Name: Sayyed Faisal Ali
Roll No: 612046

Experiment no. 01

Aim: Understanding the concept of DevOps with related technologies.

Theory:
DevOps is a set of practices that combines software development (Dev) and information-technology operations (Ops) which aims to shorten the systems development life cycle and provide continuous delivery with high software quality. DevOps is the practice of operations and development engineers participating together in the entire service lifecycle, from design through the development process to production support.

Waterfall Model: The waterfall model is a breakdown of project activities into linear sequential phases, where each phase depends on the deliverables of the previous one and corresponds to a specialization of tasks. The approach is typical for certain areas of engineering design.

Advantages of waterfall model:

1. It allows for departmentalization and managerial control.
2. Simple and easy to understand and use.
3. Easy to manage due to the rigidity of the model – each phase has specific deliverables and a review process.
4. Phases are processed and completed one at a time.
5. Works well for smaller projects where requirements are very well understood.
6. A schedule can be set with deadlines for each stage of development and a product can proceed through the development process like a car in a carwash, and theoretically, be delivered on time.

Disadvantages of waterfall model:

1. It does not allow for much reflection or revision.
2. Once an application is in the testing stage, it is very difficult to go back and change something that was not well-thought out in the concept stage.
3. No working software is produced until late during the life cycle.
4. High amounts of risk and uncertainty.
5. Not a good model for complex and object-oriented projects.
6. Poor model for long and ongoing projects.
7. Not suitable for the projects where requirements are at a moderate to high risk of changing.

Agile development: Agile methodology attempts to provide many opportunities to assess the direction of a project throughout the development life cycle. Agile methods break tasks into small increments with minimal planning and do not directly involve long-term planning. Iterations are short time frames that typically last from one to four weeks. Each iteration involves a cross

functional team working in all functions: planning, requirements analysis, design, coding, unit testing, and acceptance testing. At the end of the iteration a working product is demonstrated to stakeholders. This minimizes overall risk and allows the project to adapt to changes quickly. An iteration might not add enough functionality to warrant a market release, but the goal is to have an available release at the end of each iteration. Multiple iterations might be required to release a product or new features.

Advantages of Agile Methodology:

1. Agile first priority is to fulfill the customer need from beginning to end and continuous improvement to add into valuable software.
2. Agile allows change in requirements late in the development as well.
3. Agile works on delivering software regularly interval i.e. from couple of weeks to couple of month based on project.
4. Key point is to trust, support and motivate individuals to get it projects build on time.
5. Daily face-to-face conversation is key point in agile testing. This is most efficient & effective way of communication.

Disadvantages of Agile Methodology

1. Poor Resource Planning
2. Limited Documentation
3. No Finite End
4. Difficult Measurement

Why Is DevOps Important?

1. Shorter Development Cycles, Faster Innovation
2. Reduced Deployment Failures, Rollbacks, and Time to Recover
3. Improved Communication and Collaboration
4. Increased Efficiencies
5. Reduced Costs and IT Headcount

DevOps tools:

- **Git :** Git is one of the most popular DevOps tools, widely used across the software industry. It's a distributed SCM (source code management) tool, loved by remote teams and open source contributors. Git allows you to track the progress of your development work. You can save different versions of your source code and return to a previous version when necessary.
- **Jenkins :** Jenkins is the go-to DevOps automation tool for many software development teams. It's an open source CI/CD server that allows you to automate the different stages of your delivery pipeline. The main reason for Jenkins' popularity is its huge plugin ecosystem. Currently, it offers more than 1,000 plugins, so it integrates with almost all DevOps tools, from Docker to Puppet.
- **Docker :** Docker has been the number one container platform since its launch in 2013 and continues to improve. It's also thought of as one of the most important DevOps tools out there. Docker has made containerization popular in the tech world, mainly because it

makes distributed development possible and automates the deployment of your apps. It isolates applications into separate containers, so they become portable and more secure.

- **Puppet :** Puppet is a cross-platform configuration management platform. It allows you to manage your infrastructure as code. As it automates infrastructure management, you can deliver software faster and more securely. Puppet also provides developers with an open-source tool for smaller projects.
- **Chef :** Chef is a useful DevOps tool for achieving speed, scale, and consistency. It is a Cloud based system. It can be used to ease out complex tasks and perform automation.

Conclusion:
We studied & understood the concept of DevOps with related technologies.

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Experiment no. 02

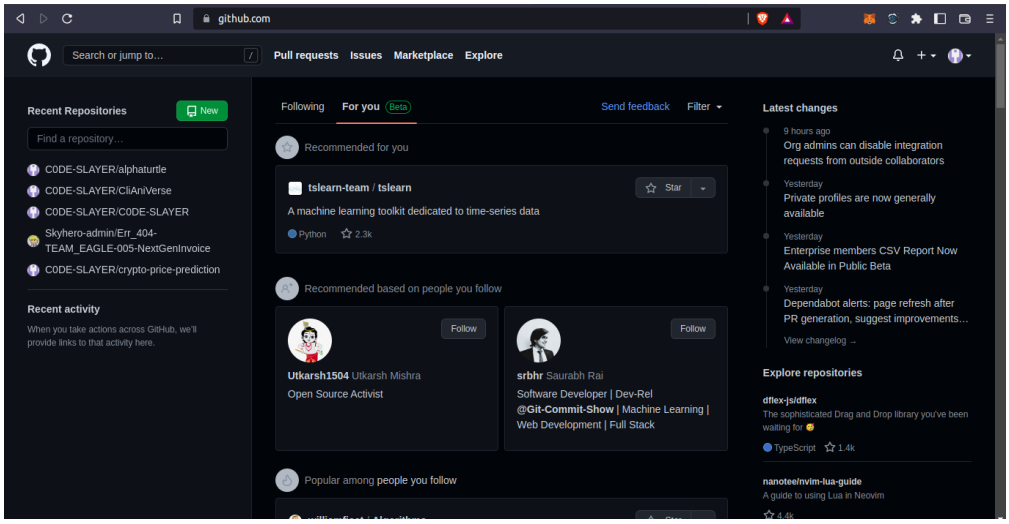
Aim: To perform version control on a website or software using the git version control tool.

Theory:

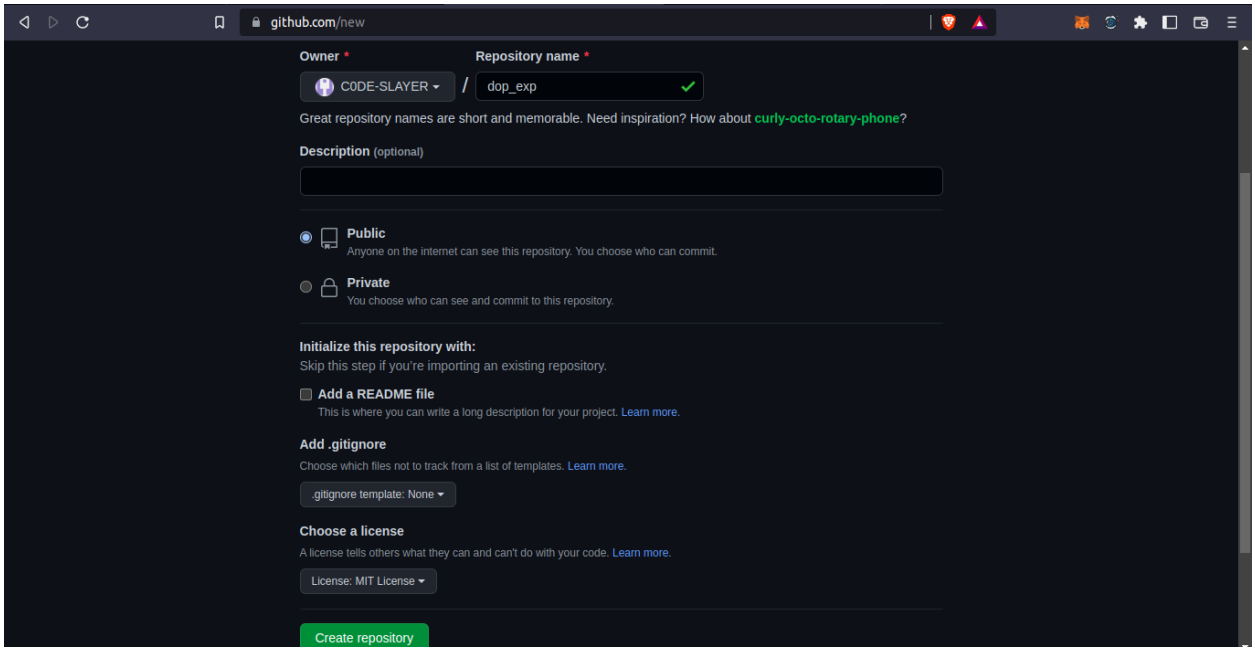
- Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later. For the examples in this book, you will use software source code as the files being version controlled, though in reality you can do this with nearly any type of file on a computer.
- A component of software configuration management, version control, also known as revision control or source control, is the management of changes to documents, computer programs, large web sites, and other collections of information.
- Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.Git is easy to learn and has a tiny footprint with lightning fast performance. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like cheap local branching, convenient staging areas, and multiple workflows.
- Founded in April 2008, GitHub is a web-based hosting service where anyone can share programming code with anyone else. GitHub offers their services for free to the general public and for businesses, they offer paid service plans. GitHub also offers a service called GitHub Gist, which is a Pastebin-like service to paste and quickly share snippets of your code.GitHub was started in 2008 and is based on a code management system developed by Linus Torvalds, called Git. Utilizing GitHub's hosting service provides users with revision control for their code, allowing them and others to view all revisions of the code shared on the site.

Steps to install and implement version control on Github using git:

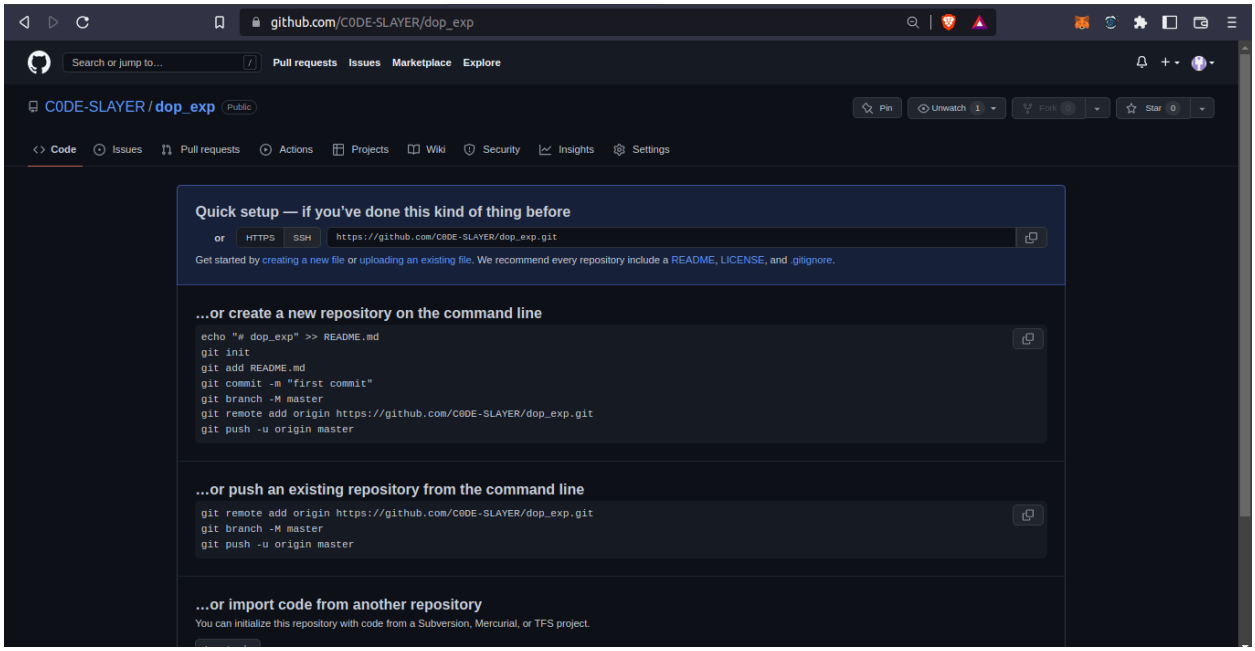
a. Login to your Github account or if you don't have one go ahead and create one. After login click on the green button which say New



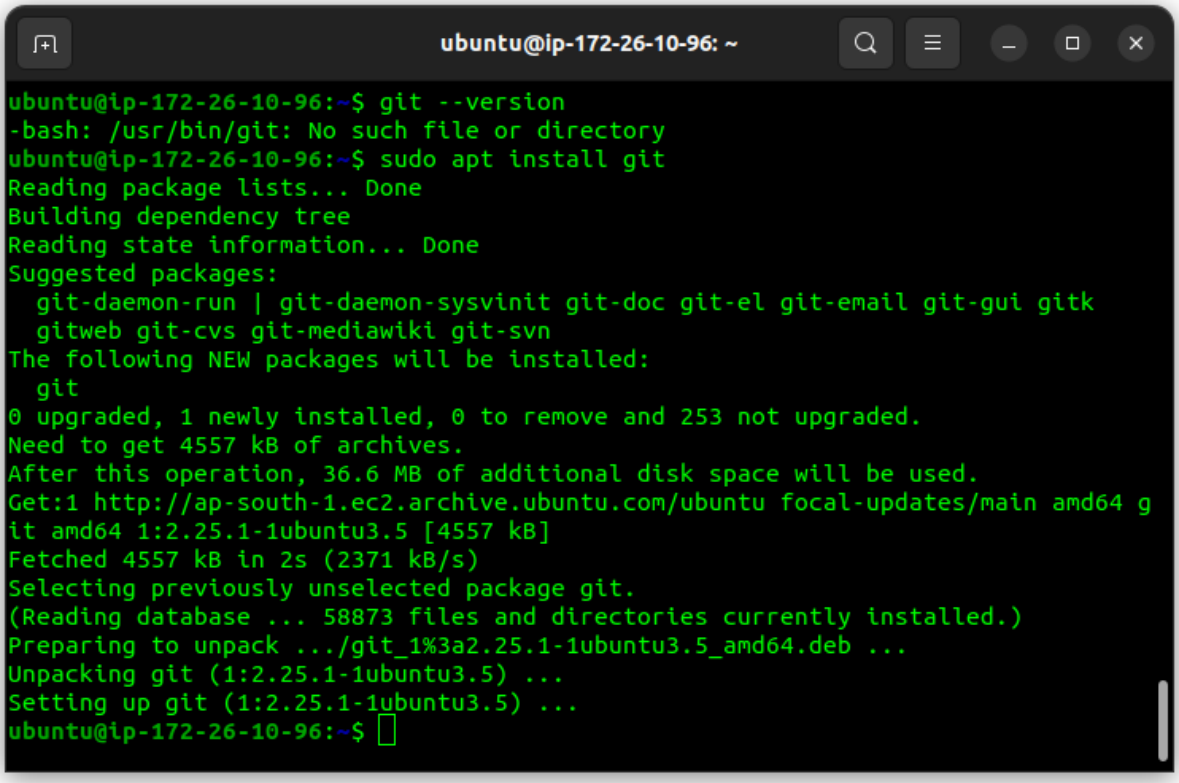
b. Now select a name for your repo and leave the rest as default. Click on Create repository to create a repo



c. We have successfully created our first repo on Github



d. Now open your terminal and check if you have git install or not using “git –version” and if git is not install use “sudo apt install git”



e. Create a new dir using “mkdir dop_exp” and write the following command to create and write content on file ‘echo “# this is my first repo and first push to Github” > readme.md’

```
ubuntu@ip-172-26-10-96:~$ mkdir dop_exp
ubuntu@ip-172-26-10-96:~$ cd dop_exp/
ubuntu@ip-172-26-10-96:~/dop_exp$ echo “# this is my first repo and first push t
o Github” > readme.md
ubuntu@ip-172-26-10-96:~/dop_exp$ cat readme.md
“# this is my first repo and first push to Github”
ubuntu@ip-172-26-10-96:~/dop_exp$
```

f. To make a dir a git repo use “git init”. To check the status of dir use “git status”. To track files use “git add .” this will track all the files in that dir.

```
ubuntu@ip-172-26-10-96:~/dop_exp$ git init
Initialized empty Git repository in /home/ubuntu/dop_exp/.git/
ubuntu@ip-172-26-10-96:~/dop_exp$ git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        readme.md

nothing added to commit but untracked files present (use "git add" to track)
ubuntu@ip-172-26-10-96:~/dop_exp$ git add .
```

g. Set your user name using “`git config --global user.name "C0DE-SLAYER"`’. Set your email using ‘`git config --global user.email "fsali315@gmail.com"`’ setting username and email will help to see who push the code And at last commit you change using ‘git commit -m “This is my first commit”’

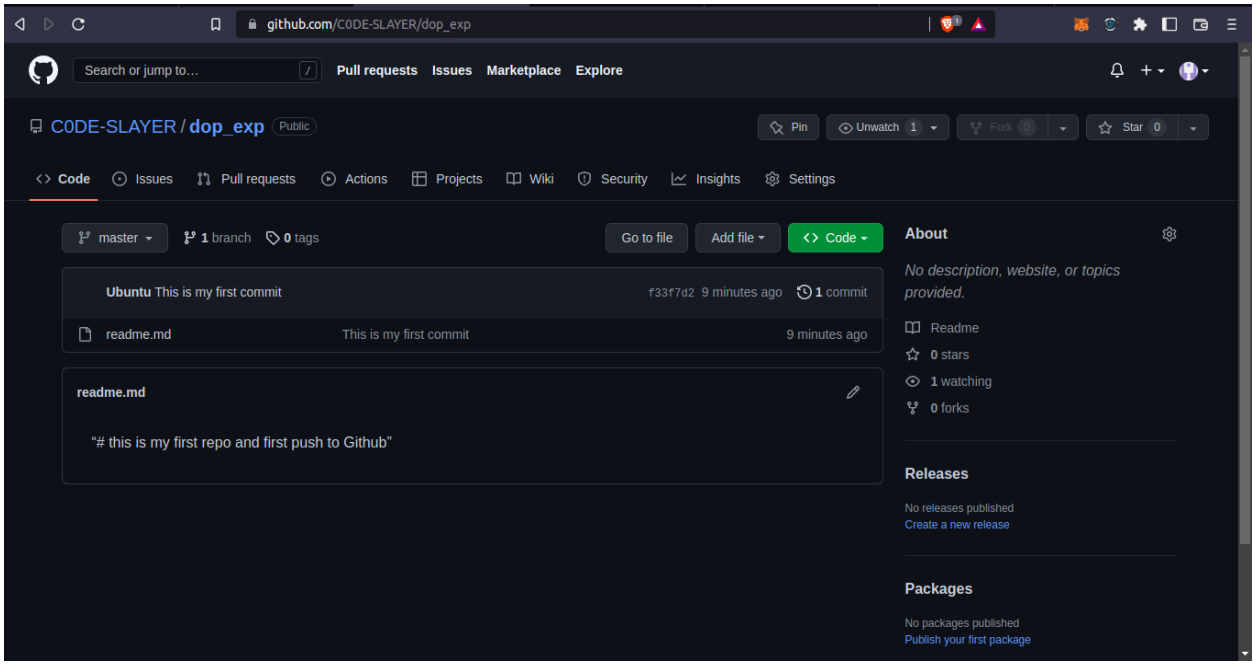
```
ubuntu@ip-172-26-10-96:~/dop_exp$ git config --global user.name "C0DE-SLAYER"
ubuntu@ip-172-26-10-96:~/dop_exp$ git config --global user.email "fsali315@gmail.com"
ubuntu@ip-172-26-10-96:~/dop_exp$ git commit -m "This is my first commit"
[master 935b26c] This is my first commit
 1 file changed, 1 insertion(+), 1 deletion(-)
ubuntu@ip-172-26-10-96:~/dop_exp$
```

h. Using this command you will connect your local repo to you github repo “`git remote add origin` https://github.com/C0DE-SLAYER/dop_exp.git” and using this command you can push you committed code to github repo “`git push -u origin master`” it will ask your username and password when you provide it your code will be

push to your github account.

```
ubuntu@ip-172-26-10-96:~/dop_exp$ git remote add origin https://github.com/C0DE-SLAYER/dop_exp.git
ubuntu@ip-172-26-10-96:~/dop_exp$ git push -u origin master
Username for 'https://github.com': C0DE-SLAYER
Password for 'https://C0DE-SLAYER@github.com':
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 288 bytes | 288.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/C0DE-SLAYER/dop_exp.git
 * [new branch]      master -> master
Branch 'master' set up to track remote branch 'master' from 'origin'.
ubuntu@ip-172-26-10-96:~/dop_exp$
```

i. Now go to your github repo and see the readme file will be upload there



Conclusion: We performed version control on website using git version control tool

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Experiment No 03

Aim: Install and configure Jenkins.

Minimum hardware requirements:

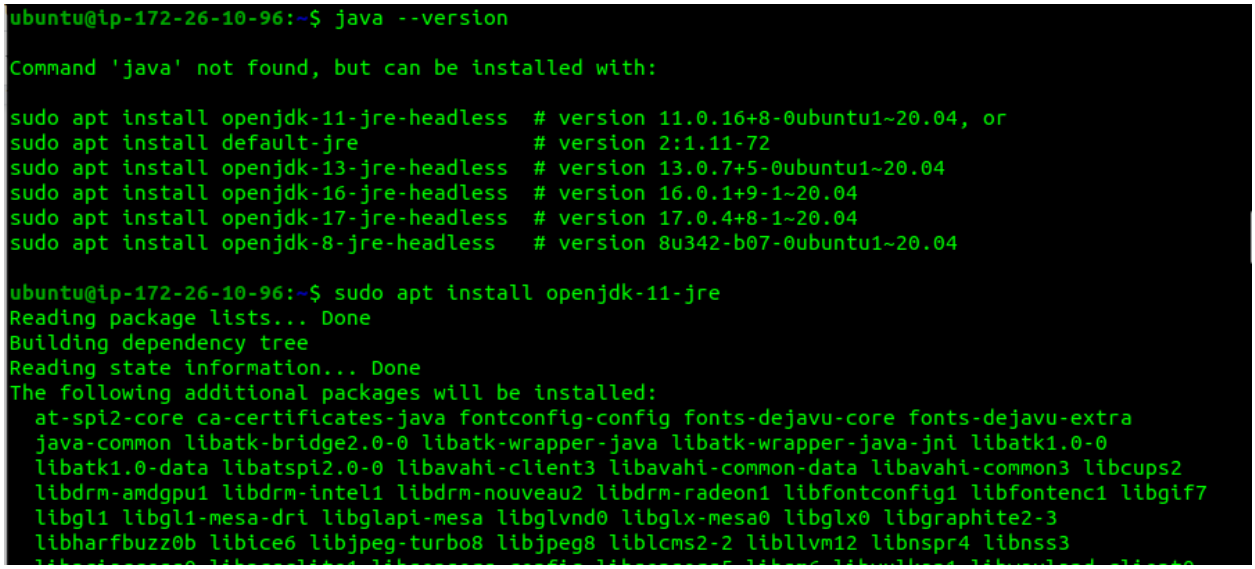
- 256 MB of RAM
- 1 GB drive space (although 10 GB is a recommended minimum if running Jenkins as a Docker container)

Software requirements:

- Java
- Web browser

Steps of installing and configuring Jenkins.

a. Open up your terminal and check where Java is install using “java –version” and if java is not install run “`sudo apt install openjdk-11-jre`”



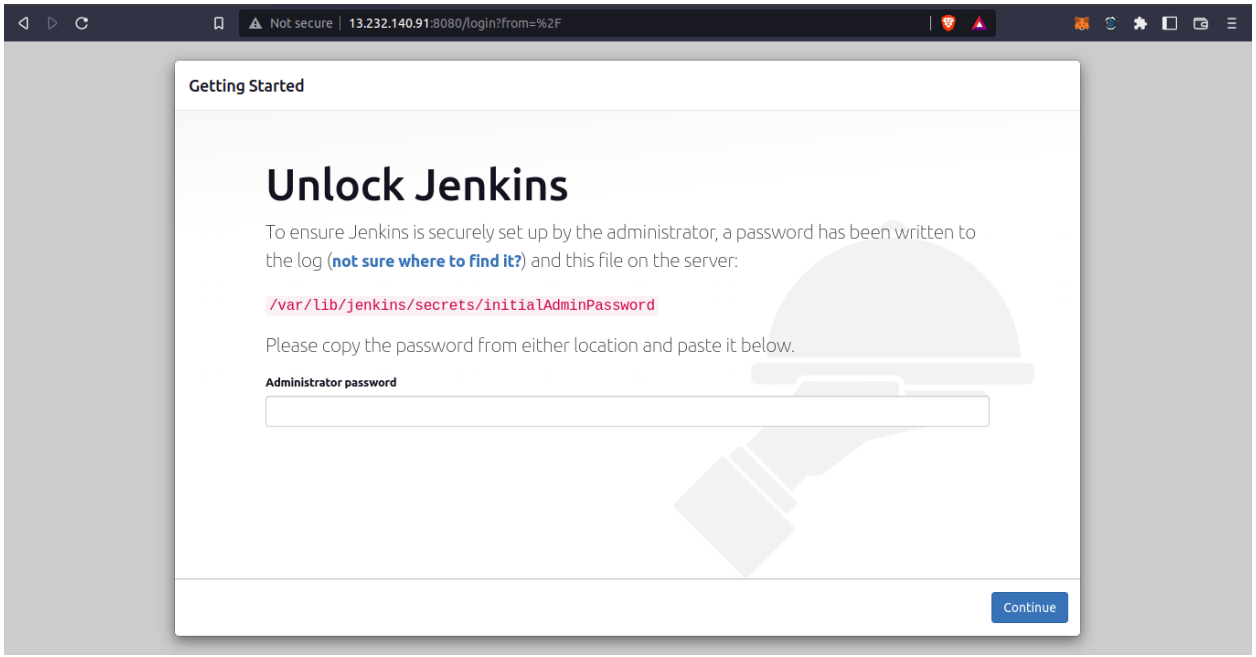
b. Copy and paste following command one by one and paste it in your terminal

1. `curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee /usr/share/keyrings/jenkins-keyring.asc > /dev/null`
2. `echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] https://pkg.jenkins.io/debian-stable binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null`
3. `sudo apt-get update`

4. sudo apt-get install jenkins

```
ubuntu@ip-172-26-10-96:~$ curl -fsSL https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo tee
 /usr/share/keyrings/jenkins-keyring.asc > /dev/null
ubuntu@ip-172-26-10-96:~$ echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] https://pkg.
jenkins.io/debian-stable binary/ | sudo tee /etc/apt/sources.list.d/jenkins.list > /dev/null
ubuntu@ip-172-26-10-96:~$ sudo apt update
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Get:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Fetched 222 kB in 1s (182 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
ubuntu@ip-172-26-10-96:~$ sudo apt install jenkins
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
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 90.9 MB of archives.
After this operation, 94.4 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:2 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git2018
```

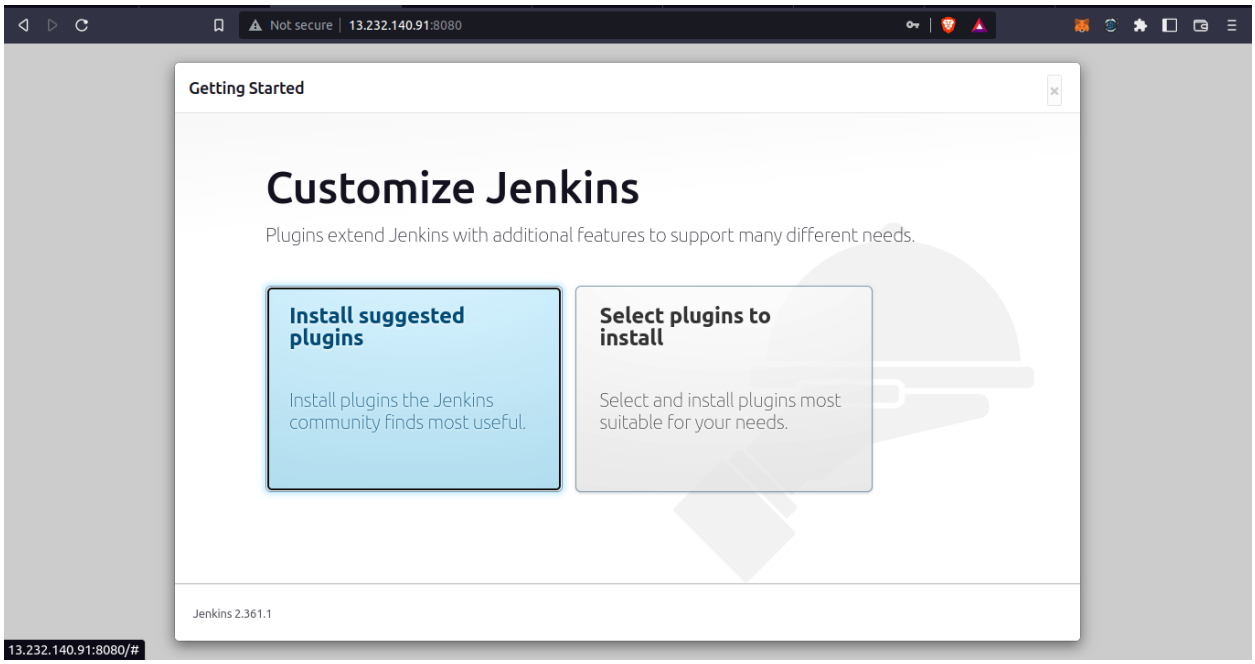
c. Now open any browser and type localhost:8080 to get start with jenkins in my case the url is 13.232.140.91:8080 and we are here on login page of jenkins



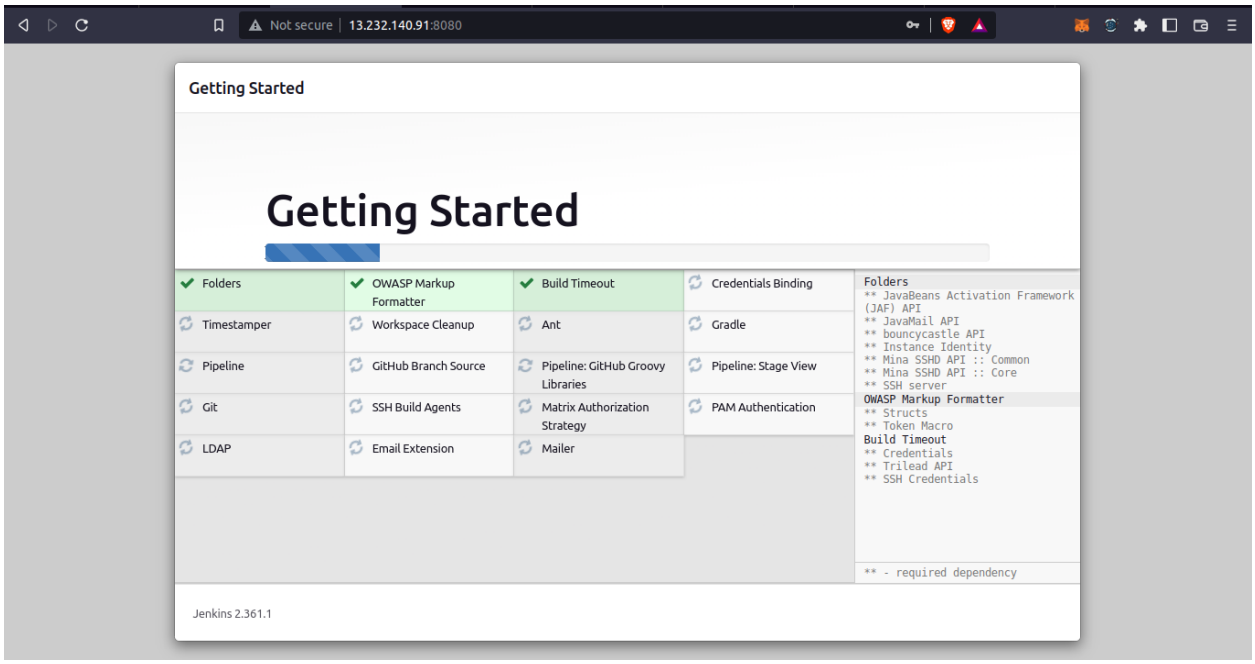
d. Now go back to your terminal and run the command to get the password “sudo cat `/var/lib/jenkins/secrets/initialAdminPassword`” and copy the password and paste it then click on continue

```
ubuntu@ip-172-26-10-96:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
a27281dd71a7440d908d22b869427cf2
ubuntu@ip-172-26-10-96:~$
```

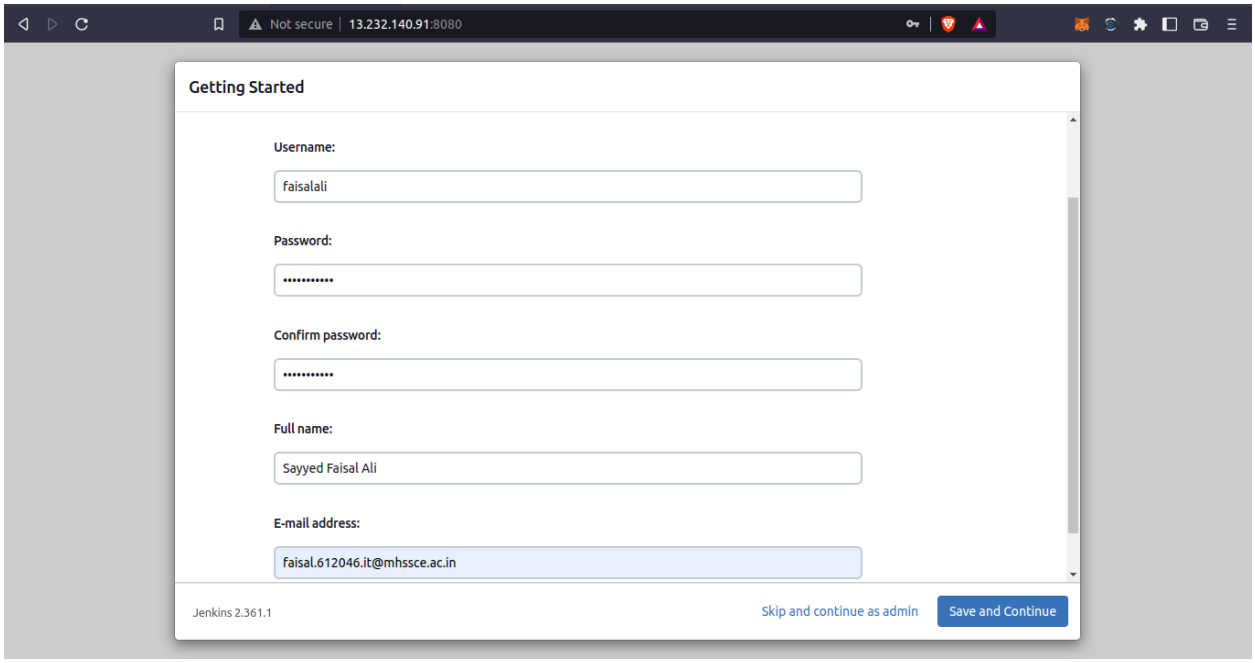
e. Select install suggested plugins



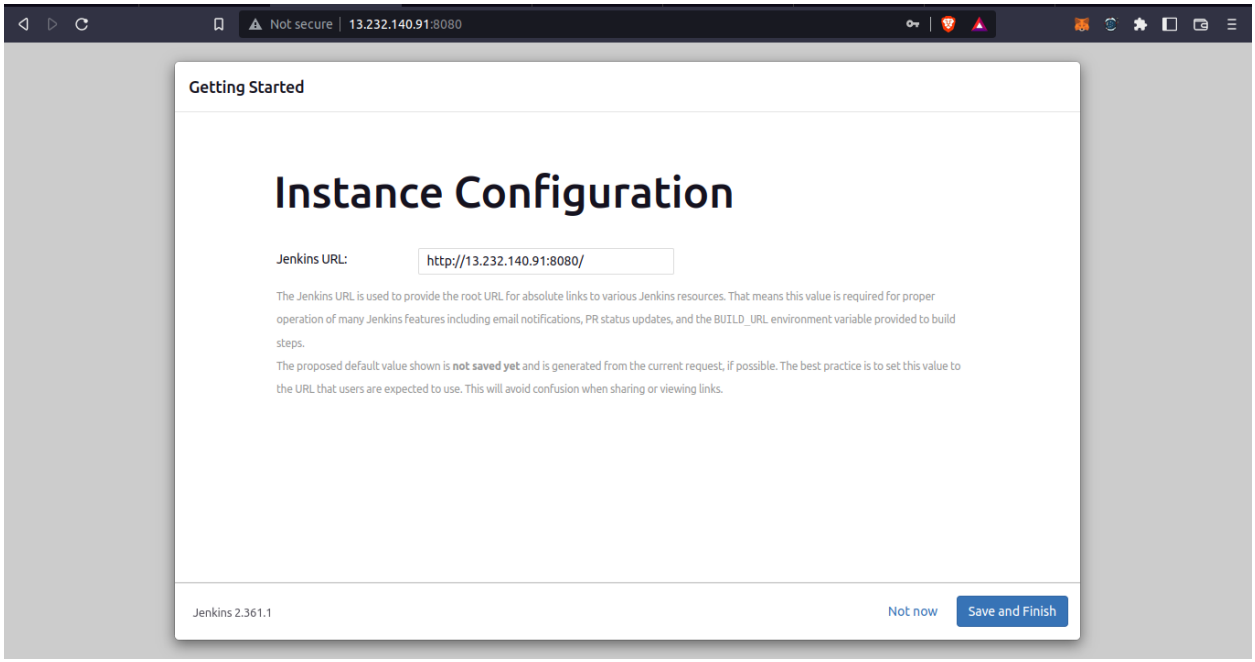
f. Let the installation of all plugins fine



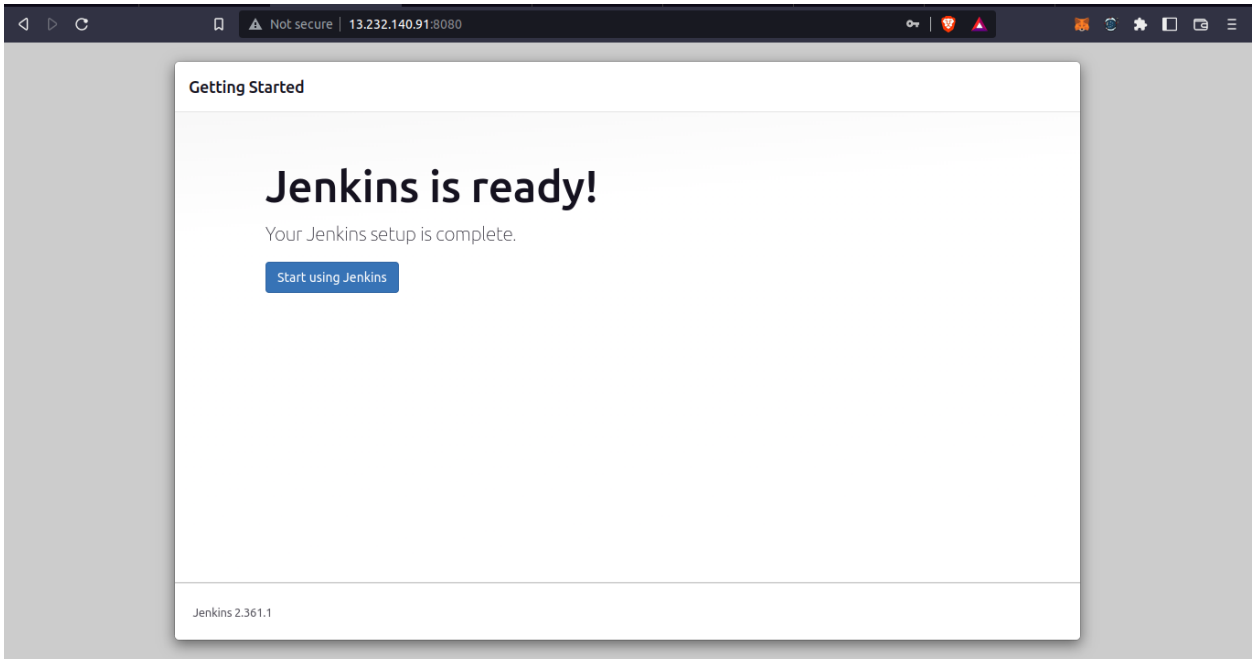
g. After the installation of plugins select a username, password, your full name and email



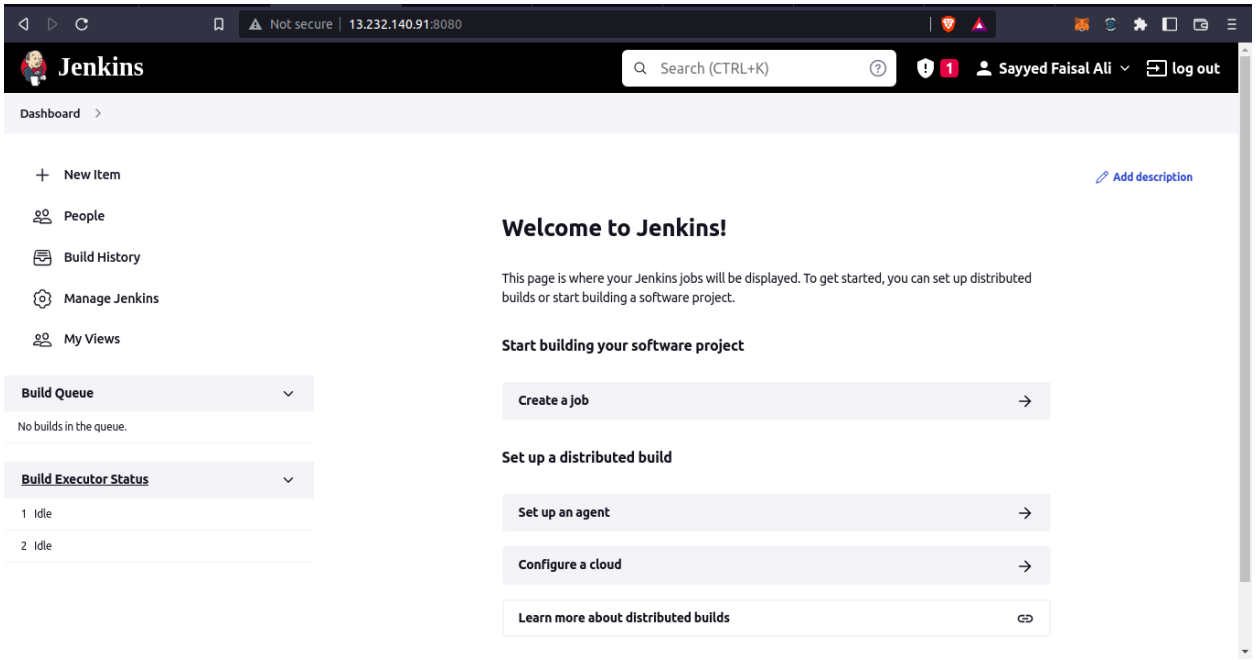
h. Just click save and finish to continue



i. Click on start using jenkins



j. Now we have successfully installed and configured jenkins. We have got our dashboard



Conclusion: We have successfully installed and configured jenkins on our local machine

Name: Sayyed Faisal Ali
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Experiment No. 04

Aim: To integrate Github with Jenkins.

Theory:
Jenkins has a number of plugins for integrating into GitHub. The primary avenues for integrating your Jenkins instance with GitHub are:

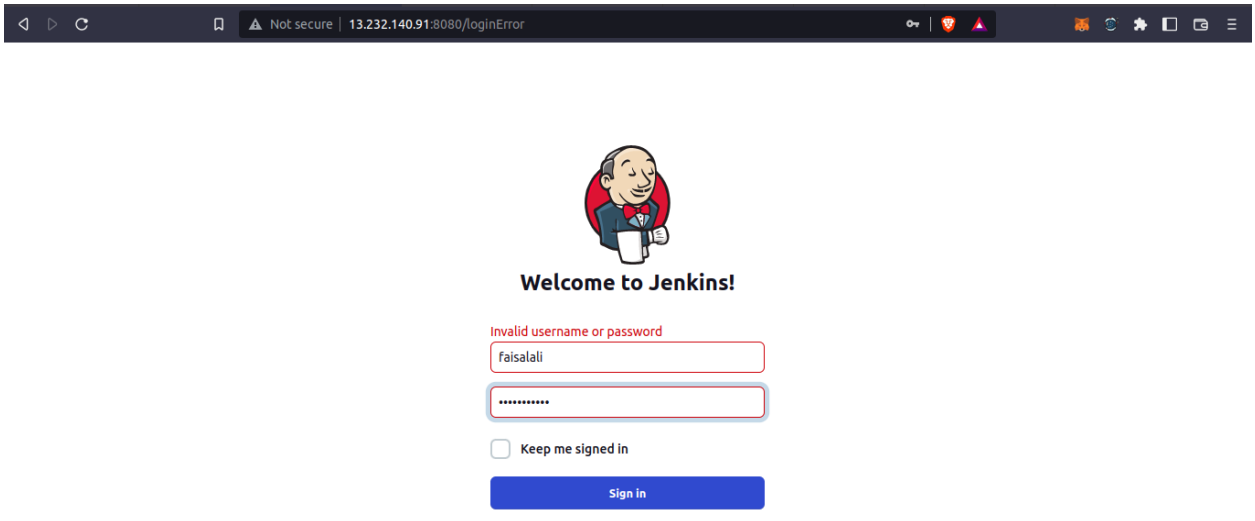
a. "build integration" - using GitHub to trigger builds
b. "authentication integration" - using GitHub as the source of authentication information to secure a Jenkins instance.

Build integration:
With the help of the Git plugin Jenkins can easily pull source code from any Git repository that the Jenkins build node can access. Going the other direction, the GitHub plugin can also feed information back into GitHub via the commit status API.

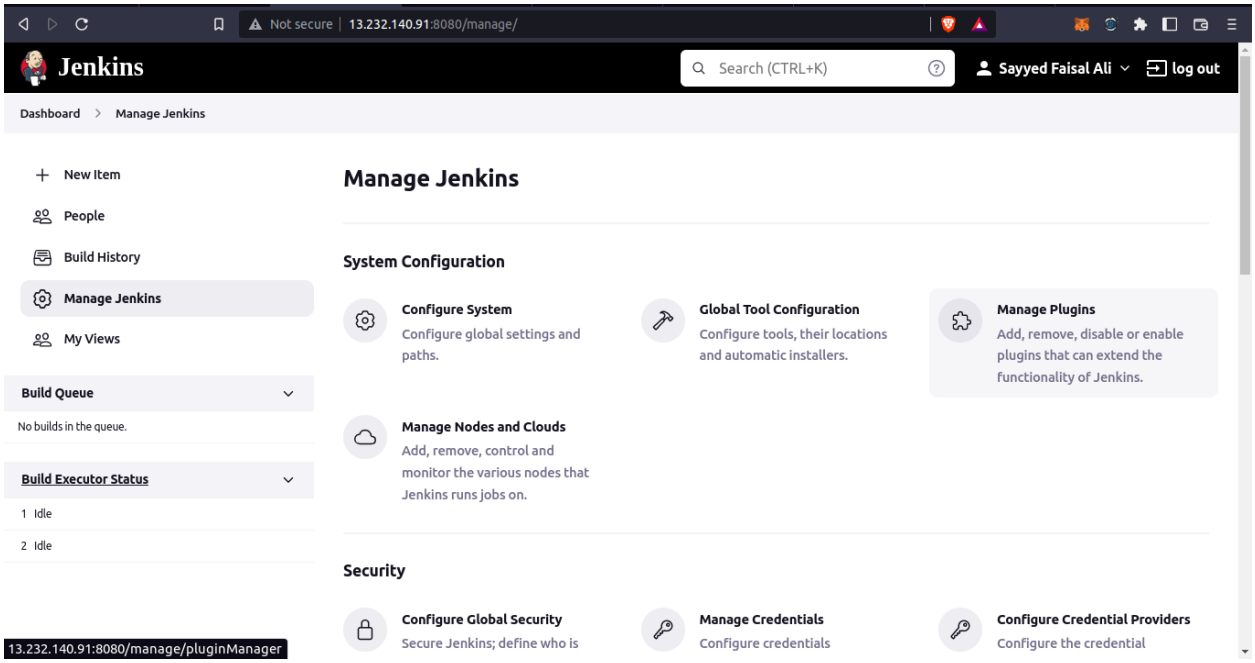
Authenticating with GitHub:
Using the GitHub Authentication plugin it is possible to use GitHub's own authentication scheme for implementing authentication in your Jenkins instance.

Steps:

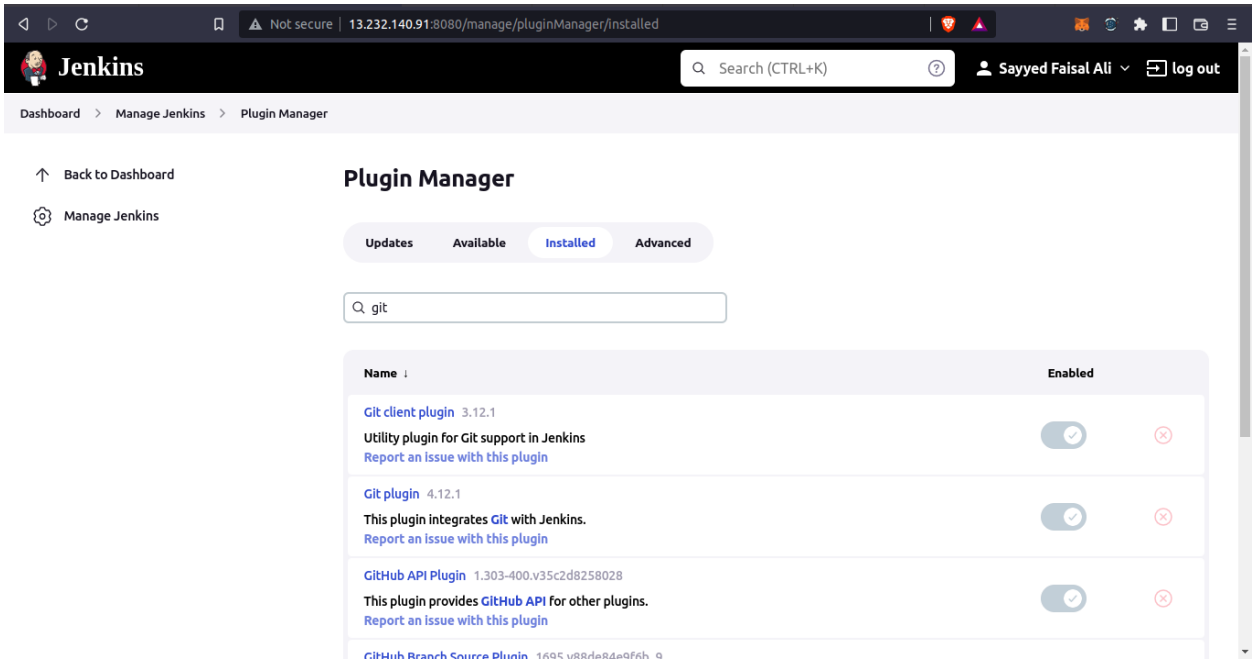
a. Fire Up your terminal and type "sudo service jenkins start" to start jenkins server and go to localhost:8080 in my case it will be 13.232.140.91:8080 and login to your account



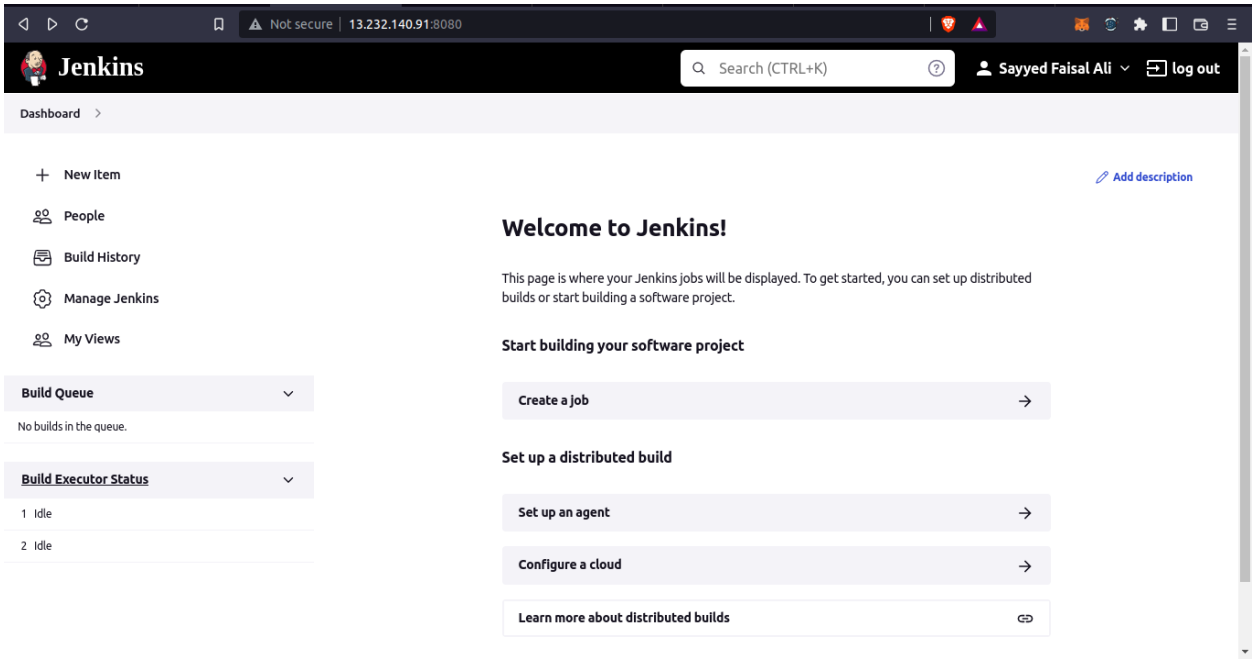
b. After login go to Manage Jenkins then click on Manage Plugins



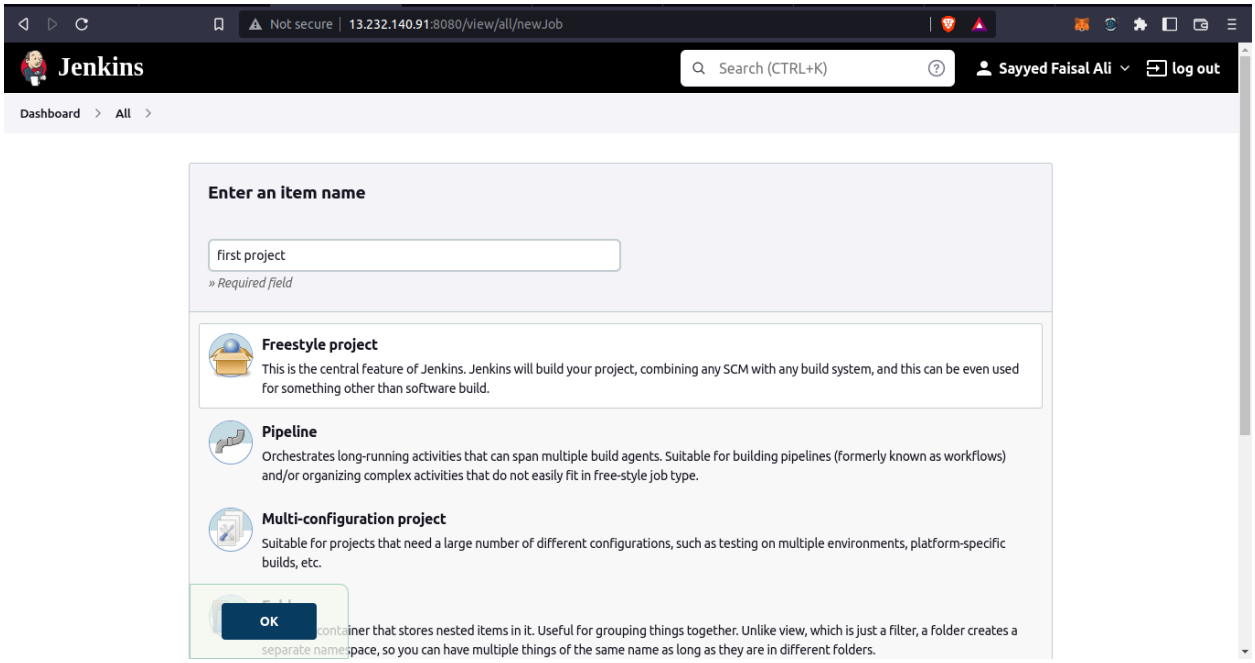
c. Then head to the Installed tab and search for git and see if it is installed or not if it is installed so continue and if not then head to Available and install it. I have it so im not install it again



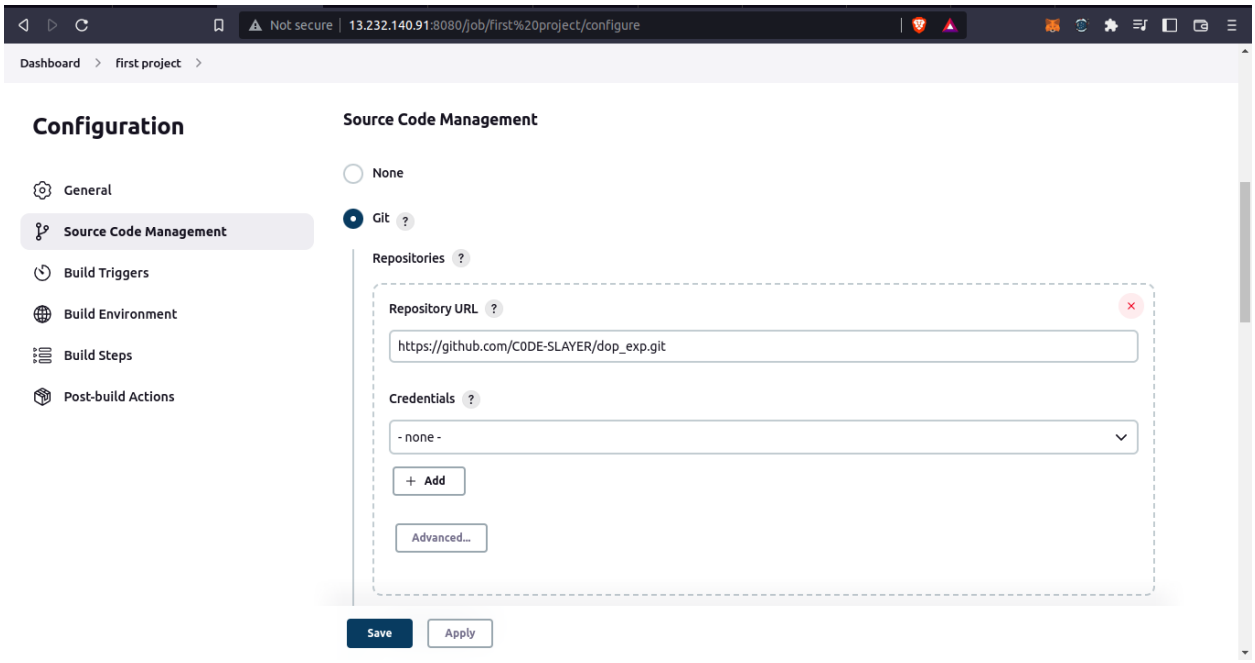
d. Go to dashboard and click on New Item



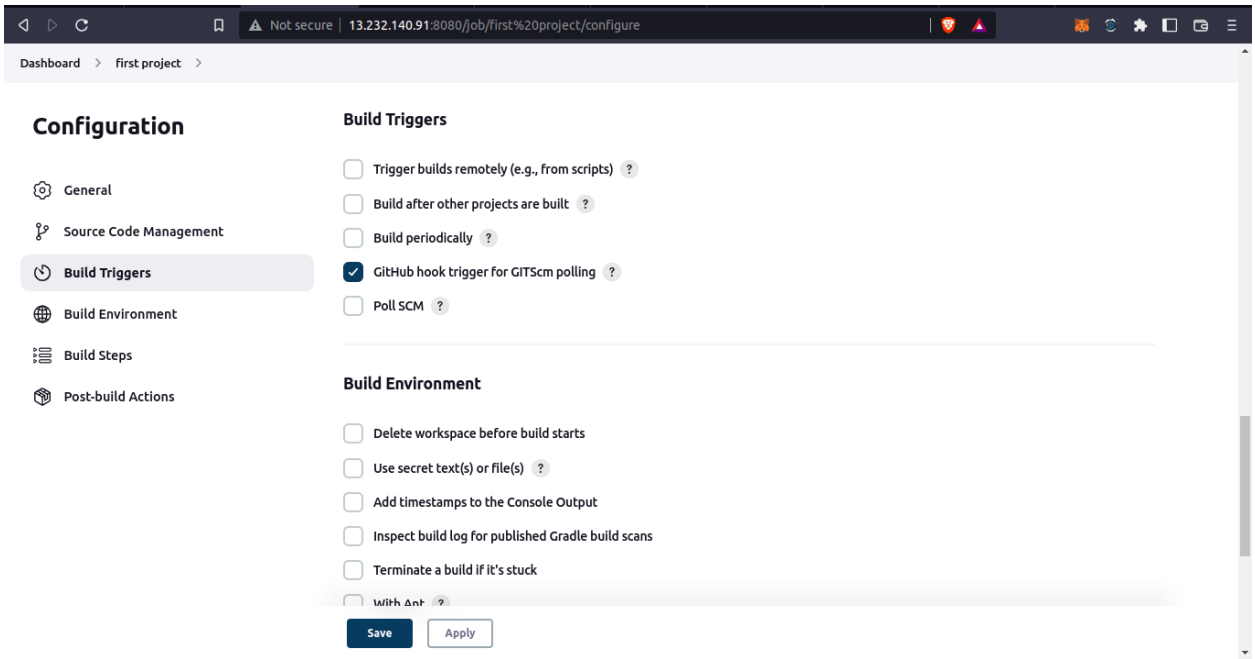
e. Select a name for your project and select Freestyle project. Click on ok button



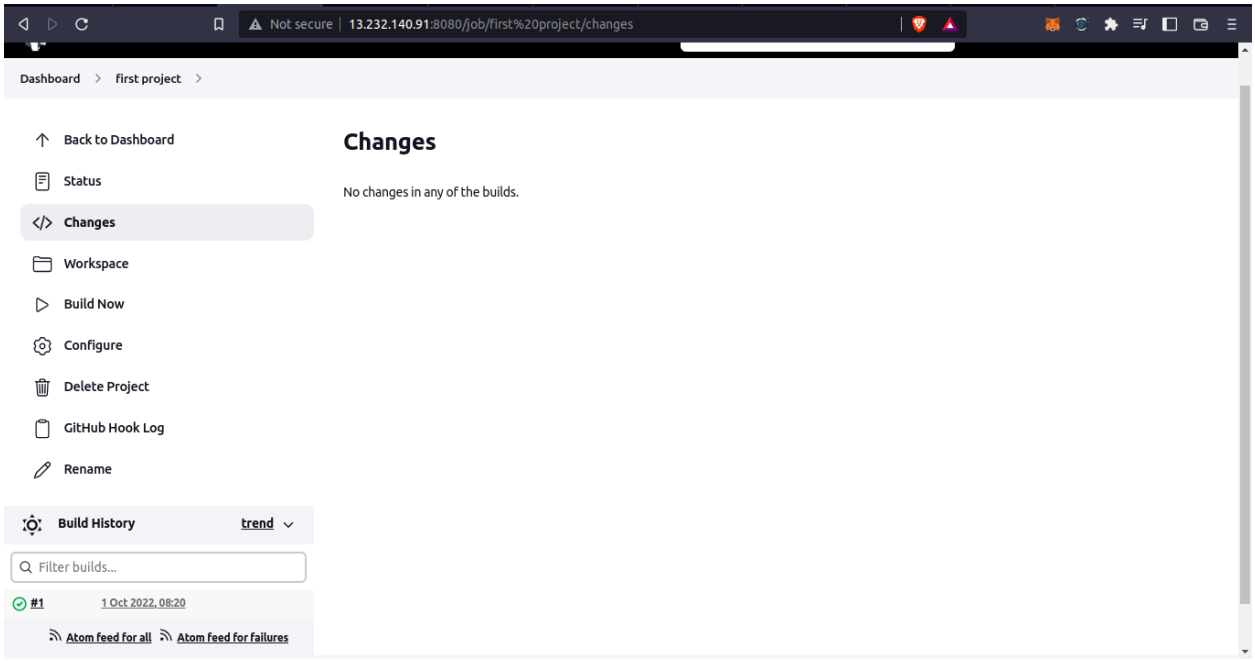
f. Now head to Source Code Management and select git. Provide the github repo link in Repository URL



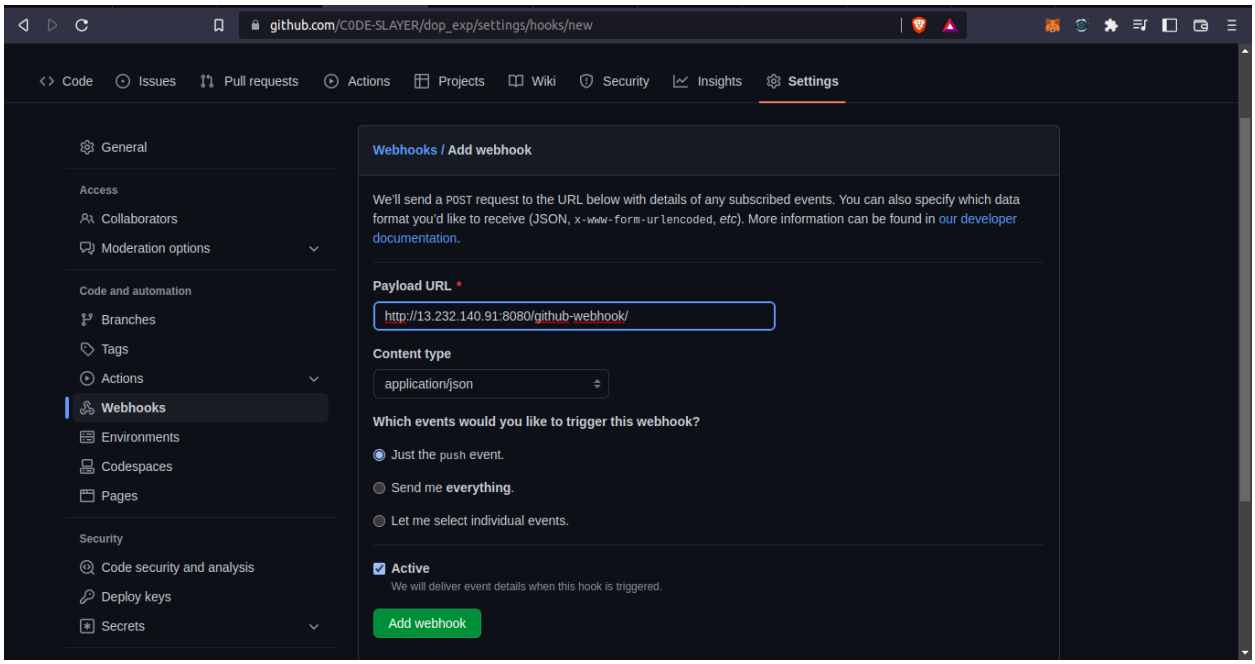
g. Now head to Build Triggers and select “GitHub hook trigger for GITScm polling” and hit save



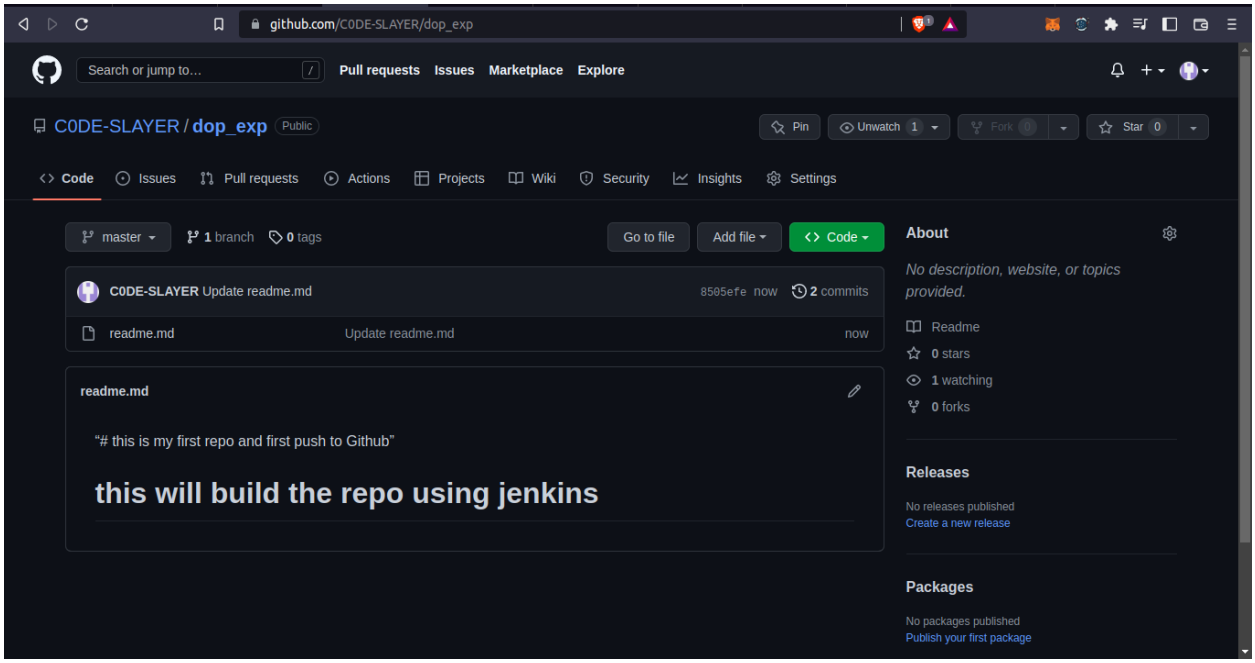
h. Well done we have integrate git to jenkins



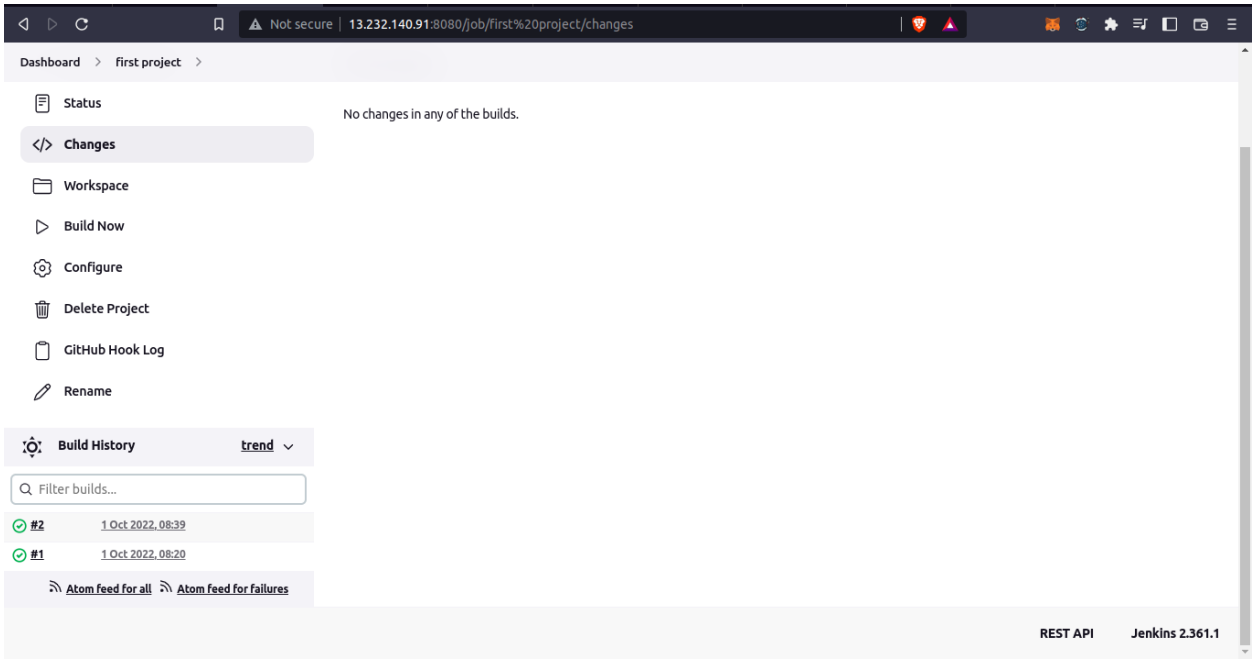
i. Now head to your repo > settings > Web hook > add new webhook. Put jenkins url http://13.232.140.91:8080/github-webhook/ and click on add webhook

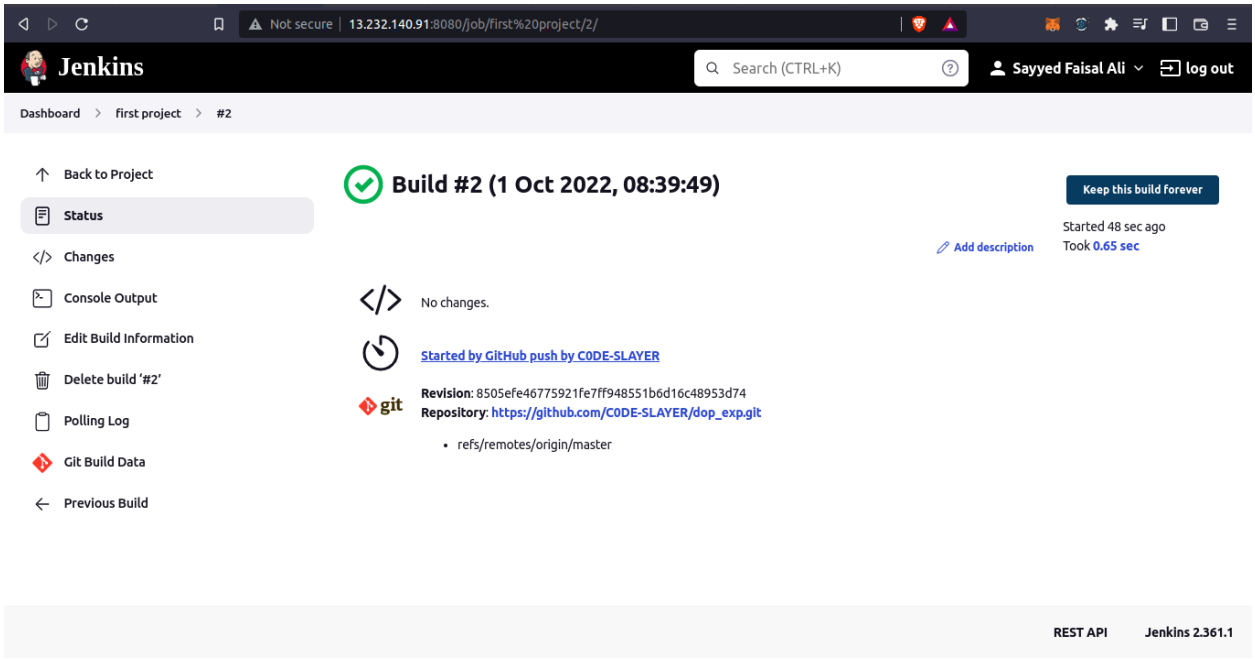


j. Make a commit on your repo



k. And we get our second build using jenkins which was made with github





Conclusion: We have successfully integrated Github with Jenkins.

Name: Sayyed Faisal Ali
Roll No. 612046

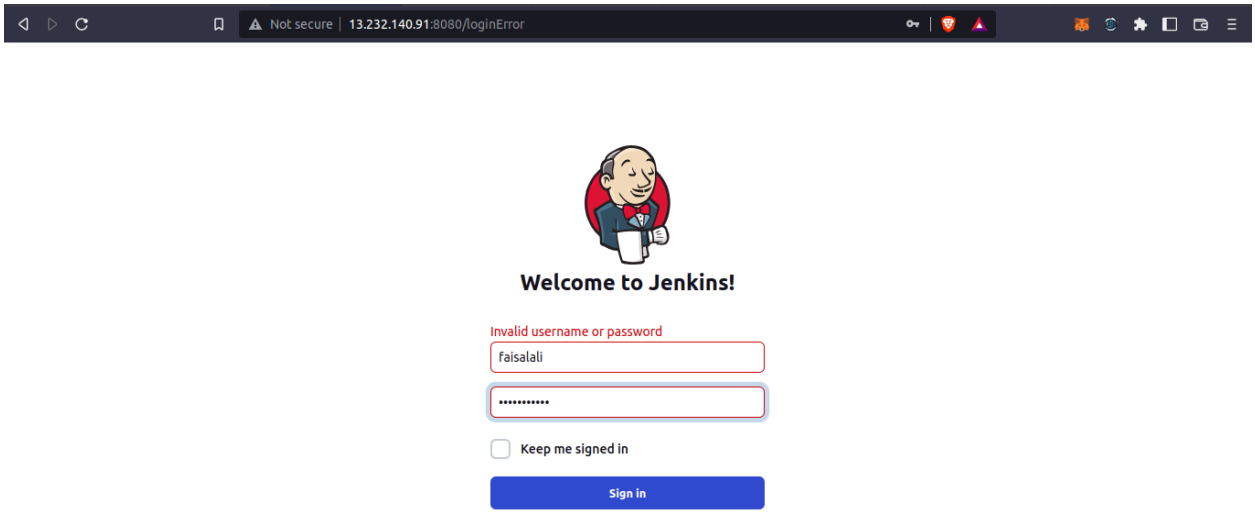
Experiment No. 05

Aim: To perform a pipeline using Jenkins.
Theory:

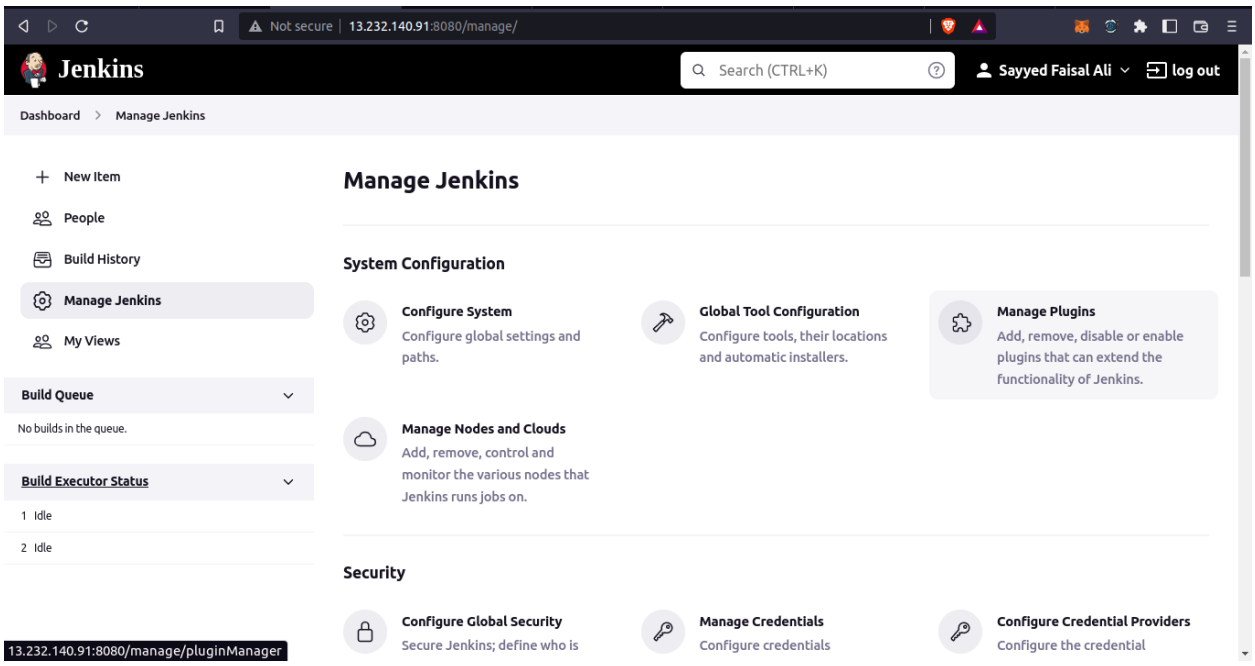
- Jenkins Pipeline (or simply "Pipeline" with a capital "P") is a suite of plugins which supports implementing and integrating continuous delivery pipelines into Jenkins.
- A continuous delivery (CD) pipeline is an automated expression of your process for getting software from version control right through to your users and customers.
- Pipeline provides an extensible set of tools for modeling simple-to-complex delivery pipelines "as code" via the Pipeline domain-specific language (DSL) syntax.
- Creating a Jenkinsfile and committing it to source control provides a number of immediate benefits:
    1. Automatically creates a Pipeline build process for all branches and pull requests.
    2. Code review/iteration on the Pipeline (along with the remaining source code).
    3. Audit trail for the Pipeline.
    4. Single source of truth for the Pipeline, which can be viewed and edited by multiple members of the project.
- Jenkins is, fundamentally, an automation engine which supports a number of automation patterns. Pipeline adds a powerful set of automation tools onto Jenkins, supporting use cases that span from simple continuous integration to comprehensive CD pipelines.
- By modeling a series of related tasks, users can take advantage of the many features of Pipeline discussed below:
    1. Code: Pipelines are implemented in code and typically checked into source control, giving teams the ability to edit, review, and iterate upon their delivery pipeline.
    2. Durable: Pipelines can survive both planned and unplanned restarts of the Jenkins master.
    3. Pausable: Pipelines can optionally stop and wait for human input or approval before continuing the Pipeline run.
    4. Versatile: Pipelines support complex real-world CD requirements, including the ability to fork/join, loop, and perform work in parallel.
    5. Extensible: The Pipeline plugin supports custom extensions to its DSL and multiple options for integration with other plugins.

Steps:

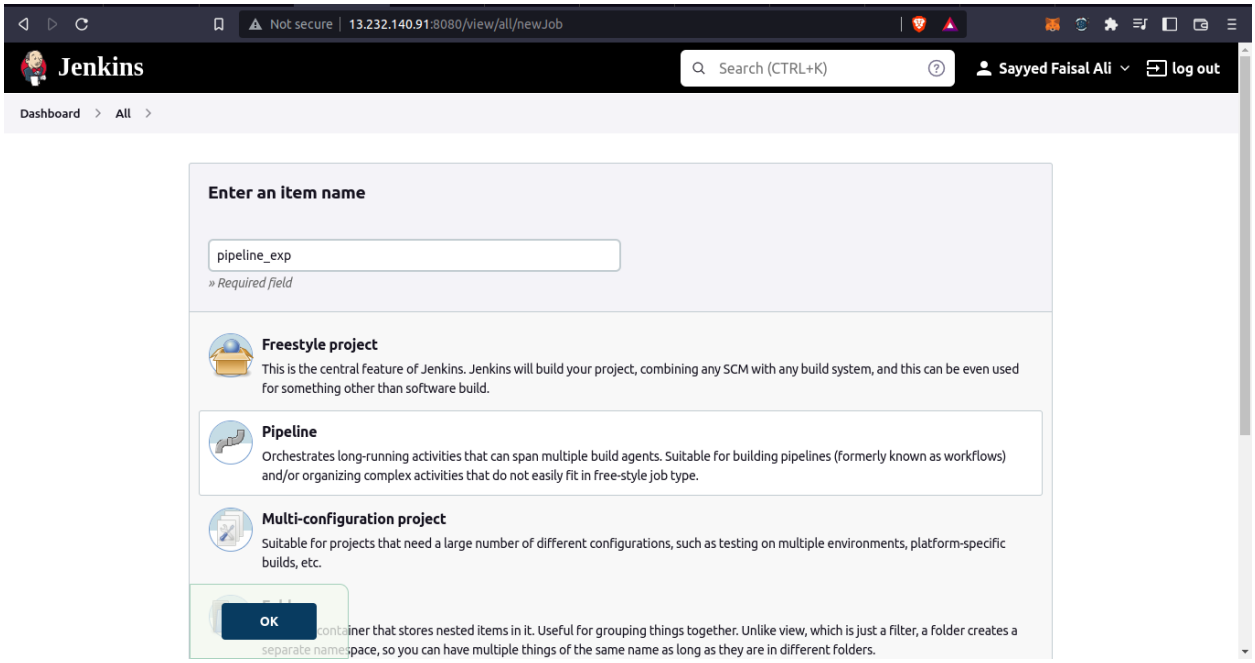
a. Fire Up your terminal and type “sudo service jenkins start” to start jenkins server and go to localhost:8080 in my case it will be 13.232.140.91:8080 and login to your account



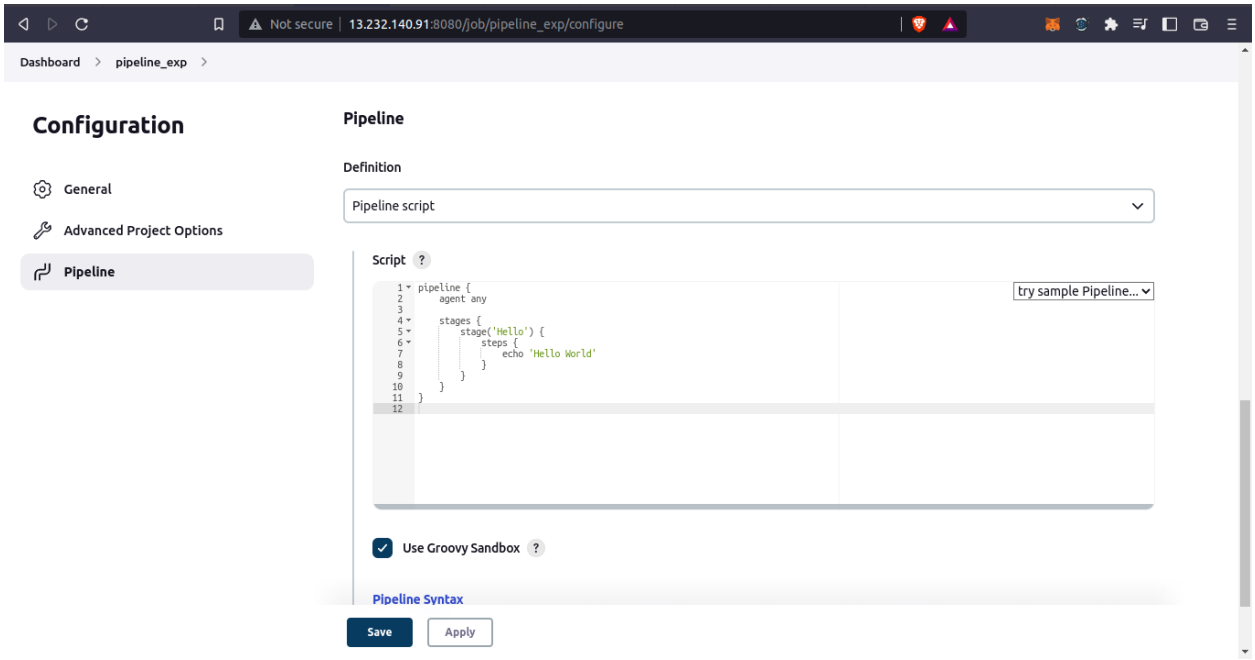
b. After login click on New Item



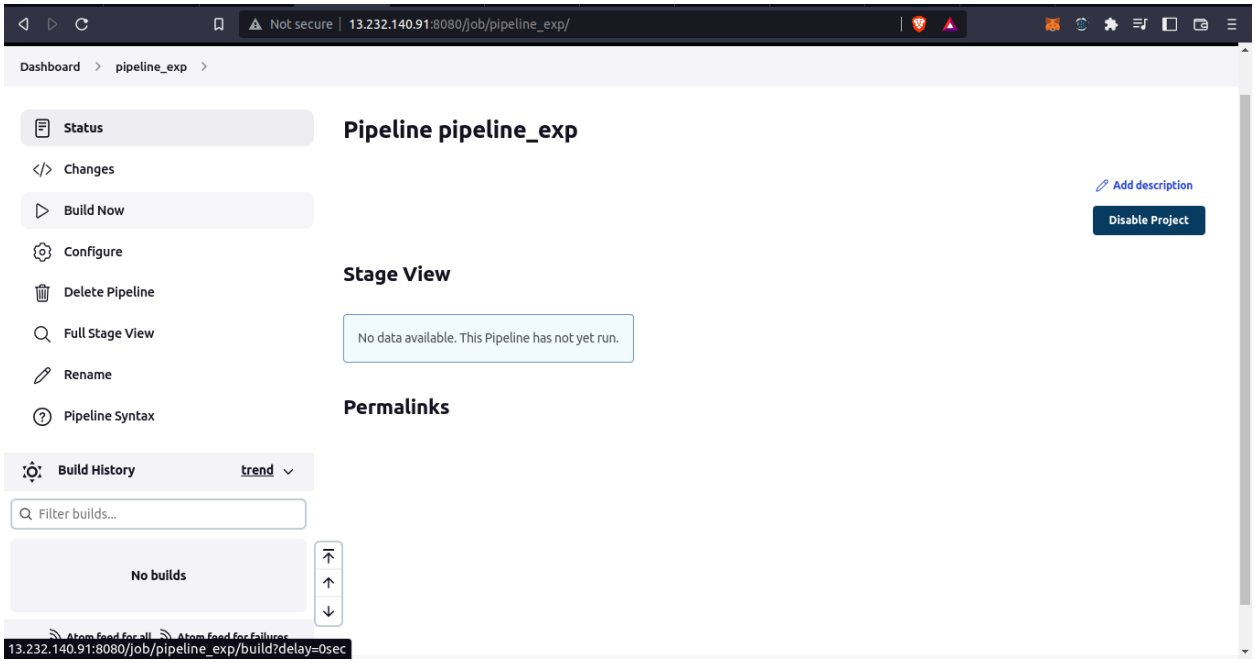
c. Select a name for your project and select Pipeline then click ok button



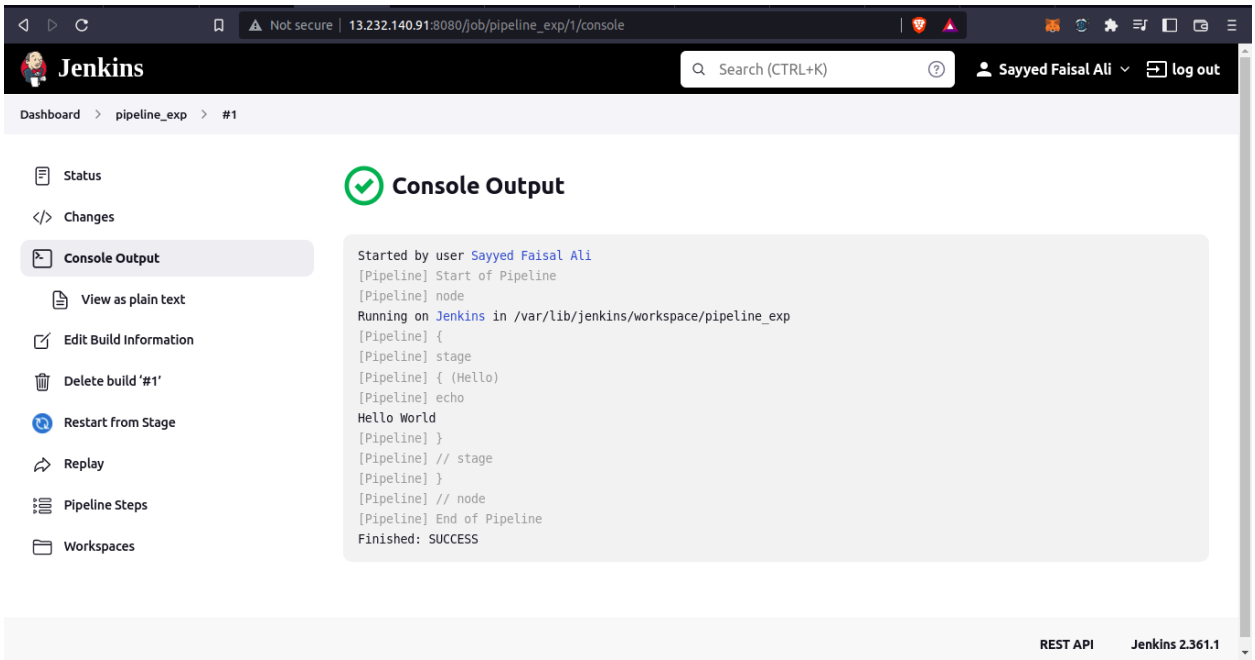
d. Head to Pipeline > Pipeline script > try simple pipeline > Hello World then click on save



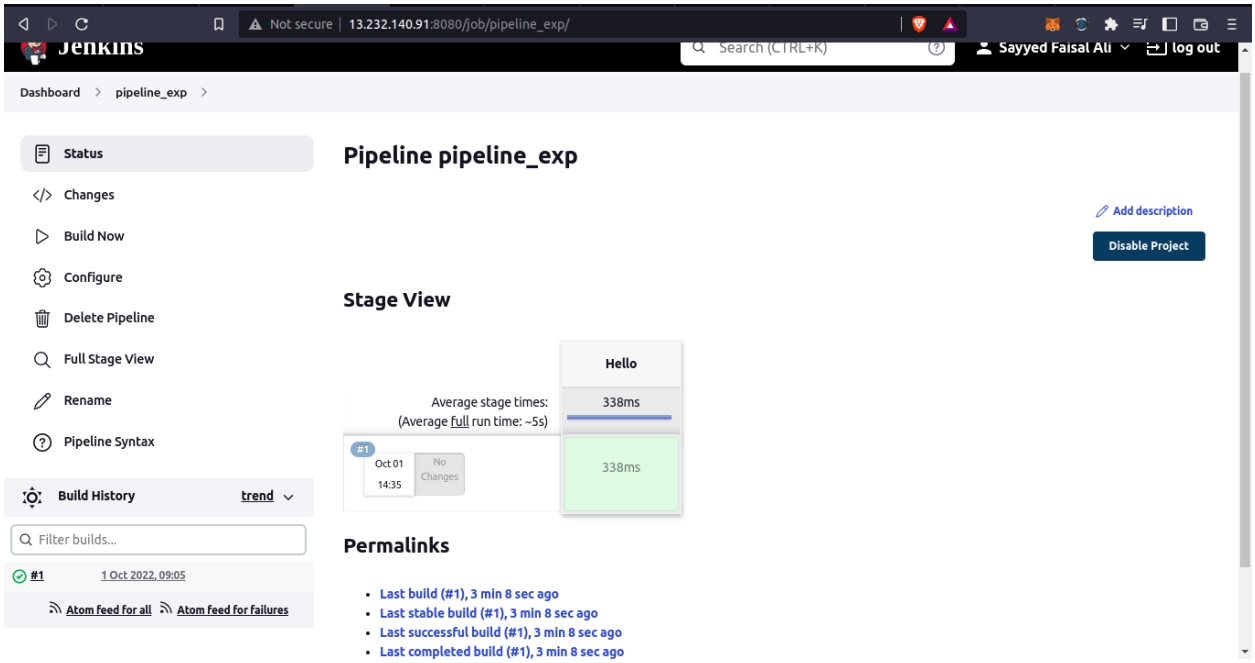
e. Now view the project and click on Build Now button on left sidebar



f. Head to Build History > #1 > Console Output and here we get our output which is Hello World



g. To view stage view of a project go to project view



Conclusion: We have successfully performed a pipelining process using Jenkins.

Name: Sayyed Faisal Ali
Roll No. 612046

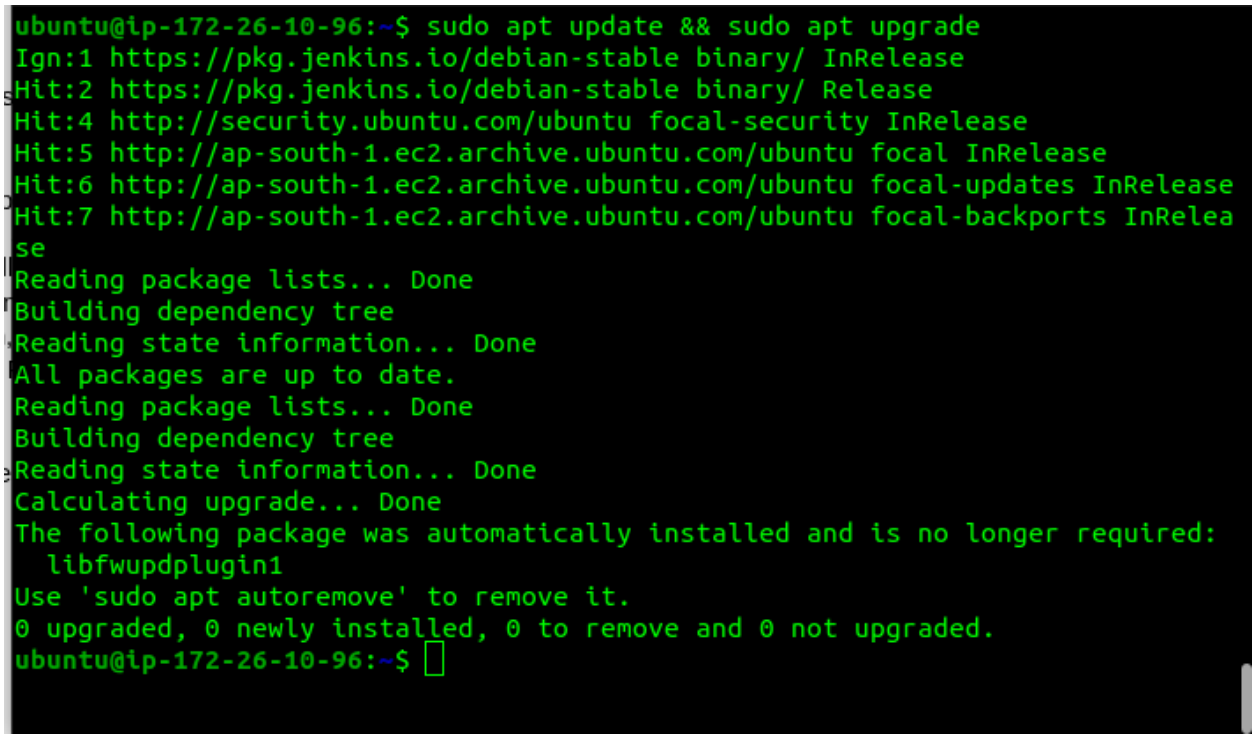
Experiment No. 06

Aim: To install Docker and configure

Theory:
Docker, a popular operating system level virtualization platform, a Type released in 2013. It is free to use software that can run different tools and applications in containers. The containers are basically an isolated environment created by the Docker for each application or images of different Linux operating systems. However, despite the individual containers of each application, all of them run by using a single operating system kernel. The traditional virtual machines. Plus a wide range of images Docker is available for Linux, MacOS and Windows.

Steps:

a. Fire up your terminal and type “sudo apt update && sudo apt upgrade”



b. Run the command one by one to install docker
    1. curl -fsSL https://get.docker.com -o get-docker.sh
    2. sh get-docker.sh

```
ubuntu@ip-172-26-10-96:~$ curl -fsSL https://get.docker.com -o get-dock
er.sh
ubuntu@ip-172-26-10-96:~$ ls
get-docker.sh
ubuntu@ip-172-26-10-96:~$ sh get-docker.sh
# Executing docker install script, commit: 4f282167c425347a931ccfd95cc9
1fab041d414f
+ sudo -E sh -c apt-get update -qq >/dev/null
+ sudo -E sh -c DEBIAN_FRONTEND=noninteractive apt-get install -y -qq a
pt-transport-https ca-certificates curl >/dev/null
+ sudo -E sh -c mkdir -p /etc/apt/keyrings && chmod -R 0755 /etc/apt/ke
yrings
+ sudo -E sh -c curl -fsSL "https://download.docker.com/linux/ubuntu/gp
g" | gpg --dearmor --yes -o /etc/apt/keyrings/docker.gpg
+ sudo -E sh -c chmod a+r /etc/apt/keyrings/docker.gpg
+ sudo -E sh -c echo "deb [arch=amd64 signed-by=/etc/apt/keyrings/docke
r.gpg] https://download.docker.com/linux/ubuntu focal stable" > /etc/ap
t/sources.list.d/docker.list
+ sudo -E sh -c apt-get update -qq >/dev/null
```

```
ocker-ce-rootless-extras >/dev/null
+ sudo -E sh -c docker version
Client: Docker Engine - Community
 Version:           20.10.18
 API version:       1.41
 Go version:        go1.18.6
 Git commit:        b40c2f6
 Built:             Thu Sep  8 23:11:45 2022
 OS/Arch:           linux/amd64
 Context:           default
 Experimental:      true

Server: Docker Engine - Community
 Engine:
  Version:          20.10.18
  API version:      1.41 (minimum version 1.12)
  Go version:       go1.18.6
  Git commit:       e42327a
  Built:            Thu Sep  8 23:09:37 2022
```

```
Visit https://docs.docker.com/go/rootless/ to learn about rootless mode
.


To run the Docker daemon as a fully privileged service, but granting no
n-root
users access, refer to https://docs.docker.com/go/daemon-access/

WARNING: Access to the remote API on a privileged Docker daemon is equi
valent
         to root access on the host. Refer to the 'Docker daemon attack
 surface'
         documentation for details: https://docs.docker.com/go/attack-s
urface/

================================================================================
=========

ubuntu@ip-172-26-10-96:~$
```

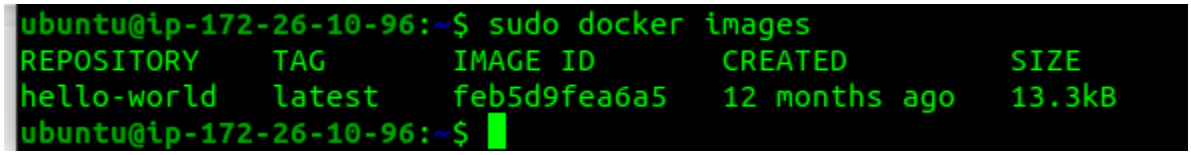
c. Docker is installed successfully then run “sudo service docker start” and then check it using “docker –version”

```
ubuntu@ip-172-26-10-96:~$ sudo service docker start
ubuntu@ip-172-26-10-96:~$ docker --version
Docker version 20.10.18, build b40c2f6
ubuntu@ip-172-26-10-96:~$
```

d. Run “sudo docker run hello-world” to pull and run hello world repo

```
ubuntu@ip-172-26-10-96:~$ sudo docker run hello-world
Unable to find image 'hello-world:latest' locally
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:62af9efd515a25f84961b70f973a798d2eca956b1b2b026d0a4a63a3b0b6a3f2
Status: Downloaded newer image for hello-world:latest

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
 $ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
 https://hub.docker.com/

For more examples and ideas, visit:
 https://docs.docker.com/get-started/

ubuntu@ip-172-26-10-96:~$
```

e. Run “sudo docker images” to see all the images pull by docker on your local machine



Conclusion: We successfully installed and configured docker on our machine

Name: Sayyed Faisal Ali
Roll no: 612046

Experiment no. 07

Aim: Build, deploy and manage web applications on Docker

Steps to build and deploy and manage web application:

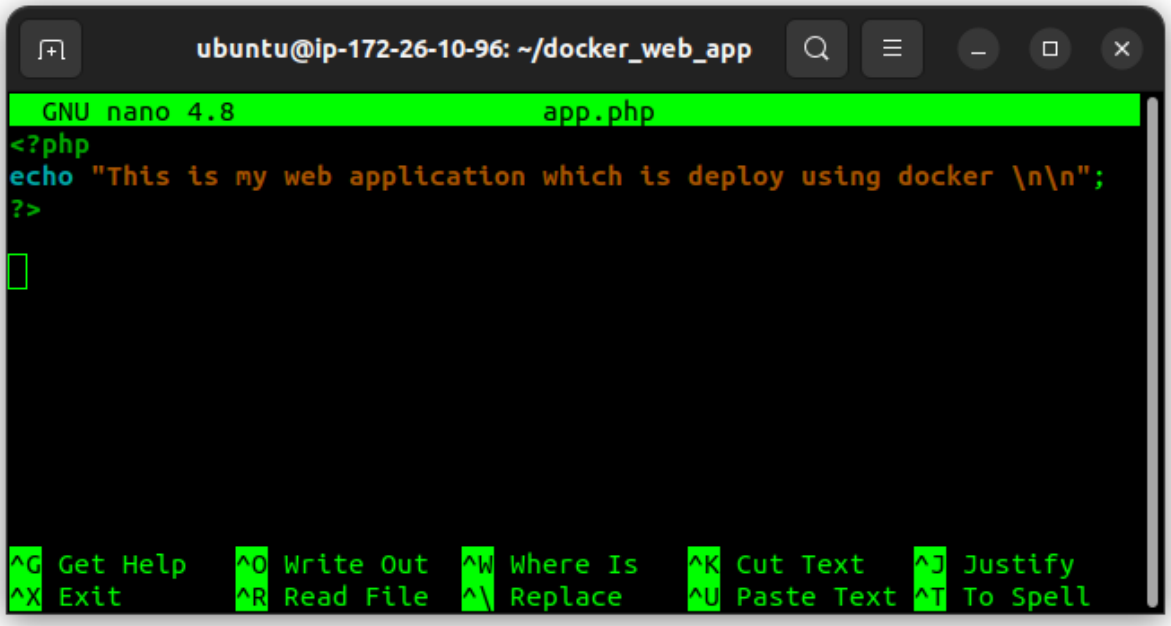
a. Fire up your terminal and run “sudo apt update && sudo apt upgrade”

```
ubuntu@ip-172-26-10-96:~$ sudo apt update && sudo apt upgrade
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Hit:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelea
se
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-26-10-96:~$
```

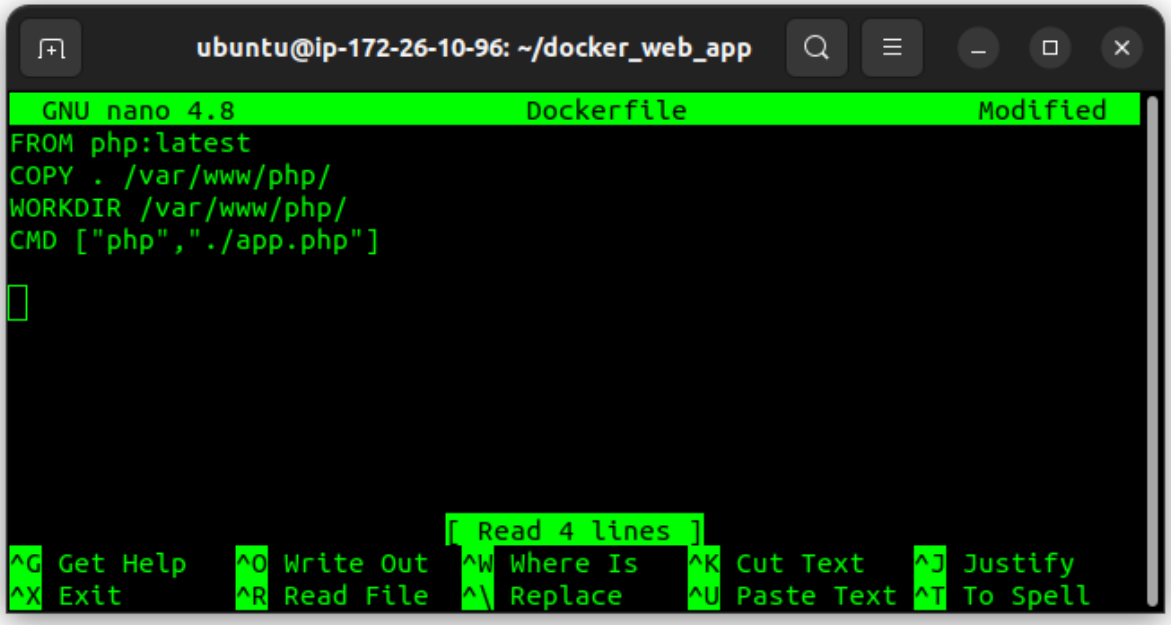
b. Create a dir using mkdir and run “touch app.php Dockerfile” in side the dir you have created

```
ubuntu@ip-172-26-10-96:~$ mkdir docker_web_app
ubuntu@ip-172-26-10-96:~$ cd docker_web_app/
ubuntu@ip-172-26-10-96:~/docker_web_app$ touch app.php Dockerfile
ubuntu@ip-172-26-10-96:~/docker_web_app$ ls
Dockerfile  app.php
ubuntu@ip-172-26-10-96:~/docker_web_app$
```

c. Using nano open app.php file and write the code given below



d. Now open Dockerfile using nano and write down the code given below



e. Now all things are set using the command “sudo docker build . -t web_app” our web app will start to build

```
ubuntu@ip-172-26-10-96:~/docker_web_app$ sudo docker build . -t web_app
Sending build context to Docker daemon  3.072kB
Step 1/4 : FROM php:latest
latest: Pulling from library/php
31b3f1ad4ce1: Pull complete
ad30ef427bea: Pull complete
deeb65fd0ffb: Pull complete
136a0d294b5e: Pull complete
d46443b10a6a: Pull complete
f83b14b0524e: Pull complete
c4e0105d1f88: Pull complete
98f312647fa0: Pull complete
74029d4cf778: Pull complete
Digest: sha256:c34f84e90cd0f2a85ef433046dc69ad5e5905bf8f9d9bc4cd4c98d4d5d4d5e60
Status: Downloaded newer image for php:latest
 ---> d82f72d88c72
Step 2/4 : COPY . /var/www/phpApp/
 ---> 18c64cd99558
Step 3/4 : WORKDIR /var/www/phpApp/
 ---> Running in 71581d036e96
Removing intermediate container 71581d036e96
 ---> 4a679eb716b2
Step 4/4 : CMD ["php","./app.php"]
 ---> Running in 3592ea375448
Removing intermediate container 3592ea375448
 ---> 0fff2c0d67aa
Successfully built 0fff2c0d67aa
Successfully tagged web_app:latest
```

f. Check weather the images is build using “sudo docker images” and run docker images using “sudo docker run web_app”

```
ubuntu@ip-172-26-10-96:~/docker_web_app$ sudo docker images
REPOSITORY   TAG       IMAGE ID       CREATED              SIZE
web_app      latest    6f26f2159b24   About a minute ago   484MB
php          latest    d82f72d88c72   40 hours ago         484MB
ubuntu@ip-172-26-10-96:~/docker_web_app$ sudo docker run web_app
This is my web application which is deploy using docker


ubuntu@ip-172-26-10-96:~/docker_web_app$
```

Conclusion: We successfully build and run our web application using docker

Name: Sayyed Faisal Ali
Roll no: 612046

Experiment no. 08

Aim: Build, deploy and manage non web applications on Docker

Steps to build and deploy and manage non web application:

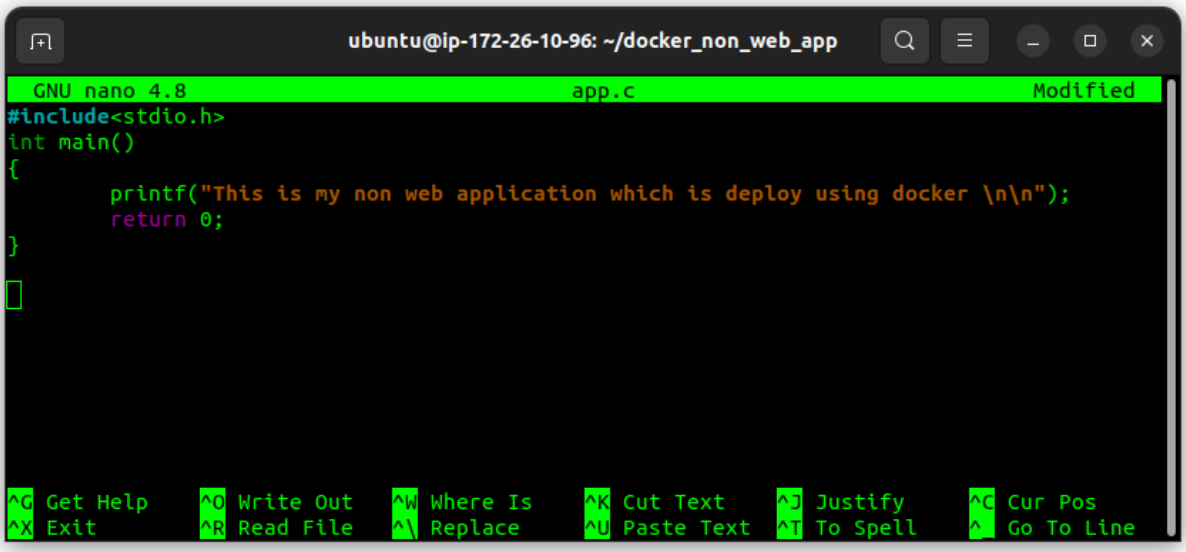
a. Fire up your terminal and run “sudo apt update && sudo apt upgrade”

```
ubuntu@ip-172-26-10-96:~$ sudo apt update && sudo apt upgrade
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease
Hit:5 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Hit:6 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:7 http://ap-south-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelea
se
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following package was automatically installed and is no longer required:
  libfwupdplugin1
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
ubuntu@ip-172-26-10-96:~$
```

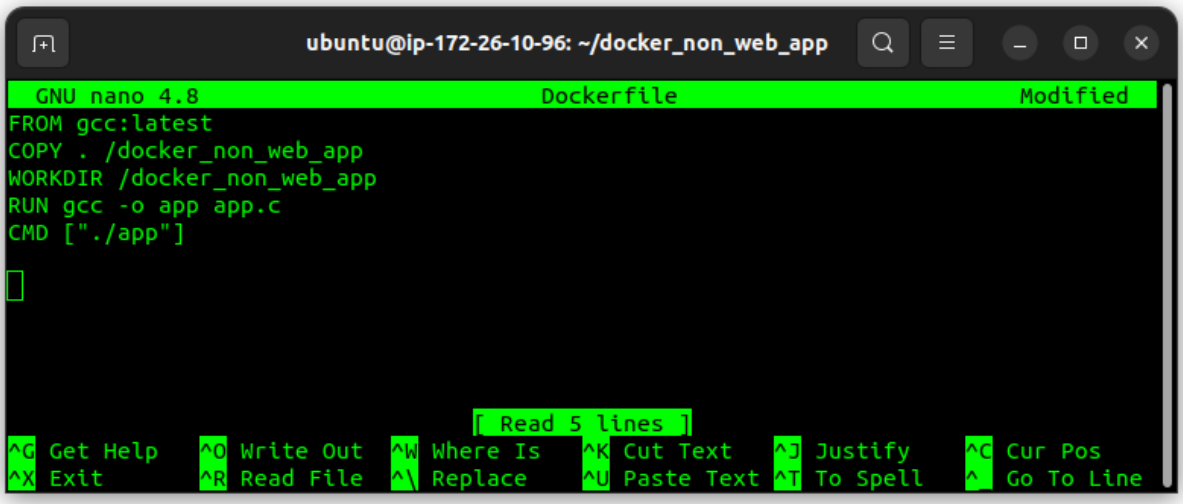
b. Create a dir using mkdir and run “touch app.c Dockerfile” in side the dir you have created

```
ubuntu@ip-172-26-10-96:~$ mkdir docker_non_web_app
ubuntu@ip-172-26-10-96:~$ cd docker_non_web_app/
ubuntu@ip-172-26-10-96:~/docker_non_web_app$ touch app.c Dockerfile
ubuntu@ip-172-26-10-96:~/docker_non_web_app$ ls
Dockerfile  app.c
ubuntu@ip-172-26-10-96:~/docker_non_web_app$
```

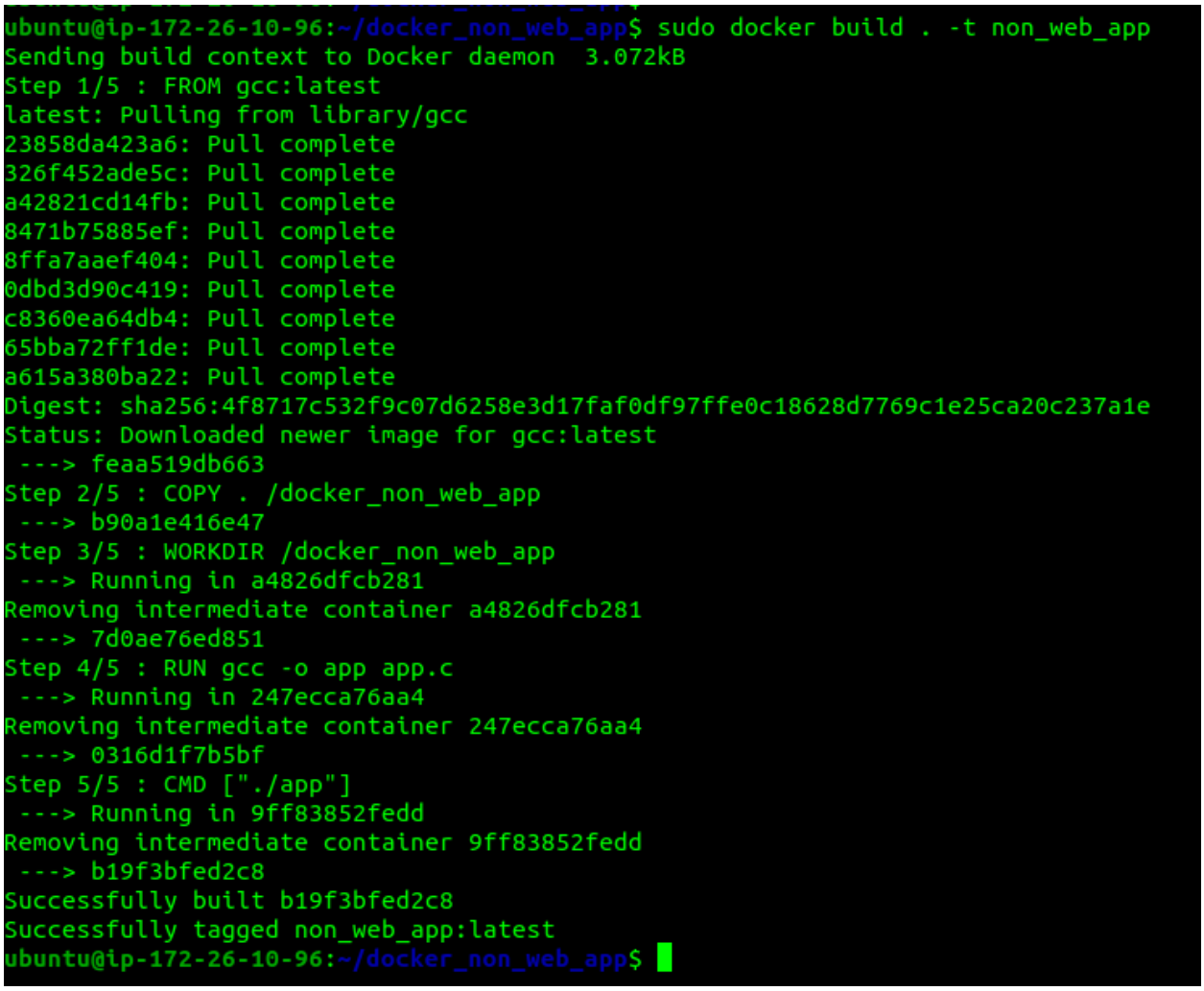
c. Using nano open app.php file and write the code given below



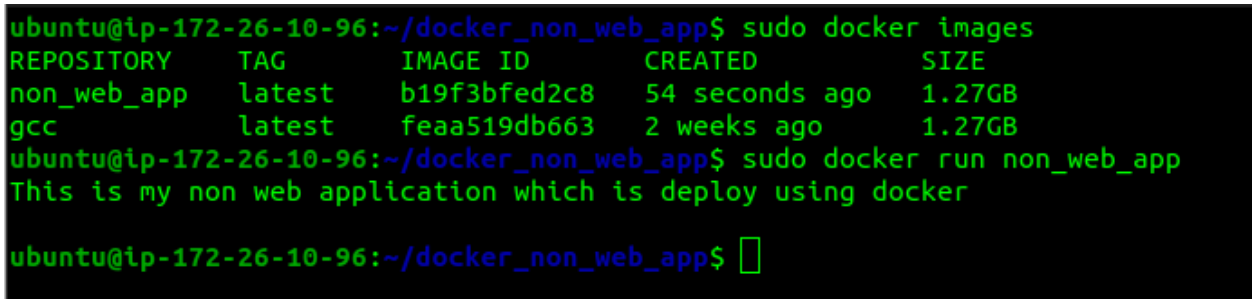
d. Now open Dockerfile using nano and write down the code given below



e. Now all things are set using the command “sudo docker build . -t non_web_app” our web app will start to build



f. Check weather the images is build using “sudo docker images” and run docker images using “sudo docker run non_web_app”



Conclusion: We successfully build and run our non web application using docker