



# **KESHAV MEMORIAL INSTITUTE OF TECHNOLOGY**

**(AN AUTONOMOUS INSTITUTION)**



**Accredited by NBA & NAAC, Approved by AICTE, Affiliated to JNTUH,  
Narayanguda, Hyderabad, Telangana – 500029**



## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

### **LAB RECORD**

### **SOFTWARE ENGINEERING LAB**

**B. Tech. III YEAR I SEM (KR23)  
ACADEMIC YEAR  
2025-26**



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## **Certificate**

This is to certify that following is a Bonafide Record of the workbook task done by

\_\_\_\_\_ bearing Roll No \_\_\_\_\_ of \_\_\_\_\_

Branch of \_\_\_\_\_ year B. Tech. Course in the \_\_\_\_\_

Subject during the Academic year \_\_\_\_\_ & \_\_\_\_\_ under our supervision.

Number of week tasks completed: \_\_\_\_\_

Signature of Staff Member Incharge

Signature of Head of the Dept.

Signature of Internal Examiner

Signature of External Examiner



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NBA

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Narayanguda, Hyderabad, Telangana – 500029**

**Daily Laboratory Assessment Sheet**

Name of the Lab:  
Branch & Section:

Student Name:  
HT. No:

Sr. No.	Name of the Experiment	Date	Observation Marks (5M)	Record Marks (5M)	Viva Voice Marks(10M)	Total Marks (20M)	Signature of Faculty
	<b>Total</b>						

**Faculty Incharge**

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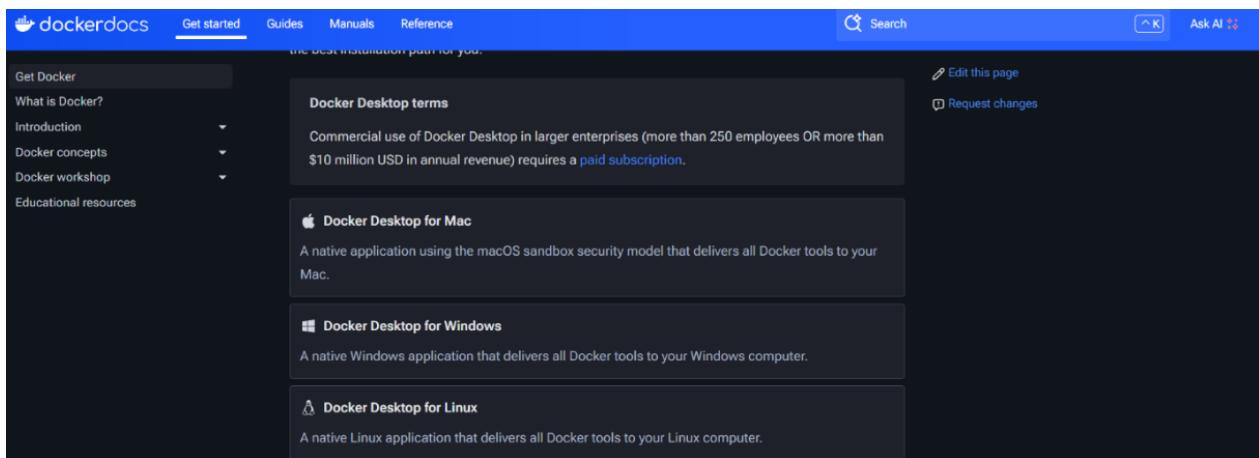
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3.	<p><b>Collaborative coding using git</b></p> <ul style="list-style-type: none"> <li>a. To work on collaborative coding by:</li> <li>b. Creating Organization.</li> <li>c. Coordinating with others through a shared repository</li> <li>d. To resolve conflicts when collaborating on same part of code.</li> <li>e. To create and apply patch.</li> </ul>	
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6.	<p><b><u>Docker</u></b></p> <ul style="list-style-type: none"> <li>a. Learn how to define and run multiple interdependent services (e.g., web server, database) in a single configuration file.</li> </ul>	

	<ul style="list-style-type: none"> <li>b. Gain skills in writing and interpreting docker-compose.yml files for service setup.</li> <li>c. Deploy the same setup across different machines without manual configuration.</li> <li>d. Configure container networking and persistent storage within Compose.</li> <li>e. Reduce setup time and enable faster iteration during application development.</li> </ul>	
7.	<p><b><u>Creating a Multi-Module Maven Project</u></b></p> <ul style="list-style-type: none"> <li>a. Build and package Java and Web applications using Maven.</li> <li>b. Add dependencies using <b>pom.xml</b>, compile and test using plugins.</li> <li>c. Resolve errors and conflicts arising from dependency mismatches.</li> <li>d. Work with parent and multi-module Maven projects.</li> <li>e. Generate executable JARs and deployable WARs using Maven</li> </ul>	
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12.	<p><b><u>Creation of virtual machine for Ubuntu OS and Deploying the web application</u></b></p> <ol style="list-style-type: none"> <li>1. Creation of virtual machine</li> <li>2. Deploying the web application</li> <li>3. Accessing it publicly</li> </ol>	

## **1. Software Installation & SRS Document:**

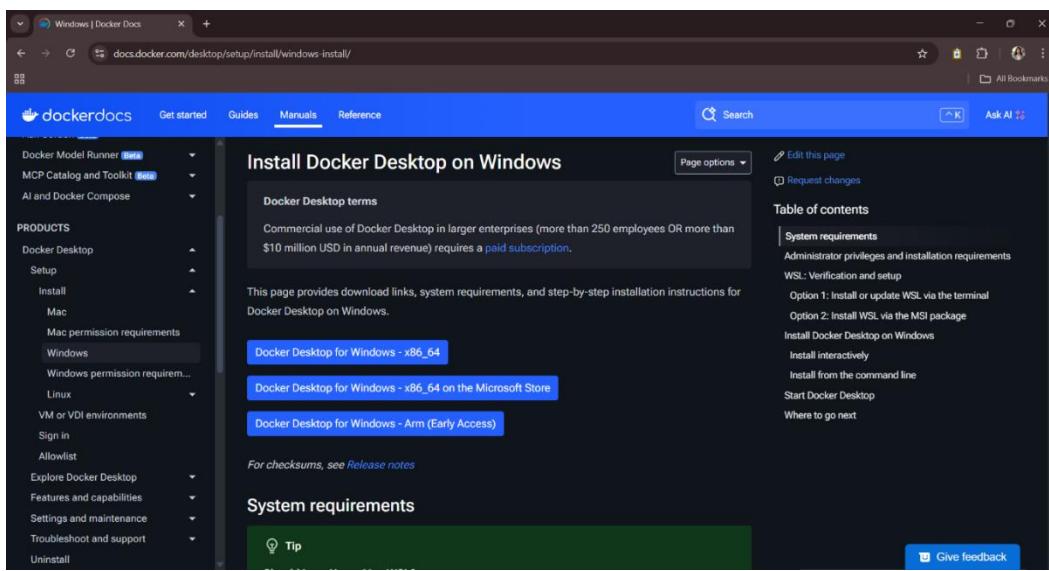
### **DOCKER- INSTALLATION**

Step-1: Go to docker website

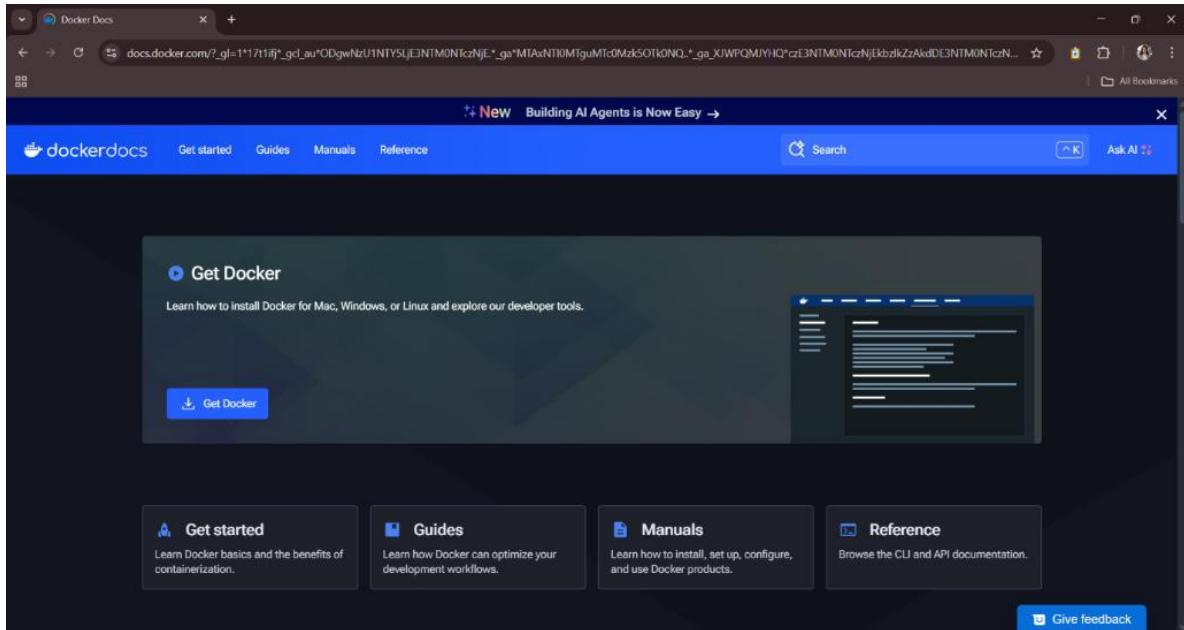


The screenshot shows the Docker documentation website with a dark theme. On the left, there's a sidebar titled 'Get Docker' containing links like 'What is Docker?', 'Introduction', 'Docker concepts', 'Docker workshop', and 'Educational resources'. The main content area has a header 'Docker Desktop terms' which states: 'Commercial use of Docker Desktop in larger enterprises (more than 250 employees OR more than \$10 million USD in annual revenue) requires a paid subscription.' Below this are three sections: 'Docker Desktop for Mac', 'Docker Desktop for Windows', and 'Docker Desktop for Linux', each with a brief description and an icon.

Step-2: Select the suitable one for your system



The screenshot shows the 'Install Docker Desktop on Windows' page from the Docker documentation. The left sidebar includes sections for Docker Model Runner, MCP Catalog and Toolkit, AI and Docker Compose, and various Docker Desktop, Windows, and Linux setup options. The main content starts with 'Docker Desktop terms' and then 'Install Docker Desktop on Windows', which provides download links and step-by-step instructions. It highlights three download options: 'Docker Desktop for Windows - x86\_64', 'Docker Desktop for Windows - x86\_64 on the Microsoft Store', and 'Docker Desktop for Windows - Arm (Early Access)'. A 'System requirements' section follows, along with a 'Tip' and a 'Give feedback' button.



Step-3: After clicking on get docker it starts initializing



Docker Desktop

Initializing...

Verifying package

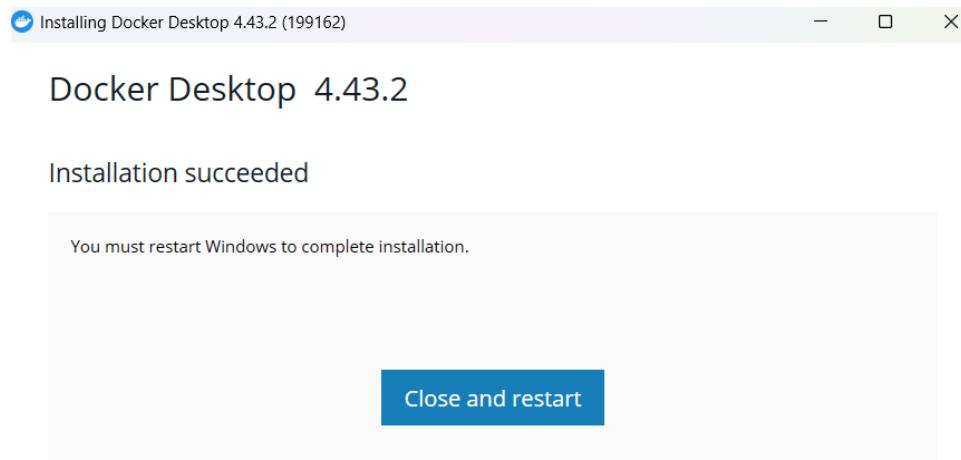


Docker Desktop 4.43.2

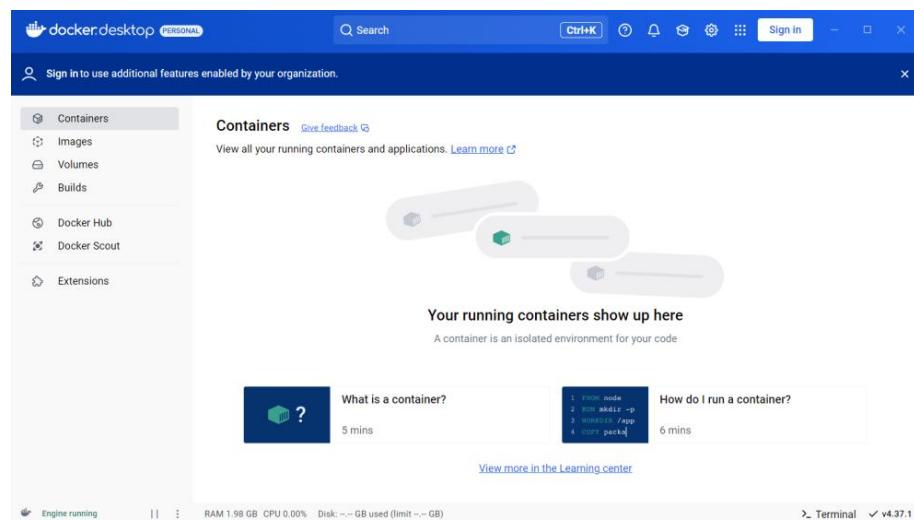
Unpacking files...

```
Unpacking file: resources/docker-desktop.iso
Unpacking file: resources/dvp.ico
Unpacking file: resources/config-options.json
Unpacking file: resources/componentsVersion.json
Unpacking file: resources/bin/docker-compose
Unpacking file: resources/bin/docker
Unpacking file: resources/.gitignore
Unpacking file: InstallerCli.pdb
Unpacking file: InstallerCli.exe.config
Unpacking file: frontend/vk_swiftshader_icd.json
Unpacking file: frontend/v8_context_snapshot.bin
Unpacking file: frontend/snapshot_blob.bin
Unpacking file: frontend/resources/regedit/vbs/wsRegReadListStream.wsf
Unpacking file: frontend/resources/regedit/vbs/wsRegReadList.wsf
```

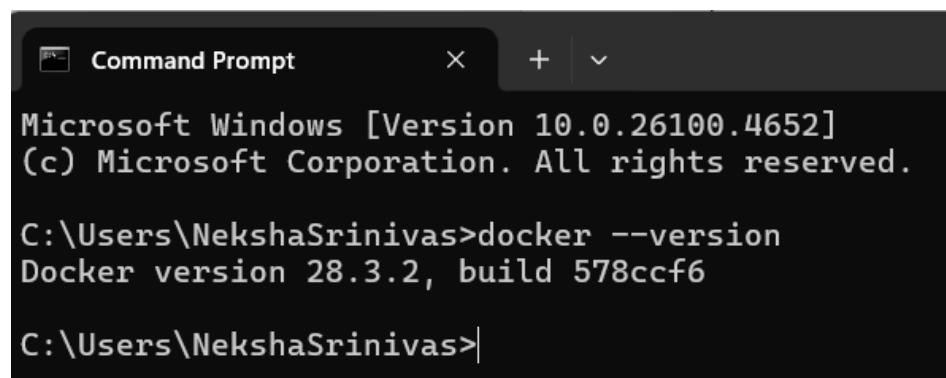
#### Step-4: Installation successful



#### Step-5: Docker interface

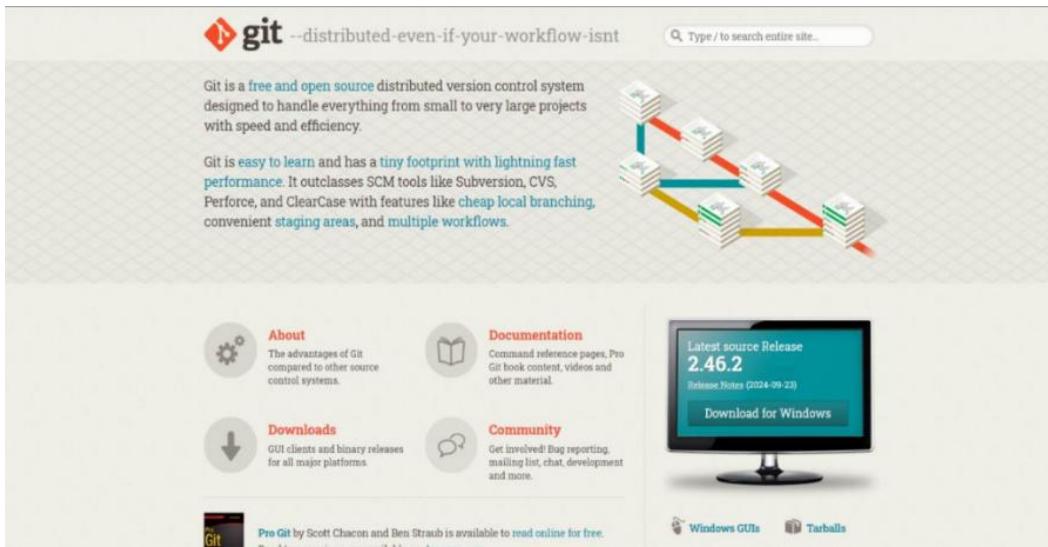


#### Step-6: docker version



## GIT – INSTALLATION:

### Step-1: Go to Git website



Step-2: click on downloads and options will be displayed



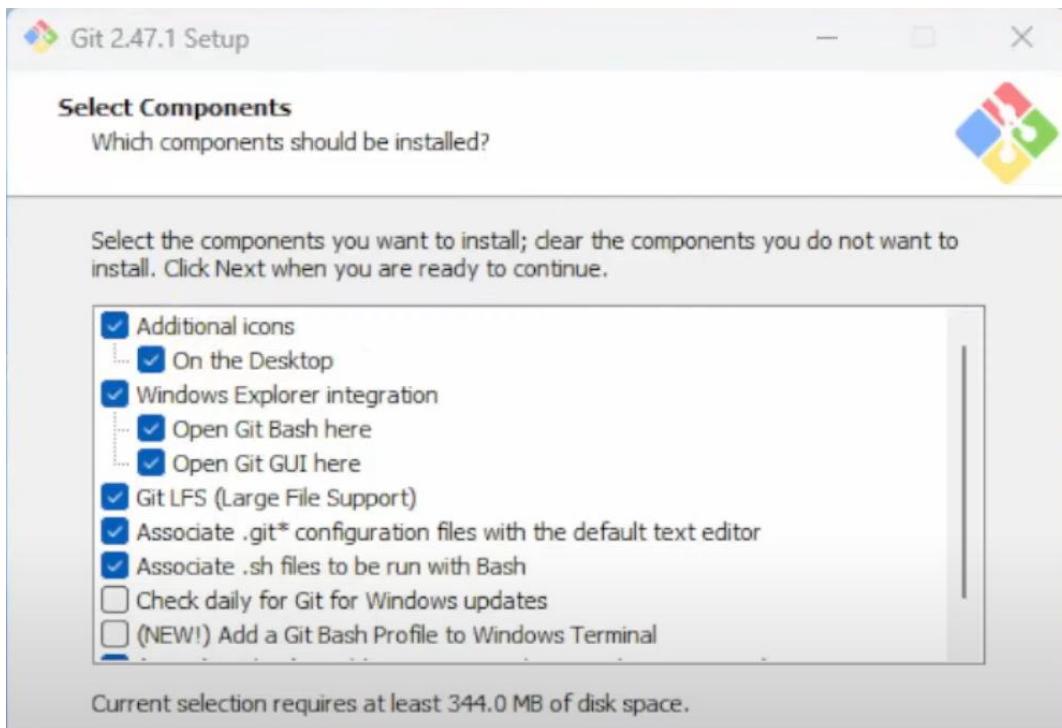
Step-3: Download for windows(suitable one for your system)



Step-4: License will be displayed click on next

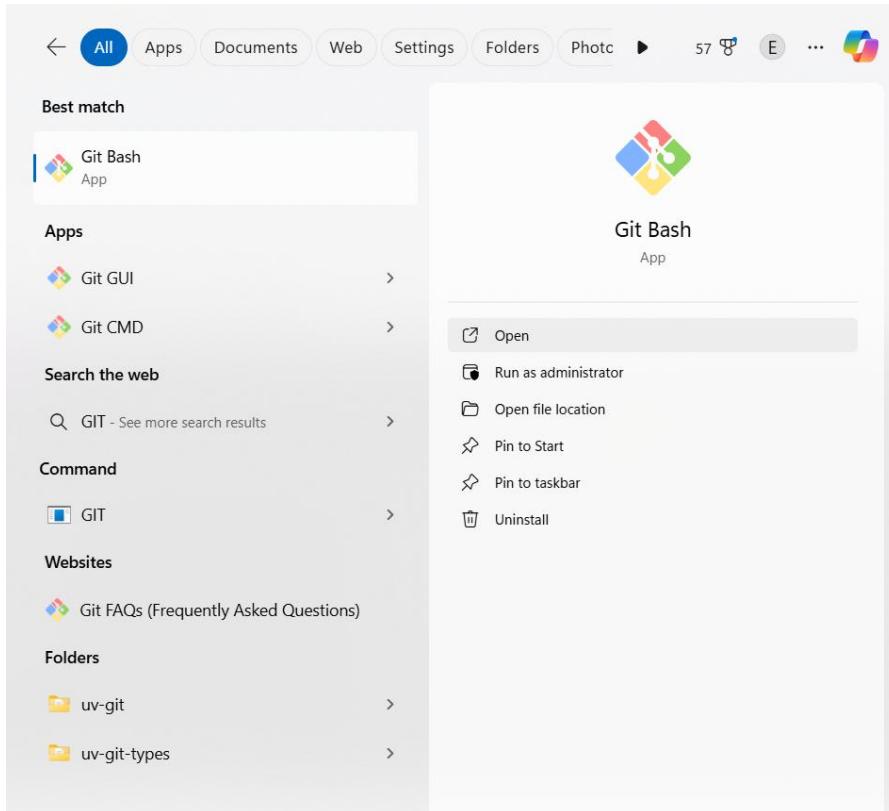


Step-5: Select the components and click next



Git bash:

Step-1: Go to search bar and click git bash



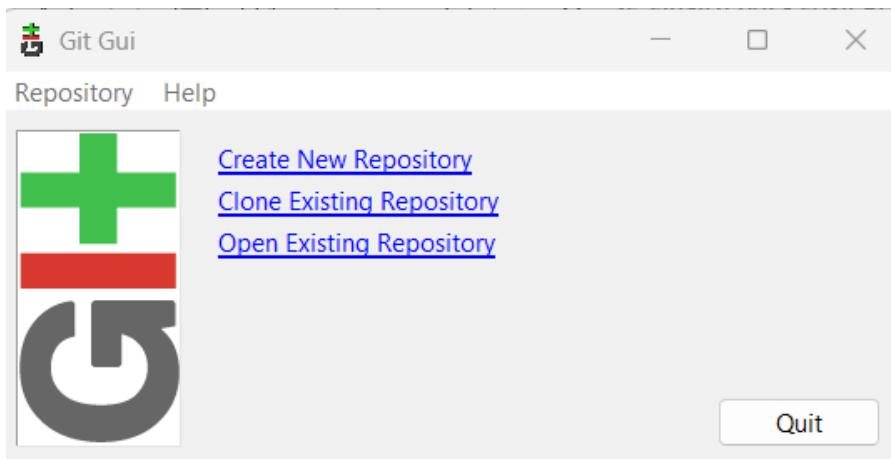
Step-2: Click on finish



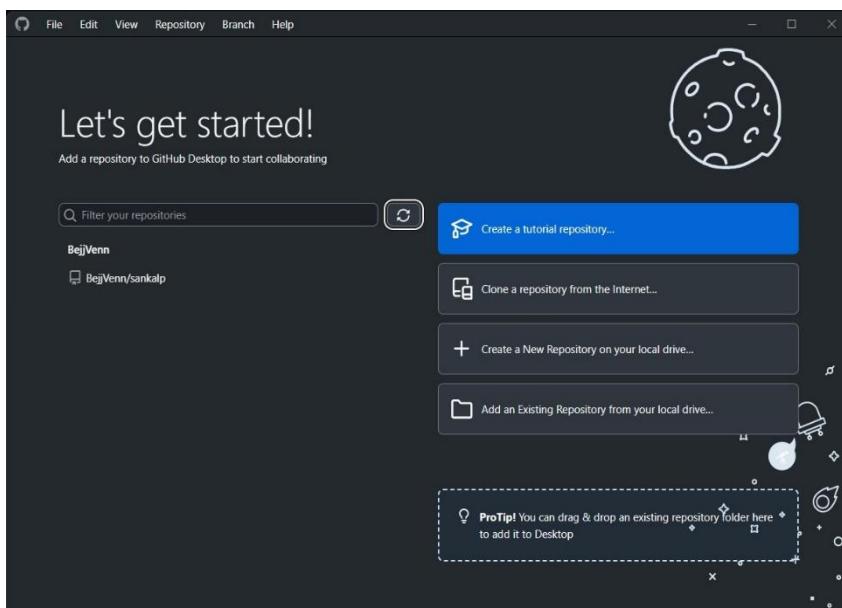
### Step-3: git bash interface



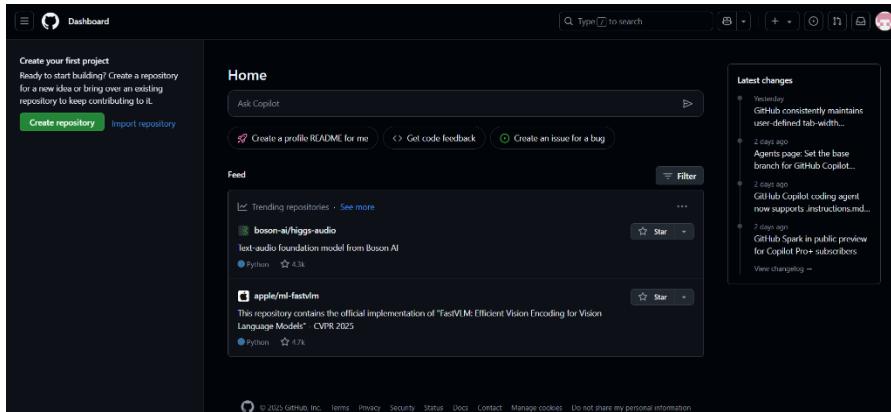
```
MINGW64:c/Users/NekshaSrinivas NekshaSrinivas@NekshaSrinivas MINGW64 ~
$ |
```



### GIT-ACCOUNT



## GIT-ACCOUNT



## Tomcat

A screenshot of a web browser displaying the Apache Tomcat 9.0.98 homepage. The URL is 'localhost:8080'. The page features a large green banner at the top that says 'If you're seeing this, you've successfully installed Tomcat. Congratulations!' Below this is a cartoon cat icon. To the right of the cat are three buttons: 'Server Status', 'Manager App', and 'Host Manager'. The main content area is divided into several sections: 'Developer Quick Start' with links to 'Tomcat Setup', 'Realms &amp; AAA', 'Examples', and 'Servlet Specifications'; 'Managing Tomcat' with information about security and user management; 'Documentation' with links to 'Tomcat 9.0 Documentation', 'Tomcat 9.0 Configuration', and 'Tomcat Wiki'; 'Getting Help' with links to 'FAQ and Mailing Lists' and descriptions of various mailing lists; and 'Other Downloads' and 'Other Documentation' sections at the bottom. The footer contains a copyright notice: 'Copyright ©1999-2025 Apache Software Foundation. All Rights Reserved'.

## Java and maven versions

```
Command Prompt
Microsoft Windows [Version 10.0.19045.6093]
(c) Microsoft Corporation. All rights reserved.

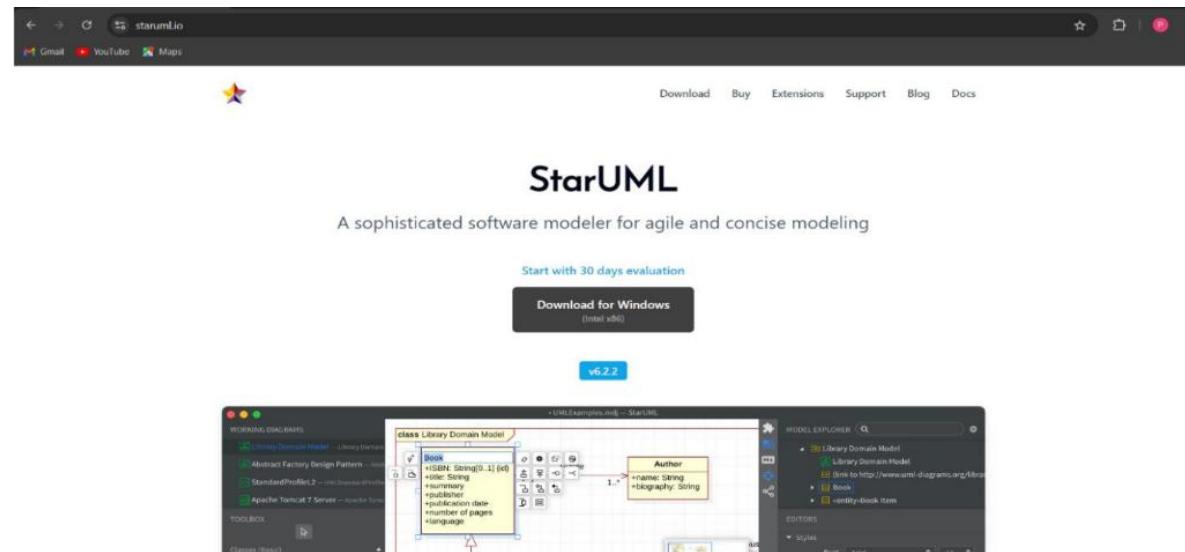
C:\Users\User>java --version
java 21.0.5 2024-10-15 LTS
Java(TM) SE Runtime Environment (build 21.0.5+9-LTS-239)
Java HotSpot(TM) 64-Bit Server VM (build 21.0.5+9-LTS-239, mixed mode, sharing)

C:\Users\User>mvn --version
Apache Maven 3.9.9 (8e8579a9e76f7d015ee5ec7bfcdc97d260186937)
Maven home: C:\apache-maven-3.9.9
Java version: 21.0.5, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk-21
Default locale: en_IN, platform encoding: UTF-8
OS name: "windows 10", version: "10.0", arch: "amd64", family: "windows"

C:\Users\User>
```

## StarUML INSTALLATION

### Step-1: Go to startuml website



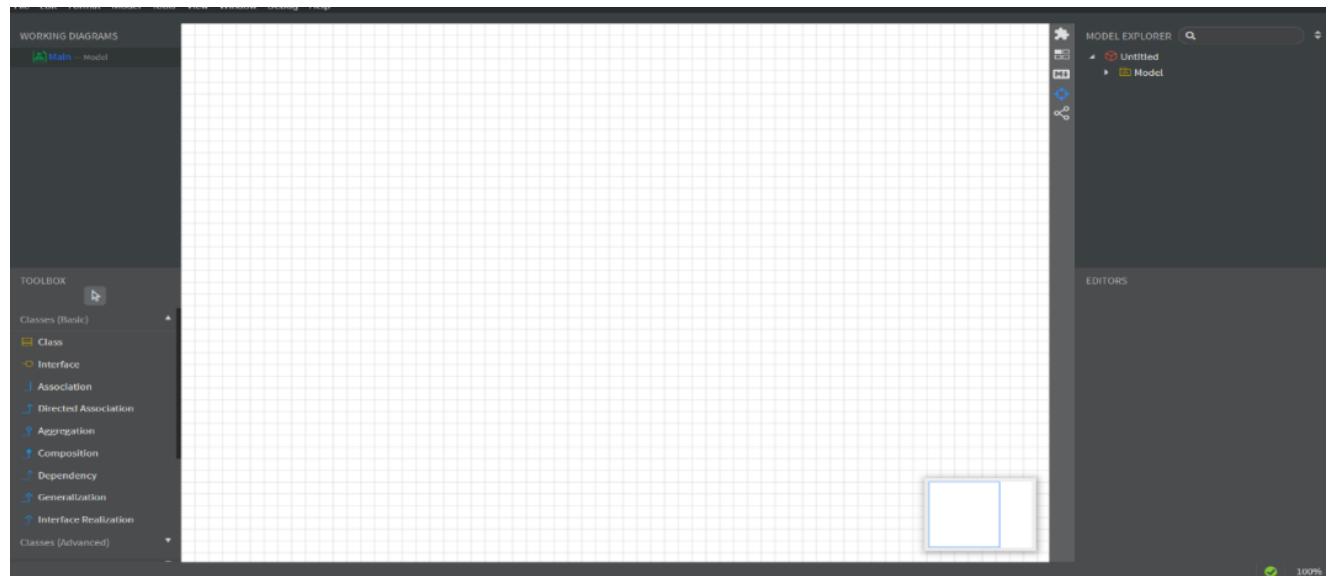
Step-2: from the given options select the suitable one for your system

The screenshot shows the Modelio download page. At the top, there is a navigation bar with links for Download, Buy, Extensions, Support, Blog, and Docs. Below the navigation bar, there is a large heading "Download" and a sub-headline "Start with 30 days evaluation". A blue button labeled "v6.2.2" is prominently displayed. Below the button, there are three main sections corresponding to different operating systems:

- macOS**: macOS 10.13 or higher. Options: macOS (Intel x86) and macOS (Apple arm64).
- Windows**: Windows 10 or higher. Option: Windows (x86-64bit).
- Ubuntu or Fedora**: Options: .deb (x86-64bit) and .rpm (x86-64bit).

At the bottom of the page, a note states: "If you want to download for previous versions, you can get a link for previous versions by [finding your license key](#)".

Step-3: Interface



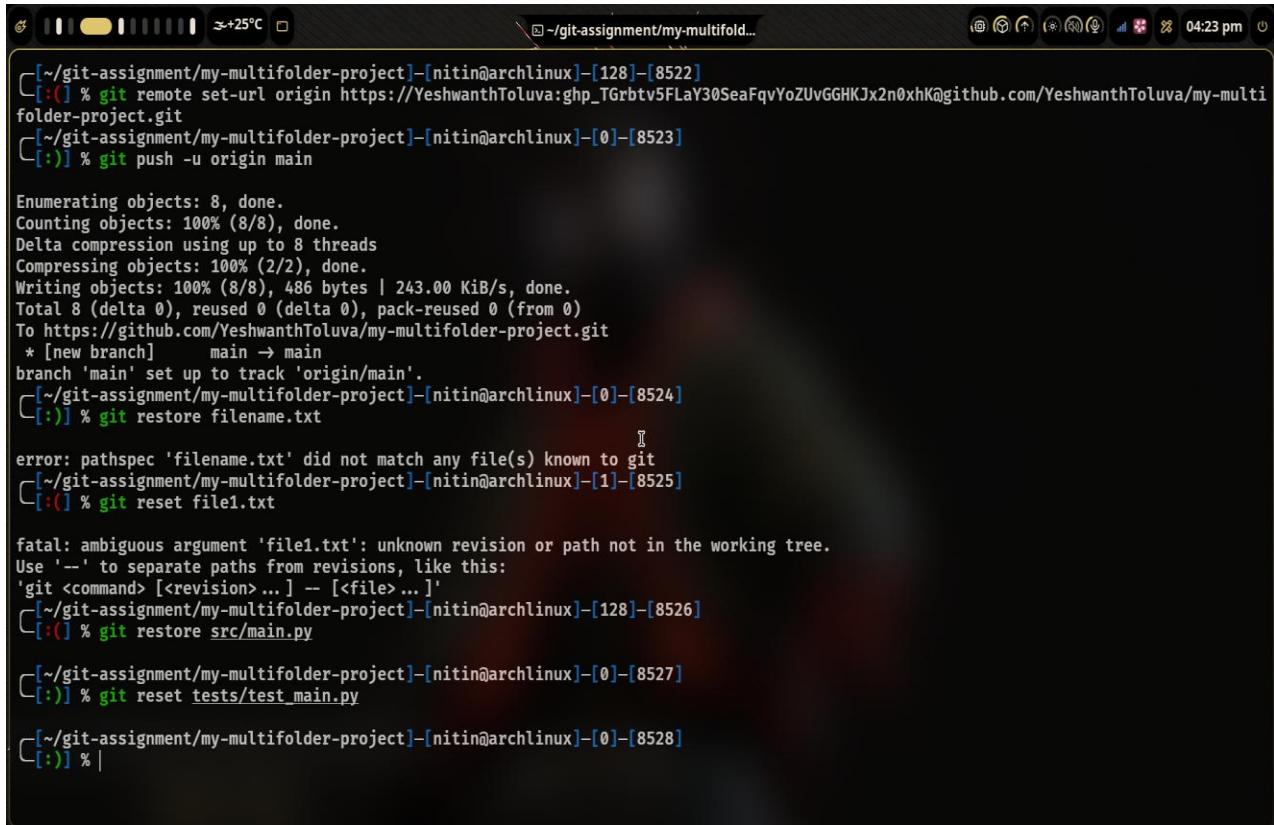
## **2. Exploring git local and remote commands on the multi-folder project**

Github Global Configuration:

```
C:\Users\NekshaSrinivas>git config --global --list
core.editor="C:\Users\NekshaSrinivas\AppData\Local\Programs\Microsoft VS Code\bin\code" --wait
user.name=Edigirala-Neksha
user.email=edigiralaneksha@gmail.com

C:\Users\NekshaSrinivas>
```

Git Push to GitHub Public Repository with Remote Set



```
[~/git-assignment/my-multifolder-project] [nitin@archlinux] [128]-[8522]
[::] % git remote set-url origin https://YeshwanthToluva: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@github.com/YeshwanthToluva/my-multi
folder-project.git
[~/git-assignment/my-multifolder-project] [nitin@archlinux] [0]-[8523]
[::] % git push -u origin main

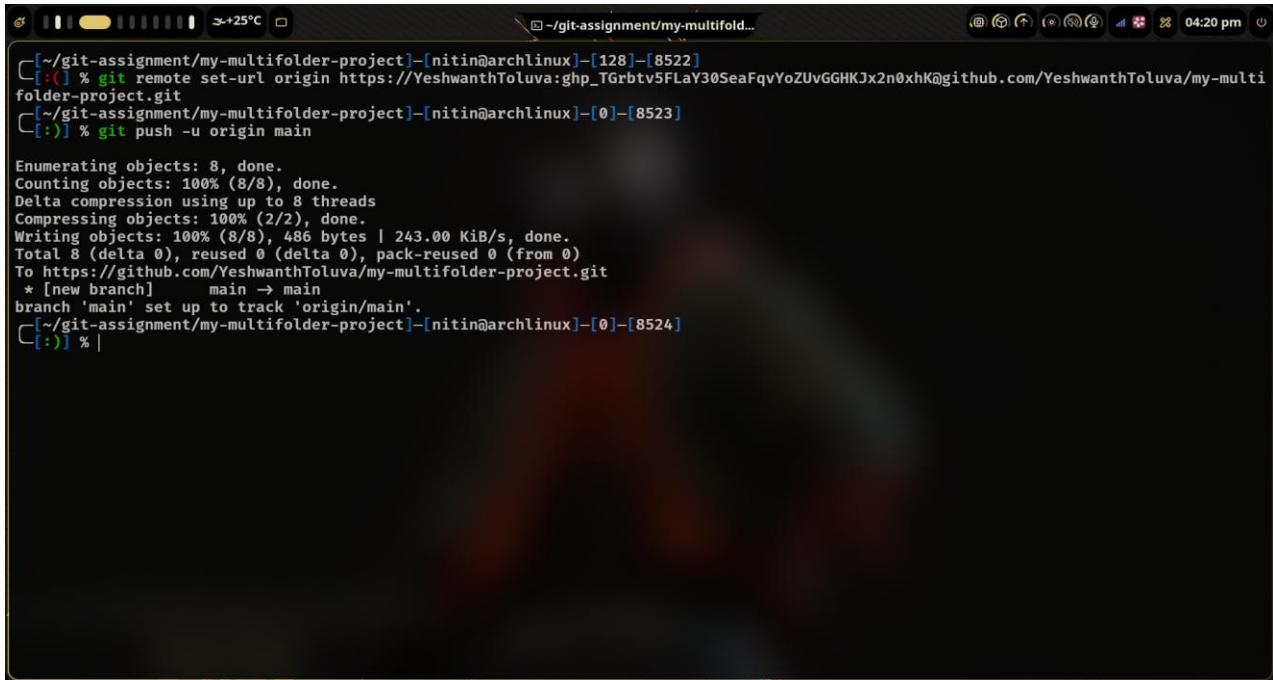
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (8/8), 486 bytes | 243.00 KiB/s, done.
Total 8 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/YeshwanthToluva/my-multifolder-project.git
 * [new branch]      main → main
branch 'main' set up to track 'origin/main'.
[~/git-assignment/my-multifolder-project] [nitin@archlinux] [0]-[8524]
[::] % git restore filename.txt
error: pathspec 'filename.txt' did not match any file(s) known to git
[~/git-assignment/my-multifolder-project] [nitin@archlinux] [1]-[8525]
[::] % git reset file1.txt

fatal: ambiguous argument 'file1.txt': unknown revision or path not in the working tree.
Use '--' to separate paths from revisions, like this:
'git <command> [<revision> ...] -- [<file> ... ]'
[~/git-assignment/my-multifolder-project] [nitin@archlinux] [128]-[8526]
[::] % git restore src/main.py

[~/git-assignment/my-multifolder-project] [nitin@archlinux] [0]-[8527]
[::] % git reset tests/test_main.py

[~/git-assignment/my-multifolder-project] [nitin@archlinux] [0]-[8528]
[::] % |
```

## Scenario-Based Git Commands: Discarding and Unstaging Changes



A screenshot of a terminal window titled 'git-assignment/my-multifold...'. The terminal shows the following command sequence:

```
[~/git-assignment/my-multiproject] [nitin@archlinux] [128] [8522]
[::] % git remote set-url origin https://YeshwanthToluva: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@github.com/YeshwanthToluva/my-multi
[~/git-assignment/my-multiproject] [nitin@archlinux] [0] [8523]
[::] % git push -u origin main

Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (8/8), 486 bytes | 243.00 KiB/s, done.
Total 8 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/YeshwanthToluva/my-multiproject.git
 * [new branch]      main    -> main
branch 'main' set up to track 'origin/main'.
[~/git-assignment/my-multiproject] [nitin@archlinux] [0] [8524]
[::] % |
```

1. You've cloned a repository and made some changes to a local branch. Now you want to push these changes to the remote repository, but you're getting an error saying "rejected - non-fast-forward." How would you resolve this?

This error occurs when the remote branch has changes that your local branch doesn't. To resolve it:

**git pull --rebase origin <branch-name>**

This rebases your local changes on top of the latest remote changes. After resolving any conflicts, push your changes:

2. You've been working on a feature branch, and now you need to push it to the remote repository. However, the remote repository already has a main branch. How do you push your feature branch without affecting the main branch?

You can push your feature branch independently:

**git push origin feature/feat-1**

This creates a new remote branch and does not affect the main branch.

3. You cloned a remote repository, but after a while, the repository's structure changed and new branches were added. How would you keep your local repository updated with the latest changes from the remote repository?

Use the following commands:

**git fetch origin**

This updates your local copy with all branches and changes from the remote. You can then check out new branches using:

**git checkout branch-name**

4. A colleague has pushed some changes to the main branch, but you have local changes in the same branch. You want to pull their changes, but you want to avoid merge conflicts. What steps would you take?

Use rebase to integrate their changes on top of your work:

**git stash # Temporarily store your changes**

**git pull --rebase origin main**

**git stash pop # Apply your changes on top**

This reduces the chance of conflicts and keeps history clean.

5. You accidentally pushed a sensitive file (e.g., API keys) to the remote repository. How would you fix this situation?

Steps to remove the sensitive data:

**Remove the file and commit:**

**git rm --cached path/to/file**

**git commit -m "Remove sensitive file"**

**git push origin main**

If the secret is in history, use git filter-branch or BFG Repo-Cleaner to rewrite history:

**git filter-branch --force --index-filter \**

**"git rm --cached --ignore-unmatch path/to/file" \**

**--prune-empty --tag-name-filter cat -- --all**

Force push and rotate the secret.

6. You're working on a feature branch, and your manager requests that you integrate the latest changes from main into your feature branch. What steps would you take?

Use rebase or merge:

Rebase:

**git checkout feature/your-feature**

**git fetch origin**

**git rebase origin/main**

7. You cloned a remote repository, but later you find that you need to push your changes to a different remote repository. How do you configure your local repository to push to this new remote?

Then push your changes:

**git push origin branch-name**

8. After running git pull, you notice that your local branch is behind the remote branch. How would you proceed to bring your local branch up to date without losing your local changes?

Use stash or rebase:

**git stash**

**git pull --rebase origin branch-name**

**git stash pop**

This ensures a clean rebase and retains your changes.

9. You're working on a project with multiple collaborators, and you notice that your local changes conflict with changes that have been pushed by others. How would you resolve the conflicts?

Pull the latest changes:

**git pull origin branch-name**

Git will highlight conflicts. Open the files, manually resolve the <<<<<, =====, and >>>>> markers.

Mark as resolved and commit:

**git add .**

**git commit**

10. You've pushed a feature branch to a remote repository, but now you need to delete the branch from the remote. How would you do that?

Use the following command:

**git push origin --delete feature/branch-name**

This will remove the branch from the remote repository.

### **3. Collaborative coding using git**

## GitHub Organization Members Page - se-lab-kmit Team Overview

The screenshot shows the GitHub Organization Members page for the 'se-lab-kmit' organization. The URL is [github.com/orgs/se-lab-kmit/people](https://github.com/orgs/se-lab-kmit/people). The page displays three members:

- Edigirala Neksha**: Member, 0 teams
- Varshith-666**: Member, 0 teams
- YeshwanthToluva**: Owner, 0 teams

A message at the top encourages users to enable two-factor authentication. The GitHub footer includes links to Terms, Privacy, Security, Status, Docs, Contact, Manage cookies, and Do not share my personal information.

## GitHub Repository Overview - LocalHunt-01 Private Repository

The screenshot shows the GitHub Repository Overview for the 'LocalHunt-01' repository, which is private. The URL is [github.com/se-lab-kmit/LocalHunt-01](https://github.com/se-lab-kmit/LocalHunt-01). The repository details are as follows:

- Code**: The active tab.
- Issues**: 0 issues.
- Pull requests**: 0 pull requests.
- Actions**: 0 actions.
- Projects**: 0 projects.
- Security**: 0 vulnerabilities.
- Insights**: Insights available.
- Settings**: Settings available.

The repository contains one branch, 'main', and one commit by 'YeshwanthToluva' titled 'Initial commit'. The 'About' section describes it as 'TEsting the private repo of the organization'. The 'Readme' file shows the same testing message. The 'Releases' section indicates 'No releases published'.

## Terminal Git Clone Operations - LocalHunt-01 Repository Setup

```

File Edit View Go Bookmarks Help
Places Computer Desktop Recent Trash Documents Music Pictures Videos Downloads
File System Windows Network Browse Network
2 folders | 1 file; 56.1 KiB (57,464 bytes) | Free space: 10.5 GiB
.../Documents/3rd yr/se lab

kitty 0.39.1
SYSTEM -- Modern 15 B12)
12th Gen Intel(R)z
UHD Graphics
1920x1080 @ 60Hz
3.54 GiB / 7.47 G)
0 B / 3.73 GiB (0)
32 mins
1920x1080 @ 60Hz
AUDIO -- Loopback Analog
CPU
GPU
SSD
HDD
RAM
Power
CPU
GPU
SSD
HDD
RAM
Power

[.../Documents/3rd yr/se lab]-(nitin@archlinux)-[0]-[8727]
[:)] % cd ~/Documents/3rd yr/se lab
rm -rf LocalHunt-01

[.../Documents/3rd yr/se lab]-(nitin@archlinux)-[0]-[8729]
[:)] % git clone https://YeshwanthToluva:ghp_GUcawTFsUfiiXUbmrjRj
hG781FPA2b4gYu8h>@github.com/se-lab-kmit/LocalHunt-01.git

zsh: no such file or directory: @github.com/se-lab-kmit/LocalHunt-0
1.git
[.../Documents/3rd yr/se lab]-(nitin@archlinux)-[1]-[8729]
[:)] % git clone https://YeshwanthToluva:ghp_GUcawTFsUfiiXUbmrjRj
hG781FPA2b4gYu8h>@github.com/se-lab-kmit/LocalHunt-01.git

Cloning into 'LocalHunt-01' ...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from
0)
Receiving objects: 100% (3/3), done.
[.../Documents/3rd yr/se lab]-(nitin@archlinux)-[0]-[8730]
[:)] %

```

## Git Branch Operations - Feature Branch Creation and File Management

```

File Edit View Go Bookmarks Help
Places Computer Desktop Recent Trash Documents Music Pictures Videos Downloads
File System Windows Network Browse Network
3 files; 2.7 MiB (2,785,074 bytes) | Free space: 10.5 GiB
.../3rd yr/se lab/LocalHunt-01

git checkout -b feature/feat-1
Switched to a new branch 'feature/feat-1'
[.../Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8733]
[:)] % touch info.txt
[.../Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8734]
[:)] % vim info.txt
[.../Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8735]
[:)] % git add .
[.../Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8736]
[:)] % git commit -m "changes made to branch"
[feature/feat-1 d11c044] changes made to branch
1 file changed, 1 insertion(+)
create mode 100644 info.txt
[.../Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8737]
[:)] %

```

## Git Push and Pull Request Creation - Feature Branch Workflow

```

733] [::] % touch info.txt
[~/Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8
734] [::] % vim info.txt
[~/Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8
735] [::] % git add .
[~/Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8
736] [::] % git commit -m "changes made to branch"
[feature/feat-1 d11c044] changes made to branch
1 file changed, 1 insertion(+)
create mode 100644 info.txt
[~/Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8
737] [::] % git push origin feature/feat-1

Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 347 bytes | 347.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
remote:
remote: Create a pull request for 'feature/feat-1' on GitHub by vis
iting:
remote: https://github.com/se-lab-kmit/LocalHunt-01/pull/new/f
eature/feat-1
remote:
To https://github.com/se-lab-kmit/LocalHunt-01.git
 * [new branch]      feature/feat-1 -> feature/feat-1
[~/Documents/3rd yr/se lab/LocalHunt-01]-(nitin@archlinux)-[0]-[8
738] [::] %

```

"Screenshot\_05-Aug\_10-38-32\_17782.png" | 1.3 MiB (1,318,318 bytes...)

## GitHub Repository Fork - simple-repo-se Overview and Setup

**YeshwanthToluva/simple-repo-se**

forked from [imagec/simple-repo](#)

**Code** Pull requests Actions Projects Wiki Security Insights Settings

**About**

a simple repo for assignment

**Readme**

**Activity**

**0 stars**

**0 watching**

**0 forks**

**Releases**

No releases published

Create a new release

**feature/feat-1** had recent pushes 2 seconds ago

Compare & pull request

master 1 Branch 0 Tags

Go to file + <> Code

This branch is up to date with imagec/simple-repo:master.

Contribute Sync fork

**image\_c** Simple-repo init

75bcc55 · 9 years ago 1 Commit

README.RD Simple-repo init 9 years ago

repo Simple-repo init 9 years ago

repo\_utils.py Simple-repo init 9 years ago

## Git Commit and Status - README.RD File Modifications in Feature Branch

```

[~/Documents/3rd yr/se lab/simple-repo-se]-[nitin@archlinux]-[0]-
[8763] [:] % git add README.RD
git status
git commit -m "Added my name to README.RD"

On branch feature/feat-1
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified: README.RD

[feature/feat-1 59b935a] Added my name to README.RD
1 file changed, 1 insertion(+), 1 deletion(-)
[~/Documents/3rd yr/se lab/simple-repo-se]-[nitin@archlinux]-[0]-
[8764] [:] %

```

## Git Push to Forked Repository - Feature Branch Upload and Pull Request Creation

```

git status
git commit -m "Added my name to README.RD"

On branch feature/feat-1
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified: README.RD

[feature/feat-1 59b935a] Added my name to README.RD
1 file changed, 1 insertion(+), 1 deletion(-)
[~/Documents/3rd yr/se lab/simple-repo-se]-[nitin@archlinux]-[0]-
[8764] [:] %

```

```

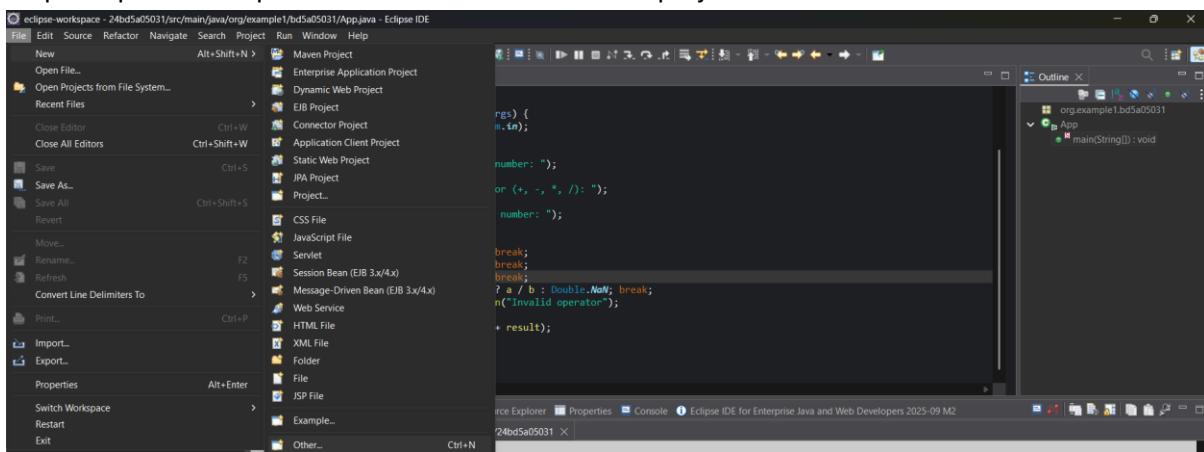
git push origin feature/feat-1

Username for 'https://github.com': YeshwanthToluva
Password for 'https://YeshwanthToluva@github.com':
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 383 bytes | 383.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object
.
remote:
remote: Create a pull request for 'feature/feat-1' on GitHub by visiting:
remote:   https://github.com/YeshwanthToluva/simple-repo-se/pull
remote: /new/feature/feat-1
remote:
To https://github.com/YeshwanthToluva/simple-repo-se.git
 * [new branch]      feature/feat-1 -> feature/feat-1
[~/Documents/3rd yr/se lab/simple-repo-se]-[nitin@archlinux]-[0]-
[8765] [:] %

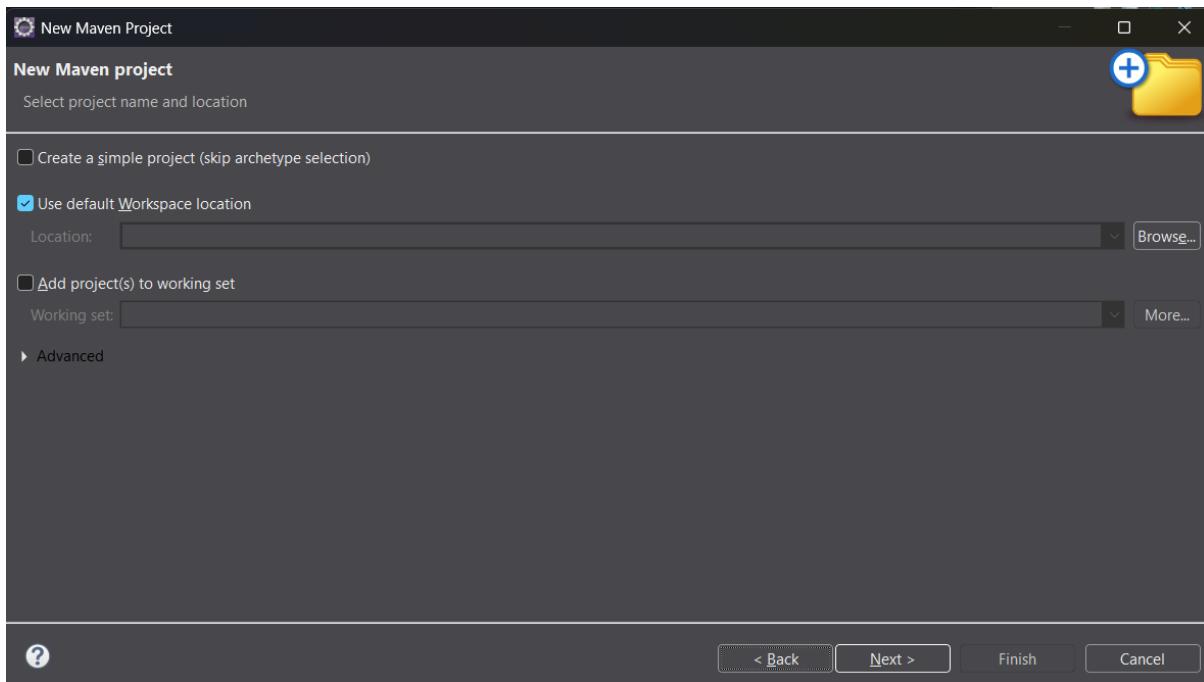
```

## 4. Build and package Java and Web applications using Maven

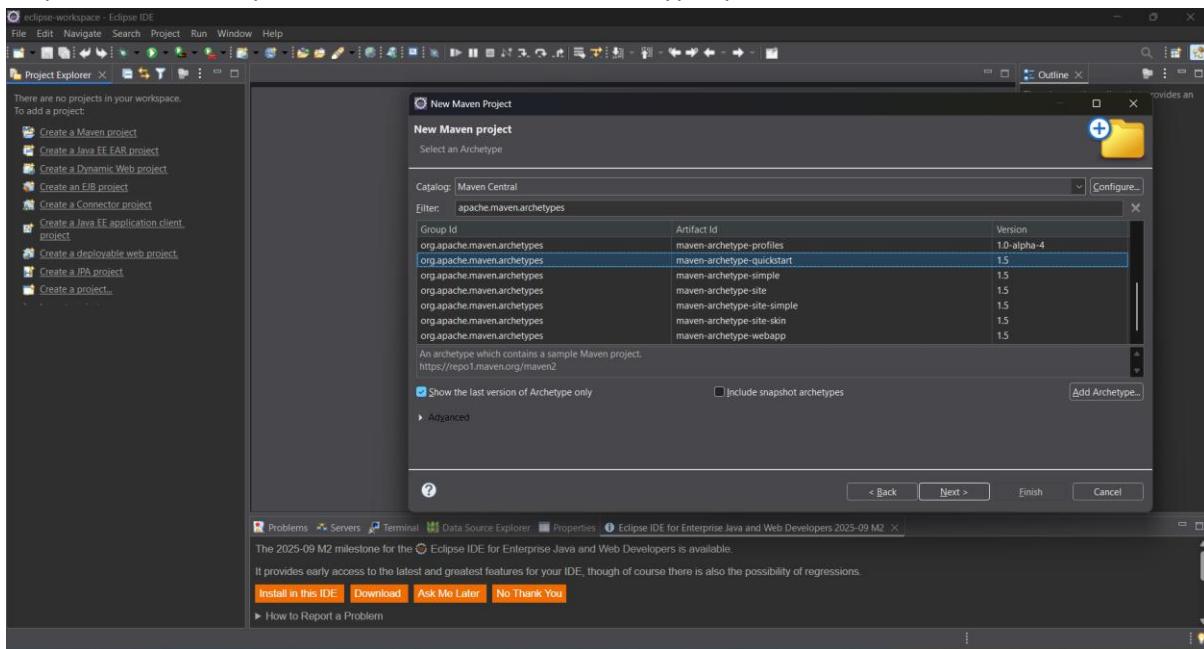
## Step-1: Open the eclipse and click on file>new>Maven project



## Step-2: select the default workspace and click on next



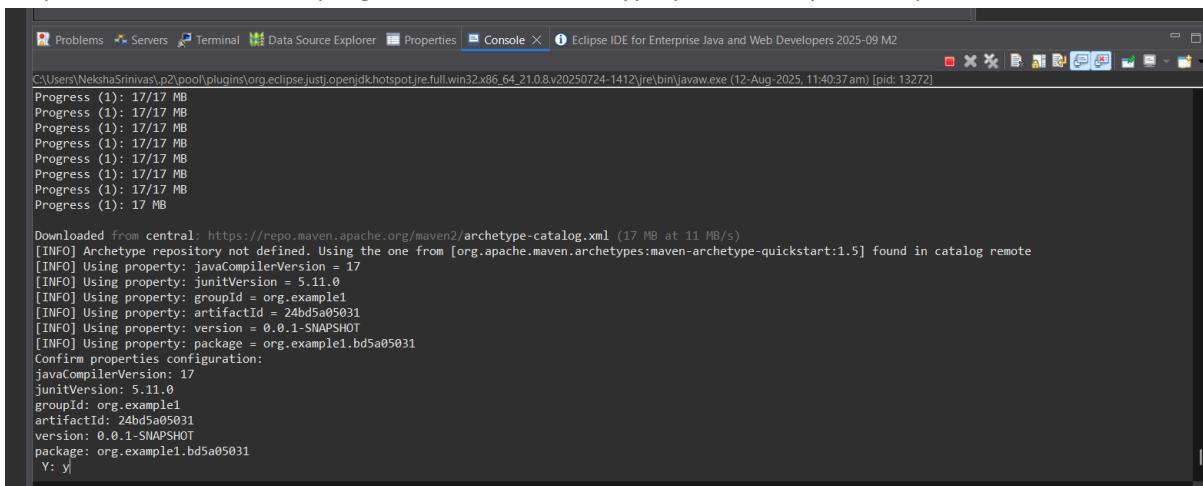
### Step-3: in the filter option select the one maven-archetype-quickstart



### Step-4: give the Group Id and Artifact Id and click on next

A screenshot of the "New Maven Project" dialog in the Eclipse IDE. The "Group Id" field is filled with "org.example1". The "Artifact Id" field is filled with "24bd5a05031". The "Version" dropdown is set to "0.0.1-SNAPSHOT". The "Package" dropdown is set to "org.example1.bd5a05031". Below these fields, there is a checked checkbox labeled "run archetype generation interactively". Under the heading "Properties available from archetype:", there is a table with two rows: "javaCompilerVersion" with value "17" and "junitVersion" with value "5.11.0". To the right of the table are "Add..." and "Remove" buttons. At the bottom of the dialog are buttons for "?", "< Back", "Next >", "Finish", and "Cancel".

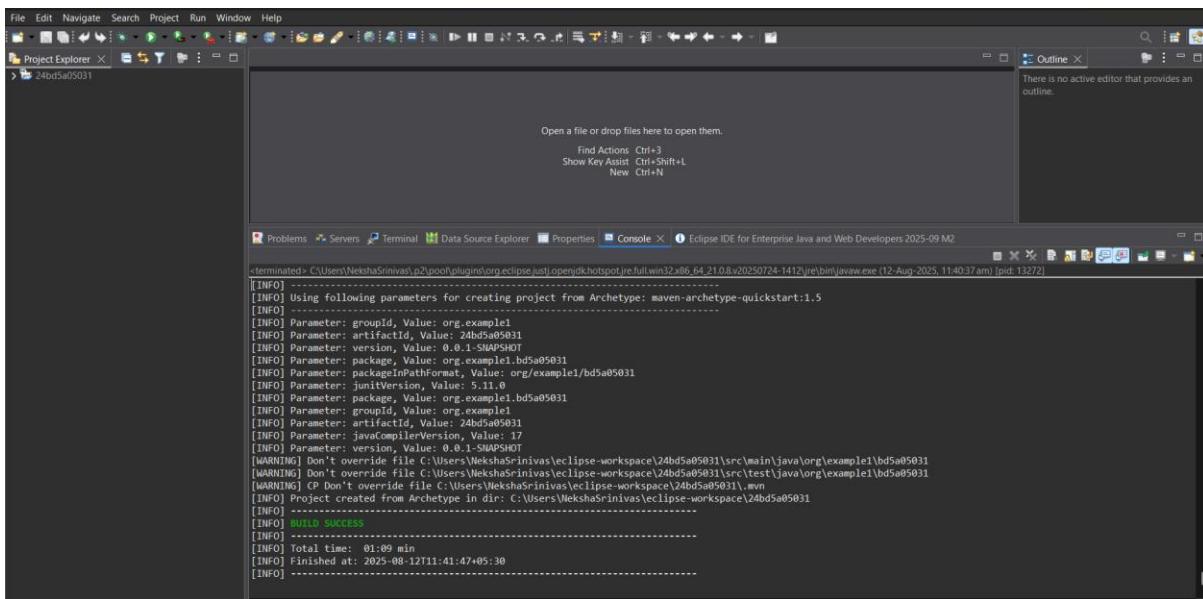
Step-5: In the console the progress will be showed type y (refers to yes) and press enter



```
C:\Users\NekshaSrinivas\p2\pool\plugins\org.eclipse.jdt.openjdk.hotspot.jre.full.win32.x86_64_21.0.8.v20250724-1412\jre\bin\javaw.exe (12-Aug-2025, 11:40:37 am) [pid: 13272]
Progress (1): 17/17 MB
Progress (1): 17 MB

Downloaded from central: https://repo.maven.apache.org/maven2/archetype-catalog.xml (17 MB at 11 MB/s)
[INFO] Archetype repository not defined. Using the one from [org.apache.maven.archetypes:maven-archetype-quickstart:1.5] found in catalog remote
[INFO] Using property: javaCompilerVersion = 17
[INFO] Using property: junitVersion = 5.11.0
[INFO] Using property: groupId = org.example1
[INFO] Using property: artifactId = 24bd5a05031
[INFO] Using property: version = 0.0.1-SNAPSHOT
[INFO] Using property: package = org.example1.bd5a05031
Confirm properties configuration:
javaCompilerVersion: 17
junitVersion: 5.11.0
groupId: org.example1
artifactId: 24bd5a05031
version: 0.0.1-SNAPSHOT
package: org.example1.bd5a05031
Y: y|
```

Step-6: BUILD SUCCESS will be shown



```
File Edit Navigate Search Project Run Window Help
Project Explorer X
24bd5a05031

Open a file or drop files here to open them.
Find Actions Ctrl+3
Show Key Assist Ctrl+Shift+L
New Ctrl+N

Problems Servers Terminal Data Source Explorer Properties Console X Eclipse IDE for Enterprise Java and Web Developers 2025-09 M2
terminated - C:\Users\NekshaSrinivas\p2\pool\plugins\org.eclipse.jdt.openjdk.hotspot.jre.full.win32.x86_64_21.0.8.v20250724-1412\jre\bin\javaw.exe (12-Aug-2025, 11:40:37 am) [pid: 13272]
[INFO]
[INFO] Using following parameters for creating project from Archetype: maven-archetype-quickstart:1.5
[INFO] -----
[INFO] Parameter: groupId, Value: org.example1
[INFO] Parameter: artifactId, Value: 24bd5a05031
[INFO] Parameter: version, Value: 0.0.1-SNAPSHOT
[INFO] Parameter: package, Value: org.example1.bd5a05031
[INFO] Parameter: packageInPathFormat, Value: org/example1/bd5a05031
[INFO] Parameter: junitVersion, Value: 5.11.0
[INFO] Parameter: groupId, Value: org.example1
[INFO] Parameter: artifactId, Value: org.example1
[INFO] Parameter: javaCompilerVersion, Value: 17
[INFO] Parameter: version, Value: 0.0.1-SNAPSHOT
[WARNING] Don't override file C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a05031\src\main\java\org\example1\bd5a05031
[WARNING] Don't override file C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a05031\src\test\java\org\example1\bd5a05031
[WARNING] CP Don't override file C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a05031\.mvn
[INFO] Project created from Archetype in dir: C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a05031
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 01:09 min
[INFO] Finished at: 2025-08-12T11:41:47+05:30
[INFO]
```

## Step-6: write the code in the App.java file

The screenshot shows the Eclipse IDE interface with the following details:

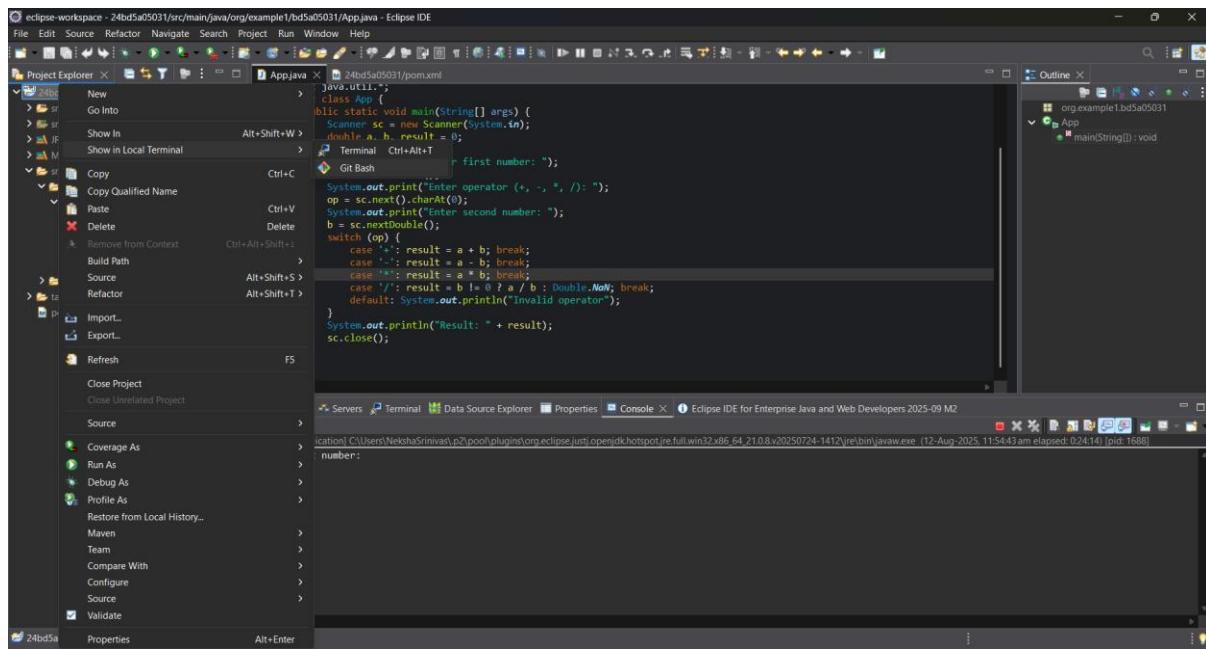
- Project Explorer:** Shows the project structure with a file named `App.java` under the `src/main/java/org/example1/bd5a05031` package.
- Code Editor:** Displays the Java code for `App.java`:

```
1 package org.example1.bd5a05031;
2
3 /**
4  * Hello world!
5  */
6 import java.util.*;
7 public class App {
8     public static void main(String[] args) {
9         Scanner sc = new Scanner(System.in);
10        double a, b, result = 0;
11        char op;
12        System.out.print("Enter first number: ");
13        a = sc.nextDouble();
14        System.out.print("Enter operator (+, -, *, /): ");
15        op = sc.next().charAt(0);
16        System.out.print("Enter second number: ");
17        b = sc.nextDouble();
18        switch (op) {
19            case '+': result = a + b; break;
20            case '-': result = a - b; break;
21            case '*': result = a * b; break;
22            case '/': result = b != 0 ? a / b : Double.NaN; break;
23            default: System.out.println("Invalid operator");
24        }
25        System.out.println("Result: " + result);
26        sc.close();
27    }
28 }
```

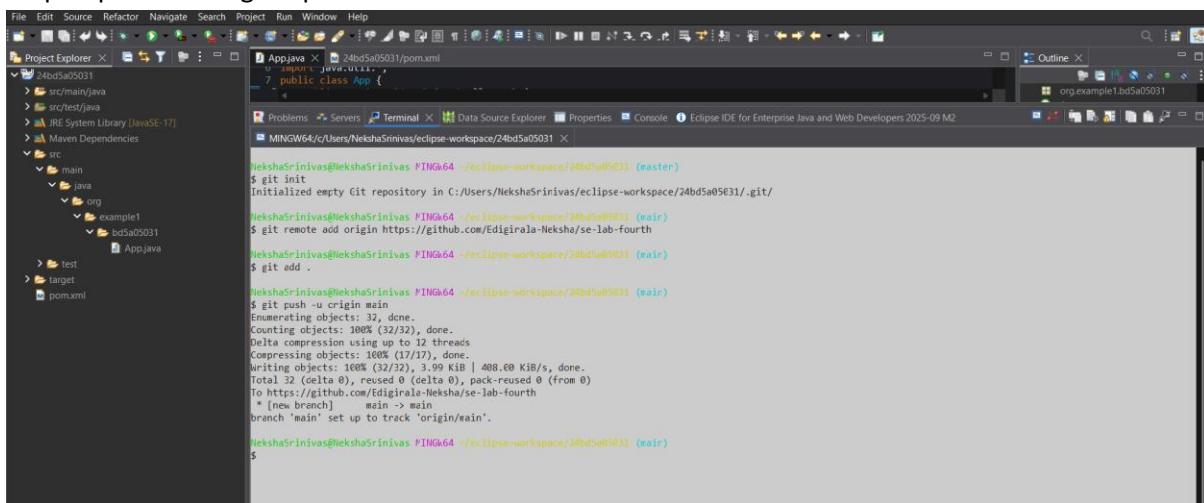
- Console:** Shows the terminal output of the application's execution:

```
Enter first number: 5
Enter operator (+, -, *, /): +
Enter second number: 10
Result: 20.0
```

## Step-7: right click on the root folder and select show in git bash



## Step-8: push to the git repo



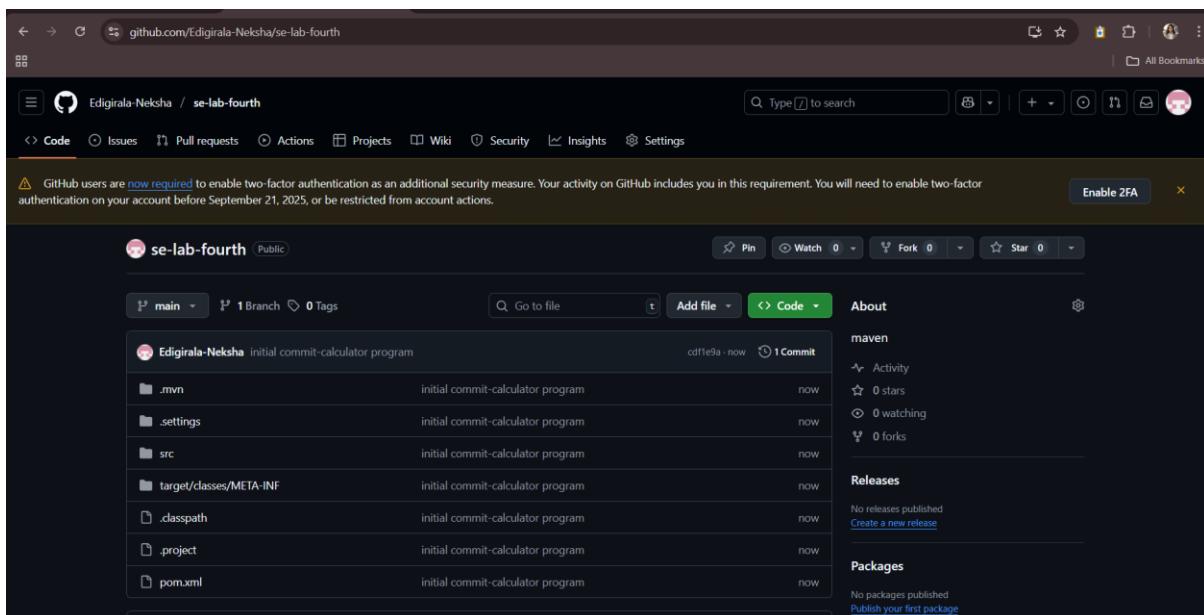
The screenshot shows the Eclipse IDE interface with the Project Explorer and Outline views on the left. The Terminal view on the right displays the following git command sequence:

```
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a05031 (main)
$ git init
Initialized empty Git repository in C:/Users/NekshaSrinivas/eclipse-workspace/24bd5a05031/.git/
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a05031 (main)
$ git remote add origin https://github.com/Edigirala-Neksha/se-lab-fourth
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a05031 (main)
$ git add .

NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a05031 (main)
$ git push -u origin main
Enumerating objects: 32, done.
Counting objects: 100% (32/32), done.
Delta compression using up to 4 threads
Compressing objects: 100% (17/17), done.
Writing objects: 100% (32/32), 3.09 KiB | 408.00 KiB/s, done.
Total 32 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Edigirala-Neksha/se-lab-fourth
 * [new branch]    main > main
branch 'main' set up to track 'origin/main'.
```

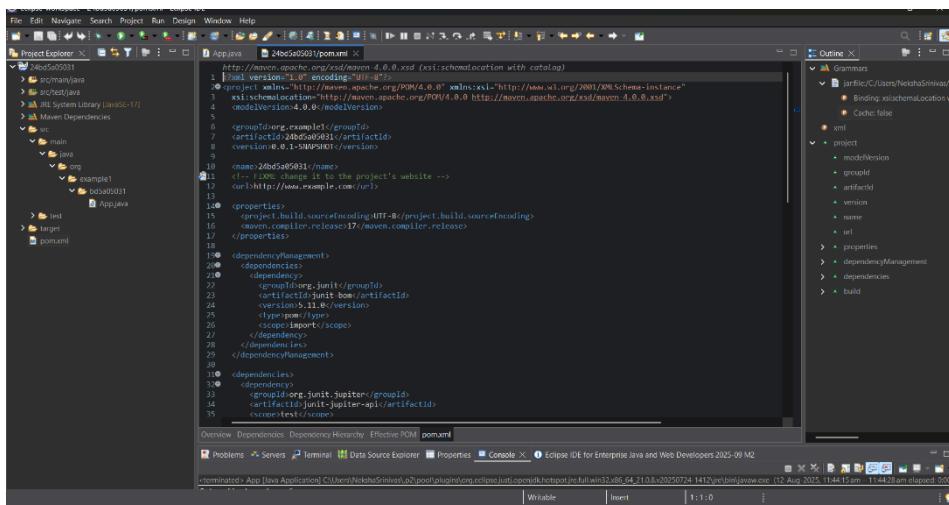
Git repo:

Git repo link: <https://github.com/Edigirala-Neksha/se-lab-fourth>



## pom.xml file:

Shows the structure-

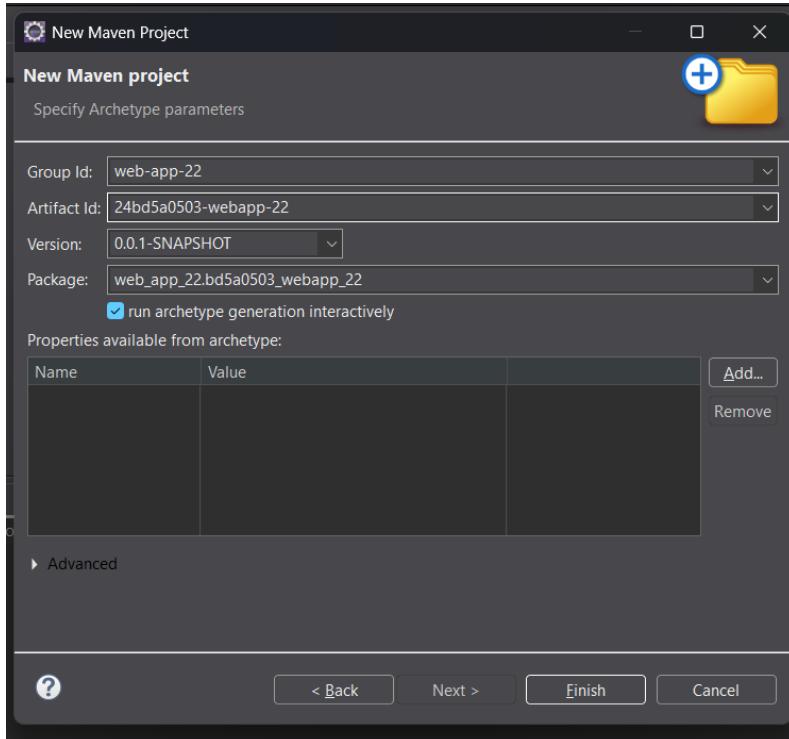


The screenshot shows the Eclipse IDE interface with the pom.xml file open in the editor. The Project Explorer on the left shows a Maven project structure with folders like src/main/java, src/test/java, and Maven Dependencies. The Outline view on the right displays the XML structure of the pom.xml file, highlighting various elements such as groupId, artifactId, version, dependencies, and properties.

```
<project>
    <modelVersion>4.0.0</modelVersion>
    <groupId>24bd5a0503</groupId>
    <artifactId>24bd5a0503</artifactId>
    <version>0.0.1-SNAPSHOT</version>
    <name>24bd5a0503</name>
    <url>http://www.example.com/</url>
    <dependencies>
        <dependency>
            <groupId>org.junit.jupiter</groupId>
            <artifactId>junit-jupiter-api</artifactId>
            <scope>test</scope>
        </dependency>
    </dependencies>
</project>
```

Creating maven-web project:

Step 1: Create a new maven project and give the details



## Step 2: Click y to continue the creation of project

```
C:\Users\NekshaSrinivas\p2\pool\plugins\org.eclipse.jst\openjdk.hotspot.jre.full.win32.x86_64_21.0.8.v20250724-1412\jre\bin\javaw.exe (02-Sept-2025, 7:19:56 pm) [pid: 13772]
Progress (1): 17/17 MB
Progress (1): 17 MB

Downloaded from central: https://repo.maven.apache.org/maven2/archetype-catalog.xml (17 MB at 9.1 MB/s)
[INFO] Archetype repository not defined. Using the one from [org.apache.maven.archetypes:maven-archetype-webapp:1.5] found in catalog remote
[INFO] Using property: groupId = web-app-22
[INFO] Using property: artifactId = 24bd5a0503-webapp-22
[INFO] Using property: version = 0.0.1-SNAPSHOT
[INFO] Using property: package = web_app_22.bd5a0503_webapp_22
Confirm properties configuration:
groupId: web-app-22
artifactId: 24bd5a0503-webapp-22
version: 0.0.1-SNAPSHOT
package: web_app_22.bd5a0503_webapp_22
y: y
```

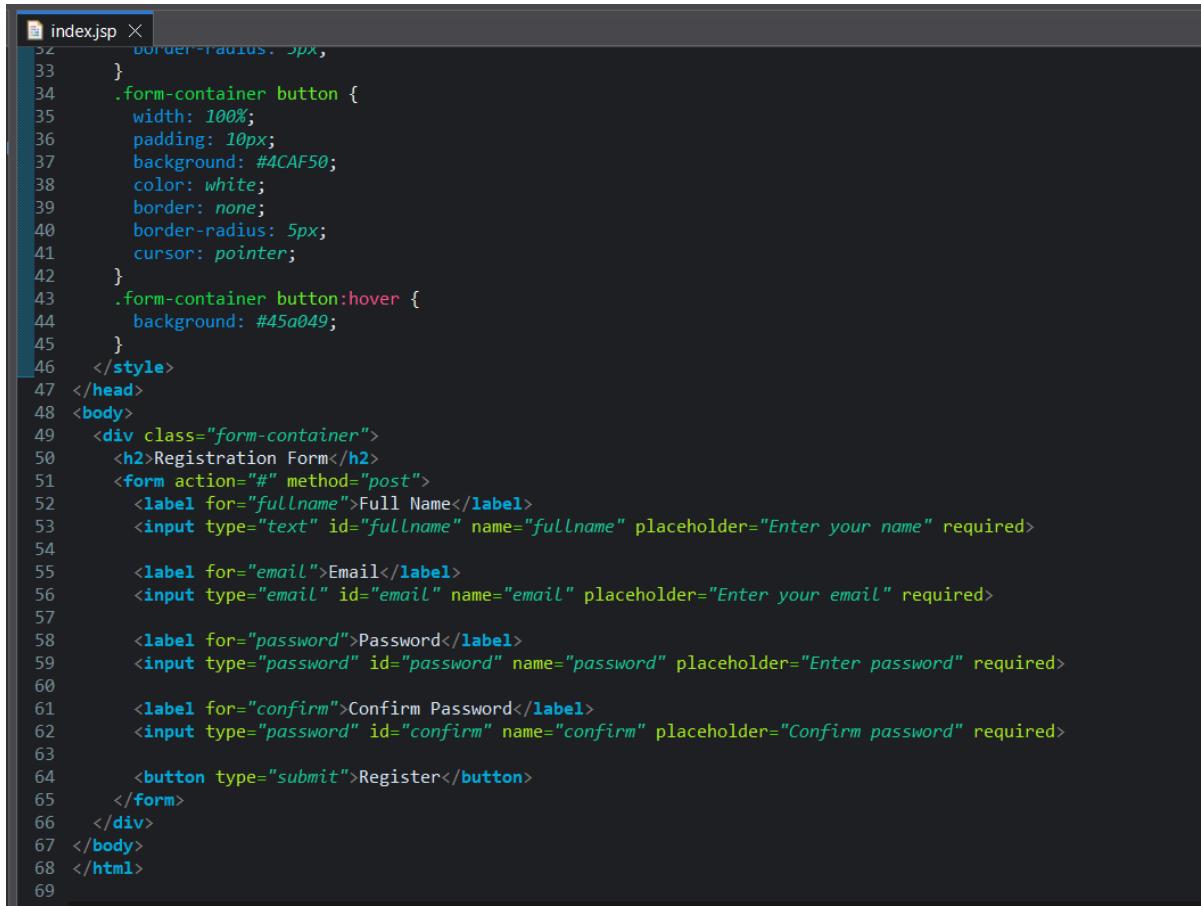
## Step 3: If the build is success it will show the message

```
package: web_app_22.bd5a0503_webapp_22
Y: y
[INFO] -----
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1.0
[INFO] -----
[INFO] Parameter: basedir, Value: C:\Users\NekshaSrinivas\eclipse-workspace
[INFO] Parameter: package, Value: web_app_22.bd5a0503_webapp_22
[INFO] Parameter: groupId, Value: web-app-22
[INFO] Parameter: artifactId, Value: 24bd5a0503-webapp-22
[INFO] Parameter: packageName, Value: web_app_22.bd5a0503_webapp_22
[INFO] Parameter: version, Value: 0.0.1-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a0503-webapp-22
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 43.500 s
[INFO] Finished at: 2025-09-02T19:20:41+05:30
[INFO] -----
```

## Step 4: write the html code for the web page:

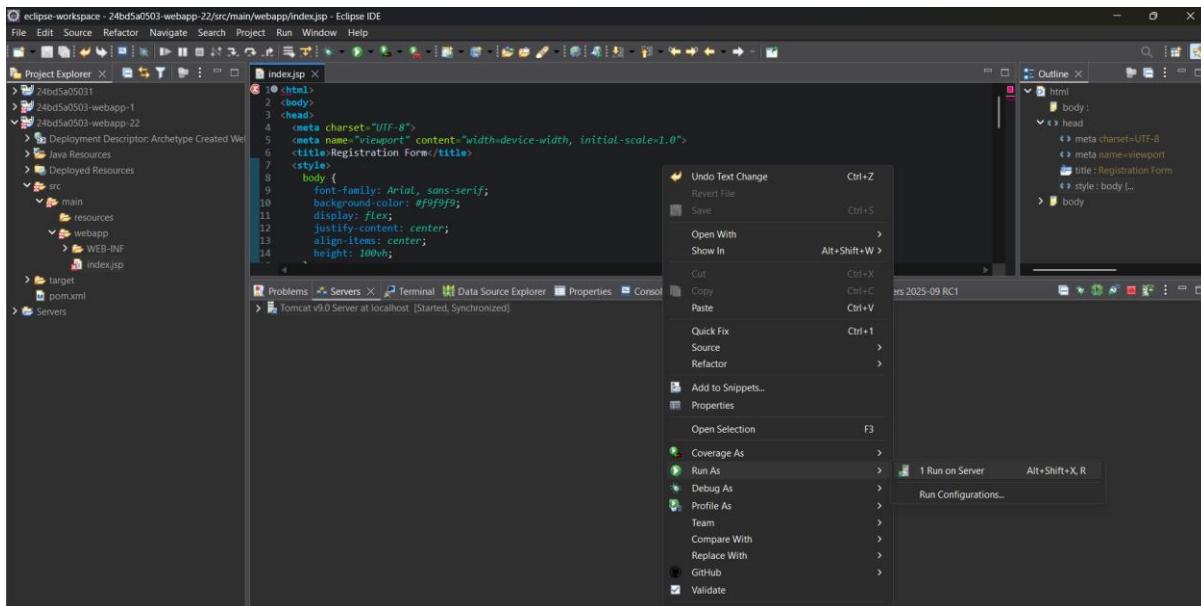
```
index.jsp X
⑥ <html>
  <body>
    <head>
      <meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1.0">
      <title>Registration Form</title>
    <style>
      body {
        font-family: Arial, sans-serif;
        background-color: #f9f9f9;
        display: flex;
        justify-content: center;
        align-items: center;
        height: 100vh;
      }
      .form-container {
        background: #fff;
        padding: 20px 30px;
        border-radius: 10px;
        box-shadow: 0 4px 10px rgba(0,0,0,0.1);
        width: 300px;
      }
      .form-container h2 {
        text-align: center;
        margin-bottom: 20px;
      }
      .form-container input {
        width: 100%;
        padding: 10px;
        margin: 8px 0;
        border: 1px solid #ccc;
        border-radius: 5px;
      }
      .form-container button {
        width: 100%;
        padding: 10px;
        background: #4CAF50;
        color: white;
        border: none;
        cursor: pointer;
      }
    </style>
  </head>
  <body>
    <div class="form-container">
      <h2>Registration Form</h2>
      <form>
        <div>
          <label>Name:</label>
          <input type="text" placeholder="Enter Name" required>
        </div>
        <div>
          <label>Email:</label>
          <input type="email" placeholder="Enter Email" required>
        </div>
        <div>
          <label>Password:</label>
          <input type="password" placeholder="Enter Password" required>
        </div>
        <div>
          <label>Confirm Password:</label>
          <input type="password" placeholder="Enter Confirm Password" required>
        </div>
        <div>
          <button type="submit">Register</button>
        </div>
      </form>
    </div>
  </body>
</html>
```

## Web-page:



```
index.jsp X
  1<!DOCTYPE html>
  2<html>
  3  <head>
  4    <meta charset="UTF-8">
  5    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  6    <title>Registration Form</title>
  7    <style>
  8      body {
  9        font-family: Arial, sans-serif;
10        background-color: #f0f0f0;
11        display: flex;
12        justify-content: center;
13        align-items: center;
14        height: 100vh;
15      }
16      .form-container button {
17        width: 100%;
18        padding: 10px;
19        background: #4CAF50;
20        color: white;
21        border: none;
22        border-radius: 5px;
23        cursor: pointer;
24      }
25      .form-container button:hover {
26        background: #45a049;
27      }
28    </style>
29  </head>
30  <body>
31    <div class="form-container">
32      <h2>Registration Form</h2>
33      <form action="#" method="post">
34        <label for="fullname">Full Name</label>
35        <input type="text" id="fullname" name="fullname" placeholder="Enter your name" required>
36
37        <label for="email">Email</label>
38        <input type="email" id="email" name="email" placeholder="Enter your email" required>
39
40        <label for="password">Password</label>
41        <input type="password" id="password" name="password" placeholder="Enter password" required>
42
43        <label for="confirm">Confirm Password</label>
44        <input type="password" id="confirm" name="confirm" placeholder="Confirm password" required>
45
46        <button type="submit">Register</button>
47      </form>
48    </div>
49  </body>
50</html>
```

## Step 5: Select run on server



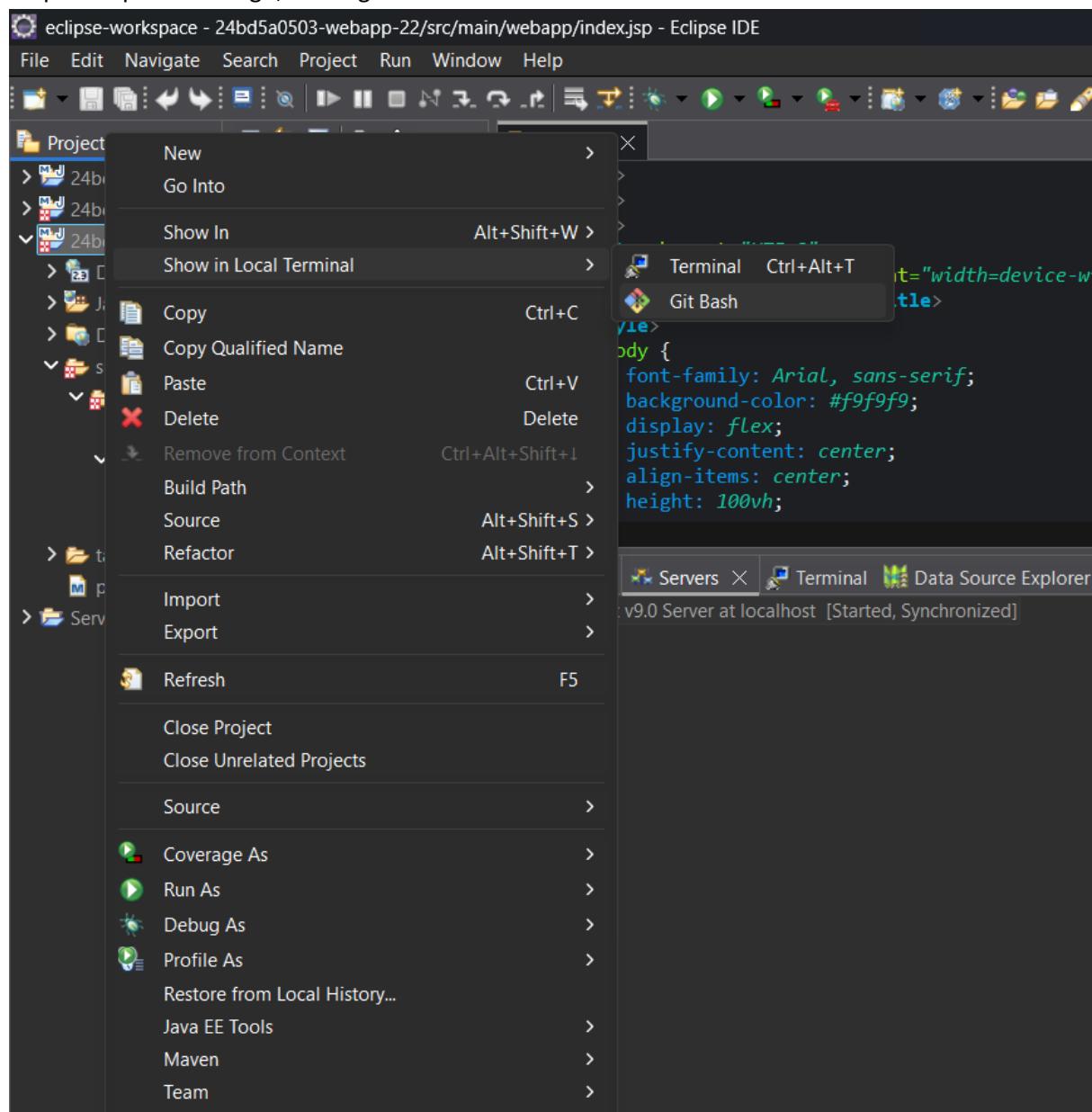
Step 6: It will show the following output:

A screenshot of a web browser window displaying a registration form. The browser's address bar shows the URL: `localhost:8080/24bd5a0503-webapp-22/index.jsp`. The main content area contains a registration form with the following fields:

- Full Name:** An input field placeholder is "Enter your name".
- Email:** An input field placeholder is "Enter your email".
- Password:** An input field placeholder is "Enter password".
- Confirm Password:** An input field placeholder is "Confirm password".

At the bottom of the form is a green **Register** button.

Step 7: To push it into git, select git bash from show in local terminal

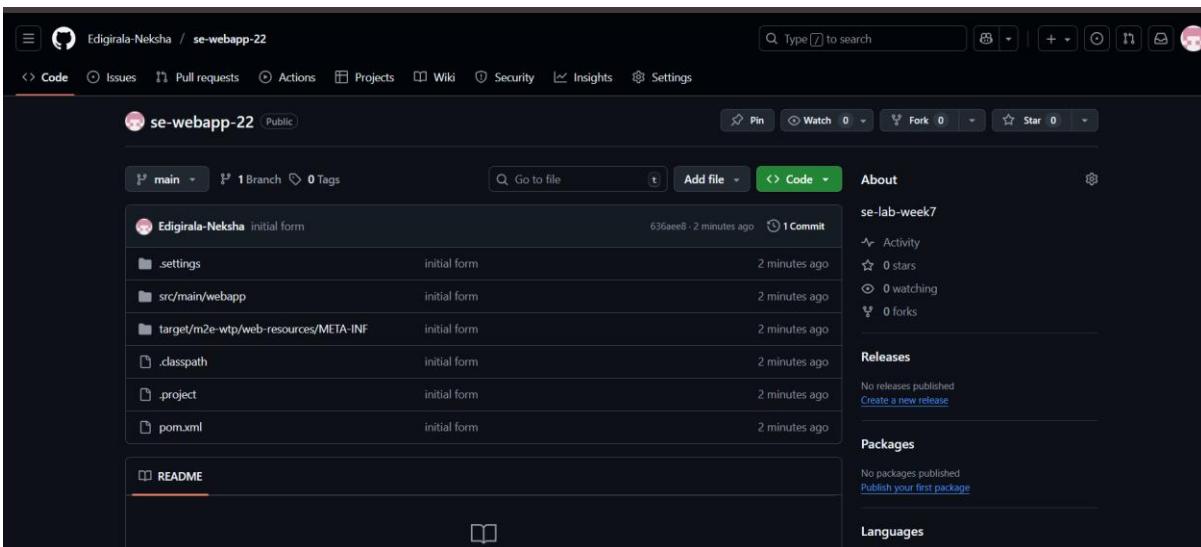


## Step 8: use the command of git to push the maven web project

```
MINGW64:/c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05... MINGW64:/c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05... MINGW64:/c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05...  
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (master)  
$ git init  
Initialized empty Git repository in C:/Users/NekshaSrinivas/eclipse-workspace/24bd5a0503-webapp-22/.git/  
  
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)  
$ git add .  
  
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)  
$ git commit -m "initial form"  
[main (root-commit) 636aee8] initial form  
16 files changed, 254 insertions(+)  
create mode 100644 .classpath  
create mode 100644 .project  
create mode 100644 .settings/.jsdtscope  
create mode 100644 .settings/crg.eclipse.jdt.core.prefs  
create mode 100644 .settings/crg.eclipse.m2e.core.prefs  
create mode 100644 .settings/crg.eclipse.wst.commonn.component  
create mode 100644 .settings/crg.eclipse.wst.commonn.project_facet.core.xml  
create mode 100644 .settings/crg.eclipse.wst.jsdt.ui.superType.container  
create mode 100644 .settings/crg.eclipse.wst.jsdt.ui.superType.name  
create mode 100644 .settings/crg.eclipse.wst.validationn.prefs  
create mode 100644 pom.xml  
create mode 100644 src/main/webapp/WEB-INF/web.xml
```

```
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)  
$ git branch  
* main  
  
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)  
$ git push origin main  
Enumerating objects: 29, done.  
Counting objects: 100% (29/29), done.  
Delta compression using up to 12 threads  
Compressing objects: 100% (18/18), done.  
Writing objects: 100% (29/29), 4.43 KiB | 283.00 KiB/s, done.  
Total 29 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)  
remote: Resolving deltas: 100% (1/1), done.  
To https://github.com/Edigirala-Neksha/se-webapp-22.git  
 * [new branch]      main -> main  
  
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)  
$
```

## Step 9: verify the repo in git hub



The screenshot shows the GitHub repository page for 'se-webapp-22'. The repository is public and has one branch, 'main'. A single commit was made by 'Edigirala-Neksha' with the message 'initial form'. The commit was pushed 2 minutes ago. The repository has 0 stars, 0 forks, and 0 releases. The README file is present.

## **5. Docker CLI commands**

### **Installing Docker and Setting up Nginx**

#### **Introduction**

**Docker** is a platform that allows us to run applications inside lightweight containers. Containers are isolated environments that include everything needed to run an application. This makes it easy to set up and deploy software without worrying about dependencies or configurations on the host system.

In this task, we used Docker to run an **Ubuntu container**, install **nginx** inside it, and serve a customized homepage

#### **Step 1: Pulling the Ubuntu Image**

First, we pulled the latest Ubuntu image from Docker Hub.

```
PS C:\Users\NekshaSrinivas> docker --version
Docker version 28.3.2, build 578ccf6
PS C:\Users\NekshaSrinivas> cd SE-1
PS C:\Users\NekshaSrinivas\SE-1> docker --version
Docker version 28.3.2, build 578ccf6
PS C:\Users\NekshaSrinivas\SE-1> docker pull ubuntu:latest
latest: Pulling from library/ubuntu
b71466b94f26: Pull complete
Digest: sha256:7c06e91f61fa88c08cc74f7e1b7c69ae24910d745357e0dfe1d2c0322aaaf2
0f9
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
```

#### **Step 2: Running the Container**

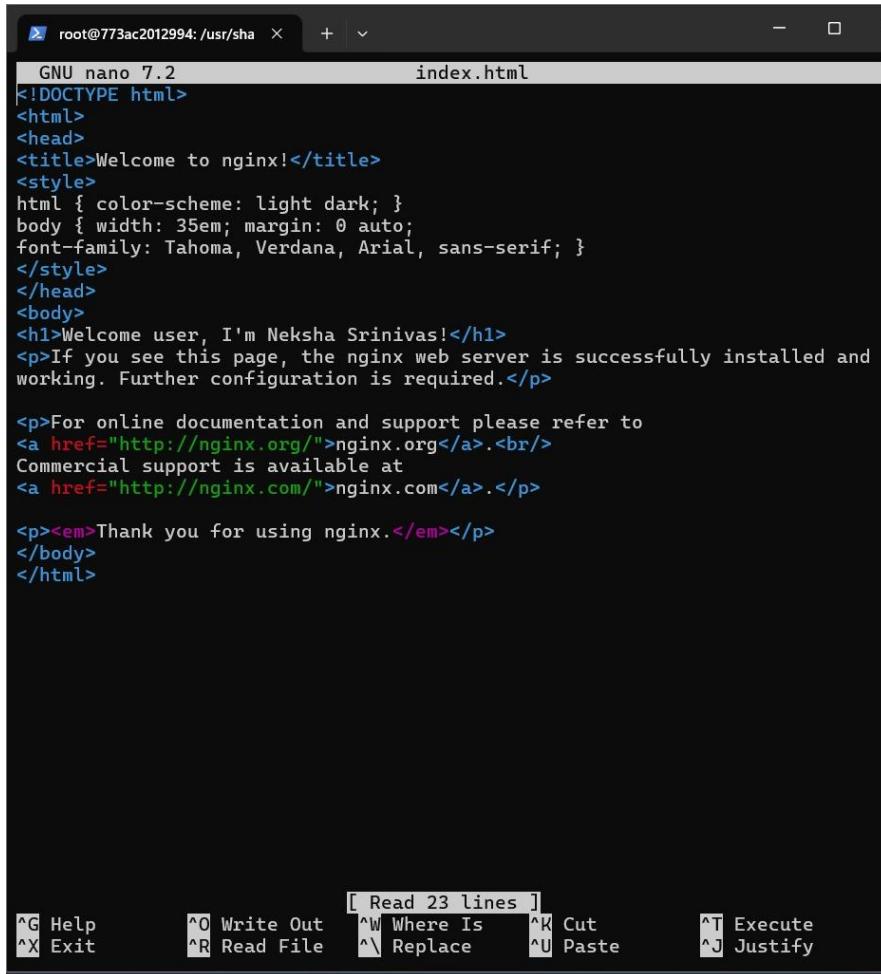
We created and started a new container named **myubuntu**, mapping port **3000** on the host to port **80** inside the container.

```
PS C:\Users\NekshaSrinivas\SE-1> docker run -it -p 9090:80 --name myubuntu1
ubuntu:latest
root@773ac2012994:/# apt update
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1135 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1355 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2047 kB]
Get:8 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]
Get:9 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [23.0 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [331 kB]
```

Step 3: Installing Nginx and redirecting to index.html page to edit the content

```
Processing triggers for libc-bin (2.39-0ubuntu8.5) ...
root@773ac2012994:/# ls
bin          dev    lib     mnt   root  sbin usr-is-merged  tmp
bin usr-is-merged etc    lib64  opt    run   srv      usr
boot        home   media  proc   sbin  sys      var
root@773ac2012994:/# cd usr
root@773ac2012994:/usr# ls
bin  games  include  lib  lib64  libexec  local  sbin  share  src
root@773ac2012994:/usr# cd share
root@773ac2012994:/usr/share# ls
apport        gcc      pam
base-files    gdb      pam-configs
base-passwd   info     perl5
bash-completion info.dir pixmaps
bug           keyrings polkit-1
common-licenses libc-bin profile
debconf       libgcrypt20 profile.md5sums
debianutils   lintian  sensible-utils
dict          locale   staff-group-for-usr-local
doc           man      tabset
doc-base      menu    terminfo
dot.bashrc    misc    util-linux
dot.profile   motd    vim
dot.profile.md5sums networks
dpkg          nginx
root@773ac2012994:/usr/share# cd nginx
root@773ac2012994:/usr/share/nginx# ls
html  modules
root@773ac2012994:/usr/share/nginx# cd html
root@773ac2012994:/usr/share/nginx/html# ls
index.html
root@773ac2012994:/usr/share/nginx/html# nano index.html
bash: nano: command not found
root@773ac2012994:/usr/share/nginx/html# apt install nano
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Suggested packages:
  hunspell
The following NEW packages will be installed:
  nano
```

Step 4: navigate to index.html using command –“nano index.html” Changed the content of h1 tag



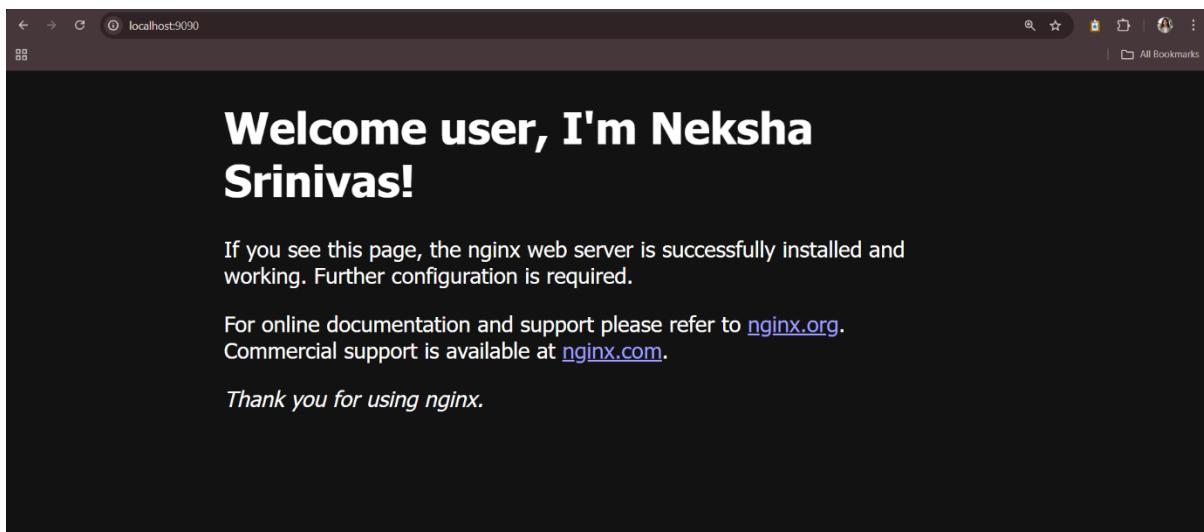
The screenshot shows a terminal window titled "root@773ac2012994: /usr/sha". The file being edited is "index.html". The content of the file is as follows:

```
GNU nano 7.2                               index.html
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome user, I'm Neksha Srinivas!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>
<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

At the bottom of the terminal window, there is a status bar with the text "[ Read 23 lines ]". Below the status bar, there are several keyboard shortcuts:

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

Step 5: Viewing the page from local host



## **6. Docker**

DOCKER IMAGE CREATION:

Image can be created in two ways:

1. Using Docker commit
2. Using docker file

Step 1: Created a new container of ubuntu so image can be created on that container

```
PS C:\Users\NekshaSrinivas\SE-1> docker run -it -p 9090:80 --name ubuntu-cont-1 ubuntu:latest
root@74098c332e58:/# apt update
Get:1 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble InRelease [256 kB]
Get:3 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [1137 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:5 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Packages [2066 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [1363 kB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [23.0 kB]
Get:9 http://archive.ubuntu.com/ubuntu noble/restricted amd64 Packages [117 kB]
Get:10 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [19.3 MB]
Get:11 http://archive.ubuntu.com/ubuntu noble/main amd64 Packages [1808 kB]
Get:12 http://archive.ubuntu.com/ubuntu noble/multiverse amd64 Packages [331 kB]
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Packages [
```

Step 2: Using commit the image is being created:

```
PS C:\Users\NekshaSrinivas\SE-1> docker commit ubuntu-cont-1 img-commit-1
sha256:153126502820131f25f36cc59f7c4557275621bcd7a54b48c8ffd4409685efd
PS C:\Users\NekshaSrinivas\SE-1> docker images
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE
img-commit-1    latest    153126502820    7 seconds ago   326MB
mynginx         latest    de77ca8d52cb    30 hours ago   279MB
mypythonapp     latest    8a39b6d82115    30 hours ago   1.63GB
nginx           latest    33e0bbc7ca9e    12 days ago    279MB
ubuntu          latest    7c06e91f61fa    3 weeks ago    117MB
PS C:\Users\NekshaSrinivas\SE-1> docker run -it img-commit-1
root@909ab066a51f:/# git --version
git version 2.43.0
root@909ab066a51f:/# docker tag img-commit-1 nekshasrinivas/img-commit-1
bash: docker: command not found
root@909ab066a51f:/# exit
exit
PS C:\Users\NekshaSrinivas\SE-1> docker tag img-commit-1 nekshasrinivas/img-commmit-1
PS C:\Users\NekshaSrinivas\SE-1> docker push nekshasrinivas/img-commmit-1
Using default tag: latest
The push refers to repository [docker.io/nekshasrinivas/img-commmit-1]
4024494ad21b: Pushed
b71466b94f26: Mounted from library/ubuntu
latest: digest: sha256:153126502820131f25f36cc59f7c4557275621bcd7a54b48c8ffd4409685efd size: 751
```

### Step 3: Image creation using docker file

```
PS C:\Users\NekshaSrinivas\SE-1> mkdir image-creation

Directory: C:\Users\NekshaSrinivas\SE-1

Mode          LastWriteTime      Length Name
----          -----          ---- 
d----        26-08-2025       18:26   image-creation

PS C:\Users\NekshaSrinivas\SE-1> ls

Directory: C:\Users\NekshaSrinivas\SE-1

Mode          LastWriteTime      Length Name
----          -----          ---- 
d----        26-08-2025       18:26   image-creation
d----        25-08-2025       12:25   static_site
-a---        25-08-2025       12:15   36 app.py
-a---        25-08-2025       12:15   100 Dockerfile
-a---        23-08-2025       16:28   29739008 myapi.tar
-a---        05-08-2025       16:33   38 README.md

PS C:\Users\NekshaSrinivas\SE-1> cd image-creation
PS C:\Users\NekshaSrinivas\SE-1\image-creation> notepad Dockerfile
PS C:\Users\NekshaSrinivas\SE-1\image-creation> ls

Directory: C:\Users\NekshaSrinivas\SE-1\image-creation

Mode          LastWriteTime      Length Name
----          -----          ---- 
-a---        26-08-2025       18:27   59 Dockerfile.txt

PS C:\Users\NekshaSrinivas\SE-1\image-creation> ren Dockerfile.txt Dockerfile
```

### Step 4: after writing the content in docker file use the command docker build

```
PS C:\Users\NekshaSrinivas\SE-1\image-creation> docker build -t img-dockerfile-1 .
[+] Building 44.0s (7/7) FINISHED
          docker:desktop-linux
=> [internal] load build definition from Dockerfile          0.1s
=> => transferring dockerfile: 96B                          0.0s
=> [internal] load metadata for docker.io/library/ubuntu:latest 0.1s
=> [internal] load .dockerignore                           0.1s
=> => transferring context: 2B                           0.0s
=> [1/3] FROM docker.io/library/ubuntu:latest@sha256:7c06e91f61fa88c 0.1s
=> => resolve docker.io/library/ubuntu:latest@sha256:7c06e91f61fa88c 0.0s
=> [2/3] RUN apt-get update                                12.5s
=> [3/3] RUN apt-get install git -y                      24.4s
=> => exporting to image                                 6.5s
=> => exporting layers                                  4.5s
=> => exporting manifest sha256:99d816a6b717e709d838937a995f24d0121e 0.0s
=> => exporting config sha256:f021a40f65d4b684b65cd403292af90ec68210 0.0s
=> => exporting attestation manifest sha256:04dc38ee96b84e155b083e5 0.1s
=> => exporting manifest list sha256:9868ecb2df510b52e539c55076bf63c 0.0s
=> => naming to docker.io/library/img-dockerfile-1:latest 0.0s
=> => unpacking to docker.io/library/img-dockerfile-1:latest 1.8s
PS C:\Users\NekshaSrinivas\SE-1\image-creation> docker run -it img-dockerfile-1
root@adfe97a50685:/# docker --version
bash: docker: command not found
root@adfe97a50685:/# git --version
git version 2.43.0
root@adfe97a50685:/# exit
exit
PS C:\Users\NekshaSrinivas\SE-1\image-creation> docker tag img-dockerfile-1 nekshasrinivas/img-dockerfile-1
PS C:\Users\NekshaSrinivas\SE-1\image-creation> docker push nekshasrinivas/img-dockerfile-1
Using default tag: latest
The push refers to repository [docker.io/nekshasrinivas/img-dockerfile-1]
6a5ccfd4b031: Pushed
edd67216c21: Pushed
b71466b94f26: Mounted from nekshasrinivas/img-commmit-1
004a734bd8b1: Pushed
latest: digest: sha256:9868ecb2df510b52e539c55076bf63ccae47b54ab67e29de352ddbc3cb33b109 size: 855
```

## Step 5: checking the images

```
PS C:\Users\NekshaSrinivas\SE-1> docker images
REPOSITORY          TAG      IMAGE ID      CREATED       SIZE
img-dockerfile-1   latest   9868ecb2df51  5 minutes ago  326MB
nekshasrinivas/img-dockerfile-1   latest   9868ecb2df51  5 minutes ago  326MB
img-commit-1        latest   153126502820  12 minutes ago  326MB
nekshasrinivas/img-commmit-1    latest   153126502820  12 minutes ago  326MB
mynginx             latest   de77ca8d52cb  30 hours ago   279MB
mypythonapp         latest   8a39b6d82115  30 hours ago   1.63GB
nginx               latest   33e0bbc7ca9e  12 days ago    279MB
ubuntu              latest   7c06e91f61fa  3 weeks ago    117MB
PS C:\Users\NekshaSrinivas\SE-1> |
```

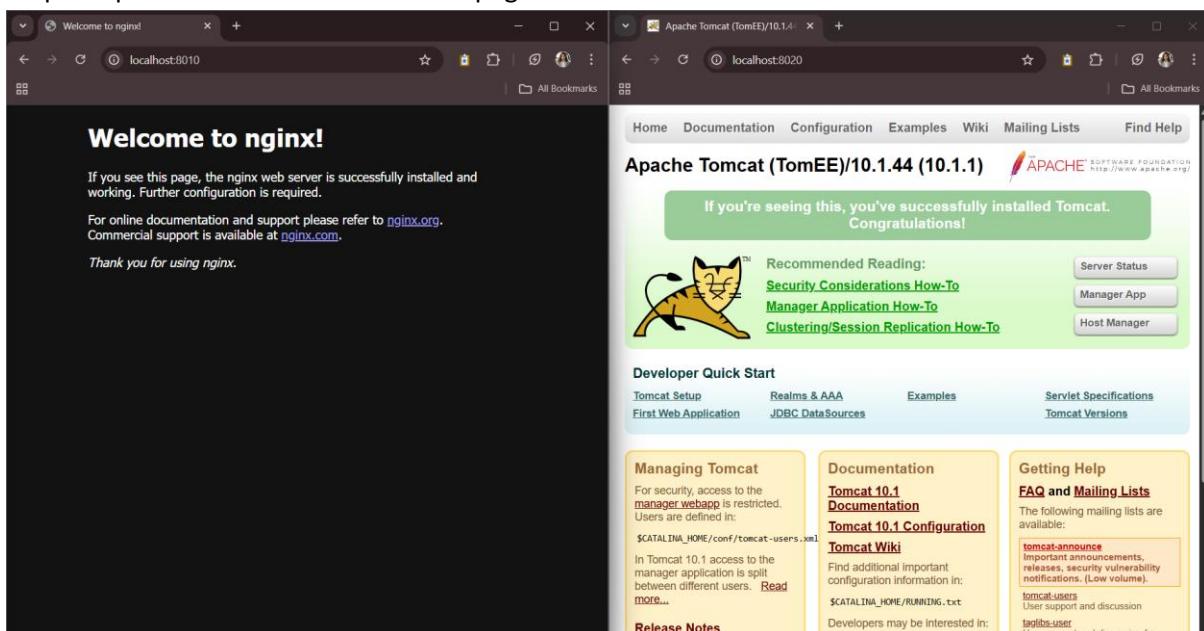
## DOCKER COMPOSE FILE:

Docker Compose is a tool used to define and run multi-container Docker applications. It allows you to define services, networks, and volumes that your application needs, all in a single file. This makes it easier to manage complex applications that require multiple containers (e.g., a web server and a database).

## Step 1: Running two servers at the same time on different ports

```
PS C:\Users\NekshaSrinivas\SE-1> docker run -d -p 8010:80 nginx
2ea4a201f197b93276310a7d23f2a46060ba9c7387f869e8a2a804931b66b2d9
PS C:\Users\NekshaSrinivas\SE-1> docker run -d -p 8020:8080 tomee
3a524036f6b212843be468585f80fb029aed07715a8e33a38e4eb306044765a2
PS C:\Users\NekshaSrinivas\SE-1> |
```

## Step 2: Open the local host to view the pages



Step 3: Using docker file to run two servers parallelly

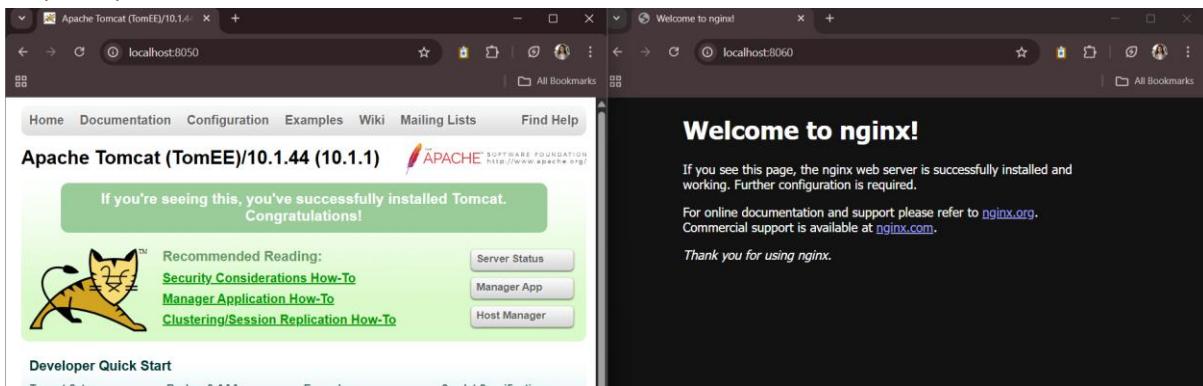


```
docker-compose.yml X
C: > Users > NekshaSrinivas > SE-1 > comp-1-server > docker-compose.yml
1 services:
2   web:
3     image: nginx
4     ports:
5       - "8060:80"
6   db:
7     image: tomee
8     ports:
9       - "8050:8080"
10
```

Step 4: Use the docker-compose up -d command to execute the docker file

```
No configuration file provided, not found
PS C:\Users\NekshaSrinivas\SE-1\comp-1-server> ren Dockerfile docker-compose
.yml
PS C:\Users\NekshaSrinivas\SE-1\comp-1-server> docker-compose up -d
[+] Running 3/3
✓ Network comp-1-server_default  C...          0.1s
✓ Container comp-1-server-db-1    St...         0.6s
✓ Container comp-1-server-web-1  S...          0.7s
PS C:\Users\NekshaSrinivas\SE-1\comp-1-server> |
```

Step 5: Open the localhost to view the servers



## WORD-PRESS:

Step 1: Create a docker-compose file and write the content for wordpress and mysql

```
PS C:\Users\NekshaSrinivas\SE-1> cd mysql
PS C:\Users\NekshaSrinivas\SE-1\mysql> notepad docker-compose
PS C:\Users\NekshaSrinivas\SE-1\mysql> ls

Directory: C:\Users\NekshaSrinivas\SE-1\mysql

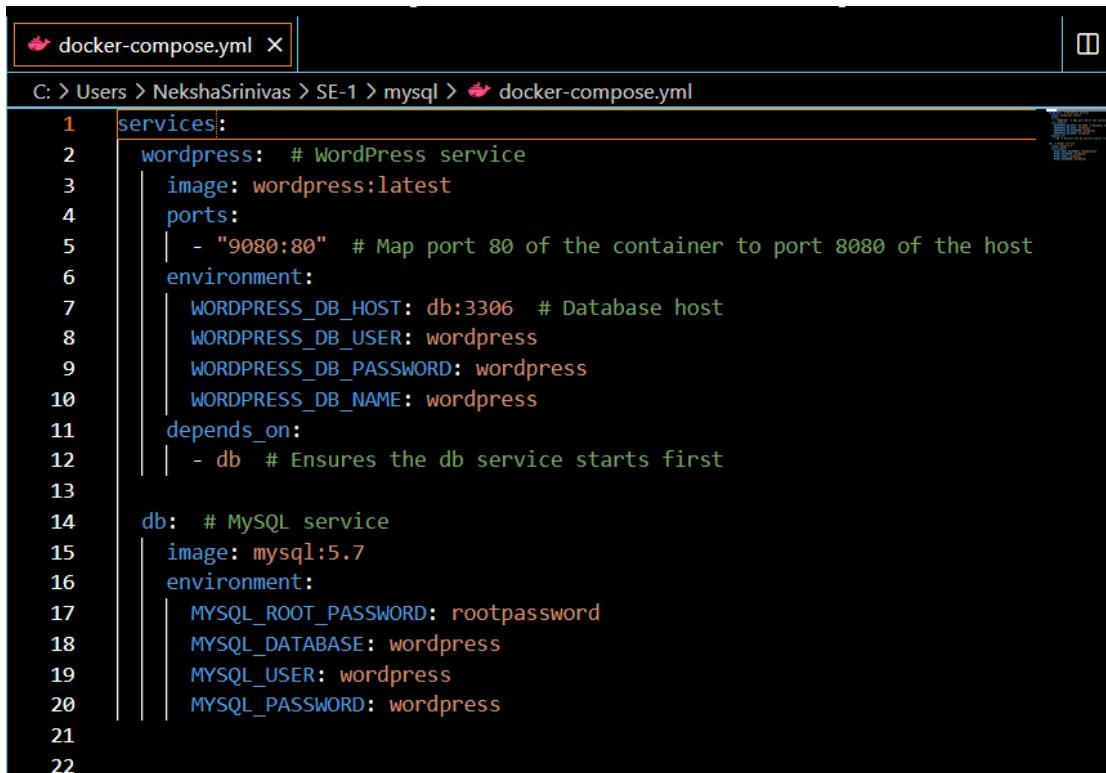
Mode                LastWriteTime        Length Name
----                -----          ----  --
-a----       26-08-2025      18:48           672 docker-compose.txt

PS C:\Users\NekshaSrinivas\SE-1\mysql>
PS C:\Users\NekshaSrinivas\SE-1\mysql> ren docker-compose.txt docker-compose
.yml
PS C:\Users\NekshaSrinivas\SE-1\mysql> ls

Directory: C:\Users\NekshaSrinivas\SE-1\mysql

Mode                LastWriteTime        Length Name
----                -----          ----  --
-a----       26-08-2025      18:48           672 docker-compose.yml
```

Step 2: docker-compose.yml file:



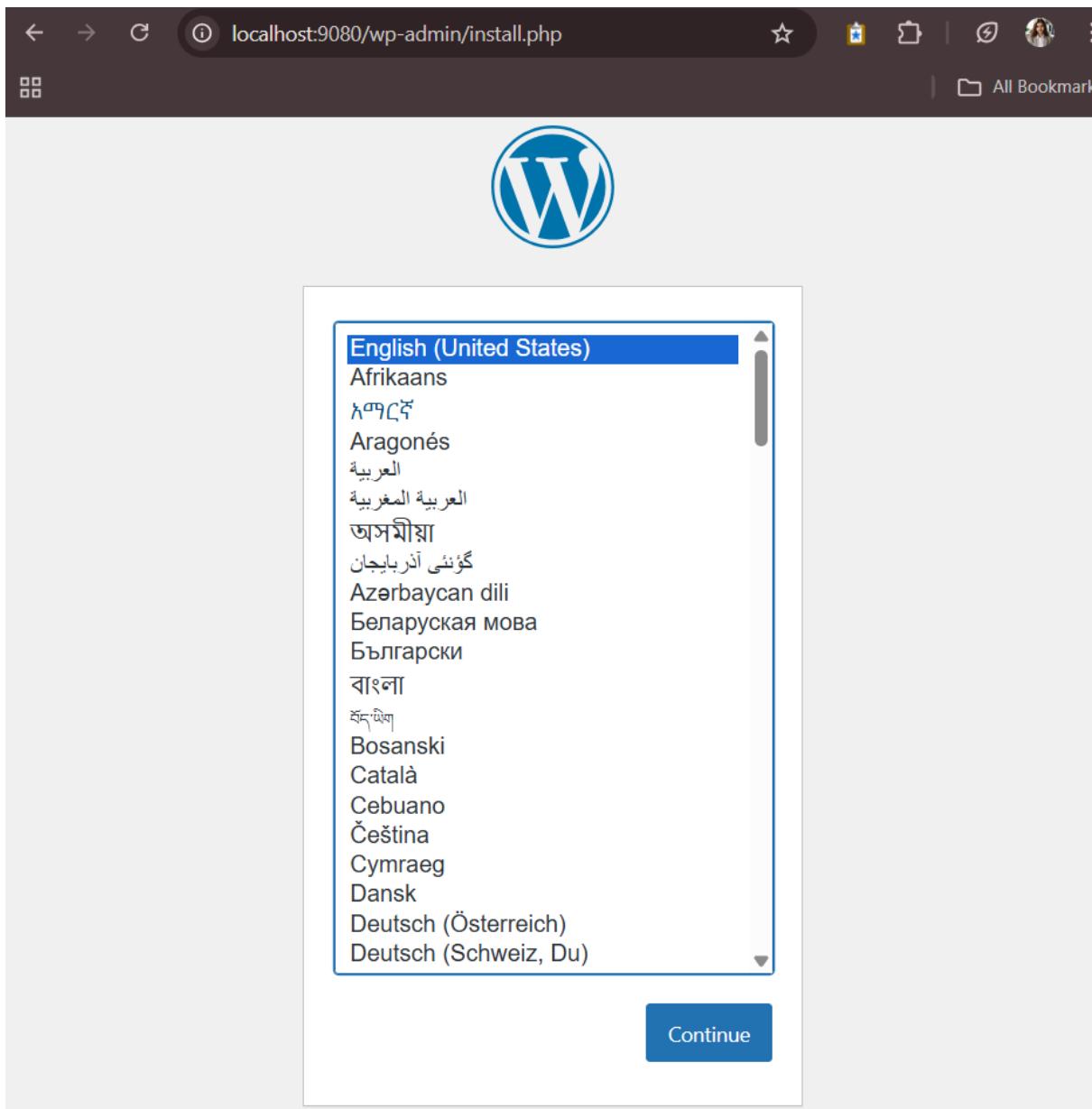
The screenshot shows a code editor window with the file 'docker-compose.yml' open. The file path is shown in the title bar: 'C: > Users > NekshaSrinivas > SE-1 > mysql > docker-compose.yml'. The code itself is a YAML configuration for a WordPress and MySQL Docker setup. It defines two services: 'wordpress' and 'db'. The 'wordpress' service uses the 'wordpress' image, maps port 80 to 8080, and depends on the 'db' service. The 'db' service uses the 'mysql:5.7' image and sets environment variables for MySQL root password, database name, user, and password.

```
1 services:
2   wordpress: # WordPress service
3     image: wordpress:latest
4     ports:
5       - "9080:80" # Map port 80 of the container to port 8080 of the host
6     environment:
7       WORDPRESS_DB_HOST: db:3306 # Database host
8       WORDPRESS_DB_USER: wordpress
9       WORDPRESS_DB_PASSWORD: wordpress
10      WORDPRESS_DB_NAME: wordpress
11      depends_on:
12        - db # Ensures the db service starts first
13
14   db: # MySQL service
15     image: mysql:5.7
16     environment:
17       MYSQL_ROOT_PASSWORD: rootpassword
18       MYSQL_DATABASE: wordpress
19       MYSQL_USER: wordpress
20       MYSQL_PASSWORD: wordpress
```

Step 3: Use the docker-compose up -d command to start the compose

```
PS C:\Users\NekshaSrinivas\SE-1\mysql> docker-compose up -d
[+] Running 3/3
  ✓ Network mysql_default          Created              0.1s
  ✓ Container mysql-db-1           Started             0.8s
  ✓ Container mysql-wordpress-1   Start...            1.0s
PS C:\Users\NekshaSrinivas\SE-1\mysql>
```

Step 4: Open in the local host and select the language



## Step 5: Fill the details in the welcome page

### Welcome

Welcome to the famous five-minute WordPress installation process! Just fill in the information below and you'll be on your way to using the most extendable and powerful personal publishing platform in the world.

### Information needed

Please provide the following information. Do not worry, you can always change these settings later.

**Site Title**

Hey

**Username**

Neksha Srinivas

Usernames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.

**Password**

Sri@121318

 Hide

Medium

**Important:** You will need this password to log in. Please store it in a secure location.

**Your Email**

edigiralaneksha@gmail.com

Double-check your email address before continuing.

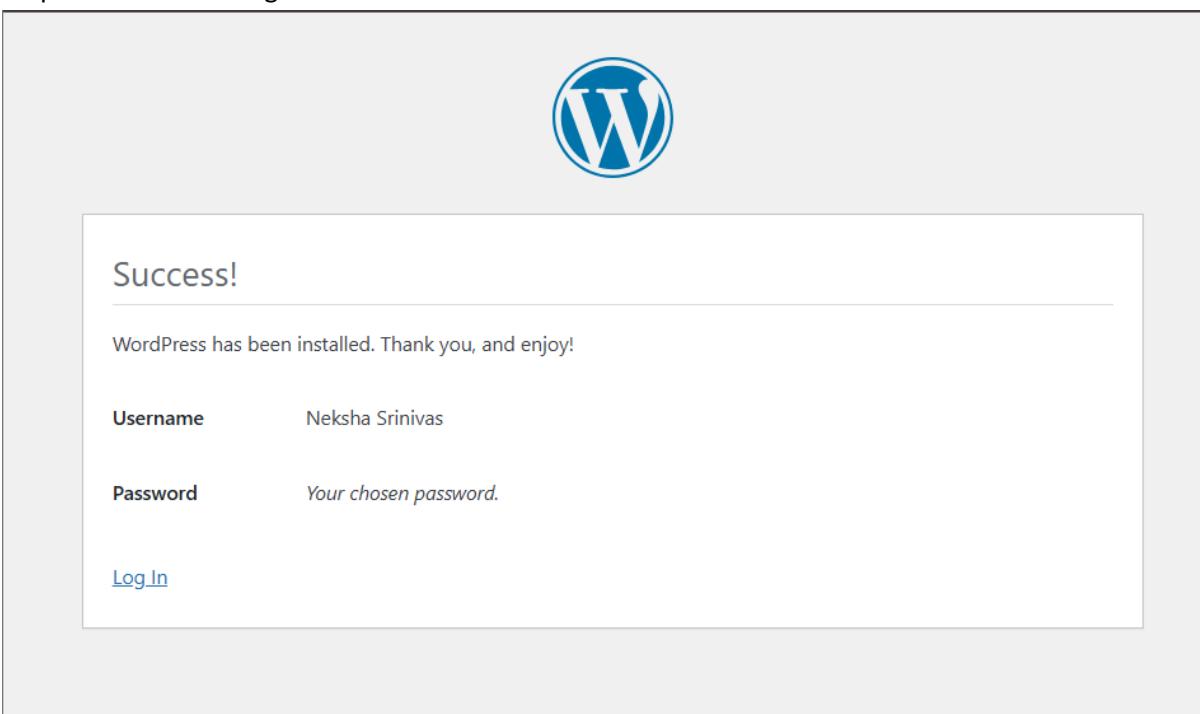
**Search engine visibility**

Discourage search engines from indexing this site

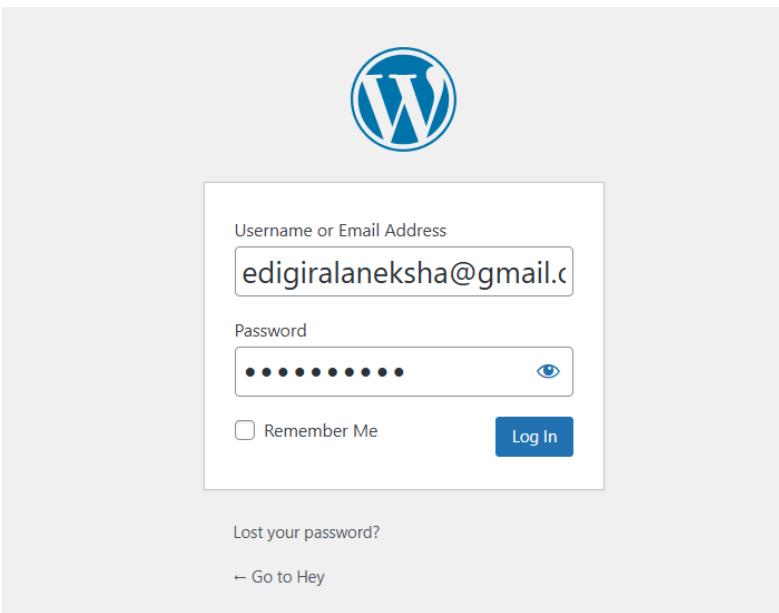
It is up to search engines to honor this request.

[Install WordPress](#)

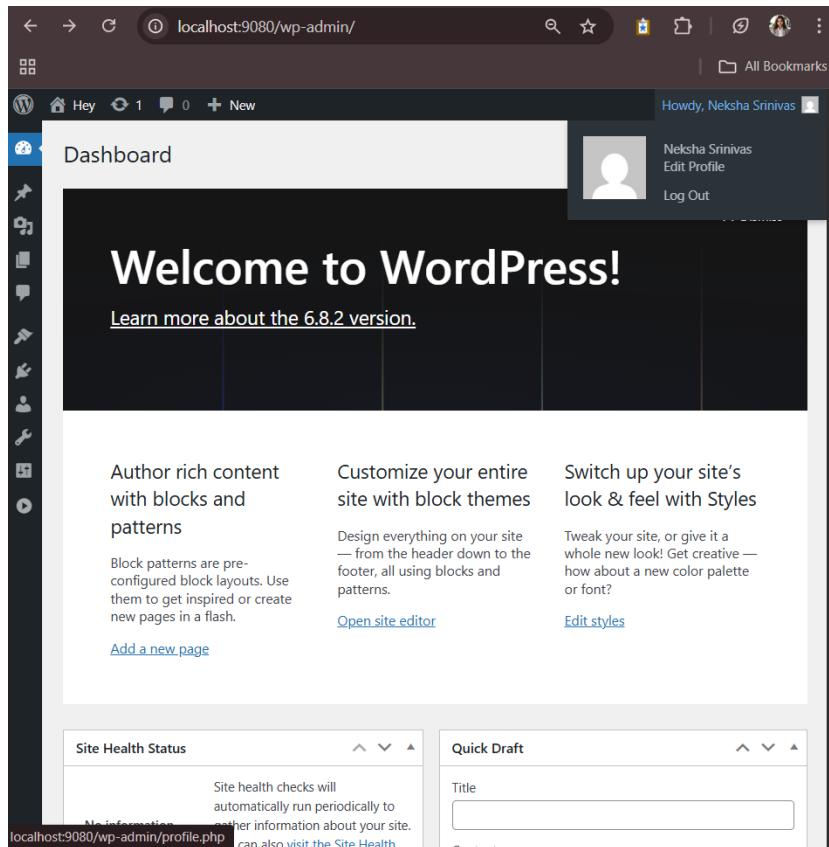
Step 6: Success message will be shown



Step 7: Use your credentials to log in



Step 7: The following page will be shown after login



Task:

Create a simple Flask app in app.py:

Step 1: create a separate folder

```
PS C:\Users\NekshaSrinivas\SE-1> mkdir custom_flask

Directory: C:\Users\NekshaSrinivas\SE-1

Mode                LastWriteTime         Length Name
----                -----          ----  --
d-----        28-08-2025      10:01           custom_flask

PS C:\Users\NekshaSrinivas\SE-1> cd custom_flask
PS C:\Users\NekshaSrinivas\SE-1\custom_flask> notepad app.py
PS C:\Users\NekshaSrinivas\SE-1\custom_flask> notepad Dockerfile
PS C:\Users\NekshaSrinivas\SE-1\custom_flask> ren Dockerfile.txt Dockerfile
PS C:\Users\NekshaSrinivas\SE-1\custom_flask> ls

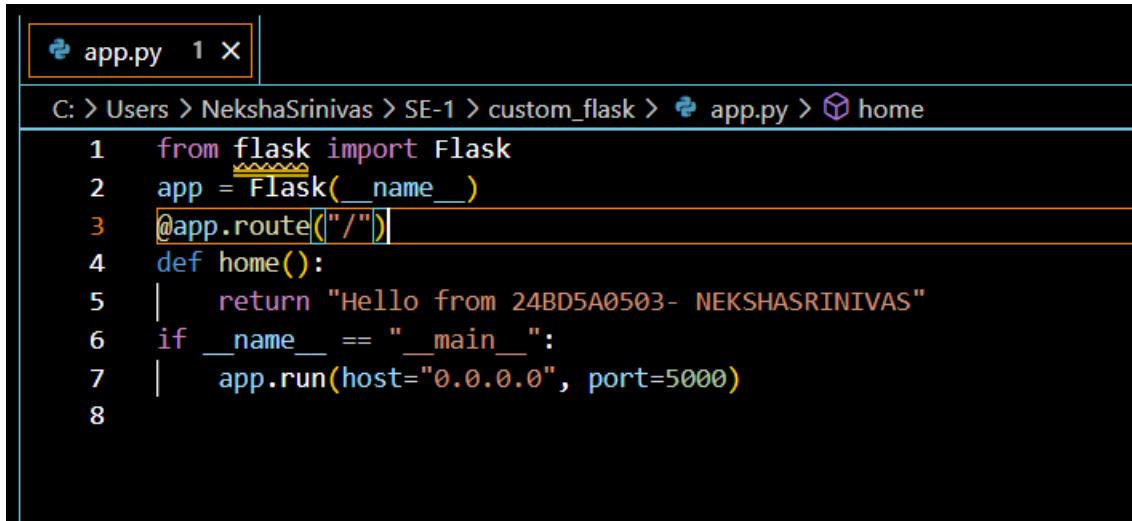
Directory: C:\Users\NekshaSrinivas\SE-1\custom_flask

Mode                LastWriteTime         Length Name
----                -----          ----  --
-a----        28-08-2025      10:02        187 app.py
-a----        28-08-2025      10:02       105 Dockerfile

PS C:\Users\NekshaSrinivas\SE-1\custom_flask> notepad docker-compose.yml
```

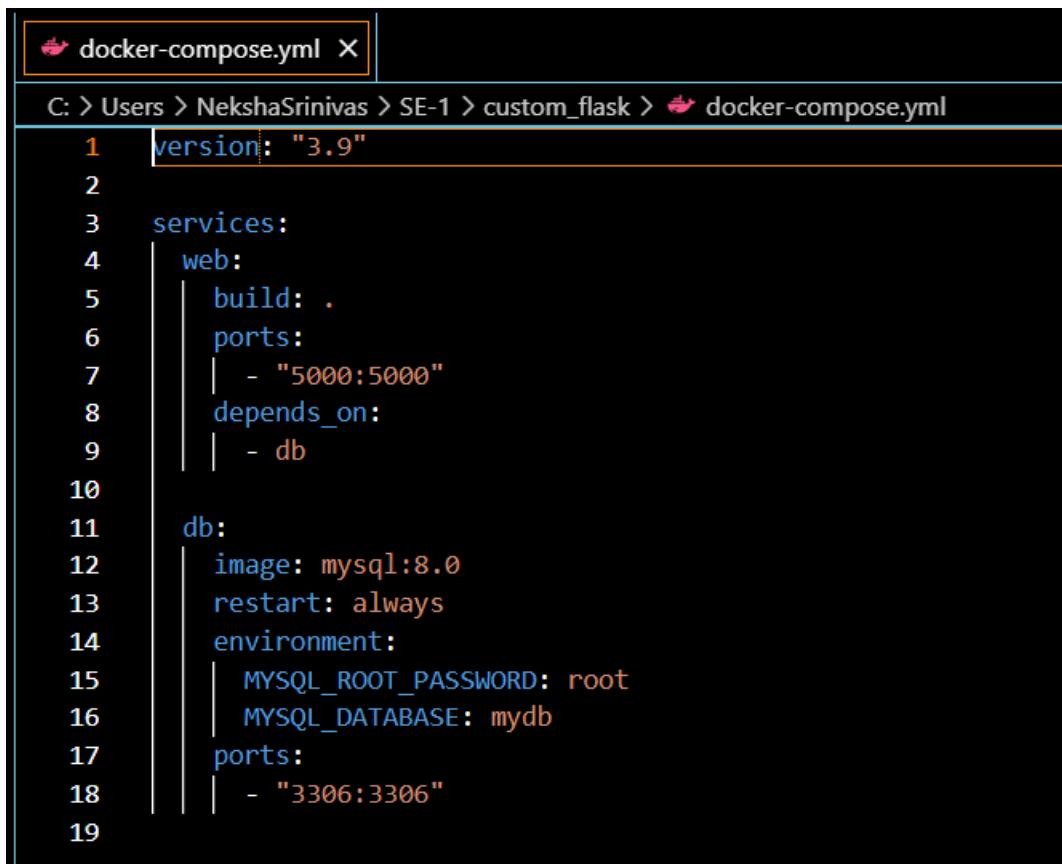
Step 2: write the content of app.py , docker-compose.yml & Dockerfile

app.py:



```
app.py 1 X
C: > Users > NekshaSrinivas > SE-1 > custom_flask > app.py > home
1  from flask import Flask
2  app = Flask(__name__)
3  @app.route("/")
4  def home():
5      return "Hello from 24BD5A0503- NEKSHASRINIVAS"
6  if __name__ == "__main__":
7      app.run(host="0.0.0.0", port=5000)
8
```

docker-compose.yml:



```
docker-compose.yml X
C: > Users > NekshaSrinivas > SE-1 > custom_flask > docker-compose.yml
1  version: "3.9"
2
3  services:
4      web:
5          build: .
6          ports:
7              - "5000:5000"
8          depends_on:
9              - db
10
11     db:
12         image: mysql:8.0
13         restart: always
14         environment:
15             MYSQL_ROOT_PASSWORD: root
16             MYSQL_DATABASE: mydb
17         ports:
18             - "3306:3306"
19
```

Dockerfile:

```
FROM python:3.10-slim
WORKDIR /app
COPY app.py /app/
RUN pip install flask
CMD ["python", "app.py"]
```

Step 3: run the compose using the command docker compose up --build:

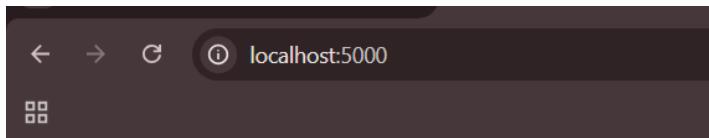
```
Mode           LastWriteTime      Length Name
----           -----          ---- 
-a---       28-08-2025     10:02        187 app.py
-a---       28-08-2025     10:03         82 docker-compose.yml
-a---       28-08-2025     10:02        105 Dockerfile

PS C:\Users\NekshaSrinivas\SE-1\custom_flask> docker compose up --build
validating C:\Users\NekshaSrinivas\SE-1\custom_flask\docker-compose.yml: additional properties 'web' not allowed
PS C:\Users\NekshaSrinivas\SE-1\custom_flask> docker compose up --build
time="2025-08-28T10:24:45+05:30" level=warning msg="C:\\\\Users\\\\NekshaSrinivas\\\\SE-1\\\\custom_flask\\\\docker-compose.yml: the attribute 'version' is obsolete, it will be ignored, please remove it to avoid potential confusion"
[+] Running 12/12
  ✓ db Pulled
    ✓ 04fa42a56901 Pull complete               75.7s
    ✓ 500d7b2546c4 Pull complete               1.8s
    ✓ ecc6cc933381 Pull complete               38.2s
    ✓ 5cd63fb67c17 Pull complete               38.5s
    ✓ 4d3eacc36b14 Pull complete               1.7s
    ✓ 9476bb8faedba Pull complete               1.7s
    ✓ 789fa151603e Pull complete               3.5s
    ✓ 1756a372d796 Pull complete               1.8s
    ✓ bc0f5543b464 Pull complete               1.9s
    ✓ 131412d69359 Pull complete               67.6s
    ✓ 03ca01bc78d4 Pull complete               42.5s
    ✓ 03ca01bc78d4 Pull complete               1.8s
#1 [internal] load local bake definitions
#1 reading from stdin 542B done
#1 DONE 0.0s

#2 [internal] load build definition from Dockerfile
#2 transferring dockerfile: 142B 0.0s done
#2 DONE 0.1s

#3 [internal] load metadata for docker.io/library/python:3.10-slim
...
```

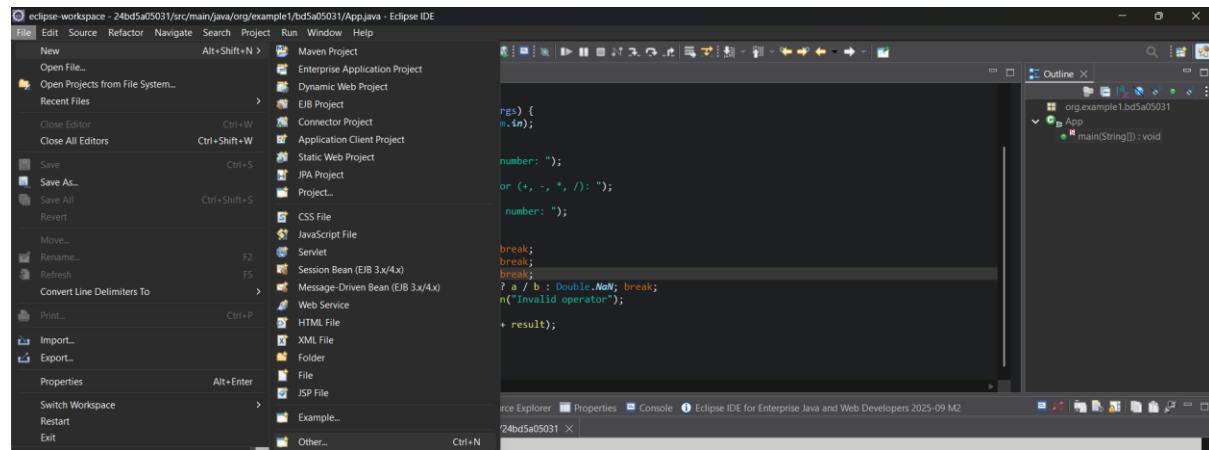
Step 4: Open the local host to view the custom page:



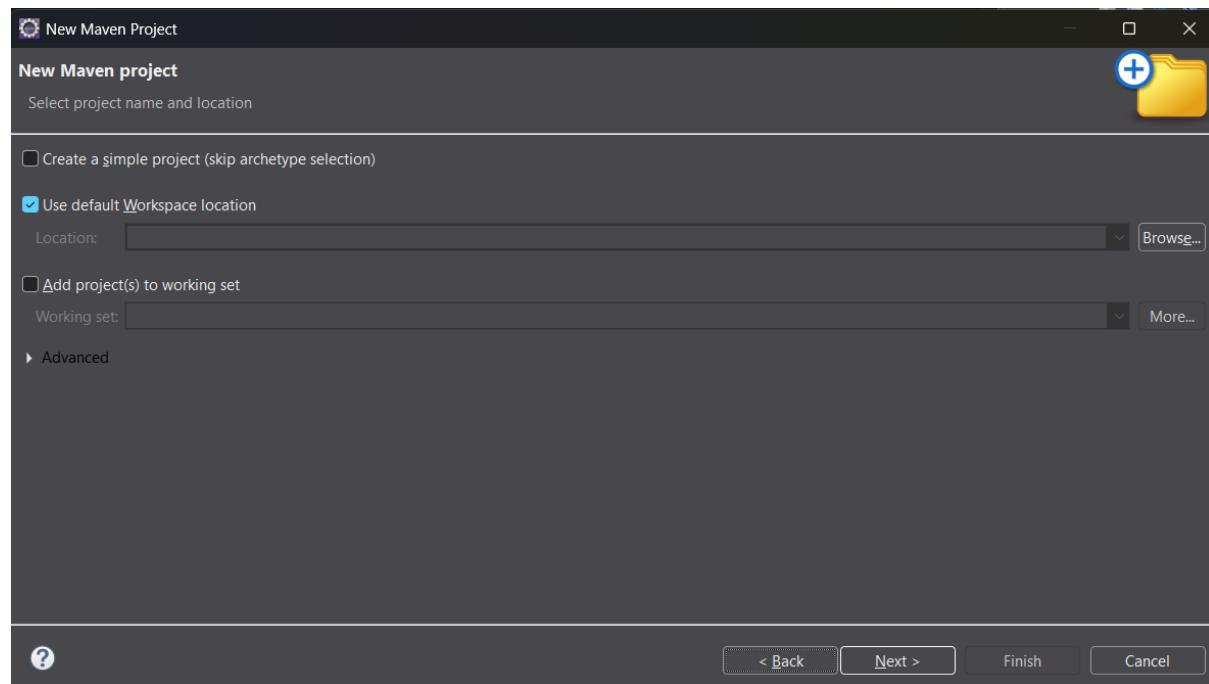
Hello from 24BD5A0503- NEKSHASRINIVAS

## **7. Creating a Multi-Module Maven Project**

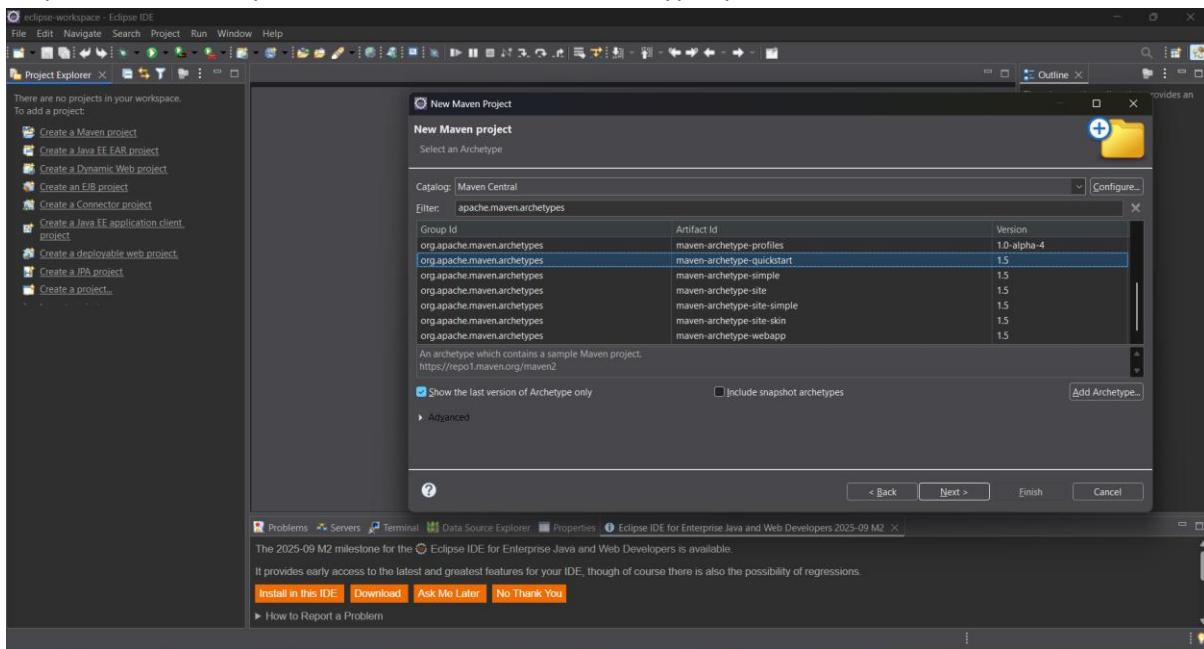
Step-1: Open the eclipse and click on file>new>Maven project



Step-2: select the default workspace and click on next



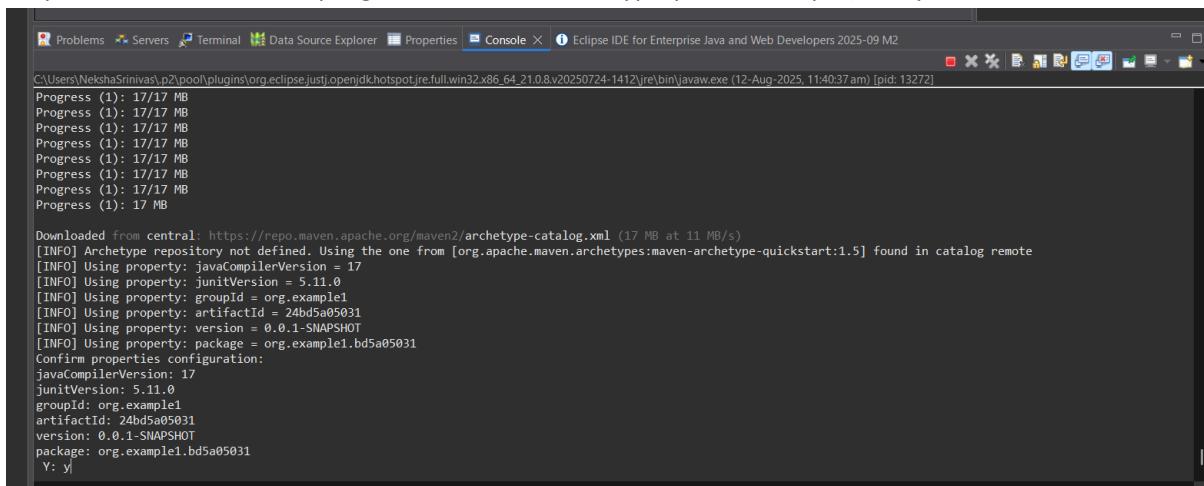
### Step-3: in the filter option select the one maven-archetype-quickstart



### Step-4: give the Group Id and Artifact Id and click on next

A screenshot of the "New Maven Project" dialog in the Eclipse IDE. The "Group Id" field is filled with "org.example1". The "Artifact Id" field is filled with "24bd5a05031". The "Version" dropdown is set to "0.0.1-SNAPSHOT". The "Package" dropdown is set to "org.example1.bd5a05031". A checkbox labeled "run archetype generation interactively" is checked. Below this, a section titled "Properties available from archetype:" lists properties with their values: "javaCompilerVersion" is 17 and "junitVersion" is 5.11.0. There are "Add..." and "Remove" buttons for managing these properties. At the bottom of the dialog are "Advanced" and "Next >" buttons, along with "Back", "Finish", and "Cancel" buttons.

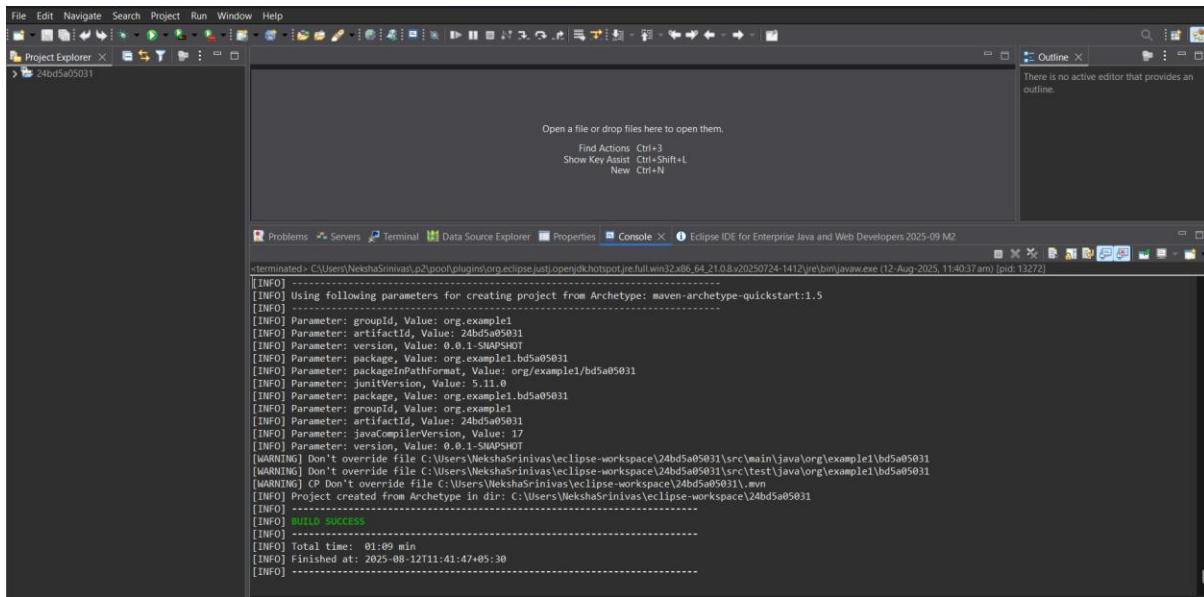
Step-5: In the console the progress will be showed type y (refers to yes) and press enter



```
C:\Users\NekshaSrinivas\p2\pool\plugins\org.eclipse.jdt.openjdk.hotspot.jre.full.win32.x86_64_21.0.8.v20250724-1412\jre\bin\javaw.exe (12-Aug-2025, 11:40:37 am) [pid: 13272]
Progress (1): 17/17 MB
Progress (1): 17 MB

Downloaded from central: https://repo.maven.apache.org/maven2/archetype-catalog.xml (17 MB at 11 MB/s)
[INFO] Archetype repository not defined. Using the one from [org.apache.maven.archetypes:maven-archetype-quickstart:1.5] found in catalog remote
[INFO] Using property: javaCompilerVersion = 17
[INFO] Using property: junitVersion = 5.11.0
[INFO] Using property: groupId = org.example1
[INFO] Using property: artifactId = 24bd5a05031
[INFO] Using property: version = 0.0.1-SNAPSHOT
[INFO] Using property: package = org.example1.bd5a05031
Confirm properties configuration:
javaCompilerVersion: 17
junitVersion: 5.11.0
groupId: org.example1
artifactId: 24bd5a05031
version: 0.0.1-SNAPSHOT
package: org.example1.bd5a05031
Y: y|
```

Step-6: BUILD SUCCESS will be shown



```
File Edit Navigate Search Project Run Window Help
Project Explorer X
24bd5a05031

Open a file or drop files here to open them.
Find Actions Ctrl+3
Show Key Assist Ctrl+Shift+L
New Ctrl+N

Problems Servers Terminal Data Source Explorer Properties Console X Eclipse IDE for Enterprise Java and Web Developers 2025-09 M2
terminated - C:\Users\NekshaSrinivas\p2\pool\plugins\org.eclipse.jdt.openjdk.hotspot.jre.full.win32.x86_64_21.0.8.v20250724-1412\jre\bin\javaw.exe (12-Aug-2025, 11:40:37 am) [pid: 13272]
[INFO]
[INFO] Using following parameters for creating project from Archetype: maven-archetype-quickstart:1.5
[INFO] -----
[INFO] Parameter: groupId, Value: org.example1
[INFO] Parameter: artifactId, Value: 24bd5a05031
[INFO] Parameter: version, Value: 0.0.1-SNAPSHOT
[INFO] Parameter: package, Value: org.example1.bd5a05031
[INFO] Parameter: packageInPathFormat, Value: org/example1/bd5a05031
[INFO] Parameter: junitVersion, Value: 5.11.0
[INFO] Parameter: groupId, Value: org.example1
[INFO] Parameter: artifactId, Value: org.example1
[INFO] Parameter: javaCompilerVersion, Value: 17
[INFO] Parameter: version, Value: 0.0.1-SNAPSHOT
[WARNING] Don't override file C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a05031\src\main\java\org\example1\bd5a05031
[WARNING] Don't override file C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a05031\src\test\java\org\example1\bd5a05031
[WARNING] CP Don't override file C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a05031\.mvn
[INFO] Project created from Archetype in dir: C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a05031
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 01:09 min
[INFO] Finished at: 2025-08-12T11:41:47+05:30
[INFO]
```

## Step-6: write the code in the App.java file

The screenshot shows the Eclipse IDE interface with the following details:

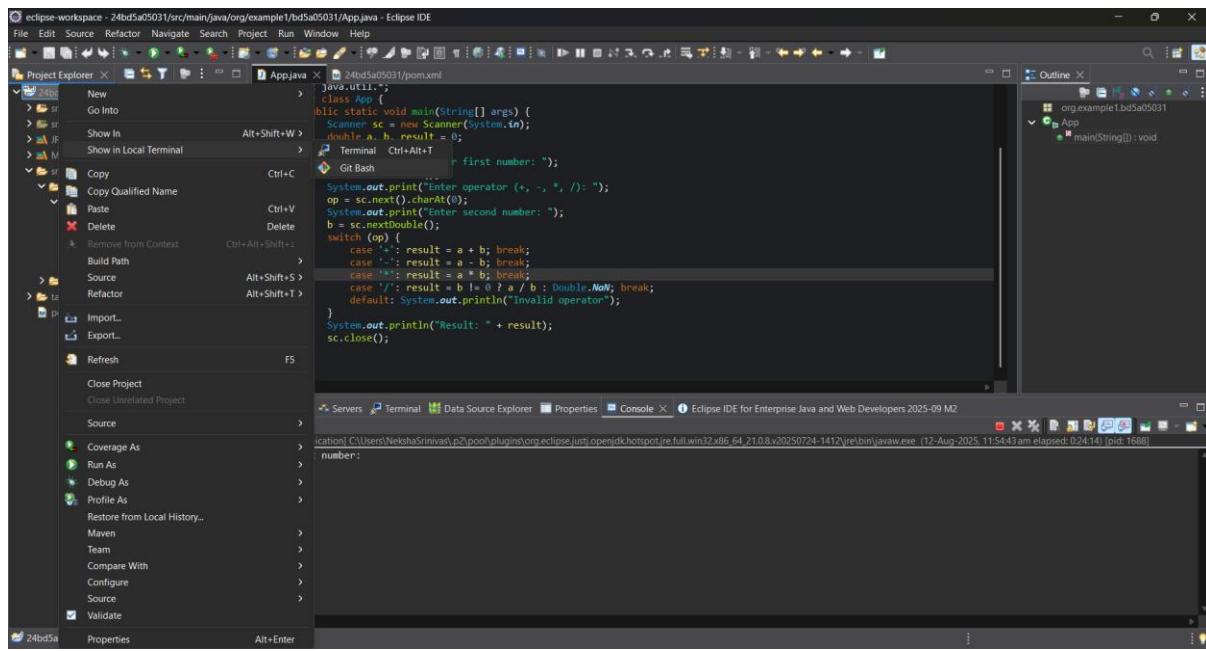
- Project Explorer:** Shows the project structure with a file named `App.java` under the `src/main/java/org/example1/bd5a05031` package.
- Code Editor:** Displays the Java code for `App.java`:

```
1 package org.example1.bd5a05031;
2
3 /**
4  * Hello world!
5  */
6 import java.util.*;
7 public class App {
8     public static void main(String[] args) {
9         Scanner sc = new Scanner(System.in);
10        double a, b, result = 0;
11        char op;
12        System.out.print("Enter first number: ");
13        a = sc.nextDouble();
14        System.out.print("Enter operator (+, -, *, /): ");
15        op = sc.next().charAt(0);
16        System.out.print("Enter second number: ");
17        b = sc.nextDouble();
18        switch (op) {
19            case '+': result = a + b; break;
20            case '-': result = a - b; break;
21            case '*': result = a * b; break;
22            case '/': result = b != 0 ? a / b : Double.NaN; break;
23            default: System.out.println("Invalid operator");
24        }
25        System.out.println("Result: " + result);
26        sc.close();
27    }
28 }
```

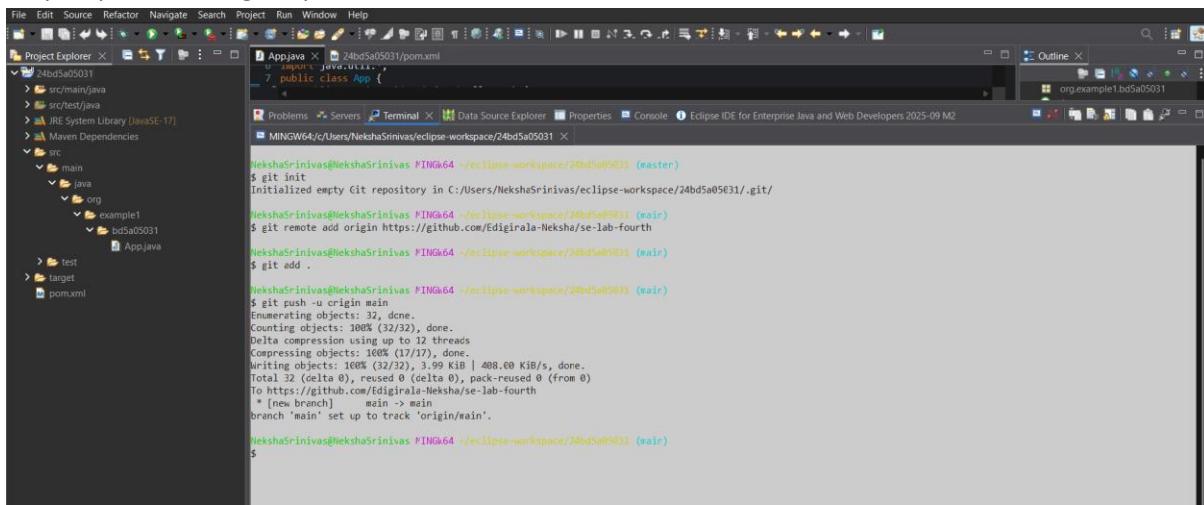
- Console:** Shows the terminal output of the application's execution:

```
Enter first number: 5
Enter operator (+, -, *, /): +
Enter second number: 10
Result: 20.0
```

## Step-7: right click on the root folder and select show in git bash



## Step-8: push to the git repo



The screenshot shows the Eclipse IDE interface with the terminal window open. The terminal output shows the user navigating to the repository directory, initializing a git repository, adding files, and pushing them to a remote origin.

```
File Edit Source Refactor Navigate Search Project Run Window Help
Project Explorer X 24bd5a05031/pom.xml
src/main/java
src/test/java
IREE System Library [JavaSE-17]
Maven Dependencies
src
  main
    java
    org
      example
        example1
          bd5a05031
            App.java
  test
pom.xml

App.java X 24bd5a05031/pom.xml
import java.util.*;
public class App {
}

Problems Servers Terminal Data Source Explorer Properties Console Eclipse IDE for Enterprise Java and Web Developers 2023-09 M2
MINGW64:/c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05031

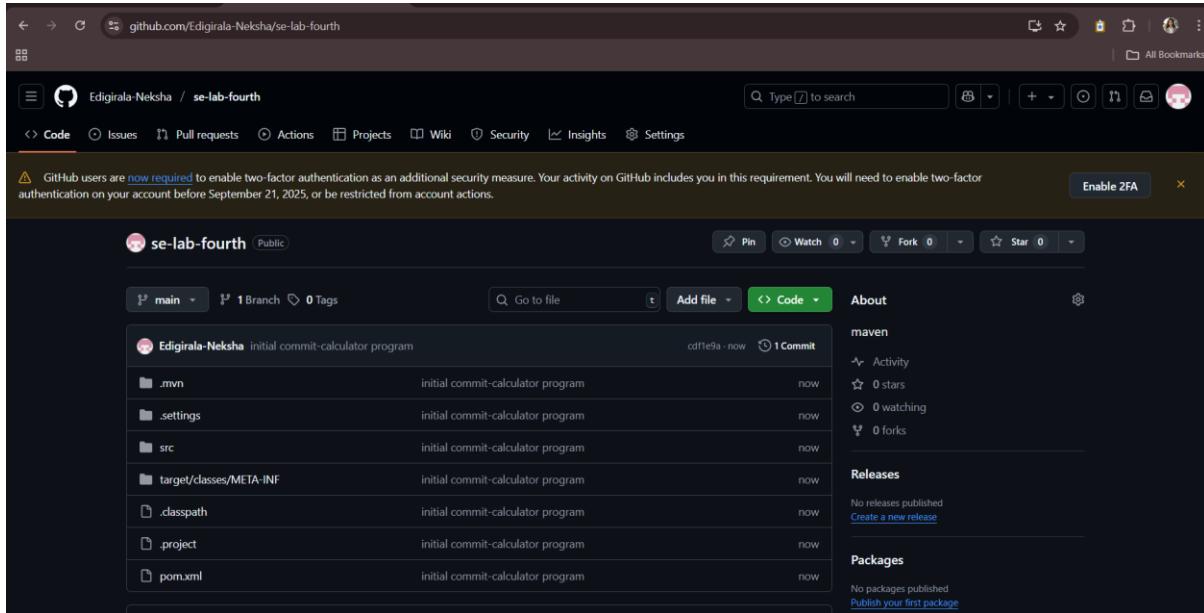
NekshaSrinivas@NekshaSrinivas MINGW64 /c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05031 (master)
$ git init
Initialized empty Git repository in C:/Users/NekshaSrinivas/eclipse-workspace/24bd5a05031/.git/
NekshaSrinivas@NekshaSrinivas MINGW64 /c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05031 (master)
$ git remote add origin https://github.com/Edigirala-Neksha/se-lab-fourth
NekshaSrinivas@NekshaSrinivas MINGW64 /c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05031 (master)
$ git add .

NekshaSrinivas@NekshaSrinivas MINGW64 /c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05031 (master)
$ git push -u origin main
Enumerating objects: 32, done.
Counting objects: 100% (32/32), done.
Delta compression using up to 8 threads
Compressing objects: 100% (17/17), done.
Writing objects: 100% (32/32), 3.09 KiB | 408.00 KiB/s, done.
Total 32 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/Edigirala-Neksha/se-lab-fourth
 * [new branch] main > main
branch 'main' set up to track 'origin/main'.

NekshaSrinivas@NekshaSrinivas MINGW64 /c/Users/NekshaSrinivas/eclipse-workspace/24bd5a05031 (master)
$
```

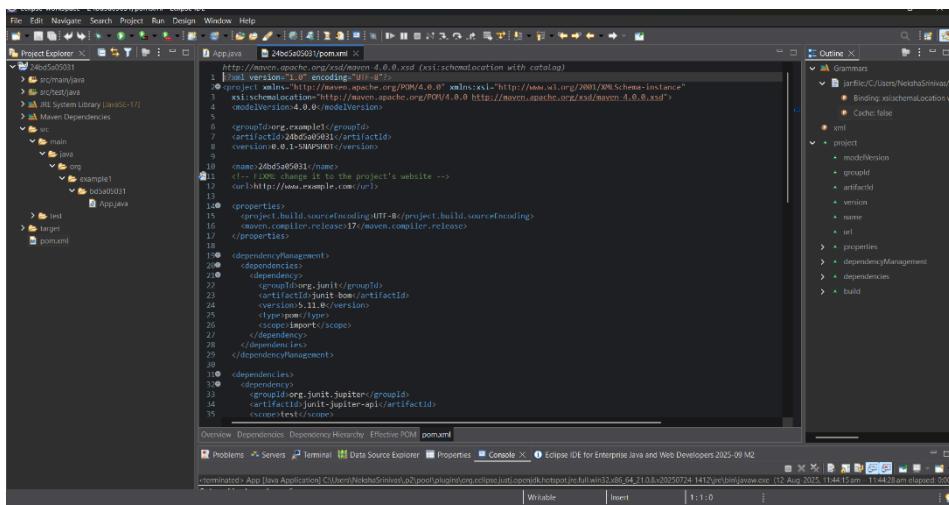
Git repo:

Git repo link: <https://github.com/Edigirala-Neksha/se-lab-fourth>



## pom.xml file:

Shows the structure-

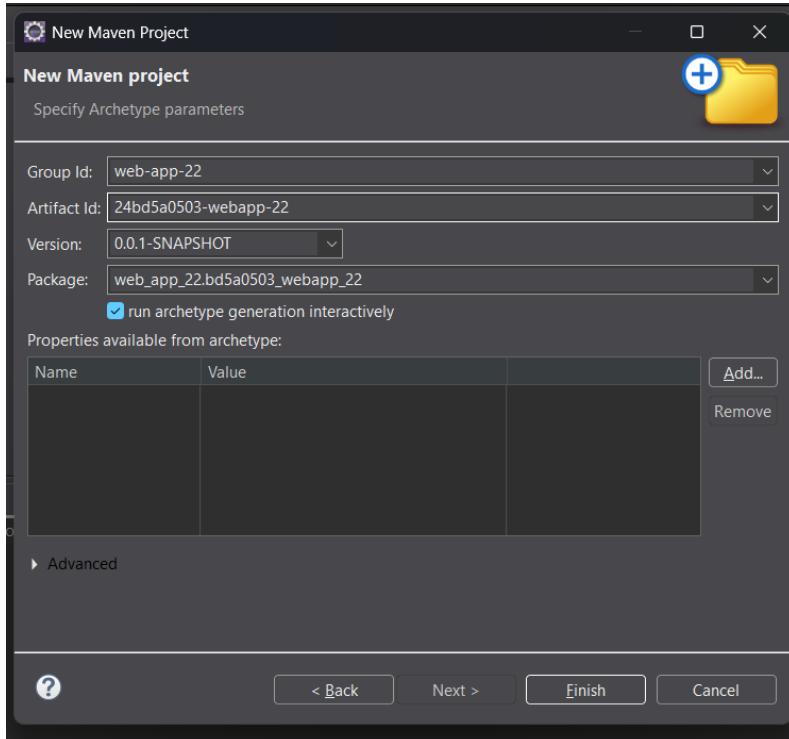


The screenshot shows the Eclipse IDE interface with the pom.xml file open in the editor. The Project Explorer on the left shows a Maven project structure with folders like src/main/java, src/test/java, and Maven Dependencies. The Outline view on the right displays the XML structure of the pom.xml file, highlighting various elements such as groupId, artifactId, version, dependencies, and properties.

```
<project>
    <modelVersion>4.0.0</modelVersion>
    <groupId>24bd5a0503</groupId>
    <artifactId>24bd5a0503</artifactId>
    <version>0.0.1-SNAPSHOT</version>
    <name>24bd5a0503</name>
    <url>http://www.example.com/</url>
    <dependencies>
        <dependency>
            <groupId>org.junit.jupiter</groupId>
            <artifactId>junit-jupiter-api</artifactId>
            <scope>test</scope>
        </dependency>
    </dependencies>
</project>
```

Creating maven-web project:

Step 1: Create a new maven project and give the details



## Step 2: Click y to continue the creation of project

```
C:\Users\NekshaSrinivas\p2\pool\plugins\org.eclipse.jst\openjdk.hotspot.jre.full.win32.x86_64_21.0.8.v20250724-1412\jre\bin\javaw.exe (02-Sept-2025, 7:19:56 pm) [pid: 13772]
Progress (1): 17/17 MB
Progress (1): 17 MB

Downloaded from central: https://repo.maven.apache.org/maven2/archetype-catalog.xml (17 MB at 9.1 MB/s)
[INFO] Archetype repository not defined. Using the one from [org.apache.maven.archetypes:maven-archetype-webapp:1.5] found in catalog remote
[INFO] Using property: groupId = web-app-22
[INFO] Using property: artifactId = 24bd5a0503-webapp-22
[INFO] Using property: version = 0.0.1-SNAPSHOT
[INFO] Using property: package = web_app_22.bd5a0503_webapp_22
Confirm properties configuration:
groupId: web-app-22
artifactId: 24bd5a0503-webapp-22
version: 0.0.1-SNAPSHOT
package: web_app_22.bd5a0503_webapp_22
y: y
```

## Step 3: If the build is success it will show the message

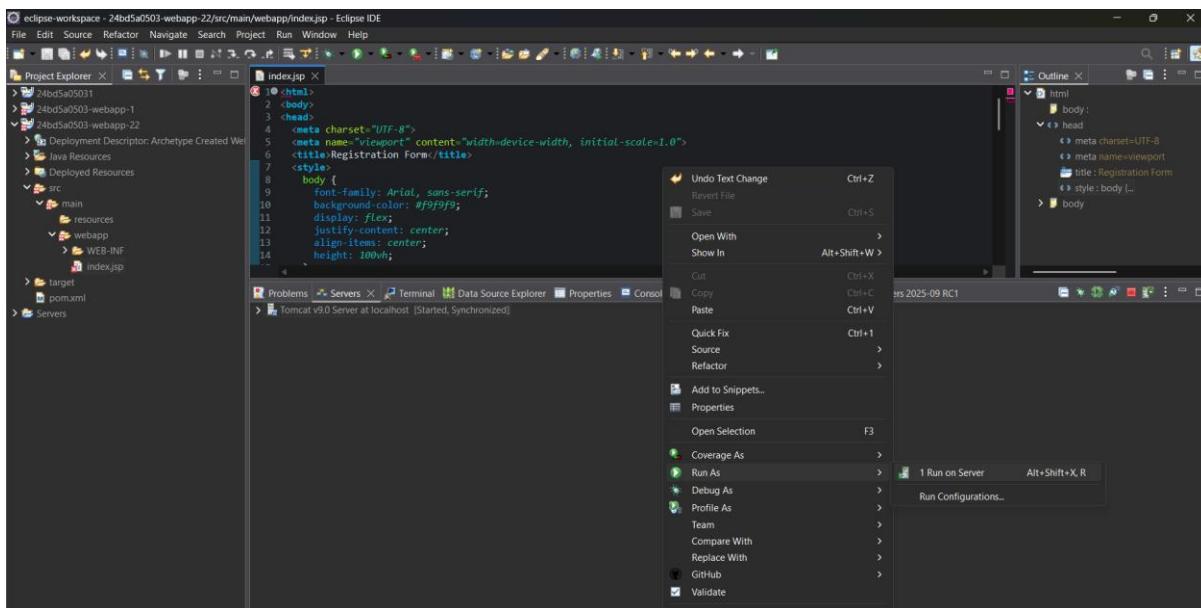
```
package: web_app_22.bd5a0503_webapp_22
Y: y
[INFO] -----
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1.0
[INFO] -----
[INFO] Parameter: basedir, Value: C:\Users\NekshaSrinivas\eclipse-workspace
[INFO] Parameter: package, Value: web_app_22.bd5a0503_webapp_22
[INFO] Parameter: groupId, Value: web-app-22
[INFO] Parameter: artifactId, Value: 24bd5a0503-webapp-22
[INFO] Parameter: packageName, Value: web_app_22.bd5a0503_webapp_22
[INFO] Parameter: version, Value: 0.0.1-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: C:\Users\NekshaSrinivas\eclipse-workspace\24bd5a0503-webapp-22
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 43.500 s
[INFO] Finished at: 2025-09-02T19:20:41+05:30
[INFO] -----
```

## Step 4: write the html code for the web page:

```
index.jsp X
⑥ <html>
  <body>
    <head>
      <meta charset="UTF-8">
      <meta name="viewport" content="width=device-width, initial-scale=1.0">
      <title>Registration Form</title>
    <style>
      body {
        font-family: Arial, sans-serif;
        background-color: #f9f9f9;
        display: flex;
        justify-content: center;
        align-items: center;
        height: 100vh;
      }
      .form-container {
        background: #fff;
        padding: 20px 30px;
        border-radius: 10px;
        box-shadow: 0 4px 10px rgba(0,0,0,0.1);
        width: 300px;
      }
      .form-container h2 {
        text-align: center;
        margin-bottom: 20px;
      }
      .form-container input {
        width: 100%;
        padding: 10px;
        margin: 8px 0;
        border: 1px solid #ccc;
        border-radius: 5px;
      }
      .form-container button {
        width: 100%;
        padding: 10px;
        background: #4CAF50;
        color: white;
        border: none;
        cursor: pointer;
      }
    </style>
  </head>
  <body>
    <div class="form-container">
      <h2>Registration Form</h2>
      <form>
        <div>
          <label>Name:</label>
          <input type="text" placeholder="Enter Name" required>
        </div>
        <div>
          <label>Email:</label>
          <input type="email" placeholder="Enter Email" required>
        </div>
        <div>
          <label>Password:</label>
          <input type="password" placeholder="Enter Password" required>
        </div>
        <div>
          <label>Confirm Password:</label>
          <input type="password" placeholder="Enter Confirm Password" required>
        </div>
        <div>
          <input type="checkbox" checked=""> I agree to the terms and conditions
        </div>
        <div>
          <button type="submit">Register</button>
        </div>
      </form>
    </div>
  </body>
</html>
```

```
index.jsp X
  border-radius: 5px;
33  }
34  .form-container button {
35    width: 100%;
36    padding: 10px;
37    background: #4CAF50;
38    color: white;
39    border: none;
40    border-radius: 5px;
41    cursor: pointer;
42  }
43  .form-container button:hover {
44    background: #45a049;
45  }
46 </style>
47 </head>
48 <body>
49 <div class="form-container">
50   <h2>Registration Form</h2>
51   <form action="#" method="post">
52     <label for="fullname">Full Name</label>
53     <input type="text" id="fullname" name="fullname" placeholder="Enter your name" required>
54
55     <label for="email">Email</label>
56     <input type="email" id="email" name="email" placeholder="Enter your email" required>
57
58     <label for="password">Password</label>
59     <input type="password" id="password" name="password" placeholder="Enter password" required>
60
61     <label for="confirm">Confirm Password</label>
62     <input type="password" id="confirm" name="confirm" placeholder="Confirm password" required>
63
64     <button type="submit">Register</button>
65   </form>
66 </div>
67 </body>
68 </html>
69
```

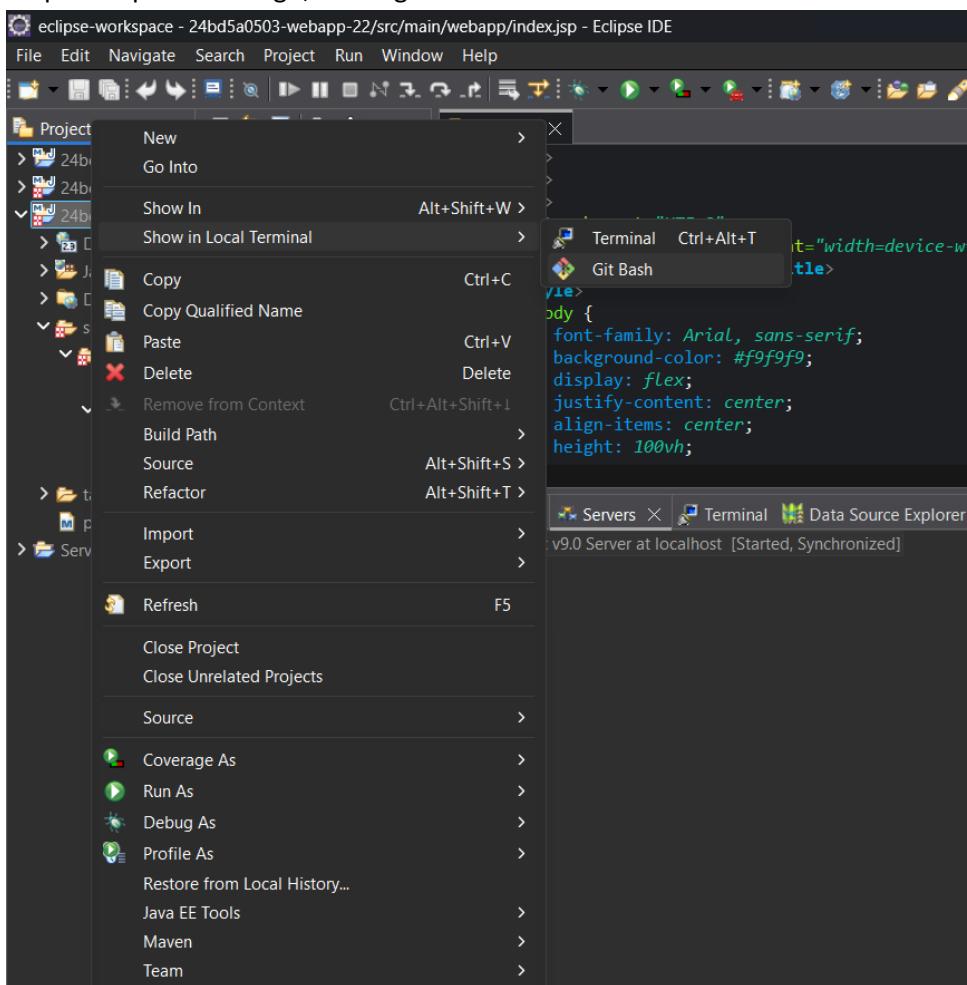
## Step 5: Select run on server



Step 6: It will show the following output:

A screenshot of a web browser window displaying a registration form. The browser's address bar shows the URL: `localhost:8080/24bd5a0503-webapp-22/index.jsp`. The main content area is a white card with a rounded border, titled "Registration Form". The form contains five input fields: "Full Name" (placeholder: "Enter your name"), "Email" (placeholder: "Enter your email"), "Password" (placeholder: "Enter password"), and "Confirm Password" (placeholder: "Confirm password"). Below these fields is a green rectangular button labeled "Register".

Step 7: To push it into git, select git bash from show in local terminal



Step 8: use the command of git to push the maven web project

```
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (master)
$ git init
Initialized empty Git repository in C:/Users/NekshaSrinivas/eclipse-workspace/24bd5a0503-webapp-22/.git/
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)
$ git add .

NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)
$ git commit -m "initial form"
[main (root-commit) 636aeef] initial form
 16 files changed, 254 insertions(+)
 create mode 100644 .classpath
 create mode 100644 .project
 create mode 100644 .settings/.jsdtscope
 create mode 100644 .settings/org.eclipse.jdt.core.prefs
 create mode 100644 .settings/org.eclipse.m2e.core.prefs
 create mode 100644 .settings/org.eclipse.wst.commonn.component
 create mode 100644 .settings/org.eclipse.wst.commonn.project.facet.core.xml
 create mode 100644 .settings/org.eclipse.wst.jsdt.ui.superType.container
 create mode 100644 .settings/org.eclipse.wst.jsdt.ui.superType.name
 create mode 100644 .settings/org.eclipse.wst.validationn.prefs
 create mode 100644 pom.xml
 create mode 100644 src/main/webapp/WEB-INF/web.xml
```

```

NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)
$ git branch
* main

NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)
$ git push origin main
Enumerating objects: 29, done.
Counting objects: 100% (29/29), done.
Delta compression using up to 12 threads
Compressing objects: 100% (18/18), done.
Writing objects: 100% (29/29), 4.43 KiB | 283.00 KiB/s, done.
Total 29 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), done.
To https://github.com/Edigirala-Neksha/se-webapp-22.git
 * [new branch]      main -> main

NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a0503-webapp-22 (main)
$
```

### Step 9: verify the repo in git hub

The screenshot shows a GitHub repository page for 'se-webapp-22'. The repository was created by 'Edigirala-Neksha' and has 1 commit. The 'Code' tab is selected, showing the repository's structure with files like .settings, src/main/webapp, target/m2e-wtp/web-resources/META-INF, .classpath, .project, and pom.xml. The README file is also visible.

## **8. Jenkins Automation**

### **Steps for MavenJava Automation**

#### **Step 1: Open Jenkins (localhost:8888)**

Click on "New Item" (left side menu) and name it as maven\_java > select freestyle project > click on "OK"

New Item

Enter an item name  
maven\_java

Select an item type

- Freestyle project**  
Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.
- Maven project**  
Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.
- Pipeline**  
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.
- Multi-configuration project**  
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.
- Folder**  
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.
- Multibranch Pipeline**  
Creates a set of Pipeline projects according to detected branches in one SCM repository.

OK

#### **Step 2: Configuration of maven\_java project**

Give the description

Configure

General

Enabled

Description

Java Build demo

Plain text Preview

Discard old builds ?

GitHub project

General

Source Code Management

Triggers

Environment

Build Steps

Post-build Actions

Configure

In the source code management select git and give the git repo link

The screenshot shows the Jenkins configuration page for a job named 'Mavenjava'. Under the 'Source Code Management' section, the 'Git' option is selected. A 'Repository URL' field contains the value 'https://github.com/SarvikaSomishetty/eclipse-maven-projects.git'. Below it, a 'Credentials' dropdown is set to '- none -'. There is also a '+ Add' button and an 'Advanced' dropdown.

In the build steps click on add build step > give maven version as MAVEN\_HOME > select invoke top-level maven targets > goals as clean

The screenshot shows the Jenkins configuration page for the same job. Under the 'Build Steps' section, two 'Invoke top-level Maven targets' steps are present. Both steps have 'Maven Version' set to 'MAVEN\_HOME' and 'Goals' set to 'clean'. At the bottom of the page are 'Save' and 'Apply' buttons.

In the build steps click on add build step > give maven version as MAVEN\_HOME > select invoke top-level maven targets > goals as install

The screenshot shows the Jenkins configuration interface for a job named "Mavenjava". The left sidebar lists configuration sections: General, Source Code Management, Triggers, Environment, Build Steps (which is selected and highlighted in blue), and Post-build Actions. The main content area is titled "Configure" and shows the "Build Steps" section. It contains a single step of type "Invoke top-level Maven targets". The "Maven Version" is set to "MAVEN\_HOME". The "Goals" field contains "clean" in the top part and "install" in the bottom part. There is also an "Advanced" dropdown. At the bottom of the build steps section is a "Post-build Actions" section with a note about what happens after a build completes. At the very bottom are "Save" and "Apply" buttons.

In the post build actions > click on add post build action > select the archive the artifacts > in the file to archive give “\*\*/\*”

For the second post build action,

In the post build actions > click on add post build action > select build other projects > give projects to build as MavenJava\_Test

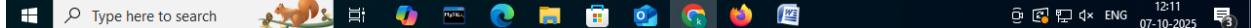
Click on apply and save

The screenshot shows the Jenkins configuration interface for a job named 'Mavenjava'. The 'Post-build Actions' section is expanded, displaying two actions:

- Archive the artifacts**: Set to archive files matching the pattern '\*\*/\*'.
- Build other projects**: Set to build the project 'MavenJava\_Test'. The trigger option 'Trigger only if build is stable' is selected.

At the bottom of the configuration page are 'Save' and 'Apply' buttons.

If the build is success:



The screenshot shows a Microsoft Windows desktop environment. At the top, there is a taskbar with several pinned icons: File Explorer, Edge browser, Task View, Start button, and a Jenkins icon. To the right of the taskbar, there is a system tray showing battery level (12:11), network connection, volume, and a date/time stamp (07-10-2025). The main window is a Jenkins job page titled "maven\_web\_build". The page displays the following information:

- Status:** Green checkmark, indicating the build is successful.
- Changes:** "web build demo"
- Workspace:** Link
- Build Now:** Link
- Configure:** Link
- Delete Project:** Link
- Rename:** Link
- Last Successful Artifacts:** Link to "maven\_web\_test"
- Downstream Projects:** Link to "maven\_web\_test"
- Permalinks:** List of recent builds:
  - Last build (#2), 27 min ago
  - Last stable build (#2), 27 min ago
  - Last successful build (#2), 27 min ago
  - Last completed build (#2), 27 min ago
- Builds:** A table showing two builds:

Build #	Timestamp
#2	11:43 AM
#1	11:42 AM

At the bottom right of the Jenkins page, it says "REST API Jenkins 2.489".

### Step 3: Create Freestyle Project (e.g., MavenJava\_Test)

Click on new item > give item name as mavaen\_java\_test or MavenJava\_Test and select free style project and click ok

New Item

Enter an item name  
maven\_java\_test

Select an item type

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

**Maven project**  
Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.

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

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

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

**Multibranch Pipeline**  
Creates a set of Pipeline projects according to detected branches in one SCM repository.

OK

### Step 4: Configuration of maven\_java project

Give the description

MavenJava\_Test Config [Jenkins] +

localhost:8888/job/MavenJava\_Test/configure

Verify it's you

Jenkins

Dashboard > MavenJava\_Test > Configuration

Configure General

Enabled

Description  
Test demo

Plain text [Preview](#)

Discard old builds ?

GitHub project

General

Source Code Management

Triggers

Environment

Build Steps

Post-build Actions

In the source code management select none and in environment select “delete workspace before build starts”

The screenshot shows the Jenkins configuration page for the 'MavenJava\_Test' job. Under 'Source Code Management', the 'None' option is selected. Under 'Environment', the 'Delete workspace before build starts' checkbox is checked. Other environment options like 'Use secret text(s) or file(s)', 'Provide Configuration files', 'Add timestamps to the Console Output', and 'Inspect build log for published build scans' are unchecked. At the bottom, there are 'Save' and 'Apply' buttons.

In the build steps> select add a build step> select “copy artifacts from another project”> give project name as Maven java and artifacts to copy as \*\*/\*

The screenshot shows the Jenkins configuration page for the 'MavenJava\_Test' job. Under 'Build Steps', a 'Copy artifacts from another project' step is added. The 'Project name' is set to 'Mavenjava'. The 'Which build' dropdown is set to 'Latest successful build' with the 'Stable build only' checkbox checked. The 'Artifacts to copy' field contains '\*\*/\*'. The 'Target directory' field is empty. There are checkboxes for 'Flatten directories', 'Optional', 'Fingerprint Artifacts', and 'Include Build Number', with 'Fingerprint Artifacts' checked. At the bottom, there are 'Save' and 'Apply' buttons.

In the post build actions> select archive the artifacts and enter files as \*\*/\*

Click on apply and save

The screenshot shows the Jenkins configuration page for the 'MavenJava\_Test' job. The 'Post-build Actions' section is highlighted. It contains two steps: 'Invoke top-level Maven targets' (Goals: test) and 'Archive the artifacts' (Files to archive: \*\*/\*). At the bottom, there are 'Save' and 'Apply' buttons.

In the dashboard you will find MavenJava and MavenJava\_Test

The screenshot shows the Jenkins dashboard. On the left, there are navigation links: '+ New Item', 'Build History', 'Project Relationship', 'Check File Fingerprint', 'Manage Jenkins', and 'My Views'. Below these are 'Build Queue' (No builds in the queue) and 'Build Executor Status' (0/2). On the right, a table lists the available jobs:

S	W	Name	Last Success	Last Failure	Last Duration
⌚	🌦	INTERNAL_JAVA	9 mo 3 days #34	40 sec #15454	0.67 sec
⌚	☀️	Mavenjava	13 days #2	N/A	11 sec
⌚	☀️	MavenJava_Test	13 days #3	N/A	3.4 sec
⌚	🌦	new	9 mo 3 days #3	13 days #4	31 sec
⌚	☀️	web_build	9 mo 9 days #8	N/A	8.2 sec
⌚	🌦	web_deploy	N/A	9 mo 9 days #15	0.31 sec
⌚	☀️	web_test	9 mo 9 days #12	N/A	3.4 sec

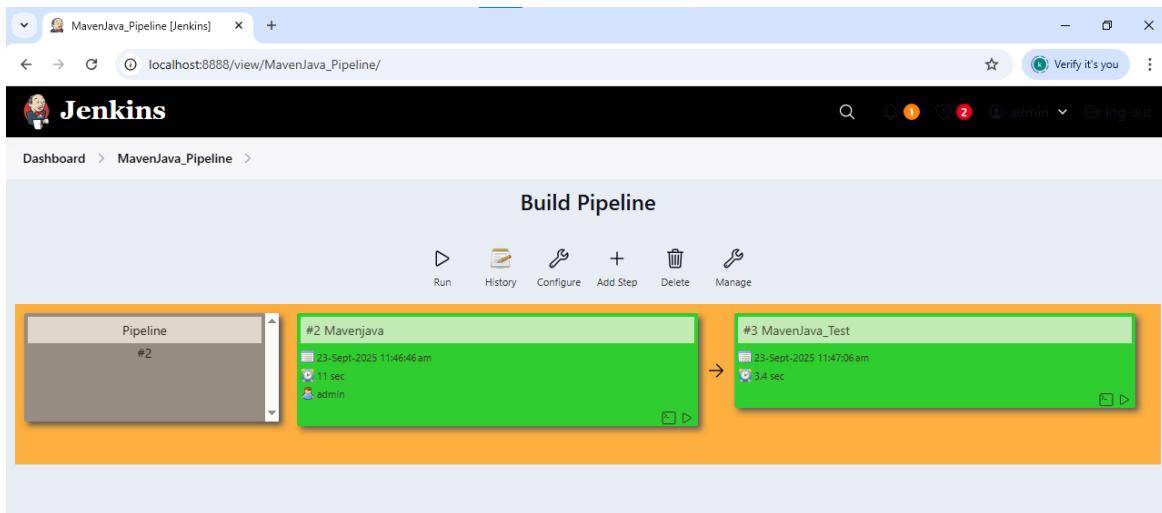
If you open the MavenJava file the following will be shown in case on no errors

The screenshot shows the Jenkins interface for the 'Mavenjava' job. The top navigation bar includes links for 'Dashboard', 'Jenkins', 'Verify it's you', 'admin', and 'log out'. The main content area has a green checkmark icon and the title 'Mavenjava'. Below the title is the subtitle 'Java Build demo'. On the left, there's a sidebar with options like 'Status', 'Changes', 'Workspace', 'Build Now', 'Configure', 'Delete Project', and 'Rename'. Under 'Builds', it lists three builds: #2 (11:46 AM), #1 (11:45 AM), and a 'Filter' dropdown. The 'Last Successful Artifacts' section lists various files with their sizes and 'view' links. The 'Downstream Projects' section shows a single project: 'MavenJava\_Test'. The 'Permalinks' section contains a link to the last build. The bottom of the page features a 'Footer' with links to 'Jenkins', 'Documentation', 'Community', 'Support', and 'Feedback'.

If you open the MavenJava\_Test file the following will be shown in case on no errors

The screenshot shows the Jenkins interface for the 'MavenJava\_Test' job. The top navigation bar includes links for 'Dashboard', 'Jenkins', 'Verify it's you', 'admin', and 'log out'. The main content area has a green checkmark icon and the title 'MavenJava\_Test'. Below the title is the subtitle 'Test demo'. On the left, there's a sidebar with options like 'Status', 'Changes', 'Workspace', 'Build Now', 'Configure', 'Delete Project', and 'Rename'. Under 'Builds', it lists three builds: #3 (11:47 AM), #2 (11:46 AM), #1 (11:45 AM), and a 'Filter' dropdown. The 'Last Successful Artifacts' section lists various files with their sizes and 'view' links. The 'Upstream Projects' section shows a single project: 'Mavenjava'. The 'Permalinks' section contains a link to the last build. The bottom of the page features a 'Footer' with links to 'Jenkins', 'Documentation', 'Community', 'Support', and 'Feedback'.

## MavenJava\_pipeline

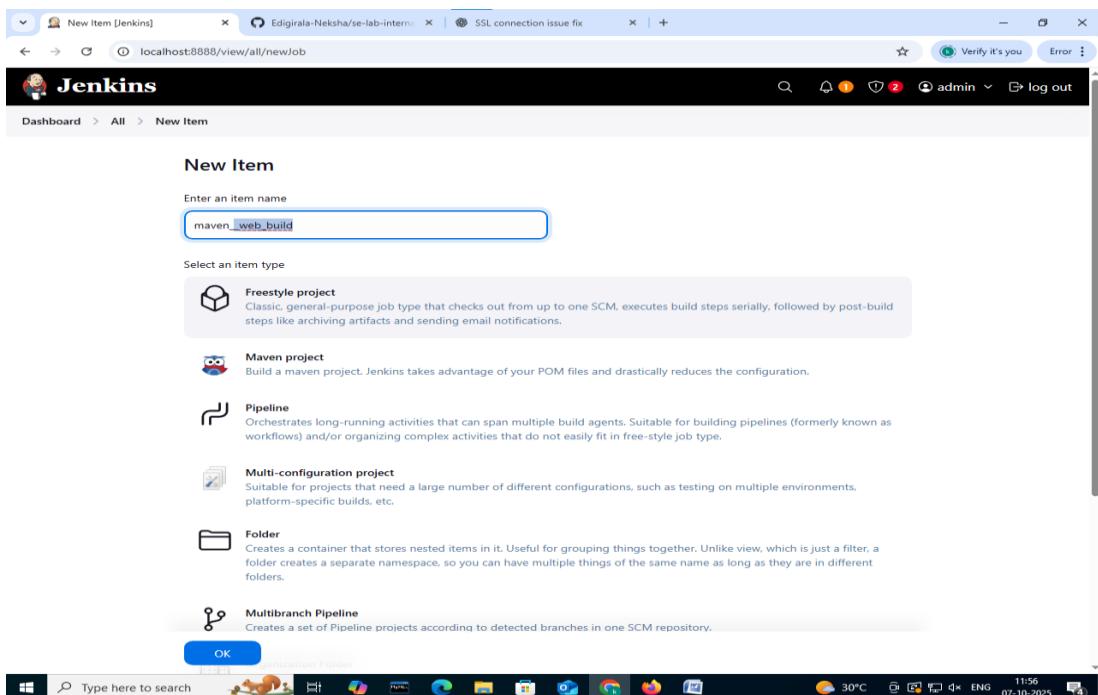


## II. Maven Web Automation Steps:

Create Freestyle Project (e.g., MavenWeb\_Build)

### Step 1: Open Jenkins (localhost:8888)

Click on "New Item" (left side menu) and name it as maven\_web\_build > select freestyle project > click on "OK"



## Step 2: Configuration of maven\_web\_build project

Give the description

The screenshot shows the Jenkins configuration interface for the 'maven\_web\_build' project. The top navigation bar includes tabs for 'maven\_web\_build Config [Jenkins]', 'Edigirala-Neksha/se-lab-intern...', and 'SSL connection issue fix'. The main title is 'localhost:8888/job/maven\_web\_build/configure'. The page header has a search icon, a bell icon with one notification, a shield icon with two errors, and a user dropdown for 'admin'. A 'log out' button is also present.

The left sidebar lists configuration sections: General, Source Code Management, Triggers, Environment, Build Steps, and Post-build Actions. The 'General' section is currently selected.

In the 'General' section, the 'Enabled' toggle switch is turned on (blue with a checkmark). The 'Description' field contains the text 'web build demo'. Below the description, there are several optional checkboxes:

- Discard old builds
- GitHub project
- Permission to Copy Artifact
- This project is parameterized
- Throttle builds
- Execute concurrent builds if necessary

A 'Plain text' link is available for previewing the description in plain text format.

At the bottom of the 'General' section, there is an 'Advanced' dropdown menu.

Below the 'General' section, there is a 'Source Code Management' section with a sub-instruction: 'Connect and manage your code repository to automatically pull the latest code for your builds.' It includes 'Save' and 'Apply' buttons.

In the source code management select git and give the git repo link

The screenshot shows the Jenkins 'Configure' screen for a job named 'maven\_web\_build'. The left sidebar lists configuration sections: General, Source Code Management (selected), Triggers, Environment, Build Steps, and Post-build Actions. The main area is titled 'Source Code Management' with the sub-instruction 'Connect and manage your code repository to automatically pull the latest code for your builds.' A radio button for 'Git' is selected. Under 'Repositories', a single repository is defined with the URL 'https://github.com/Edigirala-Neksha/se-lab-internal-1.git'. The 'Branches to build' section contains a branch specifier '\*/main'. At the bottom are 'Save' and 'Apply' buttons.

In the build steps click on add build step > give maven version as MAVEN\_HOME > select invoke top-level maven targets > goals as clean

For the second build step,

In the build steps click on add build step > give maven version as MAVEN\_HOME > select invoke top-level maven targets > goals as install

The screenshot shows the Jenkins configuration interface for a job named "maven\_web\_build". The "Build Steps" section is active, displaying two "Invoke top-level Maven targets" steps. Both steps have "MAVEN\_HOME" selected for Maven Version and "clean" or "install" selected for Goals. The interface includes a sidebar with General, Source Code Management, Triggers, Environment, Build Steps (selected), and Post-build Actions options. At the bottom are Save and Apply buttons.

Configure

Build Steps

Automate your build process with ordered tasks like code compilation, testing, and deployment.

General

Source Code Management

Triggers

Environment

Build Steps

Post-build Actions

Invoke top-level Maven targets ?

Maven Version: MAVEN\_HOME

Goals: clean

Advanced

Invoke top-level Maven targets ?

Maven Version: MAVEN\_HOME

Goals: install

Advanced

Add build step ▾

Save Apply

In the post build actions > click on add post build action > select the archive the artifacts > in the file to archive give “\*\*/\*”

For the second post build action,

In the post build actions > click on add post build action > select build other projects > give projects to build as maven\_web\_test

Click on apply and save

The screenshot shows the Jenkins job configuration page for 'maven\_web\_build'. The 'Post-build Actions' section is active. It contains two entries:

- Archive the artifacts**: Set to archive files matching the pattern '\*\*/\*'.
- Build other projects**: Set to build the project 'maven\_web\_test'. The 'Trigger only if build is stable' option is selected.

At the bottom, there are 'Save' and 'Apply' buttons. The status bar at the bottom right indicates 'Jenkins 2.489'.

Create Freestyle Project (e.g., MavenWeb\_Test):

### Step 1: Open Jenkins (localhost:8888)

Click on "New Item" (left side menu) and name it as maven\_web\_test > select freestyle project > click on "OK"

The screenshot shows the Jenkins 'New Item' configuration page. In the 'Enter an item name' field, 'maven\_web\_test' is typed. Below the field, a list of item types is shown, with 'Freestyle project' being the selected option. Other options include 'Maven project', 'Pipeline', 'Multi-configuration project', 'Folder', and 'Multibranch Pipeline'. At the bottom of the list is an 'OK' button.

### Step 2: Configuration of maven\_web\_test project

Give the description

The screenshot shows the Jenkins 'Configuration' page for the 'maven\_web\_test' project. The 'General' tab is selected. The 'Enabled' checkbox is checked. In the 'Description' field, 'test demo' is entered. There are other tabs like 'Source Code Management', 'Triggers', 'Environment', 'Build Steps', and 'Post-build Actions' on the left, but they are not currently selected.

In the source code management select none and in environment select “delete workspace before build starts”

The screenshot shows the Jenkins configuration interface for a job named "maven\_web\_test". The left sidebar lists "Configure", "General", "Source Code Management", "Triggers", "Environment", "Build Steps", and "Post-build Actions". The "Source Code Management" section is active, showing a radio button for "None" selected over "Git". The "Triggers" section contains several checkboxes for remote triggers, GitHub hooks, and periodic polling, all of which are unselected. The "Environment" section has a checked checkbox for "Delete workspace before build starts". At the bottom are "Save" and "Apply" buttons.

Configure

Source Code Management

Connect and manage your code repository to automatically pull the latest code for your builds.

None

Git ?

Triggers

Set up automated actions that start your build based on specific events, like code changes or scheduled times.

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

Build after other projects are built ?

Build periodically ?

GitHub hook trigger for GITScm polling ?

Poll SCM ?

Environment

Configure settings and variables that define the context in which your build runs, like credentials, paths, and global parameters.

Delete workspace before build starts

Advanced ▾

Use secret text(s) or file(s) ?

Provide Configuration files ?

Add timestamps to the Console Output

Inspect build log for published build scans

Save Apply

In the build steps click on add build step > select copy artifacts from another project > give project name as maven\_web\_build > give artifacts to copy as \*\*/\*

The screenshot shows the Jenkins configuration interface for the 'maven\_web\_test' job. The 'Build Steps' section is active. A 'Copy artifacts from another project' step is selected, with the following configuration:

- Project name:** maven\_web\_build
- Which build:** Latest successful build
- Stable build only:** Checked
- Artifacts to copy:** \*\*/\*
- Target directory:** (empty)
- Parameter filters:** (empty)

At the bottom, there are 'Save' and 'Apply' buttons, along with checkboxes for 'Flatten directories', 'Optional', 'Fingerprint Artifacts', and 'Include Build Number'.

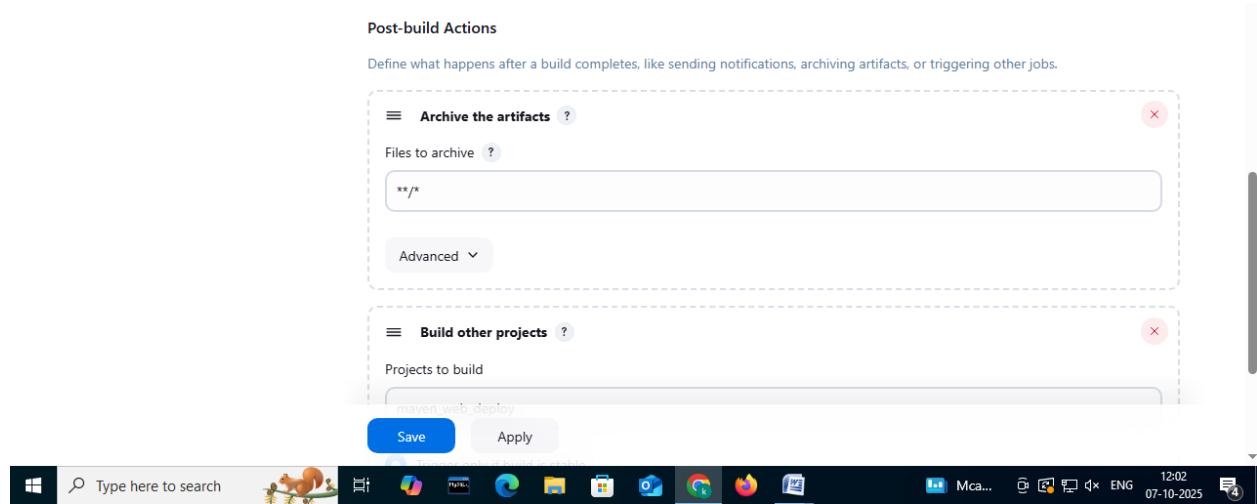
In the build steps click on add build step > give maven version as MAVEN\_HOME > select invoke top-level maven targets > goals as test

The screenshot shows the Jenkins configuration interface for the 'maven\_web\_test' job. The 'Build Steps' section is active. An 'Invoke top-level Maven targets' step is selected, with the following configuration:

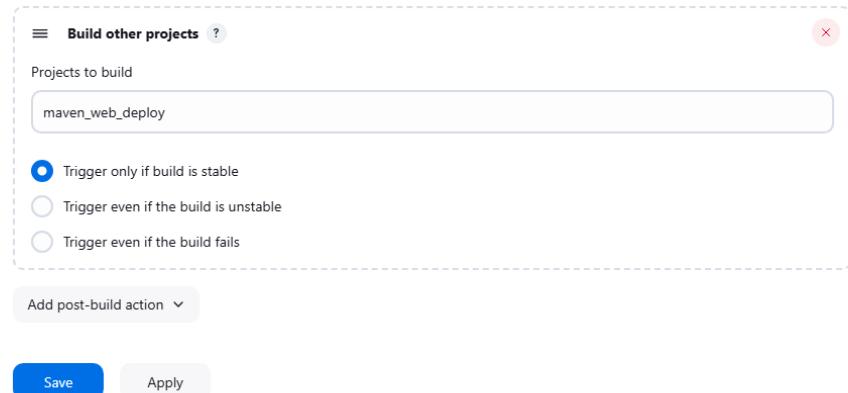
- Maven Version:** MAVEN\_HOME
- Goals:** test
- Advanced:** (dropdown menu)

At the bottom, there is an 'Add build step' button.

In the post build actions > click on add post build action > select the archive the artifacts > in the file to archive give \*\*/\*



In the post build actions > click on add post build action >select build other projects > give name as maven\_web\_deploy> select “trigger only if build is stable”



If the build is success:

The screenshot shows the Jenkins web interface for the job 'maven\_web\_test'. The status is green with a checkmark, indicating a successful build. The build number is #4, and it was run 1 min 30 sec ago. The build name is 'test demo'. The interface also shows upstream and downstream projects, and a list of recent builds.

Status: **maven\_web\_test** (green checkmark)

test demo

Last Successful Artifacts: [maven\\_web\\_build](#)

Upstream Projects: [maven\\_web\\_build](#)

Downstream Projects: [maven\\_web\\_deploy](#)

Builds:

- #4 12:36 PM (1 min 30 sec ago)
- #3 12:36 PM (1 min 30 sec ago)
- #2 11:43 AM (1 min 30 sec ago)
- #1 11:43 AM (1 min 30 sec ago)



Create Freestyle Project (e.g., MavenWeb\_Deploy):

### Step 1: Open Jenkins (localhost:8888)

Click on "New Item" (left side menu) and name it as maven\_web\_deploy > select freestyle project > click on "OK"

New Item

Enter an item name

maven\_web\_deploy

Select an item type

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

**Maven project**  
Build a maven project. Jenkins takes advantage of your POM files and drastically reduces the configuration.

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

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

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

**Multibranch Pipeline**  
Creates a set of Pipeline projects according to detected branches in one SCM repository.

OK

## Step 2: Configuration of maven\_web\_deploy project

Give the description

The screenshot shows the Jenkins configuration interface for a job named "maven\_web\_deploy". The "General" tab is selected. The "Description" field contains the text "deploy demo". A list of optional build behaviors is shown below:

- Discard old builds
- GitHub project
- Permission to Copy Artifact
- This project is parameterized
- Throttle builds
- Execute concurrent builds if necessary

At the bottom of the General tab, there are "Save" and "Apply" buttons. Below the General tab, the "Source Code Management" section is visible, with a note to "Connect and manage your code repository to automatically pull the latest code for your builds." The Jenkins header bar at the top shows tabs for "maven\_web\_deploy Config [Jen]", "Edigirala-Neksha/se-lab-intern...", and "SSL connection issue fix". The status bar at the bottom right shows "12:04 07-10-2025".

In the source code management select none and in environment select “delete workspace before build starts”

The screenshot shows the Jenkins configuration interface for a job named "maven\_web\_deploy". The left sidebar lists several configuration sections: General, Source Code Management (selected), Triggers, Environment, Build Steps, and Post-build Actions. The "Source Code Management" section contains two options: "None" (selected) and "Git". The "Triggers" section includes options like "Trigger builds remotely", "Build after other projects are built", "Build periodically", "GitHub hook trigger for GITScm polling", and "Poll SCM". The "Environment" section has a checked option "Delete workspace before build starts" and an "Advanced" dropdown. Below these are options for "Use secret text(s) or file(s)", "Provide Configuration files", "Add timestamps to the Console Output", and "Inspect build log for published build scans". At the bottom are "Save" and "Apply" buttons. The browser address bar shows the URL "localhost:8888/job/maven\_web\_deploy/configure". The system tray at the bottom right indicates a NIFTY connection, battery level, and date/time (12:07 07-10-2025).

In the build steps click on add build step > select copy artifacts from another project > give project name as maven\_web\_test > give artifacts to copy as \*\*/\*

The screenshot shows the Jenkins configuration interface for a job named 'maven\_web\_deploy'. The 'Build Steps' section is active, displaying a 'Copy artifacts from another project' step. The 'Project name' field is set to 'maven\_web\_test'. The 'Which build' dropdown is set to 'Latest successful build', and the 'Stable build only' checkbox is checked. The 'Artifacts to copy' field contains '\*\*/\*'. The 'Target directory' and 'Parameter filters' fields are empty. At the bottom, there are checkboxes for 'Flatten directories', 'Optional', 'Fingerprint Artifacts' (which is checked), and 'Include Build Number'. Below these are 'Save' and 'Apply' buttons.

In the post build actions > click on add post build actions > select deploy war/ear to a container > enter war/ear files as \*\*/\*.war > context path as webpath > give the credentials and tomcat URL

The screenshot shows the Jenkins configuration interface for a job named "maven\_web\_deploy". The left sidebar lists various configuration sections: General, Source Code Management, Triggers, Environment, Build Steps, and Post-build Actions. The "Post-build Actions" section is currently selected and expanded. Inside this section, a "Deploy war/ear to a container" action is configured. The "WAR/EAR files" field contains the pattern "\*\*/\*.war". The "Context path" field is set to "webpath". Below this, a "Containers" section is expanded, showing a "Tomcat 9.x Remote" configuration. It includes a "Credentials" dropdown containing "admin/\*\*\*\*\*", a "+ Add" button, and a "Tomcat URL" field with the value "https://localhost:8080/". At the bottom of the configuration area are "Save" and "Apply" buttons.



If the build is success:

The screenshot shows a Windows desktop environment with a Jenkins job status page open in a browser window. The browser tabs include 'maven\_web\_deploy [Jenkins]', 'Edigirala-Neksha/se-lab-intern...', 'Apache Tomcat/9.0.98', and 'Jenkins support for Java 21'. The Jenkins page for 'maven\_web\_deploy' shows a green checkmark icon and the text 'Status maven\_web\_deploy'. Below it, 'Changes' and 'Workspace' links are visible. A 'Build Now' button is present. On the right, there are icons for 'Edit description', 'Verify it's you', 'Error', and 'admin'. The 'Upstream Projects' section lists 'maven\_web\_test' with a green checkmark icon. The 'Permalinks' section provides links to various build logs. The 'Builds' section on the left lists builds from today, with the most recent one being successful (#13 at 12:36 PM). The taskbar at the bottom shows the Start button, a search bar, pinned application icons (File Explorer, Edge, Task View, Mail, OneDrive, File History, Edge Dev, and a file icon), system icons (Battery, Network, Volume, and a small orange icon), the date (07-10-2025), and the time (12:38).

## Create Pipeline View for MavenWeb

Click "+" beside "All" on the dashboard and Enter name as maven\_web\_pipeline

Select type as build pipeline view

The screenshot shows the Jenkins interface for creating a new view. The title bar indicates the URL is `localhost:8888/newView`. The main area is titled "New view". On the left, there's a sidebar with links like "New Item", "Build History", "Project Relationship", "Check File Fingerprint", "Manage Jenkins", and "My Views". The "My Views" section shows a dropdown menu for "Build Queue" which says "No builds in the queue." Below it is a "Build Executor Status" section showing "0/2". The main form has a "Name" field containing "maven\_web\_pipeline" and a "Type" section where "Build Pipeline View" is selected (indicated by a blue circle). A description below it states: "Shows the jobs in a build pipeline view. The complete pipeline of jobs that a version propagates through are shown as a row in the view." There are also options for "List View" and "My View". At the bottom right of the form is a "Create" button.

Give the description and in the upstream directly the maven\_web\_build will be shown

Jenkins

Edit View

Name: maven\_web\_pipeline

Description: Describe the purpose of this view.

Plain text: Preview

Build Pipeline View Title:

Build Queue: No builds in the queue.

Build Executor Status: 0/2

Pipeline Flow

Layout: Based on upstream/downstream relationship

This layout mode derives the pipeline structure based on the upstream/downstream trigger relationship between jobs. This is the only out-of-the-box supported layout mode, but is open for extension.

Upstream / downstream config

Select initial Job: maven\_web\_build

Trigger Options

Save Apply

Click on apply and save

Column Headers: No header

Refresh frequency (in seconds): 3

URL for custom CSS files:

Console Output Link Style: Lightbox

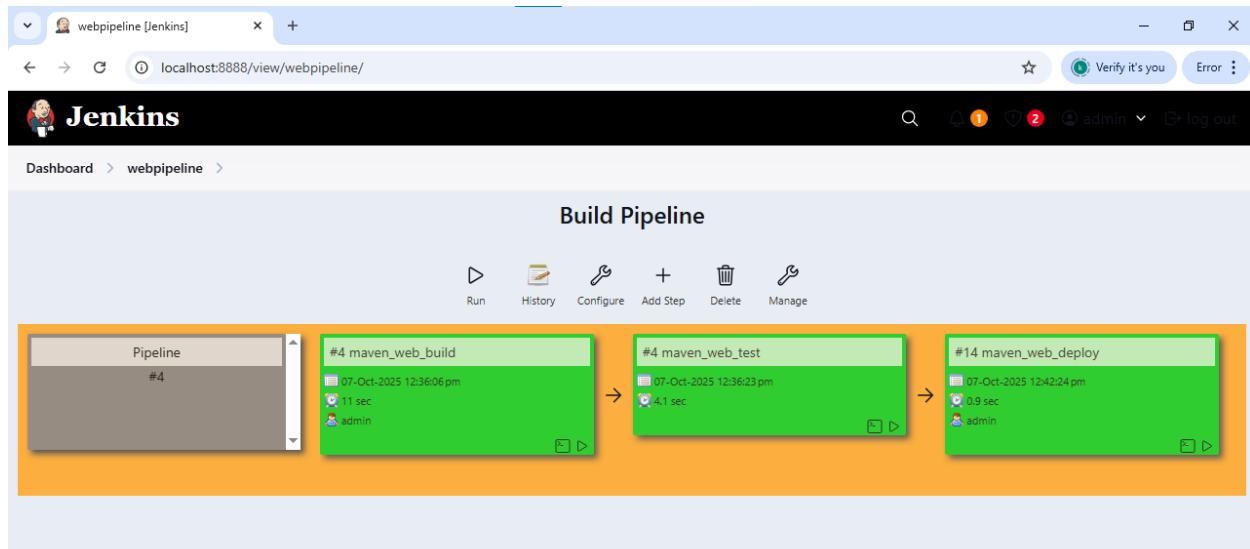
Widgets

Filter build queue  
If checked, only jobs in this view will be shown in the queue.

Filter build executors  
If checked, only those build executors will be shown that could execute the jobs in this view.

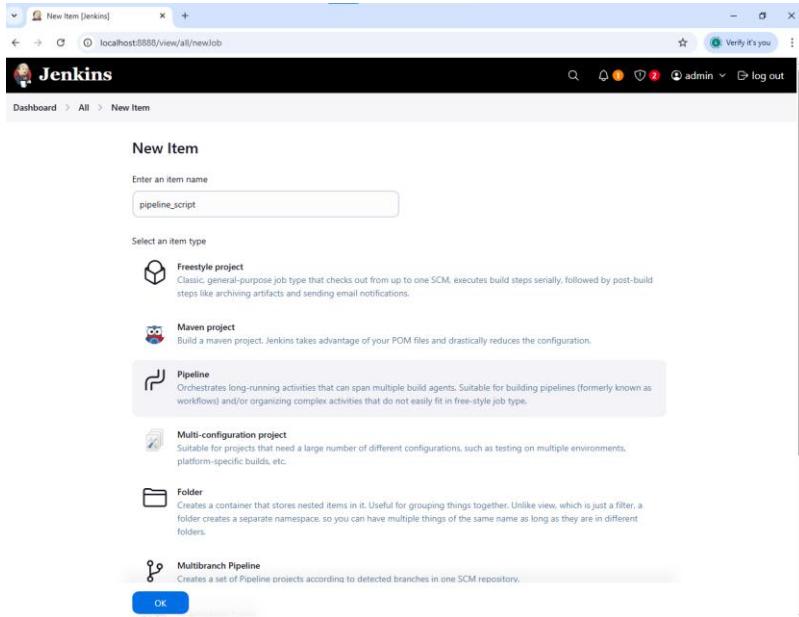
Save Apply

In the stage view it we be shown as:

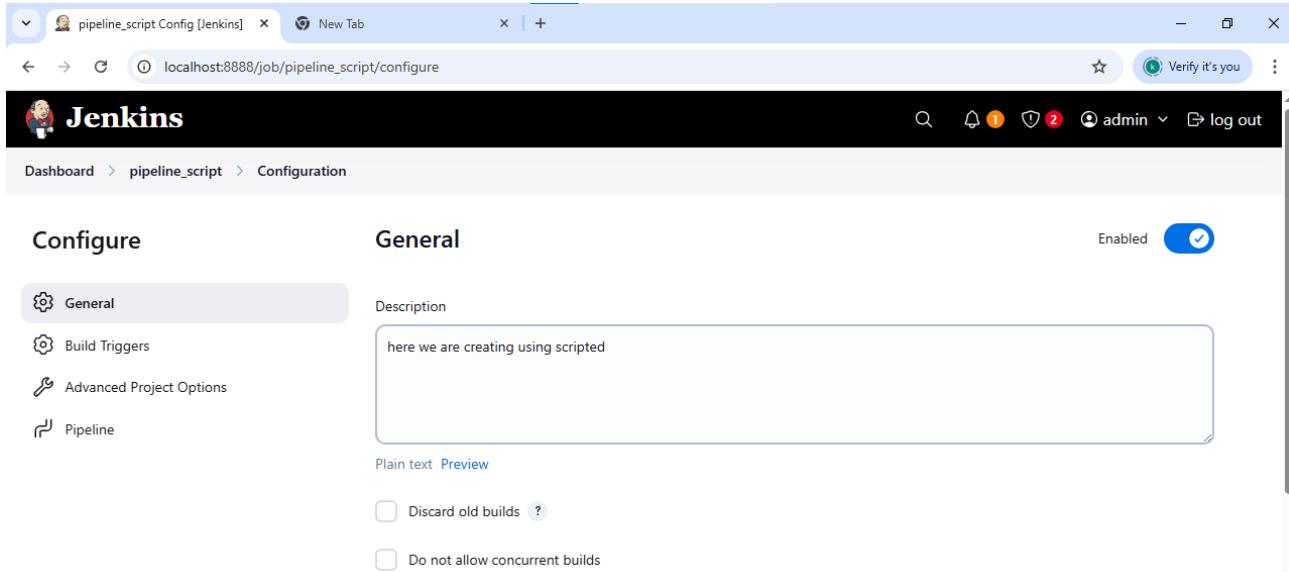


## **9.Pipeline Creation using script**

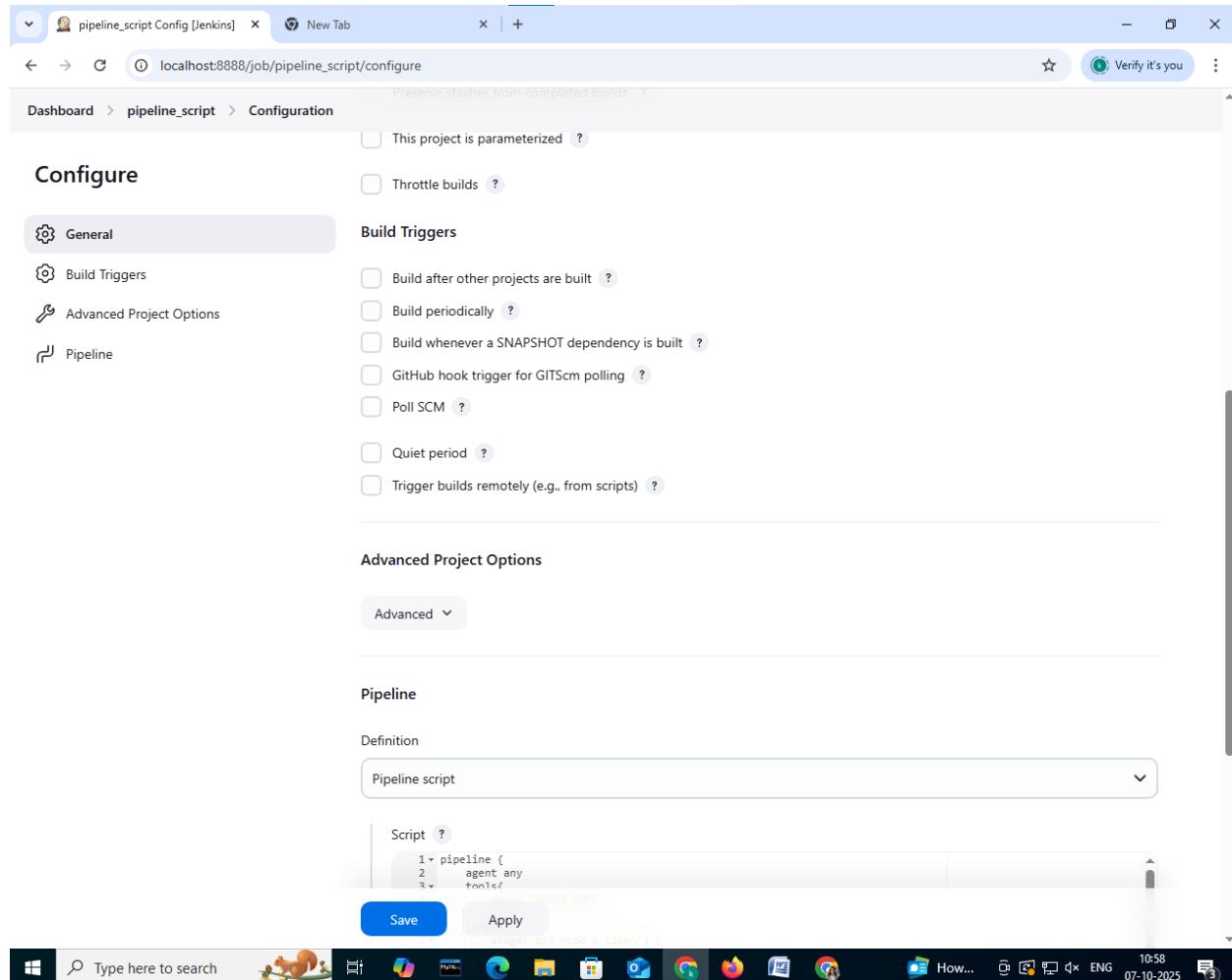
Step 1: In the Jenkins select the new item and give the name as pipeline\_script and select pipeline and click ok



Step 2: In the configuration, give the description



Step 3: In the pipeline section give definition as pipeline script and enter the script with git reop link and project name



The screenshot shows the Jenkins Pipeline configuration page for a job named "pipeline\_script". The "General" tab is selected. Under "Build Triggers", several options are listed: "Build after other projects are built", "Build periodically", "Build whenever a SNAPSHOT dependency is built", "GitHub hook trigger for GITScm polling", "Poll SCM", "Quiet period", and "Trigger builds remotely (e.g., from scripts)". The "Advanced Project Options" section is collapsed. The "Pipeline" section is expanded, showing the "Definition" field set to "Pipeline script". Below it is a code editor containing the following Groovy script:

```
1 > pipeline {
2   agent any
3   tools</pre>
```

At the bottom of the pipeline editor are "Save" and "Apply" buttons.

Step 4: click on apply and then save

The screenshot shows the Jenkins Pipeline configuration page for a job named "pipeline\_script". The "Advanced Project Options" tab is selected. The "Pipeline" section is defined using the "Pipeline script" option. The script content is as follows:

```
1 > pipeline {
2   agent any
3   tools{
4     maven 'MAVEN-HOME'
5   }
6   stages {
7     stage('git repo & clean') {
8       steps {
9         //bat "rmdir /s /q mavenjava"
10        bat "git clone https://github.com/SarvikaSomishetty/eclipse-maven-projects.git"
11        bat "mvn clean -f eclipse-maven-projects"
12      }
13    }
14    stage('install') {
15      steps {
16        bat "mvn install -f eclipse-maven-projects"
17      }
18  }
```

Below the script, there is a checkbox labeled "Use Groovy Sandbox" which is checked. At the bottom of the page are two buttons: "Save" and "Apply". The status bar at the bottom right indicates "REST API Jenkins 2.489".

Step 8: Check the stage view. If is successful.

The screenshot shows the Jenkins interface for the 'pipeline\_script' job. The top navigation bar includes links for 'Changes', 'Build Now', 'Configure', 'Delete Pipeline', 'Full Stage View', 'Stages', 'Rename', and 'Pipeline Syntax'. The main content area displays the 'Stage View' for the 'pipeline\_script' job. The Stage View table has columns for 'Declarative: Tool Install', 'git repo & clean', 'install', 'test', and 'package'. The first row shows average times: 296ms, 5s, 9s, 3s, and 4s respectively. The second row shows specific times for build #2: 296ms, 5s, 9s, 3s, and 4s. Below the Stage View is a 'Permalinks' section listing four build links. On the left, there is a 'Builds' sidebar showing a single build entry for '#2 11:02 AM'.

Declarative: Tool Install	git repo & clean	install	test	package
296ms	5s	9s	3s	4s
296ms	5s	9s	3s	4s

**Permalinks**

- Last build (#2), 4 min 29 sec ago
- Last stable build (#2), 4 min 29 sec ago
- Last successful build (#2), 4 min 29 sec ago
- Last completed build (#2), 4 min 29 sec ago

**Builds**

Oct 07 11:02 No Changes

#2 11:02 AM

## **10. Kubernetes Using Minikube:**

### **Step -1:**

#### **Start Minikube : Command- minikube start**

- First, you need to start your Kubernetes cluster using Minikube.
- When you start it, Minikube sets up a lightweight virtual machine on your system and runs a local Kubernetes node inside it.

#### **Step-2:Then check for the status Minikube status**

#### **Step-3:Create an image**

```
PS C:\Users\User>
PS C:\Users\User> kubectl delete deployment mynginx
deployment.apps "mynginx" deleted
PS C:\Users\User> kubectl create deployment mynginx --image=nginx
deployment.apps/mynginx created
PS C:\Users\User> kubectl expose deployment mynginx --type=NodePort --port=80
service/mynginx exposed
PS C:\Users\User> kubectl get pods
NAME           READY   STATUS    RESTARTS   AGE
mynginx-79bb8756c7-wpslj   1/1     Running   0          34s
```

#### **Step-4: Check the NGINX Service Details**

- After creating the service, check its details to see which port Kubernetes assigned to it.

```
  DownwardAPI:           true
QoS Class:             BestEffort
Node-Selectors:         <none>
Tolerations:           node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
                       node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type    Reason     Age   From           Message
  ----  -----   ----  ----
  Normal  Scheduled  68s  default-scheduler  Successfully assigned default/mynginx-79bb8756c7-wpslj to minikube
  Normal  Pulling   67s  kubelet        Pulling image "nginx"
  Normal  Pulled   65s  kubelet        Successfully pulled image "nginx" in 2.416s (2.416s including waiting). Image size: 159974475 bytes.
  Normal  Created   65s  kubelet        Created container nginx
  Normal  Started   64s  kubelet        Started container nginx
PS C:\Users\User> kubectl scale deployment mynginx --replicas=4
deployment.apps/mynginx scaled
PS C:\Users\User> kubectl get service mynginx
Error from server (NotFound): services "mynginx" not found
PS C:\Users\User> kubectl port-forward svc/mynginx 8081:80
Forwarding from 127.0.0.1:8081 -> 80
Forwarding from [::]:8081 -> 80
```

### Step-5:check the detail of the kubectl .

```
PS C:\Users\User> kubectl describe pods
Name:           mynginx-79bb8756c7-wpslj
Namespace:      default
Priority:      0
Service Account: default
Node:          minikube/192.168.49.2
Start Time:    Tue, 14 Oct 2025 12:38:19 +0530
Labels:        app=mynginx
               pod-template-hash=79bb8756c7
Annotations:   <none>
Status:        Running
IP:            10.244.0.16
IPs:
  IP:          10.244.0.16
Controlled By: ReplicaSet/mynginx-79bb8756c7
Containers:
  nginx:
    Container ID:  docker://675066efbd98a54ba39177103943b196de2c61f01d820ede859b48578f3e245e
    Image:         nginx
    Image ID:     docker-pullable://nginx@sha256:3b7732505933ca591ce4a6d860cb713ad96a3176b82f7979a8dfa9973486a0d6
    Port:          <none>
    Host Port:    <none>
    State:        Running
      Started:   Tue, 14 Oct 2025 12:38:22 +0530
    Ready:        True
    Restart Count: 0
    Environment:  <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-nh2rw (ro)
Conditions:
  Type          Status
  PodReadyToStartContainers  True
  Initialized    True
  Ready          True
  ContainersReady  True
  PodScheduled   True
Volumes:
  kube-api-access-nh2rw:
    Type:          Projected (a volume that contains injected data from multiple sources)
    TokenExpirationSeconds: 3607
    ConfigMapName:   kube-root-ca.crt
    ConfigMapOptional: <nil>
    DownwardAPI:    true
  QoS Class:      BestEffort
  Node-Selectors:  <none>
  Tolerations:    node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
                  node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
```

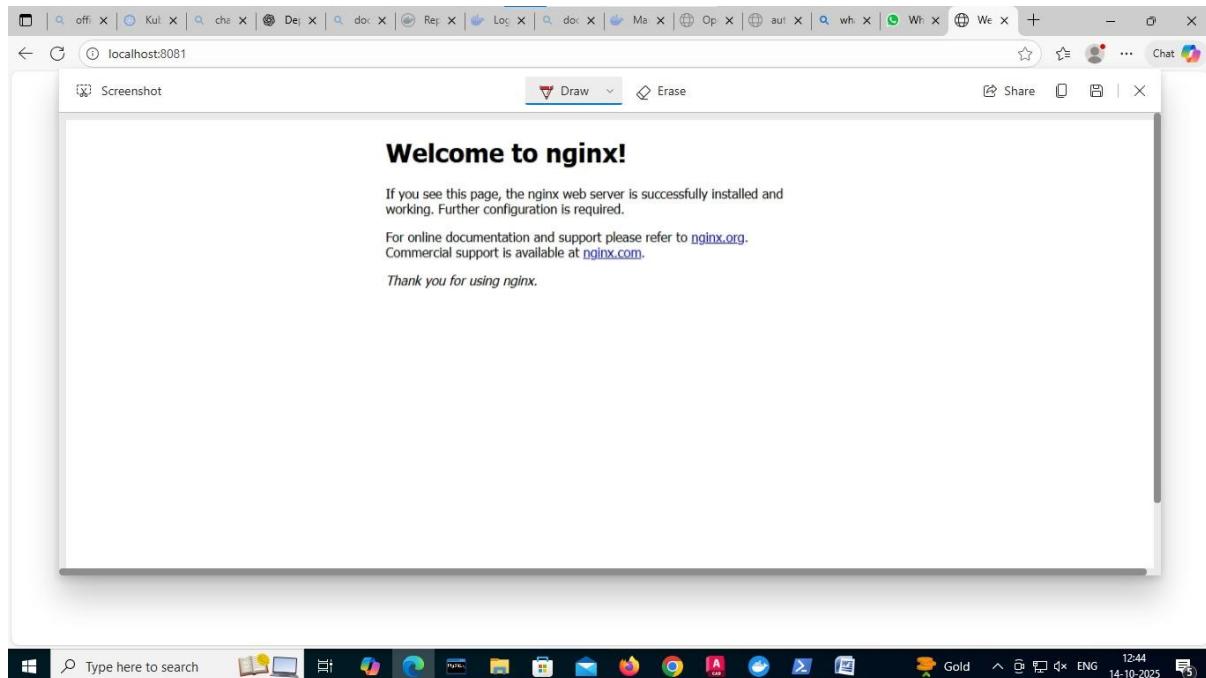
### Step-6:Check the NGINX Service Details

- After creating the service, check its details to see which port Kubernetes assigned to it.

```
PS C:\Users\User> kubectl port-forward svc/mynginx 8081:80
Forwarding from 127.0.0.1:8081 -> 80
Forwarding from [::1]:8081 -> 80
Handling connection for 8081
Handling connection for 8081
Handling connection for 8081
Handling connection for 8081
```

## Step-7: Open NGINX in the Browser

- Now that your service is exposed, you can open NGINX in your browser.



## **11. Jenkins-CI/CD**

### **Setting Up Jenkins CI-----using GitHub Webhook with Jenkins**

Step 1: Take the authentication key from the ngrok and setup in ngrok terminal

```
tcp          start a TCP tunnel
tls          start a TLS endpoint
update      update ngrok to the latest version
version     print the version string

EXAMPLES:
# forward http traffic from assigned public URL to local port 80
ngrok http 80
# port 8080 available at baz.ngrok.dev
ngrok http --url baz.ngrok.dev 8080
# tunnel arbitrary TCP traffic to port 22
ngrok tcp 22
# secure your app with oauth
ngrok http 80 --oauth=google --oauth-allow-email=foo@foo.com

Paid Features:
  ngrok http 80 --url mydomain.com                               # run ngrok with your own custom domain
  ngrok http 80 --cidr-allow 2600:8c00::a03c:91ee:fe69:9695/32 # run ngrok with IP policy restrictions
  Upgrade your account at https://dashboard.ngrok.com/billing/subscription to access paid features

Upgrade your account at https://dashboard.ngrok.com/billing/subscription to access paid features

Flags:
  -h, --help      help for ngrok

Use "ngrok [command] --help" for more information about a command.

ngrok is a command line application, try typing 'ngrok.exe http 80'
at this terminal prompt to expose port 80.
C:\Windows\System32>ngrok config add-authtoken 34gKWhQDcoITj34K6eN73XoYG6J_58fBgmpjM5ikZVdKVdyCe|
```

Step-2: Execute the following command using the port number on which Jenkins is running

```
C:\Windows\System32>ngrok.exe http 8888
```

- Following output will be given:

```
ngrok                                         (Ctrl+C to quit)

♦ Block threats before they reach your services with new WAF actions → https://ngrok.com/r/waf

Session Status        online
Account              Neksha Edigirala (Plan: Free)
Update               update available (version 3.32.0, Ctrl-U to update)
Version              3.24.0-msix
Region               India (in)
Latency              147ms
Web Interface        http://127.0.0.1:4040
Forwarding           https://corkier-darla-handsome.ngrok-free.dev -> http://localhost:8888

Connections          ttl     opn     rt1     rt5     p50     p90
                     2       0       0.00   0.00   30.28   30.47

HTTP Requests
-----
11:35:59.377 IST POST /github-webhook/          200 OK
11:34:29.479 IST POST /github-webhook/          200 OK
```

Go to Jenkins:

Step-3: Create the Jenkins job in the source code management select the git and enter git repo url and make sure the branch is same (i.e., main)

The screenshot shows the Jenkins job configuration page for 'job\_webhook\_java'. The 'Source Code Management' section is selected. Under 'Repositories', the 'Git' option is chosen, and the 'Repository URL' field contains 'https://github.com/Edigirala-Neksha/se-lab-internal-1.git'. The 'Branch Specifier' field contains '/main'. Other sections like General, Triggers, Environment, Build Steps, and Post-build Actions are visible but not selected.

Step-4: In the triggers section select “Github hook trigger for GITScm polling”

The screenshot shows the Jenkins job configuration page for 'job\_webhook\_java'. The 'Triggers' section is selected. Under 'Triggers', the 'GitHub hook trigger for GITScm polling' checkbox is checked. Other options like 'Trigger builds remotely' and 'Build periodically' are available but not selected. The 'Save' and 'Apply' buttons are at the bottom of the form.

Click on apply and save

Step-6: open the git hub repo open setting of repo and then go to webhooks

The screenshot shows the GitHub repository settings for 'se-lab-internal-1'. The 'General' tab is selected. In the left sidebar, 'Webhooks' is highlighted. The main area displays the 'Default branch' (main) and 'Releases' sections. At the bottom, there is a link to 'https://github.com/Edigirala-Neksha/se-lab-internal-1/settings/hooks'.

Step-7: Click on add a webhook and take the forwarding URL from ngrok and paste in payload URL and add /github-webhook/ along with the forwarding url

Forwarding URL: <https://corkier-darla-handsome.ngrok-free.dev>

Payload url: <https://corkier-darla-handsome.ngrok-free.dev/github-webhook/>

The screenshot shows the 'Webhooks / Add webhook' form. The 'Payload URL' field contains 'https://corkier-darla-handsome.ngrok-free.dev/github-webhook/'. The 'Content type' dropdown is set to 'application/x-www-form-urlencoded'. The 'SSL verification' section has 'Enable SSL verification' selected. The 'Which events would you like to trigger this webhook?' section has 'Just the push event' selected.

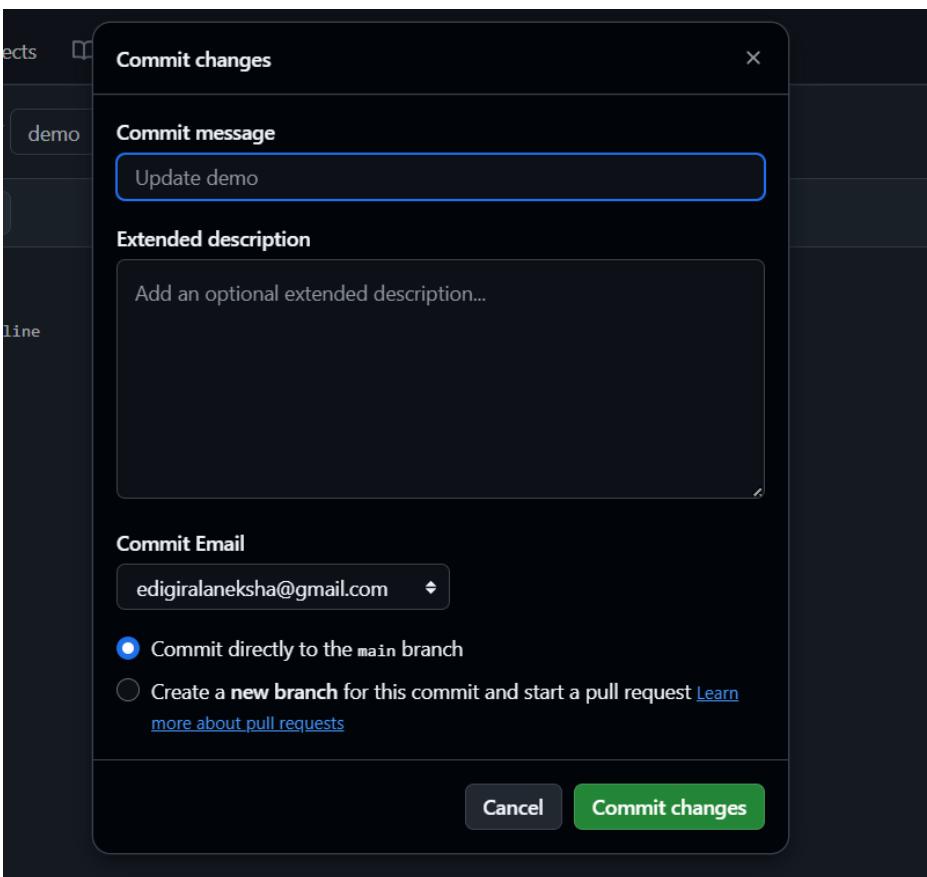
## Step 8: make changes in the files in github

A screenshot of the GitHub interface. The top navigation bar shows the repository "Edigirala-Neksha / se-lab-internal-1". The left sidebar lists project files: main, .settings, src, target, .classpath, .project, Dockerfile, demo, and pom.xml. The main area displays a file named "demo" with the following content:

```
1 deooooooo
2 webhook
3 xxxxxx-new line|
```

The right side of the screen has buttons for "Cancel changes" and "Commit changes...". A status bar at the bottom indicates "Use Control + Shift + n to toggle the tab key moving focus. Alternatively, use esc then tab to move to the next interactive element on the page."

## Step 9: click on commit changes



Step 10: open Jenkins the build will start automatically

The screenshot shows the Jenkins interface for the 'job\_webhook\_java' project. The top navigation bar includes the Jenkins logo and the current path: Jenkins / job\_webhook\_java. A sidebar on the left lists various project management options: Status (highlighted in grey), Changes, Workspace, Build Now, Configure, Delete Project, GitHub Hook Log, Rename, and Credentials. The main content area is titled 'Permalinks' and lists four recent builds. Below this is a 'Builds' section with a 'Pending' row containing a build labeled '#3' with a status message: 'In the quiet period. Expires in 2.9 sec'. Under the 'Today' heading, there is a row for build '#2' from 11:36 am.

Build	Status	Time
#3	Pending	In the quiet period. Expires in 2.9 sec
#2	Completed	11:36 am



- [>Status](#)
- [</> Changes](#)
- [Workspace](#)
- [▷ Build Now](#)
- [⚙ Configure](#)
- [trash Delete Project](#)
- [GitHub Hook Log](#)
- [✍ Rename](#)
- [🔒 Credentials](#)

Builds

Filter/

Today

- ✓ #3 11:41 am
- ✓ #2 11:36 am
- ✓ #1 11:35 am

You can check status : started by git hub push

Job #3 (28-Oct-2025, 11:41:02 am)

Started by GitHub push by Edigirala-Neksha

This run spent:

- 7.8 sec waiting;
- 2.1 sec build duration;
- 10 sec total from scheduled to completion.

Revision: bc52c46b2c311be243984889d49707f7839687de  
Repository: <https://github.com/Edigirala-Neksha/se-lab-internal-1.git>

refs/remotes/origin/main

Changes

1. Update demo ([details](#) / [githubweb](#))

## Setting Up Jenkins Email Notification Setup (Using Gmail with AppPassword)

### Step-1: Creation of app password

### **Gmail: Enable App Password (for 2-Step Verification)**

#### **ii. Enable 2-Step Verification**

#### **iii. Generate App Password for Jenkins**

- Go to:
  - Security → App passwords
- Select:
  - **App:** Other (Custom name)
  - **Name:** Jenkins-Demo
- Click **Generate**
- Copy the **16-digit app password**
  - Save it in a secure location (e.g., Notepad)

## **2. Jenkins Plugin Installation**

#### **i. Open Jenkins Dashboard**

#### **ii. Navigate to:**

- Manage Jenkins → Manage Plugins

#### **iii. Install Plugin:**

- Search for and install:
  - Email Extension Plugin

Jenkins / Manage Jenkins / Plugins

Plugins

Updates 16

Available plugins

Installed plugins

Advanced settings

Name

Health Enabled

Email Extension 1925.v1598902b\_5bdd

This plugin is a replacement for Jenkins's email publisher. It allows to configure every aspect of email notifications: when an email is sent, who should receive it and what the email says

Report an issue with this plugin

Email Extension Template Plugin 233.v1eb\_88fc160b\_5

This plugin allows administrators to create global templates for the Extended Email Publisher.

Report an issue with this plugin

Mailer Plugin 522.va\_995fa\_cfb\_8b\_d

This plugin allows you to configure email notifications for build results.

Report an issue with this plugin

Pipeline

Failed to load: Pipeline (workflow-aggregator 608.v67378e9d3db\_1)  
- Failed to load: Pipeline: Basic Steps (workflow-basic-steps 1098.v808b\_fd7f8cf4)

### 3. Configure Jenkins Global Email Settings

Go to:

- Manage Jenkins → Configure System

---

#### A. E-mail Notification Section

Field	Value
SMTP Server	smtp.gmail.com
Use SMTP Auth	<input checked="" type="checkbox"/> Enabled
User Name	Your Gmail ID (e.g., archanareddykmit@gmail.com)
Password	Paste the 16-digit App Password
Use SSL	<input checked="" type="checkbox"/> Enabled
SMTP Port	465

Reply-To Address Your Gmail ID (same as above)

#### ► Test Configuration

- Click: Test configuration by sending test e-mail
- Provide a valid email address to receive a test mail
- Should receive email from Jenkins

Jenkins / Manage Jenkins / System

E-mail Notification

SMTP server

smtp.gmail.com

Default user e-mail suffix ?

Advanced ^ Edited

Use SMTP Authentication ?

User Name  
edigiralaneksha@gmail.com

Password  
 Concealed Change Password

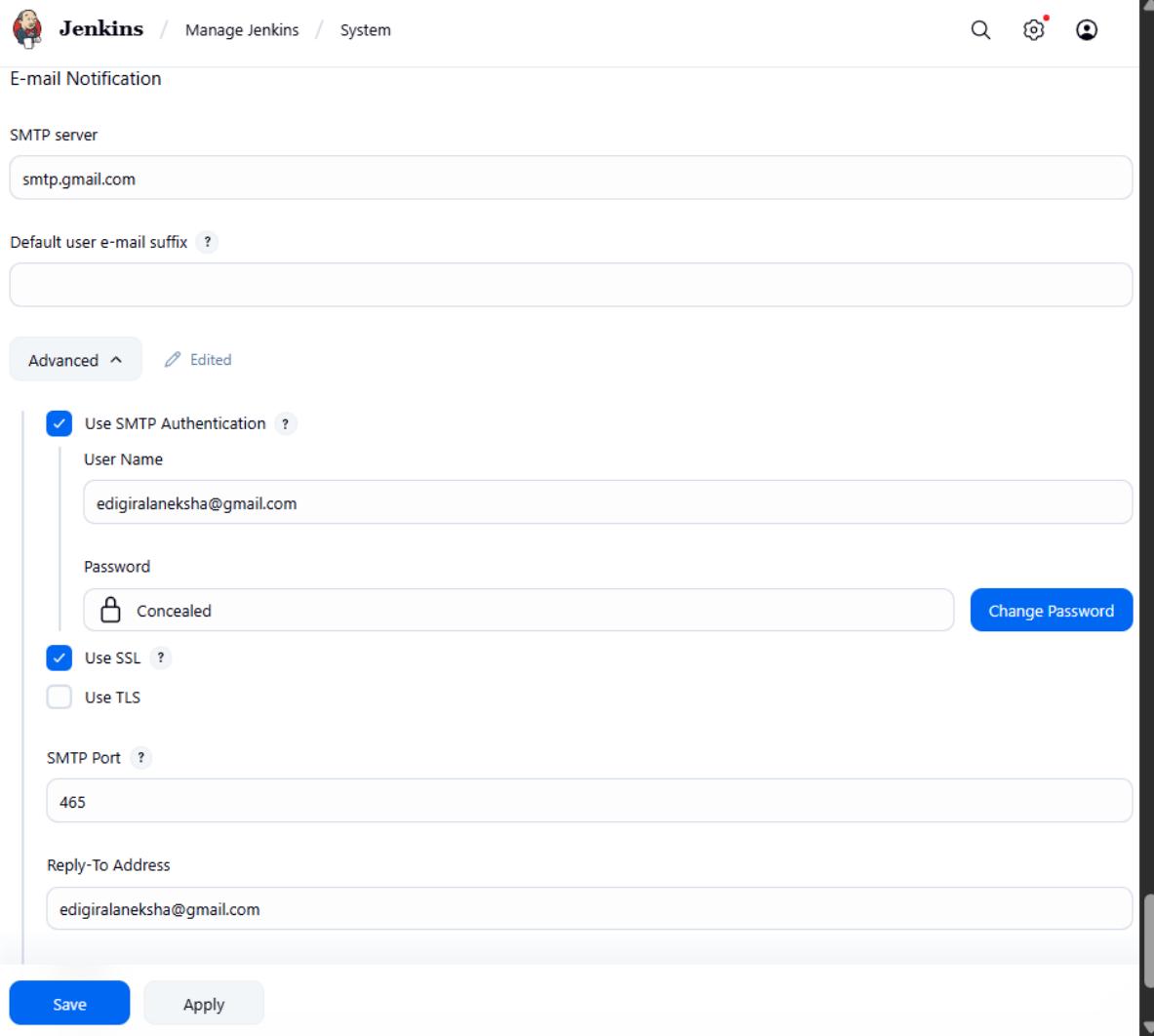
Use SSL ?

Use TLS

SMTP Port ?  
465

Reply-To Address  
edigiralaneksha@gmail.com

Save Apply



## B. Extended E-mail Notification Section

Field	Value
SMTP Server	smtp.gmail.com
SMTP Port	465
Use SSL	<input checked="" type="checkbox"/> Enabled
Credentials	Add Gmail ID and App Password as Jenkins credentials
Default Content Type	text/html or leave default

Field	Value
<b>Default Recipients</b>	Leave empty or provide default emails
<b>Triggers</b>	Select as per needs (e.g., Failure)

Extended E-mail Notification

SMTP server

SMTP Port

Advanced ^   

Credentials

+ Add

Use SSL  
 Use TLS  
 Use OAuth 2.0

Advanced Email Properties

Save    
 Apply

Default Triggers ^

Default Triggers ?

- Aborted
- Always
- Before Build
- Failure - 1st
- Failure - 2nd
- Failure - Any
- Failure - Still
- Failure - X
- Failure -> Unstable (Test Failures)
- Fixed
- Not Built
- Script - After Build
- Script - Before Build
- Status Changed
- Success
- Test Improvement
- Test Regression
- Unstable (Test Failures)
- Unstable (Test Failures) - 1st
- Unstable (Test Failures) - Still
- Unstable (Test Failures)/Failure -> Success

Content Token Reference ?

#### 4. Configure Email Notifications for a Jenkins Job

##### i. Go to:

- Jenkins → Select a Job → Configure

The screenshot shows the Jenkins configuration interface for a job named "job\_webhook\_java". The "General" tab is active. The "Description" field contains the value "java webhook". The "Source Code Management" section is configured to use "Git". At the bottom, there are "Save" and "Apply" buttons.

##### ii. In the Post-build Actions section:

- Click: Add post-build action → **Editable Email Notification**

##### A. Fill in the fields:

Field	Value
-------	-------

Field	Value
<b>Project Recipient List</b>	Add recipient email addresses (comma-separated)
<b>Content Type</b>	Default (text/plain) or text/html
<b>Triggers</b>	Select events (e.g., Failure, Success, etc.)
<b>Attachments</b>	(Optional) Add logs, reports, etc.

### iii. Click Save

#### Post-build Actions

Define what happens after a build completes, like sending notifications, archiving artifacts, or triggering other jobs.

≡ **Editable Email Notification** ? X

Allows the user to disable the publisher, while maintaining the settings

Disable Extended Email Publisher ?

**Project From**

**Project Recipient List** ?

Comma-separated list of email address that should receive notifications for this project.

**Project Reply-To List** ?

Comma-separated list of email address that should be in the Reply-To header for this project.

**Save** **Apply**

Jenkins / job\_webhook\_java

Rename Credentials

Builds

Filter

Today

- #4 11:45 am
- 28 October 2025
- #3 11:41 am
- #2 11:36 am
- #1 11:35 am

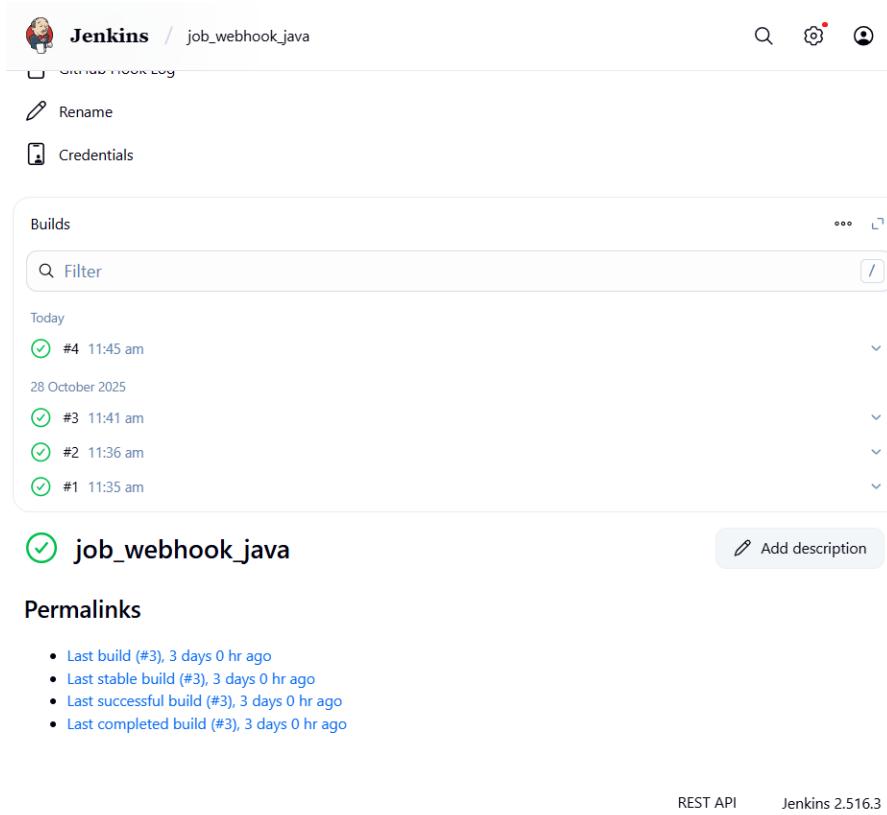
Add description

job\_webhook\_java

Permalinks

- Last build (#3), 3 days 0 hr ago
- Last stable build (#3), 3 days 0 hr ago
- Last successful build (#3), 3 days 0 hr ago
- Last completed build (#3), 3 days 0 hr ago

REST API Jenkins 2.516.3



Gmail Search mail

Compose

Inbox 84

- Starred
- Snoozed
- Sent
- Drafts 1
- Purchases 13
- More

Labels +

job\_webhook\_java - Build # 4 - Successful!

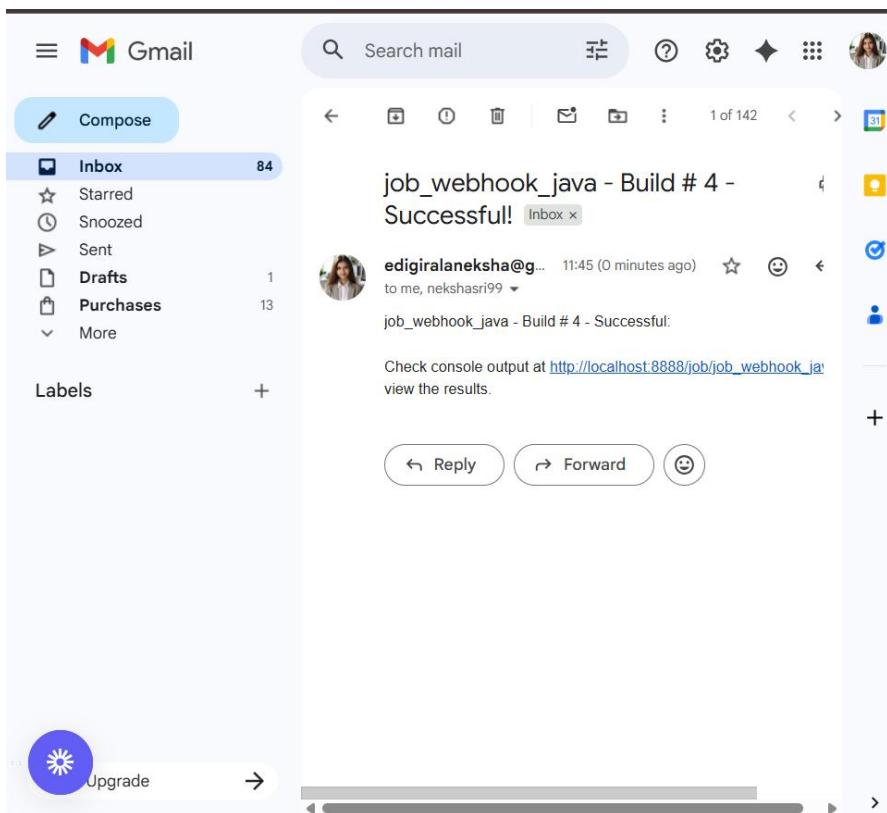
edigiralaneksha@g... 11:45 (0 minutes ago) to me, nekshasri99

job\_webhook\_java - Build # 4 - Successful!

Check console output at [http://localhost:8888/job/job\\_webhook\\_java](http://localhost:8888/job/job_webhook_java) view the results.

Reply Forward

Upgrade

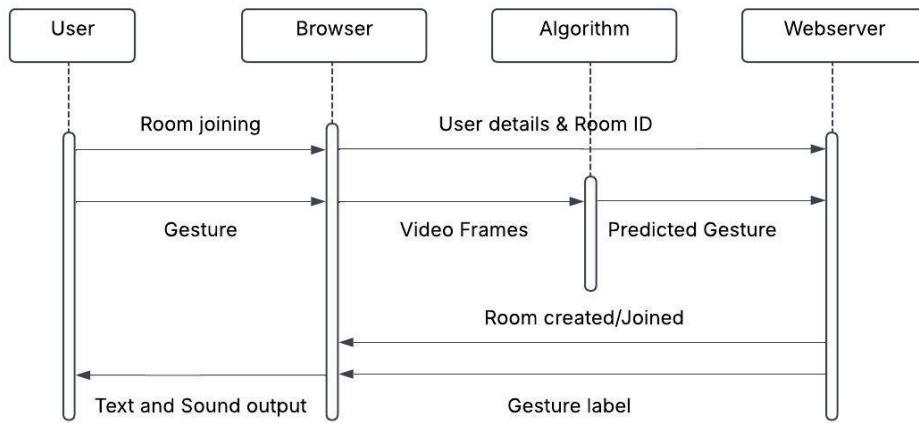


## TUNEORA – A Music Web App

### 1. Sequence Diagram:

A sequence diagram shows how objects interact in a particular scenario of a use case.

It focuses on the time order of messages exchanged between different components in a system.



### 2. Class Diagram:

A class diagram represents the static structure of a system by showing classes, their attributes, methods, and relationships.

It is mainly used for object-oriented design and modeling data structures.

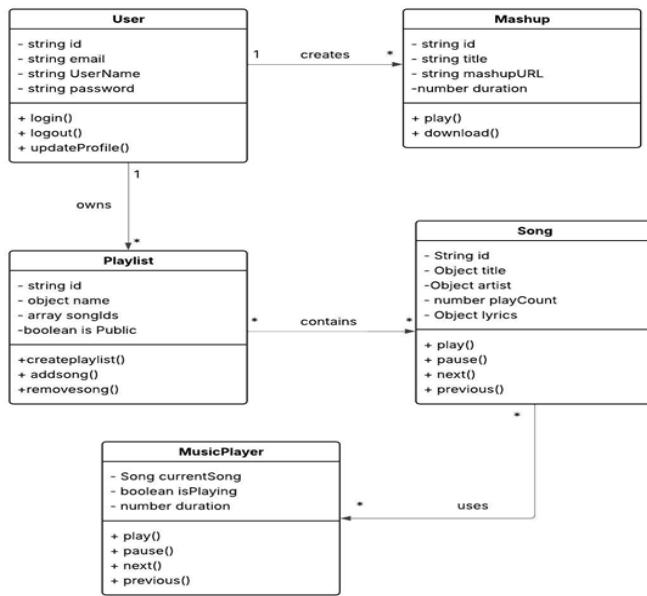
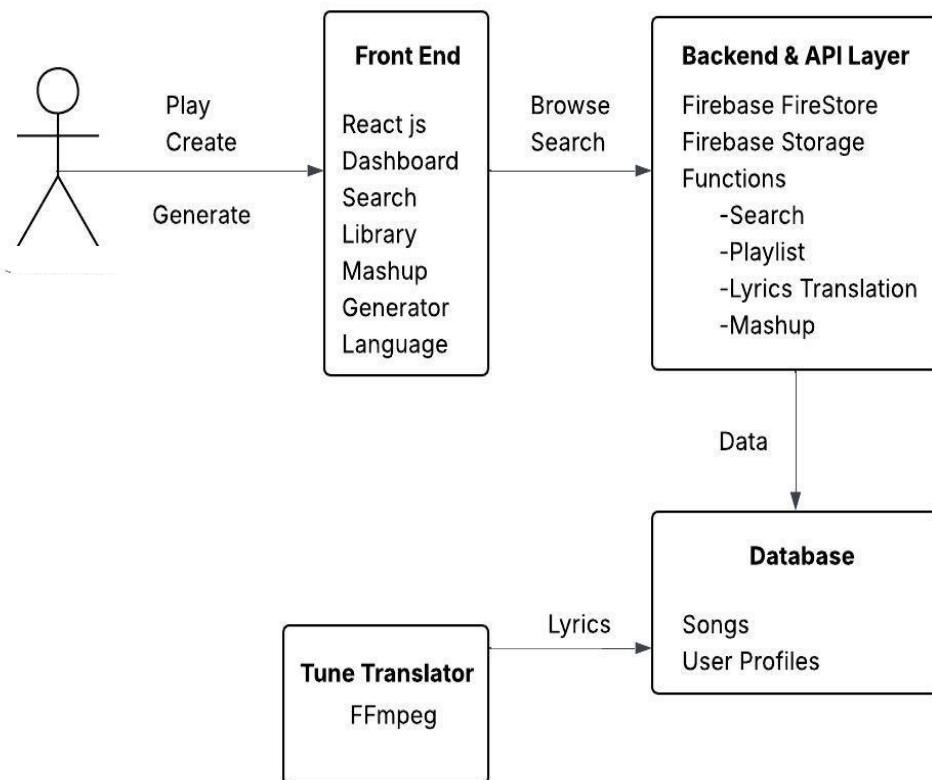


Fig 5: Class Diagram for TuneOra

### 3. Component Diagram:

A component diagram illustrates how different software components are connected and interact to form a complete system.

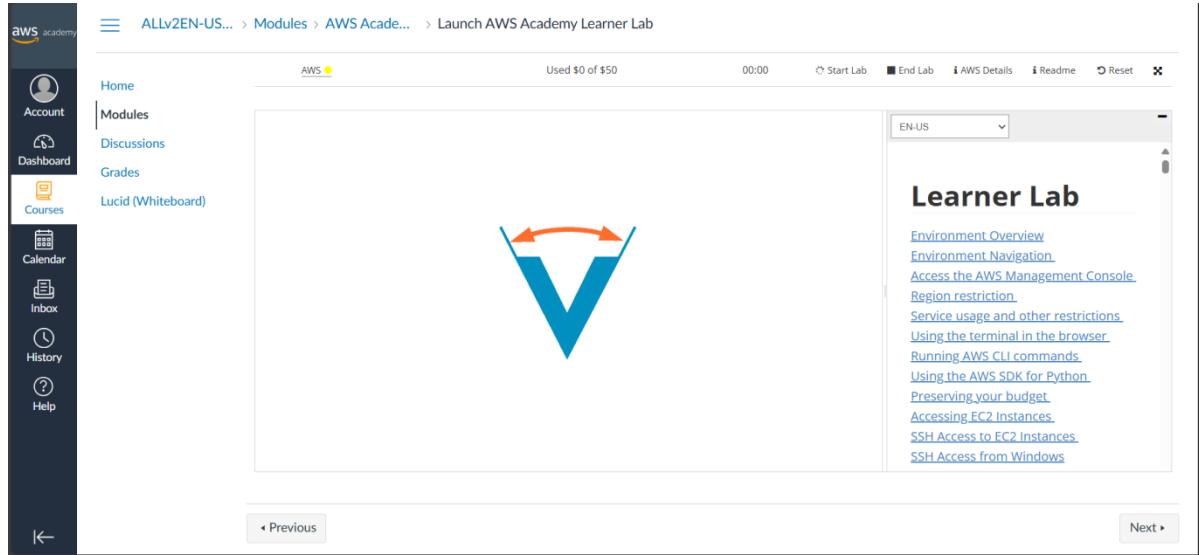
It helps visualize the organization and dependencies among modules or subsystems.



## **12.Creation of virtual machine for Ubuntu OS and Deploying the web application**

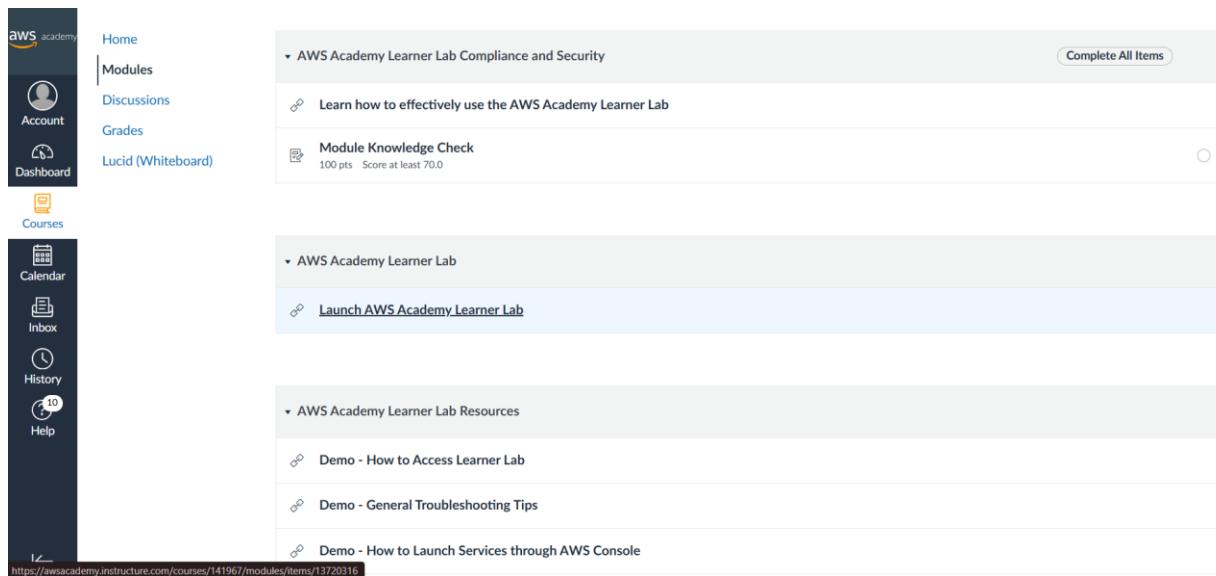
DEPLOYMENT OF INDEX.HTML USING EC2 INSTANCE in AWS

Step 1: Click on Modules.



The screenshot shows the AWS Academy Learner Lab interface. On the left, there's a sidebar with icons for Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main navigation bar at the top has 'AWS' highlighted. Below it, the 'Modules' tab is selected. The central area displays the 'Learner Lab' page, which includes a large blue downward-pointing arrow icon with an orange double-headed arrow above it. To the right of the icon is a sidebar titled 'Learner Lab' containing links to various resources like Environment Overview, Environment Navigation, and Service usage and other restrictions. At the bottom of the page are 'Previous' and 'Next' buttons.

Step 2: Scroll down and select Lunch AWS Academy Lab



The screenshot shows the AWS Academy Learner Lab interface after scrolling down. The 'Modules' tab is still selected in the sidebar. In the main content area, under the 'AWS Academy Learner Lab' section, there is a link labeled 'Launch AWS Academy Learner Lab'. This link is underlined and highlighted in blue, indicating it is the target of the scroll action. The URL at the bottom of the page is https://awsacademy.instructure.com/courses/141967/modules/items/13720316.

### Step 3: click on start lab

The screenshot shows the AWS Academy Learner Lab interface. On the left, there's a sidebar with icons for Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main area has a breadcrumb navigation: ALLv2EN-US-LTI13-141967 > Modules > AWS Academy Learner Lab > Launch AWS Academy Learner Lab. At the top right, there are buttons for Start Lab, End Lab, AWS Details, Readme, and Reset. A terminal window shows a command prompt: `eee_l_5353255@runweb195992:~$`. To the right is a sidebar titled "Learner Lab" with a list of links: Environment Overview, Environment Navigation, Access the AWS Management Console, Region restriction, Service usage and other restrictions, Using the terminal in the browser, Running AWS CLI commands, Using the AWS SDK for Python, Preserving your budget, Accessing EC2 Instances, SSH Access to EC2 Instances, and SSH Access from Windows. At the bottom are "Previous" and "Next" buttons.

### Step 4: click on AWS and in the services select EC2

This screenshot is similar to the previous one, but the sidebar on the left has the "AWS" icon highlighted. The rest of the interface, including the terminal window, sidebar links, and navigation buttons, remains the same.

## Step 5: select instances and select instance click on launch instance

## Step 6: Give the name of the machine “week-122”

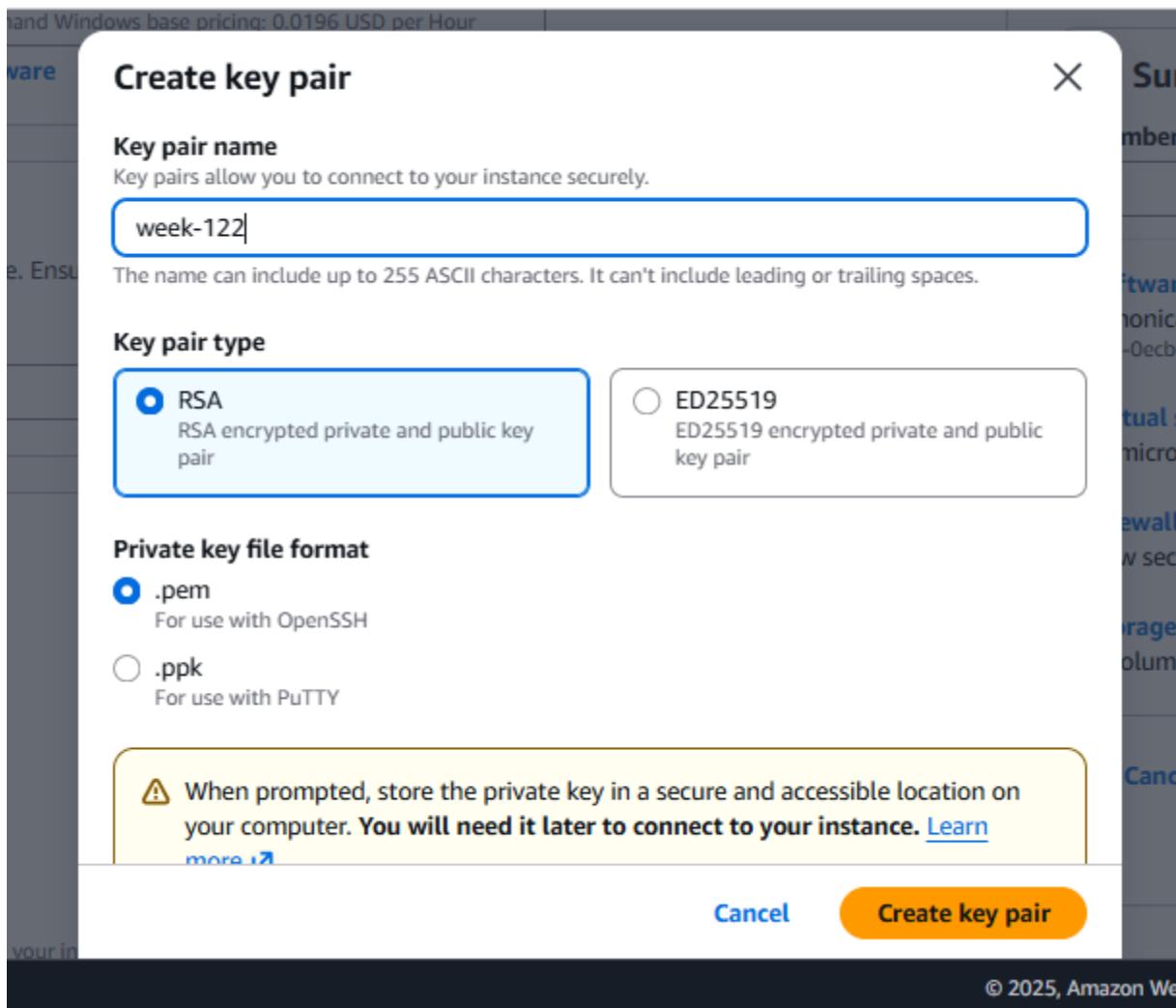
## Step 6: Select the ubuntu server

The screenshot shows the AWS EC2 'Launch an instance' wizard. In the 'Amazon Machine Image (AMI)' section, 'Ubuntu Server 24.04 LTS (HVM), SSD Volume Type' is selected. The 'Architecture' dropdown is set to '64-bit (x86)'. On the right, the 'Summary' panel shows the instance configuration: 1 instance, Canonical, Ubuntu, 24.04, amd64 noble image, t3.micro instance type, and 1 volume(s) - 8 GiB storage. The 'Launch instance' button is visible at the bottom.

## Step 7: select architecture as 64-bit and instance type as t3.micro(i.e., they are free)

The screenshot shows the AWS EC2 'Launch an instance' wizard. In the 'Instance type' section, 't3.micro' is selected. The 'Summary' panel on the right shows the configuration: 1 instance, Canonical, Ubuntu, 24.04, amd64 noble image, t3.micro instance type, and 1 volume(s) - 8 GiB storage. The 'Launch instance' button is visible at the bottom.

Step 8: Create a new keypair and select type as RSA and .pem option and click on create key pair



Step 9: In network settings select “create security group” and give the security group name

▼ Network settings [Info](#)

VPC - **required** | [Info](#)

vpc-05a9ef3852073b114 (default) ▾ [C](#)

Subnet | [Info](#)

No preference ▾ [C](#) Create new subnet ↗

Availability Zone | [Info](#)

No preference ▾ [C](#) Enable additional zones ↗

Auto-assign public IP | [Info](#)

Enable ▾

Firewall (security groups) | [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group  Select existing security group

Security group name - **required**

week-122

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_.--/()#,@[]+=;&()!\$\*

Description - **required** | [Info](#)

Launch-wizard-1 created 2025-11-11T05:36:49.724Z

Step 10: Click on edit button on the top right corner and select

Type: ssh

Source: anywhere

EC2 > Instances > Launch an instance

week-122

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_.--/()#,@[]+=;&()!\$\*

Description - **required** | [Info](#)

Launch-wizard-1 created 2025-11-11T05:36:49.724Z

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0)

Type | [Info](#) Protocol | [Info](#) Port range | [Info](#)

ssh TCP 22

Remove

Source type | [Info](#) Source | [Info](#) Description - optional | [Info](#)

Anywhere Add CIDR, prefix list or security group e.g. SSH for admin desktop

0.0.0.0/0 X

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

Add security group rule

▼ Summary

Number of instances | [Info](#)

1

Software Image (AMI)

Canonical, Ubuntu, 24.04, amd6... [read more](#)

ami-0ecb6299516bb549

Virtual server type (instance type)

t3.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Cancel [Launch instance](#) [Preview code](#)

## Step 11: In configure storage give 8GB and give number of instances as 2 and click on launch instance

The screenshot shows the AWS EC2 'Launch an Instance' configuration page. In the 'Configure storage' section, there is a warning about security group rules and an 'Add security group rule' button. The storage configuration shows 1x 8 GiB gp3 volume selected. The 'Number of instances' dropdown is set to 2. In the 'Software Image (AMI)' section, it shows Canonical, Ubuntu, 24.04, amd64. The 'Virtual server type (instance type)' is t3.micro. The 'Launch instance' button is highlighted in orange.

## Step 12: The launching of instance will start and successful message will be shown

The screenshot shows the AWS EC2 'Launch an Instance' progress bar. It displays 'Creating security group rules' at 33% completion. Below the progress bar, a message reads: 'Please wait while we launch your instance. Do not close your browser while this is loading.'

The screenshot shows the AWS EC2 'Launch an instance' success page. It displays a green success message: 'Successfully Initiated launch of instances (i-0f868fed463f89656, i-0a5aa6fe5d0039e34)'. Below the message, there is a 'Launch log' link. The 'Next Steps' section contains several links: 'Create billing usage alerts', 'Connect to your instance', 'Connect an RDS database', 'Create EBS snapshot policy', 'Manage detailed monitoring', 'Create Load Balancer', 'Create AWS budget', and 'Manage CloudWatch alarms'. At the bottom, there are links for 'CloudShell', 'Feedback', and 'Cookie preferences'.

Step 13: In the instances the created ones will be shown, you can also rename the instance , changed week-1222 to “webapp”

The screenshot shows the AWS EC2 Instances page. On the left sidebar, under the 'Instances' section, the instance 'week-122' is listed with the ID i-0d69dc97b6767aaaf. It is currently terminated. The instance 'webapp' (ID i-0f868f6d463f89656) is selected and is currently running. The 'Details' tab for 'i-0f868f6d463f89656 (webapp)' is open, displaying its Public IPv4 address (13.222.21.231), Private IP (172.31.9.83), and Public DNS (ec2-13-222-21-231.compute-1.amazonaws.com).

Step 14: click on connect and select “SSH Client” and copy the ssh command

The screenshot shows the 'Connect' dialog for the instance 'i-0f868f6d463f89656'. The 'SSH client' tab is selected. The dialog displays the copied SSH command: ssh -i "week-122.pem" ubuntu@ec2-13-222-21-231.compute-1.amazonaws.com. A note at the bottom states: 'Note: In most cases, the guessed username is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username.'

Step 15: Navigate to the path where the file with .pem extension is present(week-122.pem) and paste the command

```
PS C:\Users\User\downloads> ssh -i "week-122.pem" ubuntu@ec2-13-222-21-231.compute-1.amazonaws.com
The authenticity of host 'ec2-13-222-21-231.compute-1.amazonaws.com (13.222.21.231)' can't be established.
ED25519 key fingerprint is SHA256:NEGegchQjt8om/1AVL5qfmafnMphv5Ad4A1Mwo8qECo.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-13-222-21-231.compute-1.amazonaws.com' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.3 LTS (GNU/Linux 6.14.0-1015-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

System information as of Tue Nov 11 05:50:06 UTC 2025

  System load: 0.08      Temperature:      -273.1 C
  Usage of /: 25.9% of 6.71GB  Processes:        118
  Memory usage: 24%          Users logged in:   0
  Swap usage:  0%           IPv4 address for ens5: 172.31.9.83

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-9-83:~$
```

Step 16: check the docker and git version

If they are not present, then go to administrative terminal using command

“sudo su”

Then update using the command “sudo apt-get update”

```

ubuntu@ip-172-31-9-83:~$ docker --version
Command 'docker' not found, but can be installed with:
sudo snap install docker      # version 28.4.0, or
sudo snap install docker      # version 28.1.1+1
sudo apt install docker.io    # version 28.2.2-0ubuntu1~24.04.1
sudo apt install podman-docker # version 4.9.3+ds1-1ubuntu0.2
See 'snap info <snapname>' for additional versions.
ubuntu@ip-172-31-9-83:~$ git --version
git version 2.43.0
ubuntu@ip-172-31-9-83:~$ sudo su
root@ip-172-31-9-83:/home/ubuntu# sudo apt-get update

```

### Step 17: use command “sudo apt-get install docker.io” to install docker

```

Get:50 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [212 B]
Get:51 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Packages [27.4 kB]
Get:52 http://security.ubuntu.com/ubuntu noble-security/multiverse Translation-en [5708 B]
Get:53 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [212 B]
Get:54 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 c-n-f Metadata [384 B]
Fetched 38.6 MB in 6s (6197 kB/s)
Reading package lists... Done
root@ip-172-31-9-83:/home/ubuntu# sudo apt-get install docker.io
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
bridge-utils containerd dns-root-data dnsmasq-base pigz runc ubuntu-fan
Suggested packages:
ifupdown aufs-tools cgroupfs-mount | cgroup-lite debootstrap docker-buildx docker-compose-v2 docker-doc rinse
zfs-fuse | zfsutils
The following NEW packages will be installed:
bridge-utils containerd dns-root-data dnsmasq-base docker.io pigz runc ubuntu-fan
0 upgraded, 8 newly installed, 0 to remove and 10 not upgraded.
Need to get 76.0 MB of archives.
After this operation, 284 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/universe amd64 pigz amd64 2.8-1 [65.6 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble/main amd64 bridge-utils amd64 1.7.1-1ubuntu2 [33.9 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 runc amd64 1.3.3-0ubuntu1~24.04.2 [8815 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 containerd amd64 1.7.28-0ubuntu1~24.04.1 [38.4 MB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dns-root-data all 2024071801~ubuntu0.24.04.1 [5918 B]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dnsmasq-base amd64 2.90-2ubuntu0.1 [376 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 docker.io amd64 28.2.2-0ubuntu1~24.04.1 [28.3 MB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/universe amd64 ubuntu-fan all 0.12.16+24.04.1 [34.2 kB]
Fetched 76.0 MB in 1s (81.3 MB/s)
Preconfiguring packages ...
Selecting previously unselected package pigz.
(Reading database ... 71735 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.8-1_amd64.deb ...
Unpacking pigz (2.8-1) ...
Selecting previously unselected package bridge-utils.
Preparing to unpack .../1-bridge-utils_1.7.1-1ubuntu2_amd64.deb ...
Unpacking bridge-utils (1.7.1-1ubuntu2) ...
Selecting previously unselected package runc.
Preparing to unpack .../2-runc_1.3.3-0ubuntu1~24.04.2_amd64.deb ...
Unpacking runc (1.3.3-0ubuntu1~24.04.2)

```

Step 18: Clone the git repo that has maven project and change to that directory

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
root@ip-172-31-9-83:/home/ubuntu# git clone https://github.com/Gayathri2608-hub/maven-practice.git  
Cloning into 'maven-practice'...  
remote: Enumerating objects: 60, done.  
remote: Counting objects: 100% (60/60), done.  
remote: Compressing objects: 100% (40/40), done.  
remote: Total 60 (delta 11), reused 34 (delta 2), pack-reused 0 (from 0)  
Receiving objects: 100% (60/60), 13.39 KiB | 3.35 MiB/s, done.  
Resolving deltas: 100% (11/11), done.  
root@ip-172-31-9-83:/home/ubuntu# ls  
maven-practice  
root@ip-172-31-9-83:/home/ubuntu# cd maven-practice  
root@ip-172-31-9-83:/home/ubuntu/maven-practice# ls  
Dockerfile demo pom.xml readme src target  
root@ip-172-31-9-83:/home/ubuntu/maven-practice#
```

Step 19: change to the project directory and check for Dockerfile, if not present create the Dockerfile – “nano Dockerfile” and then build the image

“sudo docker build -t image\_name .” name of image:img1

```
root@ip-172-31-9-83:/home/ubuntu/maven-practice# ls  
Dockerfile demo pom.xml readme src target  
root@ip-172-31-9-83:/home/ubuntu/maven-practice# sudo docker build -t dep1 .  
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.  
Install the buildx component to build images with BuildKit:  
https://docs.docker.com/go/buildx/  
 Sending build context to Docker daemon 120.8kB  
Step 1/4 : FROM tomcat:9.0  
 9.0: Pulling from library/tomcat  
4b3ffd8ccb52: Pulling fs layer  
b48f960b380d: Pulling fs layer  
58424d8c3e86: Pulling fs layer  
4f4fb700ef54: Pulling fs layer  
37b617836889: Pulling fs layer  
891b6ad931b7: Pulling fs layer  
ac0beccecf50: Pulling fs layer  
4f4fb700ef54: Waiting  
37b617836889: Waiting  
891b6ad931b7: Waiting  
ac0beccecf50: Waiting  
b48f960b380d: Verifying Checksum  
b48f960b380d: Download complete  
4b3ffd8ccb52: Verifying Checksum  
4b3ffd8ccb52: Download complete  
4f4fb700ef54: Verifying Checksum  
4f4fb700ef54: Download complete  
37b617836889: Verifying Checksum  
37b617836889: Download complete  
891b6ad931b7: Verifying Checksum  
891b6ad931b7: Download complete  
ac0beccecf50: Verifying Checksum  
ac0beccecf50: Download complete  
58424d8c3e86: Verifying Checksum  
58424d8c3e86: Download complete  
4b3ffd8ccb52: Pulling fs layer
```

Step 20: Run the image “sudo docker run -d -p 8081:8080 img1”

```
root@ip-172-31-9-83:/home/ubuntu/ar/maven-practice# sudo docker run -d -p 8081:8080 img1
c5fd91cf9a9b4f0625d4d2c0d896406e8da76929ed75a3f9ccc1699fbbb08535
root@ip-172-31-9-83:/home/ubuntu/ar/maven-practice#
```

Step 21: Check the images and the containers

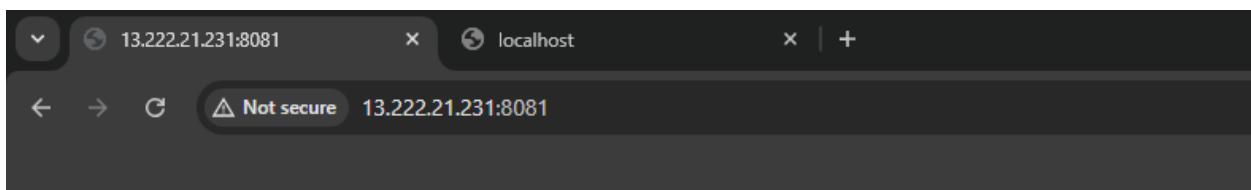
```
root@ip-172-31-9-83:/home/ubuntu/ar/maven-practice# sudo docker images
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE
img1            latest    a67a112ce8ac  2 minutes ago  413MB
dep1            latest    28efbe56e633  29 minutes ago  413MB
tomcat          9.0      2e4887a16e43  12 hours ago   413MB
root@ip-172-31-9-83:/home/ubuntu/ar/maven-practice# docker ps
CONTAINER ID   IMAGE      COMMAND      CREATED      STATUS      PORTS
              NAMES
c5fd91cf9a9b  img1      "catalina.sh run"  About a minute ago  Up About a minute  0.0.0.0:8081->8080/tcp, [::]:8081->8080/tcp  charming_banzai
84e7f9ce5ec2  dep1      "catalina.sh run"  9 minutes ago   Up 9 minutes  0.0.0.0:8080->8080/tcp, [::]:8080->8080/tcp  angry_shaw
b62aedc8bb3b  dep1      "catalina.sh run"  27 minutes ago  Up 27 minutes  0.0.0.0:7070->8080/tcp, [::]:7070->8080/tcp  sweet_archimedes
root@ip-172-31-9-83:/home/ubuntu/ar/maven-practice#
```

Step 22: Take the public IP address from the instances in AWS and open it in chrome along with the port number mapped.

Public IP- 13.222.21.231

Port used: 8081

Use: 13.222.21.231:8081, you will find your application that is deployed



**Hello World! practice**