
Learn And Build

Final Project Submission

Submitted By : Parth Chittora
Guided By : Ashish Agrawal

CI Pipeline Using Jenkins and Github

Jenkins

Jenkins is a widely used open-source automation server that facilitates continuous integration and continuous delivery (CI/CD) in software development. It automates various aspects of the software delivery process, including building, testing, and deployment, reducing manual errors and enhancing efficiency.



GitHub

- GitHub is a leading web-based platform for version control and collaborative software development. It provides a central repository where developers can store, manage, and track changes to their codebase.
- GitHub is a versatile platform that offers version control, collaboration, and project management capabilities, essential for modern software development and fostering efficient and organized development processes.





Launching Instance

- ➔ Launch an instance in AWS.
- ➔ Add port 8080 in the security group for jenkins installation.
- ➔ Take t2.small as instance type.
- ➔ Select RedHat Operating System as AMI.

– Launching Instance

aws

Services

Q Search

[Alt+S]

Mumbai

Parth Chittora

EC2 > Instances > Launch an instance

Launch an instance

Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags

Info

Name

jenkinsServer

Add additional tags

▼ Application and OS Images (Amazon Machine Image)

Info

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Q Search our full catalog including 1000s of application and OS images

Recents

Quick Start

▼ Summary

Number of instances

Info

1

Software Image (AMI)

Provided by Red Hat, Inc.

ami-008b85aa3ff5c1b02

Virtual server type (instance type)

t2.small

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 10 GiB

Free tier: In your first year includes 750 hours of t2.micro (or

Cancel

Launch instance

Review commands

CloudShell

Feedback

Language

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Privacy

Terms

Cookie preferences

– Selecting RedHat AMI and t2.small instance

aws

Services

Search [Alt+S]

Mumbai

Parth Chittora

Amazon Linux

macOS

Ubuntu

Windows

Red Hat

SUSE Li

Browse more AMIs

Amazon Machine Image (AMI)

Red Hat Enterprise Linux 9 (HVM), SSD Volume Type
ami-008b85aa3ff5c1b02 (64-bit (x86)) / ami-09d5aaa0b11e7e75d (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Free tier eligible

Description

Provided by Red Hat, Inc.

Architecture

64-bit (x86)

AMI ID

ami-008b85aa3ff5c1b02

Verified provider

Instance type

t2.small

Family: t2 1 vCPU 2 GiB Memory Current generation: true

All generations

Summary

Number of instances 1

Software Image (AMI)

Provided by Red Hat, Inc.
ami-008b85aa3ff5c1b02

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t2.small

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New security group

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1 volume(s) - 10 GiB

Free tier: In your first year includes 750 hours of t2.micro (or)

Cancel Launch instance

Review commands

CloudShell Feedback Language

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– Editing security group and assigning port 8080

0.0.0.0/0 X

▼ Security group rule 4 (TCP, 8080) Remove

Type [Info](#)
Custom TCP ▼

Protocol [Info](#)
TCP

Port range [Info](#)
8080

Source type [Info](#)
Custom ▼

Source [Info](#)
🔍 Add CIDR, prefix list or security

Description - optional [Info](#)
e.g. SSH for admin desktop

⚠️ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only. X

Add security group rule

— Launch Instance

aws

Services

Search [Alt+S]

Mumbai

Parth Chittora

☰

Type [Info](#)

HTTP

Source type [Info](#)

Anywhere

Protocol [Info](#)

TCP

Port range [Info](#)

80

Description - optional [Info](#)

e.g. SSH for admin desktop

Source [Info](#)

Add CIDR, prefix list or security

0.0.0.0/0

▼ Security group rule 4 (TCP, 8080, 0.0.0.0/0)

Remove

Type [Info](#)

Custom TCP

Source type [Info](#)

Anywhere

Protocol [Info](#)

TCP

Port range [Info](#)

8080

Description - optional [Info](#)

e.g. SSH for admin desktop

Source [Info](#)

Add CIDR, prefix list or security

0.0.0.0/0

⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Add security group rule

▼ Summary

Number of instances [Info](#)

1

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Cancel

Launch instance

Review commands

CloudShell

Feedback

Language

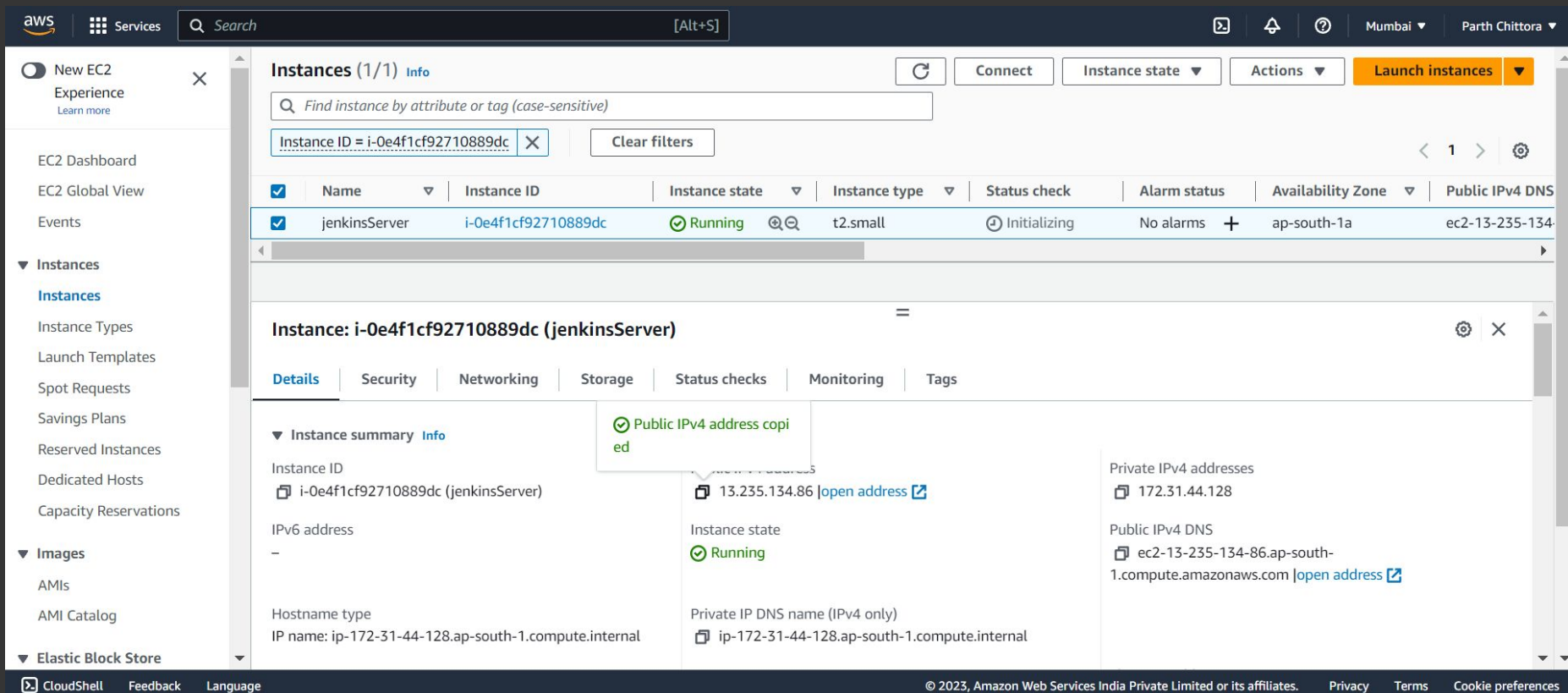
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Privacy

Terms

Cookie preferences

– Copy the IP Address and run in CMD



The screenshot displays the AWS Management Console interface. At the top, the navigation bar includes the AWS logo, 'Services', a search bar, and user information for 'Mumbai' and 'Parth Chittora'. The left sidebar shows the 'Instances' section selected, with a list of instance types and launch templates. The main content area shows the 'Instances (1/1)' page. A table lists the instance 'jenkinsServer' with ID 'i-0e4f1cf92710889dc', type 't2.small', and status 'Running'. Below the table, the 'Instance: i-0e4f1cf92710889dc (jenkinsServer)' details are shown. The 'Details' tab is active, displaying the instance summary. A tooltip indicates that the 'Public IPv4 address' (13.235.134.86) has been copied. The instance is also shown to be 'Running' and has a 'Public IPv4 DNS' address of 'ec2-13-235-134-86.ap-south-1.compute.amazonaws.com'. The bottom of the console shows the 'CloudShell' button, 'Feedback', 'Language', and copyright information for Amazon Web Services India Private Limited.

Instances (1/1) Info

Find instance by attribute or tag (case-sensitive)

Instance ID = i-0e4f1cf92710889dc X Clear filters

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
jenkinsServer	i-0e4f1cf92710889dc	Running	t2.small	Initializing	No alarms	ap-south-1a	ec2-13-235-134-

Instance: i-0e4f1cf92710889dc (jenkinsServer)

Details Security Networking Storage Status checks Monitoring Tags

Instance summary Info

Instance ID
i-0e4f1cf92710889dc (jenkinsServer)

IPv6 address
-

Hostname type
IP name: ip-172-31-44-128.ap-south-1.compute.internal

Public IPv4 address copied

13.235.134.86 [open address](#)

Instance state
Running

Private IP DNS name (IPv4 only)
ip-172-31-44-128.ap-south-1.compute.internal

Private IPv4 addresses
172.31.44.128

Public IPv4 DNS
ec2-13-235-134-86.ap-south-1.compute.amazonaws.com [open address](#)

CloudShell Feedback Language

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– Running the machine in cmd :

```
C:\Users\91723>ssh -i Downloads\parthMumbaiAws.pem ec2-user@13.235.134.86
The authenticity of host '13.235.134.86 (13.235.134.86)' can't be established.
ED25519 key fingerprint is SHA256:LNyabu2+4xsVCsEgW1nVBxxVJrV/F54vHZWe0lttG5E.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '13.235.134.86' (ED25519) to the list of known hosts.
Register this system with Red Hat Insights: insights-client --register
Create an account or view all your systems at https://red.ht/insights-dashboard
[ec2-user@ip-172-31-44-128 ~]$ |
```

– Launching Instance

aws

Services

Q Search

[Alt+S]

Mumbai

Parth Chittora

EC2 > Instances > Launch an instance

Launch an instance [Info](#)

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[Free tier](#): In your first year includes 750 hours of t2.micro (or

Cancel

Launch instance

[Review commands](#)

CloudShell Feedback Language

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– Installing wget

```
[ec2-user@ip-172-31-44-128 ~]$ sudo -i  
[root@ip-172-31-44-128 ~]# yum install wget -y  
Updating Subscription Management repositories.  
Unable to read consumer identity
```

– Downloading Jenkins Repo

```
Complete!
[root@ip-172-31-44-128 ~]# sudo wget -O /etc/yum.repos.d/jenkins.repo https://pkg.jenkins.io/redhat-stable/jenkins.repo
--2023-09-19 01:50:04-- https://pkg.jenkins.io/redhat-stable/jenkins.repo
Resolving pkg.jenkins.io (pkg.jenkins.io)... 151.101.154.133, 2a04:4e42:24::645
Connecting to pkg.jenkins.io (pkg.jenkins.io)|151.101.154.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 85
Saving to: '/etc/yum.repos.d/jenkins.repo'

/etc/yum.repos.d/j 100%[=====>]          85  --.-KB/s    in 0s

2023-09-19 01:50:04 (5.53 MB/s) - '/etc/yum.repos.d/jenkins.repo' saved [85/85]

[root@ip-172-31-44-128 ~]# |
```

– Importing Jenkins Key and Java Jdk

```
[root@ip-172-31-44-128 ~]# sudo rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io-2023.key
```

```
[root@ip-172-31-44-128 ~]# yum install java-11-openjdk -y
```

```
Updating Subscription Management repositories.
```

```
Unable to read consumer identity
```

```
This system is not registered with an entitlement server. You can use subscription-manager to register.
```

```
Jenkins-stable 174 kB/s | 27 kB 00:00
```

```
Dependencies resolved.
```

```
=====
```

Package	Arch	Version	Repository	Size
---------	------	---------	------------	------

```
=====
```

```
Installing:
```

```
java-11-openjdk      x86_64 1:11.0.20.0.8-3.el9  
                      rhel-9-appstream-rhui-rpms 441 k
```

```
Installing dependencies:
```

```
ModemManager-glib    x86_64 1.20.2-1.el9      rhel-9-baseos-rhui-rpms 337 k  
adobe-source-code-pro-fonts  
                      noarch 2.030.1.050-12.el9.1
```

– Installing Jenkins

Complete!

```
[root@ip-172-31-44-128 ~]# yum install jenkins -y
```

Updating Subscription Management repositories.

Unable to read consumer identity

This system is not registered with an entitlement server. You can use subscription-manager to register.

Last metadata expiration check: 0:01:01 ago on Tue 19 Sep 2023 01:51:58 AM UTC.

Dependencies resolved.

Package	Architecture	Version	Repository	Size
Installing:				
jenkins	noarch	2.414.1-1.1	jenkins	85 M

Transaction Summary

Install 1 Package

– Enabling Jenkins

Complete!

```
[root@ip-172-31-44-128 ~]# systemctl enable --now jenkins
```

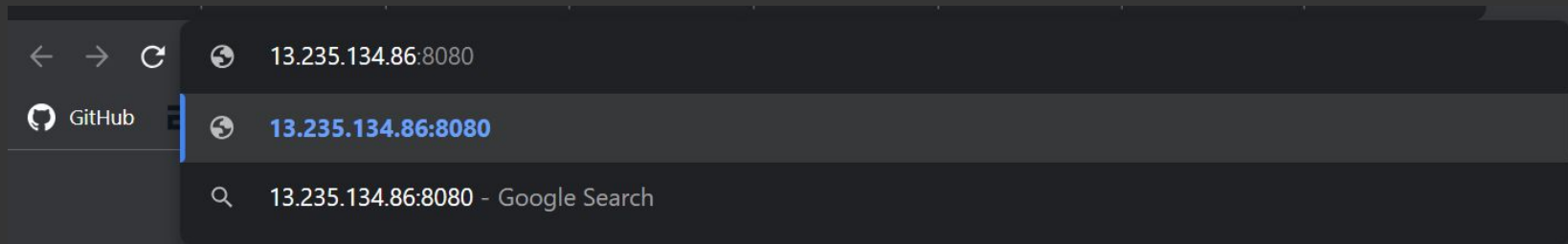
Synchronizing state of jenkins.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.

Executing: /usr/lib/systemd/systemd-sysv-install enable jenkins

Created symlink /etc/systemd/system/multi-user.target.wants/jenkins.service
→ /usr/lib/systemd/system/jenkins.service.

|

– Setting Jenkins



Google

Search Google or type a URL

– Unlock Jenkins

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

– Install Suggested Plugins

Getting Started

×

Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

Install suggested plugins

Install plugins the Jenkins community finds most useful.

Select plugins to install

Select and install plugins most suitable for your needs.

Jenkins 2.414.1

– Plugins being installed

Getting Started

Getting Started

✓ Folders	✓ OWASP M... Formatter	✓ ... Ant	✓ ... Gradle
✓ Timestampers	Workspace Cleanup		
Pipeline	GitHub Branch Source	Pipeline: GitHub Groovy Libraries	Pipeline: Stage View
Git	SSH Build Agents	Matrix Authorization Strategy	PAM Authentication
LDAP	Email Extension	Mailer	

** SCM API

Timestampers

** commons-lang3 v3.x Jenkins API

** Caffeine API

** Script Security

** JAXB

** SnakeYAML API

** Jackson 2 API

** commons-text API

** Pipeline: Supporting APIs

** Plugin Utilities API

** Font Awesome API

** Bootstrap 5 API

** JQuery3 API

** ECharts API

** - required dependency

Jenkins 2.414.1

– Creating User at Jenkins

Getting Started

Create First Admin User

Username

Password

Confirm password

— Start Using Jenkins

Getting Started

Jenkins is ready!

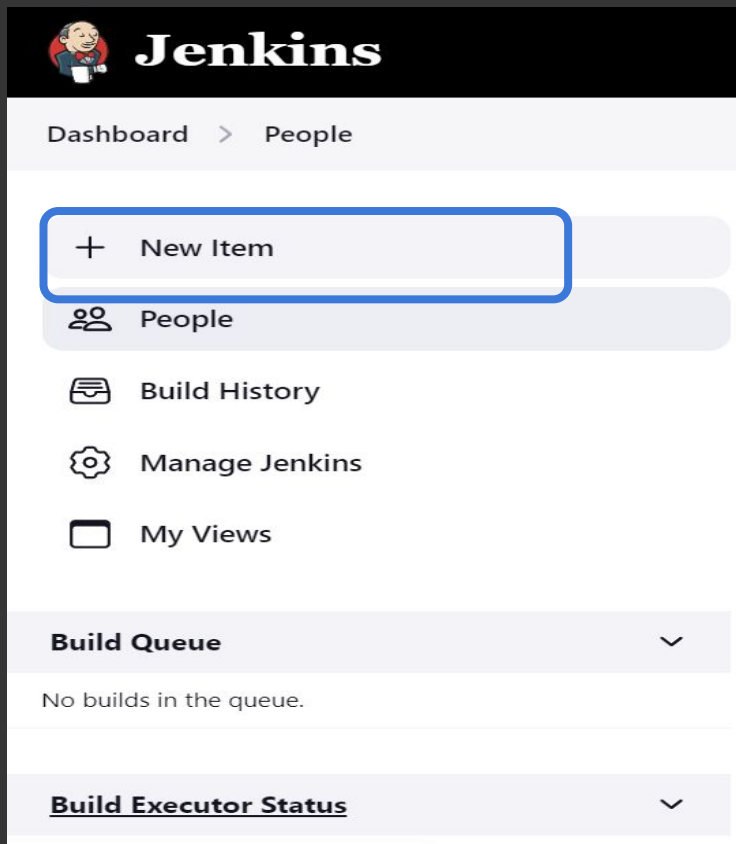
You have skipped the **setup of an admin user**.

To log in, use the username: "admin" and the administrator password you used to access the setup wizard.

Your Jenkins setup is complete.

[Start using Jenkins](#)

– Making The First Project



– Creating FreeStyle Project



Jenkins

Search (CTRL+K)



1



admin



log out

Dashboard > All >

Enter an item name

webServer

» Required field



Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.



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.

OK

Multi-configuration project

— Executing Shell in Jenkins

Dashboard > webServer > Configuration

Configure



General



Source Code Management



Build Triggers



Build Environment



Build Steps



Post-build Actions

- ☐ Inspect build log for published build scans
- ☐ Terminate a build if it's stuck
- ☐ With Ant ?

Build Steps

Add build step ^

Filter

- Execute Windows batch command
- Execute shell
- Invoke Ant
- Invoke Gradle script
- Invoke top-level Maven targets
- Run with timeout
- Set build status to "pending" on GitHub commit

– Giving Permission to access root to Jenkins

- Open terminal and fire “sudo visudo” command

```
## Next comes the main part: which users can run what software on
## which machines (the sudoers file can be shared between multiple
## systems).
## Syntax:
##
##      user      MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root    ALL=(ALL)      ALL
jenkins ALL=(ALL:ALL)  NOPASSWD:ALL|
## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATE, DRIVERS
## Allow people in group wheel to run all commands
```

– Installing **httpd** using Jenkins

 **Execute shell** 



Command

See [the list of available environment variables](#)

```
sudo yum install httpd -y  
sudo systemctl enable --now httpd
```

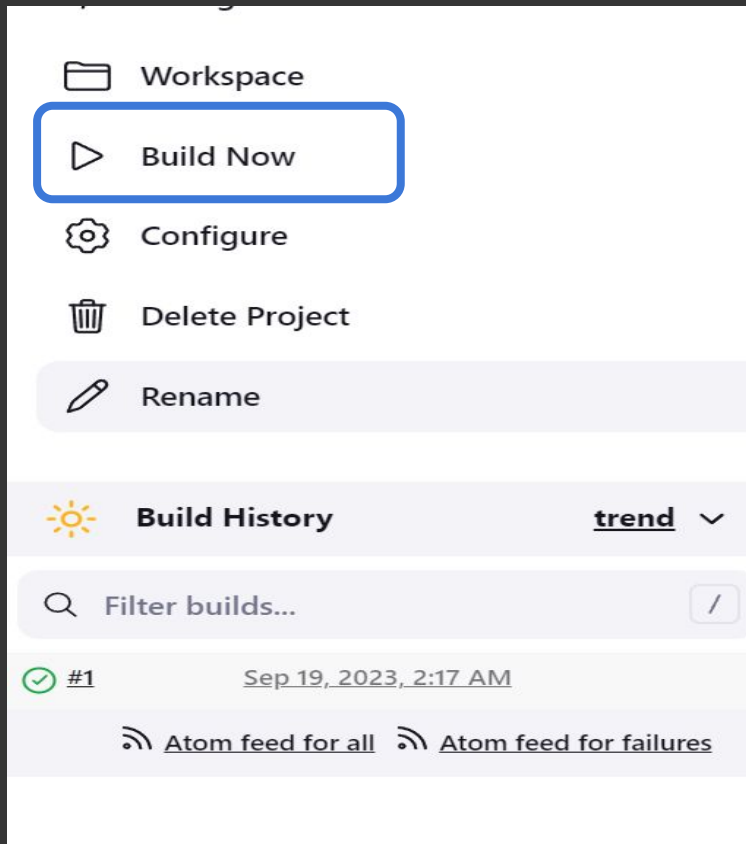
Advanced 

Add build step 

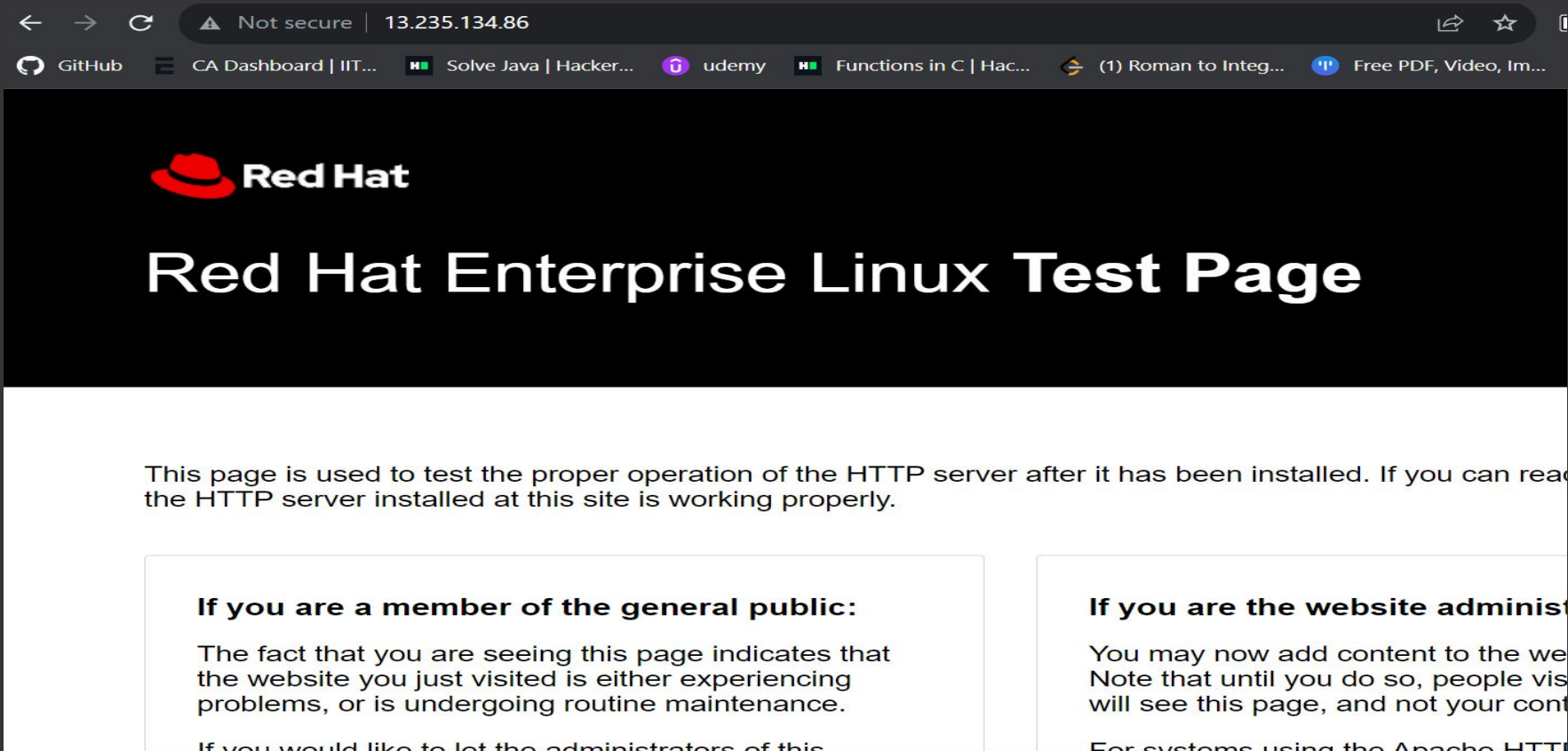
Save

Apply

– Building the project



– Checking Output by searching public IP



The screenshot shows a web browser window with the address bar displaying "13.235.134.86" and a "Not secure" warning. The browser's tab bar shows several open tabs, including "GitHub", "CA Dashboard | IIT...", "Solve Java | Hacker...", "udemy", "Functions in C | Hac...", "(1) Roman to Integ...", and "Free PDF, Video, Im...". The main content of the page is the "Red Hat Enterprise Linux Test Page". It features the Red Hat logo and a large heading. Below the heading, a paragraph explains the purpose of the page: "This page is used to test the proper operation of the HTTP server after it has been installed. If you can read this page, the HTTP server installed at this site is working properly." There are two columns of text below this paragraph. The left column is titled "If you are a member of the general public:" and contains the text: "The fact that you are seeing this page indicates that the website you just visited is either experiencing problems, or is undergoing routine maintenance. If you would like to let the administrators of this". The right column is titled "If you are the website administrator" and contains the text: "You may now add content to the website. Note that until you do so, people visiting the website will see this page, and not your content. For systems using the Apache HTTPD".

← → ↻ ⚠ Not secure | 13.235.134.86

GitHub CA Dashboard | IIT... Solve Java | Hacker... udemy Functions in C | Hac... (1) Roman to Integ... Free PDF, Video, Im...

 **Red Hat**

Red Hat Enterprise Linux Test Page

This page is used to test the proper operation of the HTTP server after it has been installed. If you can read this page, the HTTP server installed at this site is working properly.

If you are a member of the general public:

The fact that you are seeing this page indicates that the website you just visited is either experiencing problems, or is undergoing routine maintenance.

If you would like to let the administrators of this

If you are the website administrator

You may now add content to the website. Note that until you do so, people visiting the website will see this page, and not your content.

For systems using the Apache HTTPD

– Changing the output by **echo** command

Command

See [the list of available environment variables](#)

```
sudo yum install httpd -y
sudo systemctl enable --now httpd
echo "<h1>Hello everyone Parth this side</h1>" > index.html
sudo cp index.html /var/www/html/index.html
```

Advanced ▾

Add build step ▾

Save

Apply

– Checking **New Output** by searching public IP



⚠ Not secure | 13.235.134.86



GitHub



CA Dashboard | IIT...



Solve Java | Hacker...



udemy



Functions in C | Hac...





(1) Roman to Integ...








Free PD

Hello everyone Parth this side

– Linking GitHub

 New repository




Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere?
[Import a repository.](#)

Required fields are marked with an asterisk ().*

Owner *

Repository name *


 ParthChittora ▾

/


✔ ProjectJecrcTrainingParth is available.

Great repository names are short and memorable. Need inspiration? How about [super-octo-goggles](#) ?

Description (optional)

☒  **Public**

Anyone on the internet can see this repository. You choose who can commit.

☐  **Private**

You choose who can see and commit to this repository.





Adding file to Git

- Initialise the .git file by using the command `git init`.
- Add to staging area by the command:
`git add`
- Commit the changes in the file by the command : `git commit -m "messageForCommit"`
- Add the remote repository by the command:
`git remote add origin url.`
- Push the master branch by : `git push master`



master



1 branch



0 tags

Go to file

Add file

<> Code

root HTML file committed successfully



index.html

HTML file committed su

Help people interested in this repository understand your project b

Local

Codespaces New

Clone

HTTPS SSH GitHub CLI

https://github.com/ParthChittora/ProjectJecrc



Use Git or checkout with SVN using the web URL.

Open with GitHub Desktop

Download ZIP

About

No description, website, or topics provided.

Activity

0 stars

1 watching

0 forks

Releases

No releases published

Create a new release

– Add the **URL of GitHub** in Jenkins

Source Code Management

☐ None

☒ Git ?

Repositories ?

Repository URL ? ✕

`https://github.com/ParthChittora/ProjectJecrcTrainingParth.git`

Credentials ?

- none - ▼

Add ▼

Save Apply

– Committing changes and copying .html file

Build Steps

≡ **Execute shell** ?

Command

See [the list of available environment variables](#)

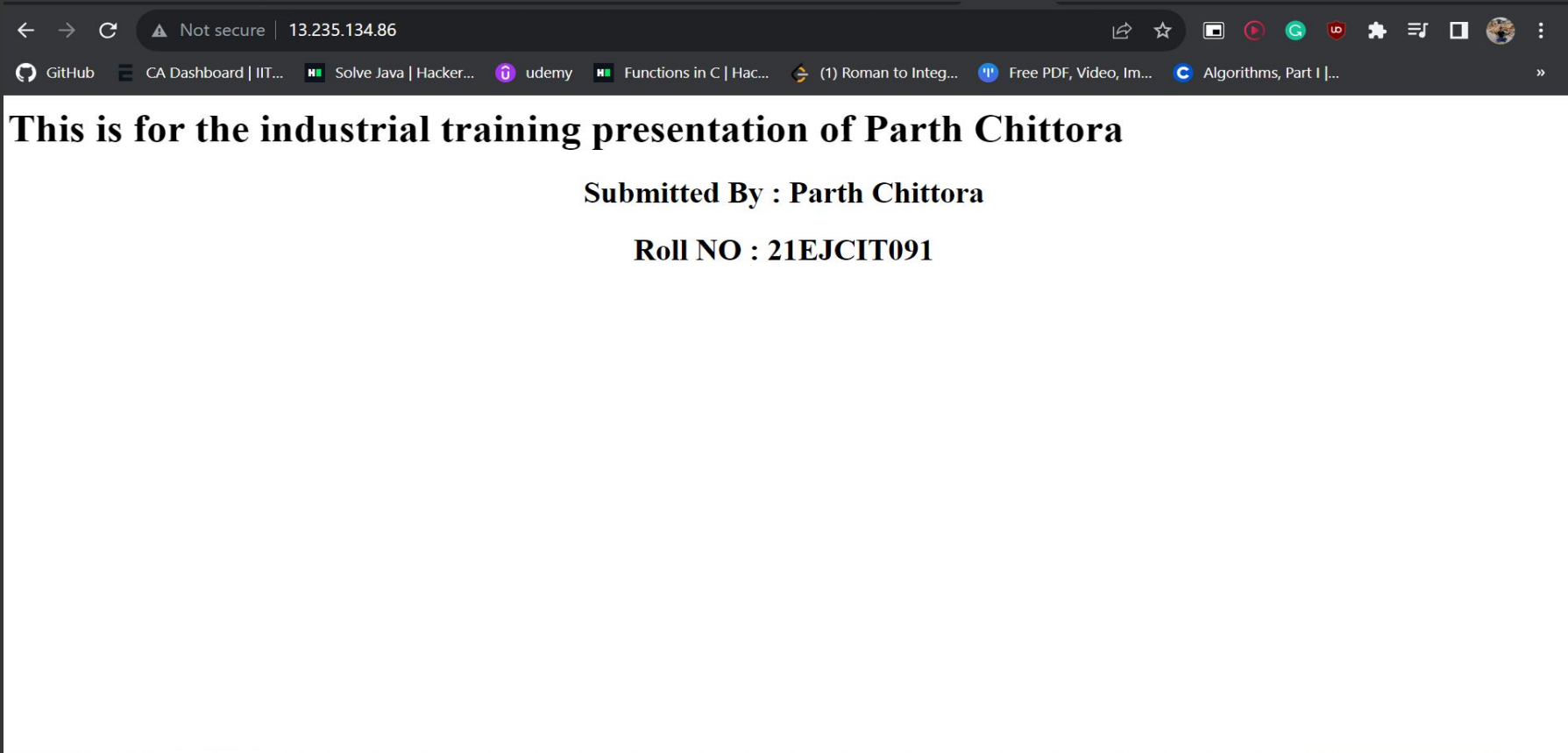
```
sudo yum install httpd -y  
sudo systemctl enable --now httpd  
sudo cp index.html /var/www/html/index.html
```

Advanced ▼

Save

Apply

– Output of the changes made (Just Refresh)



– Automating Jenkins

As we commit, the changes will be automatically reflected in the main site

Dashboard > webServer > Configuration

Configure



General



Source Code Management



Build Triggers



Build Environment

Build Triggers

☐

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

☐

Build after other projects are built ?

☐

Build periodically ?

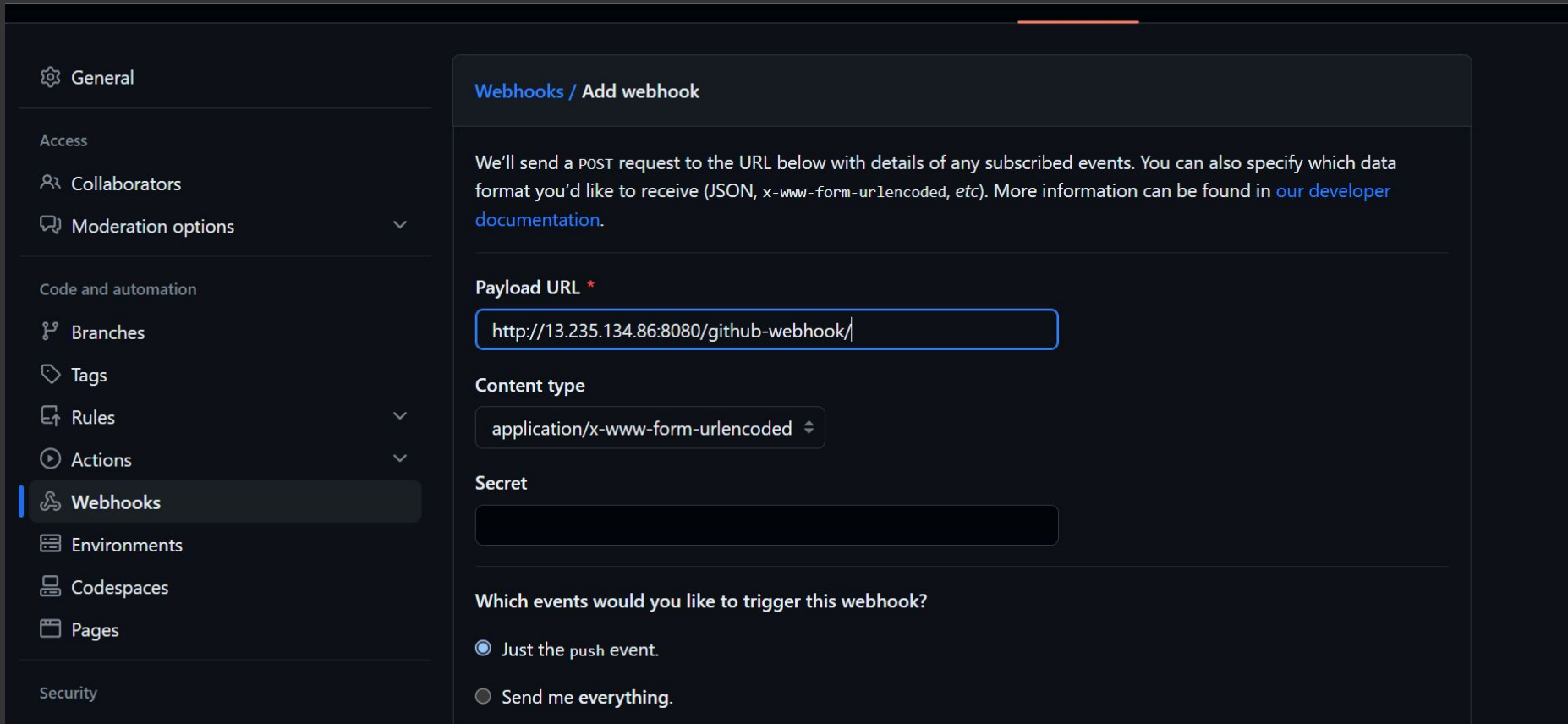
☒

GitHub hook trigger for GITScm polling ?

☐

Poll SCM ?

– Adding WebHook in GitHub



The screenshot shows the GitHub interface for adding a new webhook. On the left is a sidebar with navigation links: General, Access, Collaborators, Moderation options, Code and automation (with sub-links for Branches, Tags, Rules, and Actions), Webhooks (highlighted with a blue bar), Environments, Codespaces, Pages, and Security. The main content area is titled 'Webhooks / Add webhook'. It contains a descriptive paragraph about sending POST requests, a 'Payload URL' field with the value 'http://13.235.134.86:8080/github-webhook/', a 'Content type' dropdown menu set to 'application/x-www-form-urlencoded', a 'Secret' text input field, and a section titled 'Which events would you like to trigger this webhook?' with two radio button options: 'Just the push event.' (selected) and 'Send me everything.'

Webhooks / Add webhook

We'll send a `POST` request to the URL below with details of any subscribed events. You can also specify which data format you'd like to receive (JSON, `x-www-form-urlencoded`, etc). More information can be found in [our developer documentation](#).

Payload URL *

`http://13.235.134.86:8080/github-webhook/`

Content type

`application/x-www-form-urlencoded`

Secret

Which events would you like to trigger this webhook?

- ☒ Just the push event.
- ☐ Send me everything.

– Committing Changes

Commit

Update index.html

Browse files

🔑 master

👤 ParthChittora committed 1 minute ago Verified

1 parent 44e978b commit 0650992

Showing 1 changed file with 2 additions and 0 deletions.

Split Unified

▼ 2 ■■■ index.html 📄

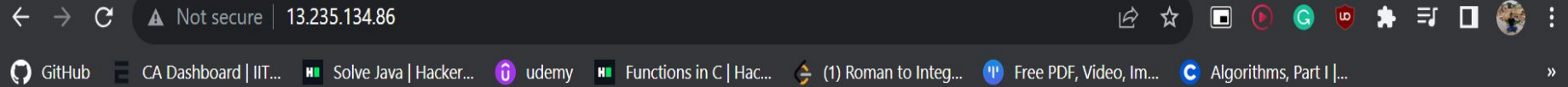
...

...	...	@@ -1,3 +1,5 @@
1	1	<h1> This is for the industrial training presentation of Parth Chittora </h1>
2	2	<center><h2>Submitted By : Parth Chittora</h2></center>
3	3	<center><h2>Roll NO : 21EJCIT091</h2></center>
	4	+
	5	+ <h2>The project is completed by this commit.</h2>

0 comments on commit 0650992

🔒 Lock conversation

– Output of Changes



This is for the industrial training presentation of Parth Chittora

Submitted By : Parth Chittora

Roll NO : 21EJCIT091

The project is completed by this commit.

– Another Commit

As we commit, the changes will be automatically reflected in the main site.

GitHub CA Dashboard | IIT... Solve Java | Hacker... udemy Functions in C | Hac... (1) Roman to Integ... Free PDF, Video, Im... Algorithms, Part I |...

This is for the industrial training presentation of Parth Chittora

Submitted By : Parth Chittora

Roll NO : 21EJCIT091

The project is completed by this commit.

WE CAN ADD ANY SITE AND AS THE COMMITS ARE DONE CHANGES WILL BE REFLECTED ON THE MAIN SITE

Shukriya !
