Name: Ansari Hanzala
Roll No: 612006
Branch: T.E. / I.T

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

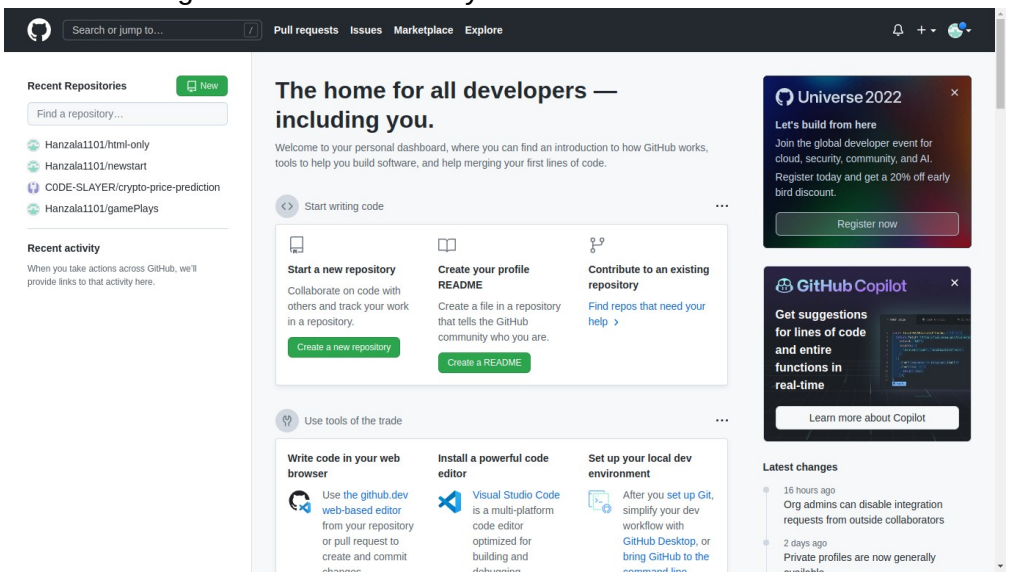
Aim: To perform version control on a website or software using the git version control tool.

Theory:

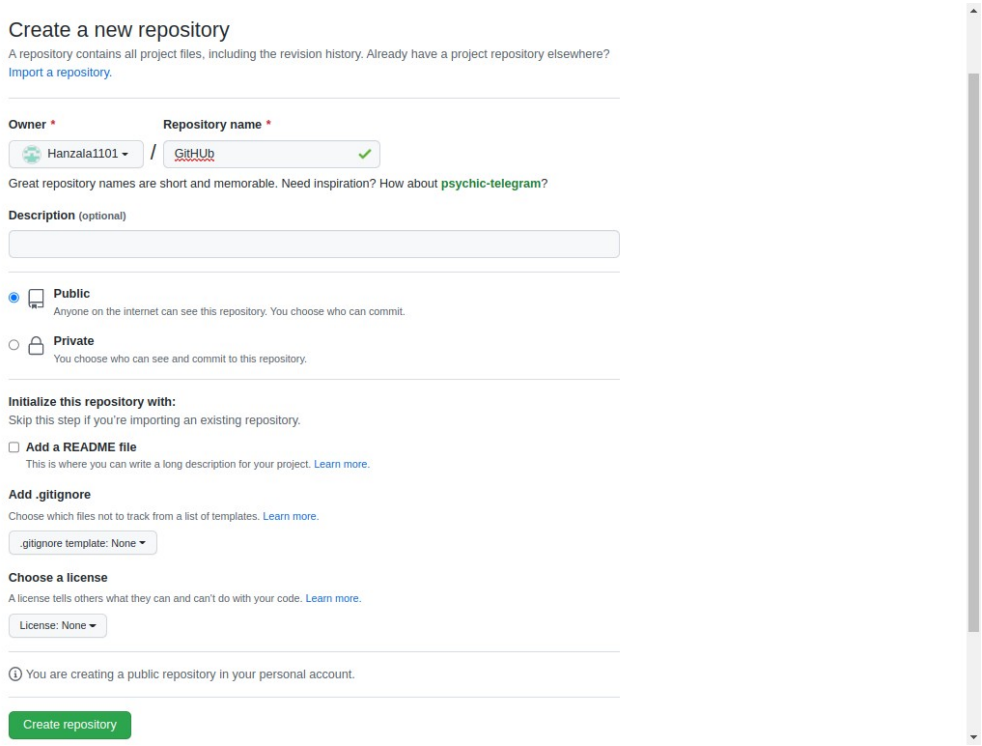
- Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later. For the examples in this book, you will use software source code as the files being version controlled, though in reality you can do this with nearly any type of file 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:

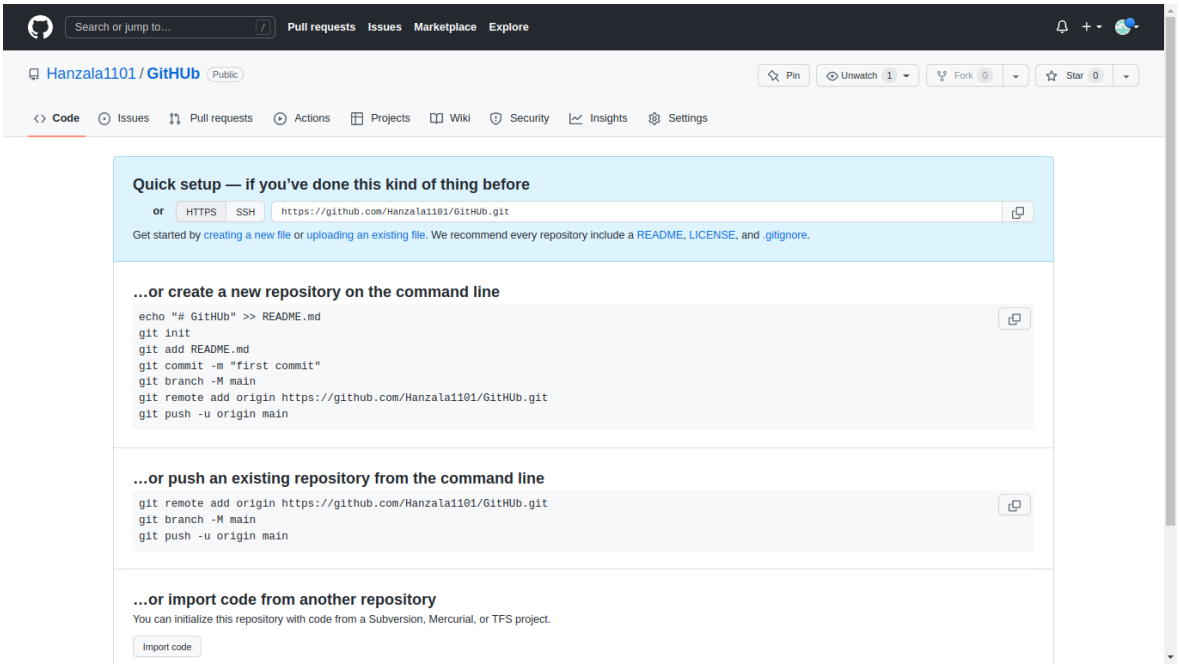
a. Login to your Github account or if you don't have one go ahead and create one. After login click on the green button which say New



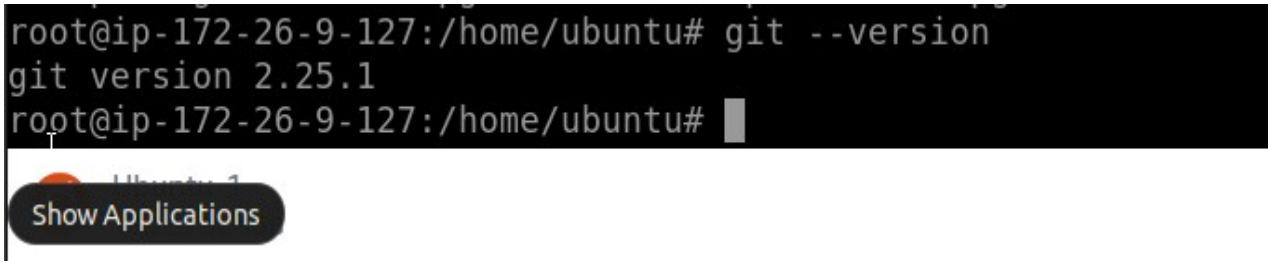
b. Now select a name for your repo and leave the rest as default. Click on Create repository to create a repo



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’

```
root@ip-172-26-9-127:/home/ubuntu# mkdir Dop_experiment
root@ip-172-26-9-127:/home/ubuntu# cd Dop_experiment/
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# echo "# This is experiment to git versio
n control" > readme.md
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# cat readme.md
# This is experiment to git version control
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment#
```

Ubuntu-1
13.233.92.158

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-1 – Terminal | Lightsail - Google Chrome

lightsail.aws.amazon.com/ls/remote/ap-south-1/instances/Ubuntu-1/terminal?protocol=ssh

```
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# git init
Initialized empty Git repository in /home/ubuntu/Dop_experiment/.git/
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# 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)
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# git add .
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# git commit -m "this is my first commit"
[master (root-commit) 2e2ab3f] this is my first commit
 Committer: root <root@ip-172-26-9-127.ap-south-1.compute.internal>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly. Run the
following command and follow the instructions in your editor to edit
your configuration file:

    git config --global --edit

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author
```

Ubuntu-1
13.233.92.158

g. Set your user name using “git config --global user.name "Hanzala_1101"’. Set your email using ‘git config --global user.email "hanzala.612006.it@mhssce.ac.in"’ 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”’

```
After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 1 file changed, 1 insertion(+)
 create mode 100644 readme.md
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# git config --global user.name Hanzala1101
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# git config --global user.email hanzala.61
2006.it@mhssce.ac.in
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment# git commit -m "This is my first commit"
On branch master
nothing to commit, working tree clean
root@ip-172-26-9-127:/home/ubuntu/Dop_experiment#
```

Ubuntu-1
13.233.92.158

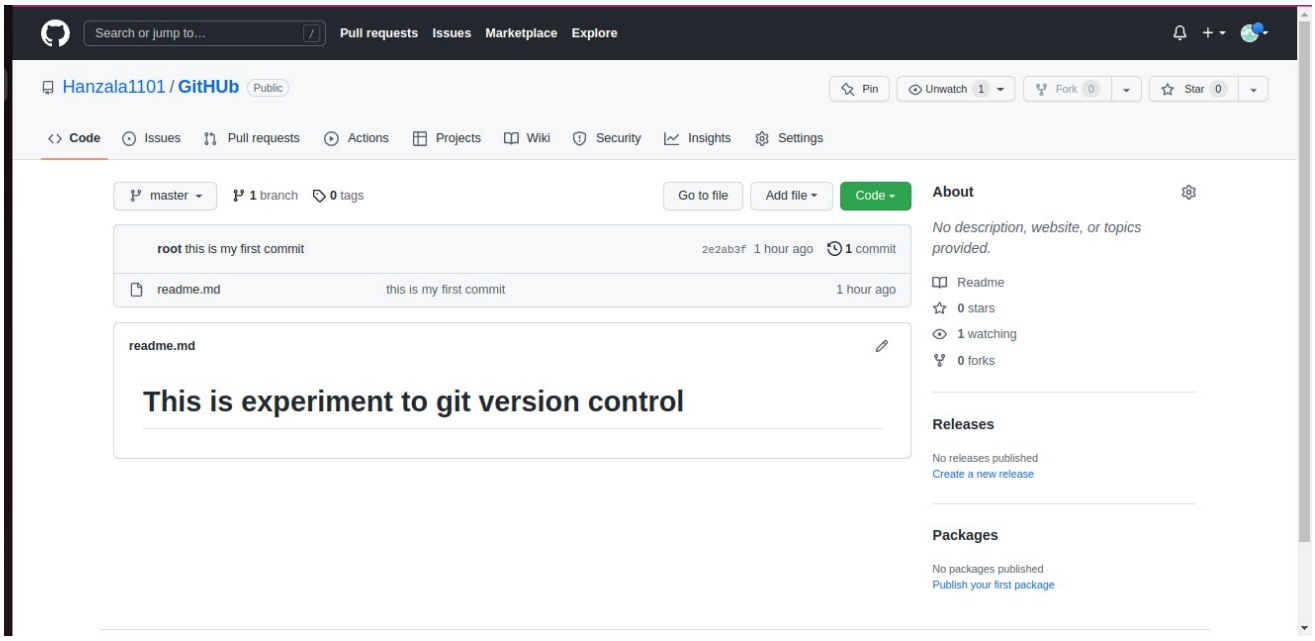
h. Using this command you will connect your local repo to you github repo
“git remote add origin “https://github.com/Hanzala1101/GitHUb.git” and using this command you can push you committed code to github repo
“git push -u origin master”

it will ask your username and password when you provide it your code will be push to your github account.

```
ubuntu@ip-172-26-9-127:~/Dop_experiment$ git push -u origin master
Username for 'https://github.com': Hanzala1101
Password for 'https://Hanzala1101@github.com':
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 273 bytes | 273.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
To https://github.com/Hanzala1101/GitHUb.git
 * [new branch]      master -> master
error: could not lock config file .git/config: Permission denied
error: Unable to write upstream branch configuration
hint:
hint: After fixing the error cause you may try to fix up
hint: the remote tracking information by invoking
hint: "git branch --set-upstream-to=origin/master".
error: update_ref failed for ref 'refs/remotes/origin/master': cannot lock ref 'refs/remote
s/origin/master': unable to create directory for .git/refs/remotes/origin/master
ubuntu@ip-172-26-9-127:~/Dop_experiment$
```

Ubuntu-1
13.233.92.158

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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Branch: T.E. / I.T Subject: DOP

Experiment No 03

Aim: Install and configure Jenkins.

Minimum hardware requirements:

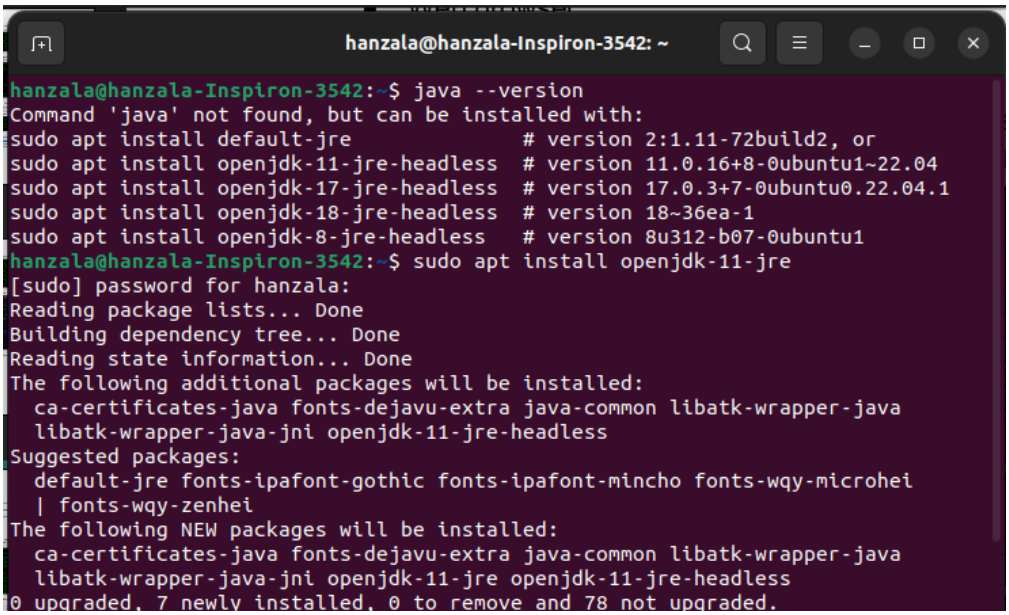
- 256 MB of RAM
- 1 GB drive space (although 10 GB is a recommended minimum if running Jenkins as a Docker container)

Software requirements:

- Java
- Web browser

Steps of installing and configuring Jenkins.

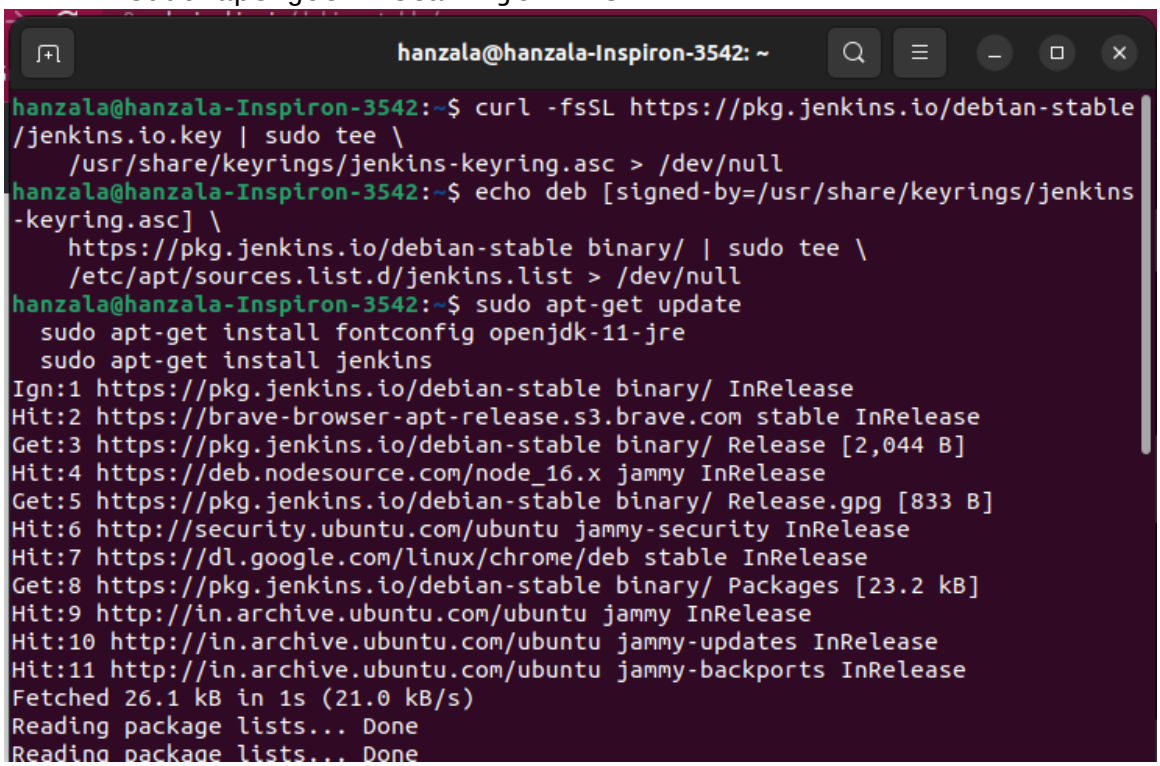
a. Open up your terminal and check where Java is install using "java –version" and if java is not install run "`sudo apt install openjdk-11-jre`"



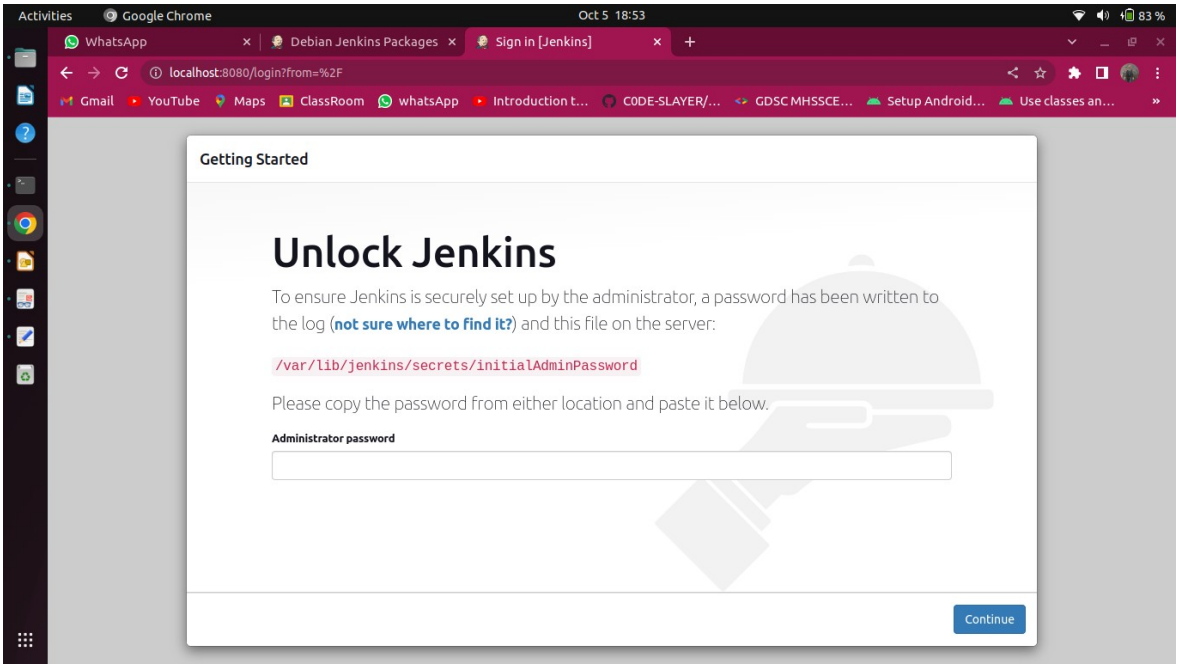
b. Copy and paste following command one by one and paste it in your terminal

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



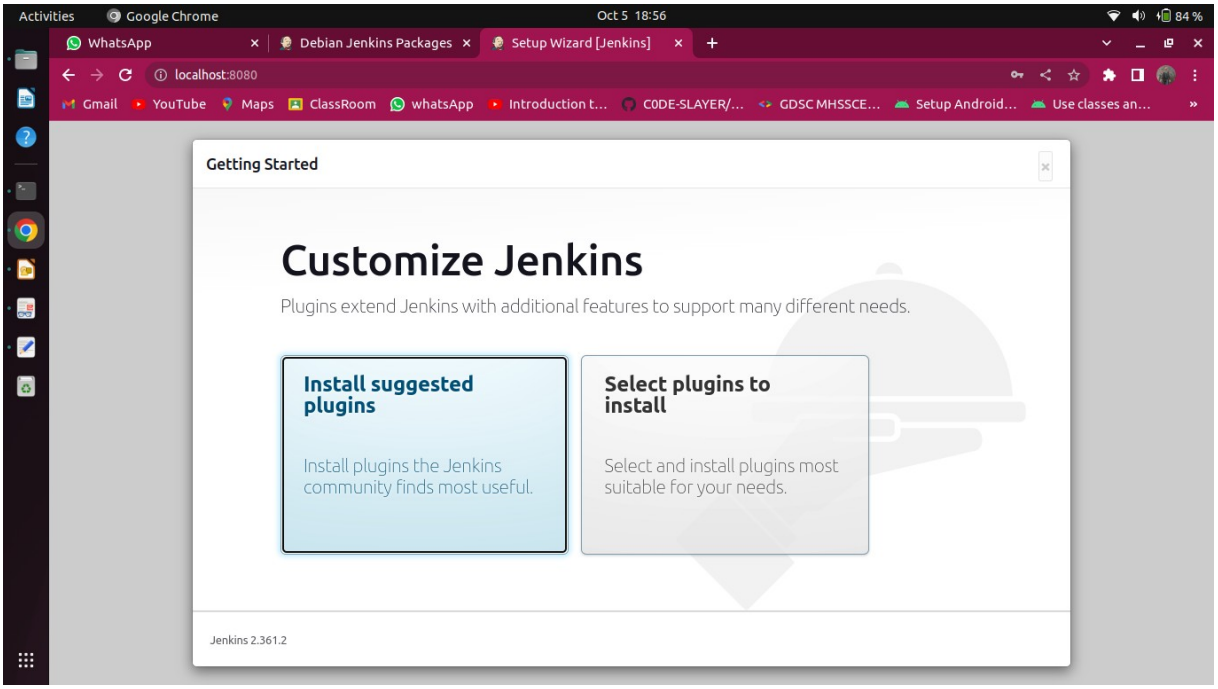
c. Now open any browser and type localhost:8080 to get start with jenkins in my case the url is 13.232.140.91:8080 and we are here on login page of jenkins



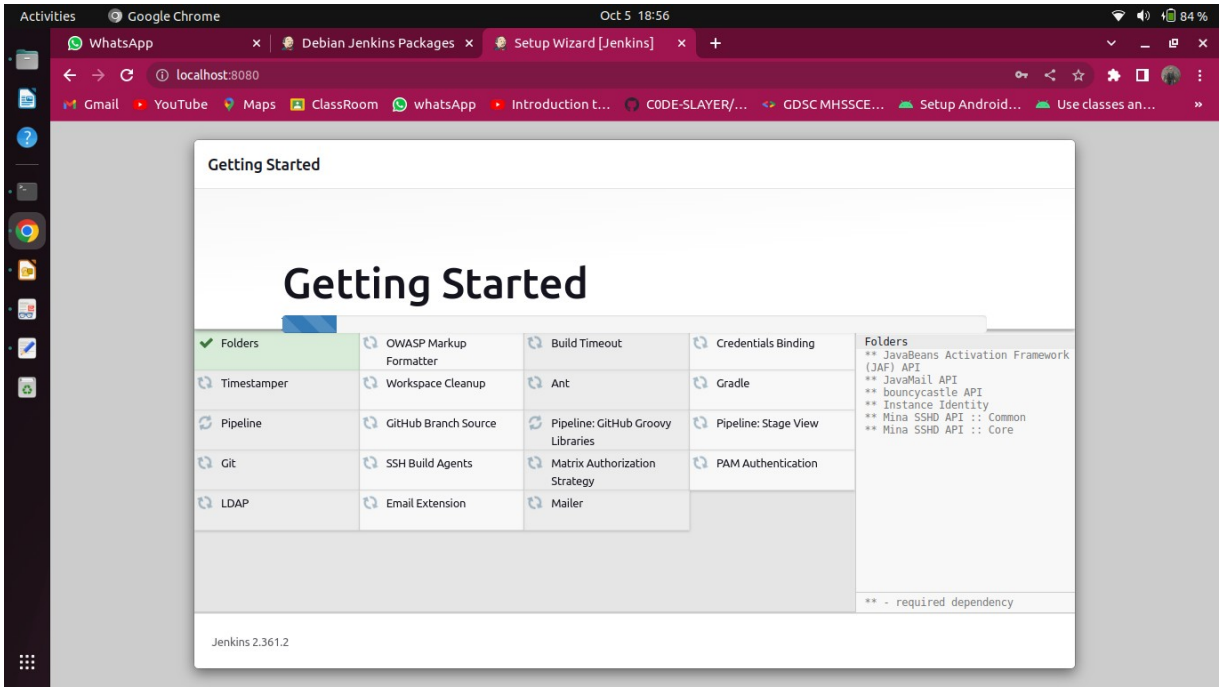
d. Now go back to your terminal and run the command to get the password “sudo cat `/var/lib/jenkins/secrets/initialAdminPassword`” and copy the password and paste it then click on continue

```
hanzala@hanzala-Inspiron-3542:~$ sudo cat /var/lib/jenkins/secrets/initialAdminP
assword
796383ceabc84052837ba2ea5ea7e14d
hanzala@hanzala-Inspiron-3542:~$
```

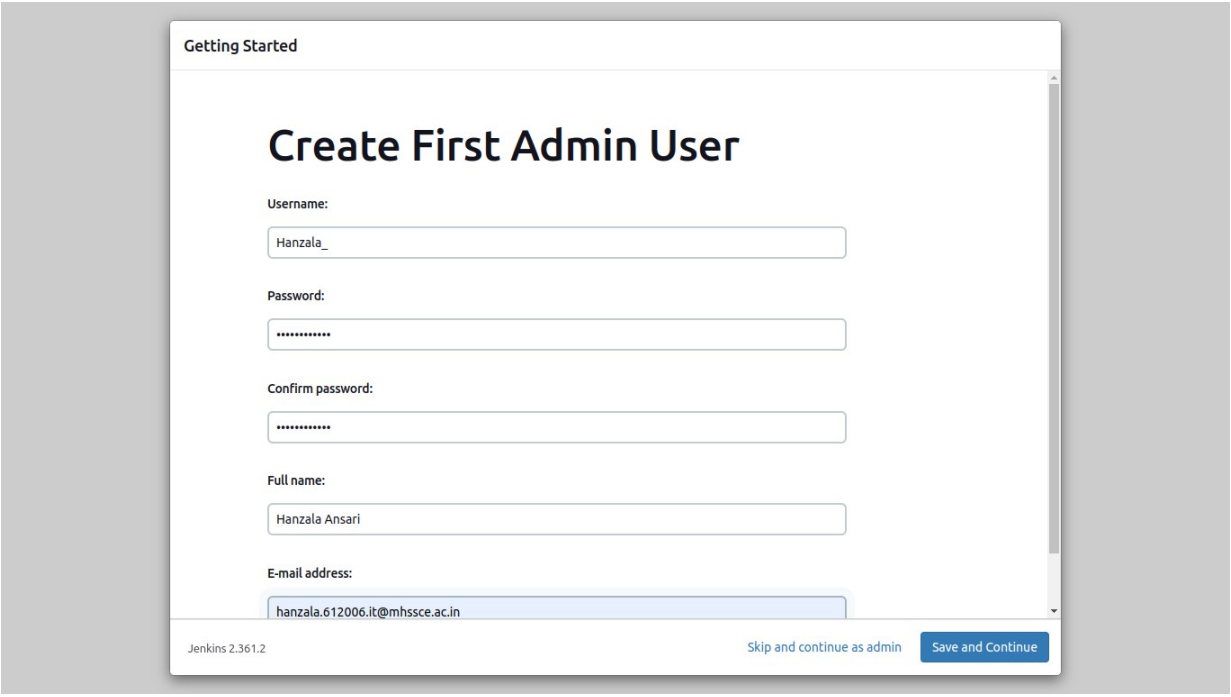
e. Select install suggested plugins



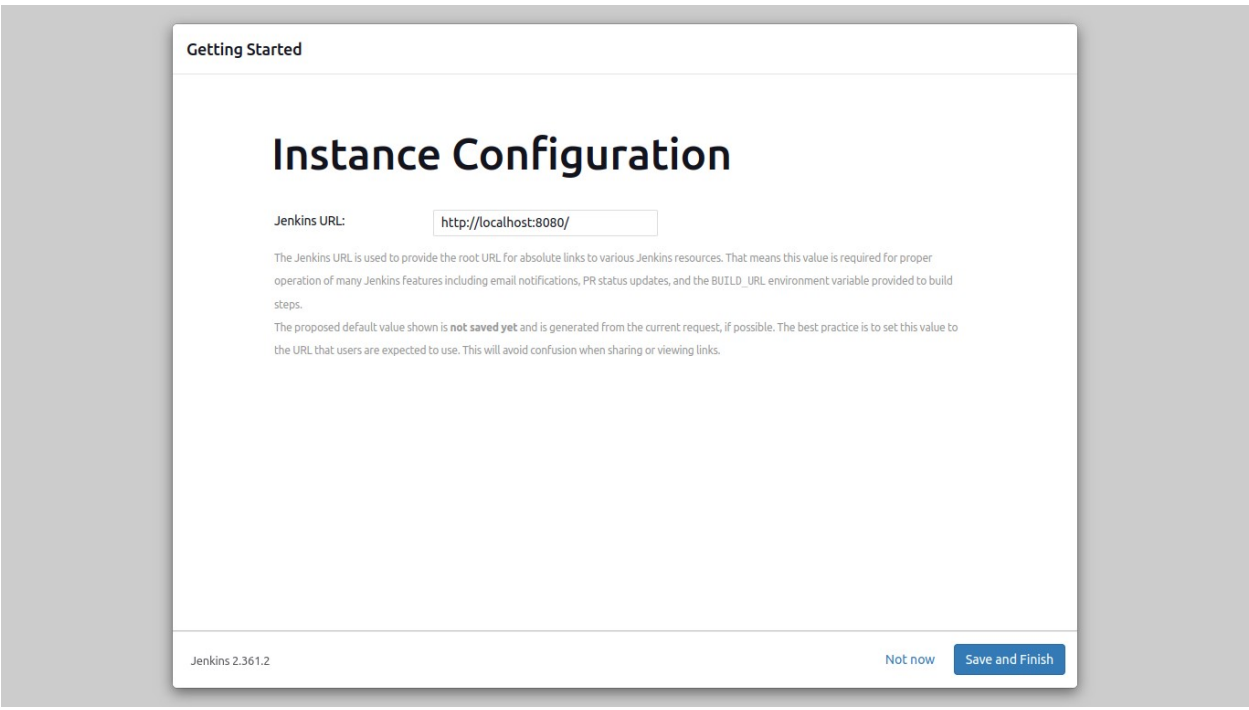
f. Let the installation of all plugins fine



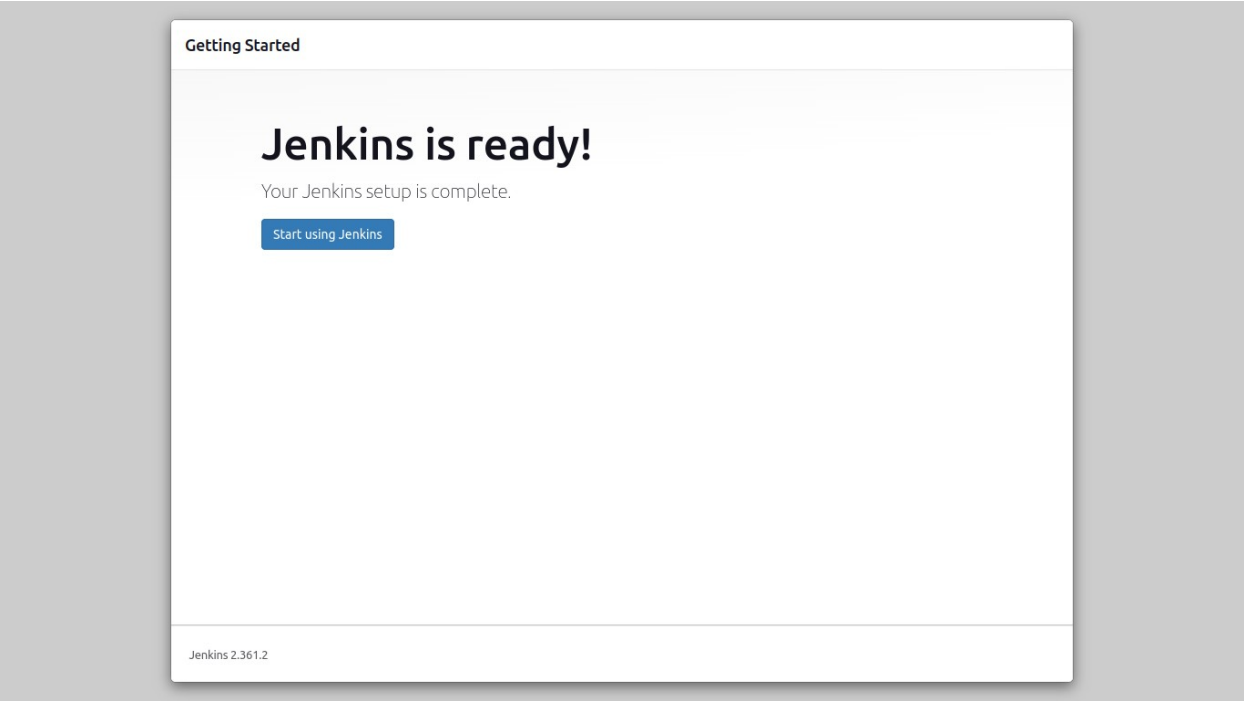
g. After the installation of plugins select a username, password, your full name and email



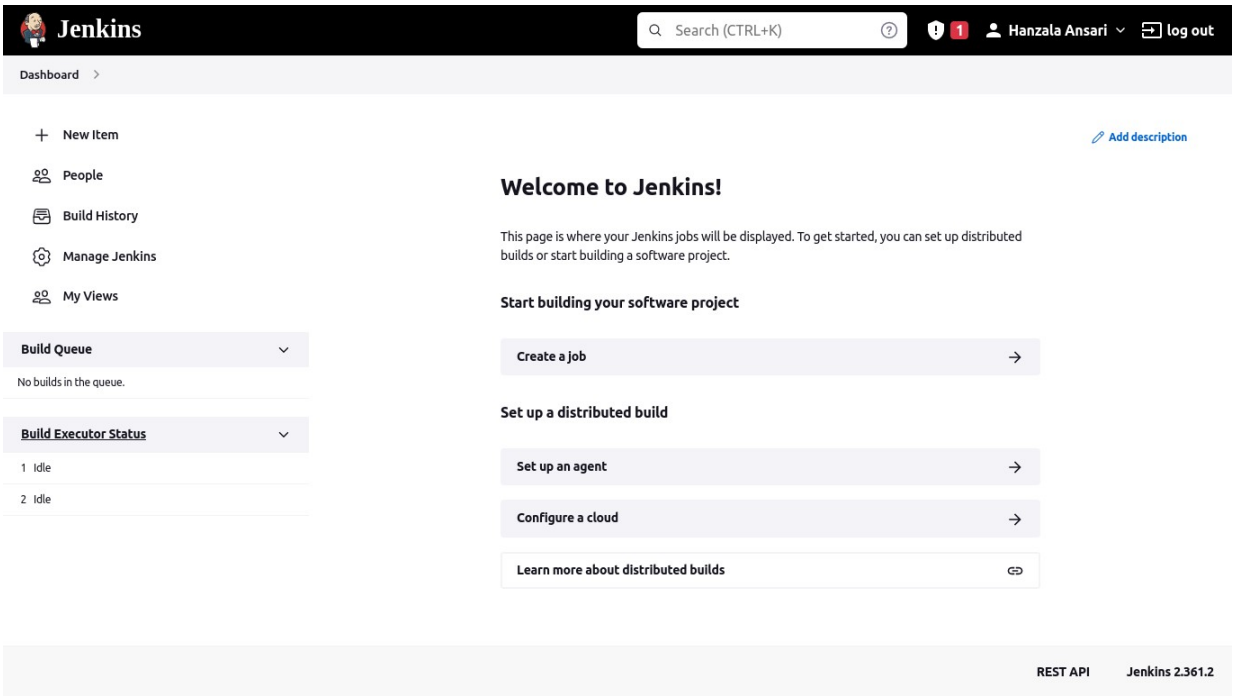
h. Just click save and finish to continue



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: Hanzala Ansari
Roll NO. 612006

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:

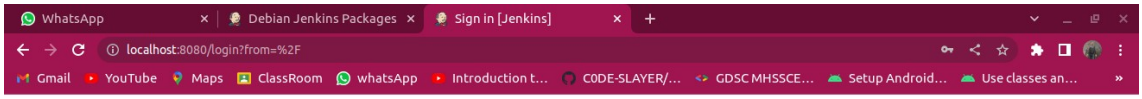
a. "build integration" - using GitHub to trigger builds
b. "authentication integration" - using GitHub as the source of authentication information to secure a Jenkins instance.

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.

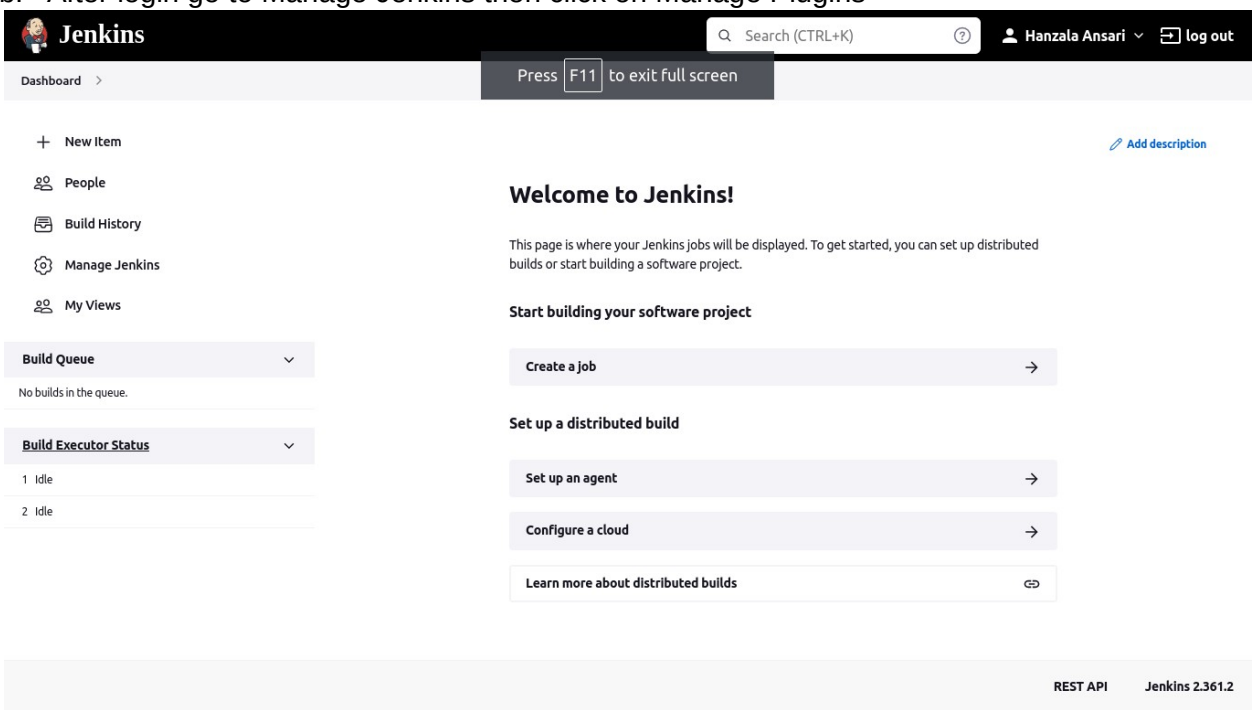
Authenticating with GitHub:
Using the GitHub Authentication plugin it is possible to use GitHub's own authentication scheme for implementing authentication in your Jenkins instance.

Steps:

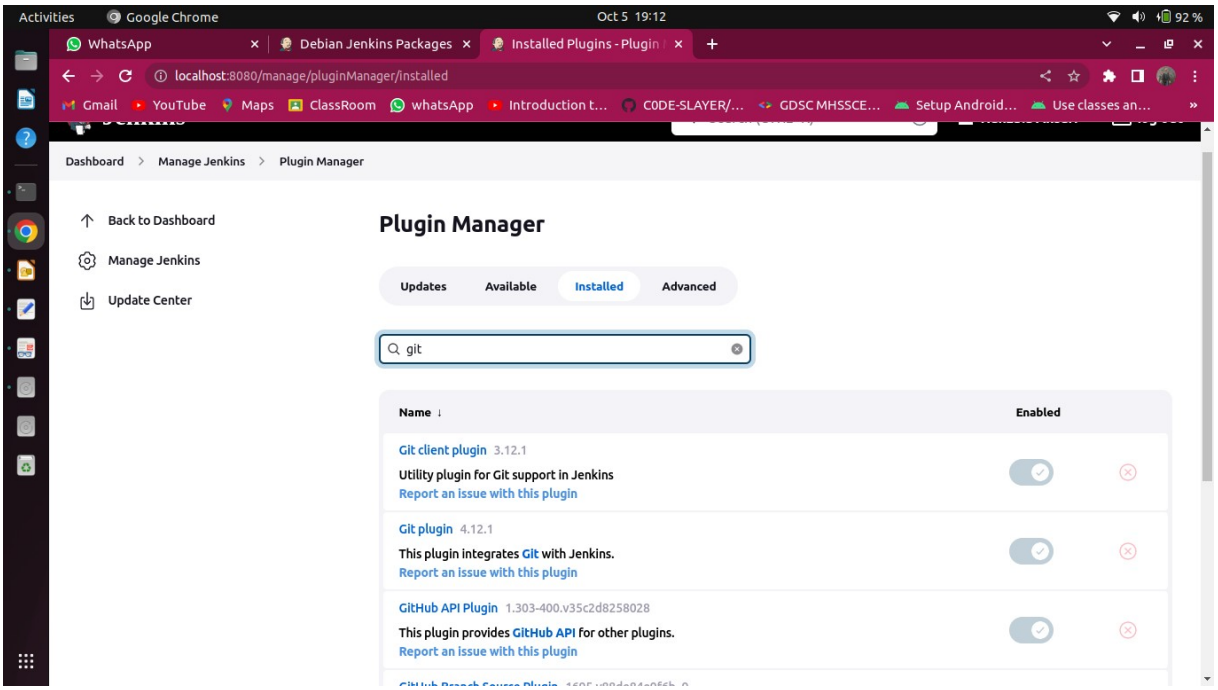
a. Fire Up your terminal and type "sudo service jenkins start" to start jenkins server and go to localhost:8080 in my case it will be 13.232.140.91:8080 and login to your account



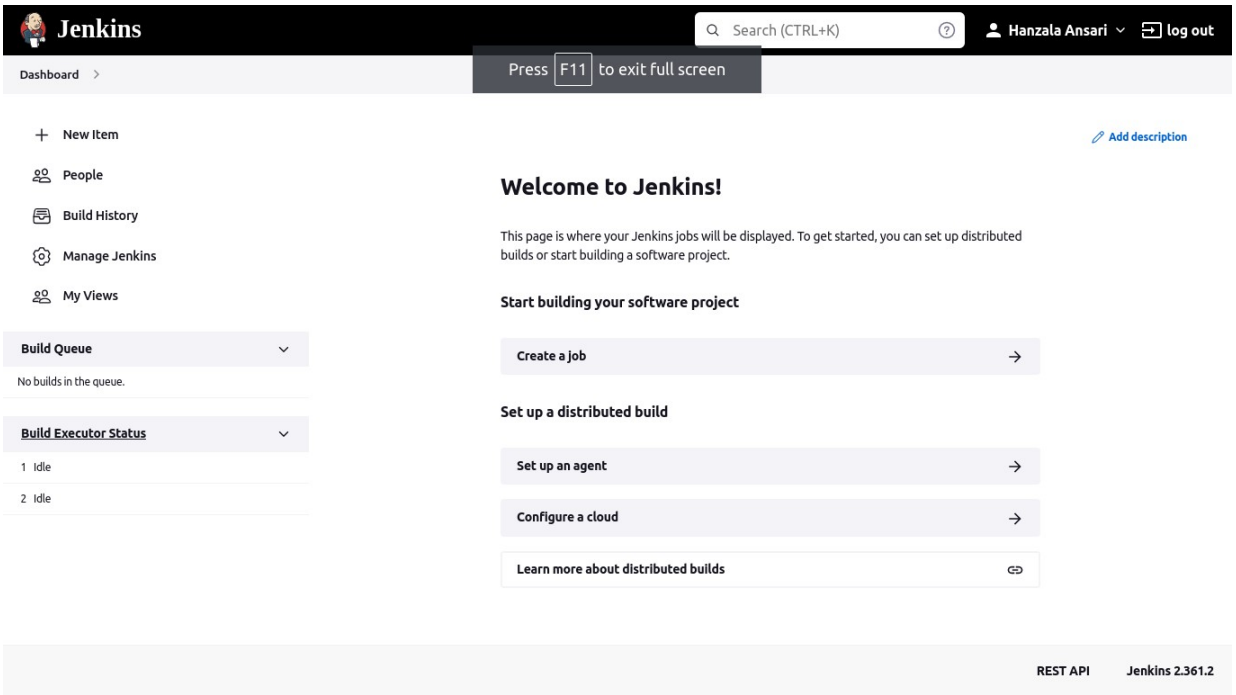
b. After login go to Manage Jenkins then click on Manage Plugins



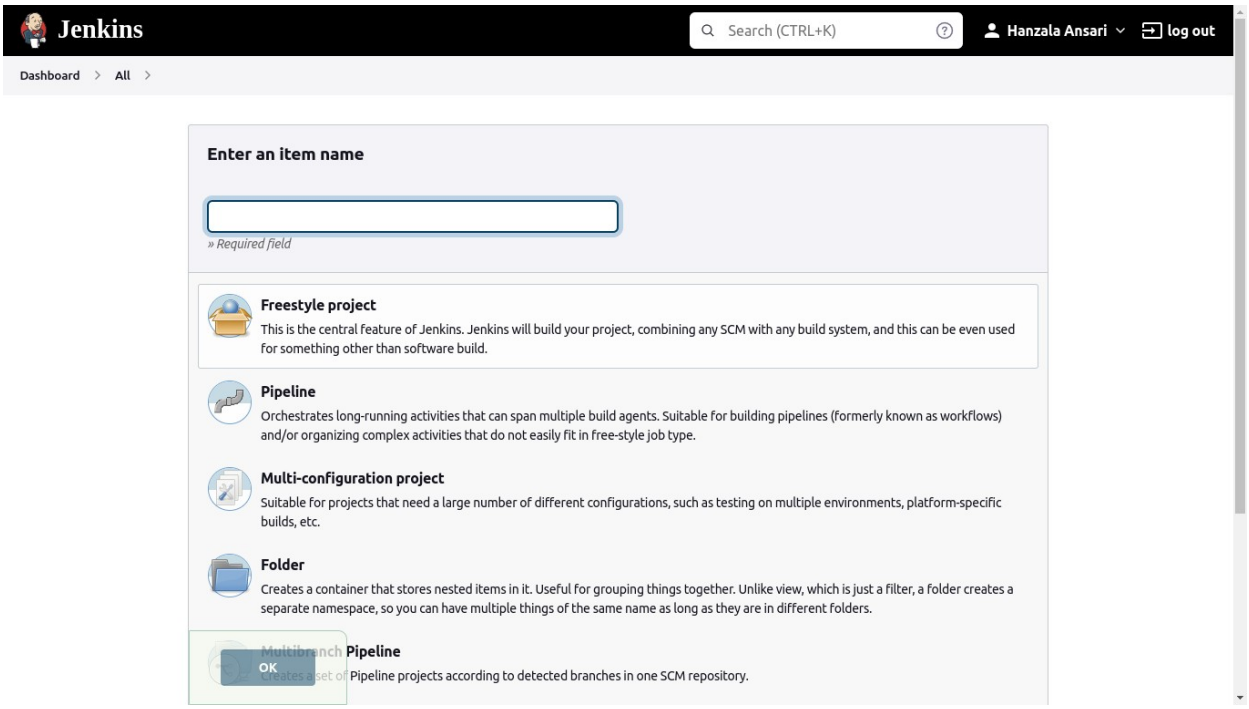
c. Then head to the Installed tab and search for git and see if it is installed or not if it is installed so continue and if not then head to Available and install it. I have it so im not install it again



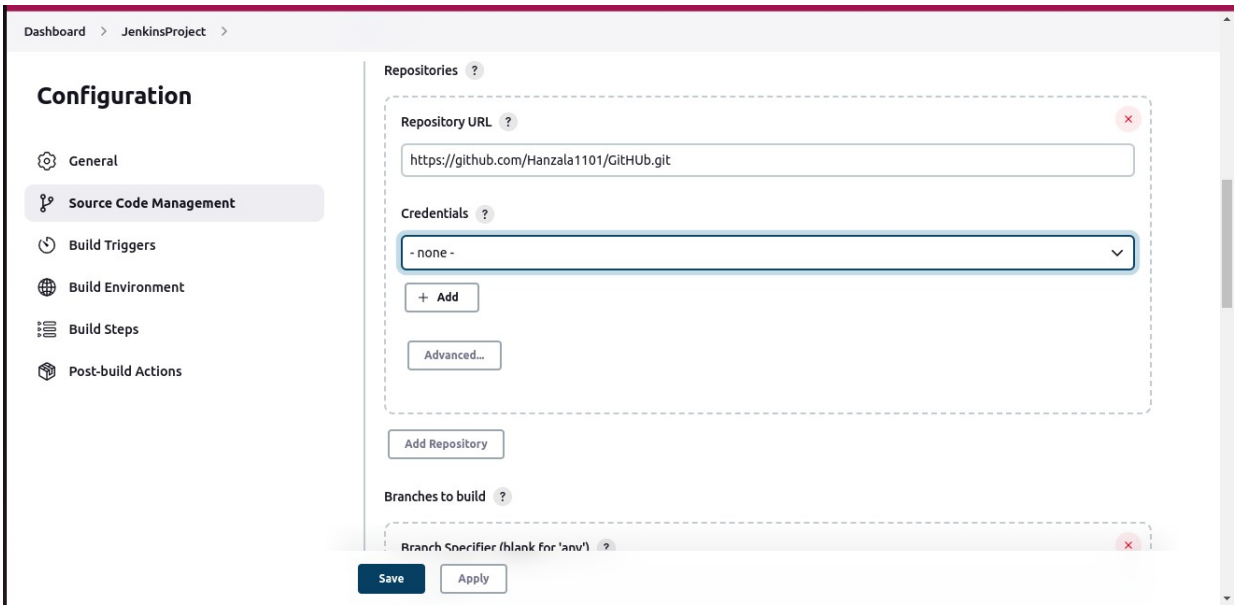
d. Go to dashboard and click on New Item



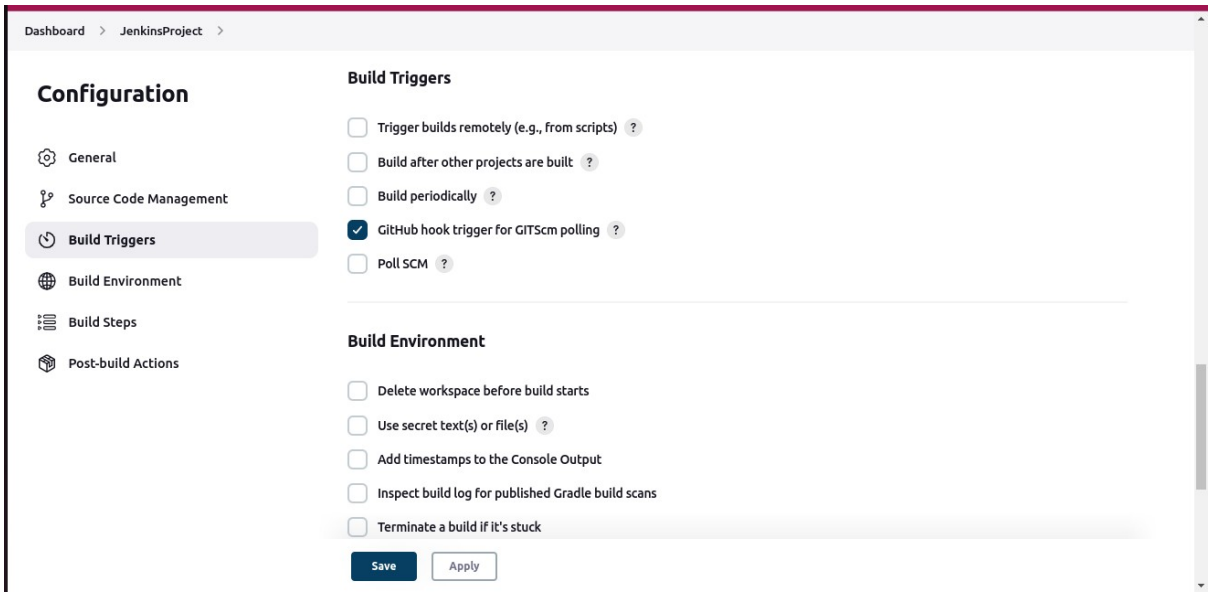
e. Select a name for your project and select Freestyle project. Click on ok button



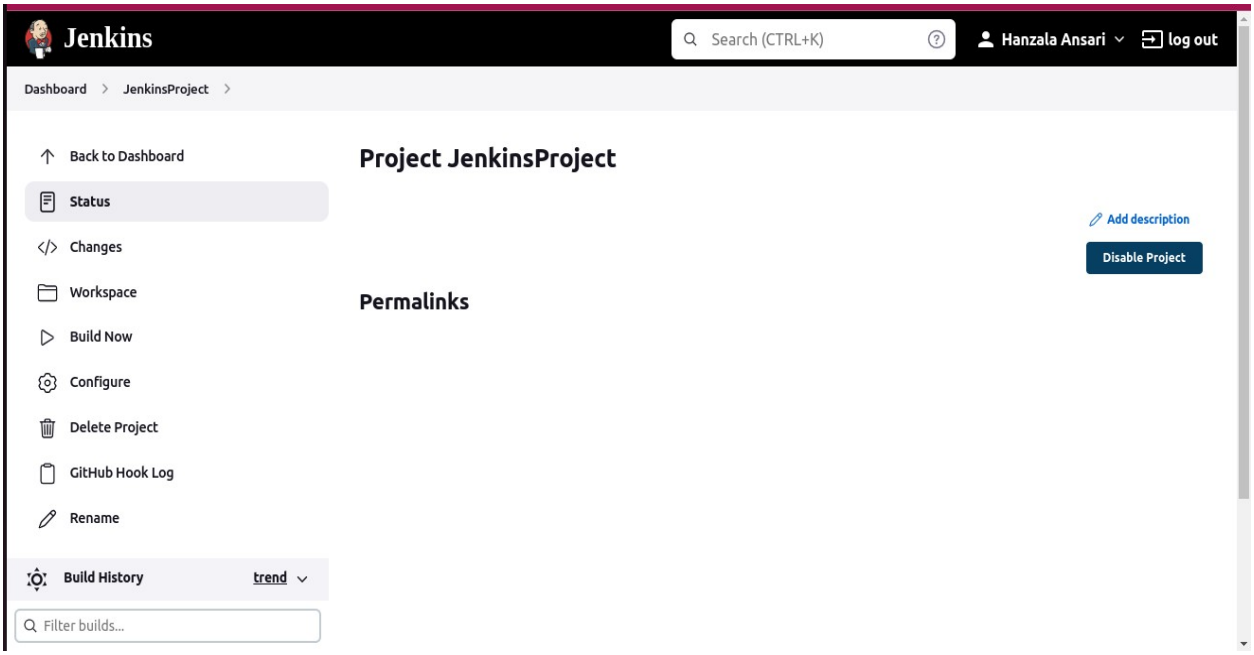
f. Now head to Source Code Management and select git. Provide the github repo link in Repository URL



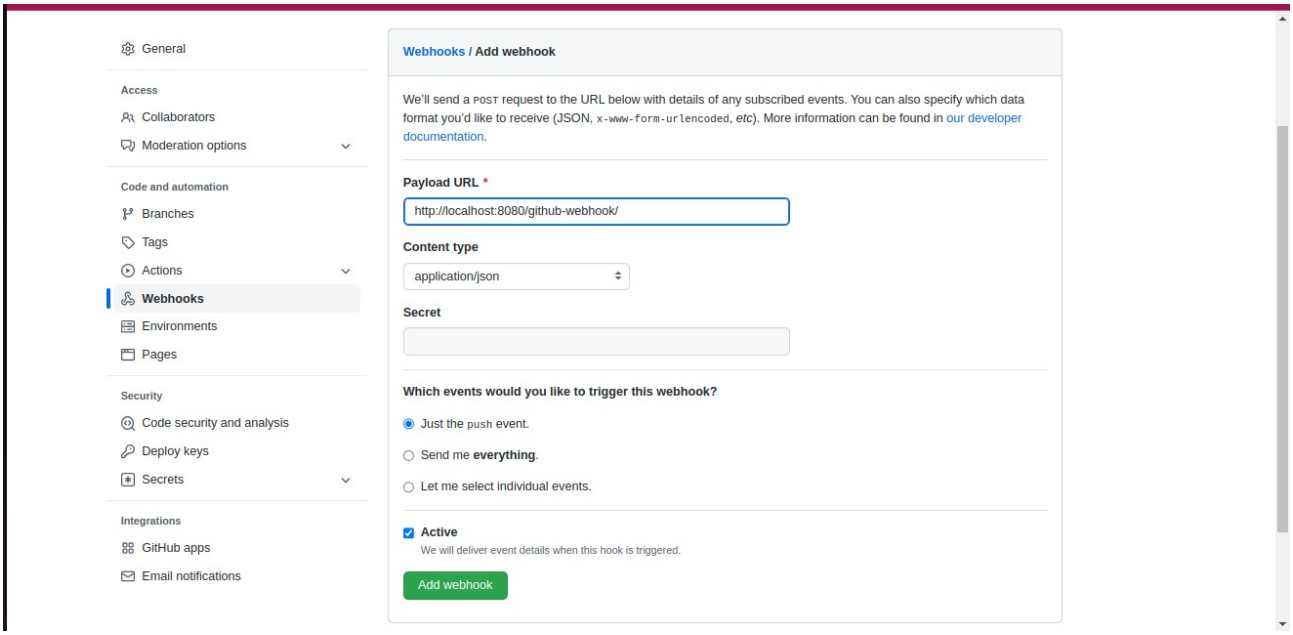
g. Now head toBuild Triggers and select "GitHub hook trigger for GITScm polling" and hit save



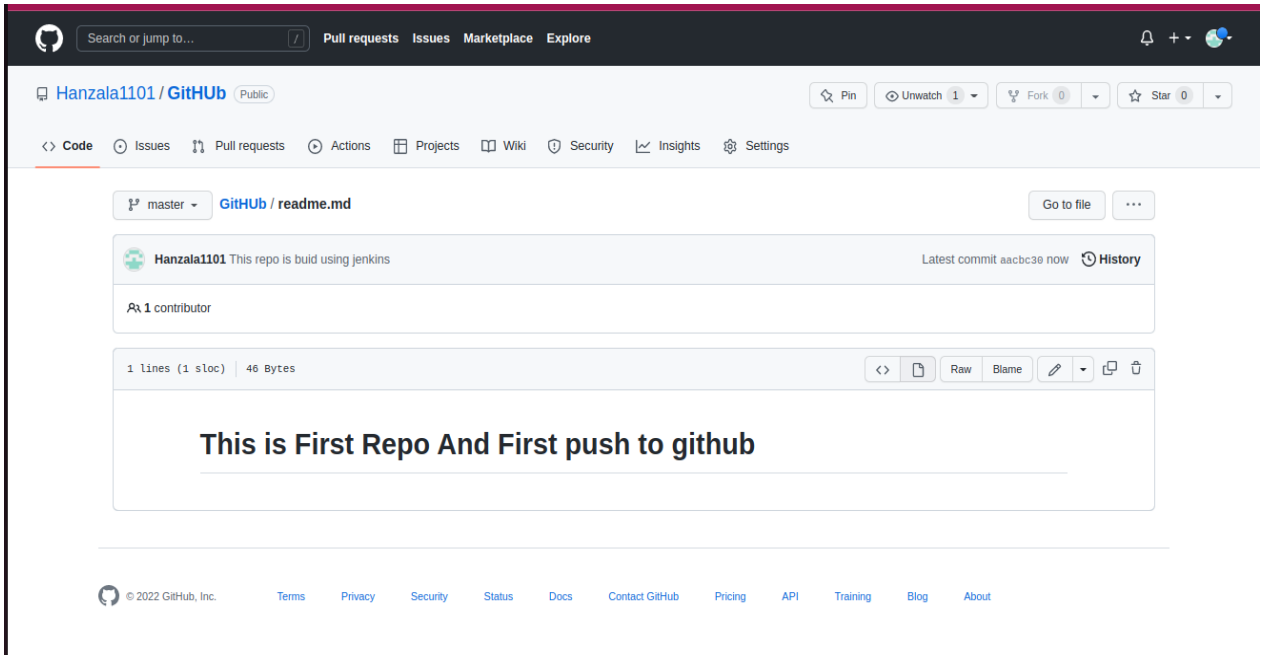
h. Well done we have integrate git to jenkins



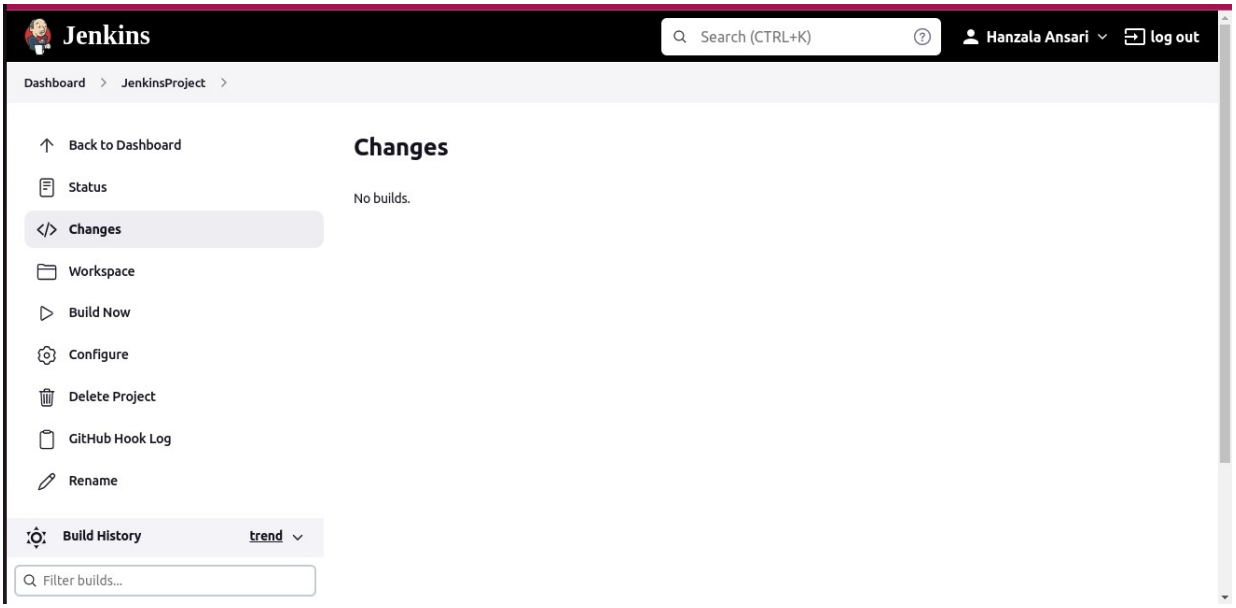
i. Now head to your repo > settings > Web hook > add new webhook. Put jenkins url http://localhost:8080/github-webhook/ and click on add webhook

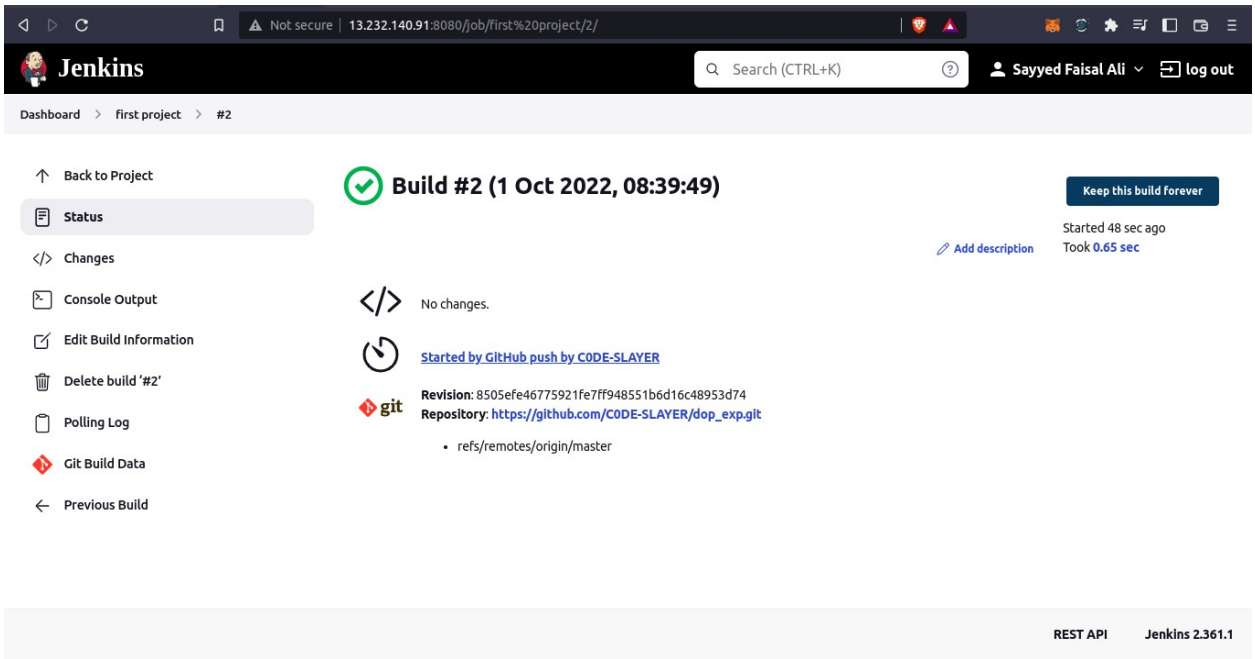


j. Make a commit on your repo



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





Conclusion: We have successfully integrated Github with Jenkins.

Name: Hanzala Ansari
Roll No. 612006

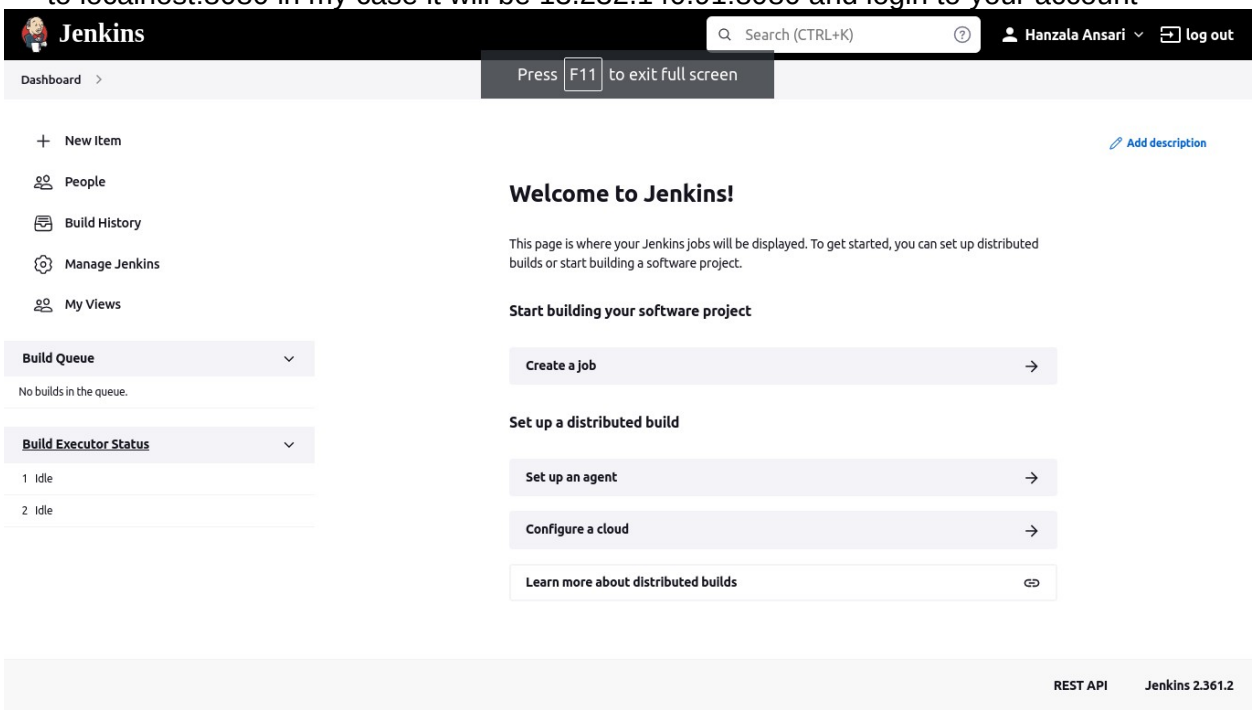
Experiment No. 05

Aim: To perform a pipeline using Jenkins.
Theory:

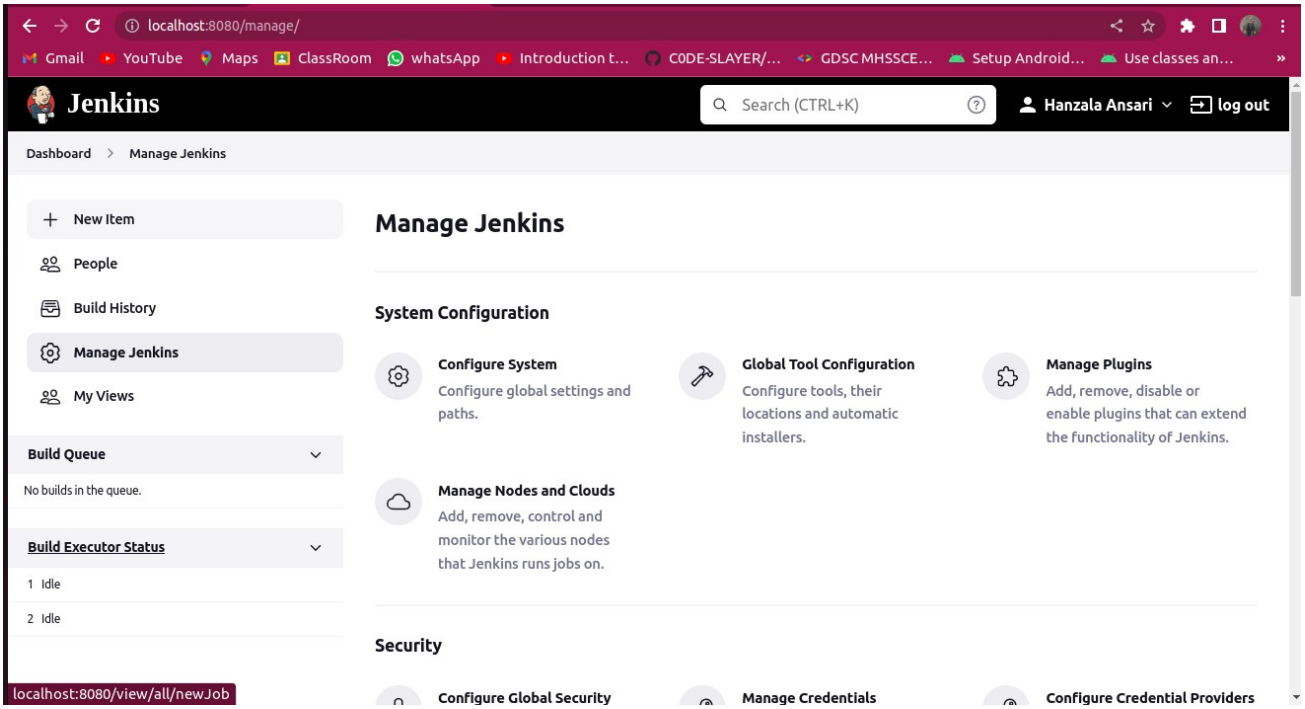
- Jenkins Pipeline (or simply "Pipeline" with a capital "P") is a suite of plugins which supports implementing and integrating continuous delivery pipelines into Jenkins.
- A continuous delivery (CD) pipeline is an automated expression of your process for getting software from version control right through 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:

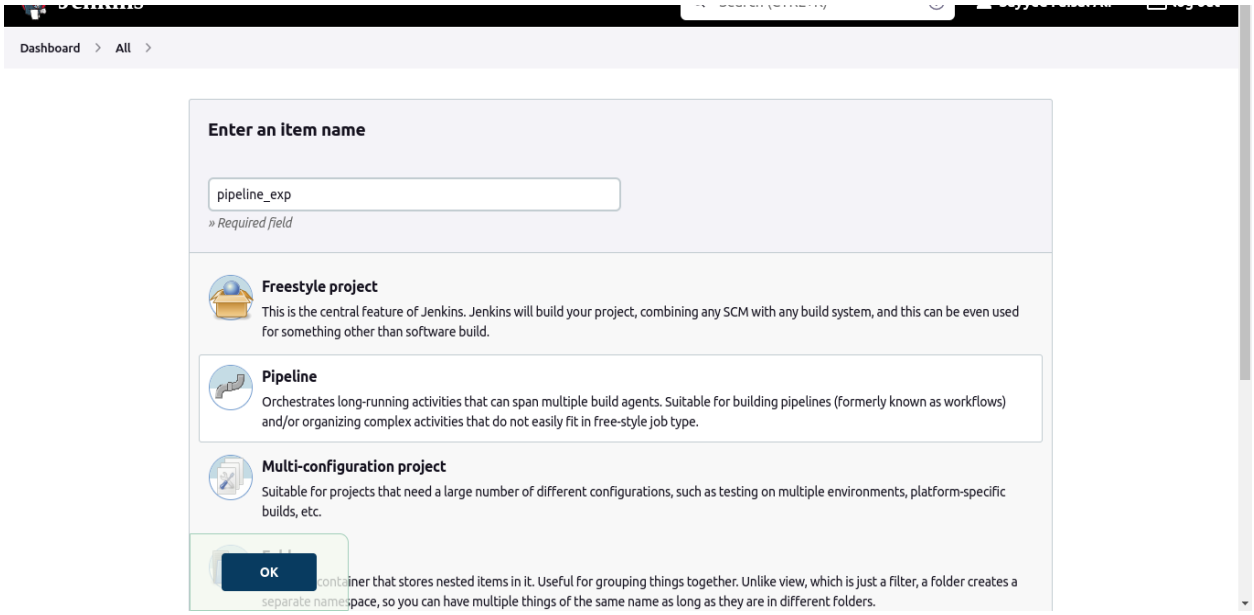
a. Fire Up your terminal and type “sudo service jenkins start” to start jenkins server and go to localhost:8080 in my case it will be 13.232.140.91:8080 and login to your account



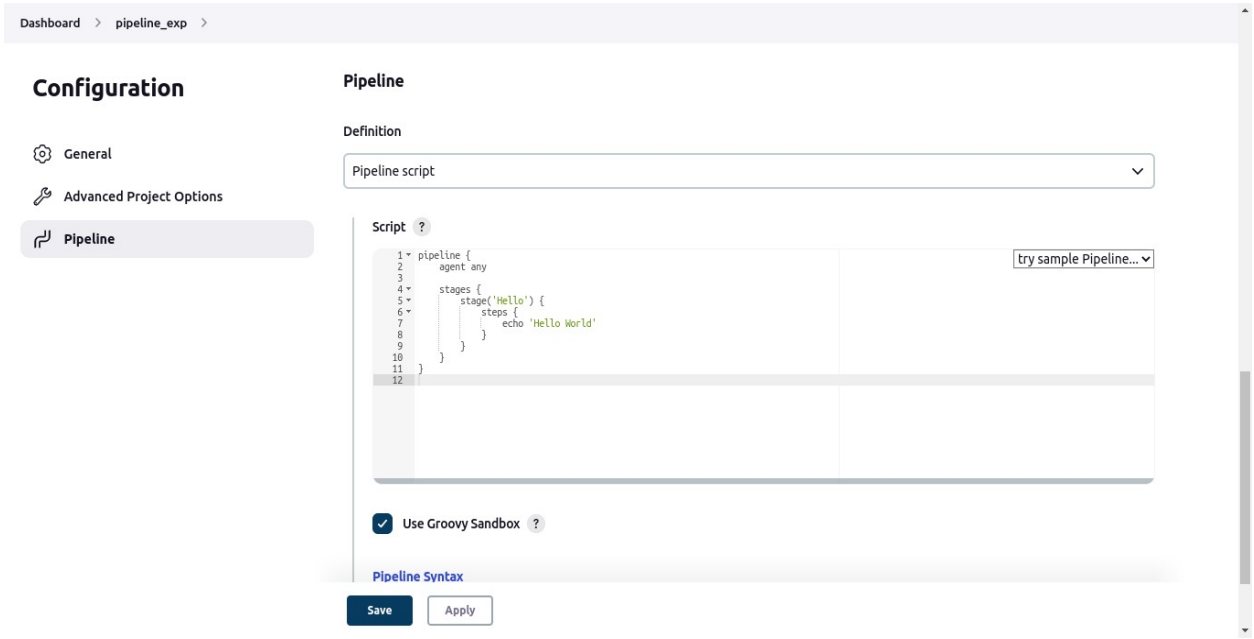
b. After login click on New Item



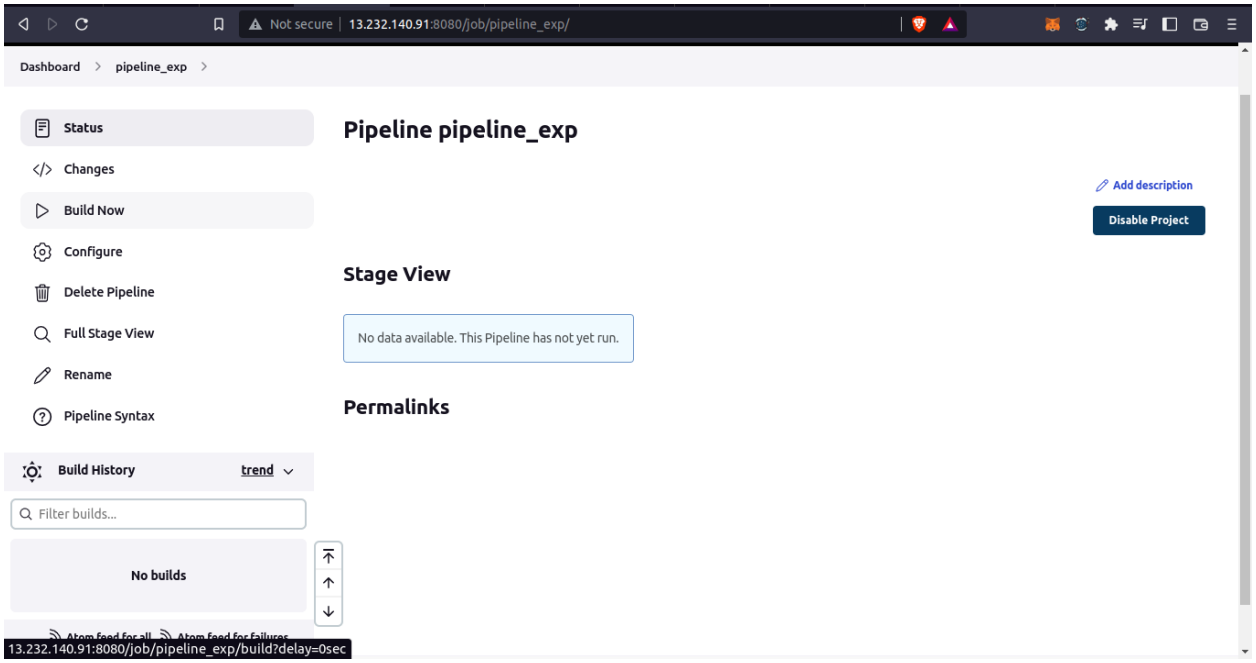
c. Select a name for your project and select Pipeline then click ok button



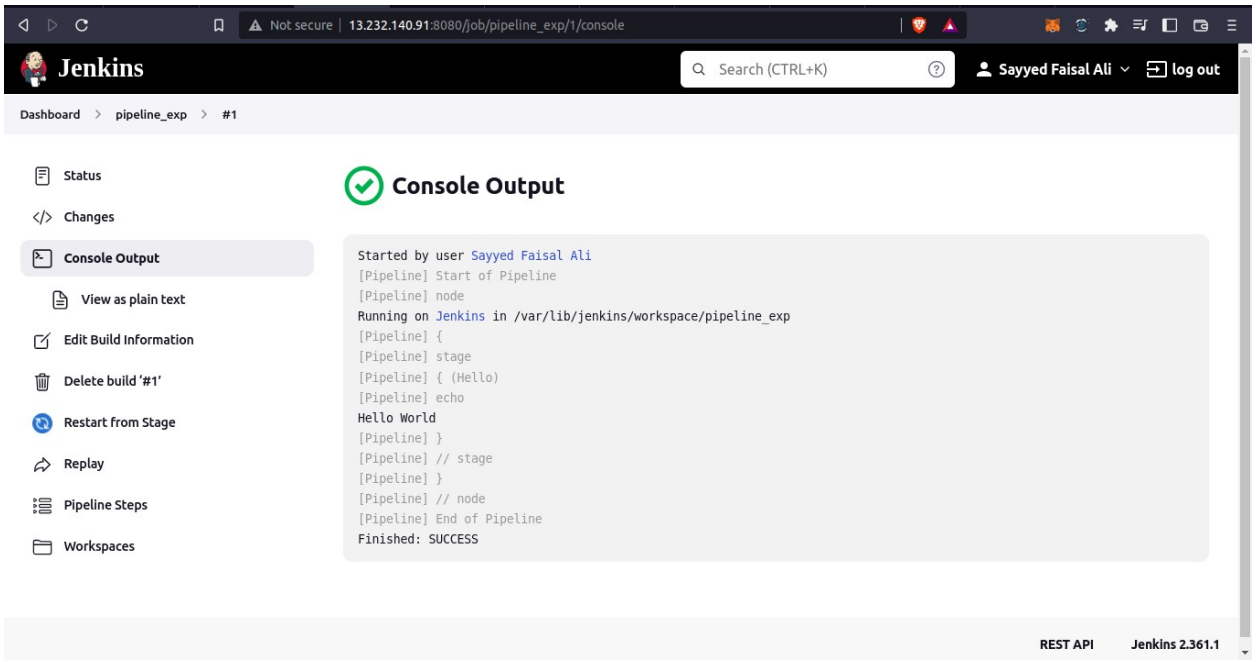
d. Head to Pipeline > Pipeline script > try simple pipeline > Hello World then click on save



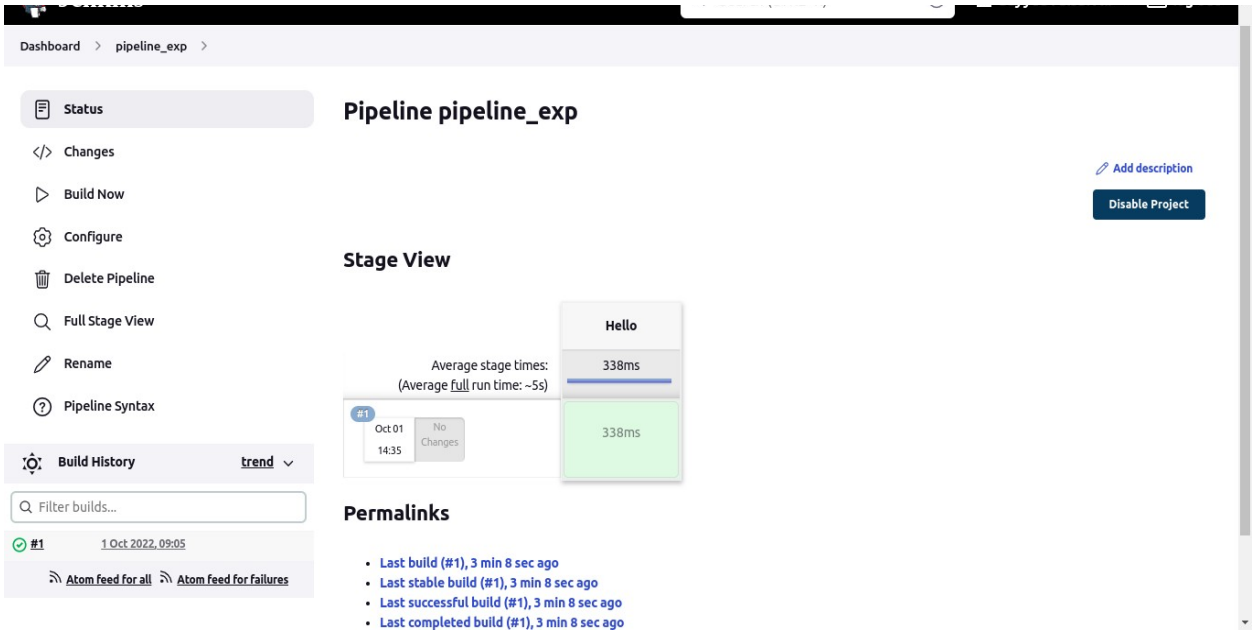
e. Now view the project and click on Build Now button on left sidebar



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: Hanzala Ansari
Roll No. 612006

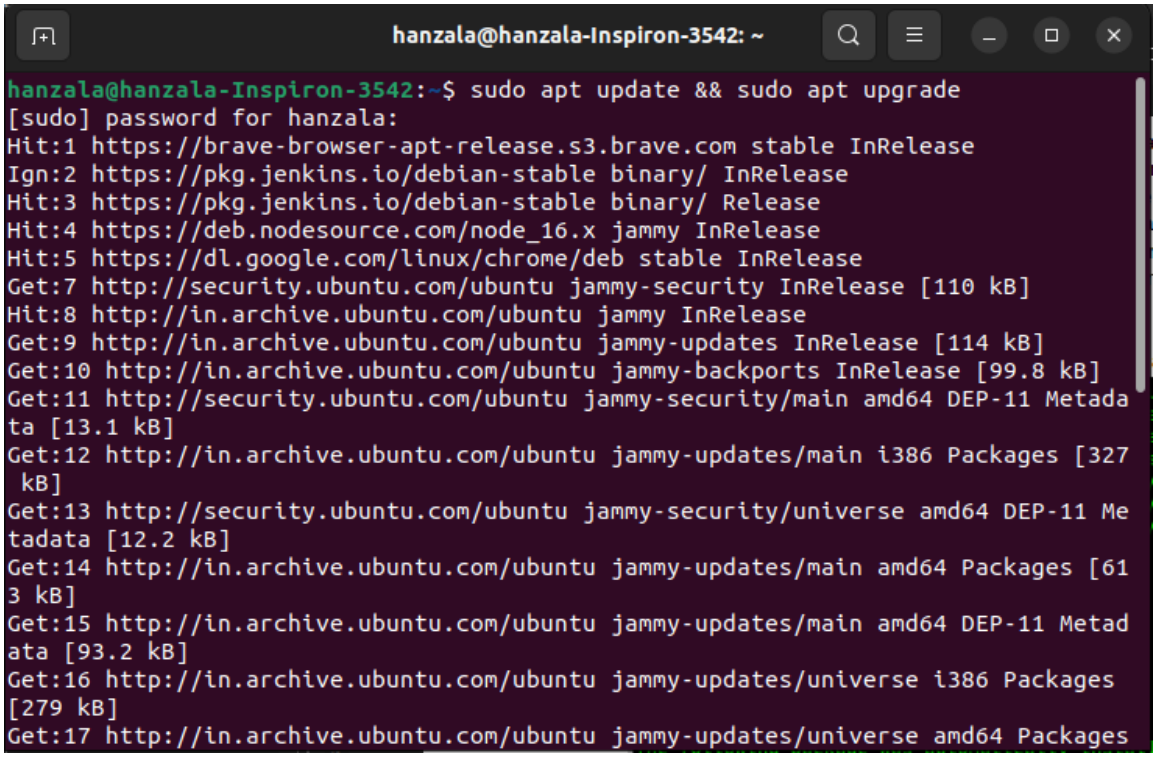
Experiment No. 06

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

```
hanzala@hanzala-Inspiron-3542: ~
hanzala@hanzala-Inspiron-3542:~$ curl -fsSL https://get.docker.com -o get-docker
.sh
hanzala@hanzala-Inspiron-3542:~$ sh get-docker.sh
# Executing docker install script, commit: 4f282167c425347a931ccfd95cc91fab041d4
14f
+ sudo -E sh -c apt-get update -qq >/dev/null
+ sudo -E sh -c DEBIAN_FRONTEND=noninteractive apt-get install -y -qq apt-transp
ort-https ca-certificates curl >/dev/null
+ sudo -E sh -c mkdir -p /etc/apt/keyrings && chmod -R 0755 /etc/apt/keyrings
+ sudo -E sh -c curl -fsSL "https://download.docker.com/linux/ubuntu/gpg" | gpg
--dearmor --yes -o /etc/apt/keyrings/docker.gpg
gpg: WARNING: unsafe ownership on homedir '/home/hanzala/.gnupg'
+ 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/docker.gpg] ht
tps://download.docker.com/linux/ubuntu jammy stable" > /etc/apt/sources.list.d/d
ocker.list
+ sudo -E sh -c apt-get update -qq >/dev/null
+ sudo -E sh -c DEBIAN_FRONTEND=noninteractive apt-get install -y -qq --no-insta
ll-recommends docker-ce docker-ce-cli containerd.io docker-compose-plugin docker
-scan-plugin >/dev/null
+ version_gte 20.10
+ [ -z  ]
+ return 0
+ sudo -E sh -c DEBIAN_FRONTEND=noninteractive apt-get install -y -qq docker-ce-
```

```
hanzala@hanzala-Inspiron-3542: ~
 Version:           20.10.18
 API version:       1.41
 Go version:        go1.18.6
 Git commit:        b40c2f6
 Built:             Thu Sep  8 23:11:43 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 23:09:30 2022
  OS/Arch:          linux/amd64
  Experimental:     false
 containerd:
  Version:          1.6.8
  GitCommit:        9cd3357b7fd7218e4aec3eae239db1f68a5a6ec6
 runc:
  Version:          1.1.4
  GitCommit:        v1.1.4-0-g5fd4c4d
```

```
hanzala@hanzala-Inspiron-3542: ~
 runc:
  Version:          1.1.4
  GitCommit:        v1.1.4-0-g5fd4c4d
 docker-init:
  Version:          0.19.0
  GitCommit:        de40ad0

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

To run Docker as a non-privileged user, consider setting up the
Docker daemon in rootless mode for your user:

    dockerd-rootless-setuptool.sh install

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


To run the Docker daemon as a fully privileged service, but granting non-root
users access, refer to https://docs.docker.com/go/daemon-access/

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

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

```
hanzala@hanzala-Inspiron-3542:~$ sudo service docker start
hanzala@hanzala-Inspiron-3542:~$ docker --version
Docker version 20.10.18, build b40c2f6
hanzala@hanzala-Inspiron-3542:~$
```

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

```
hanzala@hanzala-Inspiron-3542: ~
hanzala@hanzala-Inspiron-3542:~$ 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/

hanzala@hanzala-Inspiron-3542:~$
```

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

```
hanzala@hanzala-Inspiron-3542:~$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED         SIZE
hello-world   latest    feb5d9fea6a5   12 months ago   13.3kB
hanzala@hanzala-Inspiron-3542:~$
```

Conclusion: We successfully installed and configured docker on our machine

Name: Hanzala Ansari
Roll no: 612006

Experiment no. 07

Aim: Build, deploy and manage web applications on Docker

Steps to build and deploy and manage web application:

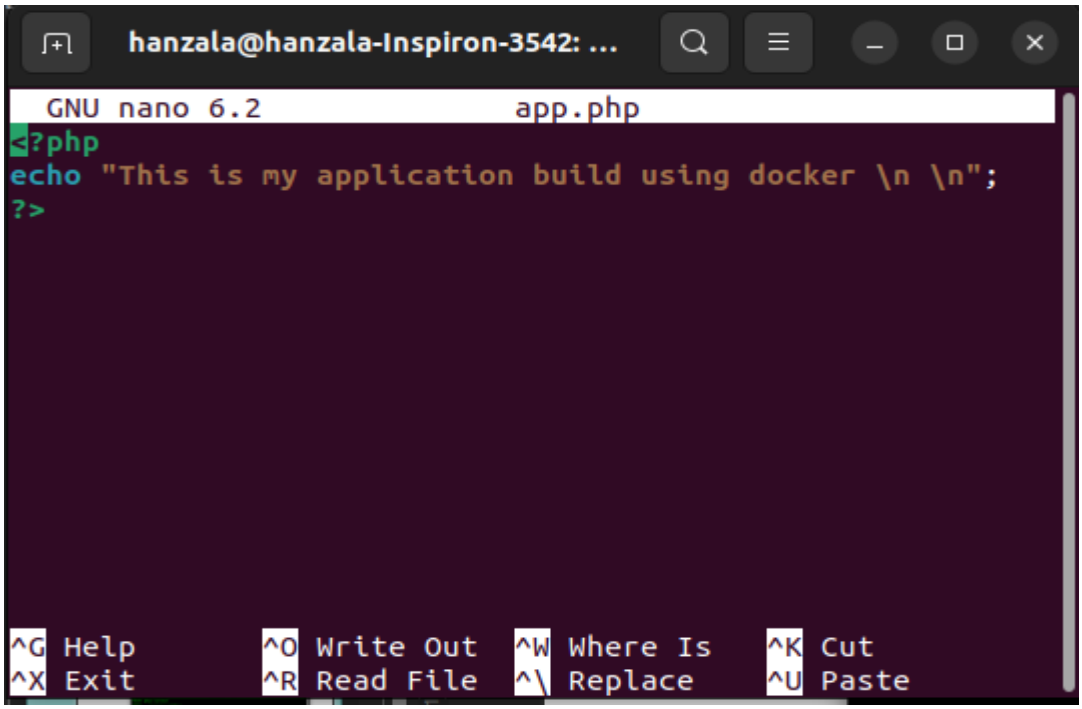
a. Fire up your terminal and run “sudo apt update && sudo apt upgrade”

```
hanzala@hanzala-Inspiron-3542: ~
hanzala@hanzala-Inspiron-3542:~$ sudo apt update && sudo apt upgrade
[sudo] password for hanzala:
Hit:1 https://brave-browser-apt-release.s3.brave.com stable InRelease
Ign:2 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:3 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:4 https://deb.nodesource.com/node_16.x jammy InRelease
Hit:5 https://dl.google.com/linux/chrome/deb stable InRelease
Get:7 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
Hit:8 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Get:9 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease [114 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease [99.8 kB]
Get:11 http://security.ubuntu.com/ubuntu jammy-security/main amd64 DEP-11 Metada
ta [13.1 kB]
Get:12 http://in.archive.ubuntu.com/ubuntu jammy-updates/main i386 Packages [327
 kB]
Get:13 http://security.ubuntu.com/ubuntu jammy-security/universe amd64 DEP-11 Me
tadata [12.2 kB]
Get:14 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [61
3 kB]
Get:15 http://in.archive.ubuntu.com/ubuntu jammy-updates/main amd64 DEP-11 Metad
ata [93.2 kB]
Get:16 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe i386 Packages
[279 kB]
Get:17 http://in.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 Packages
```

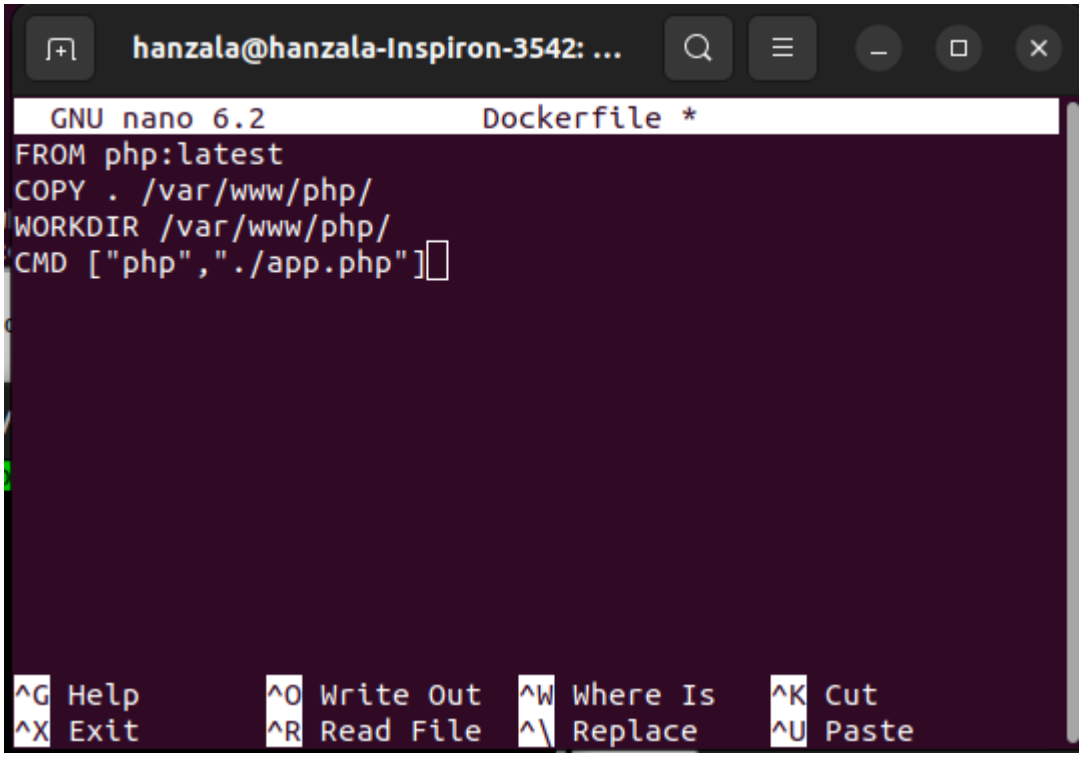
b. Create a dir using mkdir and run “touch app.php Dockerfile” in side the dir you have created

```
hanzala@hanzala-Inspiron-3542:~$ mkdir docker_web_app
hanzala@hanzala-Inspiron-3542:~$ cd docker_web_app/
hanzala@hanzala-Inspiron-3542:~/docker_web_app$ touch app.php Dockerfile
hanzala@hanzala-Inspiron-3542:~/docker_web_app$ ls
app.php  Dockerfile
hanzala@hanzala-Inspiron-3542:~/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

```
hanzala@hanzala-Inspiron-3542: ~/docker_web_app
hanzala@hanzala-Inspiron-3542:~/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
bd159e379b3b: Pull complete
1e83b070fd97: Pull complete
e7793be89e9c: Pull complete
4220e0c03377: Pull complete
77f71a584e44: Pull complete
a18ae08838ec: Pull complete
ae54e0606adf: Pull complete
ce021f7728b0: Pull complete
021585421ec5: Pull complete
Digest: sha256:9020e8fb37438a26a5890e765e5157d3d34078ee8006de259431afc0dc10e96a
Status: Downloaded newer image for php:latest
 ---> aa24992dd020
Step 2/4 : COPY . /var/www/php/
 ---> b0bf19147ccb
Step 3/4 : WORKDIR /var/www/php/
 ---> Running in 61bc7ddfd7b3
Removing intermediate container 61bc7ddfd7b3
 ---> d8f514ffa9c2
Step 4/4 : CMD ["php","./app.php"]
 ---> Running in 865c52f6fc0d
Removing intermediate container 865c52f6fc0d
 ---> 1d7369efbb27
Successfully built 1d7369efbb27
Successfully tagged web_app:latest
hanzala@hanzala-Inspiron-3542:~/docker_web_app$
```

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

```
hanzala@hanzala-Inspiron-3542:~/docker_web_app$ sudo docker images
REPOSITORY    TAG       IMAGE ID       CREATED              SIZE
web_app       latest    1d7369efbb27   About a minute ago   484MB
php           latest    aa24992dd020   8 hours ago          484MB
hello-world   latest    feb5d9fea6a5   12 months ago        13.3kB
hanzala@hanzala-Inspiron-3542:~/docker_web_app$
```

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

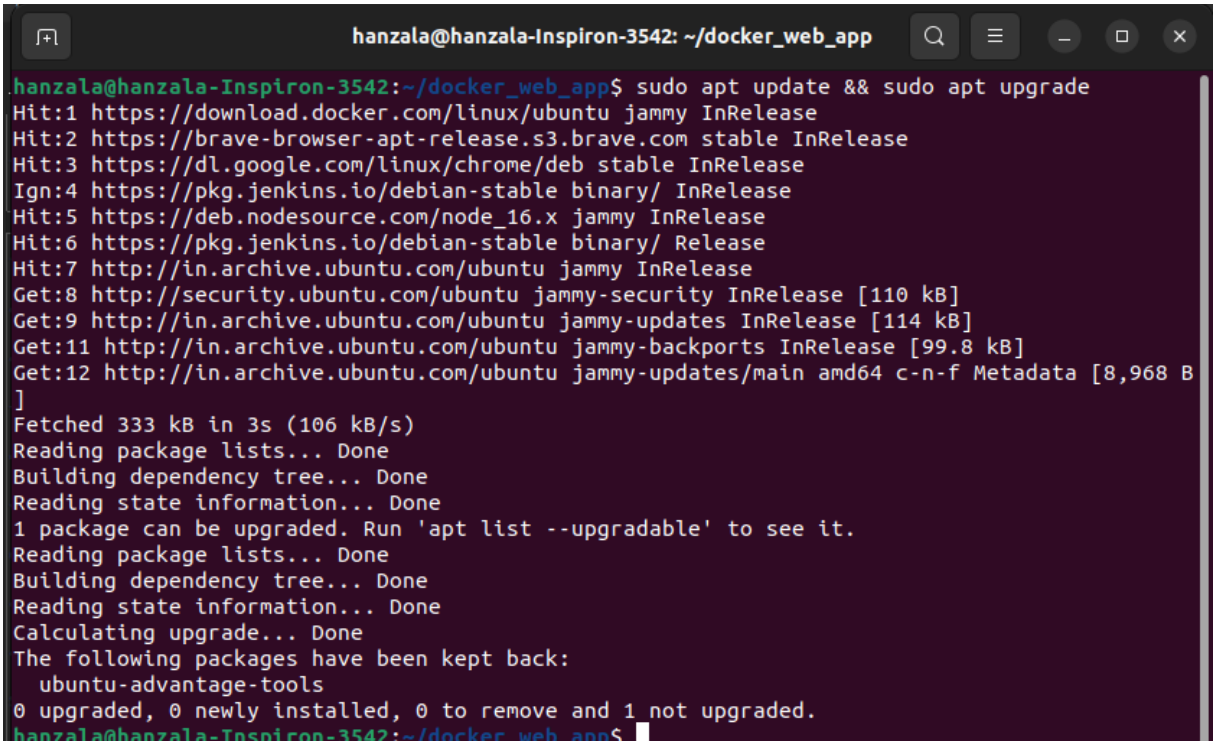
Name: Hanzala Ansari
Roll no: 612006

Experiment no. 08

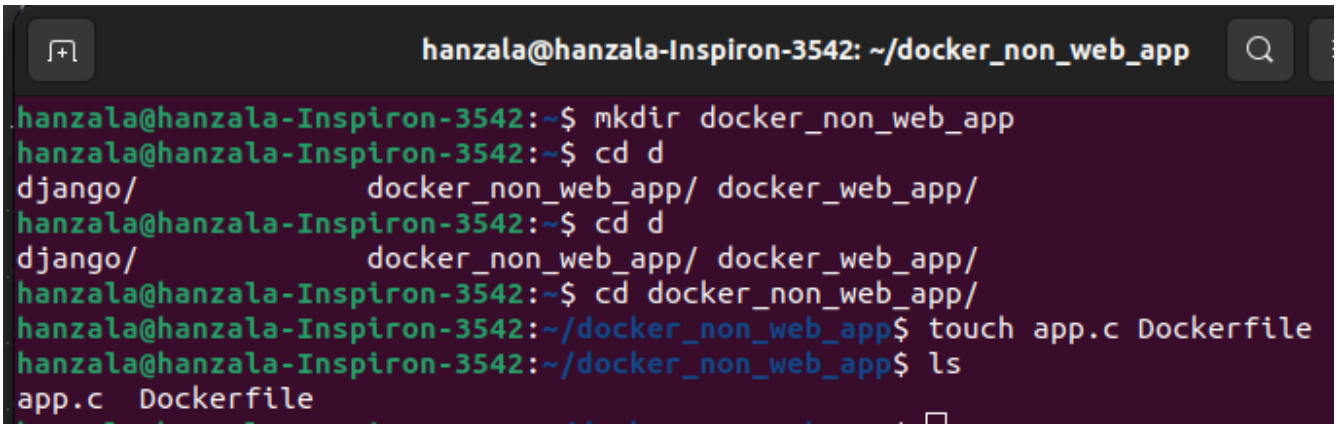
Aim: Build, deploy and manage non web applications on Docker

Steps to build and deploy and manage non web application:

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



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



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

```
hanzala@hanzala-Inspiron-3542: ~/docker_non_web_ap
  GNU nano 6.2                                app.c *
#include <stdio.h>

int main() {
  printf("This is my Non web application built using ");
  return 0;
}

^G Help        ^O Write Out   ^W Where Is    ^K Cut         ^T Exe
^X Exit        ^R Read File   ^\ Replace     ^U Paste       ^J Jus
```

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

```
hanzala@hanzala-Inspiron-3542: ~/docke...
  GNU nano 6.2                    Dockerfile *
FROM gcc:latest
COPY . /docker_non_web_app
WORKDIR /docker_non_web_app
RUN gcc -o app app.c
CMD ["./app"]

^G Help      ^O Write Out^W Where Is ^K Cut      ^T Execute
^X Exit      ^R Read File^\ Replace  ^U Paste    ^J Justify
```

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

```
hanzala@hanzala-Inspiron-3542: ~/docker_non_web_...
hanzala@hanzala-Inspiron-3542:~/docker_non_web_app$ sudo docker build . -t
 non_web_app
[sudo] password for hanzala:
Sending build context to Docker daemon  3.072kB
Step 1/5 : FROM gcc:latest
latest: Pulling from library/gcc
23858da423a6: Pull complete

326f452ade5c: Pull complete

a42821cd14fb: Pull complete

8471b75885ef: Pull complete

8ffa7aaef404: Pull complete

0dbd3d90c419: Pull complete

c8360ea64db4: Pull complete

65bba72ff1de: Pull complete

a615a380ba22: Pull complete

Digest: sha256:51c4c4a790c8c79f733f3dc3c99d494cff636dc0b569d13cb654ba28df9
86362
Status: Downloaded newer image for gcc:latest
```

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

```
hanzala@hanzala-Inspiron-3542:~/docker_non_web_app$ sudo docker images
[sudo] password for hanzala:
REPOSITORY    TAG       IMAGE ID       CREATED          SIZE
non_web_app   latest    811ec27e046a   5 minutes ago    1.27GB
web_app       latest    1d7369efbb27   46 minutes ago   484MB
php           latest    aa24992dd020   9 hours ago      484MB
gcc           latest    feaa519db663   3 weeks ago      1.27GB
hello-world   latest    feb5d9fea6a5   12 months ago    13.3kB
hanzala@hanzala-Inspiron-3542:~/docker_non_web_app$ sudo docker run non_we
b_app
This is my Non web application built using hanzala@hanzala-Inspiron-3542:~
```

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