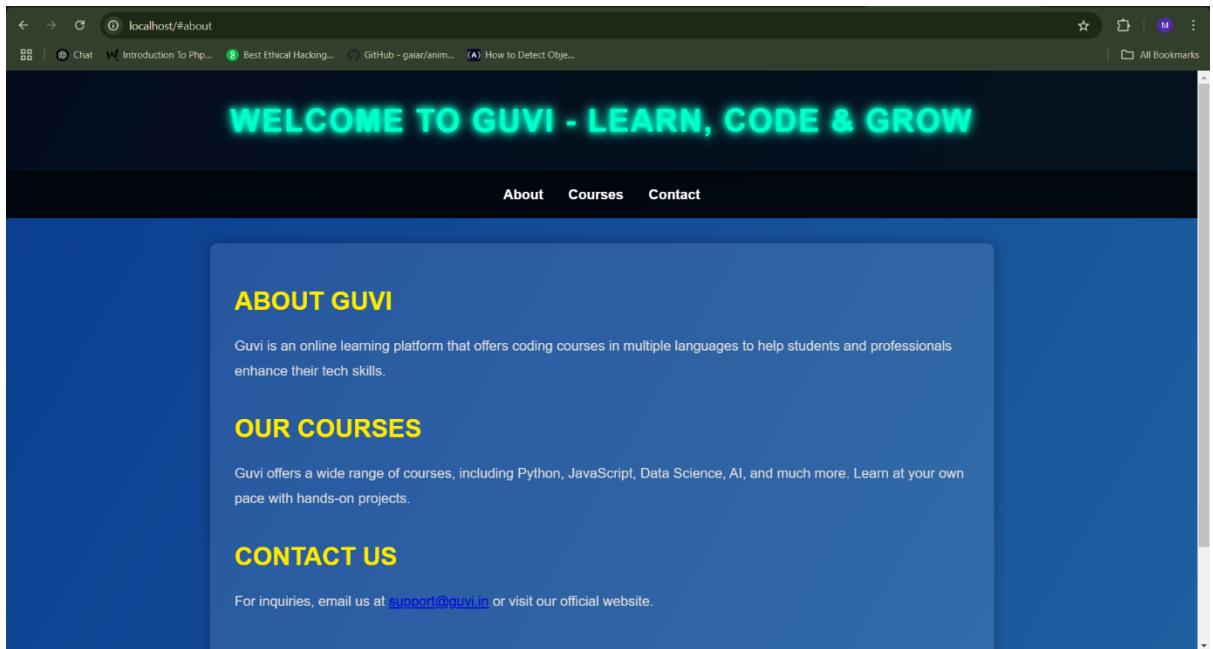
[General](#) [Tags](#) [Builds](#) [Collaborators](#) [Webhooks](#) [Settings](#)

Tags

This repository contains 1 tag(s).

Tag	OS	Type	Pulled	Pushed
 latest		Image	a minute ago	a minute ago

[See all](#)



Docker Image into Hub using Jenkins PipeLine

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

DevOps_02 Public

main 1 Branch 0 Tags

Go to file Add file Code About

No description, website, or topics provided.

Activity
0 stars
1 watching
0 forks

Releases
No releases published
Create a new release

Packages
No packages published
Publish your first package

Languages

Language	Percentage
HTML	82.6%
CSS	15.8%
Shell	1.3%
Dockerfile	0.3%

 **Jenkins**

Dashboard > DevOps_Jenkins >

 Status

 Changes

 Build Now

 Configure

 Delete Pipeline

 Stages

 Rename

 Pipeline Syntax

DevOps_Jenkins

Jenkins Pipeline Deployment

Permalinks

Builds ... ▾

Today ▼

 #1 4:48 AM

Jenkins

Dashboard > DevOps_Jenkins > Configuration

Configure

General

Description: Jenkins Pipeline Deployment

Enabled:

General

Discard old builds

Do not allow concurrent builds

Do not allow the pipeline to resume if the controller restarts

GitHub project

Pipeline speed/durability override

Preserve stashes from completed builds

This project is parameterized

Throttle builds

Triggers

Set up automated actions that start your build based on specific events, like code changes or scheduled times.

Build after other projects are built

Build periodically

GitHub hook trigger for GITScm polling

Poll SCM

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

Pipeline

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

Definition: Pipeline script from SCM

SCM: Git

Repositories

Repository URL: https://github.com/AIHK05/DevOps_02.git

Credentials: - none -

+ Add

Advanced

Add Repository

Branches to build

Branch Specifier (blank for 'any'): */main

Add Branch

Repository browser: (Auto)

Additional Behaviours

Add

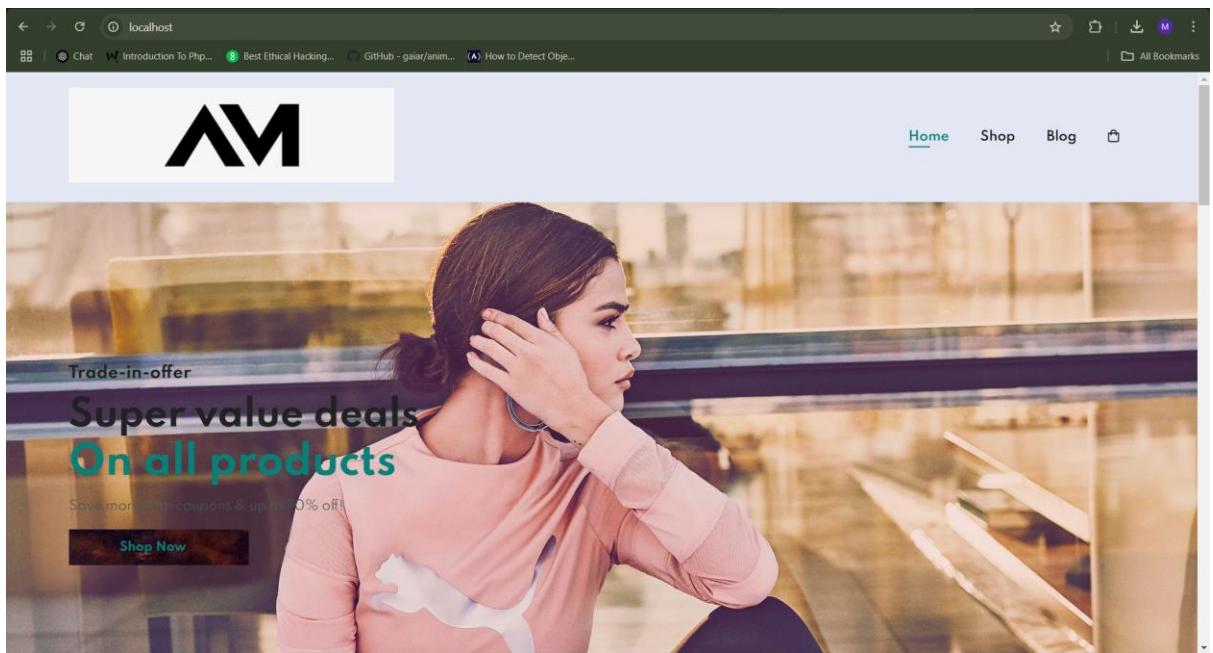
Script Path: Jenkinsfile

Lightweight checkout

Pipeline Syntax

Advanced

Save Apply



AM

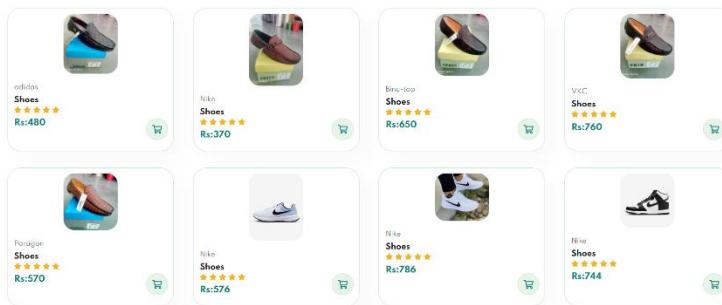
Home Shop Blog

Trade-in-offer
Super value deals
On all products
Save more on complete & up to 50% off!
Shop Now

Free Shipping **Online Order** **Save Money** **Promotion** **Happy Sell** **Support**

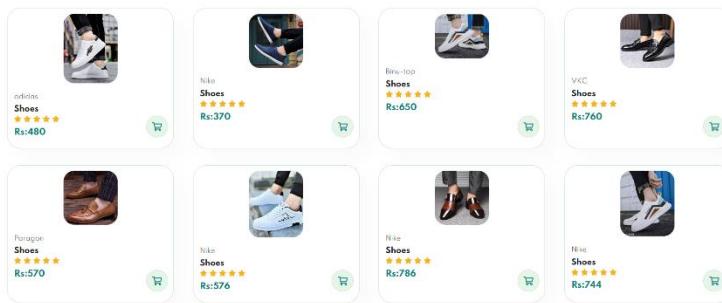
Featured Products

Sale Season



New Arrivals

Sale Season



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