

# JENKINS ASSIGNMENT SUBMISSION

**Name:** Vikram

**Assignment:** Jenkins – Trigger Pipeline Using Git (Develop Branch) & Pull Code into Folder

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## Problem Statement

You are required to configure a Jenkins Pipeline that automatically triggers whenever code is pushed to the develop branch in GitHub. The pipeline must also pull the Git repository content into a specific folder in the Jenkins workspace.

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## Environment Used

All Jenkins tasks were performed on a single Ubuntu EC2 instance, with:

- Jenkins installed on port 8080
  - Git installed for repository cloning
  - Java 11 installed as a prerequisite for Jenkins
  - GitHub repository configured with a webhook
  - Jenkins Pipeline job configured to trigger automatically on develop branch updates
- 

## Tasks Performed

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### Task 1: Install Jenkins on Ubuntu EC2 Instance

#### Steps Taken

##### 1. Updated Ubuntu Packages

`sudo apt update -y`

`sudo apt upgrade -y`

```
ubuntu@ip-10-0-9-71:~$ sudo apt update -y
sudo apt upgrade -y
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe Translation-en [5982 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 Components [3871 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 c-n-f Metadata [301 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [269 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse Translation-en [118 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 Components [35.0 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/multiverse amd64 c-n-f Metadata [8328 B]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [1625 kB]
Get:14 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1340 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main Translation-en [304 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [175 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [15.7 kB]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1500 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [304 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [378 kB]
Get:21 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [31.4 kB]
Get:22 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Packages [2307 kB]
Get:23 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [219 kB]
Get:24 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [21.5 kB]
Get:25 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [9448 B]
```

## 2. Installed Java (required for Jenkins)

```
sudo apt install fontconfig openjdk-17-jre -y
```

```
java -version
```

```
ubuntu@ip-10-0-9-71:~$ sudo apt install openjdk-17-jre -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  adwaita-icon-theme gtk-update-icon-cache hicolor-icon-theme humanity-icon-theme libcairo-gobject2 libcairo2 libdatriel libdeflate0 libgail-common libgail18t64
  libgdk-pixbuf-2.0-0 libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common libgtk2.0-0t64 libgtk2.0-bin libgtk2.0-common libjbig0 liblerc4 libpango-1.0-0 libpangocairo-1.0-0
  libpangoft2-1.0-0 libpixman-1-0 librsvg2-2 librsvg2-common libsharpyuv0 libthai-data libthai0 libtiff6 libwebp7 libxcb-render0 libxcursor1 libxdamage1 libxfixes3
  openjdk-17-jre-headless ubuntu-mono
Suggested packages:
  gvfs librsvg2-bin libnss-mdns fonts-ipafont-gothic fonts-ipafont-mincho fonts-wqy-microhei | fonts-wqy-zenhei fonts-indic
The following NEW packages will be installed:
  adwaita-icon-theme hicolor-icon-theme humanity-icon-theme libcairo-gobject2 libcairo2 libdatriel libdeflate0 libgail-common libgail18t64
  libgdk-pixbuf-2.0-0 libgdk-pixbuf2.0-bin libgdk-pixbuf2.0-common libgtk2.0-0t64 libgtk2.0-bin libgtk2.0-common libjbig0 liblerc4 libpango-1.0-0 libpangocairo-1.0-0
  libpangoft2-1.0-0 libpixman-1-0 librsvg2-2 librsvg2-common libsharpyuv0 libthai-data libthai0 libtiff6 libwebp7 libxcb-render0 libxcursor1 libxdamage1 libxfixes3
  openjdk-17-jre openjdk-17-jre-headless ubuntu-mono
0 upgraded, 36 newly installed, 0 to remove and 0 not upgraded.
Need to get 57.3 MB of archives.
After this operation, 254 MB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libgdk-pixbuf2.0-common all 2.42.10+dfsg-3ubuntu3.2 [8192 B]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 libdeflate0 amd64 1.19-1build1.1 [43.9 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libjbig0 amd64 2.1-6.1ubuntu2 [29.7 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 liblerc4 amd64 4.0.0+ds-4ubuntu2 [179 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 libsharpyuv0 amd64 1.3.2-0.4build3 [15.8 kB]
```

## 3. Installed Git

```
sudo apt install git -y
```

```
ubuntu@ip-10-0-9-71:~$ sudo apt install git -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
git is already the newest version (1:2.43.0-1ubuntu7.3).
git set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-10-0-9-71:~$
```

## 4. Added Jenkins Repository

```
curl -fsSL https://pkg.jenkins.io/debian/jenkins.io-2023.key | sudo tee \
```

```
/usr/share/keyrings/jenkins-keyring.asc > /dev/null
```

```
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
```

```
ubuntu@ip-10-0-9-71:~$ curl -fsSL https://pkg.jenkins.io/debian/jenkins.io-2023.key | sudo tee \
/usr/share/keyrings/jenkins-keyring.asc > /dev/null
ubuntu@ip-10-0-9-71:~$ 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
ubuntu@ip-10-0-9-71:~$
```

## 5. Installed Jenkins

`sudo apt update`

`sudo apt install jenkins -y`

```
ubuntu@ip-10-0-9-71:~$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease
Ign:5 https://pkg.jenkins.io/debian binary/ InRelease
Get:6 https://pkg.jenkins.io/debian binary/ Release [2044 B]
Get:7 https://pkg.jenkins.io/debian binary/ Release.gpg [833 B]
Get:8 https://pkg.jenkins.io/debian binary/ Packages [74.3 kB]
Fetched 77.2 kB in 1s (143 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
All packages are up to date.
ubuntu@ip-10-0-9-71:~$ sudo apt install jenkins -y
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  net-tools
The following NEW packages will be installed:
  jenkins net-tools
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 96.0 MB of archives.
After this operation, 97.1 MB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 net-tools amd64 2.10-0.1ubuntu4.4 [204 kB]
Get:2 https://pkg.jenkins.io/debian binary/ jenkins 2.540 [95.8 MB]
```

## 6. Started Jenkins Service

`sudo systemctl start jenkins`

`sudo systemctl enable jenkins`

`sudo systemctl status Jenkins`

```
ubuntu@ip-10-0-9-71:~$ sudo systemctl start jenkins
sudo systemctl enable jenkins
sudo systemctl status 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
● jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: enabled)
   Active: active (running) since Wed 2025-12-03 02:52:40 UTC; 1s ago
     Main PID: 2813 (java)
       Tasks: 47 (limit: 2213)
      Memory: 666.2M (peak: 678.9M)
         CPU: 23.421s
    CGroup: /system.slice/jenkins.service
            └─2813 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Dec 03 02:52:35 ip-10-0-9-71 jenkins[2813]: [LF]> This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Dec 03 02:52:35 ip-10-0-9-71 jenkins[2813]: [LF]>
Dec 03 02:52:35 ip-10-0-9-71 jenkins[2813]: [LF]> *****
Dec 03 02:52:35 ip-10-0-9-71 jenkins[2813]: [LF]> *****
Dec 03 02:52:35 ip-10-0-9-71 jenkins[2813]: [LF]> *****
Dec 03 02:52:40 ip-10-0-9-71 jenkins[2813]: 2025-12-03 02:52:40.350+0000 [id=32] INFO jenkins.InitReactorRunner$1#onAttained: Completed initialization
Dec 03 02:52:40 ip-10-0-9-71 jenkins[2813]: 2025-12-03 02:52:40.379+0000 [id=23] INFO hudson.lifecycle.Lifecycle#onReady: Jenkins is fully up and running
Dec 03 02:52:40 ip-10-0-9-71 systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Dec 03 02:52:40 ip-10-0-9-71 jenkins[2813]: 2025-12-03 02:52:40.723+0000 [id=49] INFO h.m.DownloadService$Downloadable#load: Obtained the updated data file
Dec 03 02:52:40 ip-10-0-9-71 jenkins[2813]: 2025-12-03 02:52:40.723+0000 [id=49] INFO hudson.util.Retrier#start: Performed the action check updates server
lines 1-20/20 (END)
```

## 7. Opened Port 8080 in EC2 Security Group

Allowed:

Custom TCP → Port 8080 → Source: 0.0.0.0/0

Accessed Jenkins using:

http://<EC2\_PUBLIC\_IP>:8080

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## Task 2: Configure Jenkins and Required Plugins

### Steps Taken

#### 1. Retrieved Jenkins Admin Password

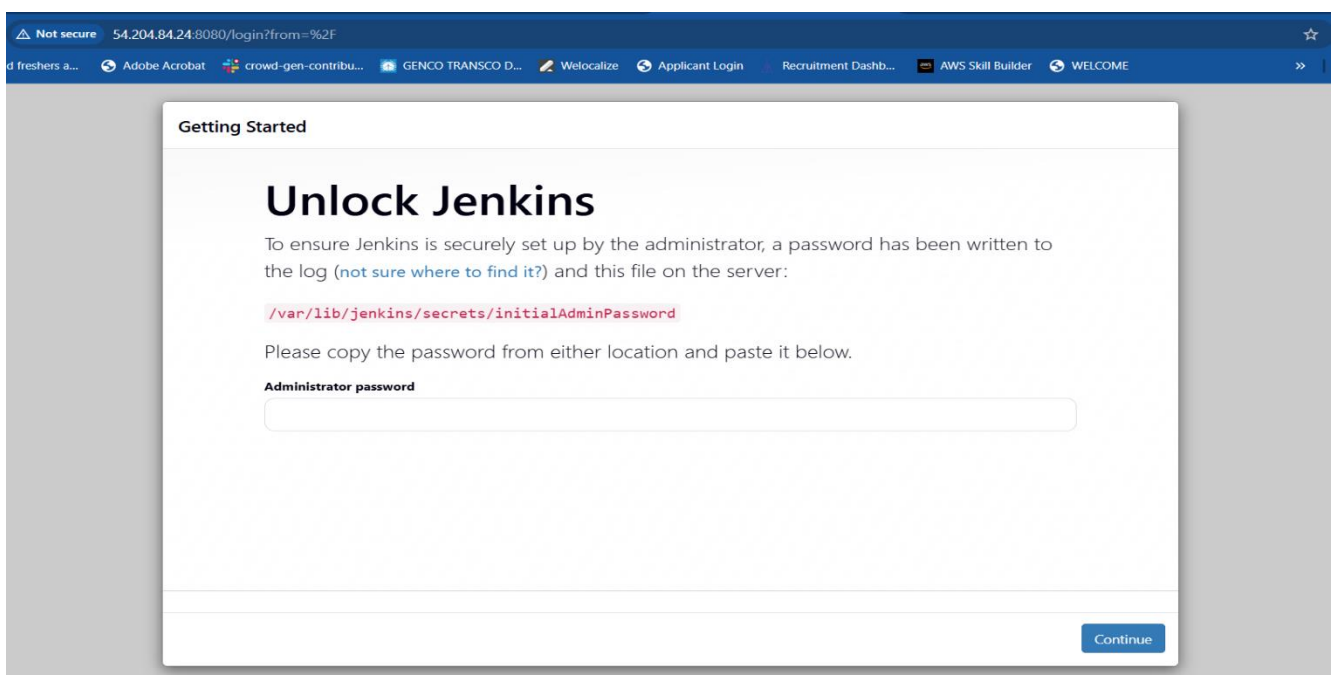
```
sudo cat /var/lib/jenkins/secrets/initialAdminPassword
```

#### 2. Installed Suggested Plugins

This included:

- Git Plugin
- Pipeline Plugin
- GitHub Integration Plugin

```
ubuntu@ip-10-0-9-71:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
f94cab9421441138684b73da93cdaff
ubuntu@ip-10-0-9-71:~$
```



## Task 3: Create Jenkins Pipeline Job Triggered by Git

### Steps Taken

#### 1. Created New Pipeline Job

- Name: develop-trigger-pipeline
- Type: Pipeline

#### 2. Enabled GitHub Trigger


Under Build Triggers, enabled:

GitHub hook trigger for GITScm polling


### New Item

Enter an item name


Select an item type

**Freestyle project**


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

**Pipeline**

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

**Multi-configuration project**

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

**Folder**

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

OK

develop-trigger-pipeline / Configure

☐ GitHub project

☐ Pipeline speed/durability override ?

☐ Preserve stashes from completed builds ?

☐ This project is parameterised ?

☐ 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 ?

---

## Task 4: Add Pipeline Script to Pull Code into a Folder

### Steps Taken

Added the following script:

```
pipeline {
  agent any

  stages {
    stage('Pull Code to Folder') {
      steps {
        dir('myfolder') {
          git branch: 'develop',
              url: 'https://github.com/<your-username>/<your-repo>.git'
        }
      }
    }

    stage('Verify Files') {
      steps {
        sh 'ls -la myfolder'
      }
    }
  }
}
```

Apply and save.

Click on build now.

### This script performs:

- Automatic checkout of the develop branch
- Cloning into a folder named myfolder
- Listing the files for confirmation

Definition

Pipeline script

Script ?

```
1 pipeline {
2   agent any
3
4   stages {
5     stage('Pull Code to Folder') {
6       steps {
7         dir('myfolder') {
8           git branch: 'develop',
9             url: 'https://github.com/<your-username>/<your-repo>.git'
10        }
11      }
12    }
13
14    stage('Verify Files') {
15      steps {
```

try sample Pipeline...

develop-trigger-pipeline / #2

Q ⚙️ 👤

```
> git config core.sparsecheckout # timeout=10
> git checkout -f ce7061b26adaadb58f9e2a7aeac2183b166c9226 # timeout=10
> git branch -a -v --no-abbrev # timeout=10
> git checkout -b develop ce7061b26adaadb58f9e2a7aeac2183b166c9226 # timeout=10
Commit message: "Added develop.txt in develop branch"
First time build. Skipping changelog.
[Pipeline] }
[Pipeline] // dir
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Verify Files)
[Pipeline] sh
+ ls -la myfolder
total 16
drwxr-xr-x 3 jenkins jenkins 4096 Dec  3 03:11 .
drwxr-xr-x 3 jenkins jenkins 4096 Dec  3 03:08 ..
drwxr-xr-x 8 jenkins jenkins 4096 Dec  3 03:11 .git
-rw-r--r-- 1 jenkins jenkins  13 Dec  3 03:11 develop.txt
-rw-r--r-- 1 jenkins jenkins   0 Dec  3 03:11 main.txt
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS
```

## Task 5: Create GitHub Webhook to Trigger Jenkins Pipeline

### Steps Taken

Go to:

**GitHub → Repository → Settings → Webhooks → Add Webhook**

Fill:

### Payload URL

`http://<EC2_PUBLIC_IP>:8080/github-webhook/`

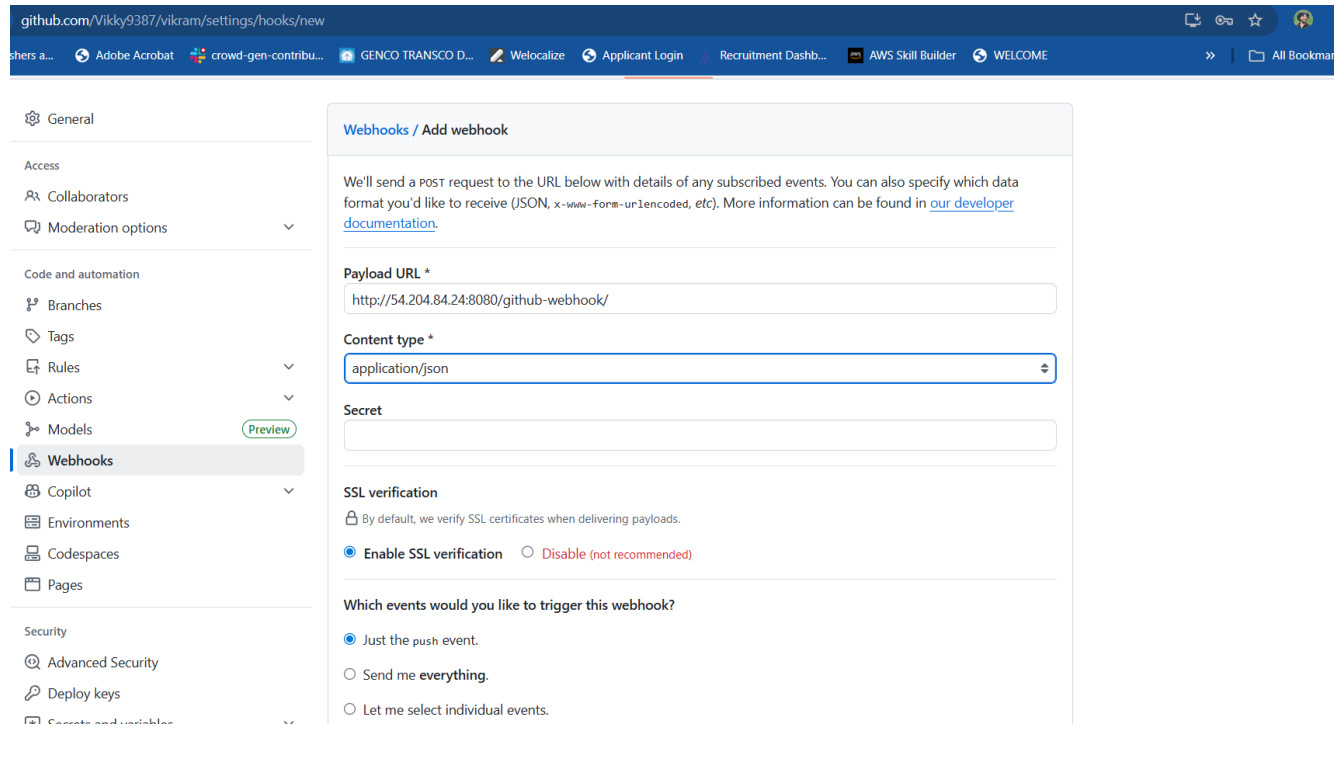
## Content type

application/json

## Event

✓ Just the push event

Webhook was successfully created.



The screenshot shows the GitHub 'Add webhook' configuration page for the repository 'vikram'. The left sidebar contains navigation links: General, Access, Collaborators, Moderation options, Code and automation, Branches, Tags, Rules, Actions, Models, Webhooks (selected), Copilot, Environments, Codespaces, Pages, Security, Advanced Security, Deploy keys, and Secrets and variables. The main content area is titled 'Webhooks / Add webhook' and includes the following fields and options:

- Payload URL \***: `http://54.204.84.24:8080/github-webhook/`
- Content type \***: `application/json`
- Secret**: (empty text field)
- SSL verification**: ☒ Enable SSL verification (selected), ☐ Disable (not recommended)
- Which events would you like to trigger this webhook?**: ☒ Just the push event. (selected), ☐ Send me everything., ☐ Let me select individual events.

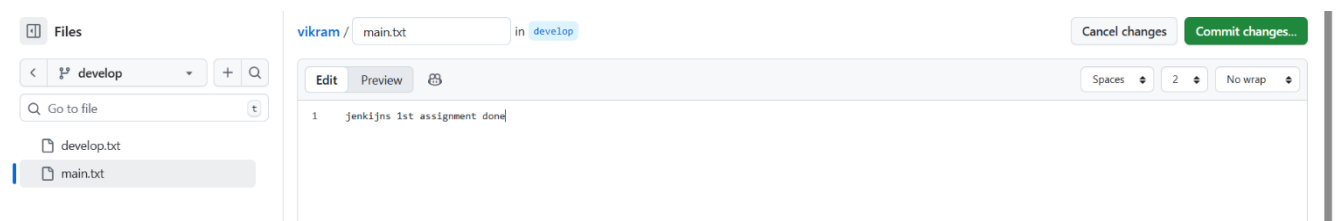
## ✓ Task 6: Test Automatic Pipeline Trigger (UPDATED)

### Steps Taken

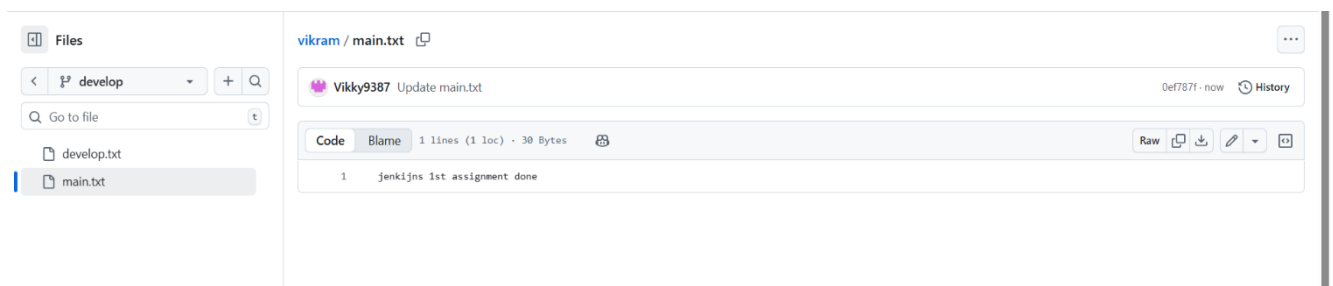
#### 🔴 Performed a commit directly in GitHub:

1. Opened the repository on GitHub
2. Selected the develop branch
3. Opened or created any file
4. Clicked Edit
5. Made a small change
6. Committed directly to the develop branch

This action automatically triggered the Jenkins pipeline.







### ✓ #3 (3 Dec 2025, 03:19:32)



Started by GitHub push by Vikky9387



This run spent:

- 8.1 sec waiting;
- 1.5 sec build duration;
- 9.7 sec total from scheduled to completion.



**Revision:** 0ef787f8e192534060523b84120809e998b37951

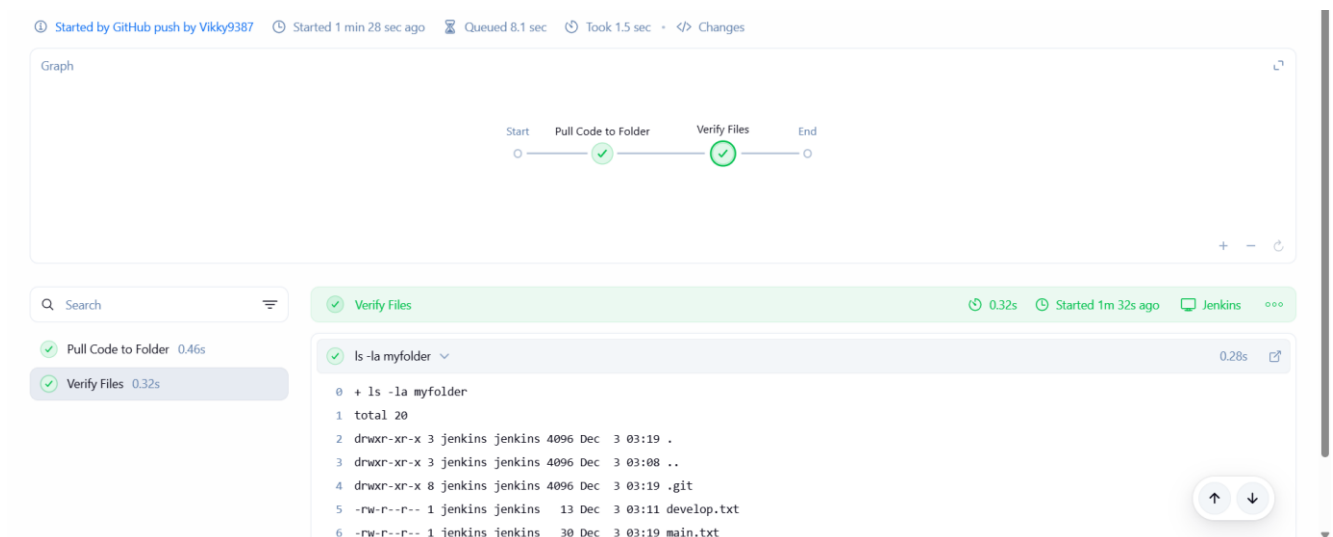
**Repository:** <https://github.com/Vikky9387/vikram.git>

- refs/remotes/origin/develop



Changes

1. Update main.txt ([details](#) / [githubweb](#))



## Conclusion

Successfully installed Jenkins on Ubuntu EC2, configured required plugins, created a pipeline job, set up GitHub webhook triggers, and implemented a Jenkins Pipeline that pulls code from the develop branch into a specific folder when a push is made. This completes all assignment requirements and demonstrates the ability to configure CI/CD automation using GitHub and Jenkins.