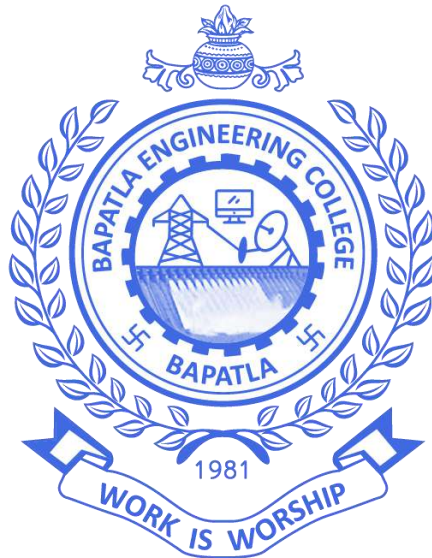


**Bapatla Engineering College :: Bapatla**  
**(Autonomous)**

**Department of Computer Science and Engineering**



**Lab Manual**  
**IV / IV B. Tech.**  
**DevOps Lab**  
**(20CSL701/SOC5)**

## **List of Experiments**

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## Experiment 1

### 1. Demonstrate working with Git Shell commands.

#### Git Shell Commands:

##### **git config**

This command sets the author name and email address respectively to be used with your commits.

syntax:-

```
git config --global user.name "[name]"
```

```
git config --global user.email "[email address]"
```

##### **git init**

This command is used to start a new repository.

syntax:-

```
git init
```

##### **git clone**

This command is used to obtain a repository from an existing URL.

syntax:-

```
git clone [url]
```

##### **git add**

This command adds a file to the staging area.

syntax:-

```
git add [file]
```

This command adds one or more to the staging area.

syntax:-

`git add .`

### **git commit**

This command records or snapshots the file permanently in the version history.

syntax:-

`git commit -m "[your message]"`

### **git diff**

This command shows the file differences which are not yet staged.

syntax:-

`git diff`

This command shows the differences between the two branches mentioned.

syntax:-

`git diff [first branch] [second branch]`

### **git reset**

This command unstages the file, but it preserves the file contents.

syntax:-

`git reset [file]`

### **git status**

This command lists all the files that have to be committed.

syntax:-

`git status`

### **git log**

This command is used to list the version history for the current branch.

syntax:-

`git log`

### **git show**

This command shows the metadata and content changes of the specified commit.

syntax:-

`git show [commit]`

### **git branch**

This command lists all the local branches in the current repository.

syntax:-

`git branch`

This command creates a new branch.

syntax:-

`git branch [branch name]`

This command deletes the feature branch.

syntax:-

`git branch -d [branch name]`

### **git checkout**

This command is used to switch from one branch to another.

syntax:-

`git checkout [branch name]`

This command creates a new branch and also switches to it.

syntax:-

`git checkout -b [branch name]`

**git merge**

This command merges the specified branch's history into the current branch.

syntax:-

```
git merge [branch name]
```

**git remote**

This command is used to connect your local repository to the remote server.

syntax:-

```
git remote [variable name] [remote server link]
```

**git push**

This command sends the committed changes of master branch to your remote repository.

syntax:-

```
git push [variable name] master
```

This command sends the branch commits to your remote repository.

syntax:-

```
git push [variable name] [branch name]
```

**git pull**

This command fetches and merges changes on the remote server to your working directory.

syntax:-

```
git pull [repository link]
```

## git stash

This command temporarily stores all the modified tracked files.

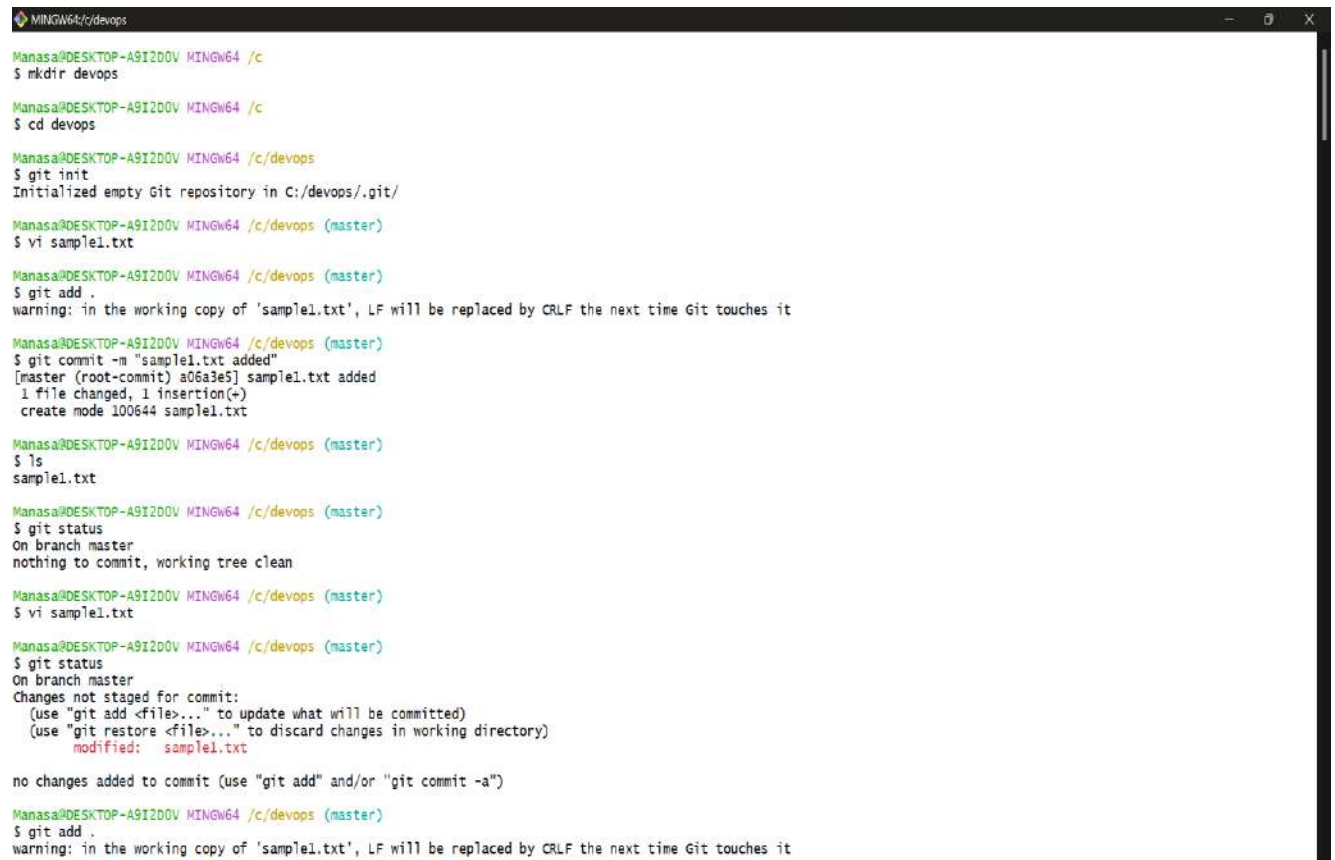
syntax:-

git stash

git stash pop

syntax:-

This command restores the most recently stashed files.



```
Manasa@DESKTOP-A9I2D0V MINGW64 /c
$ mkdir devops

Manasa@DESKTOP-A9I2D0V MINGW64 /c
$ cd devops

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops
$ git init
Initialized empty Git repository in C:/devops/.git/

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ vi sample1.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git add .
warning: in the working copy of 'sample1.txt', LF will be replaced by CRLF the next time Git touches it

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git commit -m "sample1.txt added"
[master (root-commit) a06a3e5] sample1.txt added
1 file changed, 1 insertion(+)
create mode 100644 sample1.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ ls
sample1.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git status
On branch master
nothing to commit, working tree clean

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ vi sample1.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   sample1.txt

no changes added to commit (use "git add" and/or "git commit -a")

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git add .
warning: in the working copy of 'sample1.txt', LF will be replaced by CRLF the next time Git touches it
```

```
Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git add
warning: in the working copy of 'sample1.txt', LF will be replaced by CRLF the next time Git touches it

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        modified:   sample1.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git commit -m "sample1 file is commit"
[master 1b70577] sample1 file is commit
1 file changed, 1 insertion(+)

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git status
On branch master
nothing to commit, working tree clean

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ mv sample1.txt demo1.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ ls
demo1.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    sample1.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        demo1.txt

no changes added to commit (use "git add" and/or "git commit -a")

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops (master)
$ git log
commit 1b705774757f60f9dd4a84d8de52f1c85b9af358 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:39:16 2023 +0530
```



```
MINGW64/c/devops
Manasa@DESKTOP-AS12D0V MINGW64 /c/devops (master)
$ git log
commit 1b705774757f60f9dd4a84d8de62f1c85b9af358 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:39:16 2023 +0530

    sample1 file is commit

commit a06a3e5d440e00dd1521f47c303d41a7d0786de2
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

Manasa@DESKTOP-AS12D0V MINGW64 /c/devops (master)
$ git add
warning: in the working copy of 'demo1.txt', LF will be replaced by CRLF the next time Git touches it

Manasa@DESKTOP-AS12D0V MINGW64 /c/devops (master)
$ git commit -m "demo1 file is update"
[master beaeed7] demo1 file is update
1 file changed, 0 insertions(+), 0 deletions(-)
rename sample1.txt => demo1.txt (100%)

Manasa@DESKTOP-AS12D0V MINGW64 /c/devops (master)
$ git status
On branch master
nothing to commit, working tree clean

Manasa@DESKTOP-AS12D0V MINGW64 /c/devops (master)
$ git log
commit beaeed73352b75aced73c5d7871187ac642795be (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:41:34 2023 +0530

    demo1 file is update

commit 1b705774757f60f9dd4a84d8de62f1c85b9af358
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:39:16 2023 +0530

    sample1 file is commit

commit a06a3e5d440e00dd1521f47c303d41a7d0786de2
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added
```

```

MINGW64/c/devops
Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git reset 1b705774757f60f9dd4a84d8de62f1c85b9af358
Unstaged changes after reset:
D   sample1.txt

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git log
commit 1b705774757f60f9dd4a84d8de62f1c85b9af358 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:39:16 2023 +0530

    sample1 file is commit

commit a06a3e5d440e00dd1521f47c303d41a7d0786de2
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git reset a06a3e5d440e00dd1521f47c303d41a7d0786de2
Unstaged changes after reset:
D   sample1.txt

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git log
commit a06a3e5d440e00dd1521f47c303d41a7d0786de2 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git status
On branch master
Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    sample1.txt

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

no changes added to commit (use "git add" and/or "git commit -a")

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git add .

```

```

MINGW64/c/devops
Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git add .
warning: in the working copy of 'demol.txt', LF will be replaced by CRLF the next time Git touches it

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        renamed:    sample1.txt -> demol.txt

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git stash
Saved working directory and index state WIP on master: a06a3e5 sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git status
On branch master
nothing to commit, working tree clean

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git stash pop
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   demol.txt

Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    sample1.txt

Dropped refs/stash@{0} (16968c8c7339c732666a2dc2c426a717183a6c78)

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
        new file:   demol.txt

Changes not staged for commit:
  (use "git add/rm <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        deleted:    sample1.txt

```

```

MINGW64/c/devops
Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git stash
Saved working directory and index state WIP on master: a06a3e5 sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git stash clear

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git status
On branch master
nothing to commit, working tree clean

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git branch ranjith

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git checkout ranjith
Switched to branch 'ranjith'

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (ranjith)
$ git status
On branch ranjith
nothing to commit, working tree clean

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (ranjith)
$ git log
commit a06a3e5d440e00dd1521f47c303d41a7d0786de2 (HEAD -> ranjith, master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (ranjith)
$ vi sample2.txt

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (ranjith)
$ git add .
warning: in the working copy of 'sample2.txt', LF will be replaced by CRLF the next time Git touches it

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (ranjith)
$ git commit -m "sample2.txt is created"
[ranjith 3534082] sample2.txt is created
1 file changed, 1 insertion(+)
create mode 100644 sample2.txt

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (ranjith)
$ git log
commit 3534082f0ba2f2e6e4a9bf68b92d1ae546b67fe9 (HEAD -> ranjith)

```

```

MINGW64/c/devops
Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (ranjith)
$ git log
commit 3534082f0ba2f2e6e4a9bf68b92d1ae546b67fe9 (HEAD -> ranjith)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 11:09:18 2023 +0530

    sample2.txt is created

commit a06a3e5d440e00dd1521f47c303d41a7d0786de2 (master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (ranjith)
$ git checkout master
Switched to branch 'master'

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git log
commit a06a3e5d440e00dd1521f47c303d41a7d0786de2 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git merge ranjith
Updating a06a3e5..3534082
Fast-forward
 sample2.txt | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 sample2.txt

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git log
commit 3534082f0ba2f2e6e4a9bf68b92d1ae546b67fe9 (HEAD -> master, ranjith)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 11:09:18 2023 +0530

    sample2.txt is created

commit a06a3e5d440e00dd1521f47c303d41a7d0786de2
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

```

```
Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ git remote add origin https://github.com/ranjith6082/GitTutorialDemo.git

Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ git remote -v
origin https://github.com/ranjith6082/GitTutorialDemo.git (fetch)
origin https://github.com/ranjith6082/GitTutorialDemo.git (push)

Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ git remote
origin

Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ git push origin master
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (6/6), 536 bytes | 536.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/ranjith6082/GitTutorialDemo.git
* [new branch] master -> master

Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ vi sample3.txt

Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ git add .
warning: in the working copy of 'sample3.txt', LF will be replaced by CRLF the next time Git touches it

Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ git commit -m "sample3.txt is created"
[master 66046d7] sample3.txt is created
1 file changed, 1 insertion(+)
create mode 100644 sample3.txt

Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ git status
On branch master
nothing to commit, working tree clean

Manasa@DESKTOP-A912D0V MINGW64 /c/devops (master)
$ git log
commit 66046d786b793aed83f37f6ff57dd80204289f99 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 11:26:17 2023 +0530

    sample3.txt is created
```

```

MINGW64/c/devops
Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git log
commit 66046d786b793aed83f37f8ff57dd80204289f99 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 11:26:17 2023 +0530

    sample3.txt is created

commit 3534082f0ba2f2e5e4a9bf68b92dae546b67fe9 (origin/master, ranjith)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 11:09:18 2023 +0530

    sample2.txt is created

commit a06a3e5d440e00dd1521f47e303d41a7d0786de2
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git diff master ranjith
diff --git a/sample3.txt b/sample3.txt
deleted file mode 100644
index 118cd35..0000000
--- a/sample3.txt
+++ /dev/null
@@ -1,0,0 @@
-This is a sample3 paragraph

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git show 66046d786
commit 66046d786b793aed83f37f8ff57dd80204289f99 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 11:26:17 2023 +0530

    sample3.txt is created

diff --git a/sample3.txt b/sample3.txt
new file mode 100644
index 0000000..118cd35
--- /dev/null
+++ b/sample3.txt
@@ -0,0 +1 @@
+This is a sample3 paragraph

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git show HEAD
$

MINGW64/c/devops
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 10:37:26 2023 +0530

    sample1.txt added

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git diff master ranjith
diff --git a/sample3.txt b/sample3.txt
deleted file mode 100644
index 118cd35..0000000
--- a/sample3.txt
+++ /dev/null
@@ -1,0,0 @@
-This is a sample3 paragraph

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git show 66046d786
commit 66046d786b793aed83f37f8ff57dd80204289f99 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 11:26:17 2023 +0530

    sample3.txt is created

diff --git a/sample3.txt b/sample3.txt
new file mode 100644
index 0000000..118cd35
--- /dev/null
+++ b/sample3.txt
@@ -0,0 +1 @@
+This is a sample3 paragraph

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$ git show HEAD
commit 66046d786b793aed83f37f8ff57dd80204289f99 (HEAD -> master)
Author: ranjith6082 <ranjithkrishnaakurathi@gmail.com>
Date: Tue Dec 5 11:26:17 2023 +0530

    sample3.txt is created

diff --git a/sample3.txt b/sample3.txt
new file mode 100644
index 0000000..118cd35
--- /dev/null
+++ b/sample3.txt
@@ -0,0 +1 @@
+This is a sample3 paragraph

Manasa@DESKTOP-A9I2DOV MINGW64 /c/devops (master)
$

```



## Experiment:2

### 2. Demonstrate working with remote repositories

#### Procedure:

#### Working with remote repository:

➔ Accessing remote repository:

\$ git clone <github repo url>:to access to the remote repository

```

MINGW64/c/devops1/firstrepository
Manasa@DESKTOP-A912D0V MINGW64 /c/devops1
$ git init
Initialized empty Git repository in C:/devops1/.git/

Manasa@DESKTOP-A912D0V MINGW64 /c/devops1 (master)
$ git clone https://github.com/ranjith6082/firstrepository.git
Cloning into 'firstrepository'...
warning: You appear to have cloned an empty repository.
Manasa@DESKTOP-A912D0V MINGW64 /c/devops1 (master)
$ cd firstrepository/

Manasa@DESKTOP-A912D0V MINGW64 /c/devops1/firstrepository (main)
$ ll -la
total 4
drwxr-xr-x 1 Manasa 197121 0 Dec  5 12:46 ./
drwxr-xr-x 1 Manasa 197121 0 Dec  5 12:46 ../
drwxr-xr-x 1 Manasa 197121 0 Dec  5 12:46 .git/

Manasa@DESKTOP-A912D0V MINGW64 /c/devops1/firstrepository (main)
$ vi sample1.txt

Manasa@DESKTOP-A912D0V MINGW64 /c/devops1/firstrepository (main)
$ git add
warning: in the working copy of 'sample1.txt', LF will be replaced by CRLF the next time Git touches it
Manasa@DESKTOP-A912D0V MINGW64 /c/devops1/firstrepository (main)
$ git commit -m "just added a file"
[main (root-commit) a794463] just added a file
1 file changed, 1 insertion(+)
create mode 100644 sample1.txt

Manasa@DESKTOP-A912D0V MINGW64 /c/devops1/firstrepository (main)
$ git status
On branch main
Your branch is based on 'origin/main', but the upstream is gone.
(use "git branch --unset-upstream" to fixup)

nothing to commit, working tree clean

Manasa@DESKTOP-A912D0V MINGW64 /c/devops1/firstrepository (main)
$ git branch
* main

Manasa@DESKTOP-A912D0V MINGW64 /c/devops1/firstrepository (main)
$ git push origin main
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Writing objects: 100% (3/3), 251 bytes | 251.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/ranjith6082/firstrepository.git
 * [new branch]      main -> main

Manasa@DESKTOP-A912D0V MINGW64 /c/devops1/firstrepository (main)
$ git pull origin main
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.

```

➔ git push:

command is used to push the changes from your local branch (usually named "main") to the remote repository (typically named "origin")

It will push commit files to the cloned repository else it will “everything is upto the date

So before pushing we should add and commit the files which are newly added in local repository

```

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (main)
$ git pull origin main
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 678 bytes | 52.00 KiB/s, done.
From https://github.com/ranjith6082/firstrepository
* branch                main       -> FETCH_HEAD
Updating a794463..29ef7fd
Fast-forward
 sample1.txt | 1 +
 1 file changed, 1 insertion(+)

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (main)
$ git branch
* main

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (main)
$ git branch ranjith

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (main)
$ git branch
* main
  ranjith

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (main)
$ cat sample1.txt
This is a sample1 paragraph
File is changed by ranjith

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (main)
$ git add .

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (main)
$ git commit -m "created new branch"
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (main)
$ git checkout ranjith
Switched to branch 'ranjith'

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (ranjith)
$ git push origin ranjith
fatal: unable to access 'https://github.com/ranjith6082/firstrepository.git/': Could not resolve host: github.com

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (ranjith)
$ git status
On branch ranjith
nothing to commit, working tree clean

Manasa@DESKTOP-AB1200V MINGW64 /c/devops1/firstrepository (ranjith)
$

```

➔ Mapping local repository with remote repository:

To map local repository with remote repository first create a local repository

Then initialize using “git init”

Then we can find configuration details in file “config”

using following command we can map local repository with remote repo:

\$ git remote add origin <github url/reponame.git>

we can find the procedure in the below snapshot

```

MINGW64/c/devops1/firstrepository
Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git branch
  main
* ranjith

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git remote
origin
origin1

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git push origin1 ranjith
Total 0 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'ranjith' on GitHub by visiting:
remote:   https://github.com/ranjith6082/firstrepository/pull/new/ranjith
remote:
To https://github.com/ranjith6082/firstrepository.git
 * [new branch]      ranjith -> ranjith

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ vi sample2.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git status
On branch ranjith
Untracked files:
  (use "git add <file>..." to include in what will be committed)
        sample2.txt

nothing added to commit but untracked files present (use "git add" to track)

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git add .
warning: in the working copy of 'sample2.txt', LF will be replaced by CRLF the next time Git touches it

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git commit -m "created a sample2 file"
[ranjith d73f58b] created a sample2 file
1 file changed, 1 insertion(+)
create mode 100644 sample2.txt

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git status
On branch ranjith
nothing to commit, working tree clean

Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)

```

➔ pushing a new local file to remote repository:

create a new text file using “cat>filename”

Then stage and commit the created file using “add” and “commit” commands

using push command push the commit files using “git push origin main”

Then in github repository we can see pushed files

In Git, **HEAD** is a special pointer or reference that points to the latest commit in the currently checked-out branch. It essentially represents the "tip" or the mostrecent commit on the branch.



```
MINGW64 /c/devops1/firstrepository
Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git push origin1 ranjith
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 311 bytes | 311.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/ranjith6082/firstrepository.git
29ef7fd..d73f58b ranjith -> ranjith

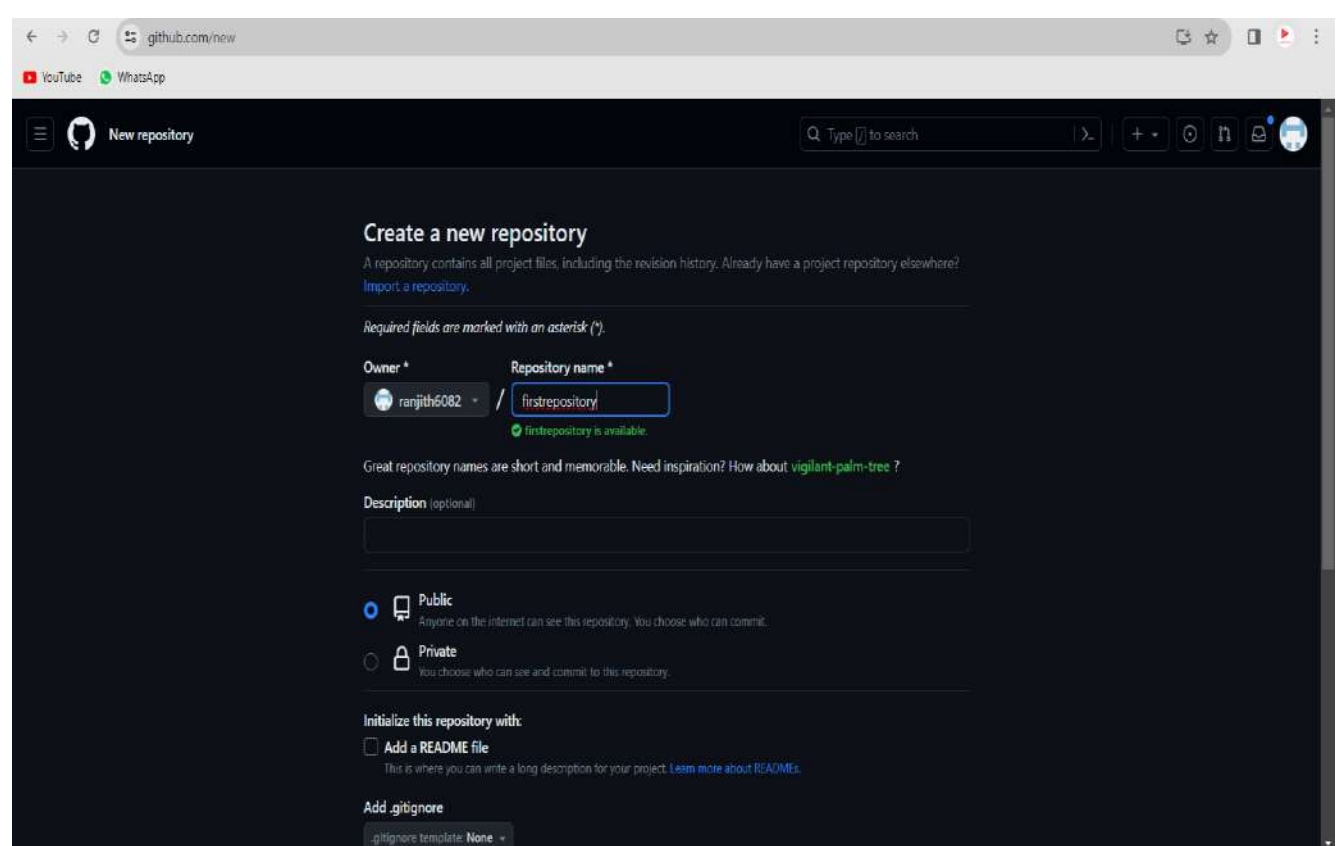
Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git status
On branch ranjith
nothing to commit, working tree clean

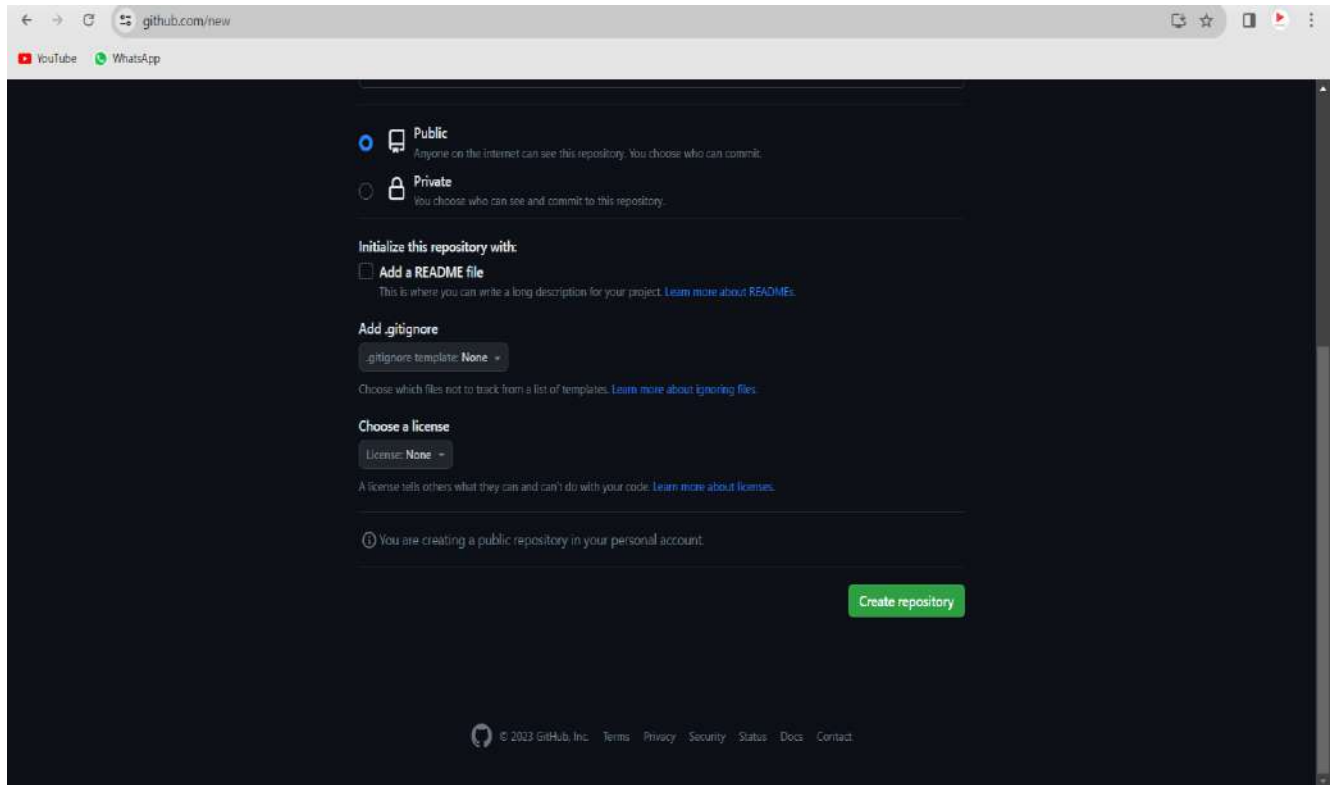
Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git fetch origin1
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 720 bytes | 60.00 KiB/s, done.
From https://github.com/ranjith6082/firstrepository
* [new branch]      main       -> origin1/main
d73f58b..95f553f ranjith -> origin1/ranjith

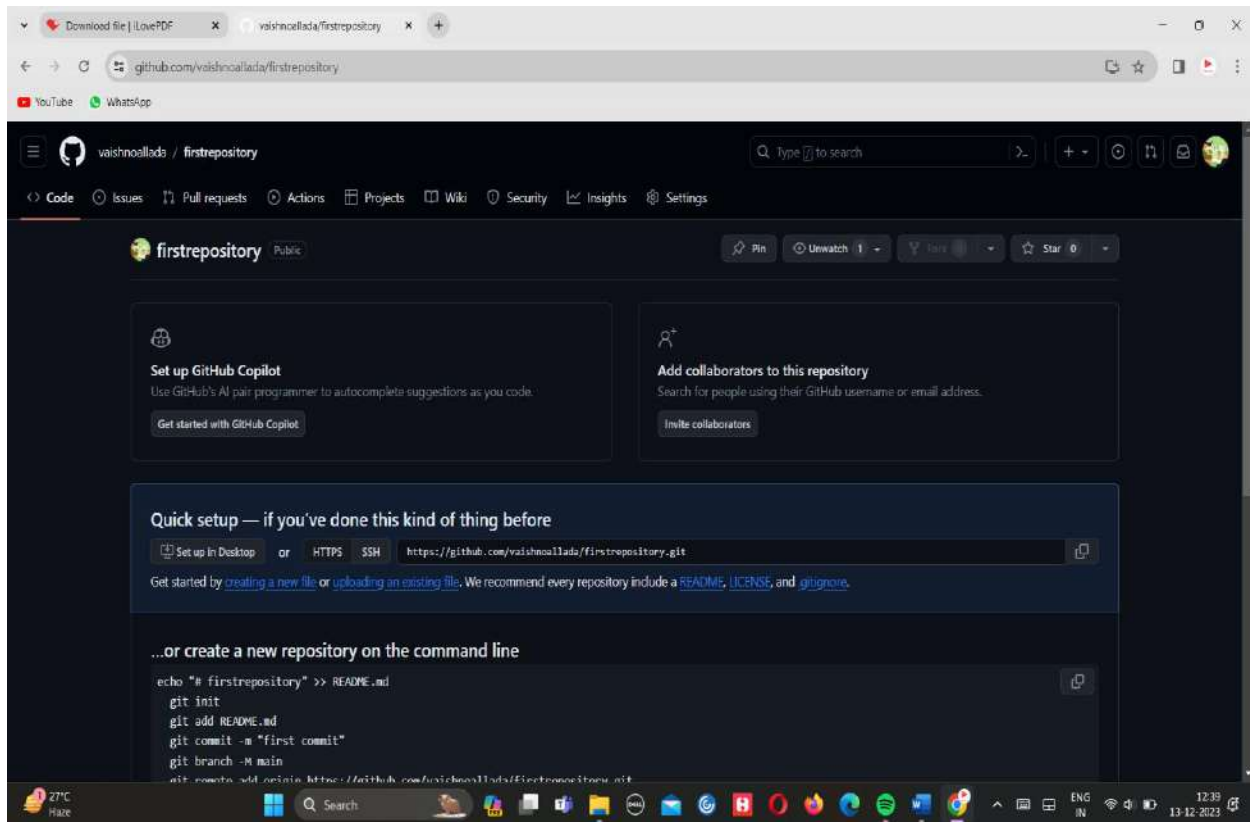
Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ git merge origin1/ranjith
Updating d73f58b..95f553f
Fast-forward
 sample2.txt | 1 +
 1 file changed, 1 insertion(+)

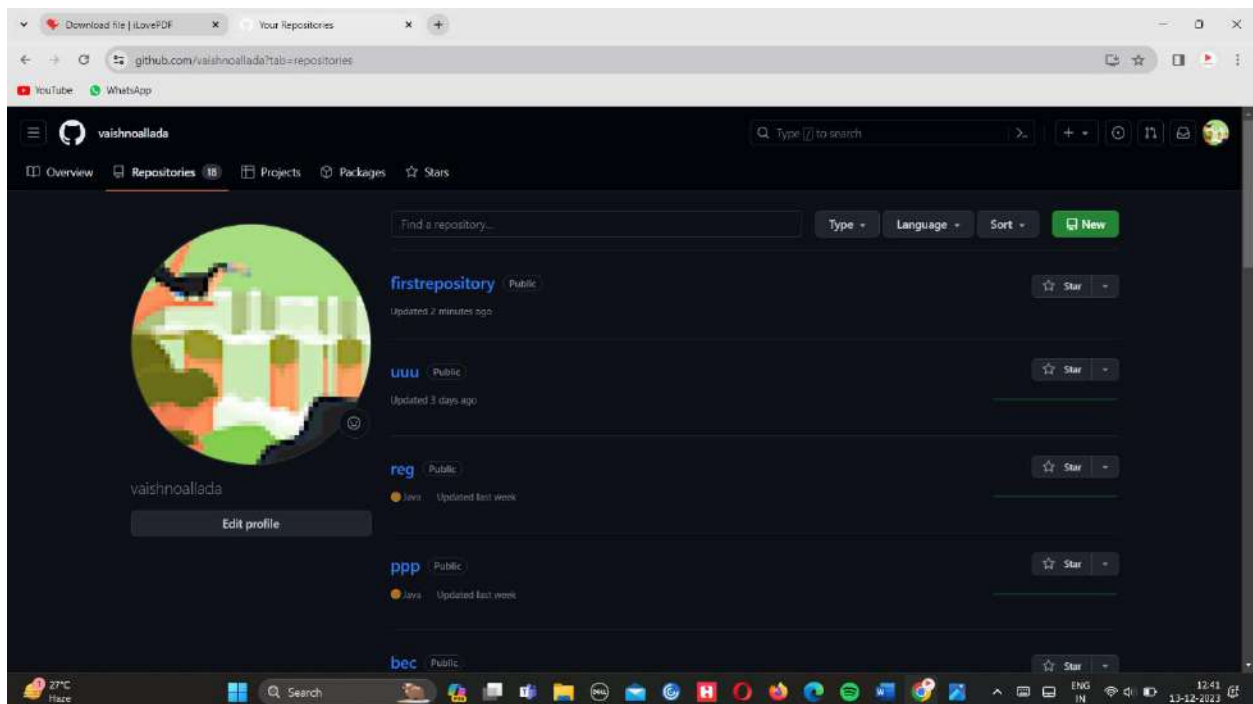
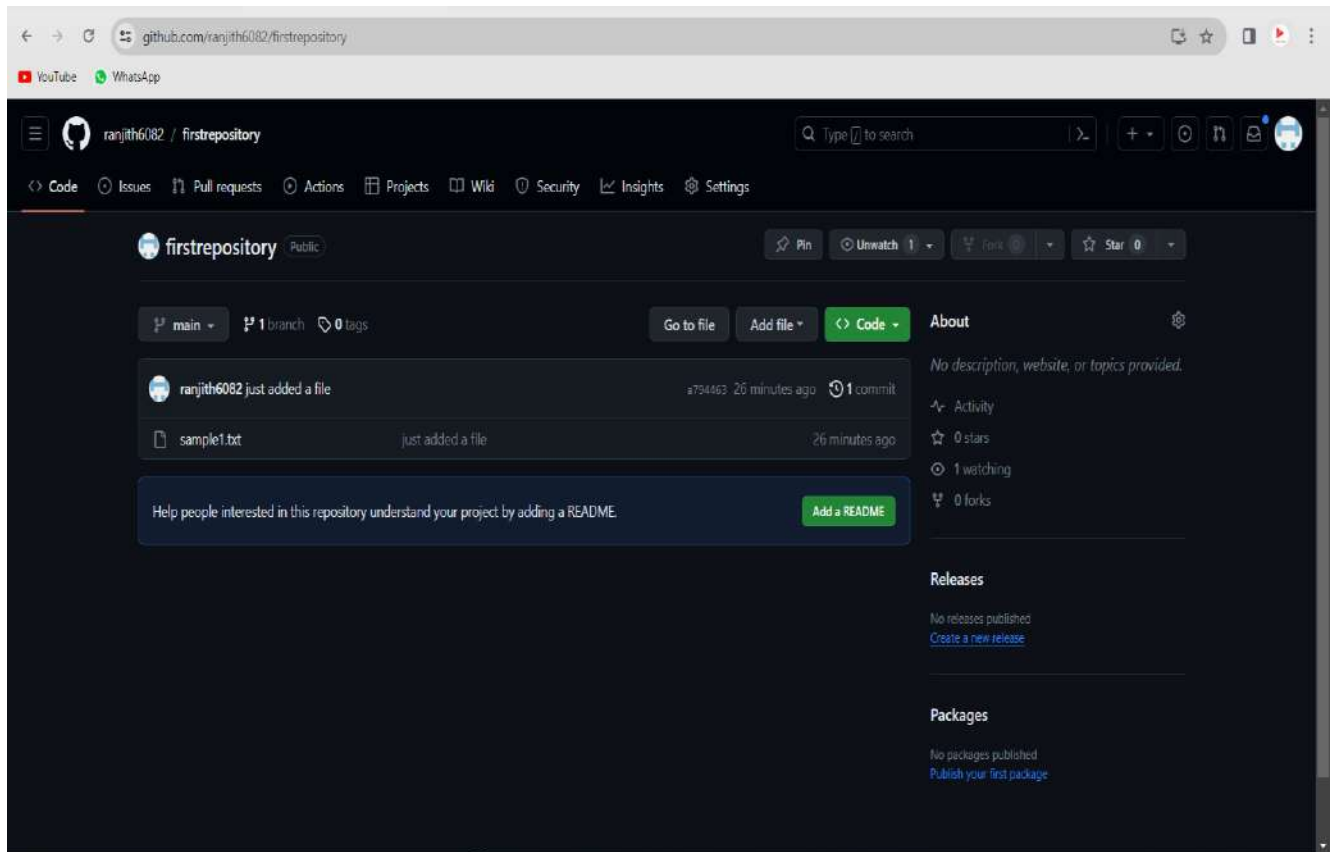
Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$ cat sample2.txt
This is a sample2 paragraph
Content modified by some other user

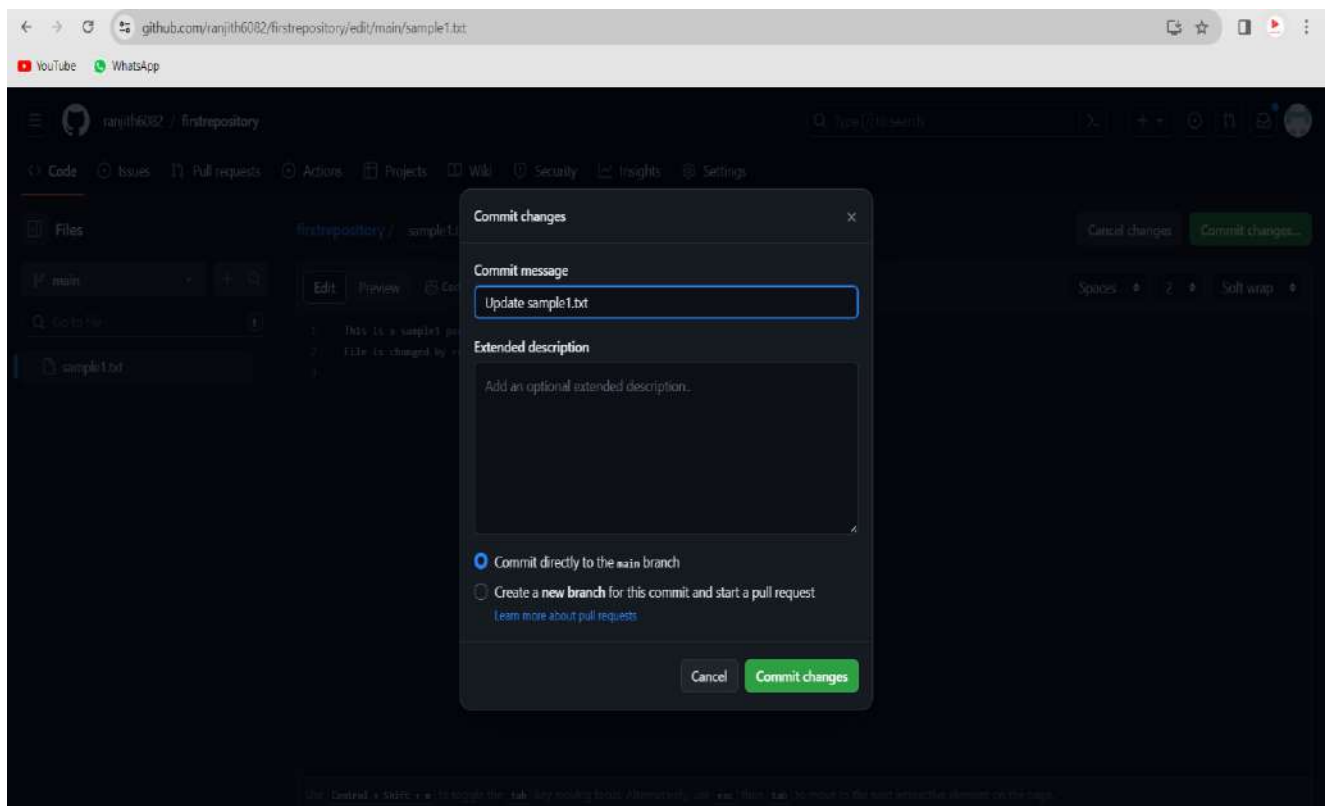
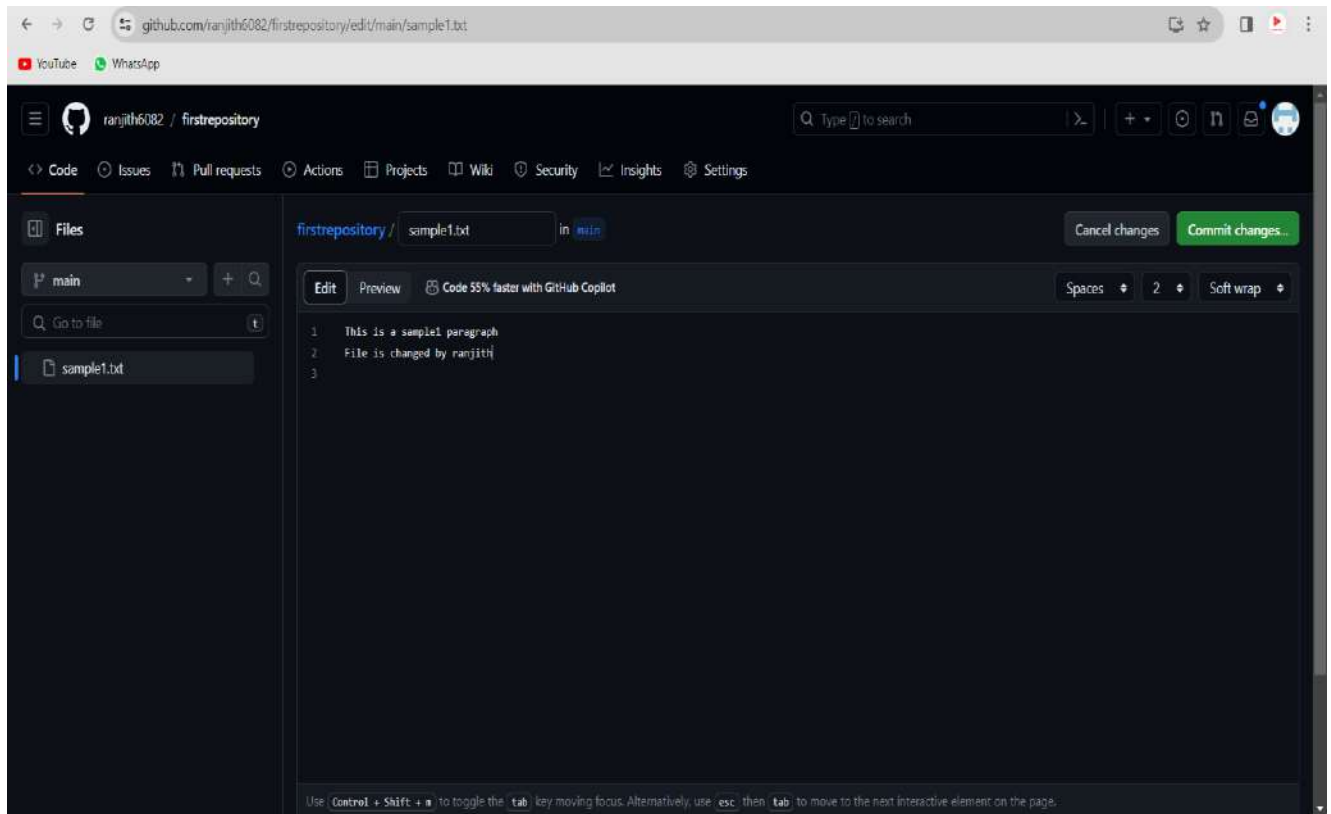
Manasa@DESKTOP-A9I2D0V MINGW64 /c/devops1/firstrepository (ranjith)
$
```

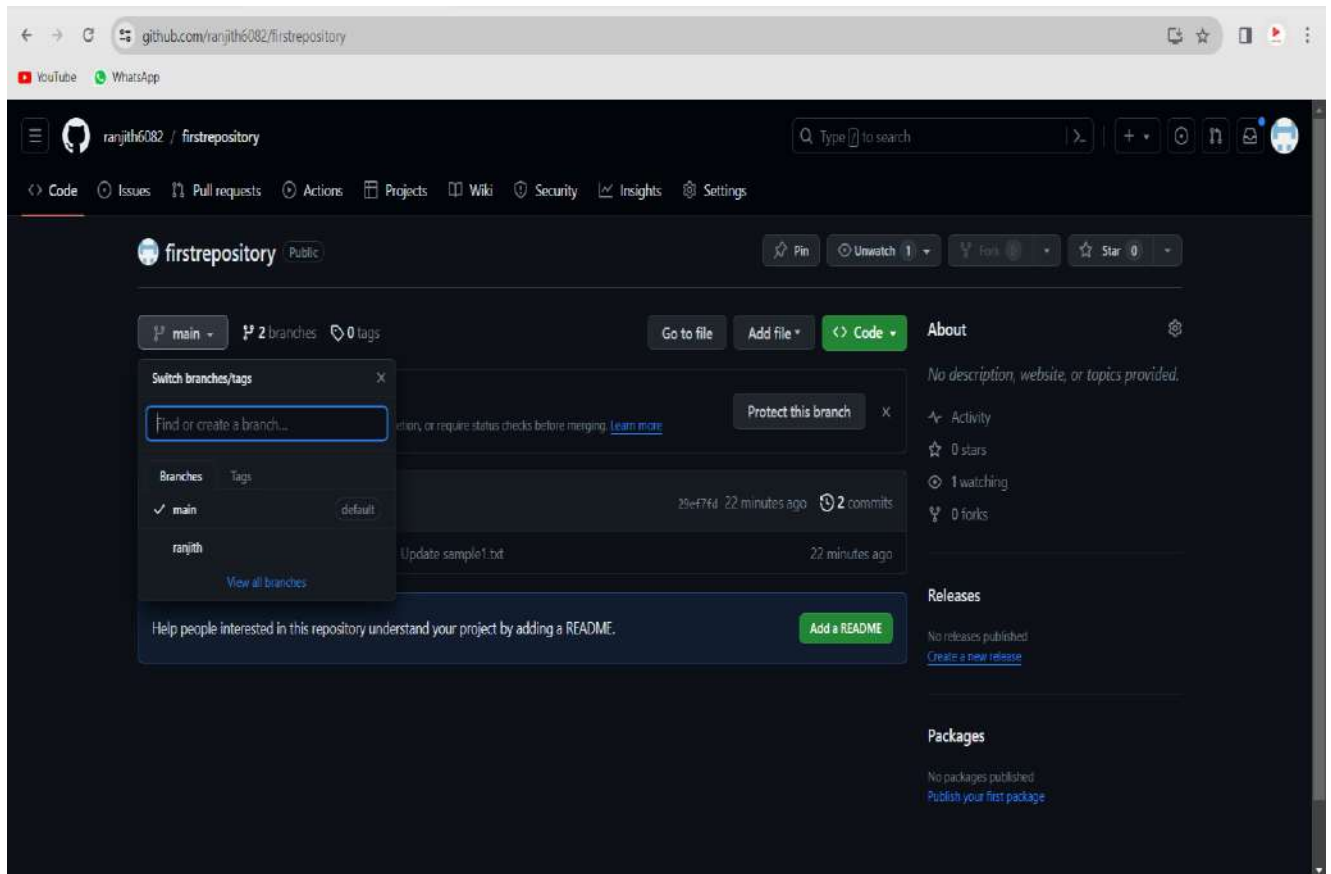


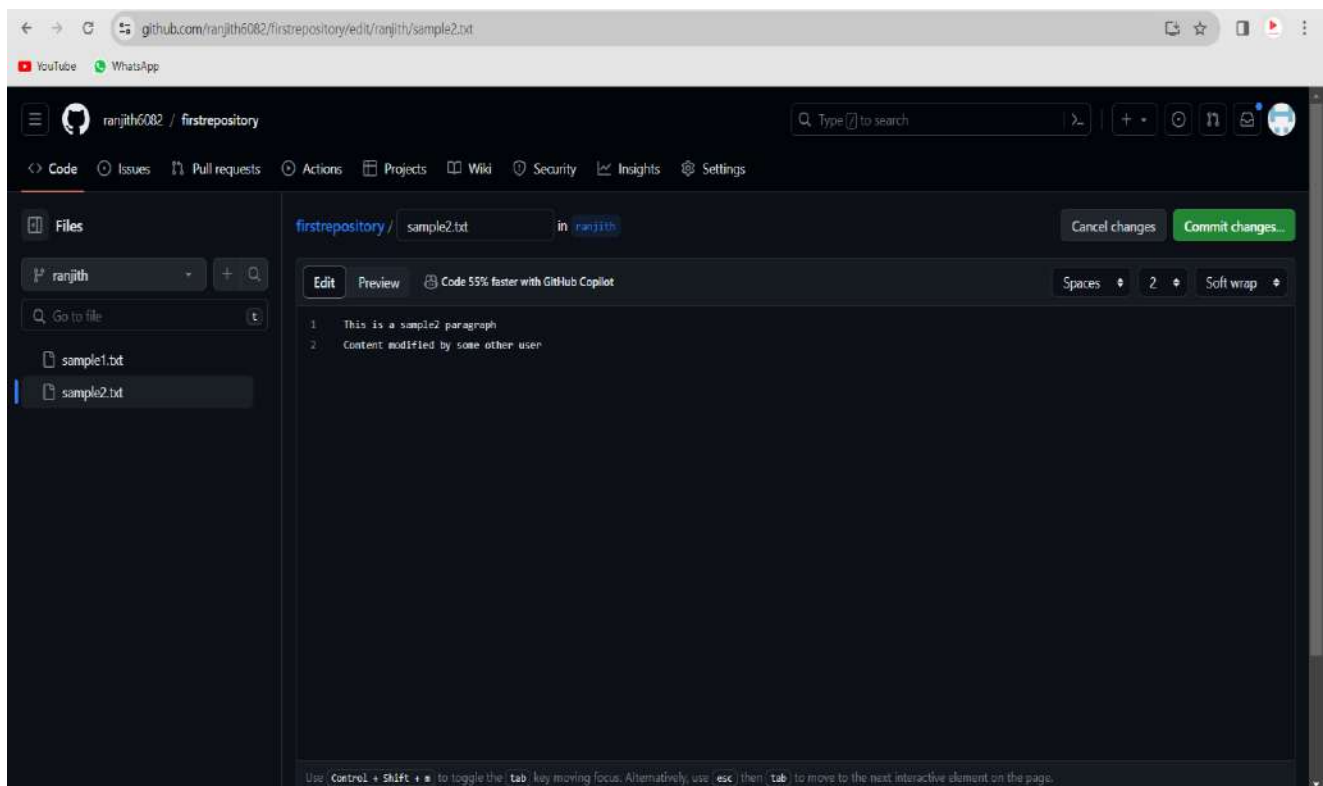
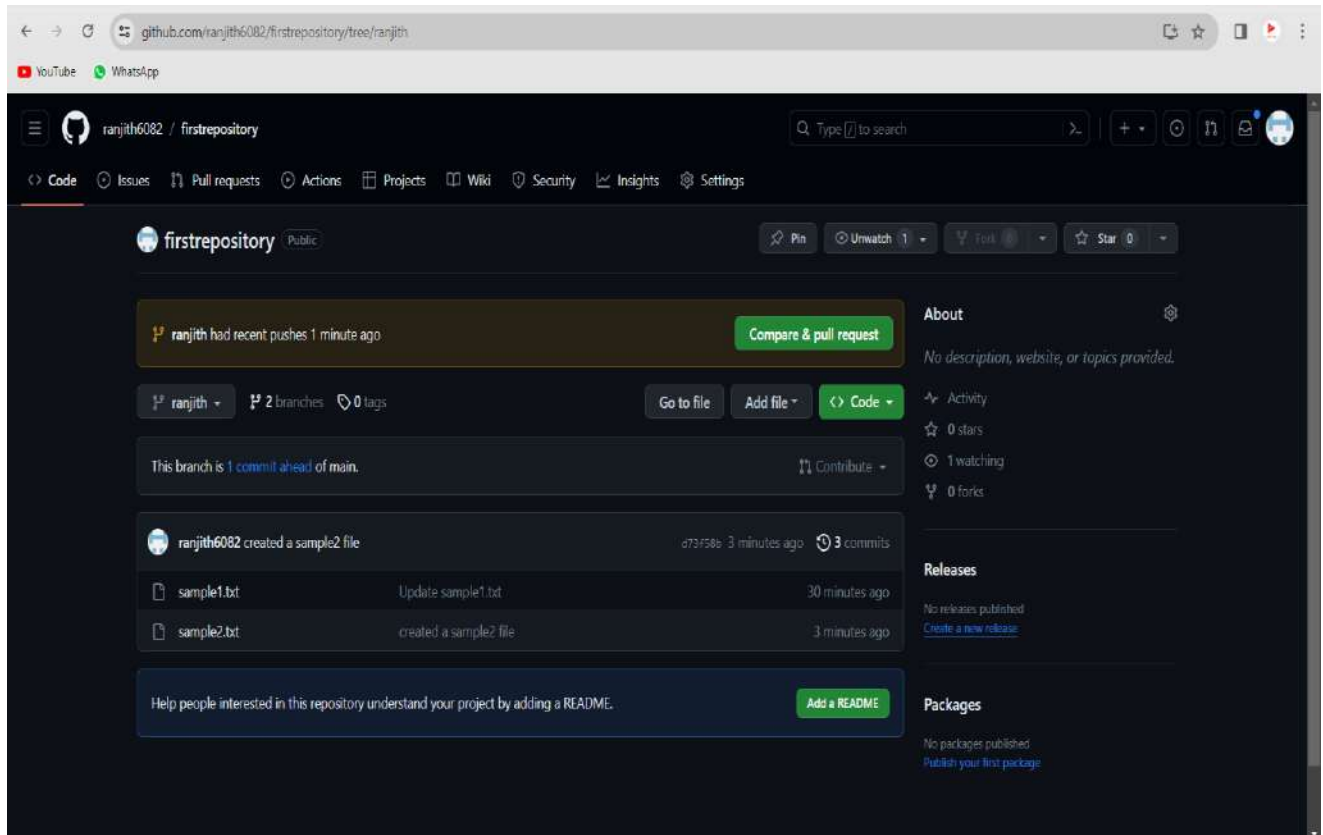


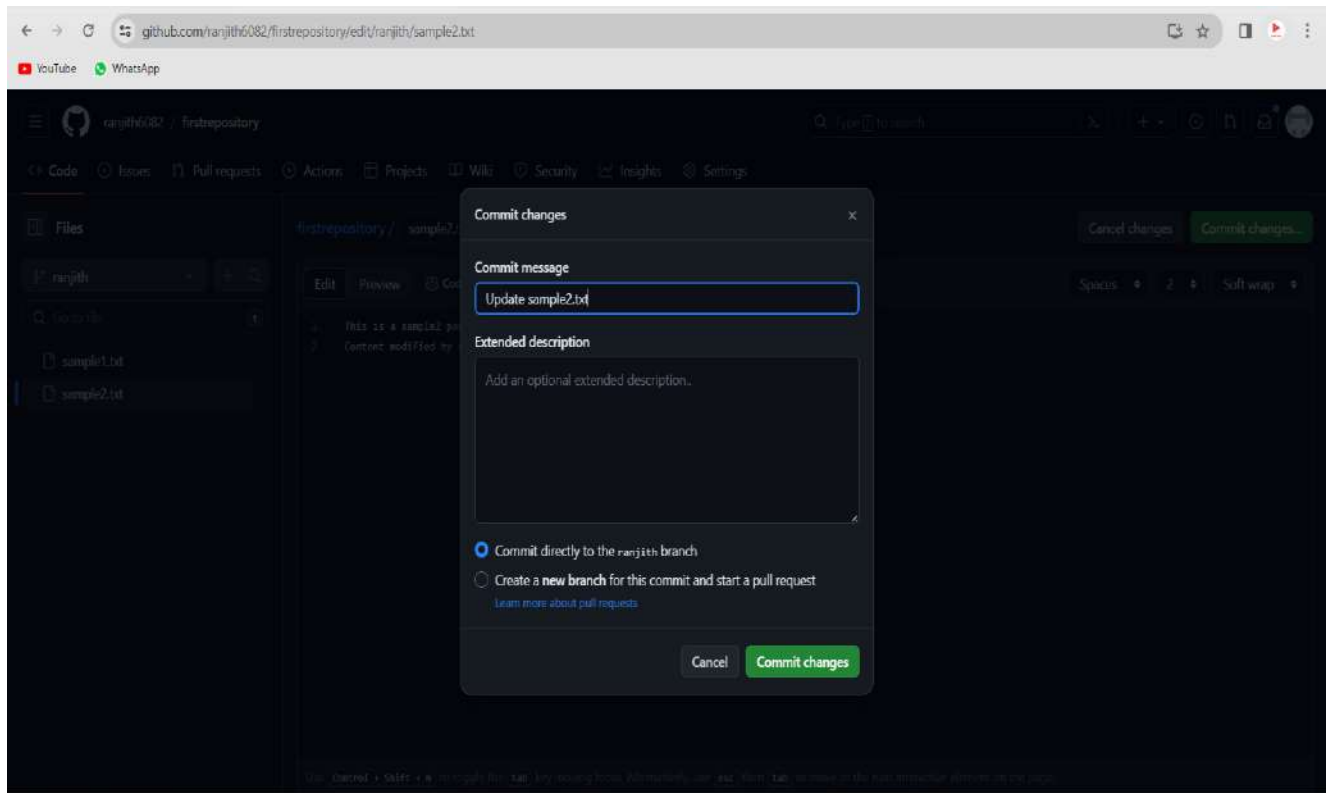












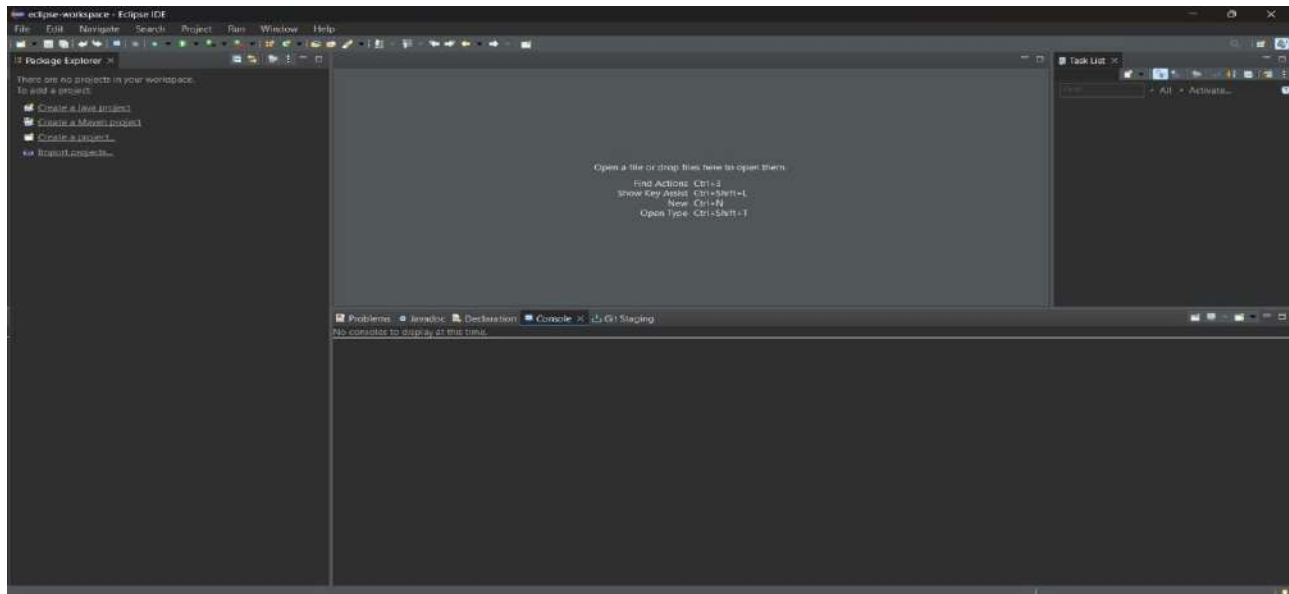


## **Experiment:3**

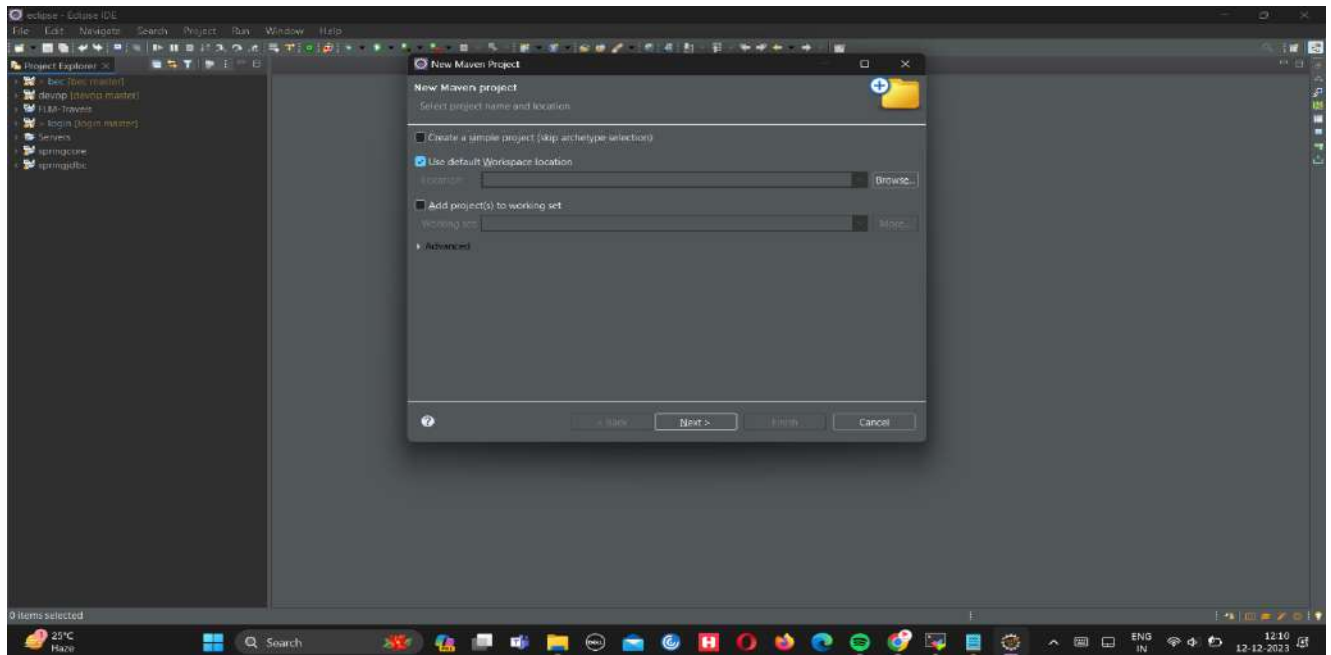
### **3. Demonstrate Deploying an Application to GitHub.**

#### **Procedure:**

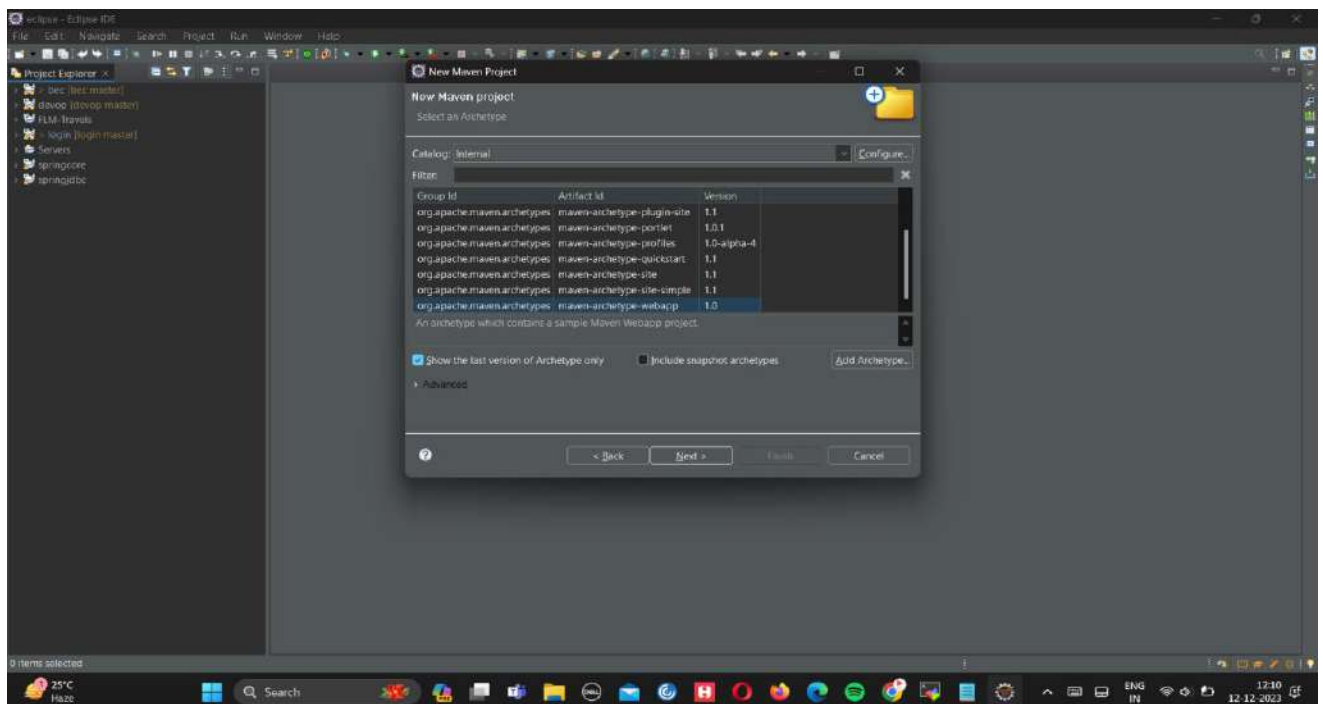
- ➔ To deploy an application to github we use ECLIPSE IDE
- ➔ In eclipse we can create maven project and can deploy them using following procedure



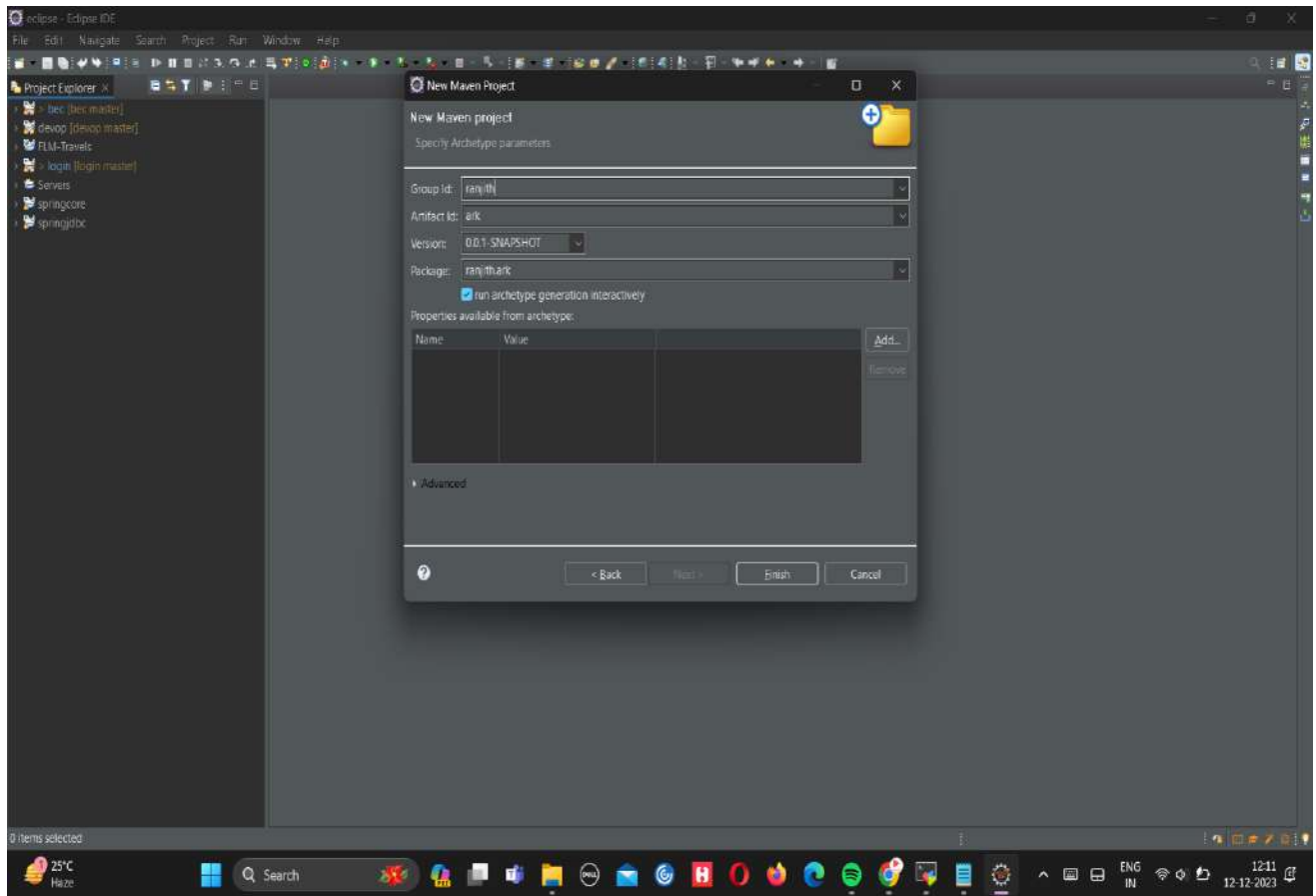
- ➔ Then it asks for New maven project to create in default location click on next



➔ Then it ask catalog select “internal” and filter is “webapp” select it and click next

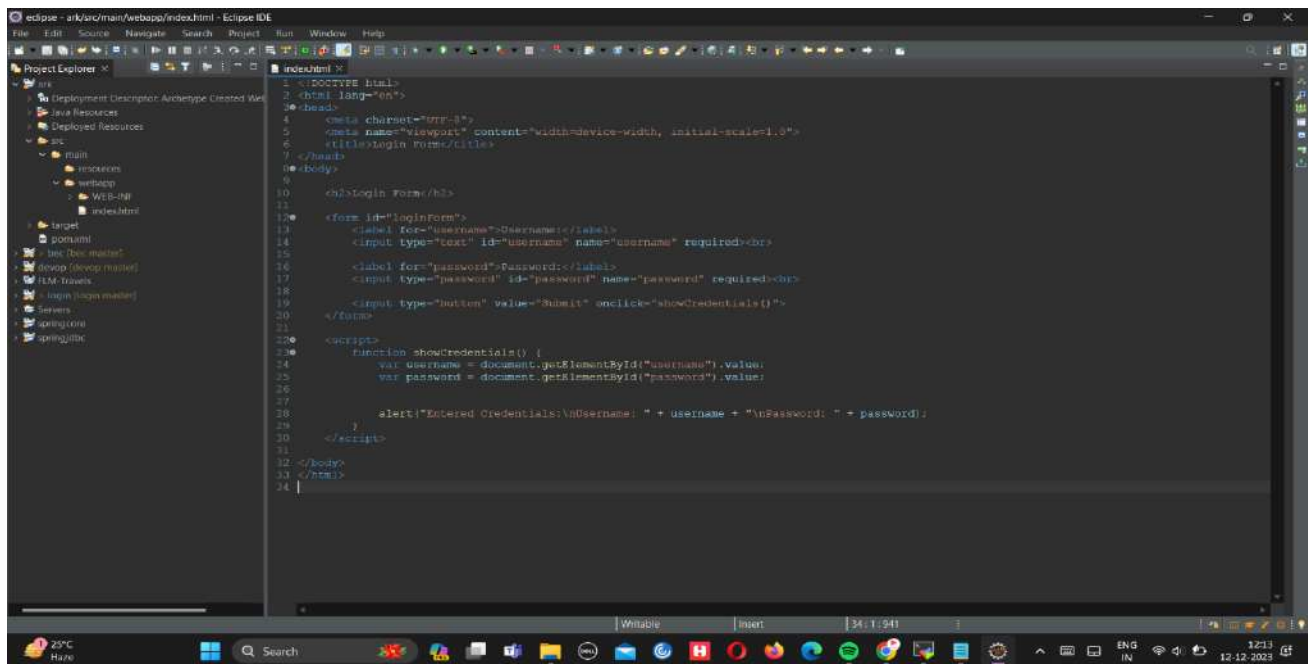


➔ Then it asks for Group id and artifact id give them as ur wish and then click on Finish



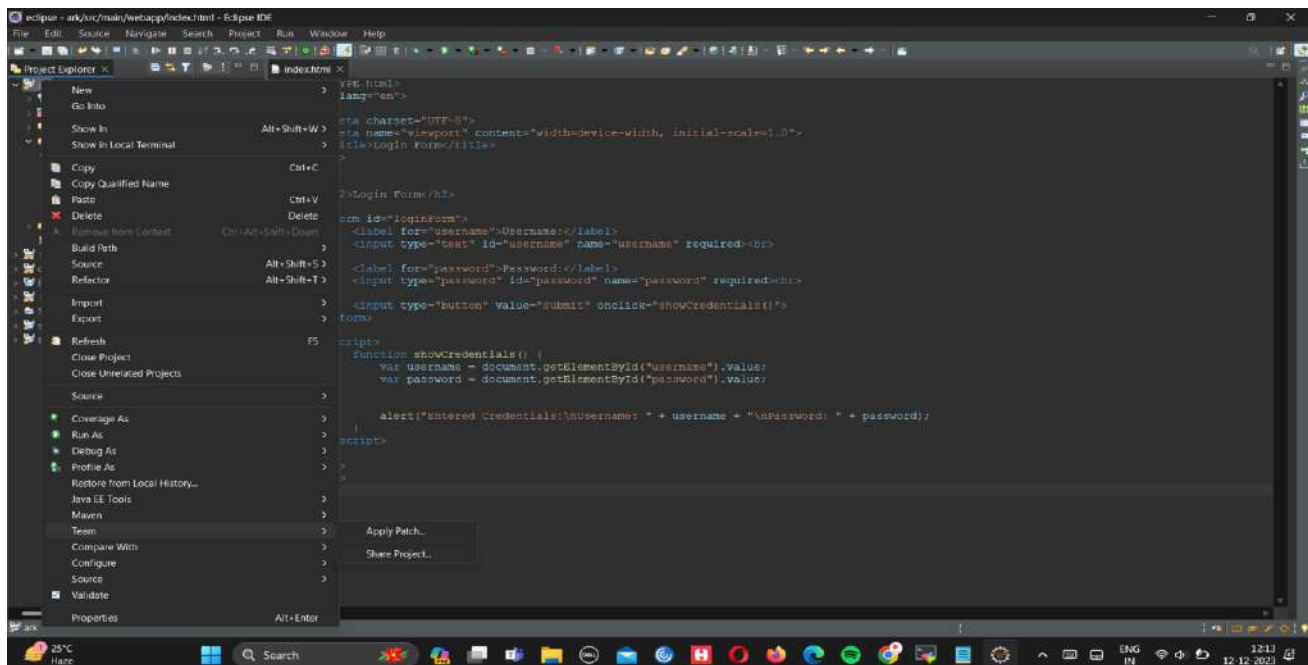
➔ Then the project is build is successful and in left side bar we can see our project in that our projectcode file is in

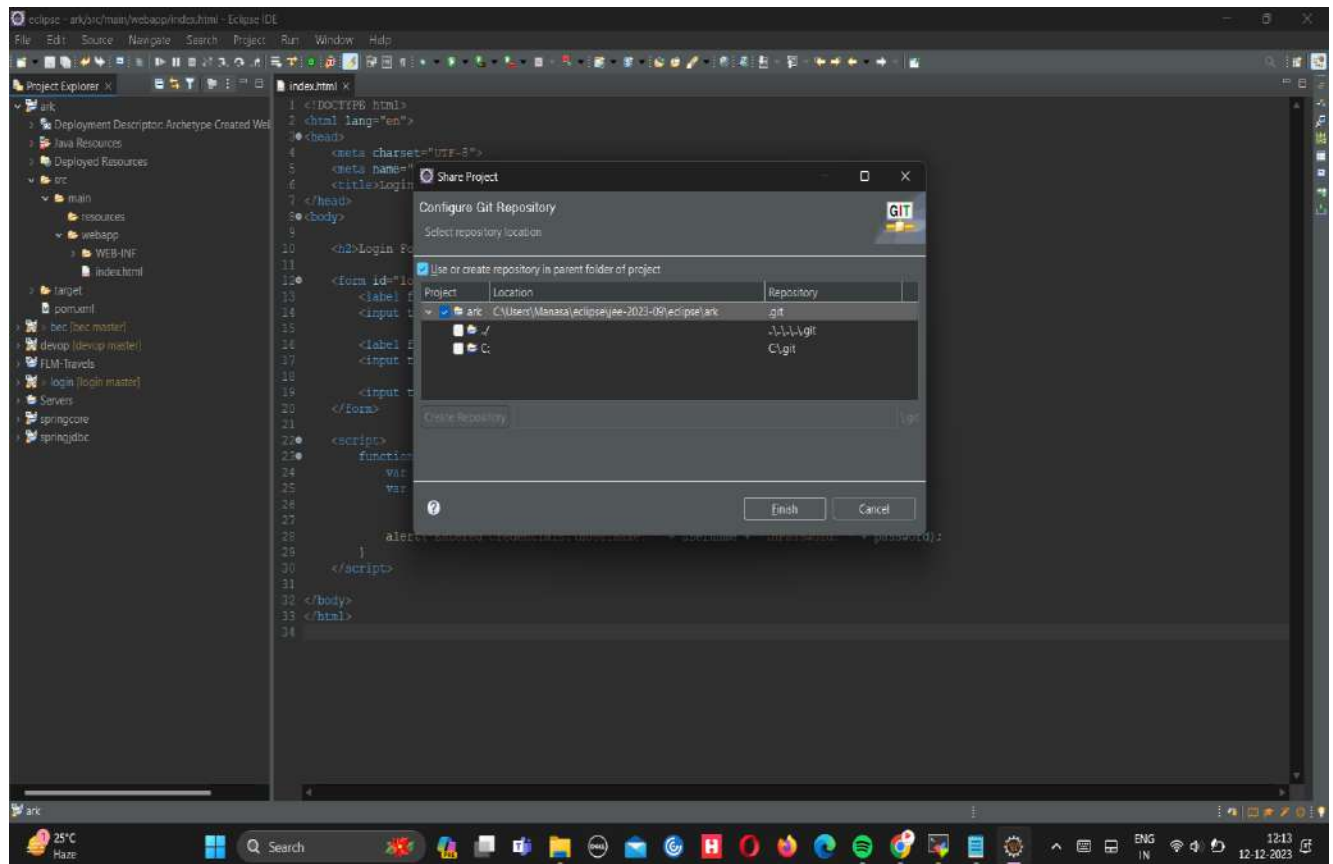
Project >>src>>main>>webapp>>index.jsp double click on it then the file will be open



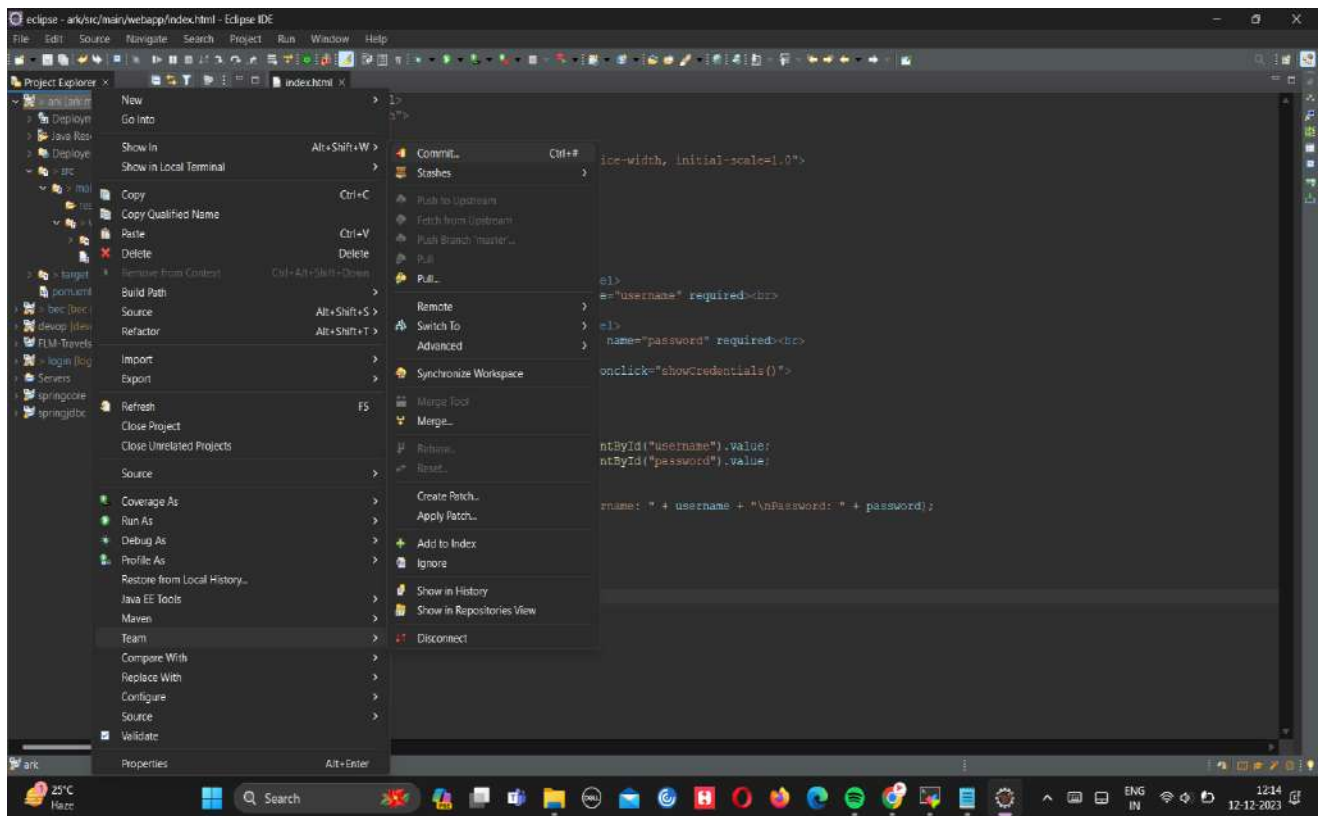
➔ Now it's time to deploy that application into Github. Now again go to project and right click on it where you can see option "Teams" and then we will see share project click on it

➔ And then it asks for configure git repository select and click on finish

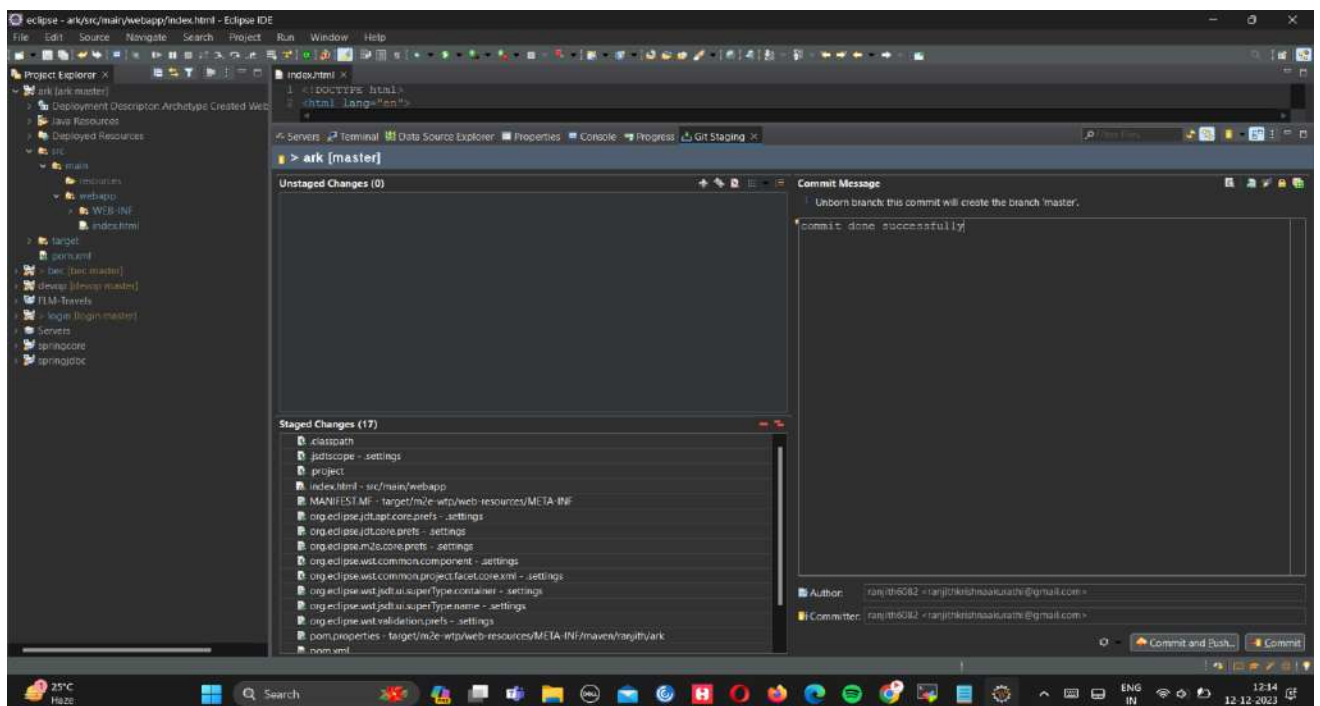




➔ Then again right click on project and then teams now we will see commit option there click on it



➔ Then in Git staging tab we will see unstaged and staged changes. Now select all unstaged files and drag it to staged area and type some commit message and click on commit



➔ Then click on Push Head where you have to details of Destination Git

Repository Like Remote name: origin

### Location:

URI: url of the github project

Host: host will be the user that is github owner

Repository path: this is repository path of github

### Authentication:

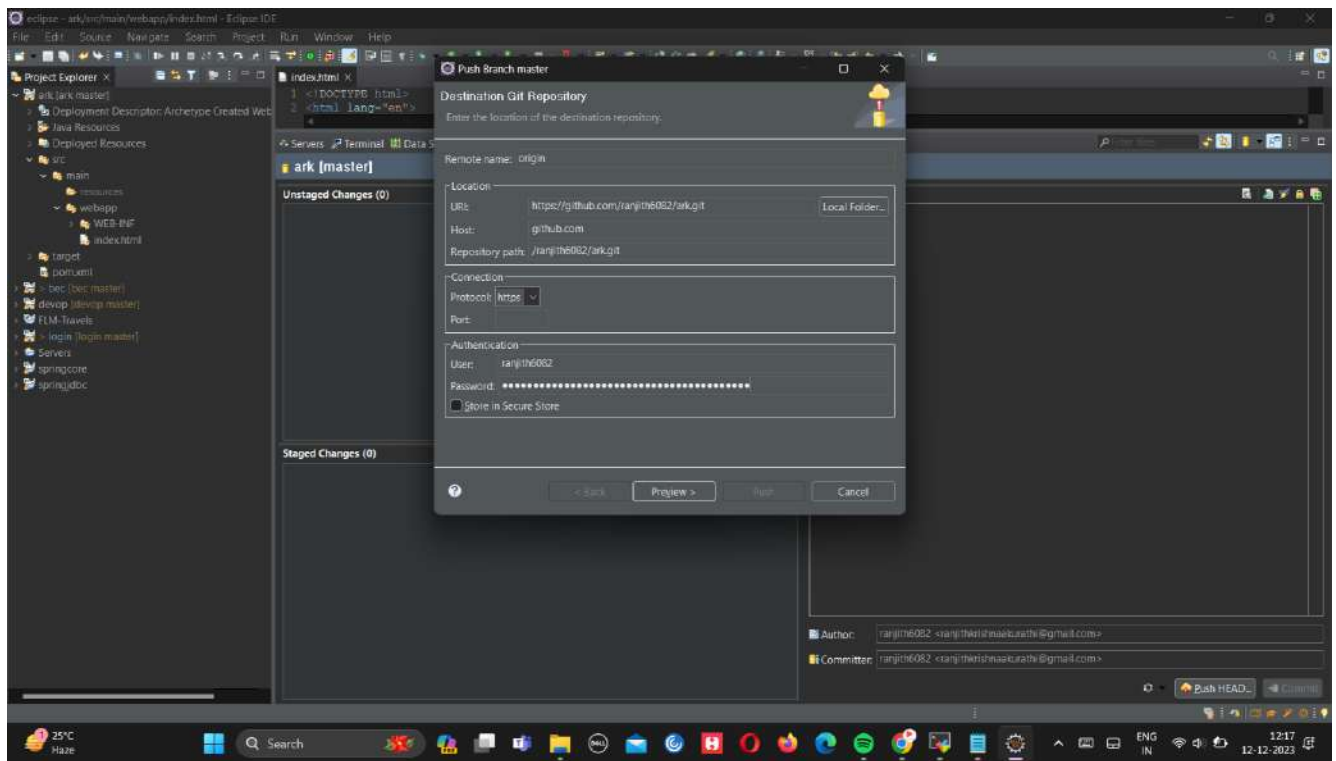
Username: it will be username of your github account we can give it as our github email

Password: this will be a public access token of our github account we can get from following procedure

click on settings of your github account then in last we can find developer settings

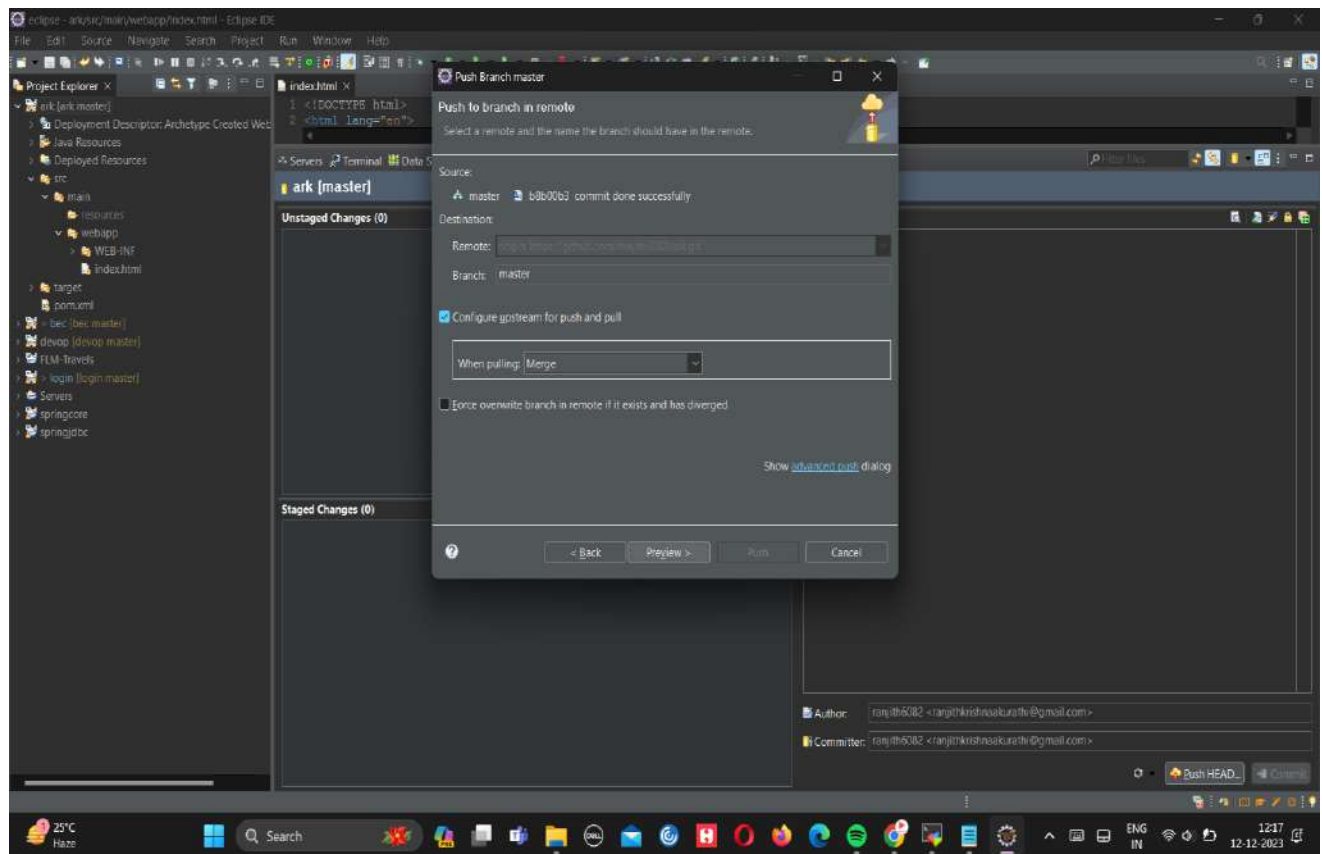
click on it where we can see public access token click on classical public access

And then click on generate new token and which will act as our public access token to github



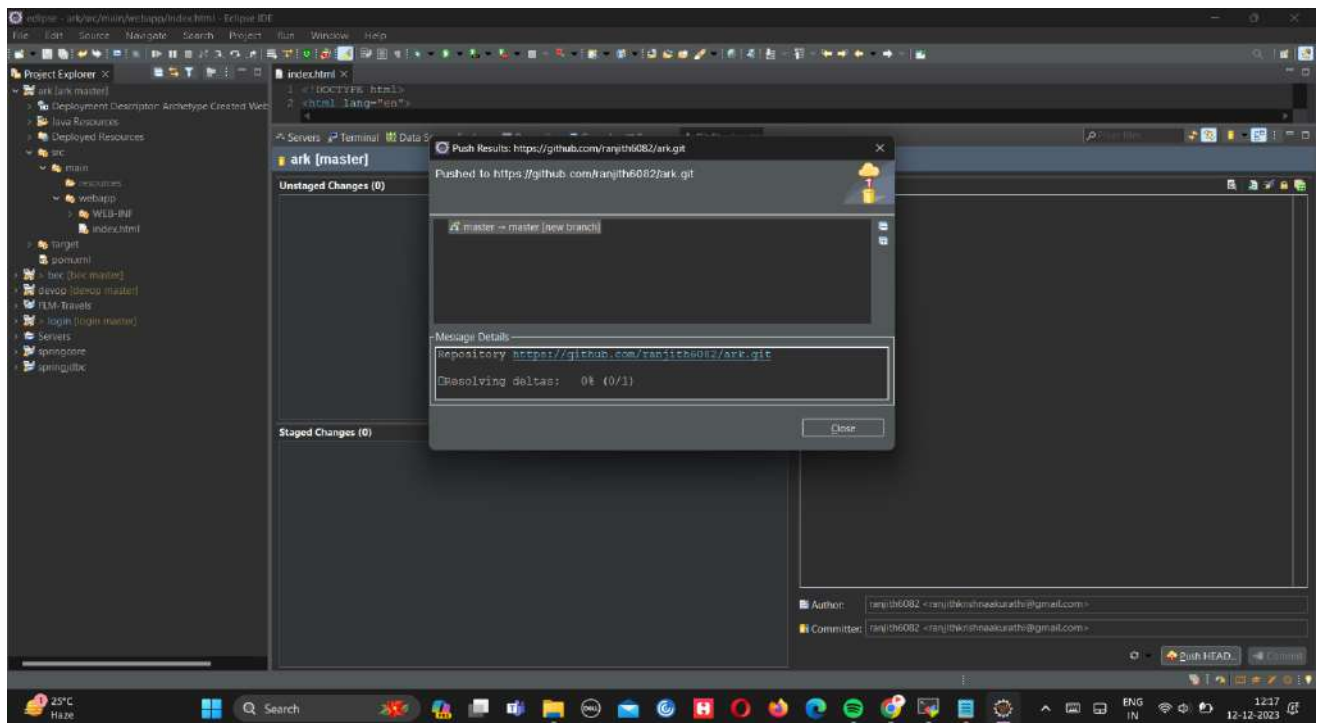
➔ Then click on preview and again click on preview then click on push



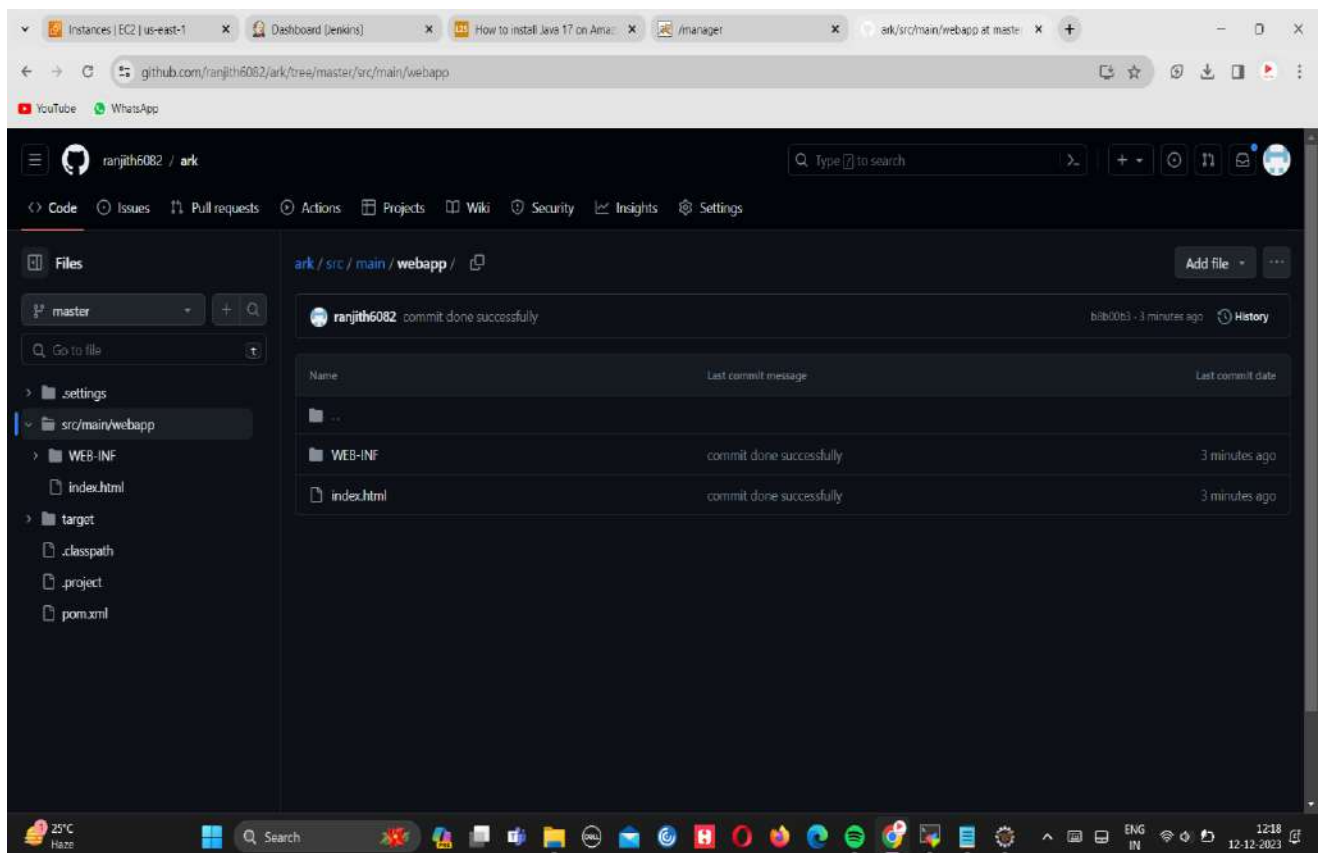


➔ Then again it will ask for credentials to log in, fill them and click on log in, then it shows push results so we can confirm that our project is pushed to github





➔ we can confirm it by visiting our github repository we can deployed project files there.



## Experiment:4

### 4. Demonstrate CI job to build maven application using Jenkins.

Procedure:

#### Jenkins Installation

- ➔ Open the browser type jenkins for ec2 linux instance
- ➔ Goto Installing Jenkins -> Linux -> Fedora copy the links and paste in mobaxterm.

```

[ec2-user@ip-172-31-22-182 ~]$ sudo wget -O /etc/yum.repos.d/jenkins.repo \
https://pkg.jenkins.io/redhat-stable/jenkins.repo
--2023-12-12 06:08:33-- https://pkg.jenkins.io/redhat-stable/jenkins.repo
Resolving pkg.jenkins.io (pkg.jenkins.io)... 146.75.38.133, 2a04:4e42:79::645
Connecting to pkg.jenkins.io (pkg.jenkins.io)|146.75.38.133|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 85
Saving to: '/etc/yum.repos.d/jenkins.repo'

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

2023-12-12 06:08:33 (4.93 MB/s) - '/etc/yum.repos.d/jenkins.repo' saved [85/85]

[ec2-user@ip-172-31-22-182 ~]$ sudo rpm --import https://pkg.jenkins.io/redhat-stable/jenkins.io-2023.key
[ec2-user@ip-172-31-22-182 ~]$ sudo dnf upgrade
Jenkins-stable
Dependencies resolved.
Nothing to do.
Complete!
[ec2-user@ip-172-31-22-182 ~]$ sudo dnf install java-17-amazon-corretto-devel
Last metadata expiration check: 0:00:25 ago on Tue Dec 12 06:08:52 2023.
Dependencies resolved.

```

Package	Architecture	Version	Repository	Size
Installing:				
java-17-amazon-corretto-devel	x86_64	1:17.0.9+8-1.amzn2023.1	amazonlinux	149 k
Installing dependencies:				
alsa-lib	x86_64	1.2.7.2-1.amzn2023.0.2	amazonlinux	504 k
cairo	x86_64	1.17.6-2.amzn2023.0.1	amazonlinux	684 k
dejavu-sans-fonts	noarch	2.37-16.amzn2023.0.2	amazonlinux	1.3 M
dejavu-sans-mono-fonts	noarch	2.37-16.amzn2023.0.2	amazonlinux	467 k
dejavu-serif-fonts	noarch	2.37-16.amzn2023.0.2	amazonlinux	1.8 M
fontconfig	x86_64	2.13.94-2.amzn2023.0.2	amazonlinux	273 k
fonts-filesystem	noarch	1:2.0.5-12.amzn2023.0.2	amazonlinux	9.5 k
freetype	x86_64	2.13.0-2.amzn2023.0.1	amazonlinux	422 k
google-noto-fonts-common	noarch	20201206-2.amzn2023.0.2	amazonlinux	15 k
google-noto-sans-vf-fonts	noarch	20201206-2.amzn2023.0.2	amazonlinux	492 k
graphite2	x86_64	1.3.14-7.amzn2023.0.2	amazonlinux	97 k
harfbuzz	x86_64	7.0.0-2.amzn2023.0.1	amazonlinux	868 k
java-17-amazon-corretto-headless	x86_64	1:17.0.9+8-1.amzn2023.1	amazonlinux	91 M
javapackages-filesystem	noarch	0.0.0-7.amzn2023.0.0	amazonlinux	12 k

```

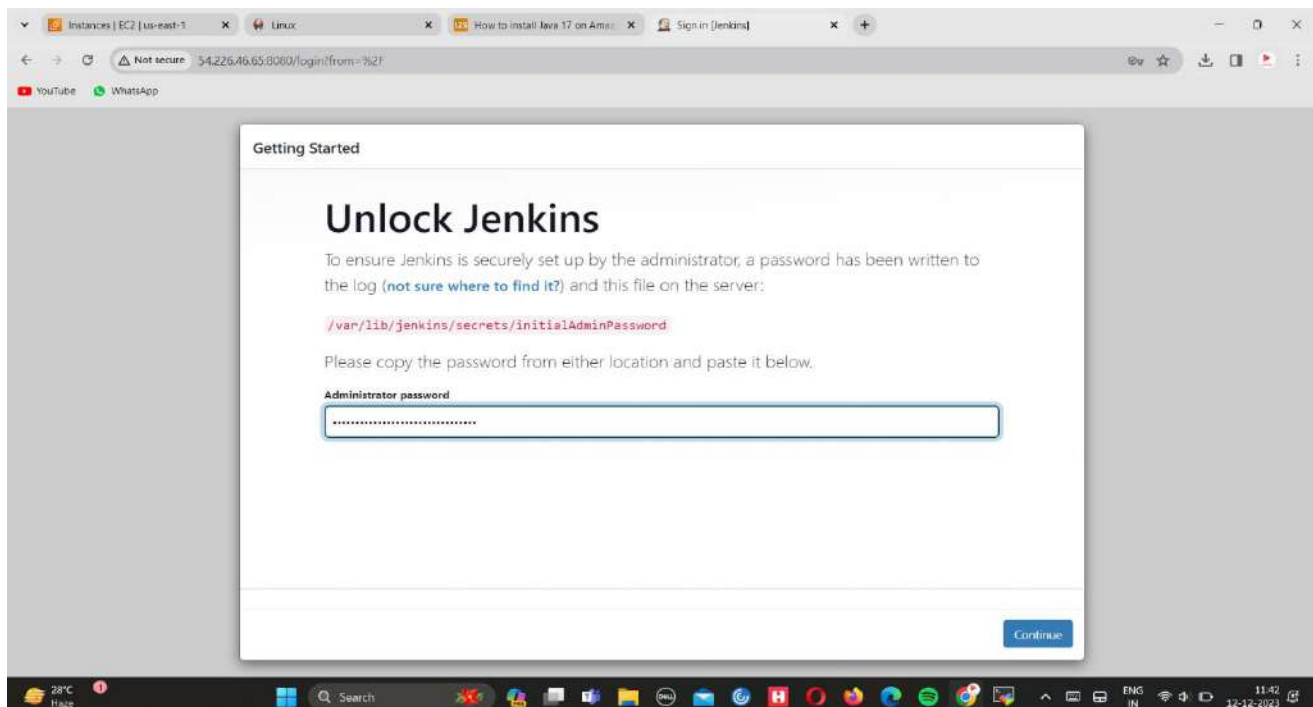
Complete!
[root@ip-172-31-22-182 ec2-user]# sudo dnf install jenkins
Last metadata expiration check: 0:00:55 ago on Tue Dec 12 06:08:52 2023.
Dependencies resolved.
=====
Package                Architecture      Version           Repository        Size
-----
Installing:
jenkins                noarch            2.426.1-1.1      jenkins           85 M
=====
Transaction Summary
=====
Install 1 Package

Total download size: 85 M
Installed size: 85 M
Is this ok [y/N]: y
Downloading Packages:
jenkins-2.426.1-1.1.noarch.rpm                                14 MB/s | 85 MB | 00:06
-----
Total
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
Preparing :
Running scriptlet: jenkins-2.426.1-1.1.noarch                1/1
Installing : jenkins-2.426.1-1.1.noarch                      1/1
Running scriptlet: jenkins-2.426.1-1.1.noarch                1/1
Verifying : jenkins-2.426.1-1.1.noarch                      1/1
Installed:
jenkins-2.426.1-1.1.noarch

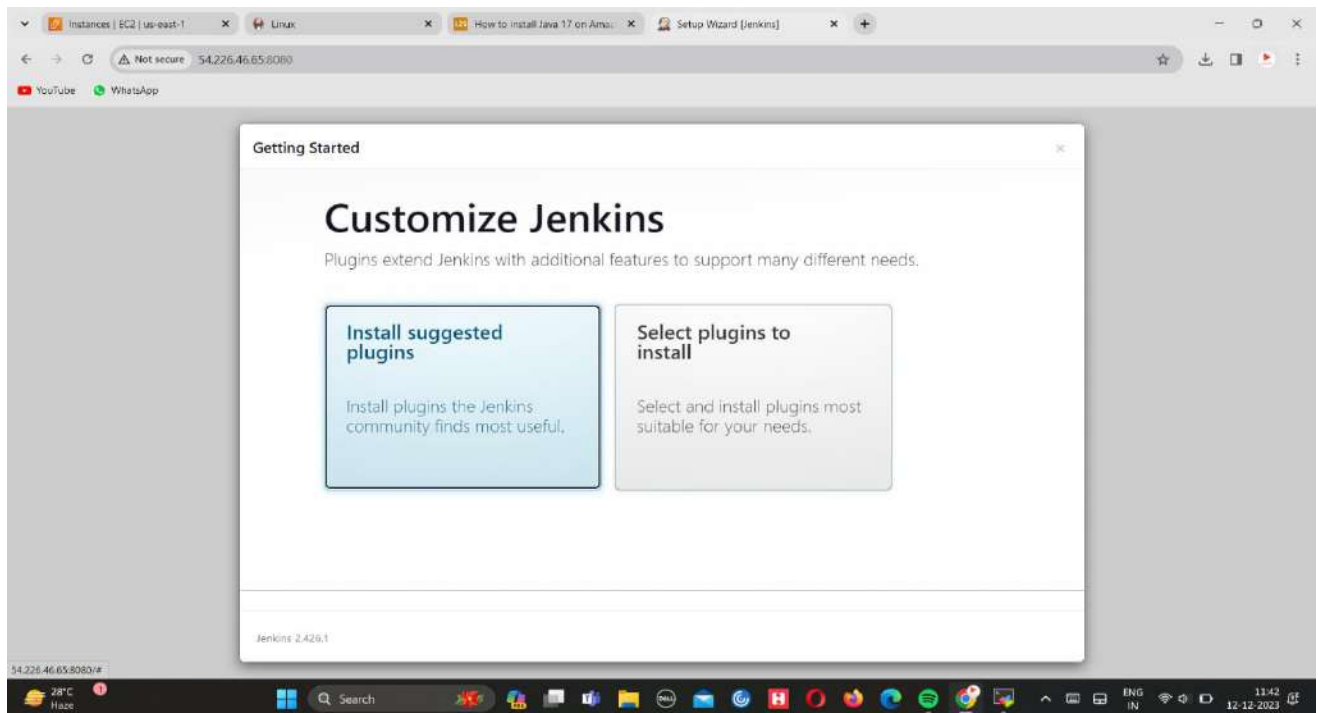
Complete!
[root@ip-172-31-22-182 ec2-user]# sudo systemctl daemon-reload
[root@ip-172-31-22-182 ec2-user]# sudo systemctl enable jenkins
Created symlink /etc/systemd/system/multi-user.target.wants/jenkins.service → /usr/lib/systemd/system/jenkins.service.
[root@ip-172-31-22-182 ec2-user]# sudo systemctl start jenkins
[root@ip-172-31-22-182 ec2-user]# vi /var/lib/jenkins/secrets/initialAdminPassword
[root@ip-172-31-22-182 ec2-user]#

```

➔ copy the link and open link using vi command, it contain password copy that password and paste it below.



➔ we need to select install suggested plugins



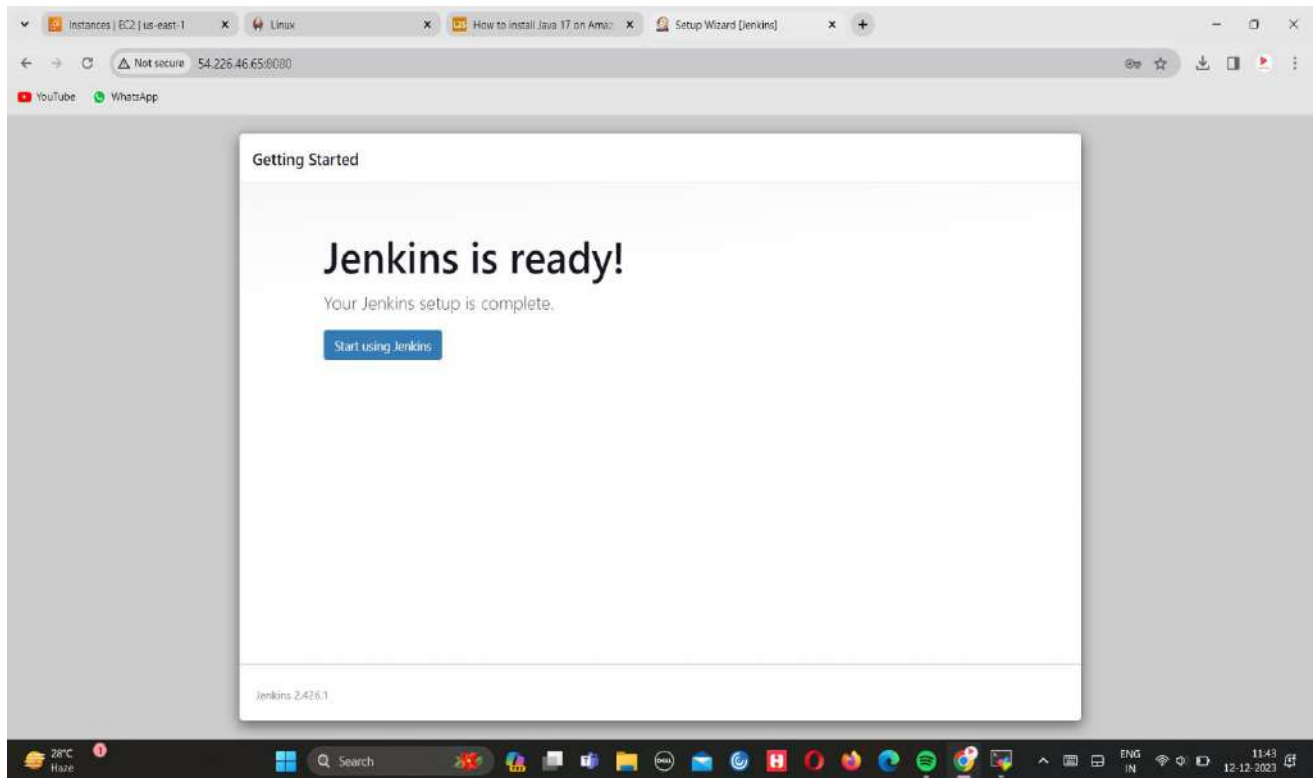
➔ It will open a registration page. We need to fill it with your details.

The screenshot shows the Jenkins Setup Wizard interface in a web browser. The page is titled "Getting Started" and "Create First Admin User". It contains four input fields: "Username" with the value "y20acs402", "Password" with masked characters, "Confirm password" with masked characters, and "Full name" with the value "AKURATHI RANJITH KRISHNA". There is an empty "Email address" field below. At the bottom, it says "Jenkins 2.426.1" and has two buttons: "Skip and continue as admin" and "Save and Continue".

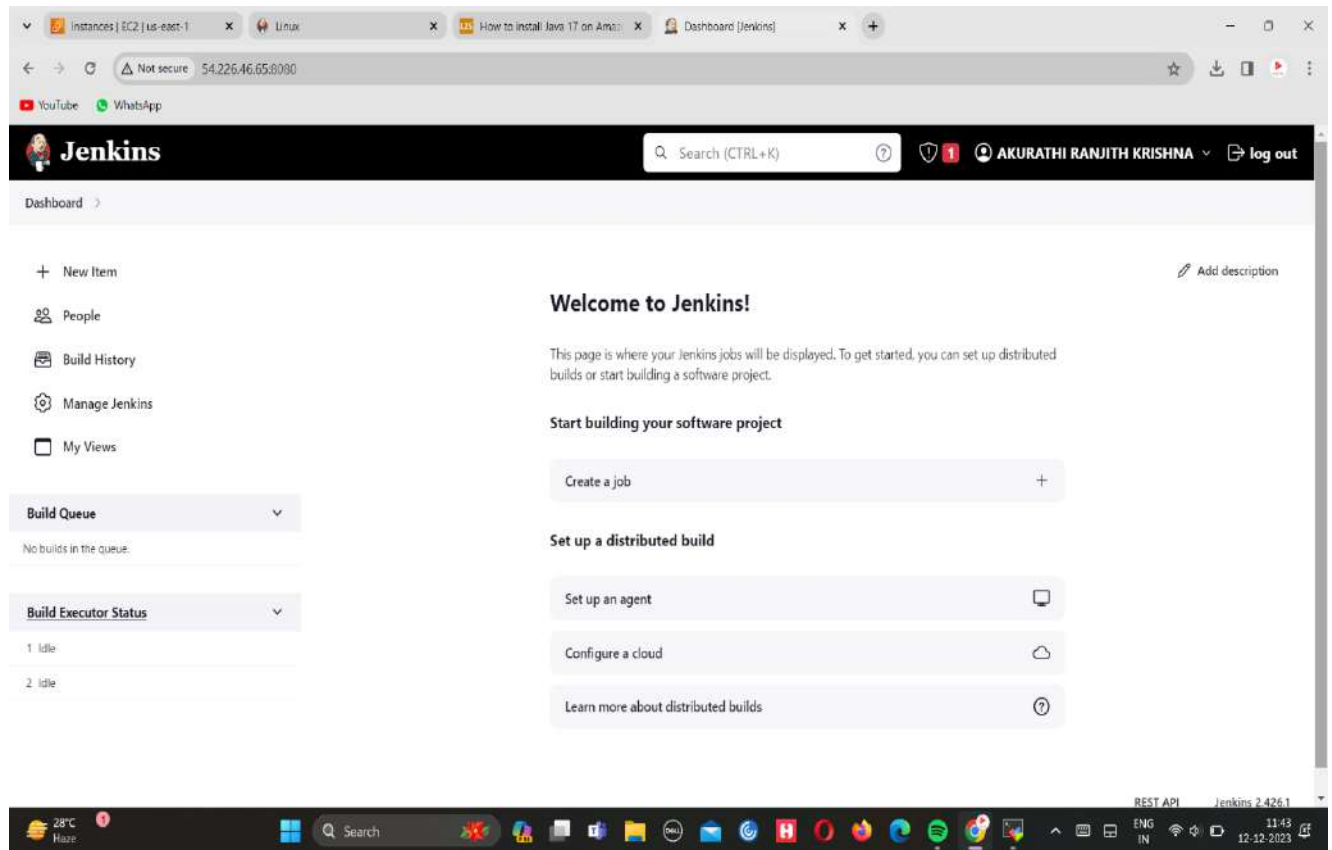
➔ It will show the url of the jenkins

The screenshot shows the Jenkins Setup Wizard interface in a web browser. The page is titled "Getting Started" and "Instance Configuration". It contains a "Jenkins URL:" label and a text input field with the value "http://54.226.46.65:8080/". Below the input field, there is explanatory text about the Jenkins URL. At the bottom, it says "Jenkins 2.426.1" and has two buttons: "Not now" and "Save and Finish".

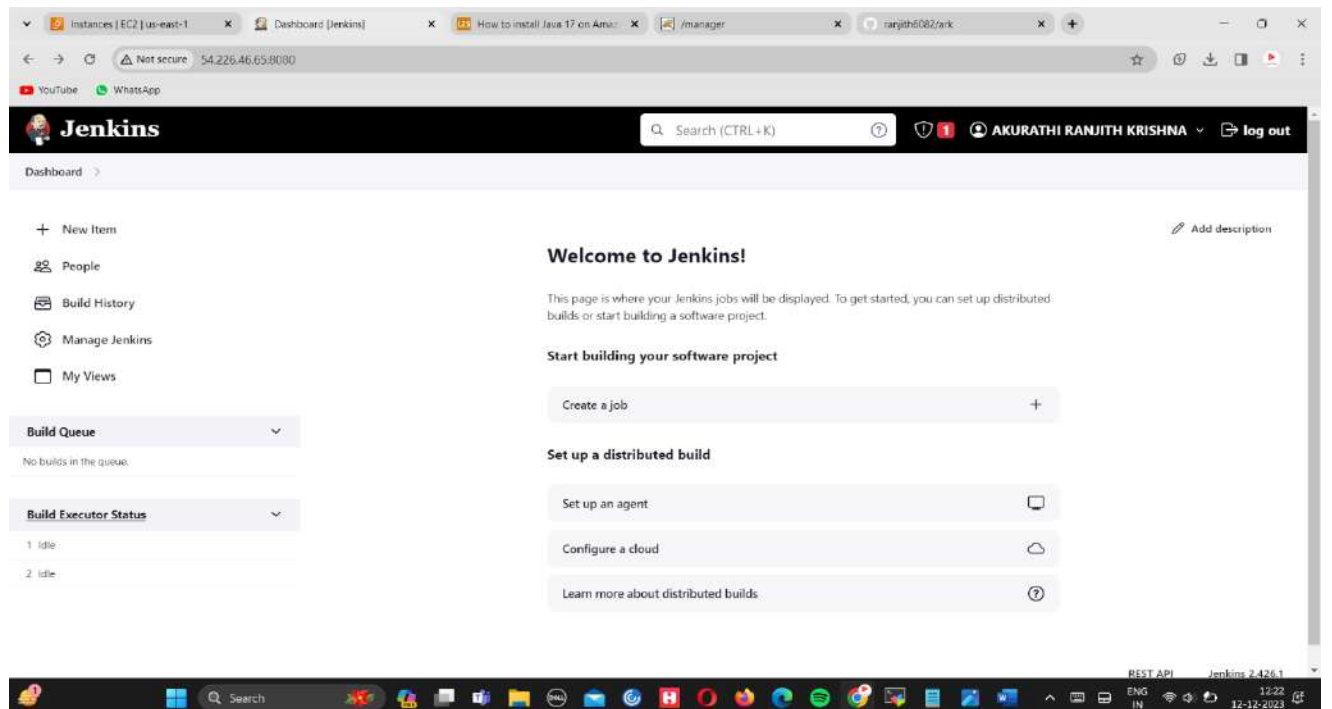
➔ Now the Jenkins is successfully installed. Click on start using Jenkins.



➔ After login success, the interface of the Jenkins look like as shown in below.

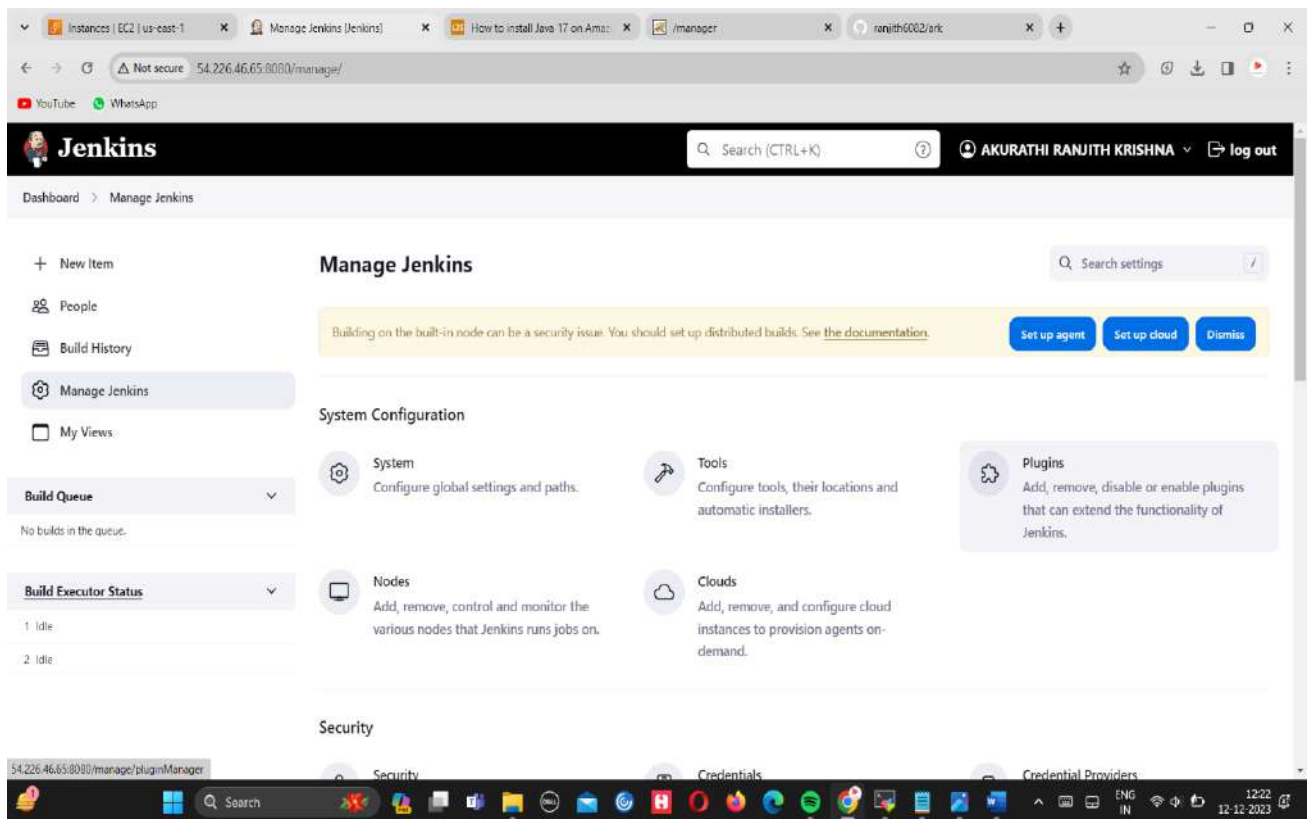


➔ Login into Jenkins and select manage jenkins



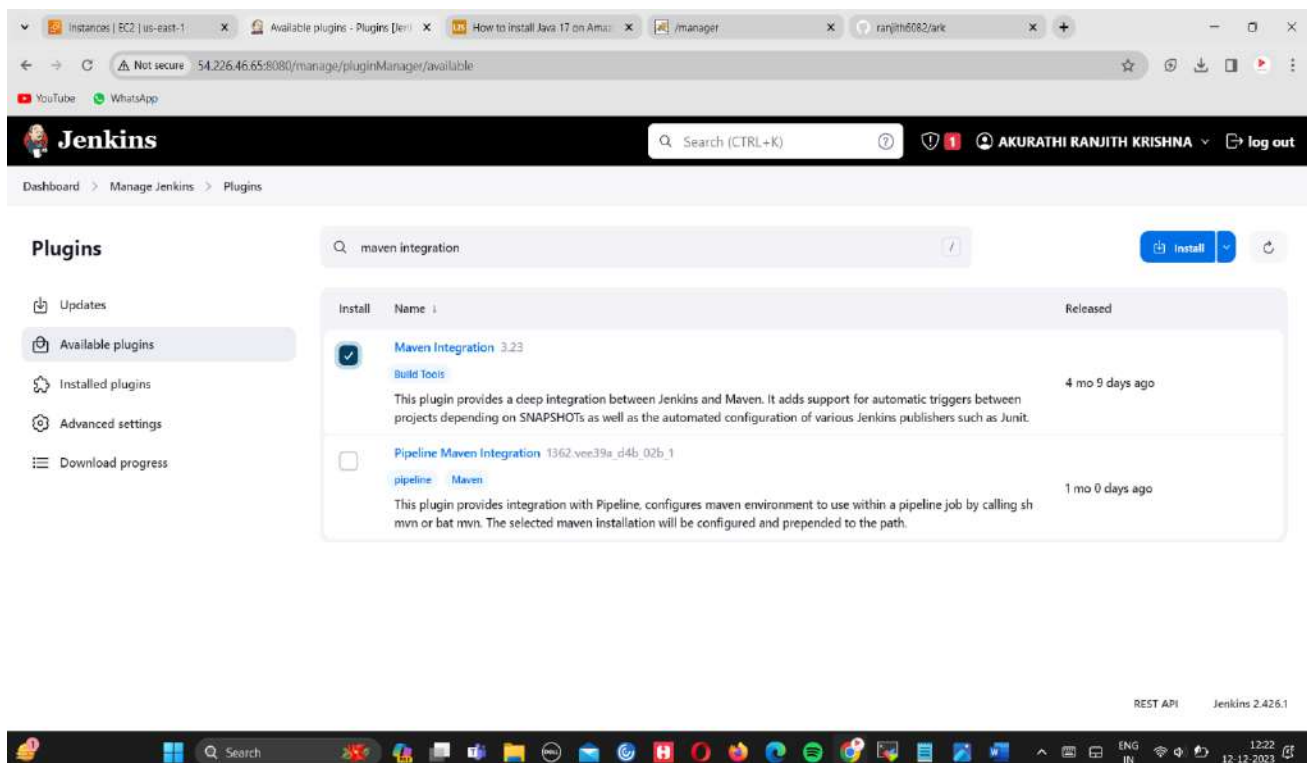


➔ We need to click on plugin



The screenshot shows the Jenkins 'Manage Jenkins' interface. The left sidebar contains links for 'New Item', 'People', 'Build History', 'Manage Jenkins' (selected), and 'My Views'. Below this is a 'Build Queue' section showing 'No builds in the queue.' and a 'Build Executor Status' section showing two idle executors. The main content area is titled 'Manage Jenkins' and features a search bar. A yellow warning banner at the top states: 'Building on the built-in node can be a security issue. You should set up distributed builds. See the documentation.' with buttons for 'Set up agent', 'Set up cloud', and 'Dismiss'. The 'System Configuration' section is visible, with tabs for 'System', 'Tools', 'Plugins', 'Nodes', and 'Clouds'. The 'Plugins' tab is selected, showing a search bar and a list of available plugins.

➔ click on available plugins, select maven integration plugin and install that plugin.

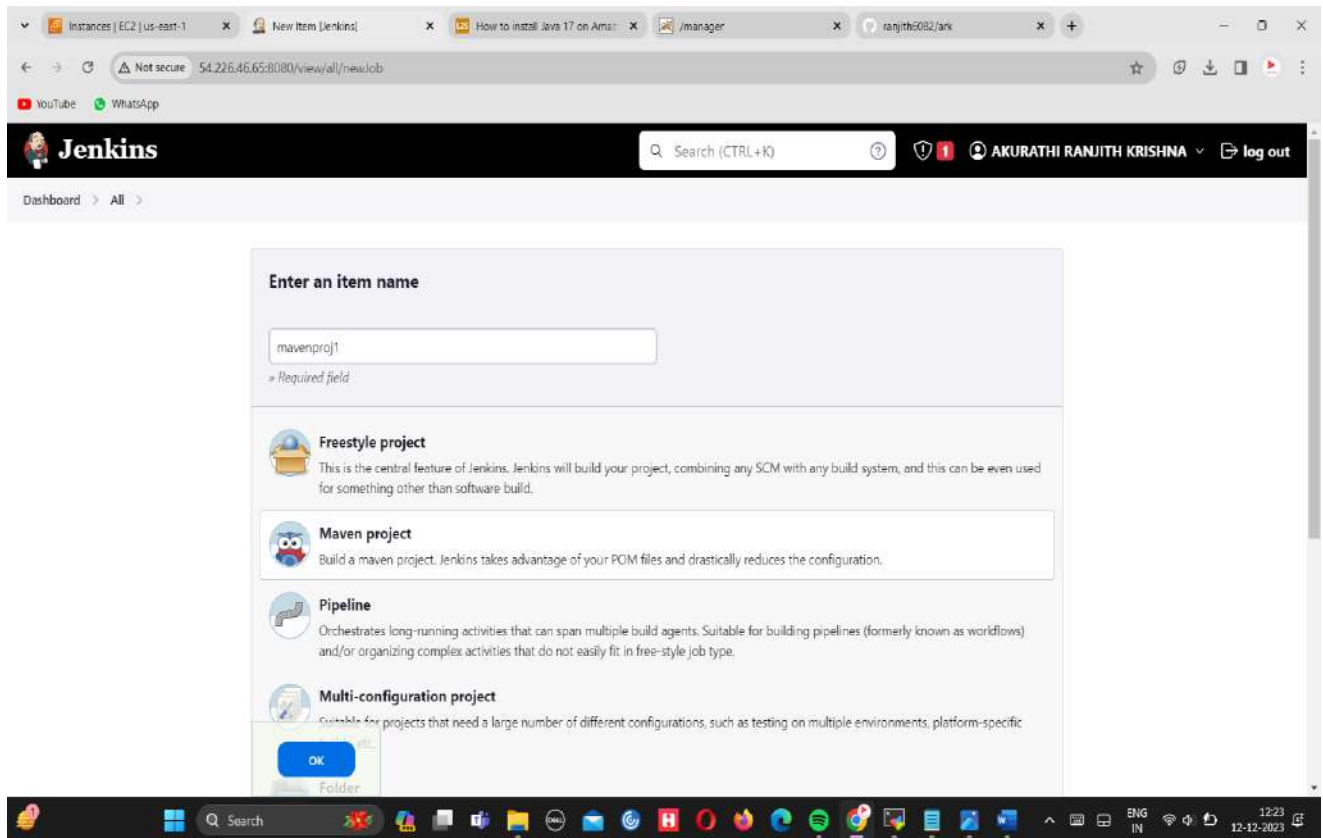


The screenshot shows the Jenkins 'Plugins' page. The left sidebar contains links for 'Updates', 'Available plugins' (selected), 'Installed plugins', 'Advanced settings', and 'Download progress'. The main content area is titled 'Plugins' and features a search bar with 'maven integration' entered. Below the search bar, there is a table of available plugins. The 'Maven Integration 3.23' plugin is selected, and its details are shown. The 'Pipeline Maven Integration' plugin is also listed.

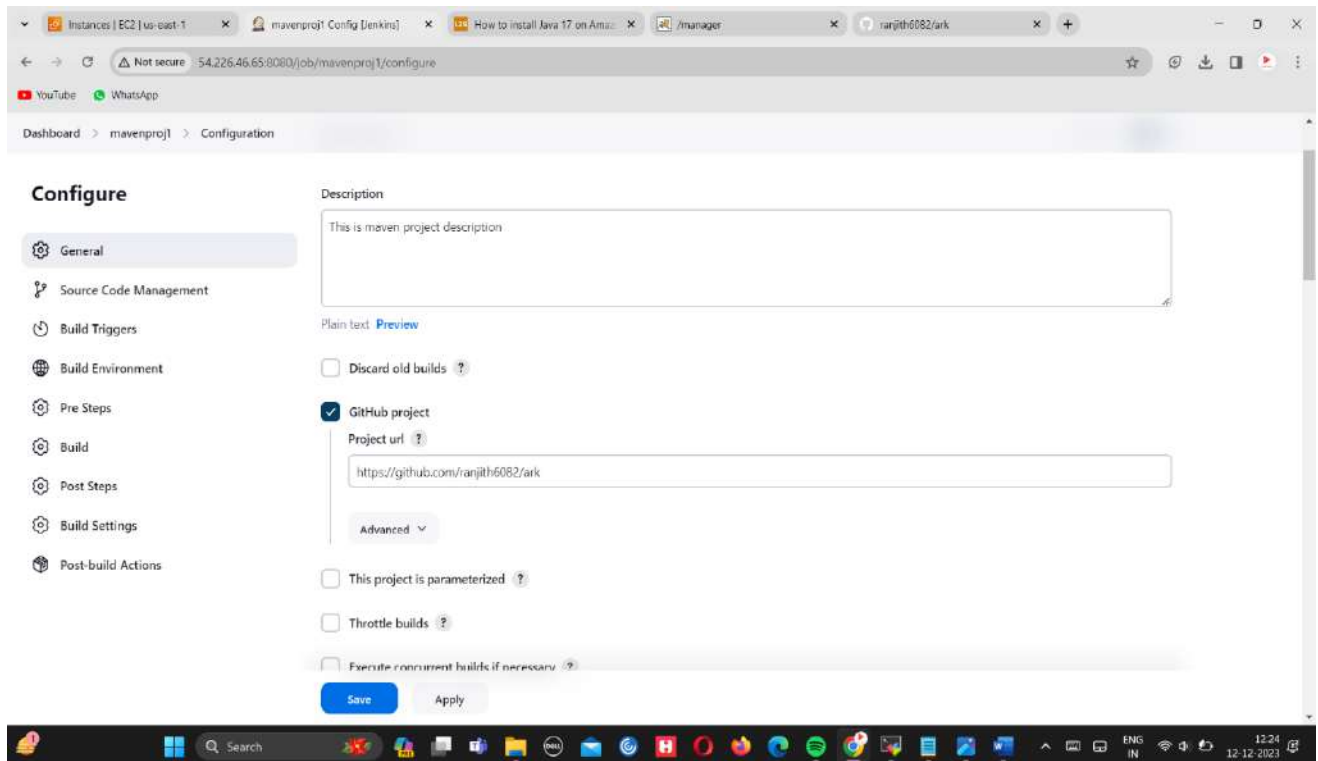
Install	Name	Released
<input checked="" type="checkbox"/>	<b>Maven Integration</b> 3.23 Build Tools This plugin provides a deep integration between Jenkins and Maven. It adds support for automatic triggers between projects depending on SNAPSHOTS as well as the automated configuration of various Jenkins publishers such as Junit.	4 mo 9 days ago
<input type="checkbox"/>	<b>Pipeline Maven Integration</b> 1362.vcc39a_d4b_02b_1 pipeline Maven This plugin provides integration with Pipeline, configures maven environment to use within a pipeline job by calling sh mvn or bat mvn. The selected maven installation will be configured and prepended to the path.	1 mo 0 days ago



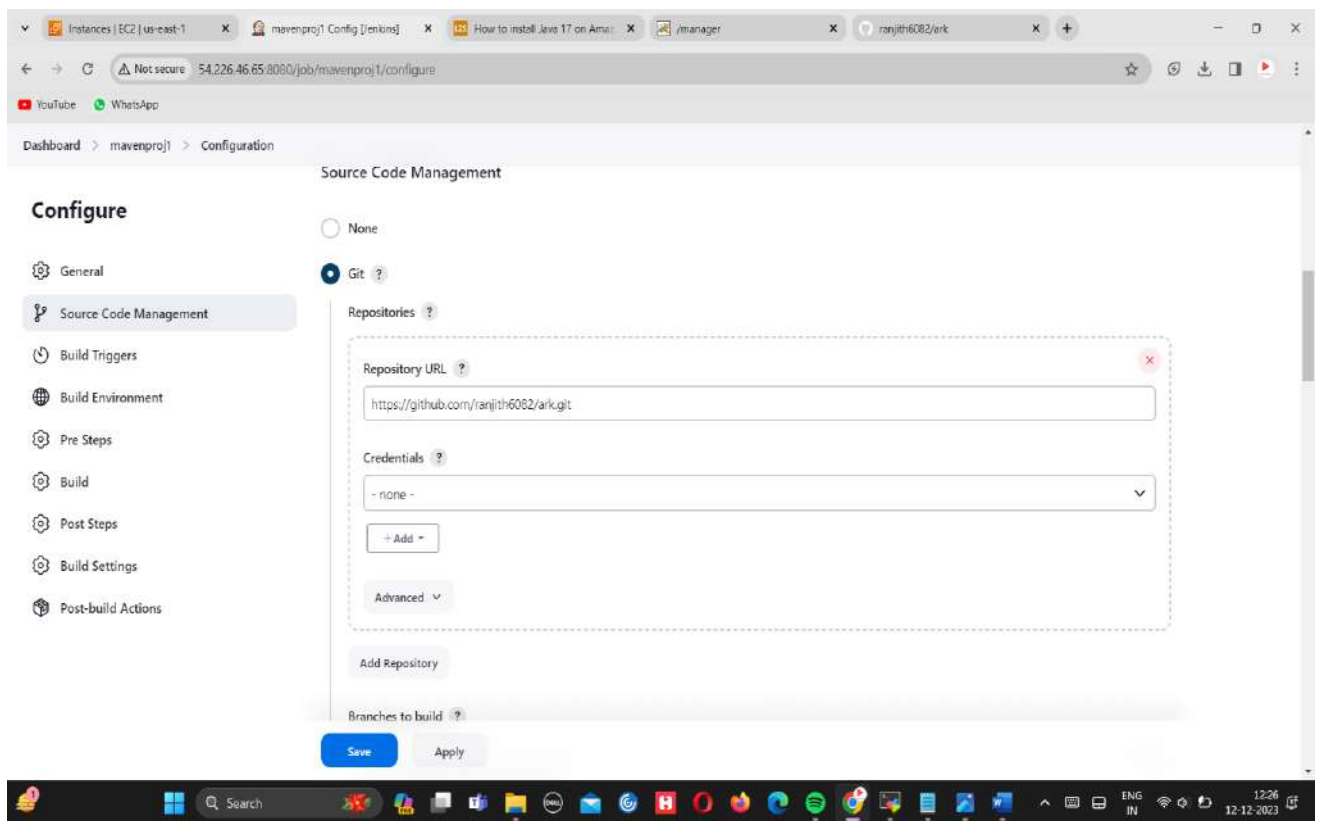
➔ select a new item, enter item name and select on maven project.



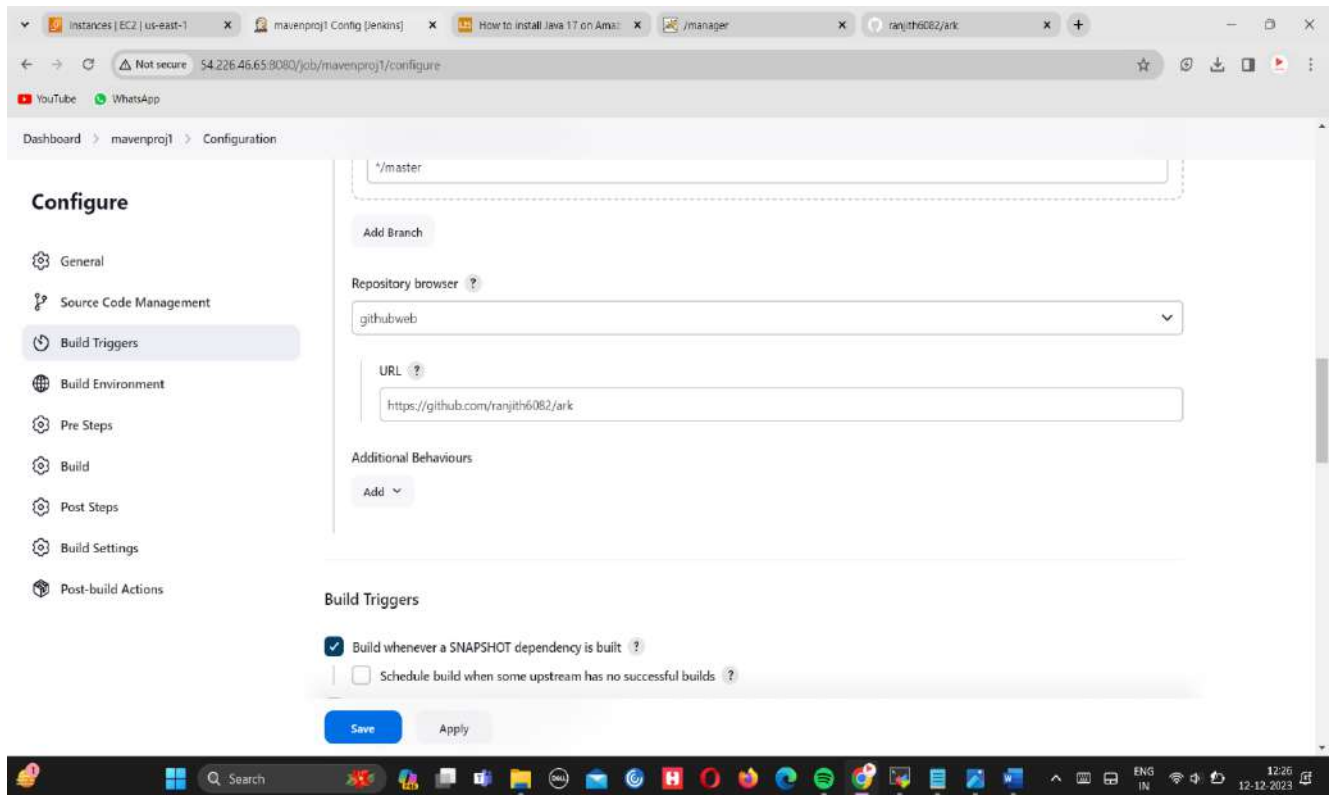
➔ write the description of an item and select on github project add git url.



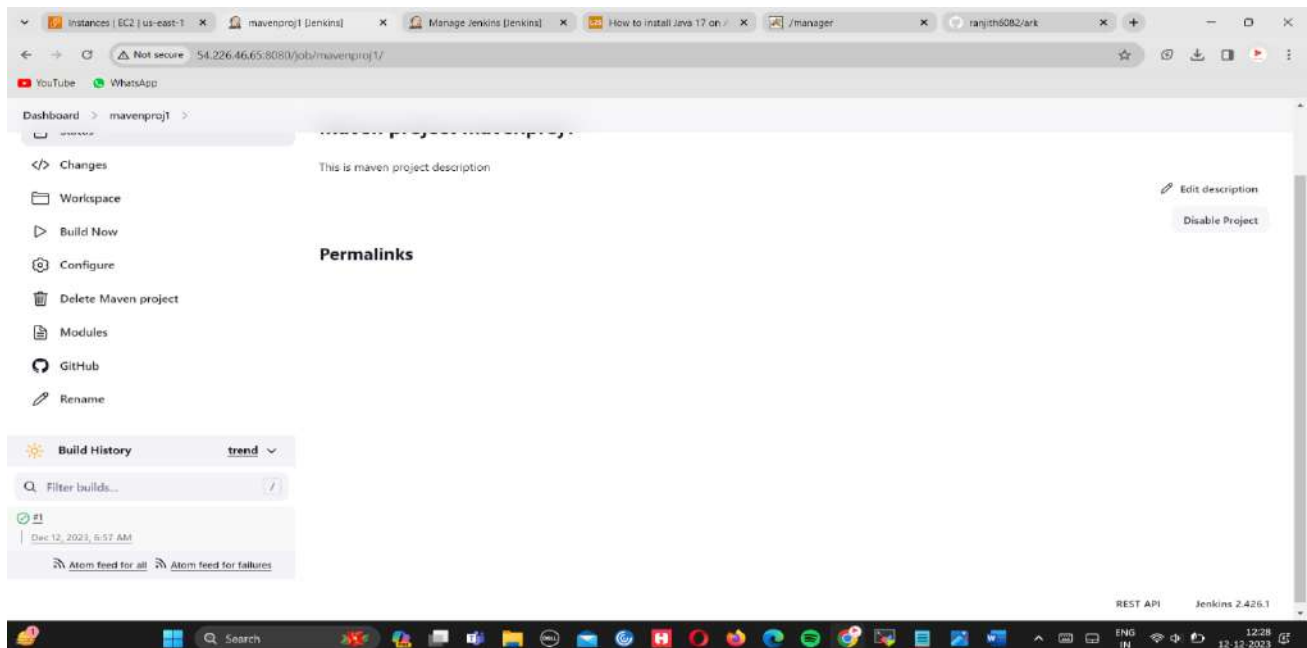
➔ In source code management select git and add a repository url.



➔ Select githubweb from dropdownlist enter url and click on apply and save button..



➔ we need to select build now option, if we get green symbol then our build will be done successfully.



➔ Now we can check the console output, our build will be done successfully.

The screenshot displays the Jenkins web interface in a browser. The address bar shows the URL `54.226.46.65:8080/job/mavenproj1/1/console`. The Jenkins logo and a search bar are at the top. The left sidebar contains navigation links: Status, Changes, Console Output (selected), View as plain text, Edit Build Information, Delete build #1, Git Build Data, Redeploy Artifacts, and See Fingerprints. The main area is titled "Console Output" and shows the following text:

```
Started by user AKURATHI RANJITH KRISHNA
Running as SYSTEM
Building in workspace /var/lib/jenkins/workspace/mavenproj1
The recommended git tool is: NONE
No credentials specified
Cloning the remote Git repository
Cloning repository https://github.com/ranjith6082/ark.git
> git init /var/lib/jenkins/workspace/mavenproj1 # timeout=10
Fetching upstream changes from https://github.com/ranjith6082/ark.git
> git --version # timeout=10
> git --version # 'git version 2.40.1'
> git fetch --tags --force --progress -- https://github.com/ranjith6082/ark.git +refs/heads/*:refs/remotes/origin/* # timeout=10
> git config remote.origin.url https://github.com/ranjith6082/ark.git # timeout=10
> git config --add remote.origin.fetch +refs/heads/*:refs/remotes/origin/* # timeout=10
Avoid second fetch
> git rev-parse refs/remotes/origin/master^{commit} # timeout=10
Checking out Revision b8b00b319f4b645f2592b73f8063d1a85ebde19f (refs/remotes/origin/master)
> git config core.sparsecheckout # timeout=10
> git checkout -f b8b00b319f4b645f2592b73f8063d1a85ebde19f # timeout=10
Commit message: "commit done successfully"
First time build. Skipping changelog.
Parsing POMs
```

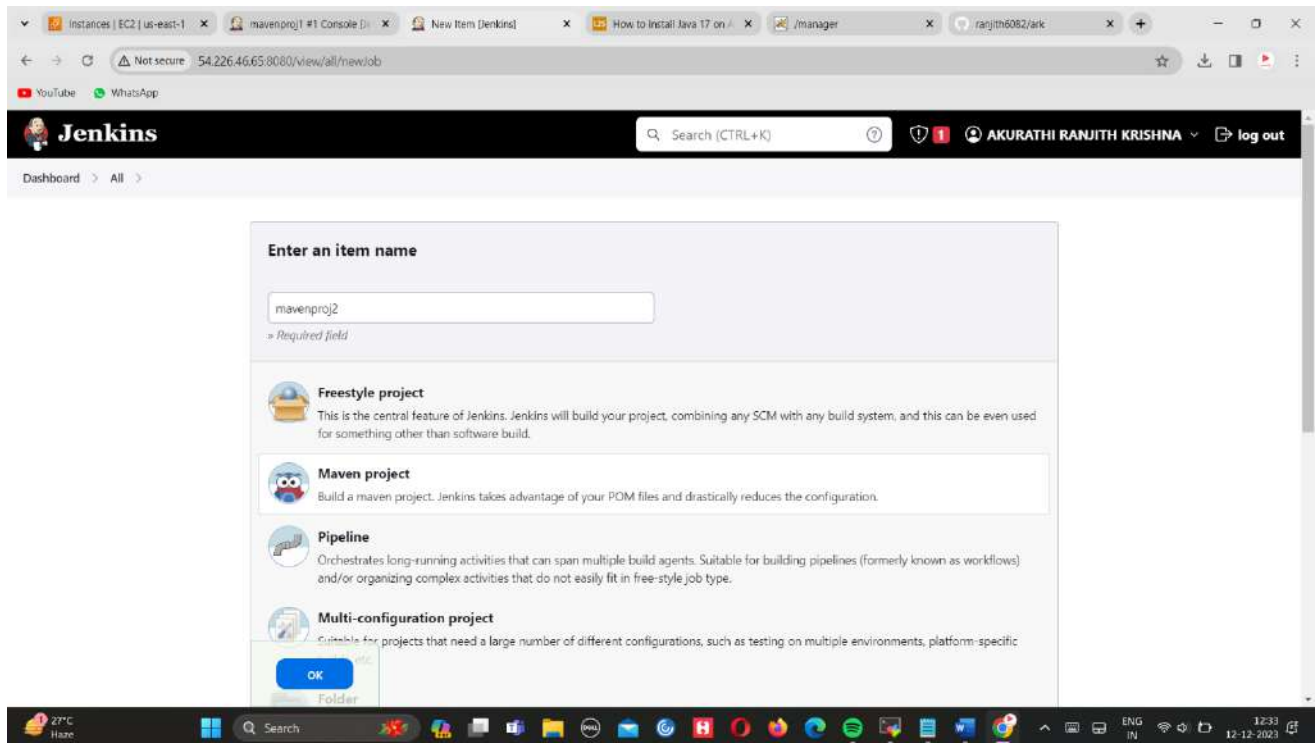
The Windows taskbar at the bottom shows the time as 12:28 on 12-12-2023.

## Experiment:5

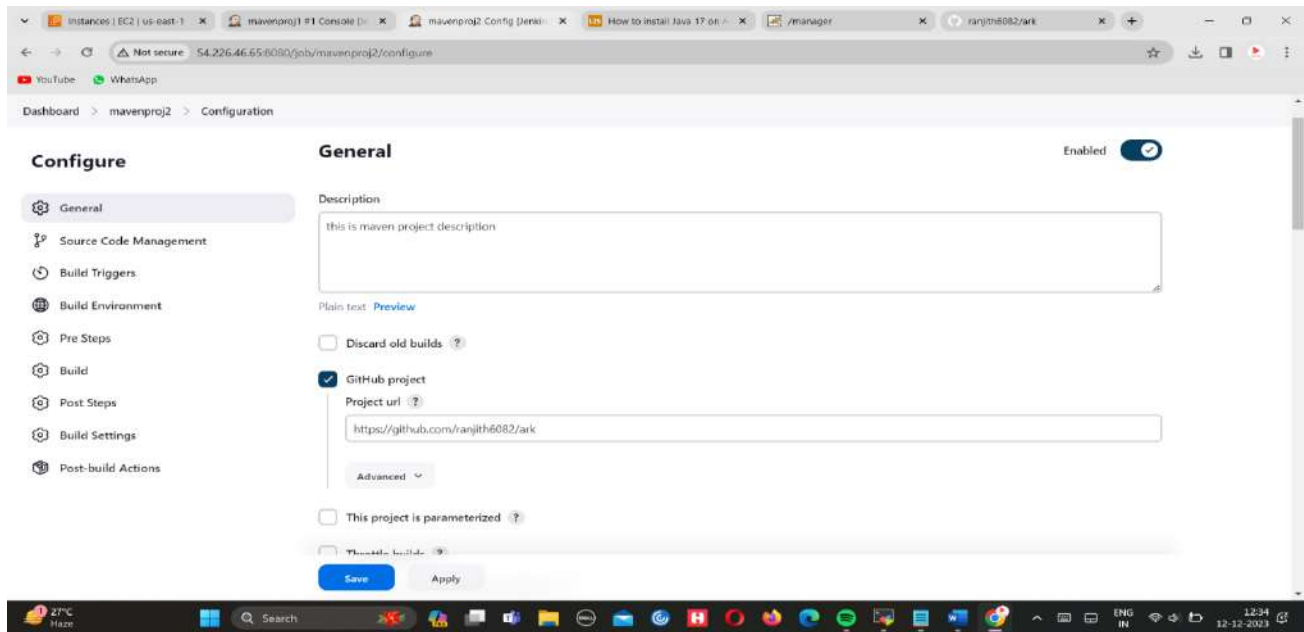
### 5. Demonstrate CI/CD job to build maven application and deploy it on tomcat server using Jenkins.

#### Procedure:

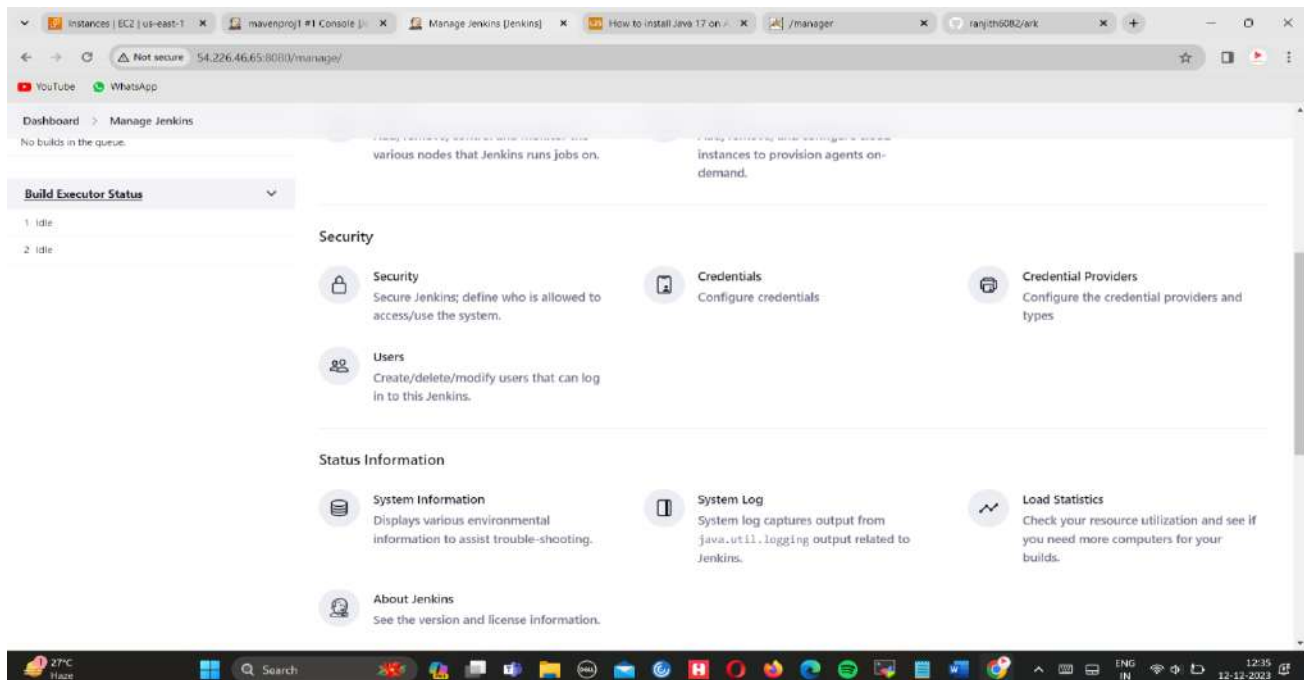
➔ Open Jenkins and select new item



➔ We need to write the description of item and give the project url



➔ Go to the dashboard select manage jenkins



➔ We need to select global credentials and add credentials

Global credentials (unrestricted) [+ Add Credentials](#)

Credentials that should be available irrespective of domain specification to requirements matching.

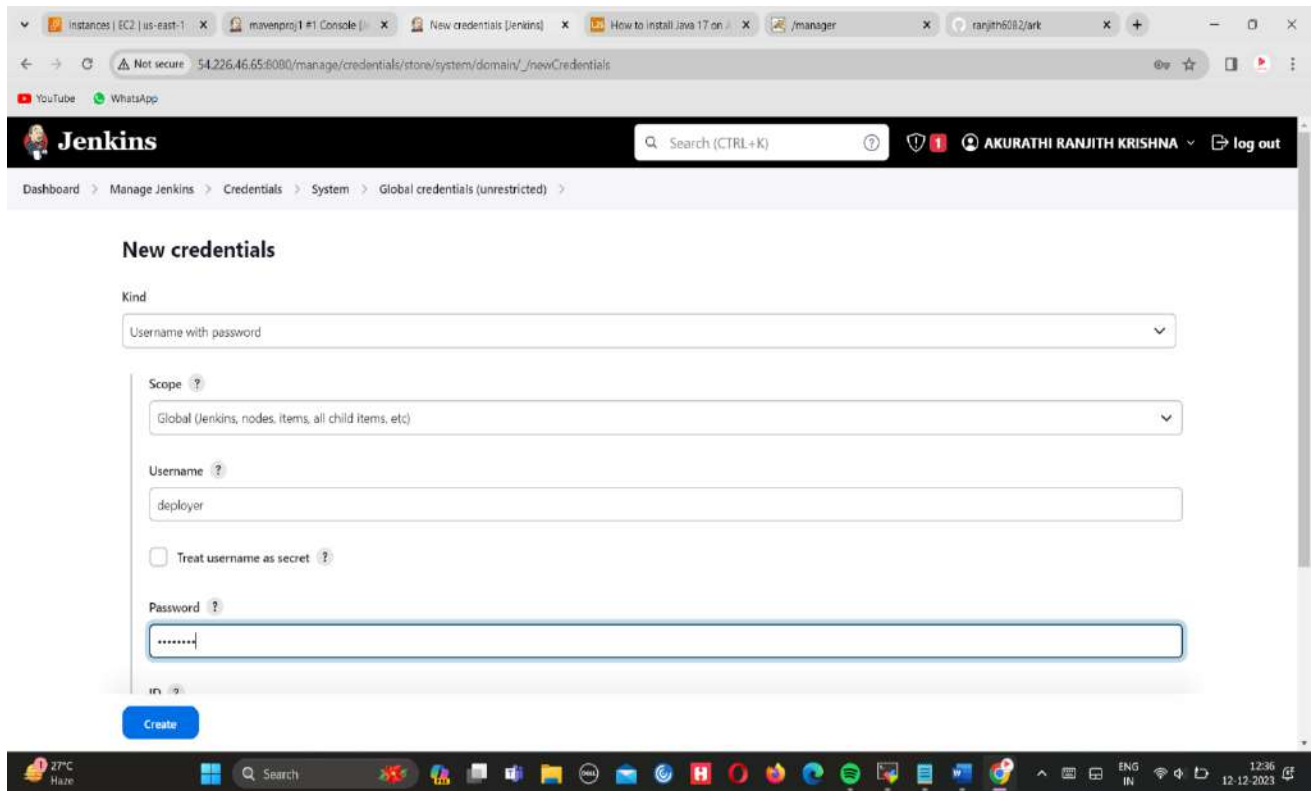
ID	Name	Kind	Description
This credential domain is empty. How about <a href="#">adding some credentials?</a>			

Icons: S M L

REST API Jenkins 2.426.1

27°C Haze Search 12:36 12-12-2023

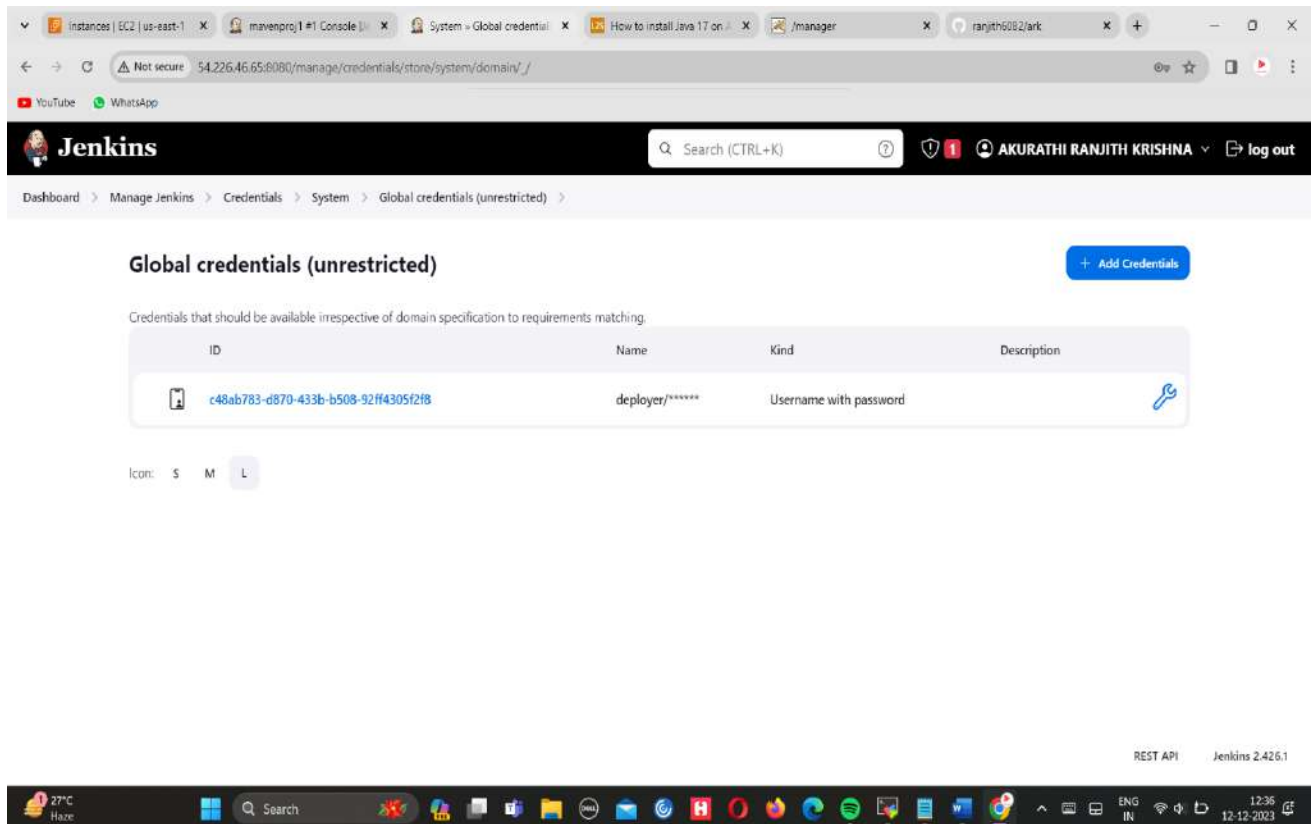
➔ Enter username as “deployer” and password as “deployer” and click on create





The screenshot shows the Jenkins 'New credentials' form. The browser tabs include 'Instances | EC2 | us-east-1', 'mavenproj1 #1 Console', 'New credentials [Jenkins]', 'How to install Java 17 on', '/manager', and 'ranjith6082/ark'. The address bar shows '54.226.46.65:8080/manage/credentials/store/system/domain/\_/newCredentials'. The Jenkins header shows the user 'AKURATHI RANJITH KRISHNA' and a 'log out' button. The breadcrumb trail is 'Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted)'. The form is titled 'New credentials' and contains the following fields:

- Kind:** A dropdown menu with 'Username with password' selected.
- Scope:** A dropdown menu with 'Global (Jenkins, nodes, items, all child items, etc)' selected.
- Username:** A text input field containing 'deployer'.
- Treat username as secret:** An unchecked checkbox.
- Password:** A password input field with masked characters '\*\*\*\*\*'.
- ID:** A text input field.
- Create:** A blue button at the bottom left of the form.

➔ Now the credentials are added successfully



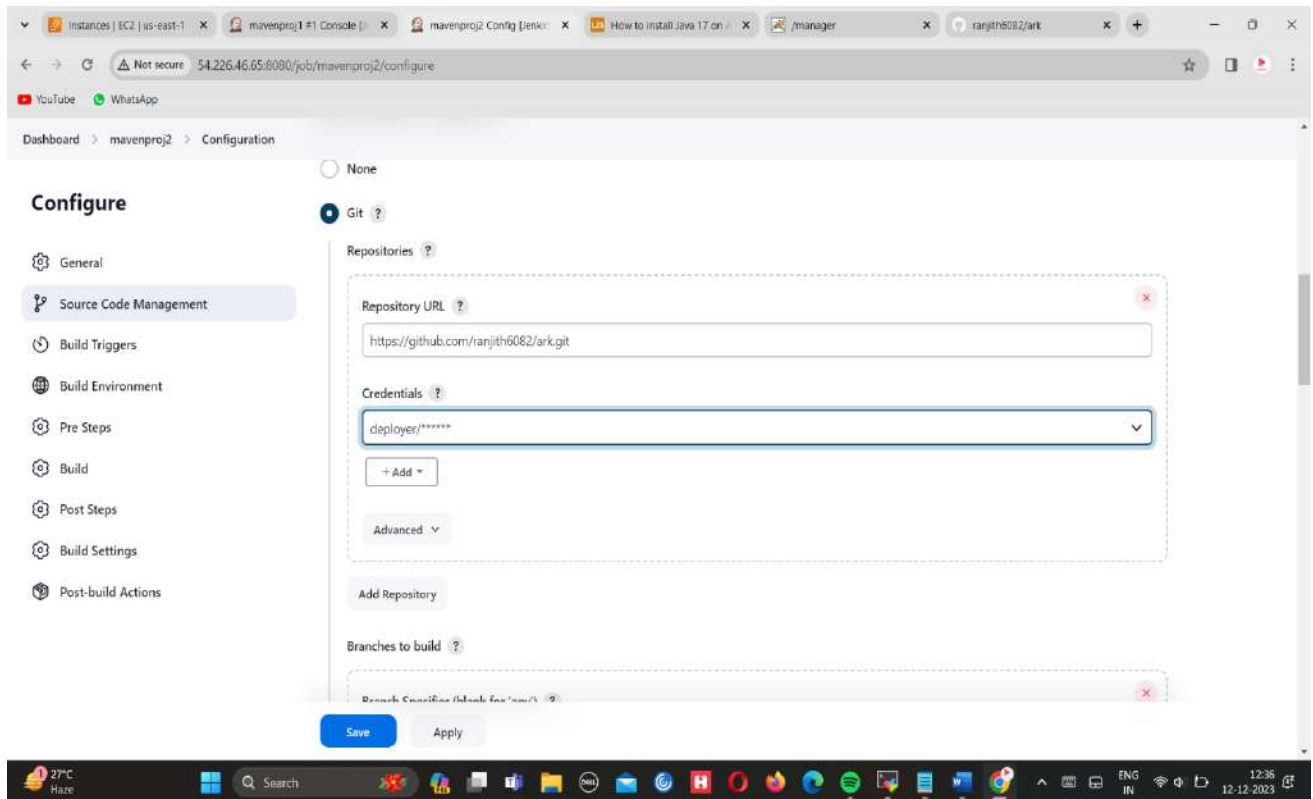
The screenshot shows the Jenkins 'Global credentials (unrestricted)' page. The browser tabs are the same as in the previous screenshot. The address bar shows '54.226.46.65:8080/manage/credentials/store/system/domain/'. The Jenkins header is the same. The breadcrumb trail is 'Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted)'. The page title is 'Global credentials (unrestricted)' with an '+ Add Credentials' button. Below the title, it says 'Credentials that should be available irrespective of domain specification to requirements matching.' A table lists the credentials:

ID	Name	Kind	Description
 c48ab783-d870-433b-b508-92ff4305f2f8	deployer/*****	Username with password	

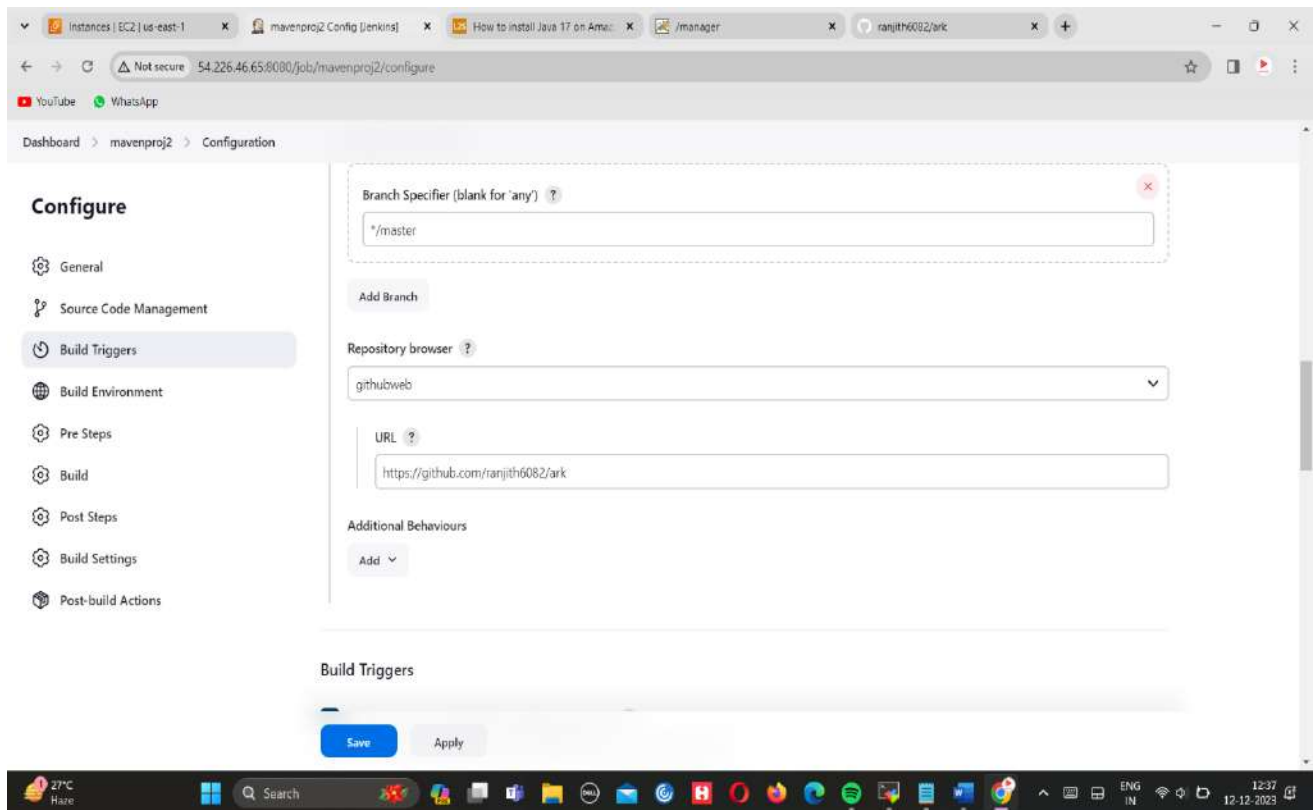
Below the table, there is a section for 'Icon:' with buttons for 'S', 'M', and 'L'. At the bottom right, it says 'REST API Jenkins 2.426.1'.



➔ Open the configuration file and give the credentials which is given in global credentials

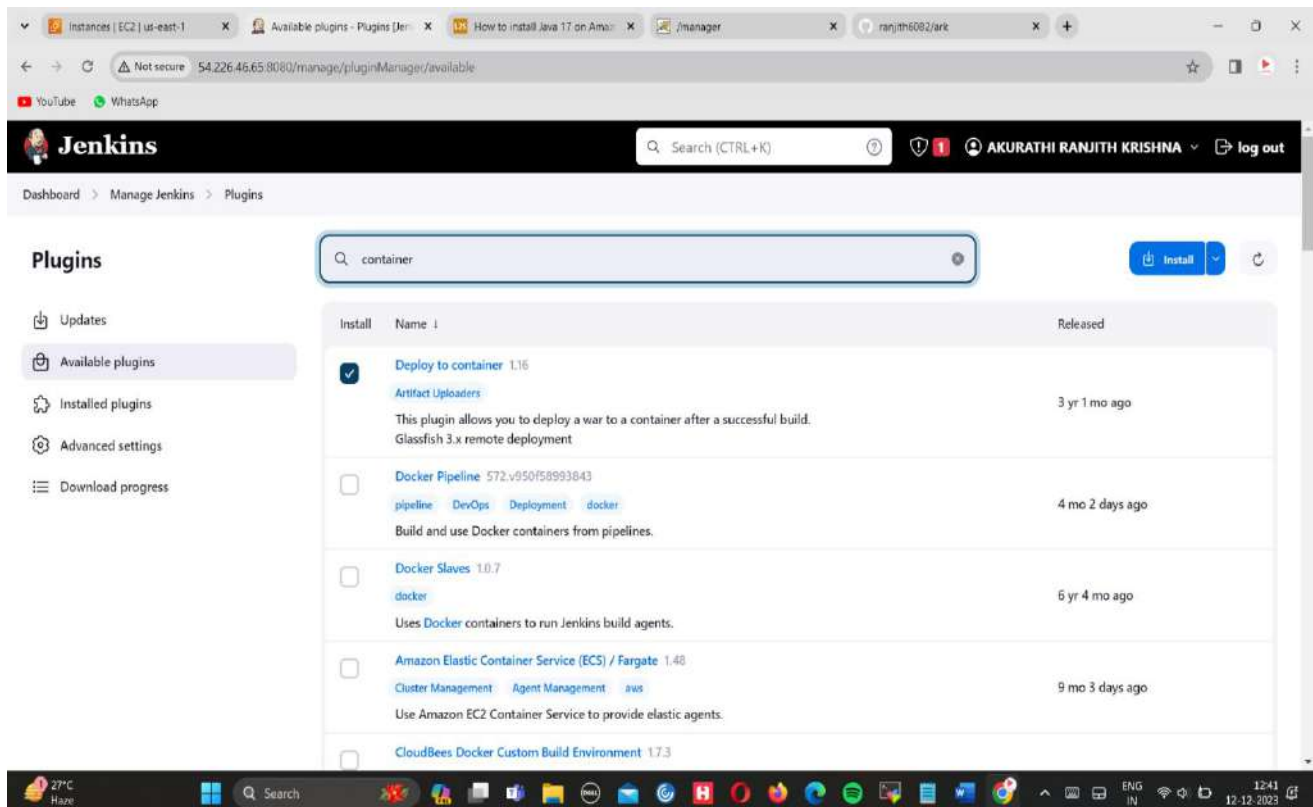


➔ Select githubweb from dropdown list and add url to it



The screenshot shows the Jenkins Configuration page for a job named 'mavenproj2'. The left sidebar contains a 'Configure' section with a list of tabs: General, Source Code Management, Build Triggers, Build Environment, Pre Steps, Build, Post Steps, Build Settings, and Post-build Actions. The 'Build Triggers' tab is selected. The main content area shows the 'Build Triggers' configuration. It includes a 'Branch Specifier (blank for \'any\')' field with the value '\*/master'. Below this is an 'Add Branch' button. The 'Repository browser' is set to 'githubweb'. The 'URL' field contains 'https://github.com/ranjith6082/ark'. There is an 'Additional Behaviours' section with an 'Add' button. At the bottom of the configuration area are 'Save' and 'Apply' buttons. The browser's address bar shows the URL '54.226.46.65:8080/job/mavenproj2/configure'.

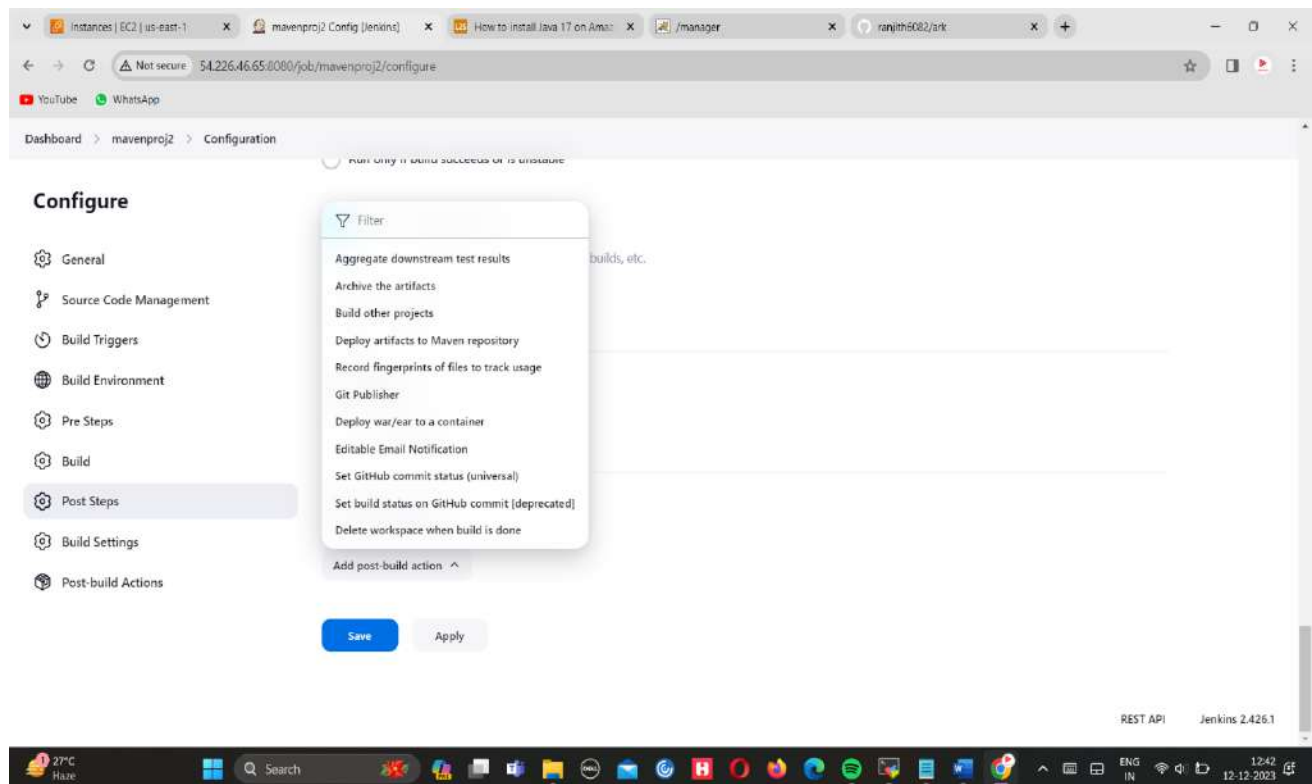
➔ Install the deploy to container on install plugins



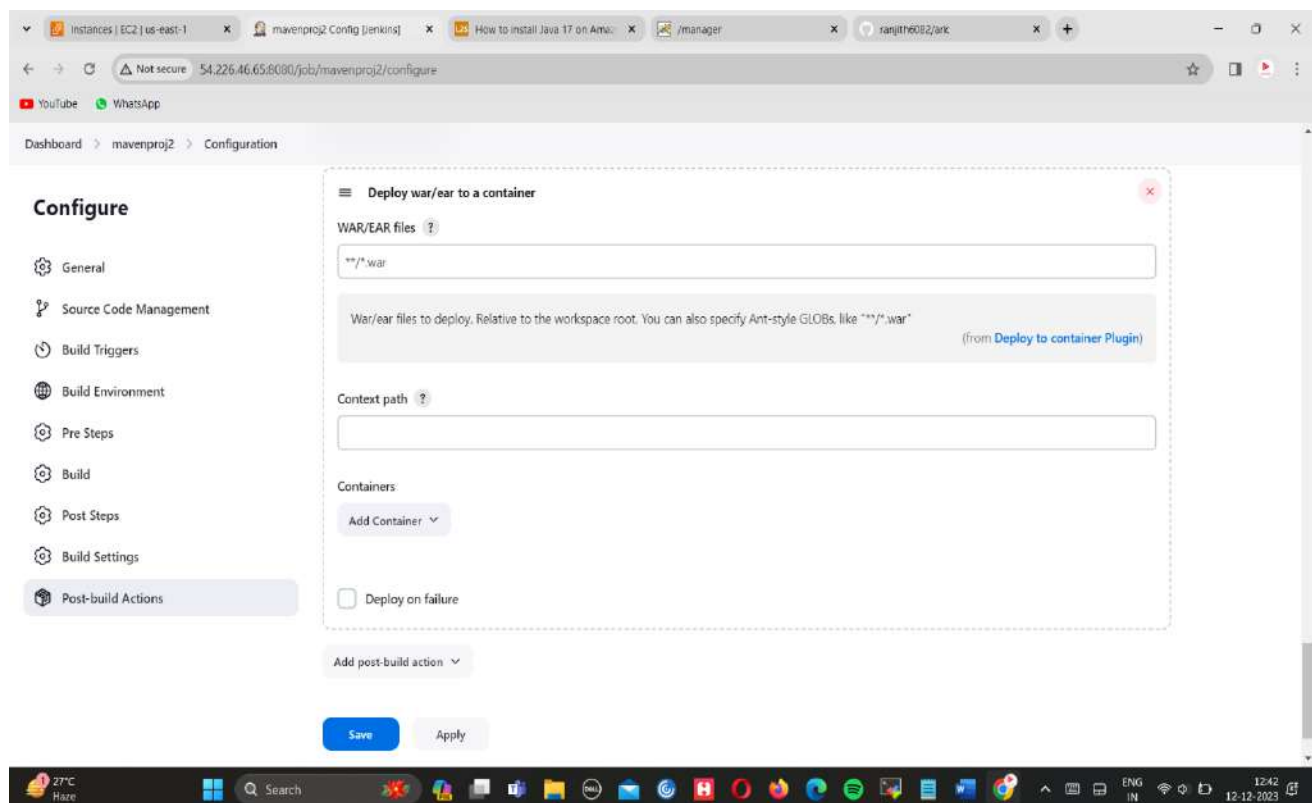
The screenshot shows the Jenkins 'Manage Jenkins > Plugins' page. The left sidebar has a 'Plugins' section with a list of tabs: Updates, Available plugins, Installed plugins, Advanced settings, and Download progress. The 'Available plugins' tab is selected. The main content area shows a search bar with the text 'container'. Below the search bar is a table of available plugins. The table has columns for 'Install', 'Name', and 'Released'. The first plugin, 'Deploy to container 1.16', is checked in the 'Install' column. The table lists several other plugins, including 'Artifact Uploaders', 'Docker Pipeline', 'Docker Slaves', 'Amazon Elastic Container Service (ECS) / Fargate', and 'CloudBees Docker Custom Build Environment'. The browser's address bar shows the URL '54.226.46.65:8080/manage/pluginManager/available'.

Install	Name	Released
<input checked="" type="checkbox"/>	Deploy to container 1.16 Artifact Uploaders This plugin allows you to deploy a war to a container after a successful build. Glassfish 3.x remote deployment	3 yr 1 mo ago
<input type="checkbox"/>	Docker Pipeline 572.v950f58993843 pipeline DevOps Deployment docker Build and use Docker containers from pipelines.	4 mo 2 days ago
<input type="checkbox"/>	Docker Slaves 1.0.7 docker Uses Docker containers to run Jenkins build agents.	6 yr 4 mo ago
<input type="checkbox"/>	Amazon Elastic Container Service (ECS) / Fargate 1.48 Cluster Management Agent Management aws Use Amazon EC2 Container Service to provide elastic agents.	9 mo 3 days ago
<input type="checkbox"/>	CloudBees Docker Custom Build Environment 1.7.3	

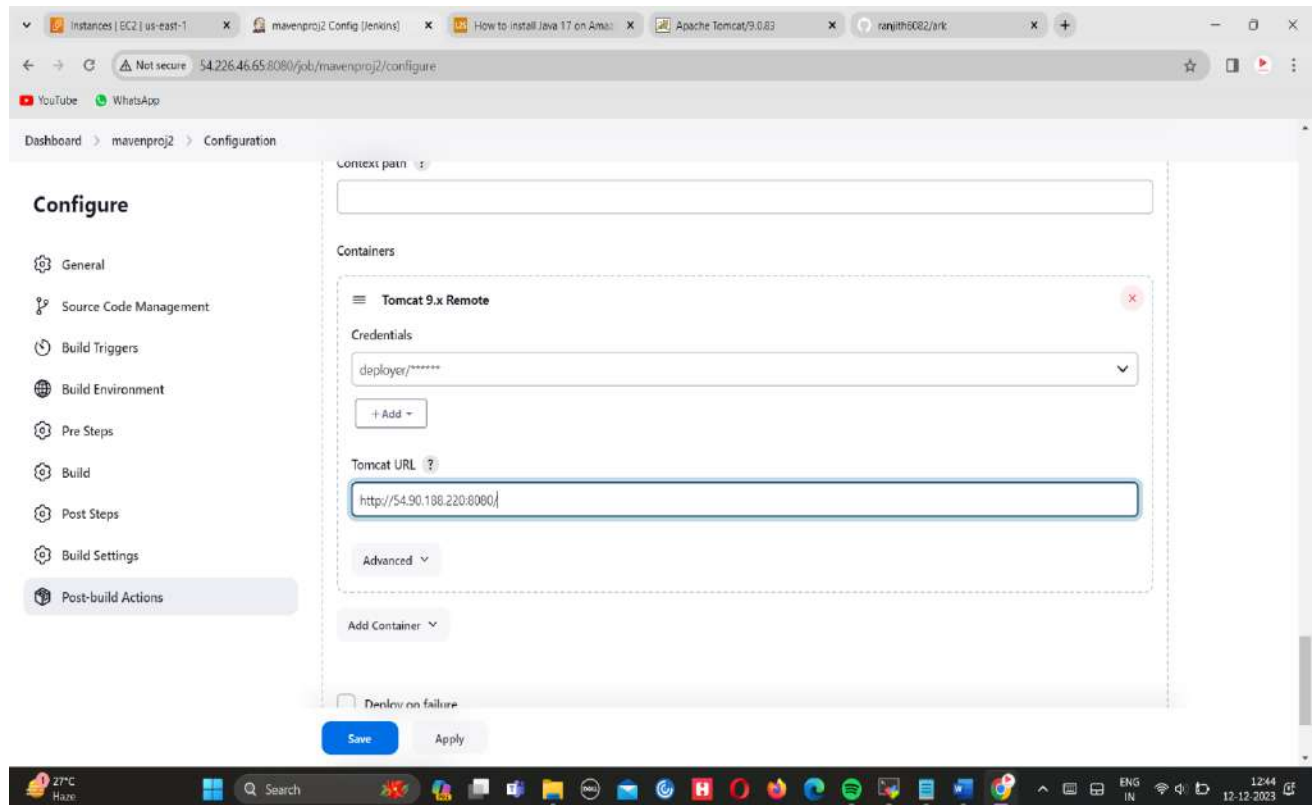
➔ we need to select the deploy war/ear to a container option



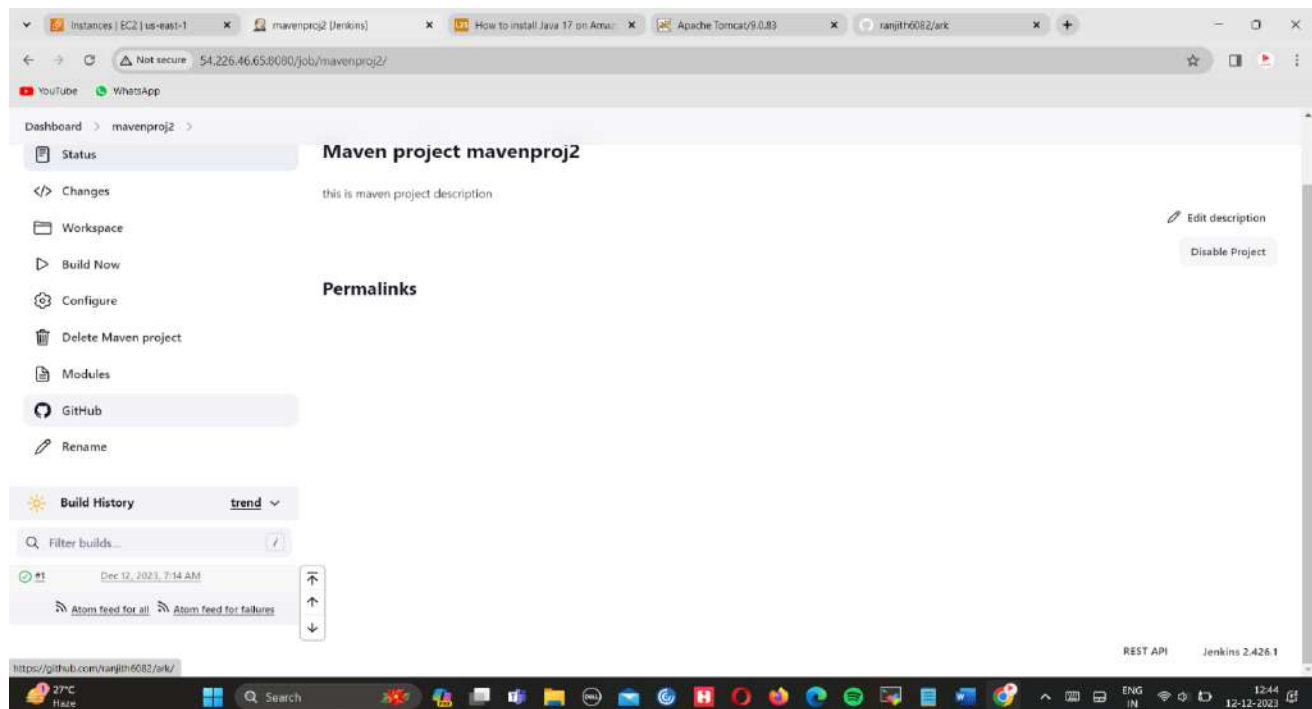
➔ Give \*\*/\*.war in WAR/EAR files



➔ Copy the tomcat url and paste it in below

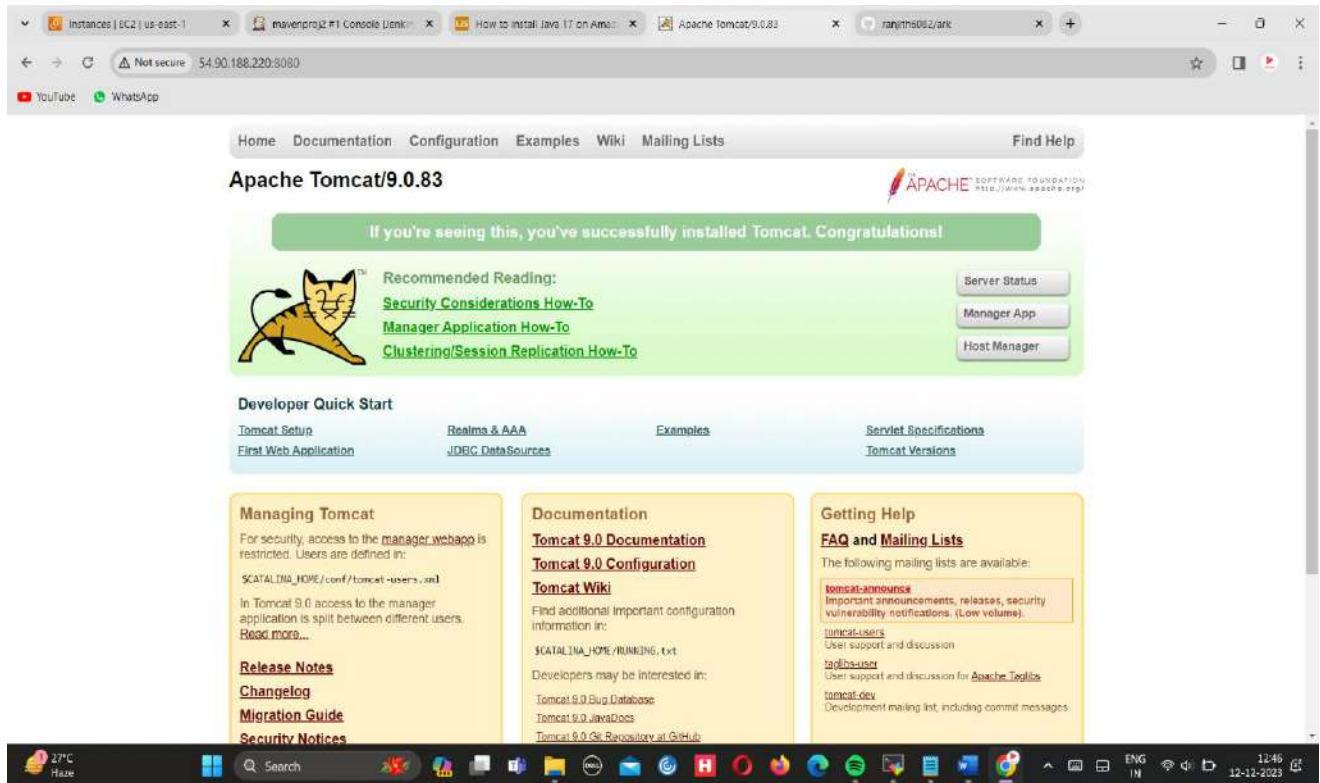


➔ Click on build now option, build will be done successfully.

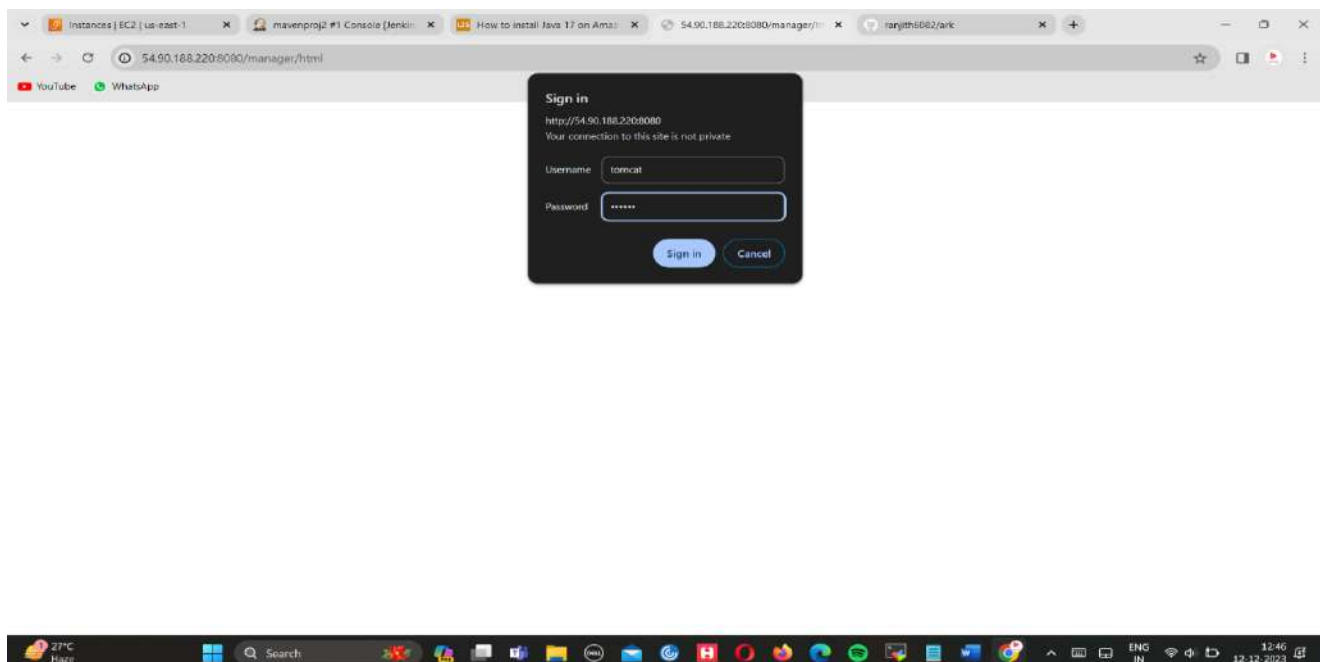


➔ Now, Open New Tab and search with tomcat IP :8080 and Redirect to tomcat page.

- ➔ There click on manager app.
- ➔ And Login to the tomcat using the credentials of tomcat user having deployer.



- ➔ Give the credentials of username and password as we specified on tomcat\_users.xml.



Message: OK

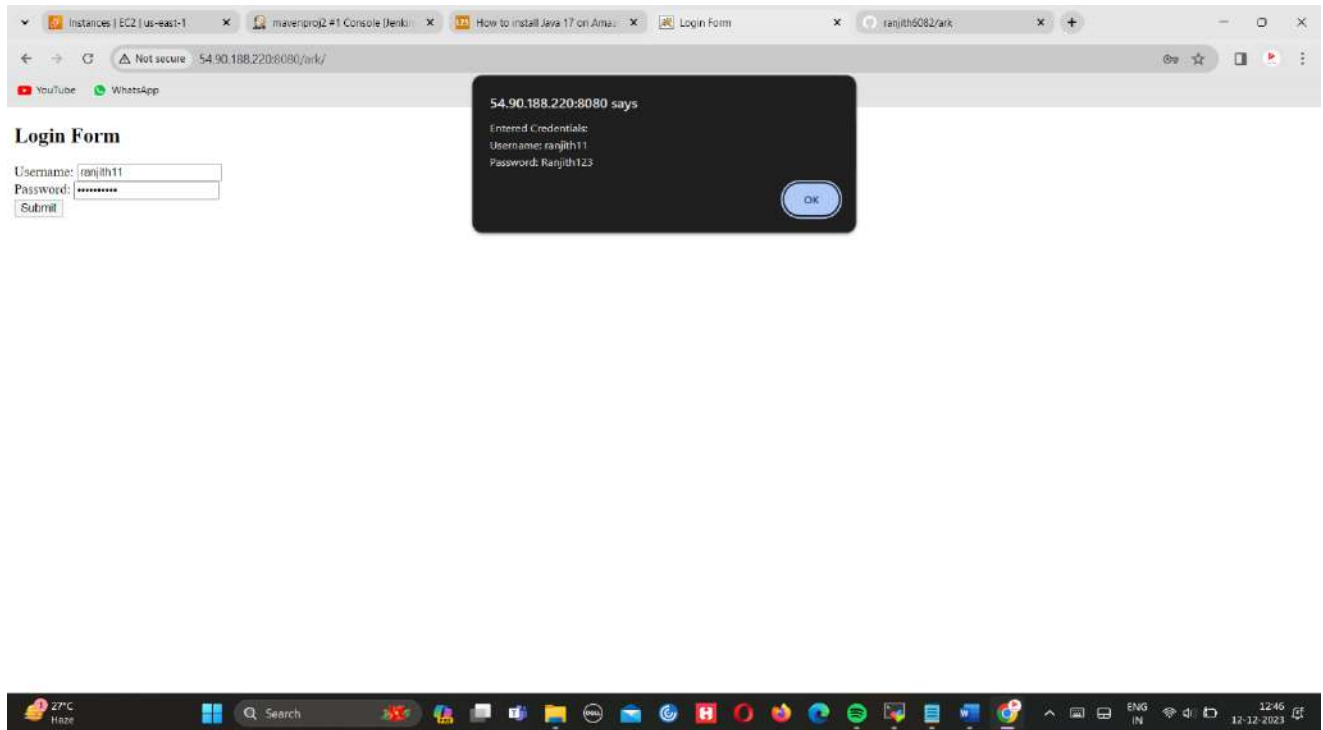
**Manager**

[List Applications](#) [HTML Manager Help](#) [Manager Help](#) [Server Status](#)

**Applications**

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/ark	None specified	Archetype Created Web Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	None specified	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/manager	None specified	Tomcat Manager Application	true	1	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

- ➔ After successful login. Click on the project that deployed maven project from the Jenkins after building the project.
- ➔ It will run project on tomcat server.



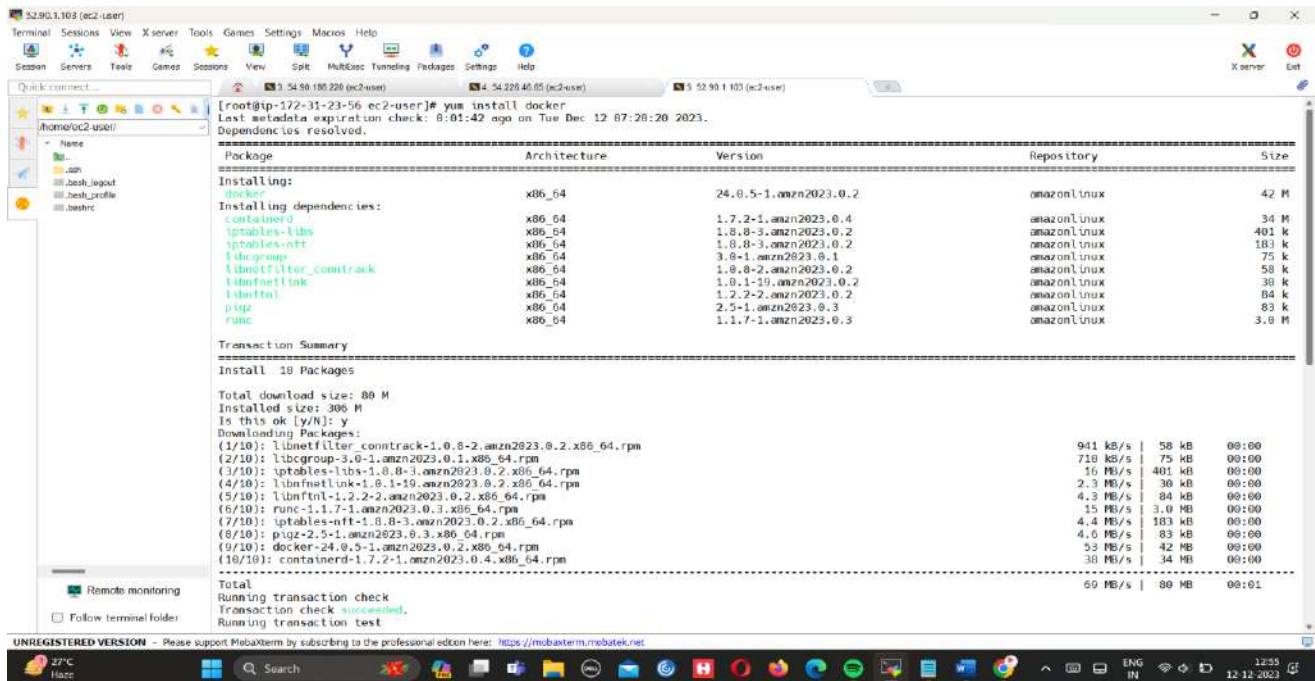


## Experiment 6

6. Demonstrate to create a docker container using customized docker image with base image ascentos/fedora.

### Procedure:

➔ Firstly install docker using yum install docker



```
[root@ip-172-31-23-56 ec2-user]# yum install docker
Last metadata expiration check: 8:01:42 ago on Tue Dec 12 07:20:20 2023.
Dependencies resolved.
=====
Package                               Architecture      Version           Repository        Size
-----
Installing:
docker                                x86_64            24.0.5-1.amzn2023.0.2   amazonlinux        42 M
Installing dependencies:
containerd                            x86_64            1.7.2-1.amzn2023.0.4   amazonlinux        34 M
iptables-libse                        x86_64            1.8.0-3.amzn2023.0.2   amazonlinux        401 k
iptables-nft                          x86_64            1.8.0-3.amzn2023.0.2   amazonlinux        183 k
libcgroup                             x86_64            3.0-1.amzn2023.0.1     amazonlinux        75 k
libnetfilter_conntrack                x86_64            1.0.8-2.amzn2023.0.2   amazonlinux        50 k
libnftnl-1.0.1-10.amzn2023.0.2       x86_64            1.0.1-10.amzn2023.0.2  amazonlinux        30 k
libnftnl-1.2.2-2.amzn2023.0.2        x86_64            1.2.2-2.amzn2023.0.2   amazonlinux        84 k
pigz-2.5-1.amzn2023.0.3              x86_64            2.5-1.amzn2023.0.3     amazonlinux        83 k
runC                                  x86_64            1.1.7-1.amzn2023.0.3   amazonlinux        3.0 M
=====
Transaction Summary
-----
Install 10 Packages

Total download size: 80 M
Installed size: 306 M
Is this ok [y/N]: y
Downloading Packages:
(1/10): libnetfilter_conntrack-1.0.8-2.amzn2023.0.2.x86_64.rpm 941 kB/s | 50 kB  00:00
(2/10): libcgroup-3.0-1.amzn2023.0.1.x86_64.rpm              710 kB/s | 75 kB  00:00
(3/10): iptables-libse-1.8.0-3.amzn2023.0.2.x86_64.rpm        16 MB/s | 401 kB  00:00
(4/10): libnftnl-1.0.1-10.amzn2023.0.2.x86_64.rpm            2.3 MB/s | 30 kB  00:00
(5/10): libnftnl-1.2.2-2.amzn2023.0.2.x86_64.rpm             4.3 MB/s | 84 kB  00:00
(6/10): runC-1.1.7-1.amzn2023.0.3.x86_64.rpm                 15 MB/s | 3.0 MB  00:00
(7/10): iptables-nft-1.8.0-3.amzn2023.0.2.x86_64.rpm         4.4 MB/s | 183 kB  00:00
(8/10): pigz-2.5-1.amzn2023.0.3.x86_64.rpm                   4.0 MB/s | 83 kB  00:00
(9/10): docker-24.0.5-1.amzn2023.0.2.x86_64.rpm             53 MB/s | 42 MB  00:00
(10/10): containerd-1.7.2-1.amzn2023.0.4.x86_64.rpm          38 MB/s | 34 MB  00:00
-----
Total
Running transaction check
Transaction check succeeded.
Running transaction test
-----
60 MB/s | 80 MB  00:01
```

➔ Start docker service using service docker start command



```

Transaction test successful.
Running transaction
  Preparing                : 1/10
  Installing               : runc-1.1.7-1.amzn2023.0.3.x86_64      1/10
  Installing               : containerd-1.7.2-1.amzn2023.0.4.x86_64 2/10
  Running scriptlet        : containerd-1.7.2-1.amzn2023.0.4.x86_64 2/10
  Installing               : pigz-2.5-1.amzn2023.0.3.x86_64        3/10
  Installing               : libnftnl-1.2.2-2.amzn2023.0.2.x86_64 4/10
  Installing               : libnftnl-link-1.0.1-19.amzn2023.0.2.x86_64 5/10
  Installing               : libnftfilter-conntrack-1.0.8-2.amzn2023.0.2.x86_64 6/10
  Installing               : iptables-libs-1.8.8-3.amzn2023.0.2.x86_64 7/10
  Installing               : iptables-nft-1.8.8-3.amzn2023.0.2.x86_64 8/10
  Running scriptlet        : iptables-nft-1.8.8-3.amzn2023.0.2.x86_64 8/10
  Installing               : libcgrouper-3.0-1.amzn2023.0.1.x86_64 9/10
  Running scriptlet        : docker-24.0.5-1.amzn2023.0.2.x86_64 10/10
  Installing               : docker-24.0.5-1.amzn2023.0.2.x86_64 10/10
  Running scriptlet        : docker-24.0.5-1.amzn2023.0.2.x86_64 10/10
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /usr/lib/systemd/system/docker.socket.

  Verifying                : runc-1.1.7-1.amzn2023.0.3.x86_64      1/10
  Verifying                : libnftfilter-conntrack-1.0.8-2.amzn2023.0.2.x86_64 2/10
  Verifying                : libcgrouper-3.0-1.amzn2023.0.1.x86_64 3/10
  Verifying                : docker-24.0.5-1.amzn2023.0.2.x86_64 4/10
  Verifying                : iptables-libs-1.8.8-3.amzn2023.0.2.x86_64 5/10
  Verifying                : libnftnl-link-1.0.1-19.amzn2023.0.2.x86_64 6/10
  Verifying                : libnftnl-1.2.2-2.amzn2023.0.2.x86_64 7/10
  Verifying                : iptables-nft-1.8.8-3.amzn2023.0.2.x86_64 8/10
  Verifying                : containerd-1.7.2-1.amzn2023.0.4.x86_64 9/10
  Verifying                : pigz-2.5-1.amzn2023.0.3.x86_64        10/10

Installed:
  containerd-1.7.2-1.amzn2023.0.4.x86_64      docker-24.0.5-1.amzn2023.0.2.x86_64      iptables-libs-1.8.8-3.amzn2023.0.2.x86_64
  iptables-nft-1.8.8-3.amzn2023.0.2.x86_64    libcgrouper-3.0-1.amzn2023.0.1.x86_64    libnftfilter-conntrack-1.0.8-2.amzn2023.0.2.x86_64
  libnftnl-link-1.0.1-19.amzn2023.0.2.x86_64  libnftnl-1.2.2-2.amzn2023.0.2.x86_64    pigz-2.5-1.amzn2023.0.3.x86_64
  runc-1.1.7-1.amzn2023.0.3.x86_64

Complete!
[root@ip-172-31-23-56 ec2-user]# service docker start
Redirecting to /bin/systemctl start docker.service
[root@ip-172-31-23-56 ec2-user]# cd /opt
[root@ip-172-31-23-56 opt]# vi Dockerfile
[root@ip-172-31-23-56 opt]#

```

➔ We need to add instructions on a Dockerfile.

```

FROM fedora
RUN yum install java -y
RUN mkdir /opt/tomcat
WORKDIR /opt/tomcat
ADD https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.83/bin/apache-tomcat-9.0.83.tar.gz .
RUN tar -xvzf apache-tomcat-9.0.83.tar.gz
EXPOSE 8080
CMD ["./opt/tomcat/bin/catalina.sh", "run"]

```

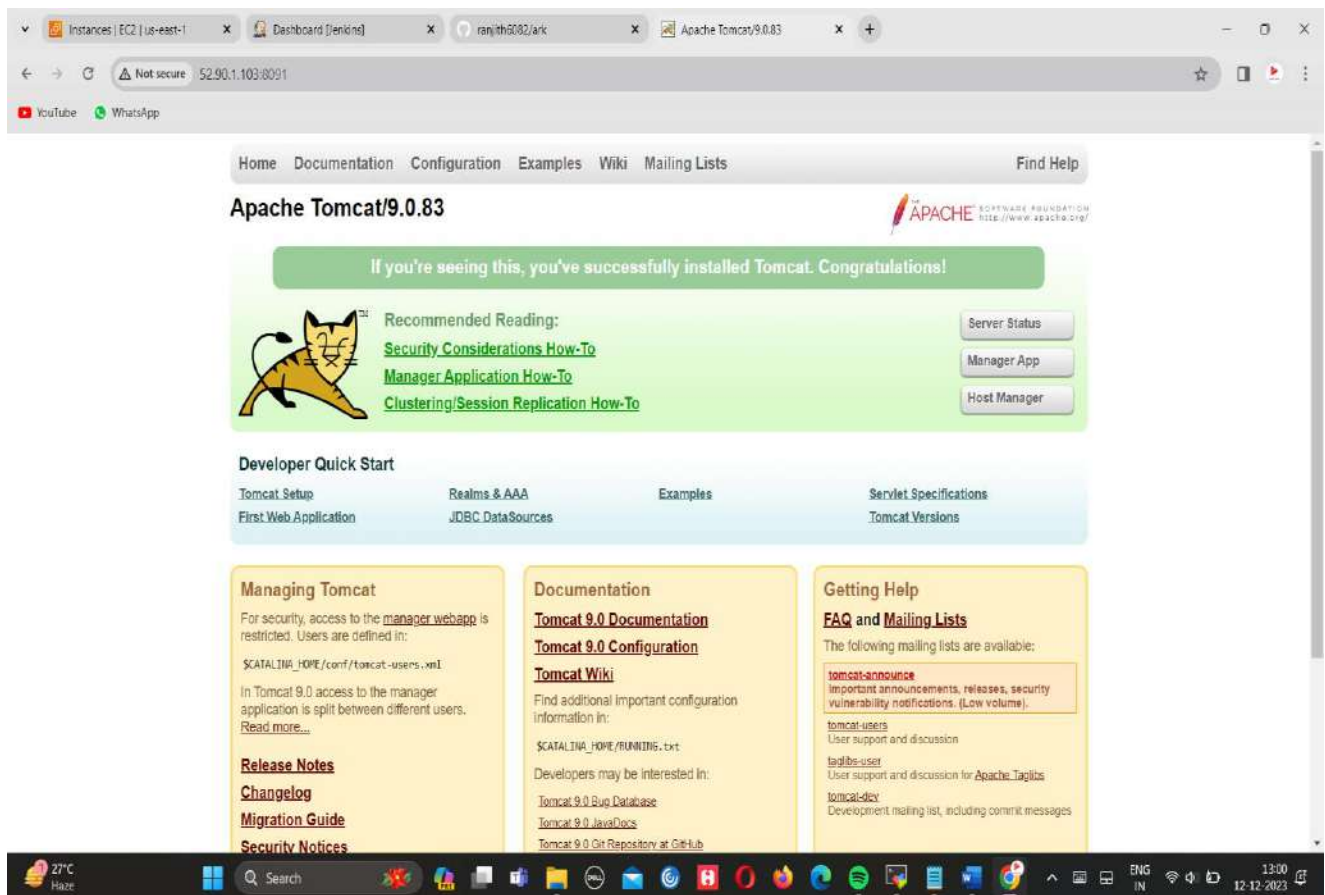
- ➔ Now, Create a Dockerfile in root. To create docker image from base image of fedora. Using the commands.
- ➔ Build a docker image mytomcat:v1. By the following
- ➔ Create container from the mytomcat:v1 image.

```

[root@ip-172-31-23-56 opt]# docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
[root@ip-172-31-23-56 opt]# docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
[root@ip-172-31-23-56 opt]# docker build -t tomcat:v2 .
[*] Building 111.0s (12/12) FINISHED
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 397B
=> [internal] load .dockerignore
=> transferring context: 2B
=> [internal] load metadata for docker.io/library/fedora:latest
=> [1/7] FROM docker.io/library/fedora:sha256:06df381d097114940c85fd8a94afdc838df74e93f6511ed3ee8477a7d6e8
=> resolve docker.io/library/fedora:sha256:06df381d097114940c85fd8a94afdc838df74e93f6511ed3ee8477a7d6e8
=> sha256:06df381d097114940c85fd8a94afdc838df74e93f6511ed3ee8477a7d6e8 / 975B
=> sha256:dfb5e6183f515192b37df93566226676461a41b724d9f02953433dca3e85deb1 529B / 529B
=> sha256:8404925a71fd9f56243a4c54fe44f1102e29a19d23e7c858042ddc8b43b4ca9e 2.90kB / 2.90kB
=> sha256:8237fce9f9db5acc12e701d84e6245c6b08937de832c1987c4769866af1573a 64.87MB / 64.87MB
=> extracting sha256:8237fce9f9db5acc12e701d84e6245c6b08937de832c1987c4769866af1573a
=> https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.83/bin/apache-tomcat-9.0.83.tar.gz
=> [2/7] RUN yum install java -y
=> [3/7] RUN mkdir /opt/tomcat
=> [4/7] WORKDIR /opt/tomcat
=> [5/7] ADD https://dlcdn.apache.org/tomcat/tomcat-9/v9.0.83/bin/apache-tomcat-9.0.83.tar.gz
=> [6/7] RUN tar -xvzf apache-tomcat-9.0.83.tar.gz
=> [7/7] RUN mv apache-tomcat-9.0.83/* /opt/tomcat
=> exporting to usage
=> exporting layers
=> writing image sha256:e5a201feb3f3cd71c365b4352755993b19000b7c463fddad7d2f37b47eeef
=> naming to docker.io/library/tomcat:v2
[root@ip-172-31-23-56 opt]# docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
tomcat v2 e5a201feb3f3 28 seconds ago 1.27GB
[root@ip-172-31-23-56 opt]# docker run -d --name tomcatv2 -p 8091:8080 tomcat:v2
44de65f3c990269873e52629f72d3bcfec956fa5d2a768d8869174e7b1deb0f
[root@ip-172-31-23-56 opt]# docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
44de65f3c99 tomcatv2 "/opt/tomcat/bin/cat..." 6 seconds ago Up 5 seconds 0.0.0.0:8091->8080/tcp, :::8091->8080/tcp tomcatv2

```

➔ Now , Check in browser tomcat homepage will display.



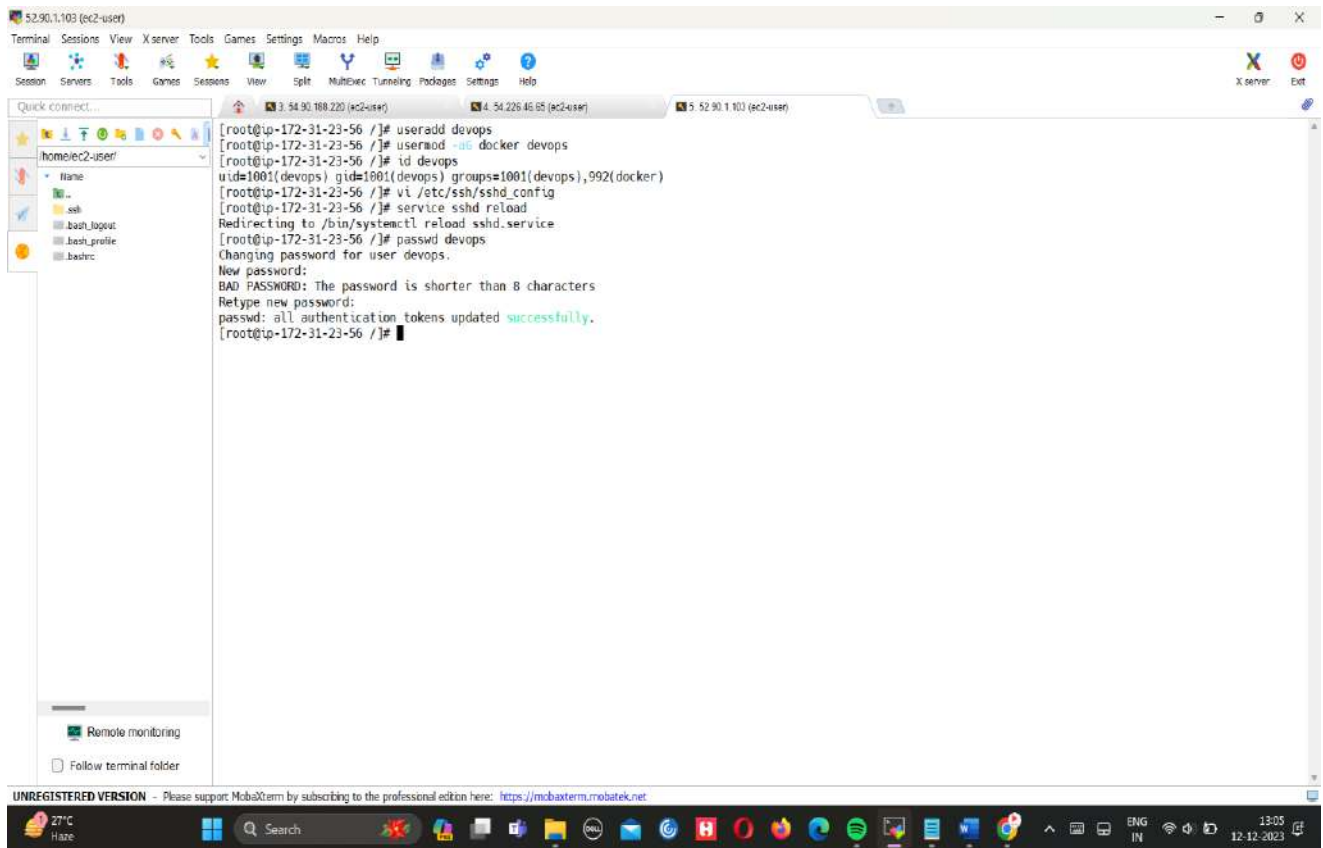
## EXPERIMENT-7

### 7. Demonstrate CI/CD job to build maven application and deploy it on docker container using Jenkins.

#### Procedure:

➔ Open Mobaxterm connect to docker instance. And add a docker user and setpassword.

➔ Add the user to docker group. Check the user by id user.

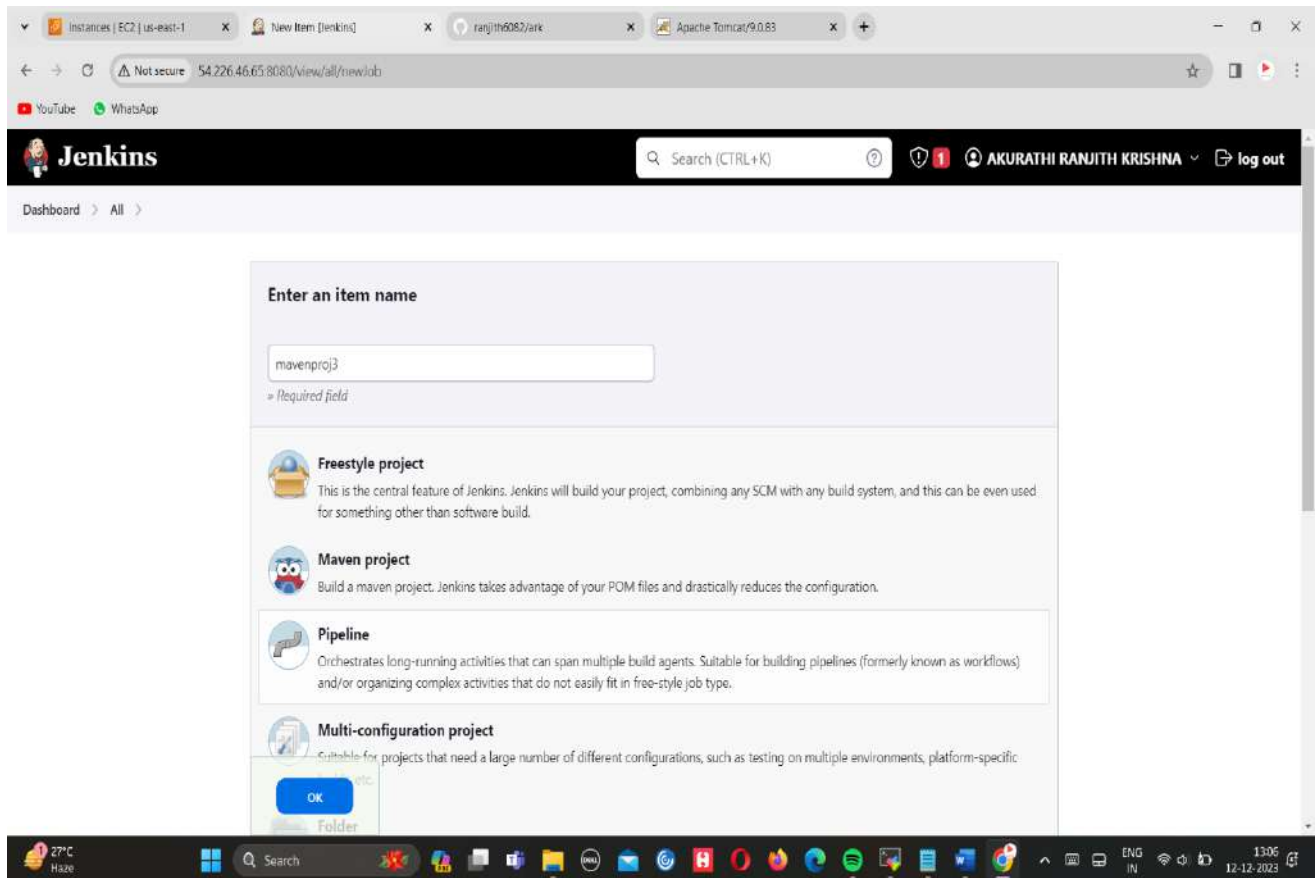


The screenshot shows a Mobaxterm window with a terminal session on a root@ip-172-31-23-56 machine. The terminal output is as follows:

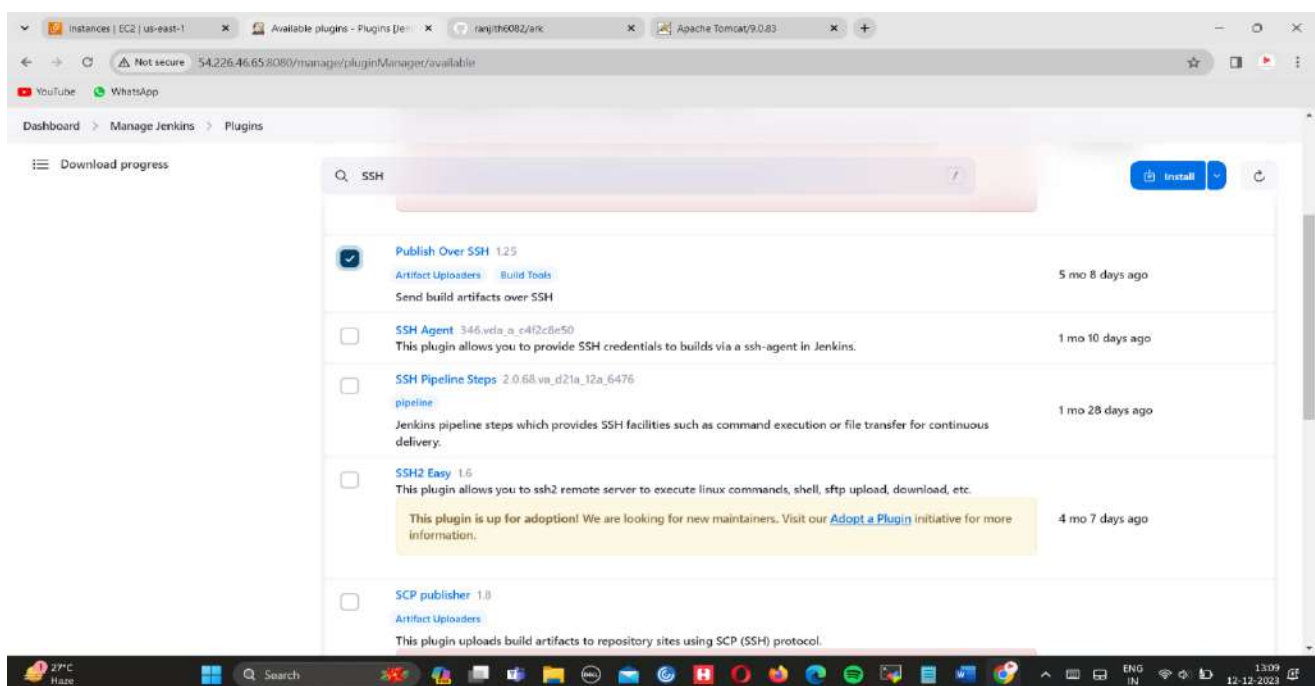
```
[root@ip-172-31-23-56 /]# useradd devops
[root@ip-172-31-23-56 /]# usermod -s /bin/bash devops
[root@ip-172-31-23-56 /]# id devops
uid=1001(devops) gid=1001(devops) groups=1001(devops),992(docker)
[root@ip-172-31-23-56 /]# vi /etc/ssh/sshd_config
[root@ip-172-31-23-56 /]# service sshd reload
Redirecting to /bin/systemctl reload sshd.service
[root@ip-172-31-23-56 /]# passwd devops
Changing password for user devops.
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: all authentication tokens updated successfully.
[root@ip-172-31-23-56 /]#
```

The interface includes a top menu bar (Terminal, Sessions, View, X server, Tools, Games, Settings, Macros, Help), a toolbar with various icons, a left sidebar with a 'Quick connect...' section and a file tree, and a bottom status bar indicating 'UNREGISTERED VERSION' and system information.

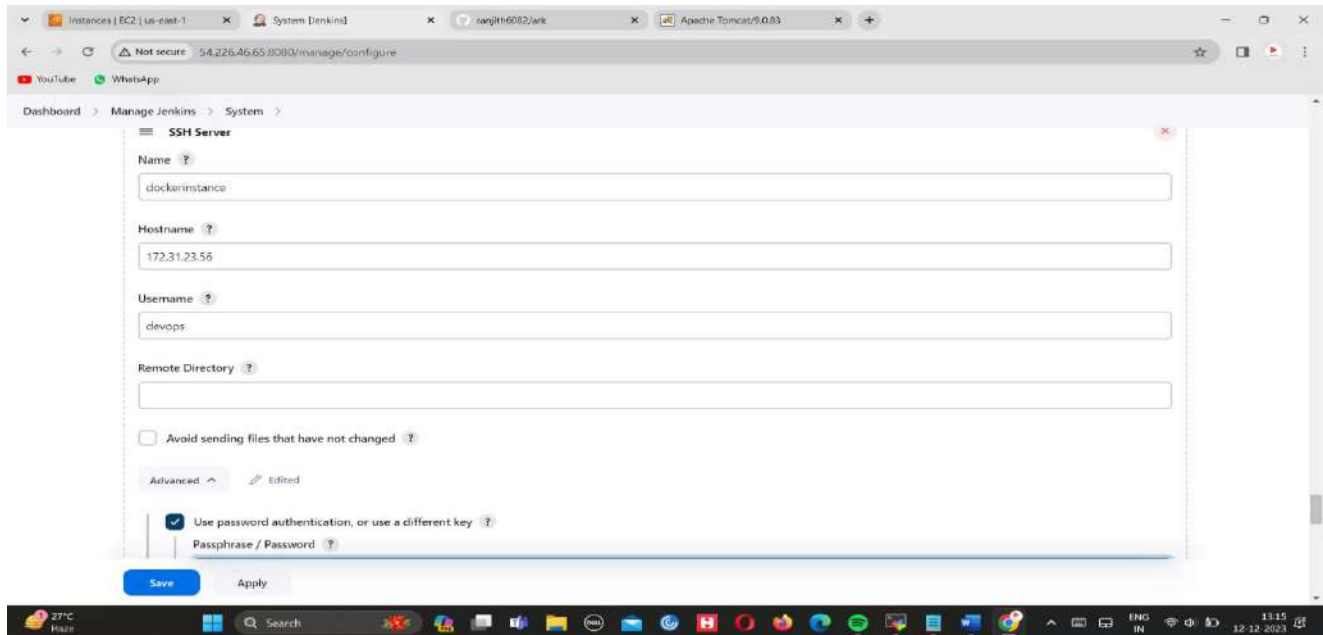
➔ Move to Jenkins and create a maven project.



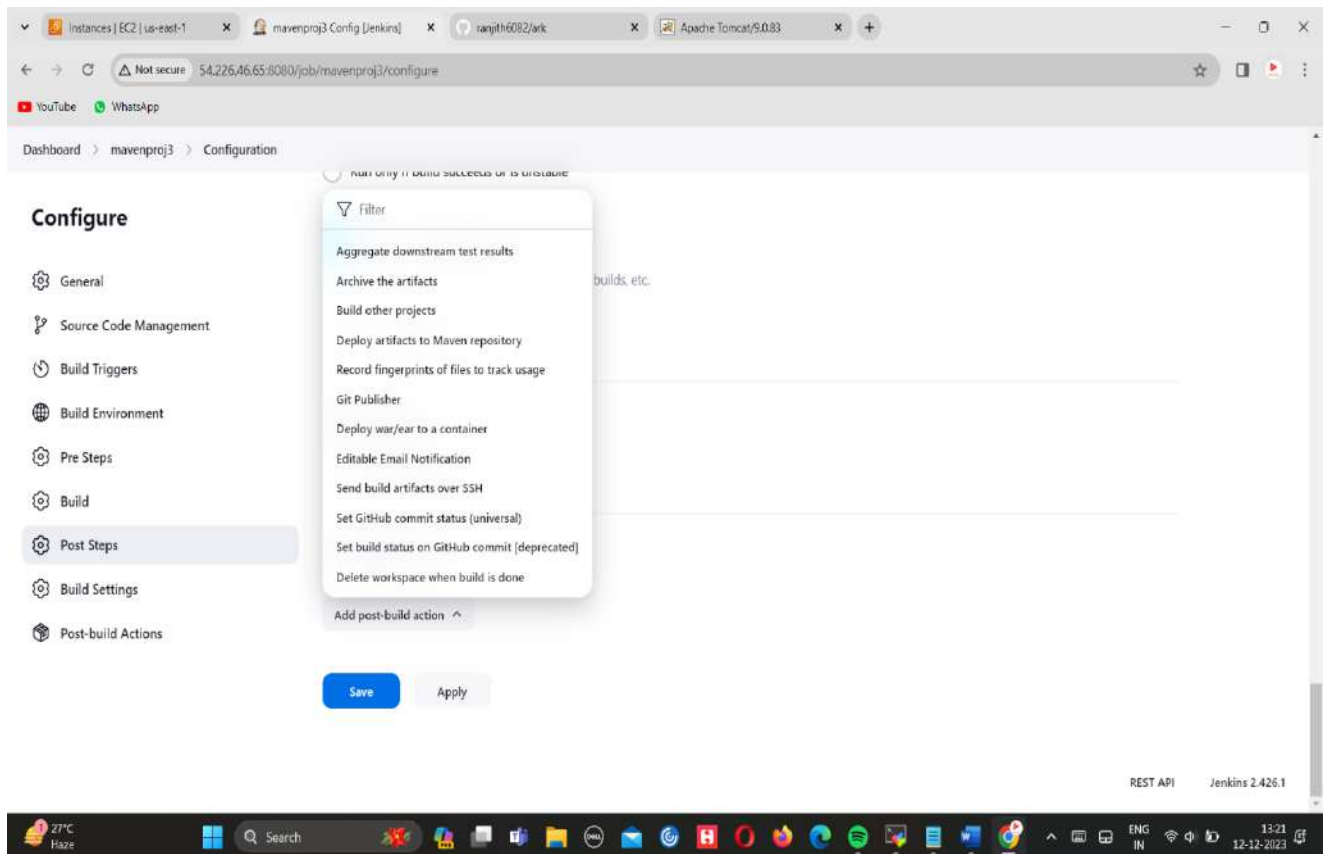
➔ Go to plugins and install Publish Over SSH plugin



➔ Before that go to manage Jenkins>>system>> add SSH.

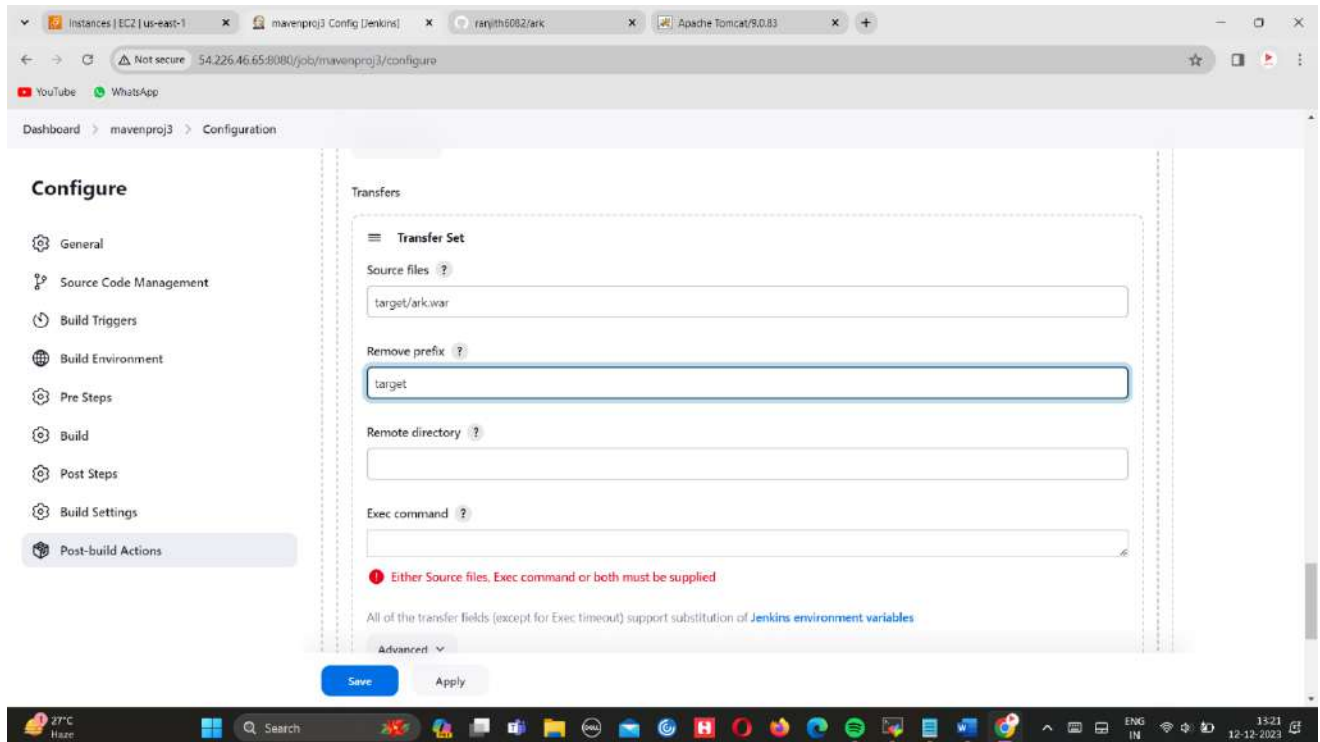


➔ Select the Send build artifacts over SSH

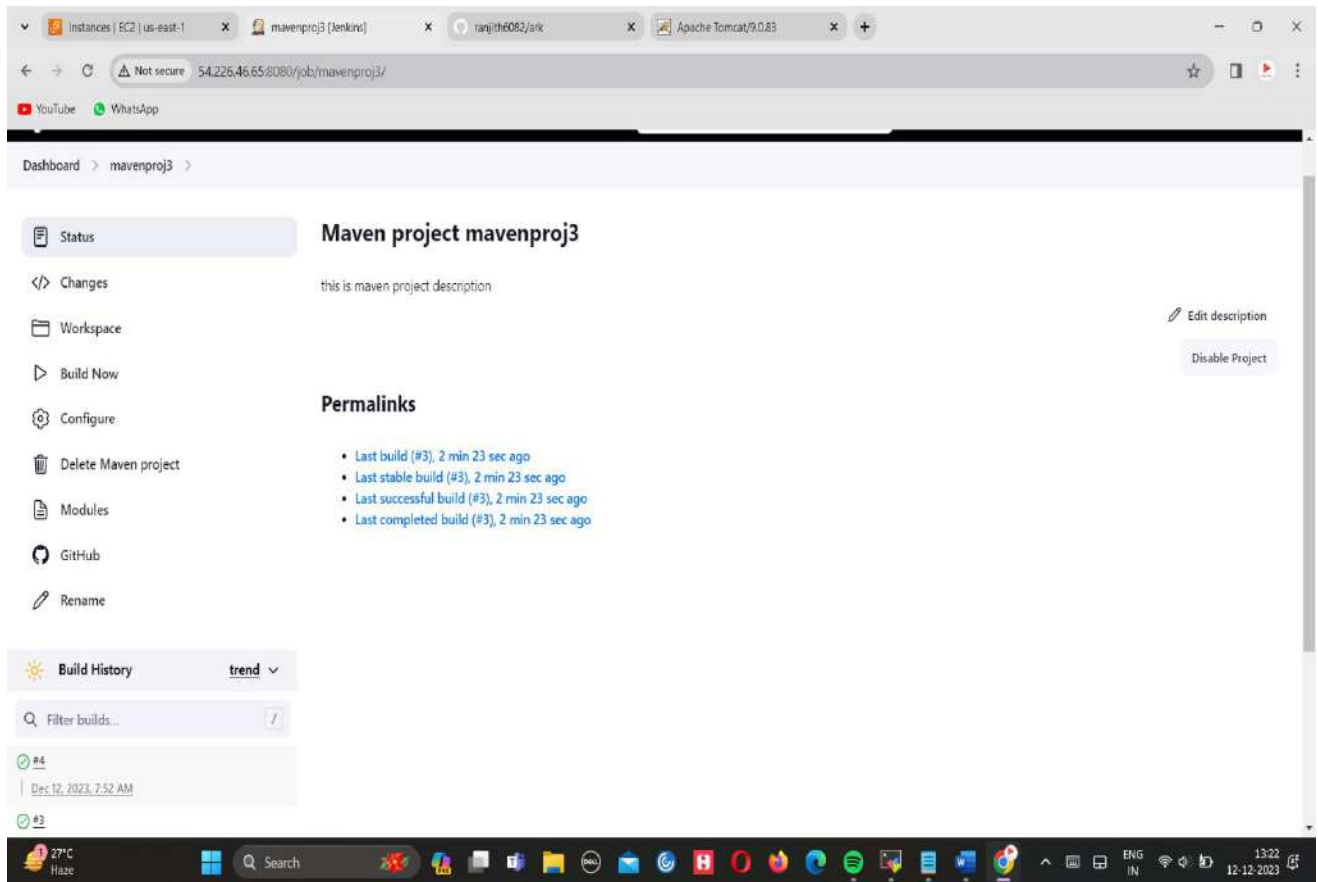




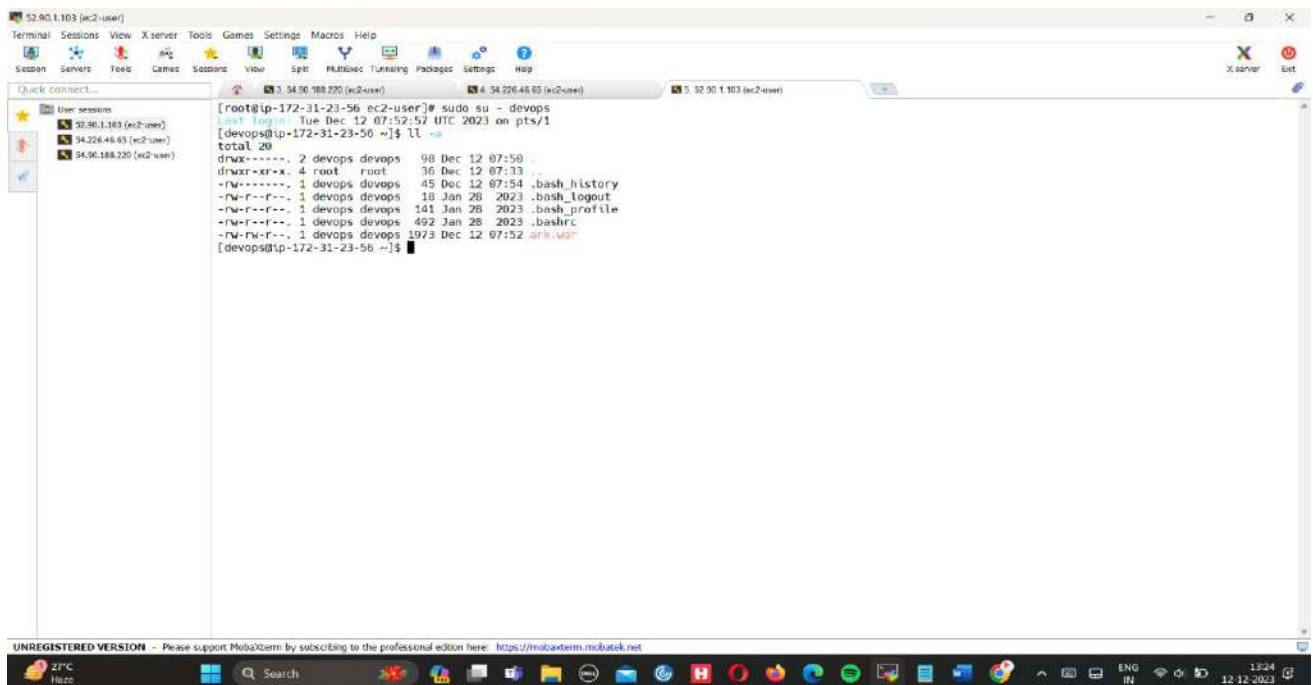
➔ Copy the war file location paste it in source files and remove prefix



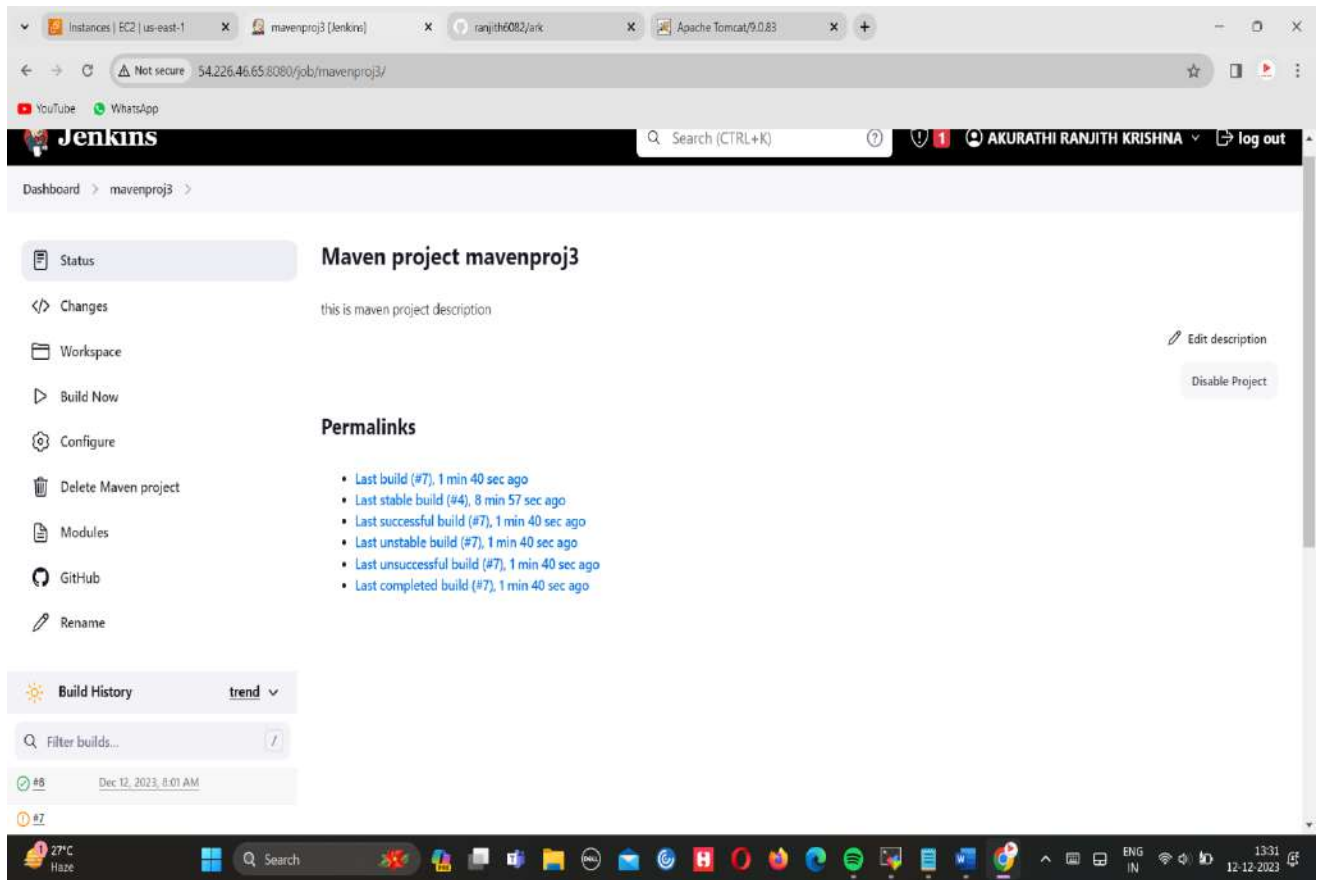
➔ Click on build now option



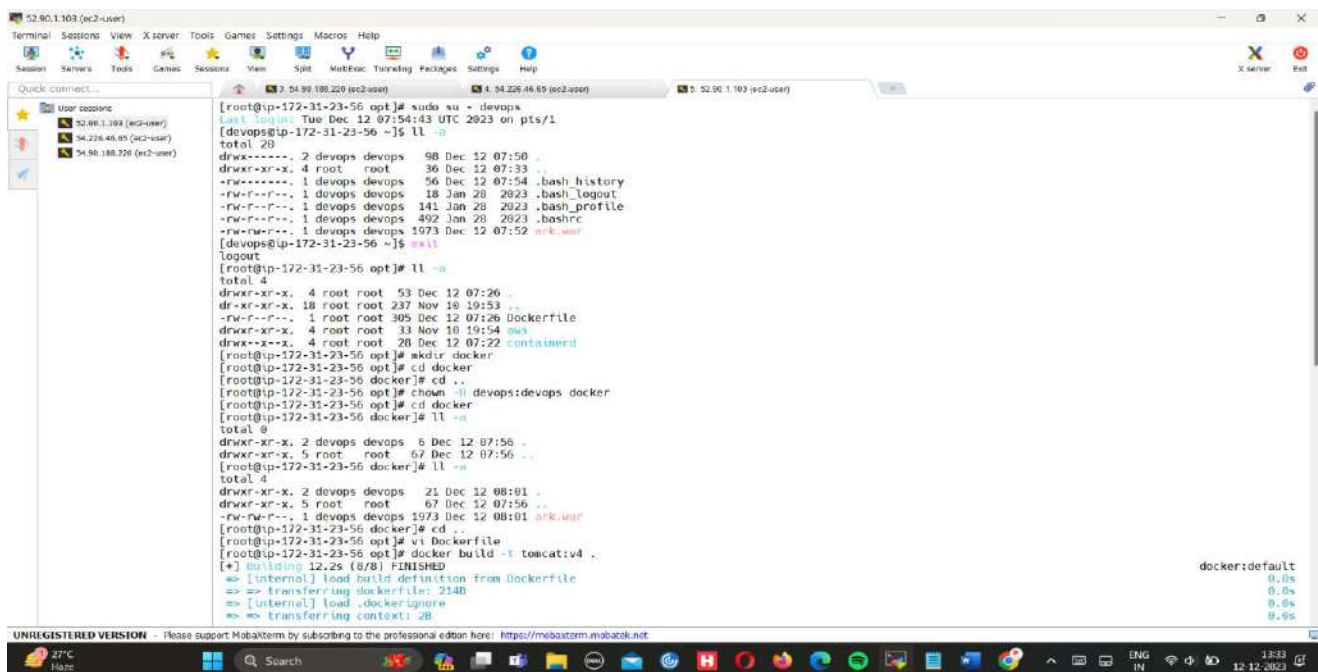
➔ War file will be stored in devops user location



➔ Click on build now option, build will be done successfully



➔ We need to create image using docker build -t tomcat:v4 . command





➔ We need to create a docker container for image tomcatv4 .

```

52.90.1.103 (ec2-user)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect...
User sessions
52.90.1.103 (ec2-user)
54.228.40.00 (ec2-user)
54.90.180.220 (ec2-user)

[ec2-user@ip-172-31-23-56 ~]$ docker build -t tomcat:v4 .
[+] Building 0.0s
=> [internal] load metadata for docker.io/library/tomcat:latest
=> [1/3] FROM docker.io/library/tomcat@sha256:394d09a9ab4aaff2a7e073d90a8def17e46eb8515cfc368c7b50236825db66d1
=> resolve docker.io/library/tomcat@sha256:394d09a9ab4aaff2a7e073d90a8def17e46eb8515cfc368c7b50236825db66d1
=> sha256:394d09a9ab4aaff2a7e073d90a8def17e46eb8515cfc368c7b50236825db66d1 765B / 765B
=> sha256:5c980220571d404eaf087b5c3c3956e219e33c21e8ff9dfe2a0c1580ba59171 2.09kB / 2.09kB
=> sha256:fa6924fdd5c53e9e6a4f095a3ac0632c92bdf1fbbba057546a23871cef74265 158.64MB / 158.64MB
=> sha256:e76527580e57a1914571993b68a8531f86ea34087936e7d4212bdc445d97658 12.93kB / 12.93kB
=> sha256:cbe3537751ce03ea42788c2f8e2d5d336180dc2e20472c8cda8b3224191d101 30.45MB / 30.45MB
=> sha256:6cd3fc495d1a4839e5239c716fa5a6ec48209bfff26db1e7d7af7b0701ac4ee7 17.46MB / 17.46MB
=> sha256:be39ca79f5d2bc28f3f2498ca0f67a9337066ea52acc98e8f3837b369bd32735 174B / 174B
=> sha256:c87de00e1575097a08f792a5b70be9f2e74d8970e6d7e519080ea285bef7a57 733B / 733B
=> sha256:9c09f0bf59a33dbac044158c8a1761a776be7f49223000e5529bf362d9feb238 171B / 171B
=> sha256:3707ddd7f28eddc30c1d9f83ba6943f22a2cc93cc861c2e452f43303634b3ab 12.79MB / 12.79MB
=> sha256:14081f281dd6bb3dc03579572a600f60922e5432c05359c2d7185c62e53e11a 131B / 131B
=> extracting sha256:cbe3537751ce03ea42788c2f8e2d5d336180dc2e20472c8cda8b3224191d101 2.24
=> extracting sha256:6cd3fc495d1a4839e5239c716fa5a6ec48209bfff26db1e7d7af7b0701ac4ee7 1.44
=> extracting sha256:fa6924fdd5c53e9e6a4f095a3ac0632c92bdf1fbbba057546a23871cef74265 4.55
=> extracting sha256:be39ca79f5d2bc28f3f2498ca0f67a9337066ea52acc98e8f3837b369bd32735 0.05
=> extracting sha256:c87de00e1575097a08f792a5b70be9f2e74d8970e6d7e519080ea285bef7a57 0.05
=> extracting sha256:9c09f0bf59a33dbac044158c8a1761a776be7f49223000e5529bf362d9feb238 0.05
=> extracting sha256:3707ddd7f28eddc30c1d9f83ba6943f22a2cc93cc861c2e452f43303634b3ab 0.55
=> extracting sha256:14081f281dd6bb3dc03579572a600f60922e5432c05359c2d7185c62e53e11a 0.05
[internal] load build context
=> transferring context: 2B
=> [2/3] RUN cp -R /usr/local/tomcat/webapps.dist/* /usr/local/tomcat/webapps
=> [3/3] COPY --devop.war /usr/local/tomcat/webapps
=> exporting to image
=> exporting layers
=> writing image sha256:b4c42117bf6d5d19012f7146e3e510c05025335f5741eece4f72b6eb90d7825a
=> naming to docker.io/library/tomcat:v4
[ec2-user@ip-172-31-23-56 ~]$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
tomcat v4 b4c42117bf6d 6 seconds ago 458MB
tomcat v2 e5a201feb3f3 34 minutes ago 1.27GB
[ec2-user@ip-172-31-23-56 ~]$ docker run -d --name tomcatv4 -- B097:8088 tomcat:v4
0dccc5ac1b363d4de9b2a58bafdf2c787a67eb52f2f99c3236f446eeae51f1
[ec2-user@ip-172-31-23-56 ~]$ docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
0dccc5ac1b363 tomcat:v4 "catalina.sh run" 7 seconds ago Up 6 seconds 0.0.0.0:8097->8088/tcp, :::8097->8088/tcp tomcatv4
44de65fa3c99 tomcat:v2 "/opt/tomcat/bin/cat..." 33 minutes ago Up 33 minutes 0.0.0.0:8091->8088/tcp, :::8091->8088/tcp tomcatv2
[ec2-user@ip-172-31-23-56 ~]$

```

➔ Output on the browser using Public IP : port / .war file name.

