



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
(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)**

LAB RECORD

SOFTWARE ENGINEERING LAB

B. Tech. III YEAR I SEM (KR23)

**ACADEMIC YEAR
2025-26**



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Narayanguda, Hyderabad, Telangana – 500029**



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



KESHAV MEMORIAL INSTITUTE OF TECHNOLOGY (AN AUTONOMOUS INSTITUTION)



NBA
National Board

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Narayanguda, Hyderabad, Telangana – 500029**

Daily Laboratory Assessment Sheet

Name of the Lab:
Branch & Section:

Student Name:
HT. No:

Faculty Incharge

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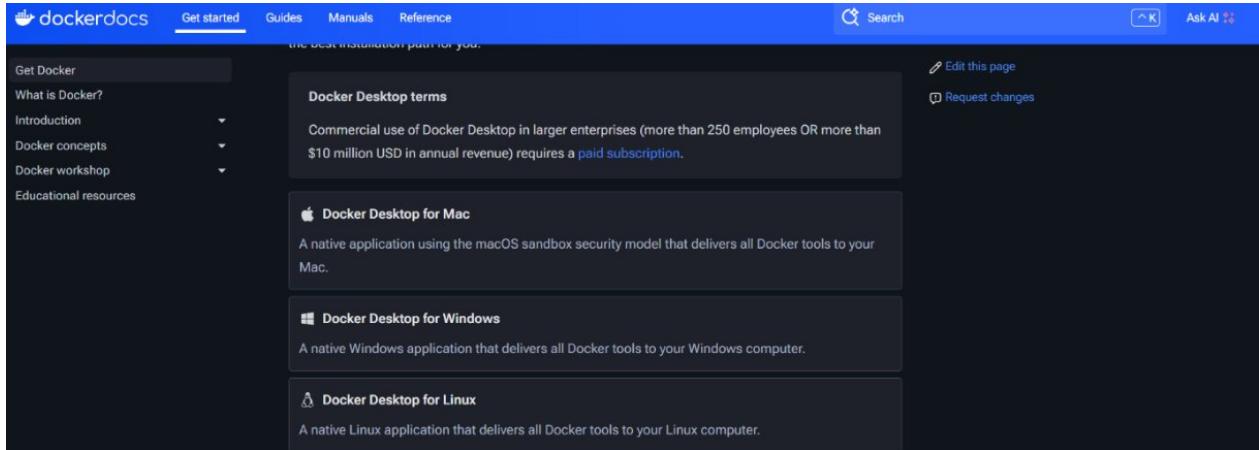
Sr. NO.	CONTENTS	PAGE NO.
1.	<p>Software Installation & SRS Document</p> <ul style="list-style-type: none"> a. Abstract b. Functional Requirements (FR) c. Non-Functional Requirements (NFR) d. User Identification e. Workflow of Each User f. Use Cases 	
2.	<p>Exploring git local and remote commands on the multi-folder project</p> <ul style="list-style-type: none"> a. Pushing multi-folder project into private repository (by student). b. Students must explore all listed git commands on the multi-folder project in local and remote repository. c. Students must explore all git commands on given scenario-based question 	
3.	<p>Collaborative coding using git</p> <ul style="list-style-type: none"> a. To work on collaborative coding by: b. Creating Organization. c. Coordinating with others through a shared repository d. To resolve conflicts when collaborating on same part of code. e. To create and apply patch. 	
4.	<p>Build and package Java and Web applications using Maven</p> <ul style="list-style-type: none"> a. Understand the structure and lifecycle of a Maven project. b. Build and package Java and Web applications using Maven. c. Add dependencies using pom.xml, compile and test using plugins. d. Resolve errors and conflicts arising from dependency mismatches. e. Work with parent and multi-module Maven projects. f. Generate executable JARs and deployable WARs using Maven. 	
5.	<p>Docker CLI commands</p> <ul style="list-style-type: none"> a. Learn how to pull, run, stop, start, remove, and inspect containers and images. b. Gain the ability to create, monitor, and troubleshoot running containers. c. Configure and manage networks for container communication. d. Create and manage persistent storage for containers. e. Learn how to list, remove, and manage images efficiently. 	
6.	<p>Docker</p> <ul style="list-style-type: none"> a. Learn how to define and run multiple interdependent services (e.g., web server, database) in a single configuration file. 	

	<ul style="list-style-type: none"> b. Gain skills in writing and interpreting docker-compose.yml files for service setup. c. Deploy the same setup across different machines without manual configuration. d. Configure container networking and persistent storage within Compose. e. Reduce setup time and enable faster iteration during application development. 	
7.	<p><u>Creating a Multi-Module Maven Project</u></p> <ul style="list-style-type: none"> a. Build and package Java and Web applications using Maven. b. Add dependencies using pom.xml, compile and test using plugins. c. Resolve errors and conflicts arising from dependency mismatches. d. Work with parent and multi-module Maven projects. e. Generate executable JARs and deployable WARs using Maven 	
8.	<p><u>Jenkins Automation</u></p> <ul style="list-style-type: none"> a. Hands-on practice on manual creation of Jenkins pipeline using Maven projects from Github b. Create the job and build the pipeline for maven-java and maven-web project. 	
9.	<p><u>Pipeline Creation using script</u></p> <ul style="list-style-type: none"> a. Evaluation of Jenkins pipeline. b. WORKING ON BUILD TRIGGERS FOR LAST JENKINS PIPILINE c. Hands-on practice on creation of scripted Jenkins pipeline. d. Take the screenshots for above task 	
10.	<p><u>Working with minikube and Nagios</u></p> <ul style="list-style-type: none"> a. Hands-on practice of creating, running and scaling pods in minikube. b. Running Nginx server on specified port number by explaining the Nginx monitoring tool c. Running Nagios server and Understanding the Monitoring tool using Docker. d. AWS-free Trier account Creation steps 	
11.	<p><u>Jenkins-CI/CD</u></p> <ul style="list-style-type: none"> a. CI-Continuous Integration using Webhooks. b. Sending E-mail Notification on Build Failure or success 	
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1. Software Installation & SRS Document:

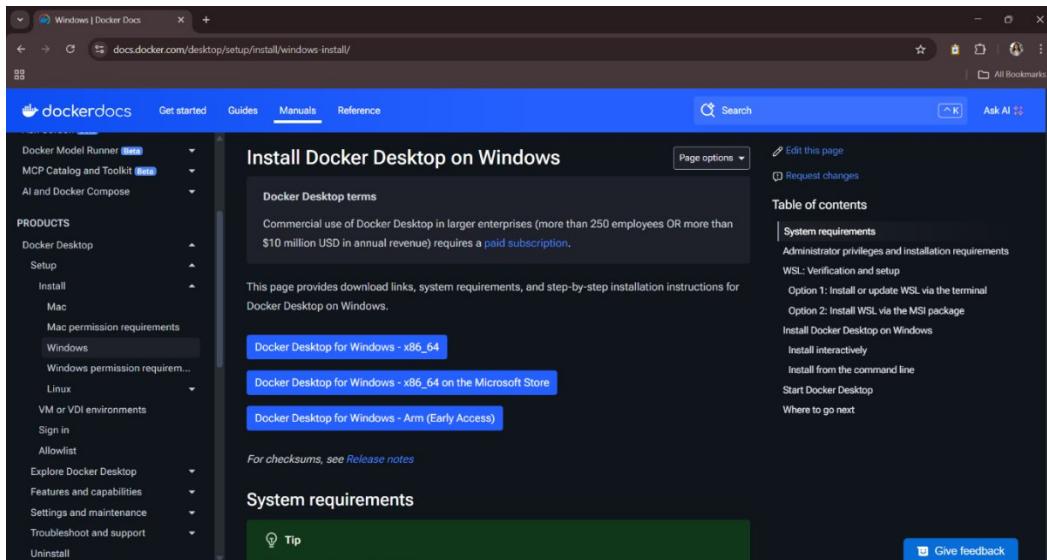
DOCKER- INSTALLATION

Step-1: Go to docker website

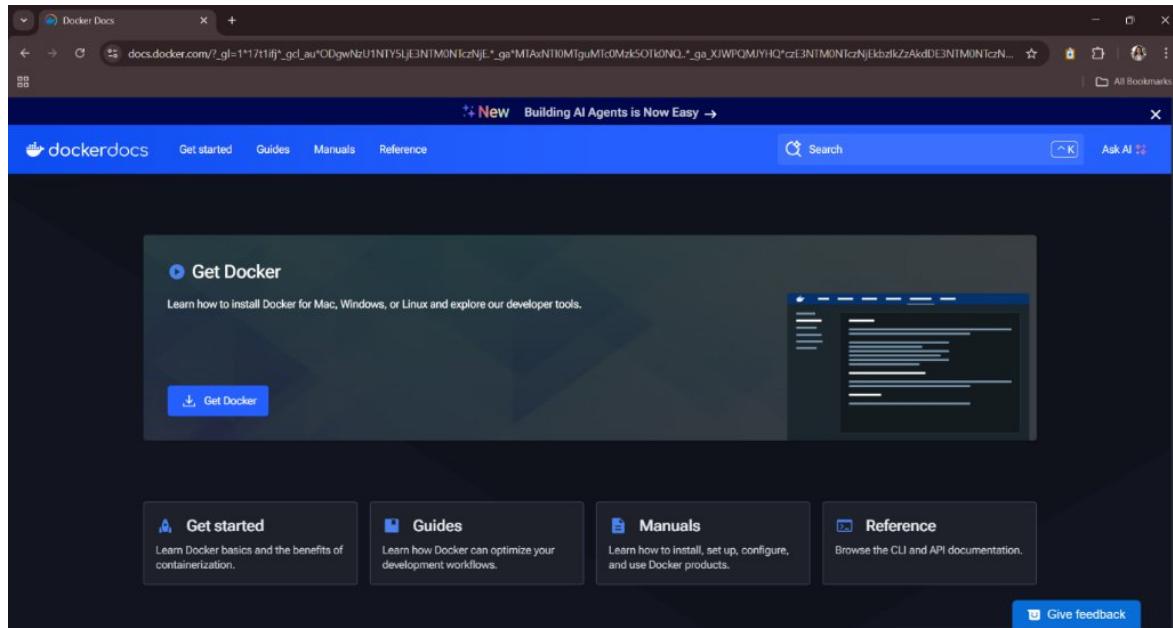


The screenshot shows the Docker Docs website with a dark theme. On the left, there's a sidebar titled 'Get Docker' containing links like 'What is Docker?', 'Introduction', 'Docker concepts', 'Docker workshop', and 'Educational resources'. The main content area has a heading 'Docker Desktop terms' with a note about commercial use requiring a paid subscription. Below it are three sections: 'Docker Desktop for Mac', 'Docker Desktop for Windows', and 'Docker Desktop for Linux', each with a brief description.

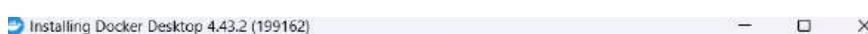
Step-2: Select the suitable one for your system



The screenshot shows the 'Install Docker Desktop on Windows' page from the Docker Docs website. The left sidebar includes 'Docker Model Runner', 'MCP Catalog and Toolkit', 'AI and Docker Compose', and a 'PRODUCTS' section with 'Docker Desktop' expanded to show 'Install', 'Mac', 'Windows', and 'Linux'. The main content area has a heading 'Install Docker Desktop on Windows' with a note about commercial use. It lists download links for '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 is also present.

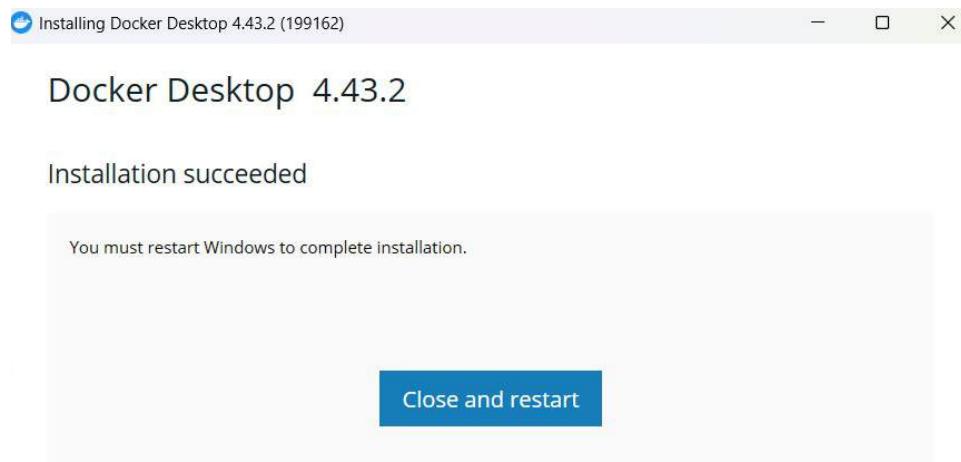


Step-3: After clicking on get docker it starts initializing

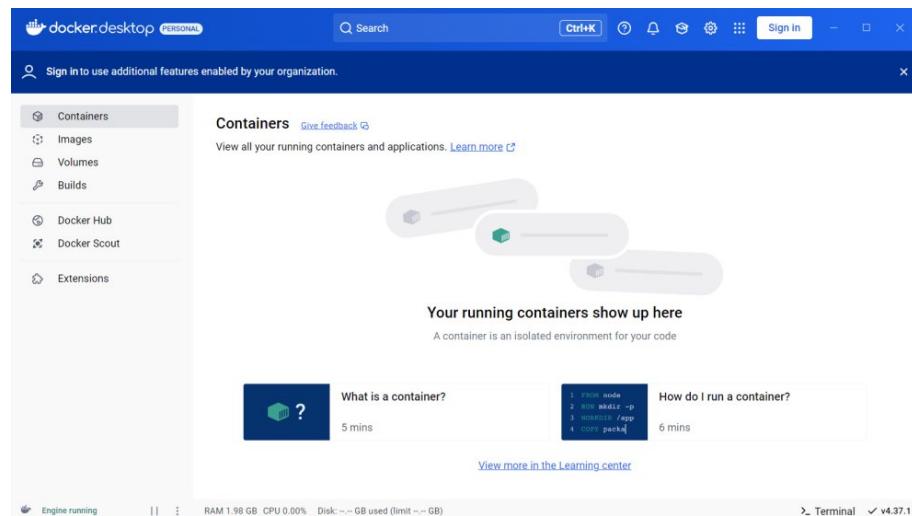


```
Unpacking file: resources/docker-desktop.iso
Unpacking file: resources/ddvp.ico
Unpacking file: resources/config-options.json
Unpacking file: resources/componentsVersion.json
Unpacking file: resources/bin/docker-compose
Unpacking file: resources/bin/docker
Unpacking file: resources/.gitignore
Unpacking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

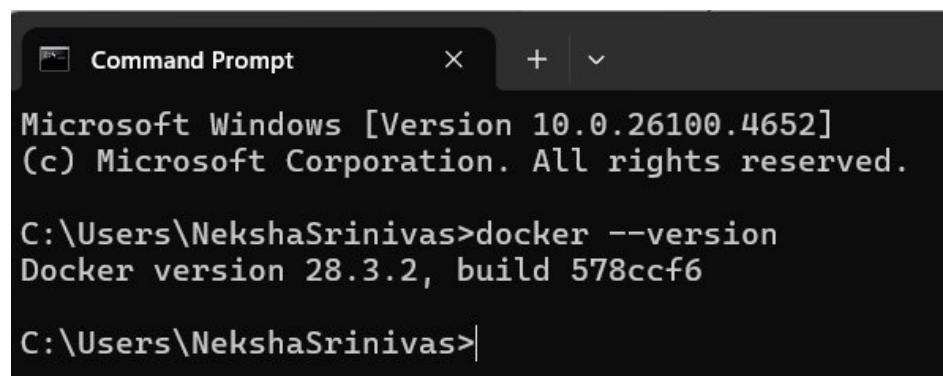
Step-4: Installation successful



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



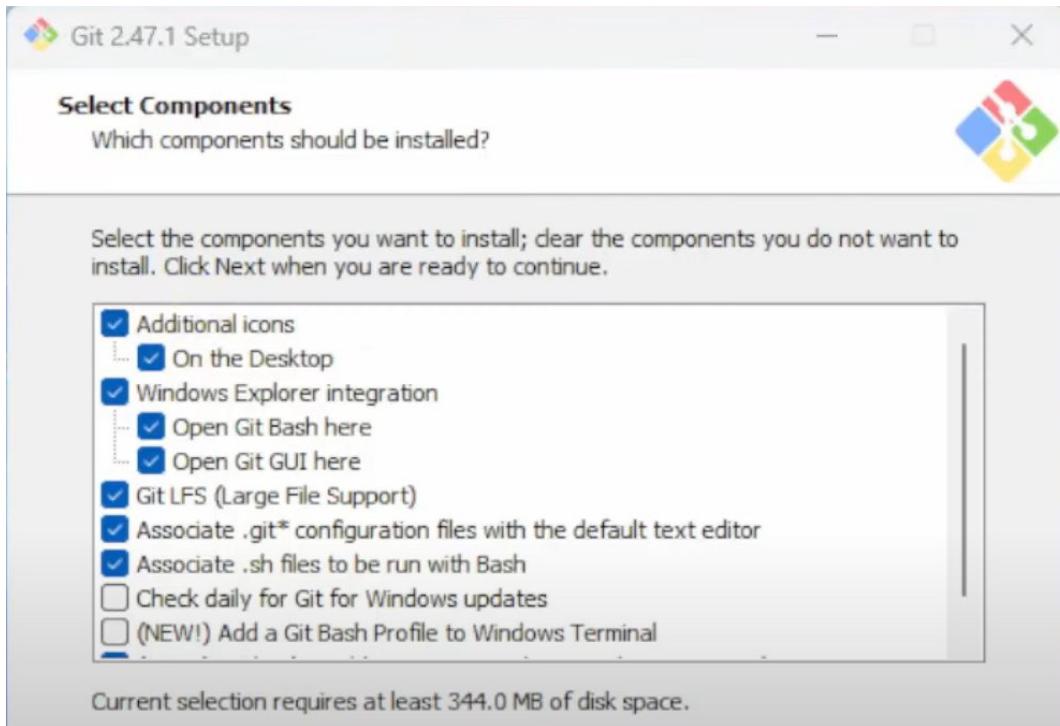
Step-3: Download for windows(suitable one for your system)



Step-4: License will be displayed click on next

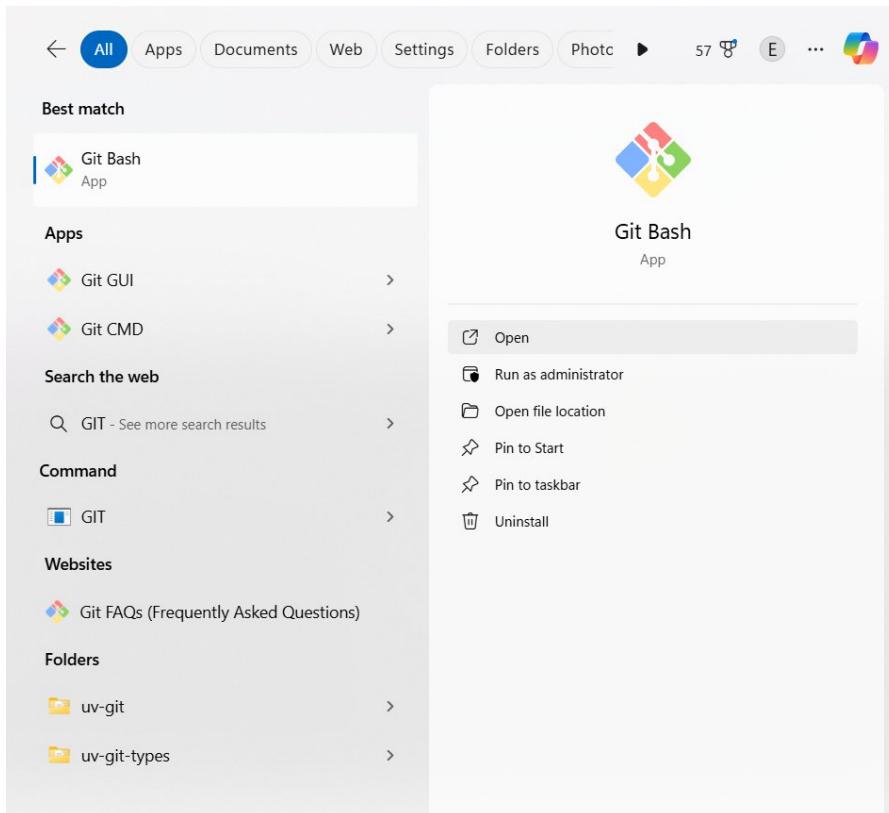


Step-5: Select the components and click next



Git bash:

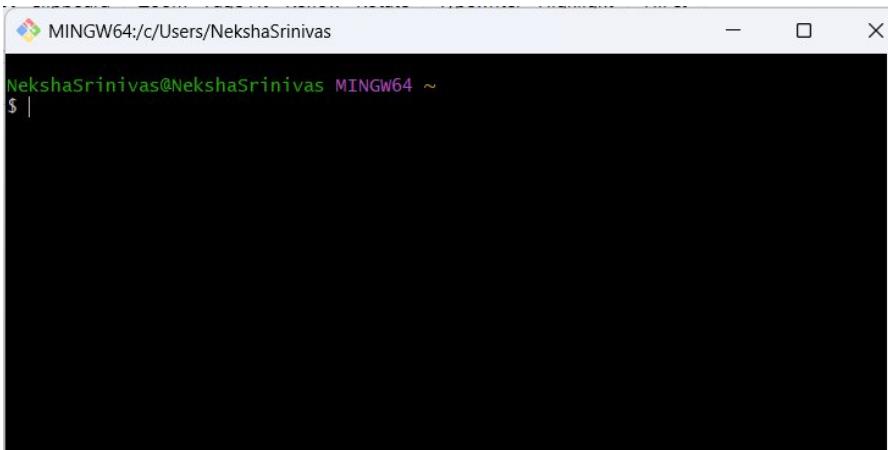
Step-1: Go to search bar and click git bash



Step-2: Click on finish



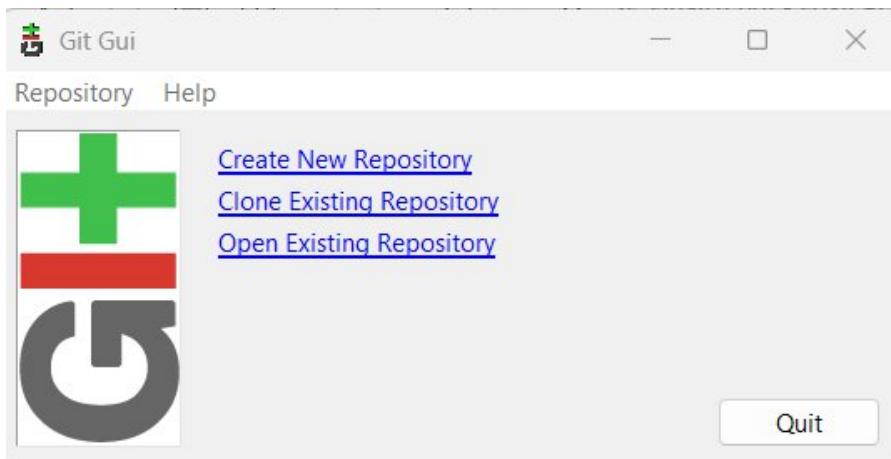
Step-3: git bash interface



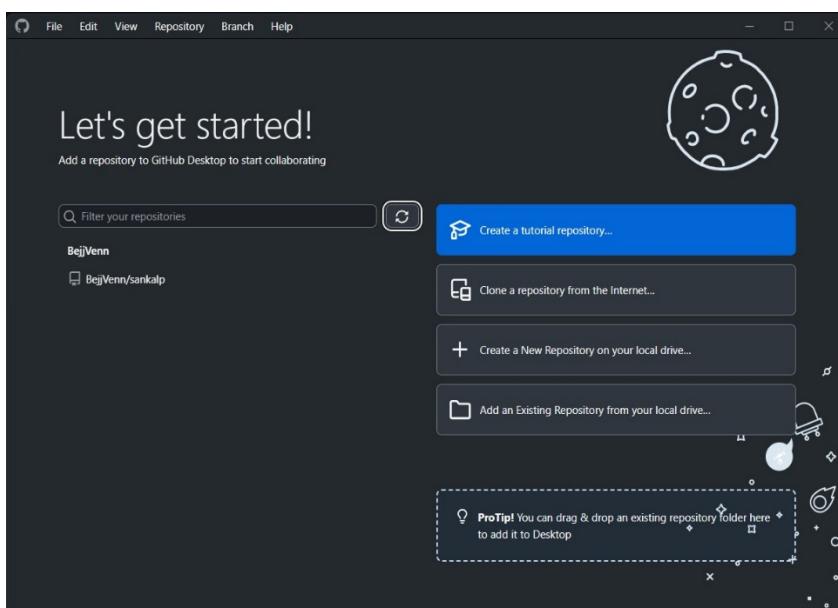
```
MINGW64:c/Users/NekshaSrinivas
```

```
NekshaSrinivas@NekshaSrinivas MINGW64 ~
```

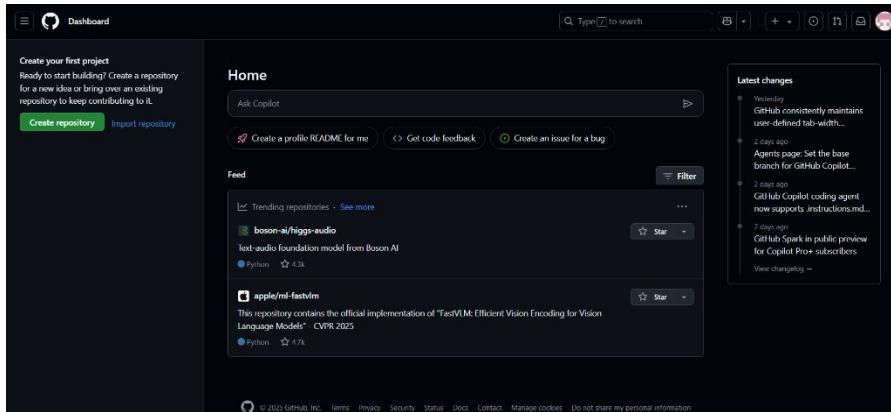
```
$ |
```



GIT-ACCOUNT



GIT-ACCOUNT



Tomcat

A screenshot of the Apache Tomcat 9.0.98 homepage. The URL in the browser 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, First Web Application, Realms & AAA, JDBC DataSources, Examples, Servlet Specifications, and Tomcat Versions); 'Managing Tomcat' (with information about manager webapp access and a link to \$CATALINA_HOME/conf/tomcat-users.xml); 'Documentation' (links to Tomcat 9.0 Documentation, Tomcat 9.0 Configuration, and Tomcat Wiki); 'Getting Help' (links to tomcat-announce, tomcat-users, taglibs-user, and tomcat-dev mailing lists); and a footer section with links to Other Downloads, Other Documentation, Get Involved, Miscellaneous, and the Apache Software Foundation.

Java and maven versions

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

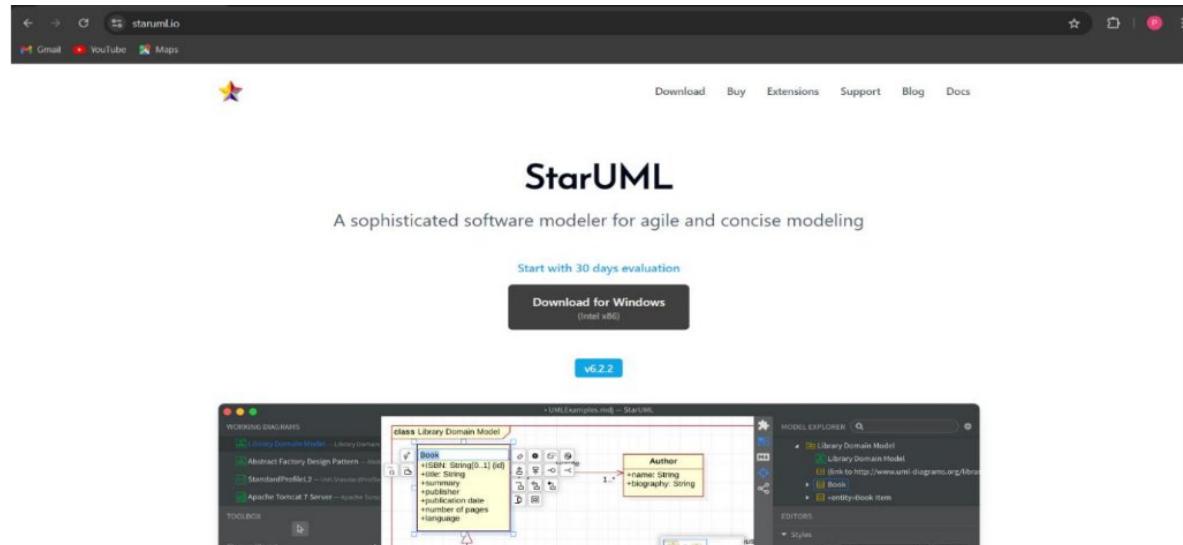
C:\Users\User>java --version
java 21.0.5 2024-10-15 LTS
Java(TM) SE Runtime Environment (build 21.0.5+9-LTS-239)
Java HotSpot(TM) 64-Bit Server VM (build 21.0.5+9-LTS-239, mixed mode, sharing)

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



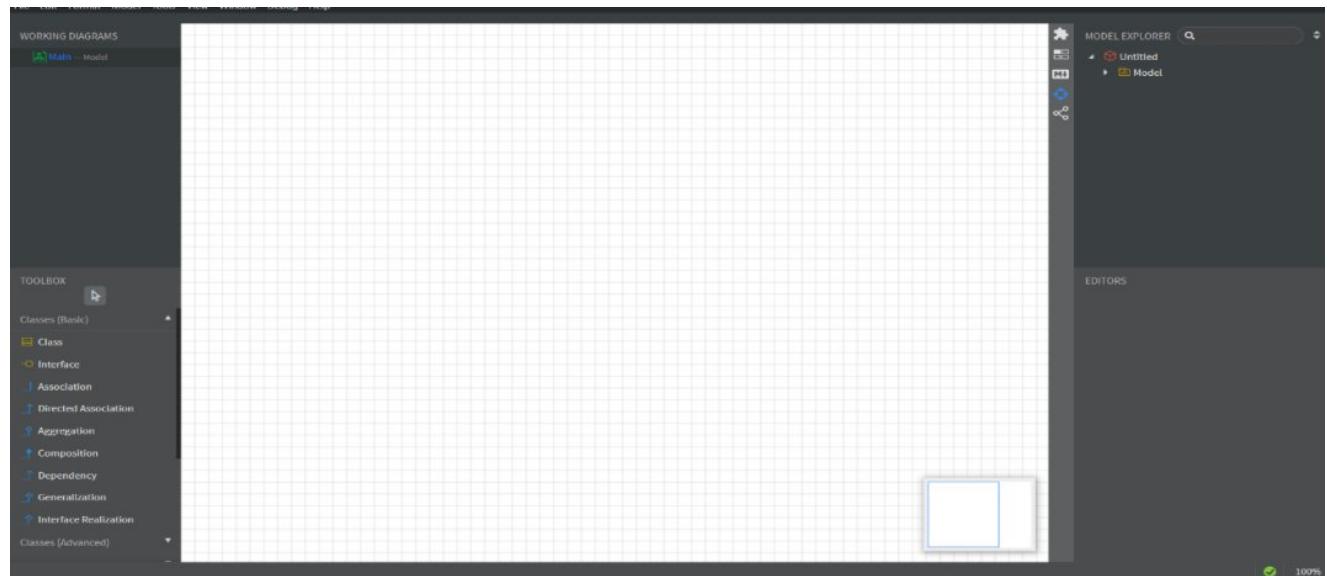
Step-2: from the given options select the suitable one for your system

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 section titled "Download" with the sub-section "Start with 30 days evaluation". A blue button labeled "v6.2.2" is prominently displayed. Below this, there are three main sections for 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



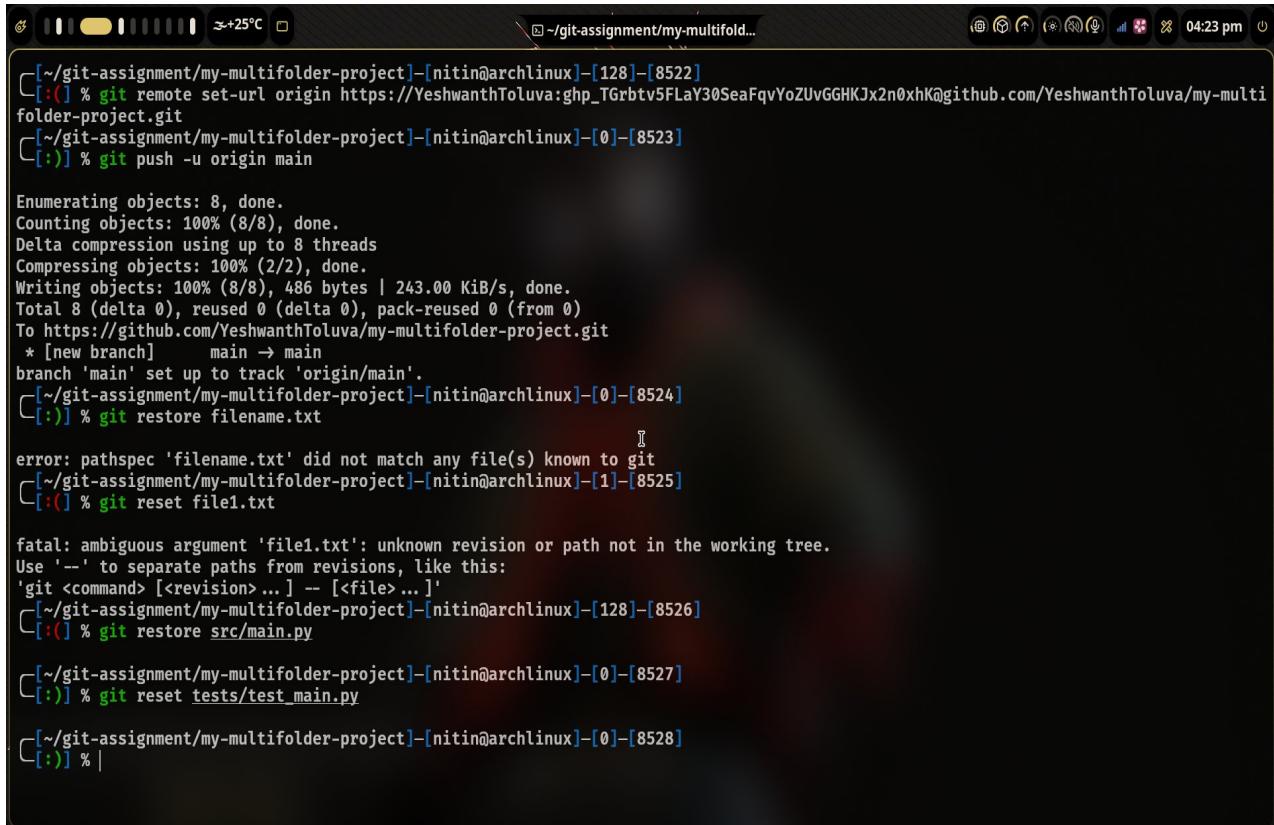
2. Exploring git local and remote commands on the multi-folder project

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



The screenshot shows a terminal window on Arch Linux with the following session:

```
[~/.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

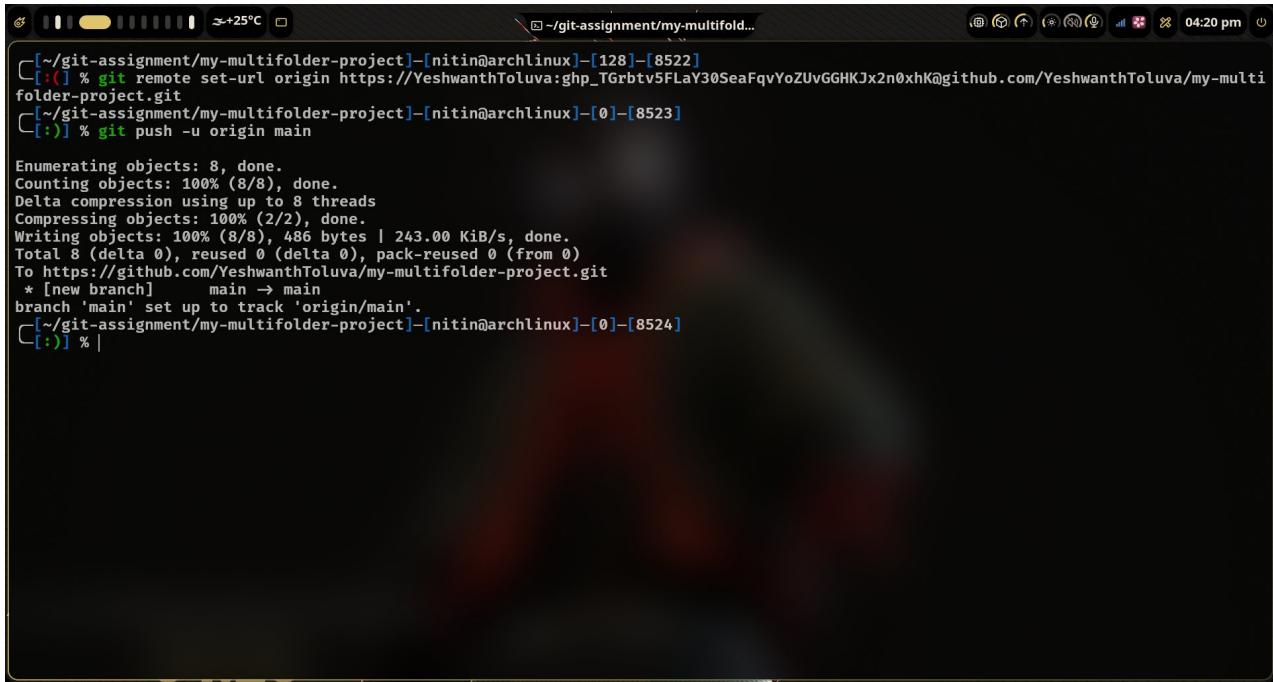
fatal: ambiguous argument 'file1.txt': unknown revision or path not in the working tree.
Use '--' to separate paths from revisions, like this:
'git <command> [<revision> ...] -- [<file> ...]'

[~/.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 on Arch Linux. The title bar shows the path: ~/git-assignment/my-multifolder... . The terminal output is as follows:

```
[~/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
[~/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]
[::] % |
```

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 page for 'se-lab-kmit'. The 'People' tab is selected, displaying three members: Edigirala Neksha, Varshith-666, and YeshwanthToluva. Each member's profile includes their GitHub icon, name, role (Member or Owner), and team count (0 teams). A message at the top encourages users to enable two-factor authentication.

GitHub Repository Overview - LocalHunt-01 Private Repository

The screenshot shows the GitHub repository page for 'LocalHunt-01'. The 'Code' tab is selected, displaying the main branch ('main'), 1 branch, and 0 tags. The repository has 1 commit by 'YeshwanthToluva' with the message 'Initial commit' and timestamp '2330a42 · now'. The 'About' section contains the description 'TEsting the private repo of the organization'. The 'Releases' section indicates 'No releases published'.

Terminal Git Clone Operations - LocalHunt-01 Repository Setup

```

File Edit View Go Bookmarks Help
< > ^ _ /home/nitin/Documents/3rd yr/se lab/ se lab Screenshots
Places Computer nitin Desktop Recent Trash Documents Music Pictures Videos Downloads
LocalHunt-01 ss Week_3_on_5_8_25_Uplad_with_fork_.docx
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
LSP -- 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

.../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] - [8728]
[::] % git clone https://YeshwanthToluva:ghp_GUcawTFSuFiiXUbmrjRjh781FPA2b4gYu8h@github.com/se-lab-kmit/LocalHunt-01.git
zsh: no such file or directory: @github.com/se-lab-kmit/LocalHunt-01.git
.../Documents/3rd yr/se lab - [nitin@archlinux] - [1] - [8729]
[::] % git clone https://YeshwanthToluva:ghp_GUcawTFSuFiiXUbmrjRjh781FPA2b4gYu8h@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
< > ^ _ /home/nitin/Documents/3rd yr/se lab/ss/ se lab Screenshots
Places Computer nitin Desktop Recent Trash Documents Music Pictures Videos Downloads
Screenshot_05-Aug_10-30-3 Screenshot_05-Aug_10-14-2 Screenshot_05-Aug_10-11-10 3_1569.png 0_722.png _16450.png
3 files; 2.7 MiB (2,785,074 bytes) | Free space: 10.5 GiB

.../3rd yr/se lab/LocalHunt-01
[~]/Documents/3rd yr/se lab/LocalHunt-01 - [nitin@archlinux] - [0] - [8732]
[::] % 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

```

File Edit View Go Bookmarks Help
Places Computer nitin Desktop Recent Trash Documents Music Pictures Videos Downloads Devices File System Windows Network Browse Network
SS Screenshots
Screenshot_05-Aug_10-38-32_17782.png Screenshot_05-Aug_10-30-3 Aug_10-14-2 Aug_10-11-10 2_17782.png 3_1569.png 0_7222.png _16450.png
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

The screenshot shows a GitHub repository page for 'simple-repo-se'. The repository is public and forked from 'imagec/simple-repo'. It has 1 branch and 0 tags. The master branch is up-to-date with 'imagec/simple-repo:master'. There is 1 commit from 'image_c' titled 'Simple-repo init' made 9 years ago. The repository has 0 stars, 0 forks, and 0 releases. The 'About' section describes it as a simple repo for assignment.

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

A screenshot of a terminal window on Arch Linux. The terminal shows a file browser window for the directory `/home/nitin/Documents/3rd yr/se lab/simple-repo-se`. The file browser lists several files and folders, including `ss`, `LocalHunt-01`, `simple-repo-se`, `Week_3_on_5_8_25_Uplaod_with_fork_.docx`, and `Screenshots`. The terminal itself displays a git session:

```
[~/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

A screenshot of a terminal window on Arch Linux. The terminal shows a file browser window for the directory `/home/nitin/Documents/3rd yr/se lab/simple-repo-se`. The file browser lists the same files and folders as the previous screenshot. The terminal displays a git session:

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

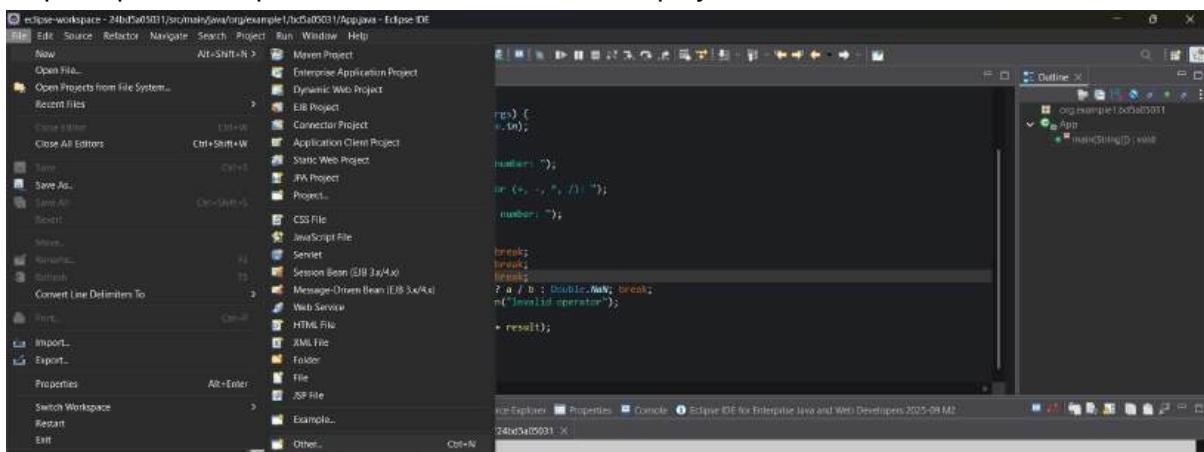
On branch feature/feat-1
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified: README.RD

[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

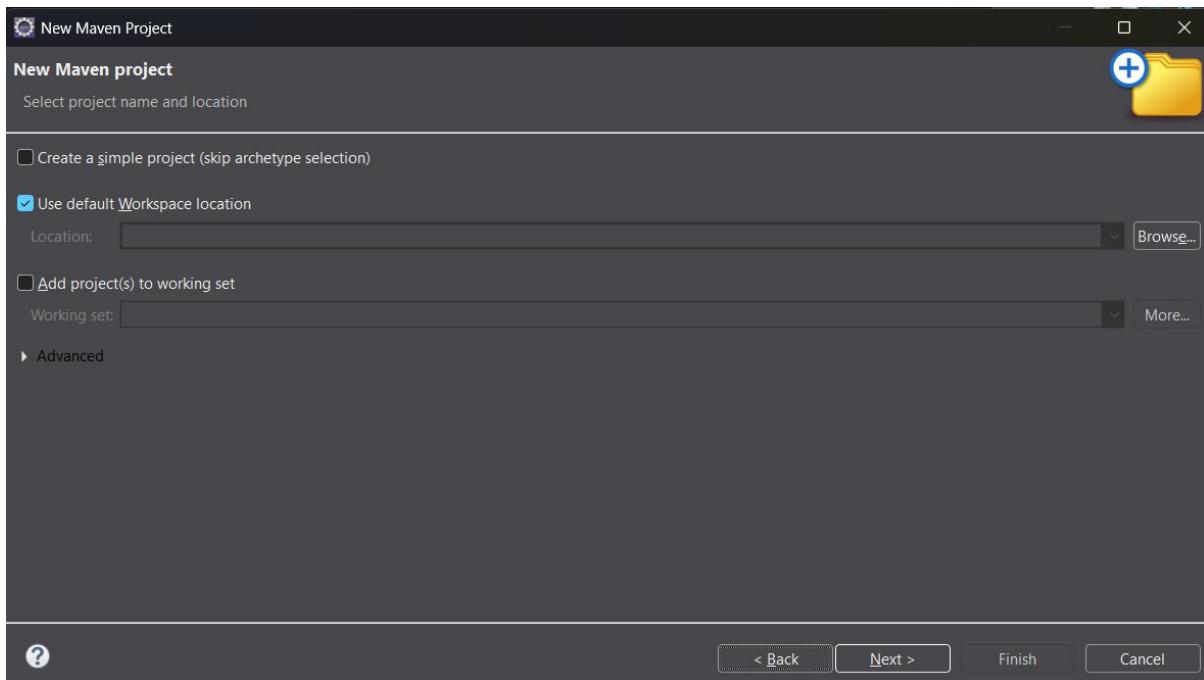
Username for 'https://github.com': YeshwanthToluva
Password for 'https://YeshwanthToluva@github.com':
Enumerating objects: 5, done.
Counting objects: 100% (5/5), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 383 bytes | 383.00 KiB/s, 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 vis
iting:
remote:   https://github.com/YeshwanthToluva/simple-repo-se/pull
/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

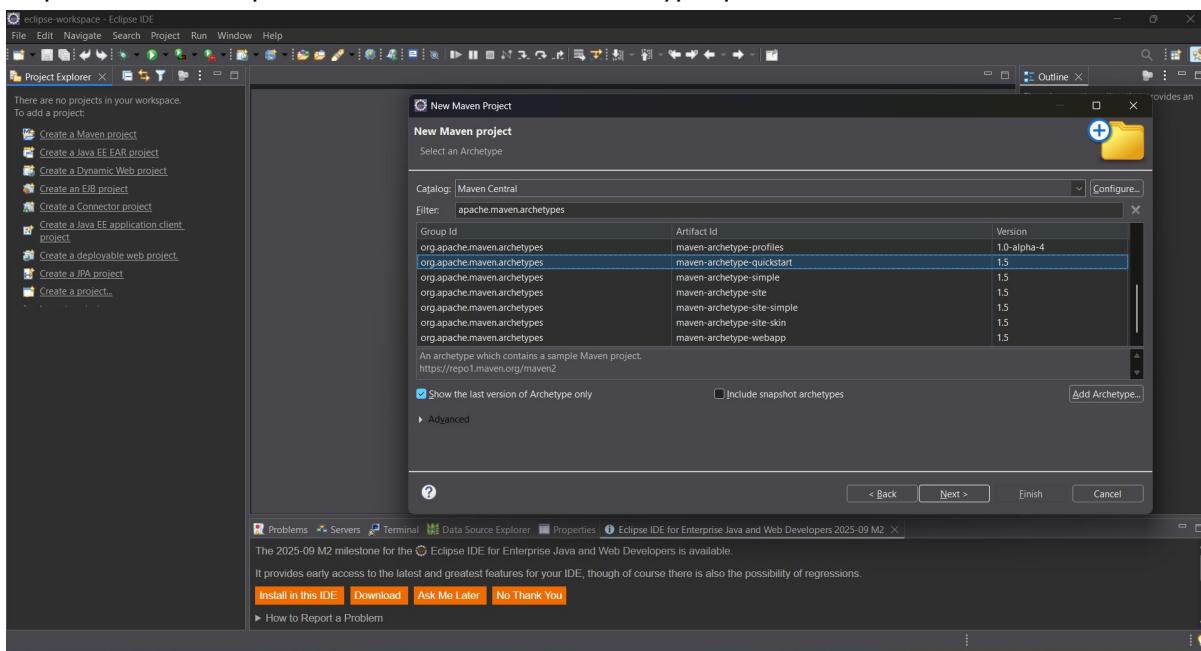
Step-1: Open the eclipse and click on file>new>Maven project



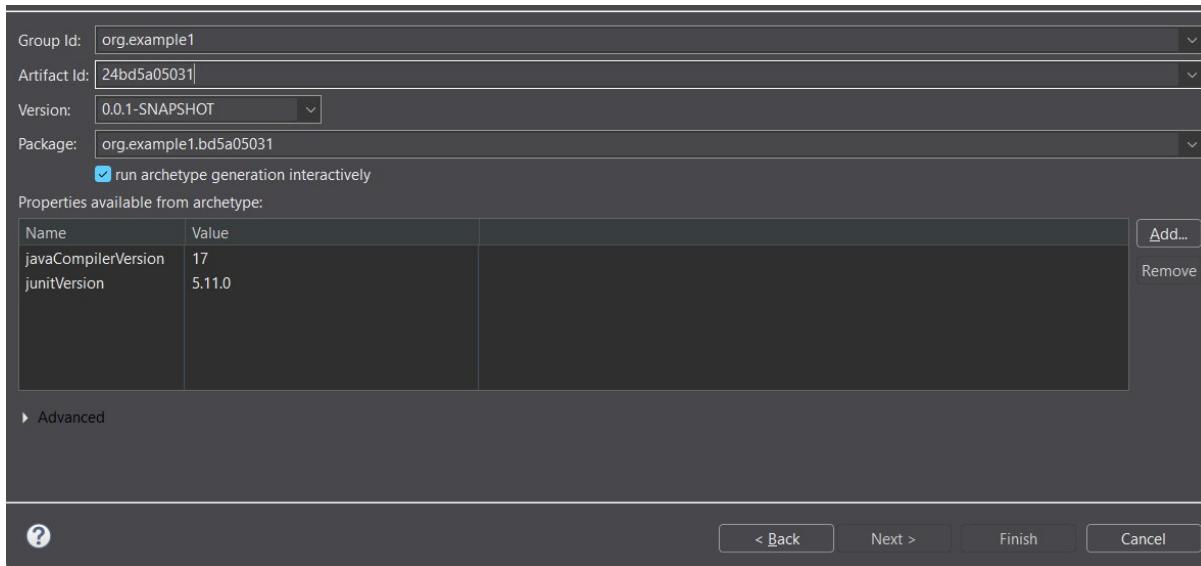
Step-2: select the default workspace and click on next



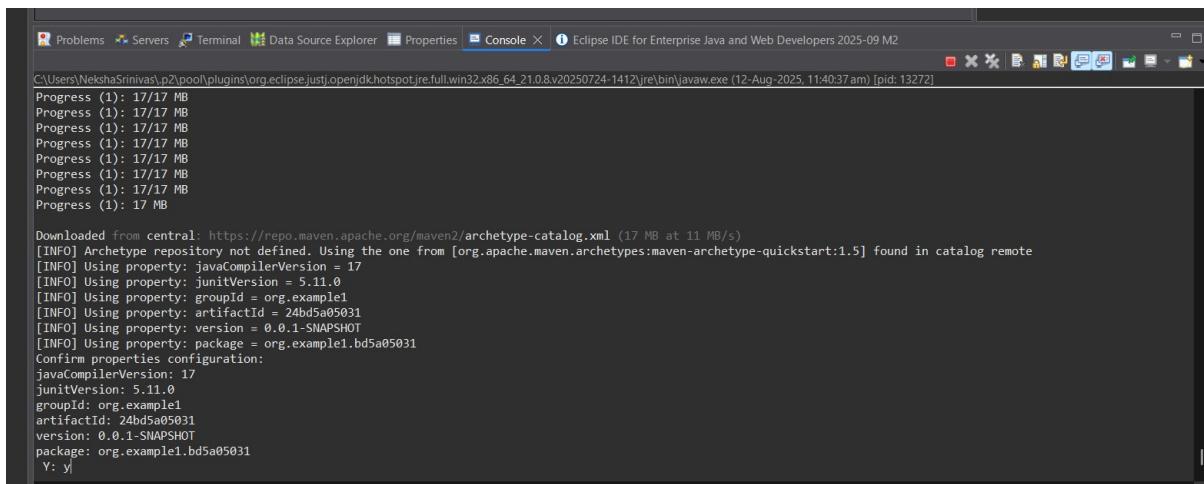
Step-3: in the filter option select the one maven-archetype-quickstart



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



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

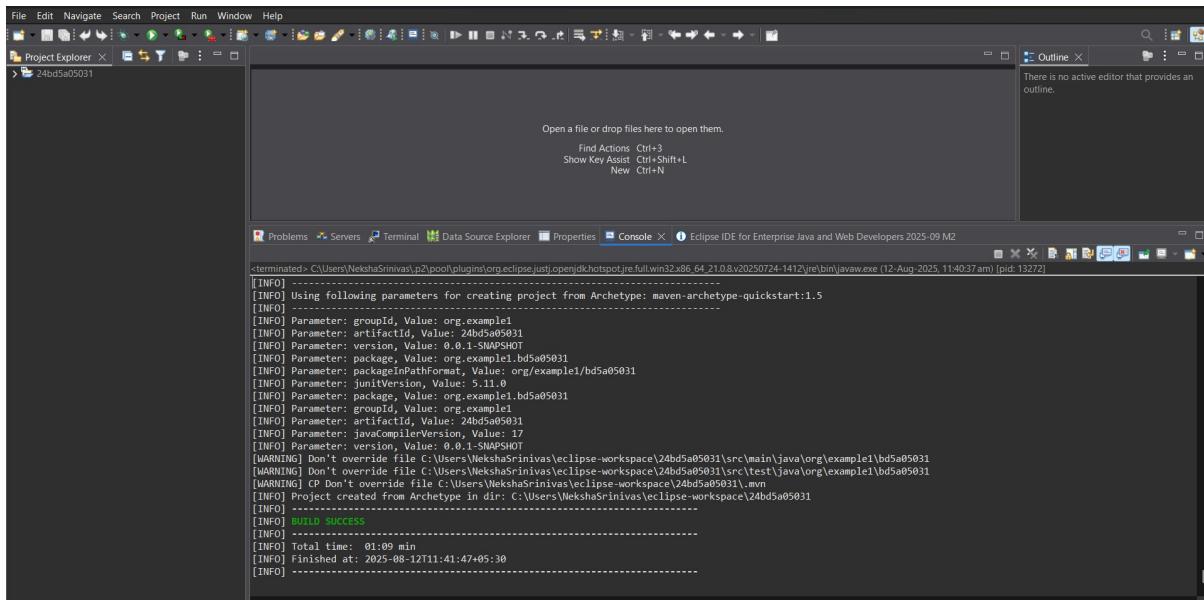


The screenshot shows the Eclipse IDE interface with the 'Console' tab selected. The output window displays the following text:

```
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



The screenshot shows the Eclipse IDE interface with the 'Console' tab selected. The output window displays the following text:

```
[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: javaVersion, Value: 17
[INFO] Parameter: packager, Value: org.example1.bd5a05031
[INFO] Parameter: groupId, Value: org.example1
[INFO] Parameter: artifactId, Value: 24bd5a05031
[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] 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

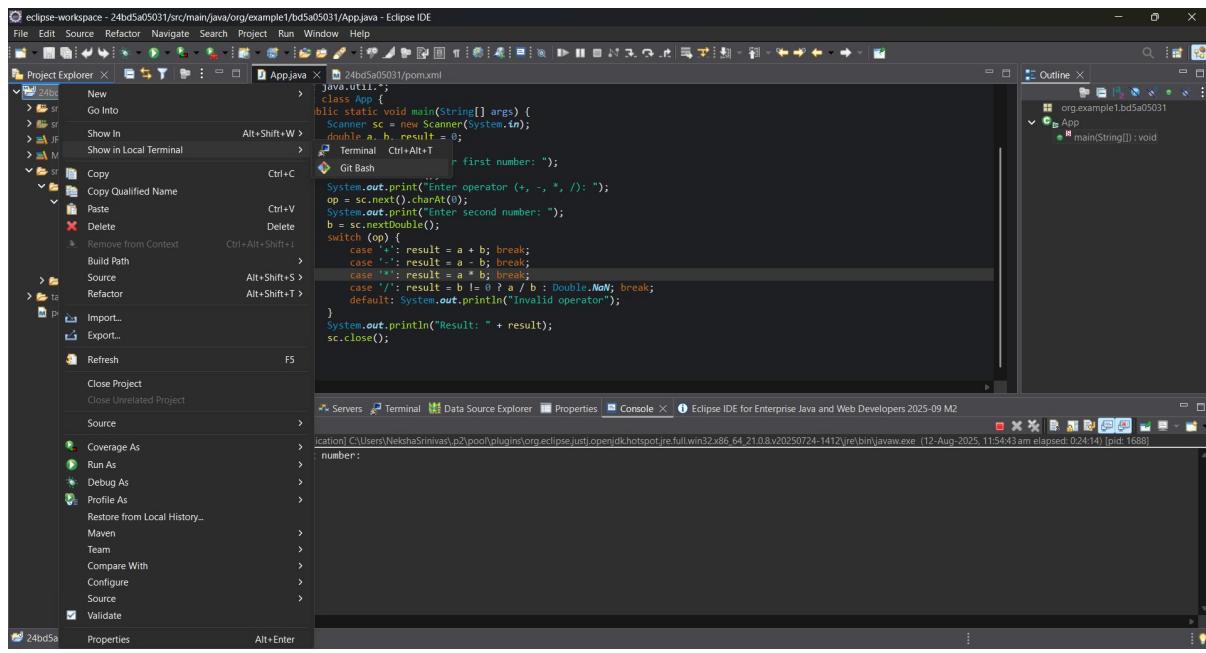
The screenshot shows the Eclipse IDE interface with the following details:

- Project Explorer:** Shows the project structure with a package named `org.example1.bd5a05031` containing a source folder `src` which has a Java class `App.java`.
- Code Editor:** Displays the `App.java` code:

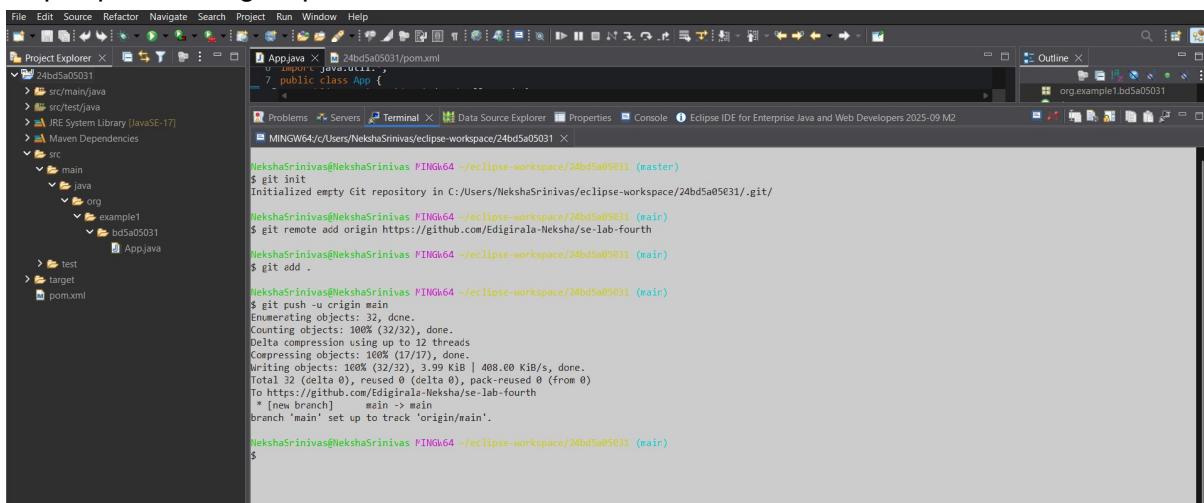
```
1 package org.example1.bd5a05031;
2
3 /**
4  * Hello world!
5  */
6
7 import java.util.*;
8
9 public class App {
10     public static void main(String[] args) {
11         Scanner sc = new Scanner(System.in);
12         double a, b, result = 0;
13         char op;
14
15         System.out.print("Enter first number: ");
16         a = sc.nextDouble();
17         System.out.print("Enter operator (+, -, *, /): ");
18         op = sc.next().charAt(0);
19         System.out.print("Enter second number: ");
20         b = sc.nextDouble();
21         switch (op) {
22             case '+': result = a + b; break;
23             case '-': result = a - b; break;
24             case '*': result = a * b; break;
25             case '/': result = b != 0 ? a / b : Double.NaN; break;
26             default: System.out.println("Invalid operator");
27         }
28         System.out.println("Result: " + result);
29         sc.close();
30     }
31 }
```
- Console:** Shows the terminal output of the application's execution:

```
Enter first number: 5
Enter operator (+, -, *, /): +
Enter second number: 15
Result: 20.0
```

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



Step-8: push to the git repo



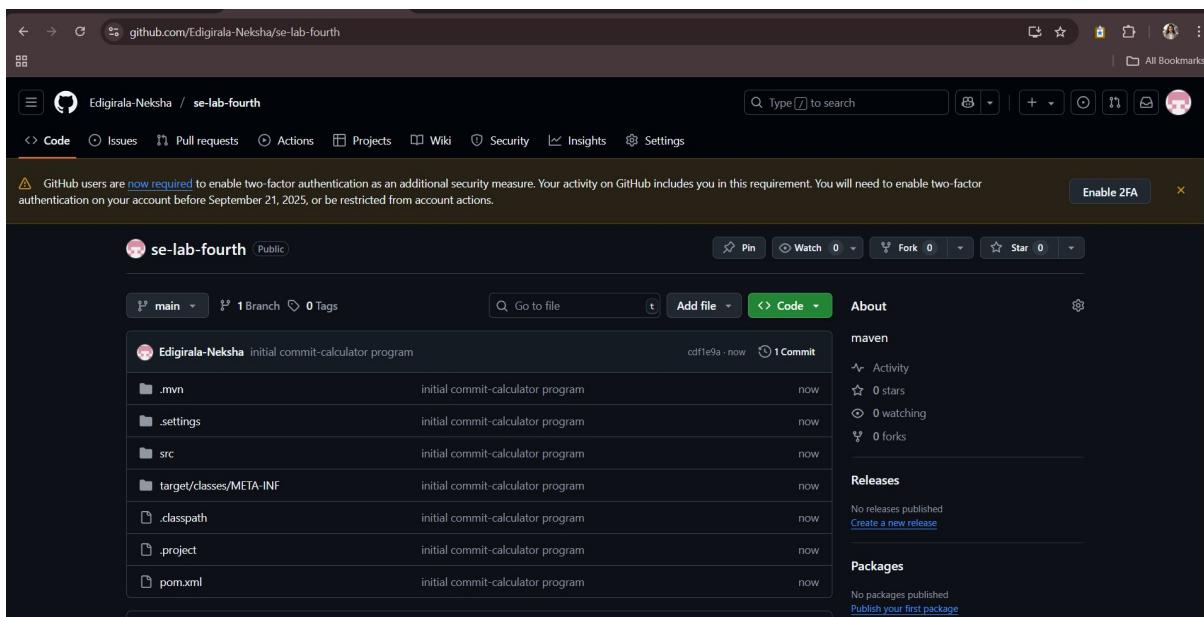
The screenshot shows the Eclipse IDE interface with the Terminal view open. The terminal window displays the following command-line session:

```
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a05031 (master)
$ 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 8 threads
Compressing objects: 100% (17/17), done.
Writing objects: 100% (32/32), 3.99 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 following details:

- Project Explorer** (left): Shows the project structure for "2bed5a9031". It includes a main folder containing Java and example subfolders, and a Maven Dependencies folder.
- Outline** (right): Shows the XML structure of the pom.xml file, with sections like Grammars, project, and properties.
- Overview** (bottom left): Displays the Maven dependency hierarchy for the project.
- Bottom Bar**: Includes tabs for Problems, Servers, Terminal, Data Source Explorer, Properties, Console, and Help.

pom.xml Content (Excerpt):

```
<!-- I'll change it to the project's website -->
<url>http://www.example.com/relese</url>

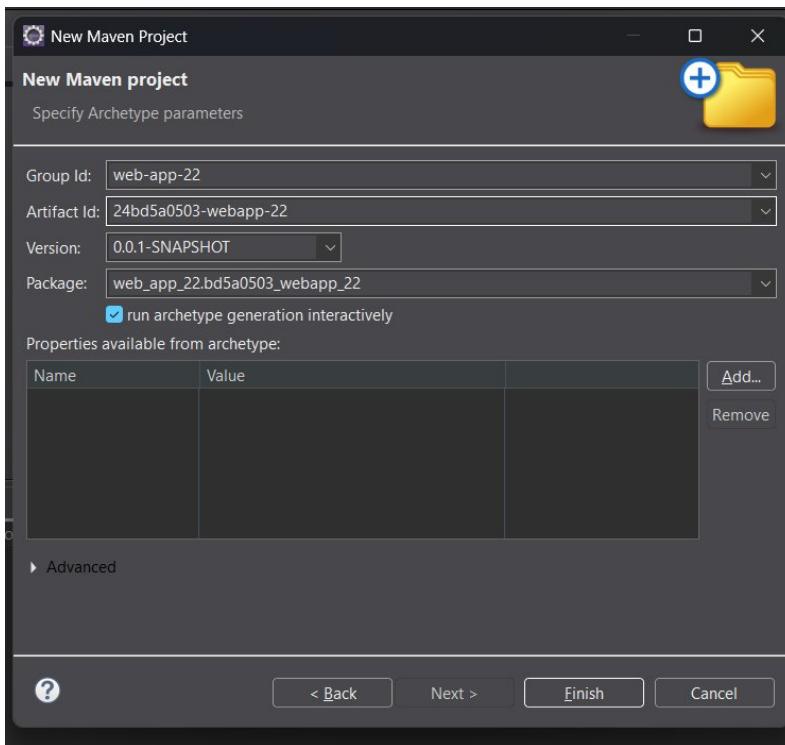
<properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    <project.compiler.release>17</project.compiler.release>
</properties>

<dependencyManagement>
    <dependencies>
        <dependency>
            <groupId>org.junit.jupiter</groupId>
            <artifactId>junit-jupiter</artifactId>
            <version>5.8.1</version>
            <type>pom</type>
            <scope>import</scope>
        </dependency>
        <dependency>
            <groupId>org.junit.jupiter</groupId>
            <artifactId>junit-jupiter-api</artifactId>
            <scope>text</scope>
        </dependency>
    </dependencies>
</dependencyManagement>

<dependencies>
    <dependency>
        <groupId>org.junit.jupiter</groupId>
        <artifactId>junit-jupiter-api</artifactId>
        <scope>text</scope>
    </dependency>
</dependencies>
```

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_21.0.8v20250724-1412\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
```

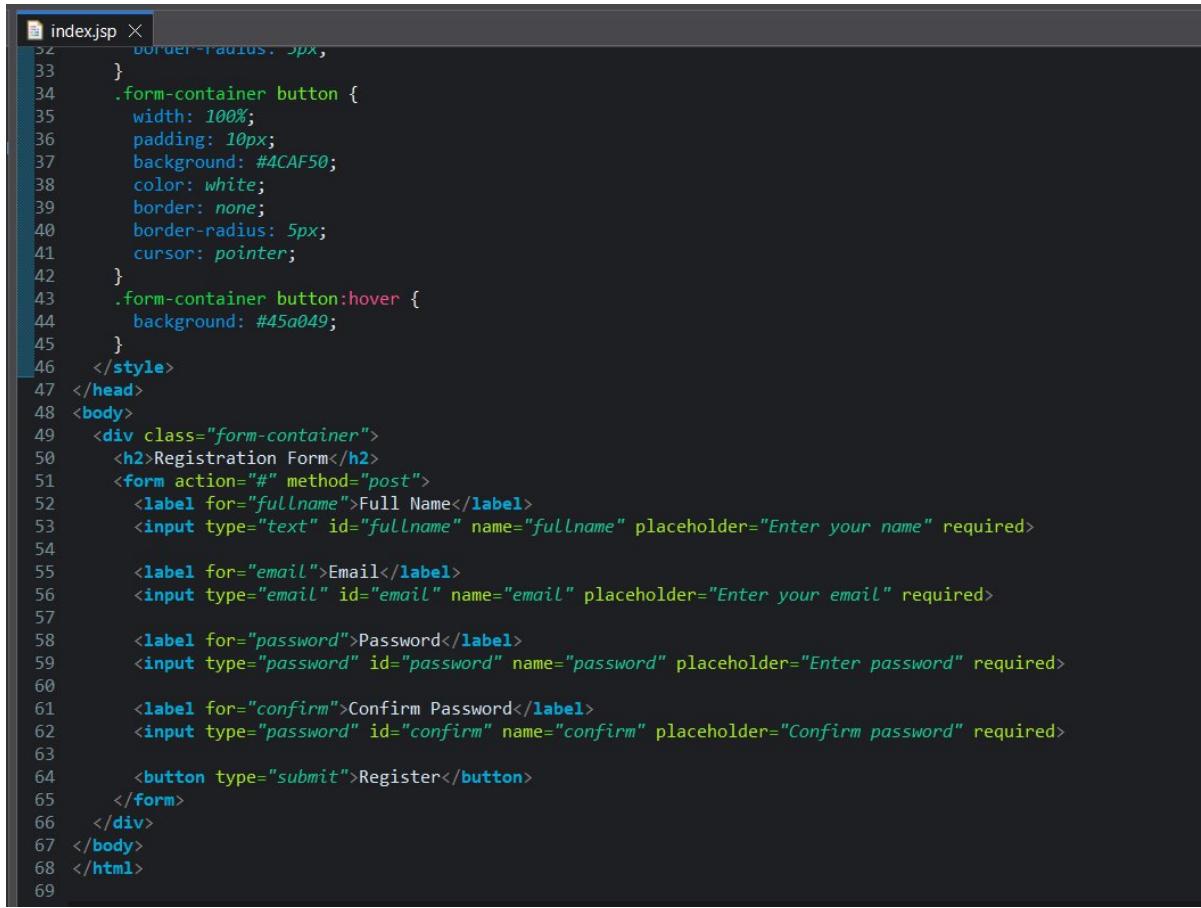
Step 3: If the build is success it will show the message

```
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:

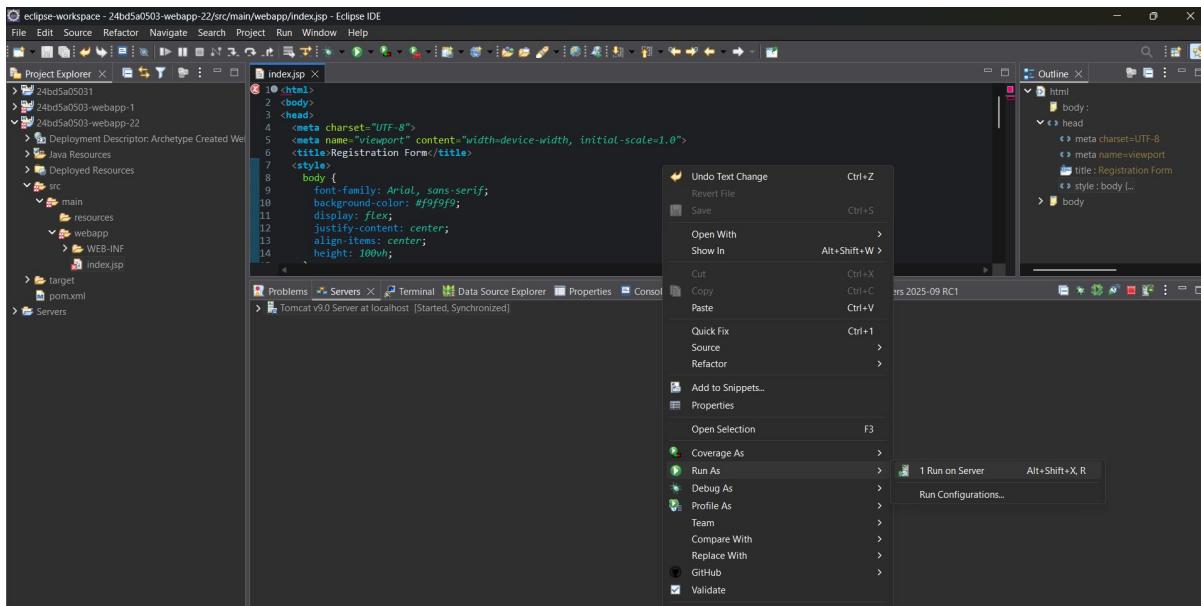
```
index.jsp X
1 <html>
2   <body>
3     <head>
4       <meta charset="UTF-8">
5       <meta name="viewport" content="width=device-width, initial-scale=1.0">
6       <title>Registration Form</title>
7       <style>
8         body {
9           font-family: Arial, sans-serif;
10          background-color: #f9f9f9;
11          display: flex;
12          justify-content: center;
13          align-items: center;
14          height: 100vh;
15        }
16        .form-container {
17          background: #fff;
18          padding: 20px 30px;
19          border-radius: 10px;
20          box-shadow: 0 4px 10px rgba(0,0,0,0.1);
21          width: 300px;
22        }
23        .form-container h2 {
24          text-align: center;
25          margin-bottom: 20px;
26        }
27        .form-container input {
28          width: 100%;
29          padding: 10px;
30          margin: 8px 0;
31          border: 1px solid #ccc;
32          border-radius: 5px;
33        }
34        .form-container button {
35          width: 100%;
36          padding: 10px;
37          background: #4CAF50;
38          color: white;
```

Web-page:



```
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



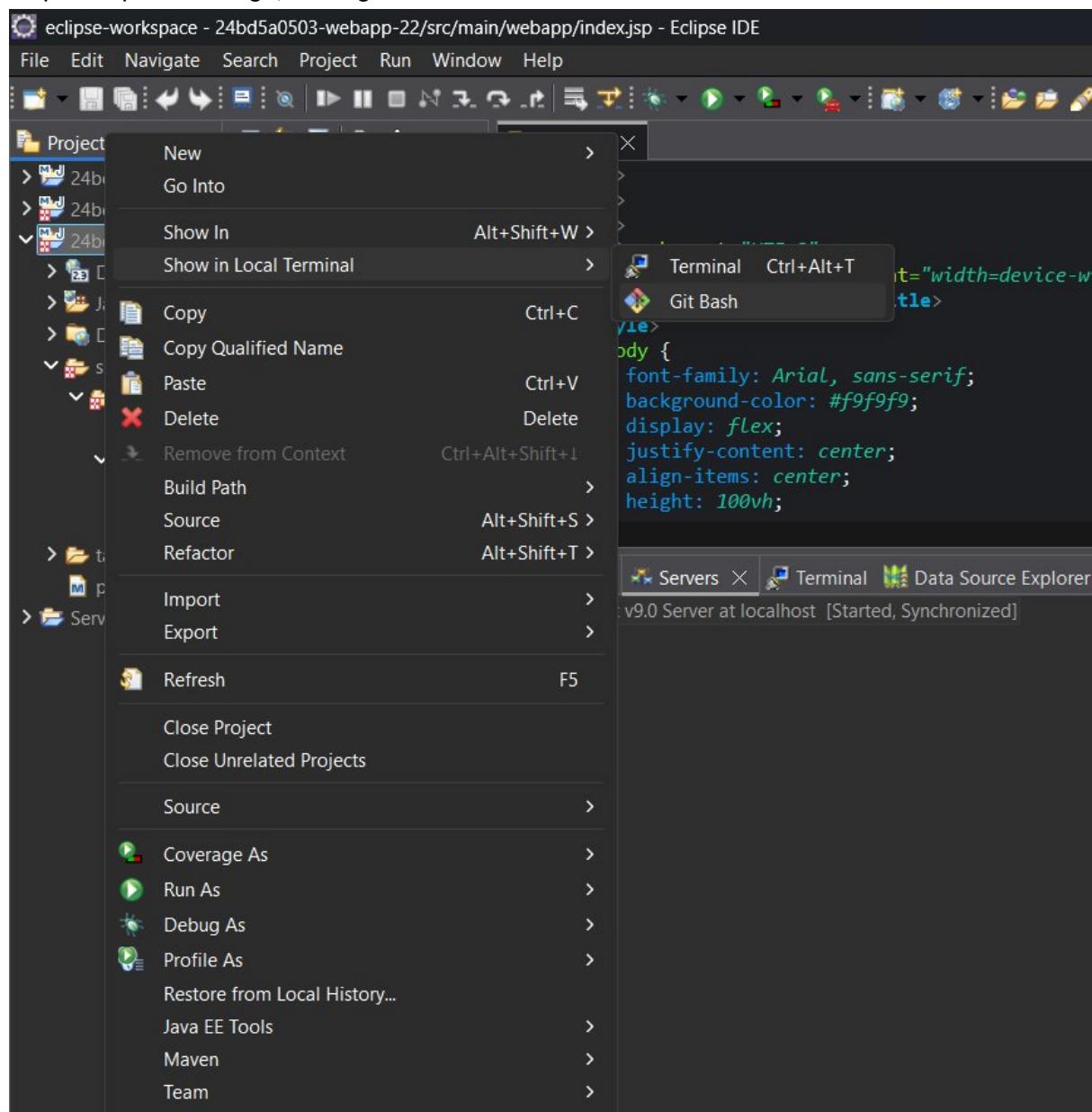
Step 6: It will show the following output:

The screenshot shows a web browser window with the URL `localhost:8080/24bd5a0503-webapp-22/index.jsp`. The main content is a registration form titled "Registration Form". The form fields are as follows:

- Full Name:** Input field placeholder: "Enter your name"
- Email:** Input field placeholder: "Enter your email"
- Password:** Input field placeholder: "Enter password"
- Confirm Password:** Input field placeholder: "Confirm password"

A green "Register" button is located at the bottom right of the form.

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

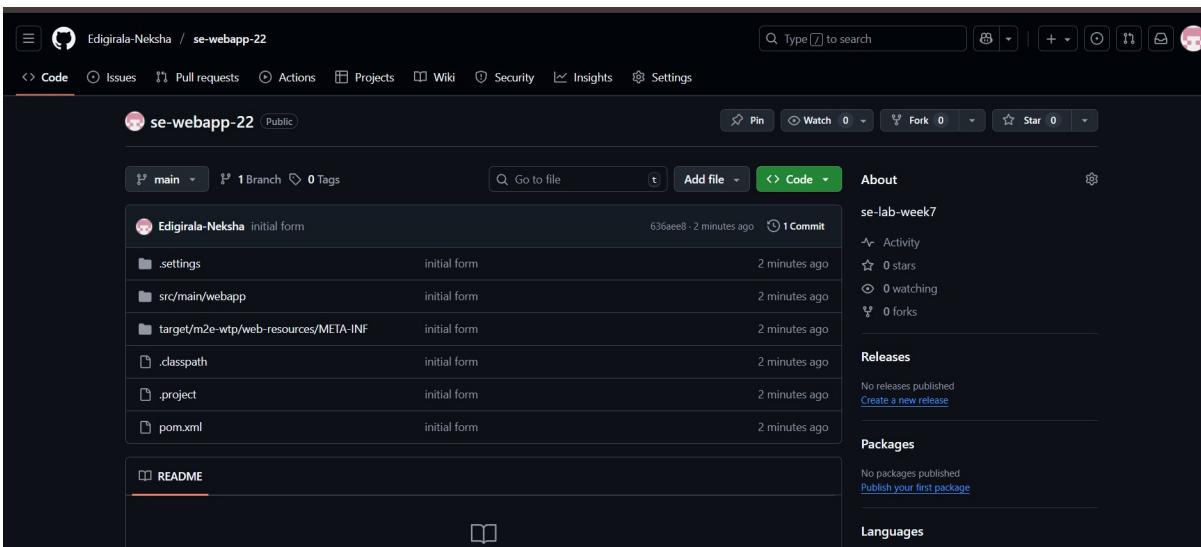


Step 8: use the command of git to push the maven web project

```
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.validation.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', with 1 commit. The commit was made by 'Edigirala-Neksha' and is titled 'initial form'. The commit message is 'initial form'. 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: sha256:7c06e91f61fa88c08cc74f7e1b7c69ae24910d745357e0dfe1d2c0322aaf2
0f9
Status: Downloaded newer image for ubuntu:latest
docker.io/library/ubuntu:latest
```

Step 2: Running the Container

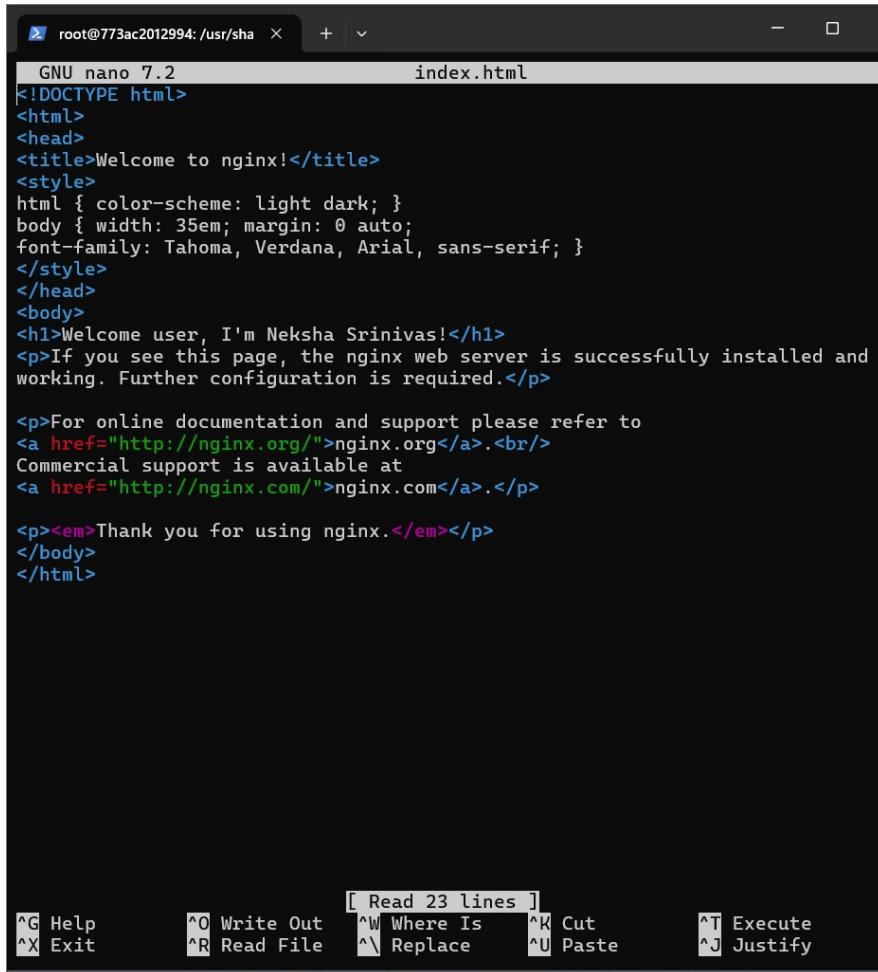
We created and started a new container named **myubuntu**, mapping port **3000** on the host to port **80** inside the container.

```
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

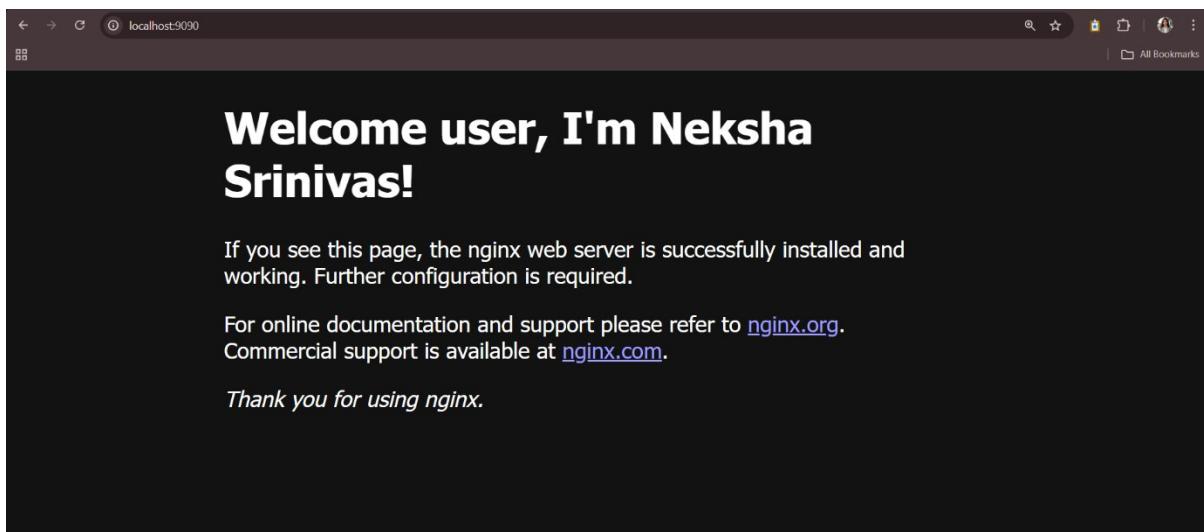


The screenshot shows a terminal window titled "root@773ac2012994: /usr/sha". The file being edited is "index.html". The content of the file is as follows:

```
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 menu bar with the following options: [Read 23 lines], ^G Help, ^X Exit, ^O Write Out, ^R Read File, ^W Where Is, ^\ Replace, ^K Cut, ^U Paste, ^T Execute, ^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 Packa
```

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> |
```

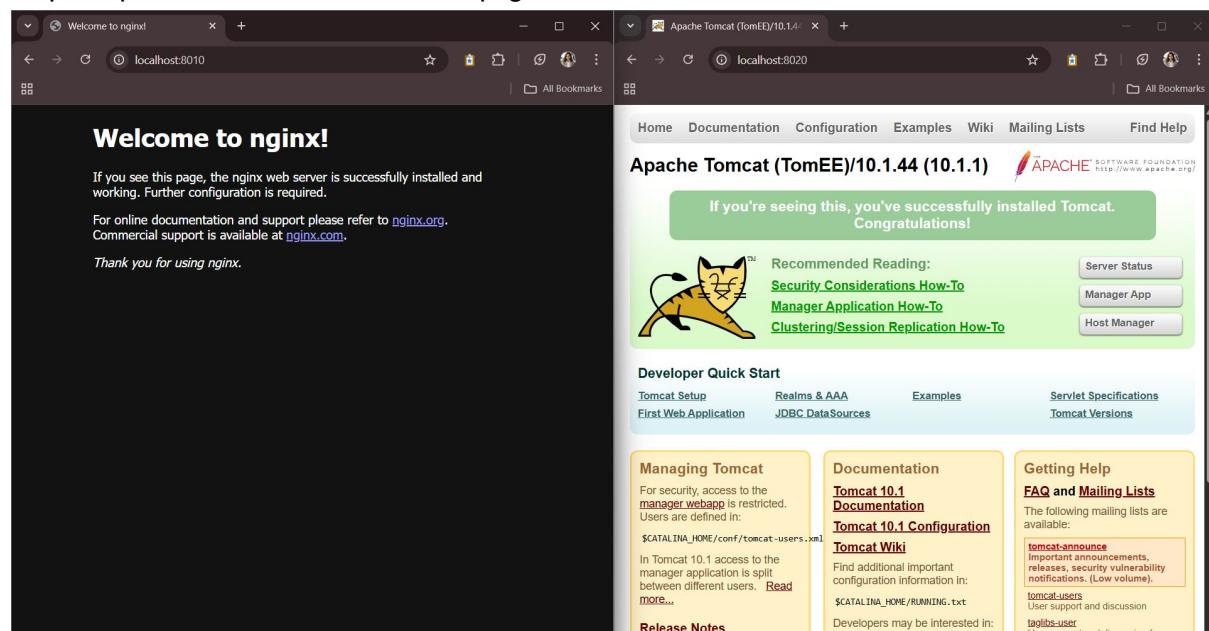
DOCKER COMPOSE FILE:

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



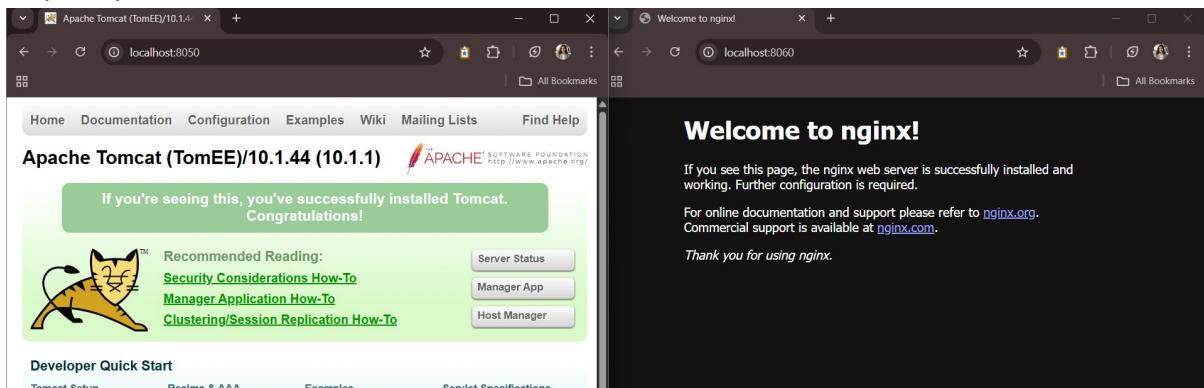
Step 3: Using docker file to run two servers parallelly

```
docker-compose.yml
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



WORDPRESS:

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

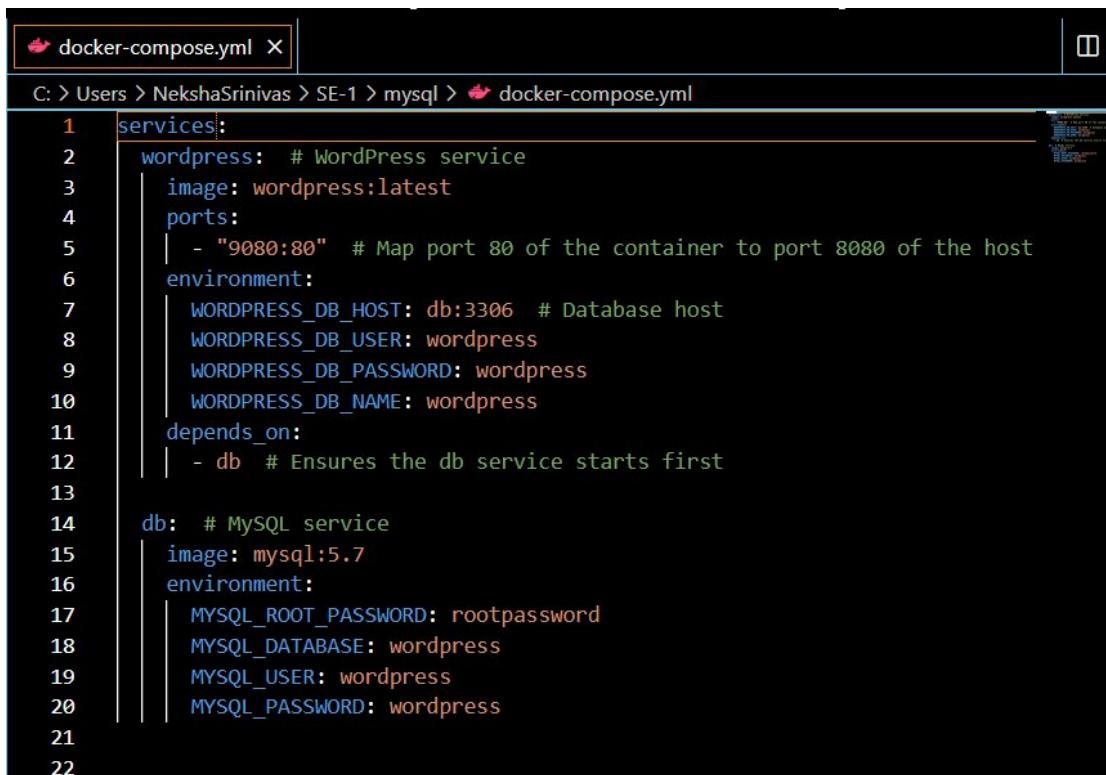
Mode                LastWriteTime        Length Name
----                -----          ----  --
-a----       26-08-2025      18:48           672 docker-compose.txt

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:



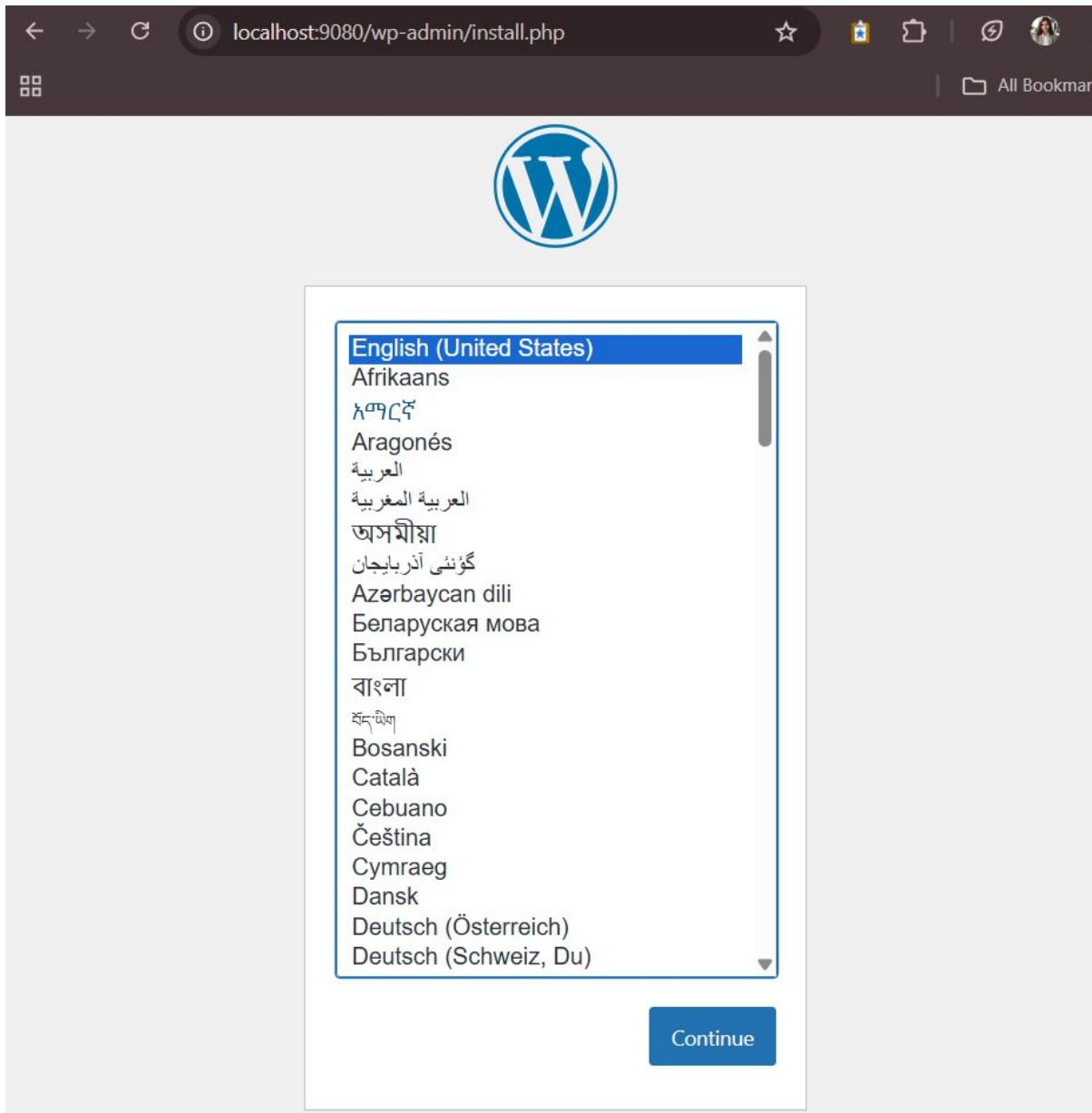
The screenshot shows a code editor window with the file 'docker-compose.yml' open. The file path is shown in the title bar: 'C: > Users > NekshaSrinivas > SE-1 > mysql > docker-compose.yml'. The code itself is a YAML configuration for a WordPress and MySQL Docker setup. It defines two services: 'wordpress' 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.

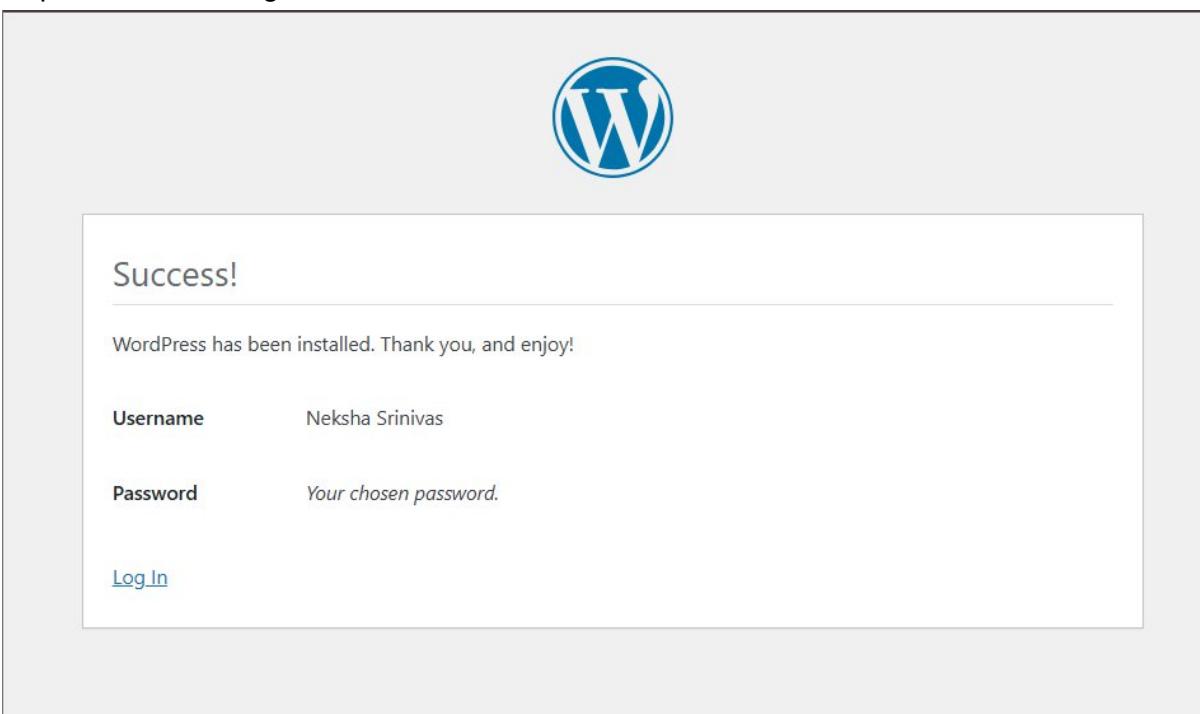
Search engine visibility

Discourage search engines from indexing this site

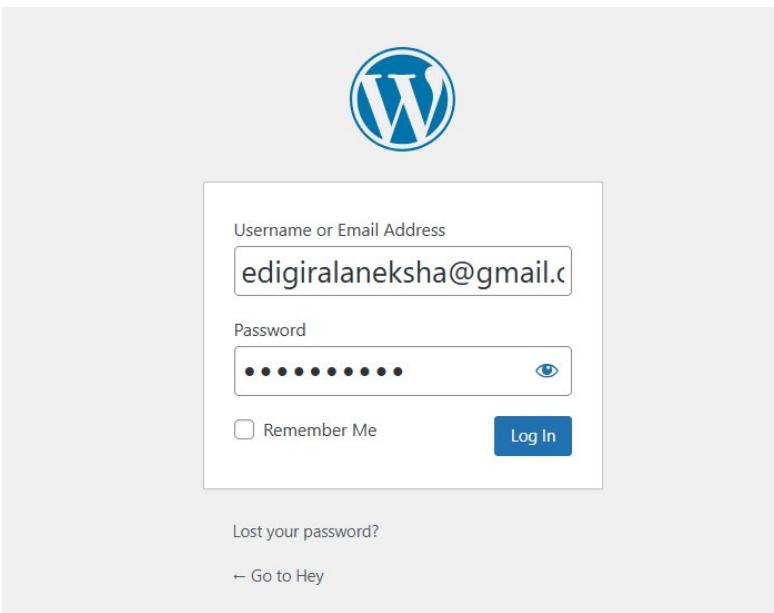
It is up to search engines to honor this request.

[Install WordPress](#)

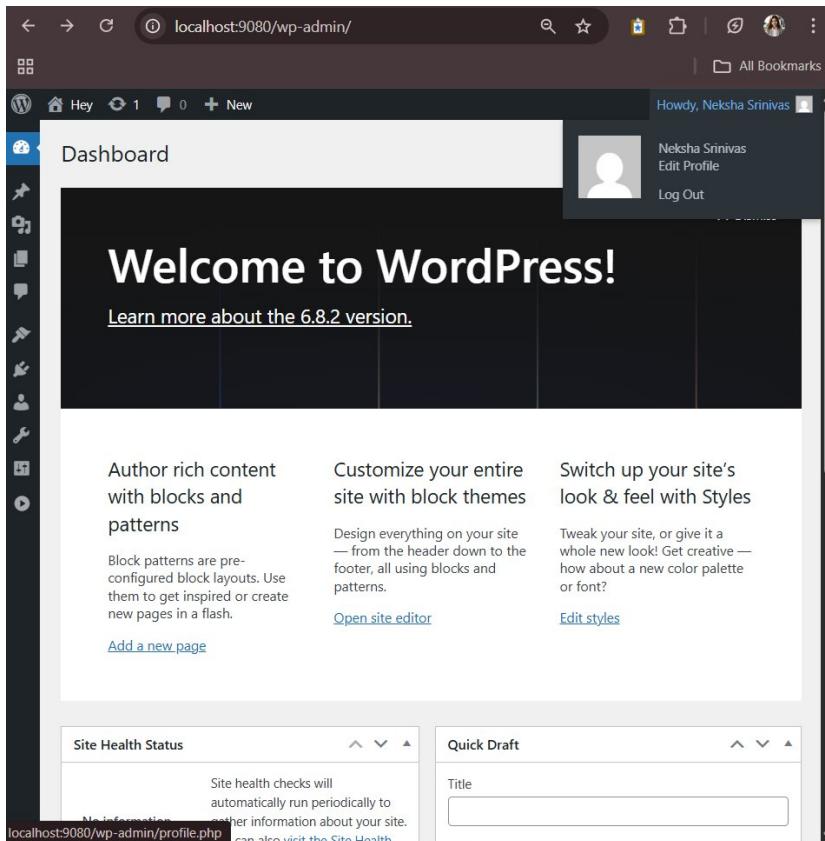
Step 6: Success message will be shown



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

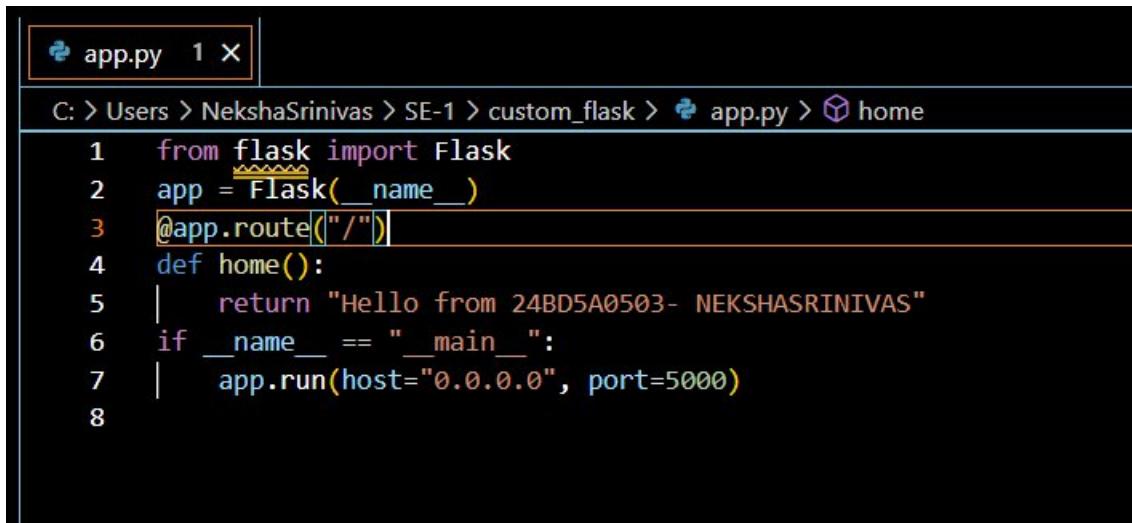
Directory: C:\Users\NekshaSrinivas\SE-1\custom_flask

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
```

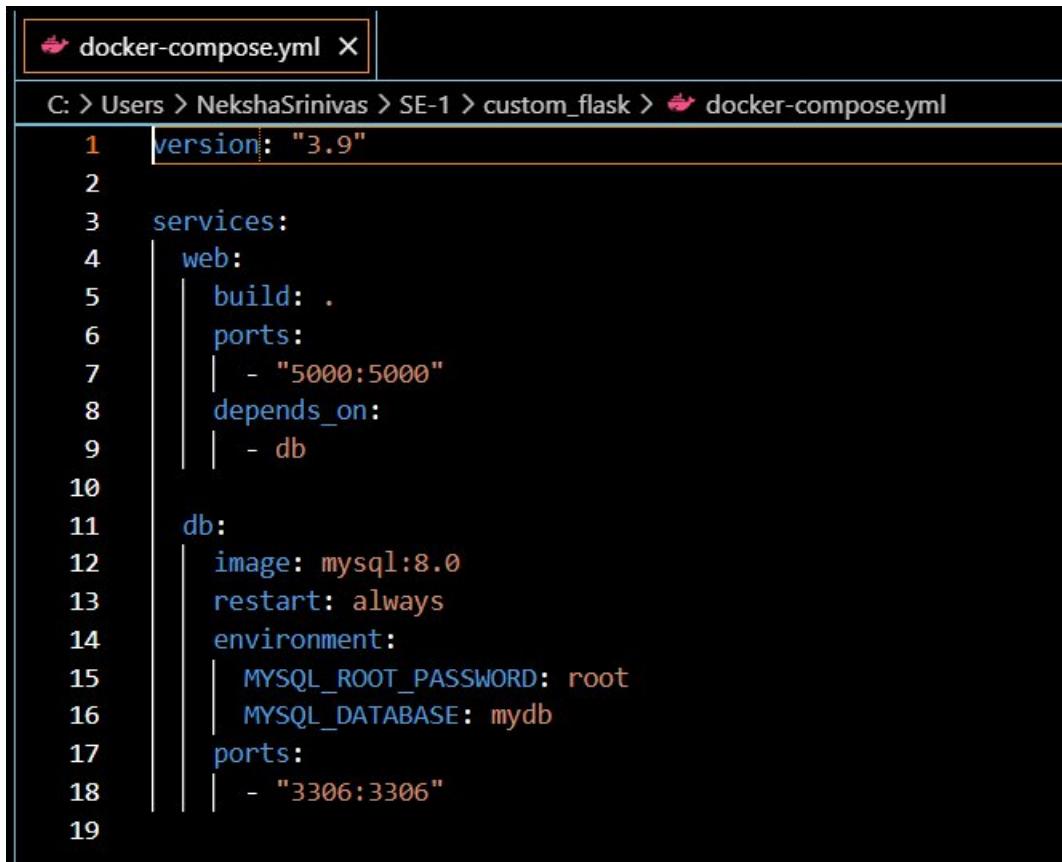
Step 2: write the content of app.py , docker-compose.yml & Dockerfile

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:

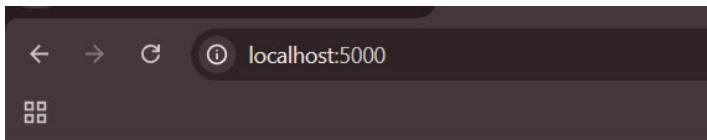
```
Mode           LastWriteTime      Length Name
----           -----          ---- 
-a---       28-08-2025     10:02        187 app.py
-a---       28-08-2025     10:03         82 docker-compose.yml
-a---       28-08-2025     10:02        105 Dockerfile

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
✓9476b8faedba 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
...
```

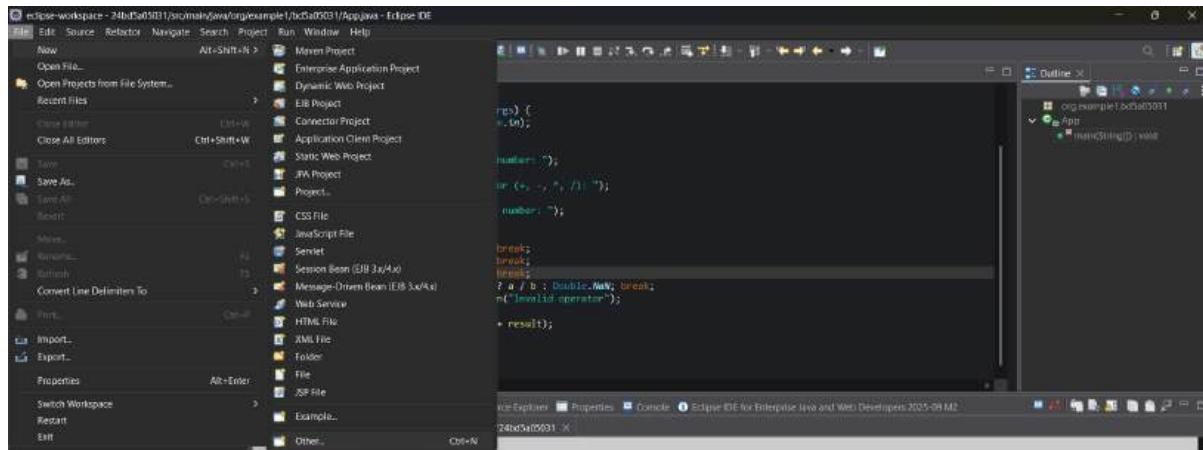
Step 4: Open the local host to view the custom page:



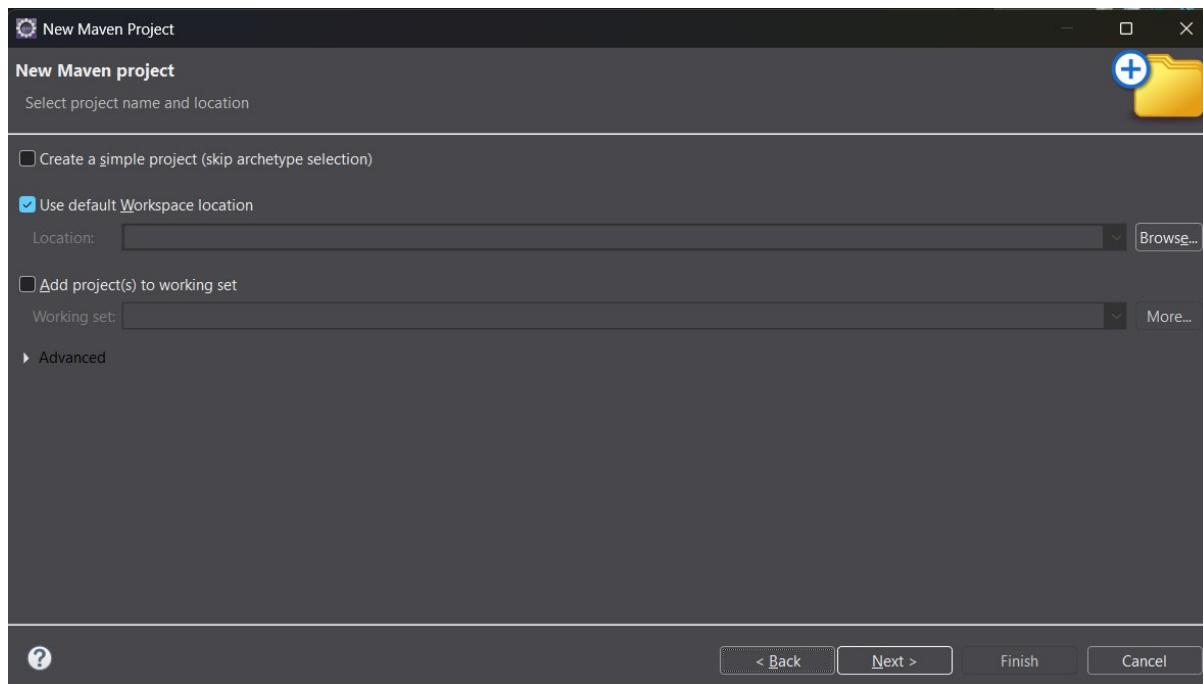
Hello from 24BD5A0503- NEKSHASRINIVAS

7. Creating a Multi-Module Maven Project

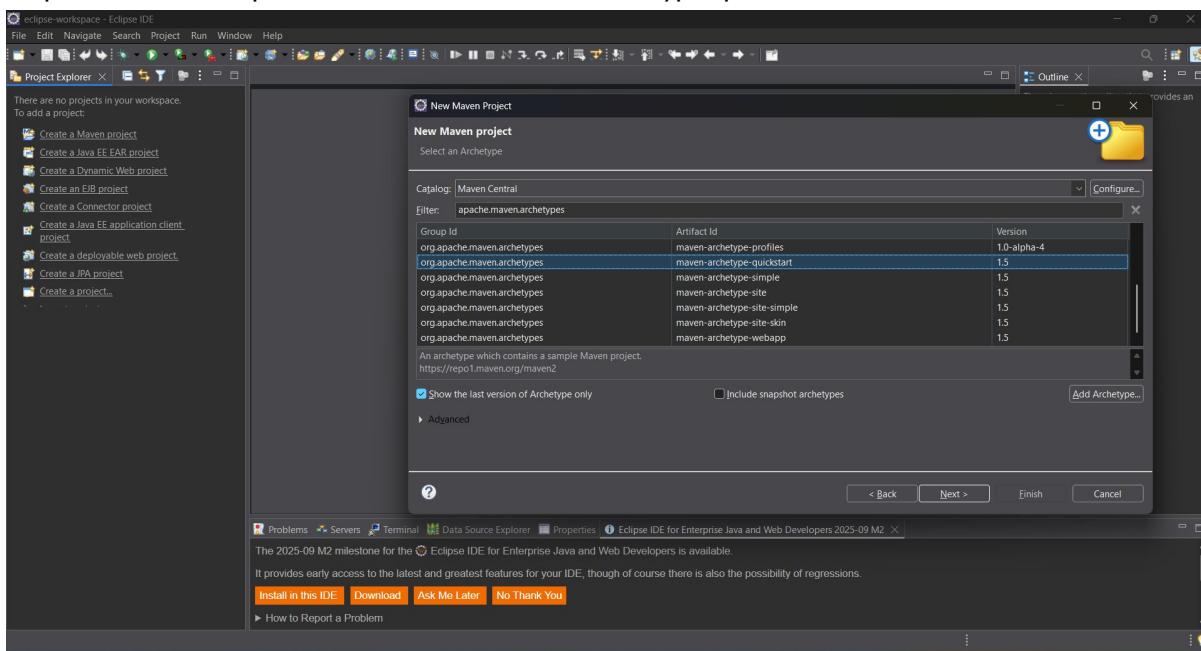
Step-1: Open the eclipse and click on file>new>Maven project



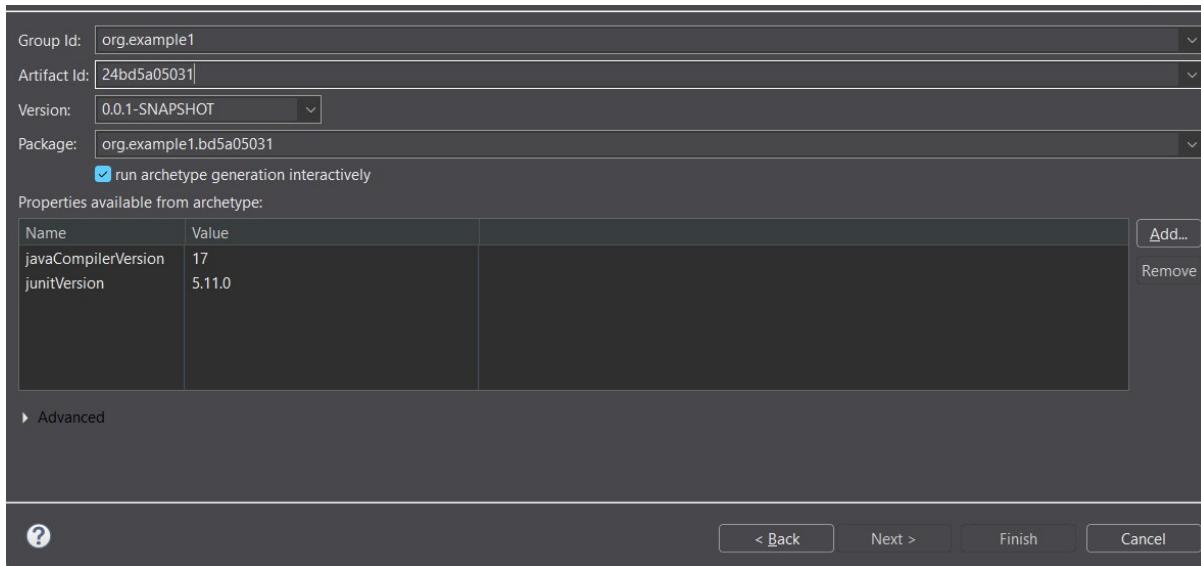
Step-2: select the default workspace and click on next



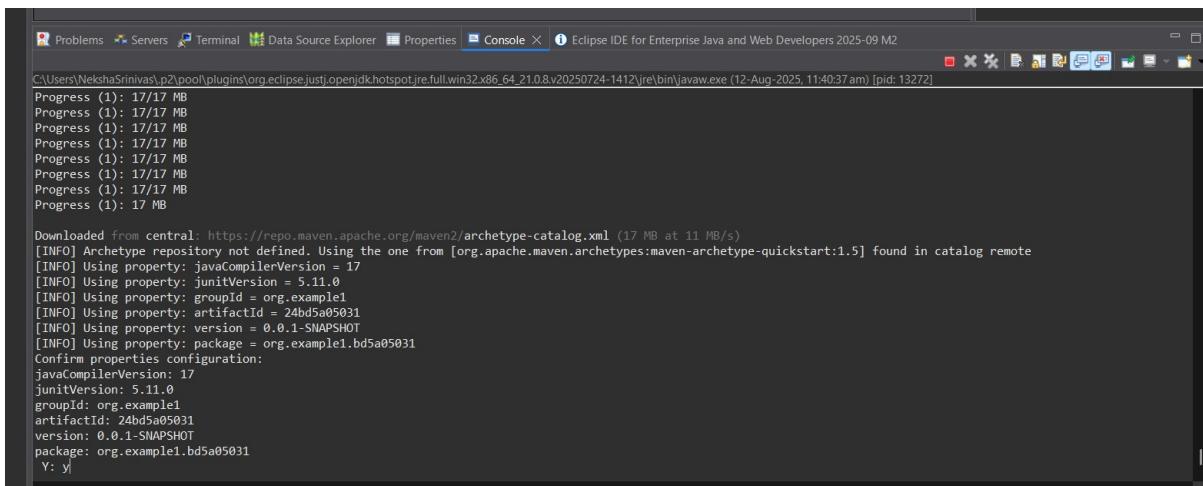
Step-3: in the filter option select the one maven-archetype-quickstart



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



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

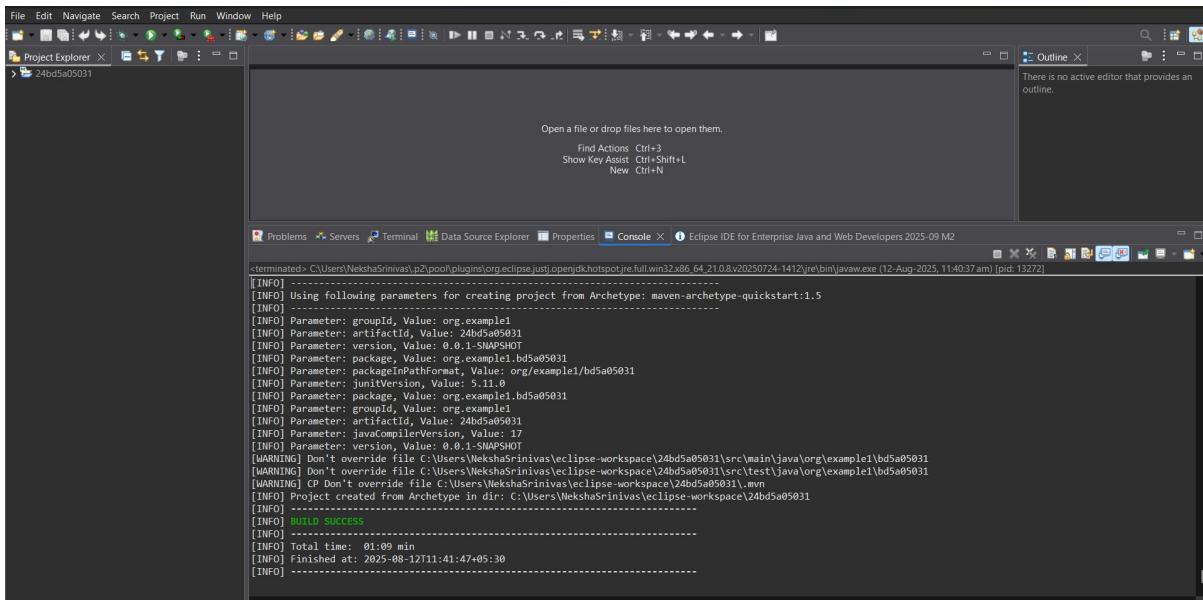


The screenshot shows the Eclipse IDE interface with the 'Console' tab selected. The output window displays the following text:

```
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



The screenshot shows the Eclipse IDE interface with the 'Console' tab selected. The output window displays the following text:

```
[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: javaVersion, Value: 17
[INFO] Parameter: packager, Value: org.example1.bd5a05031
[INFO] Parameter: groupId, Value: org.example1
[INFO] Parameter: artifactId, Value: 24bd5a05031
[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] 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

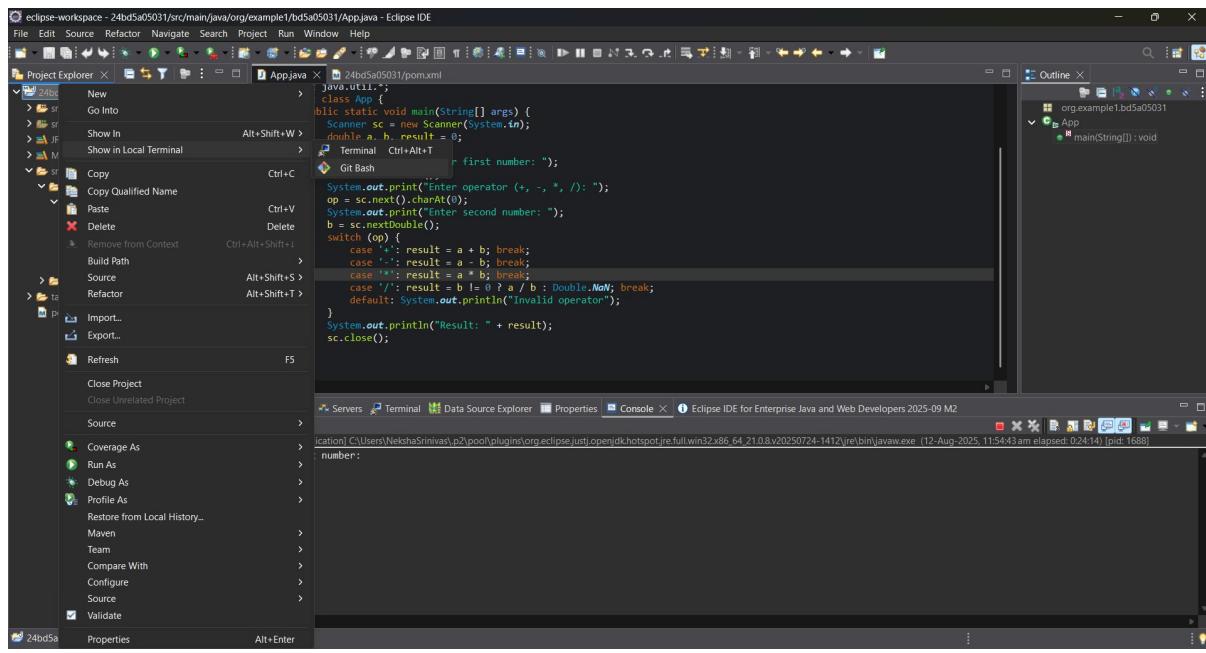
The screenshot shows the Eclipse IDE interface with the following details:

- Project Explorer:** Shows the project structure with a package named `org.example1.bd5a05031` containing a source folder `src` which has a Java class `App.java`.
- Code Editor:** Displays the `App.java` code:

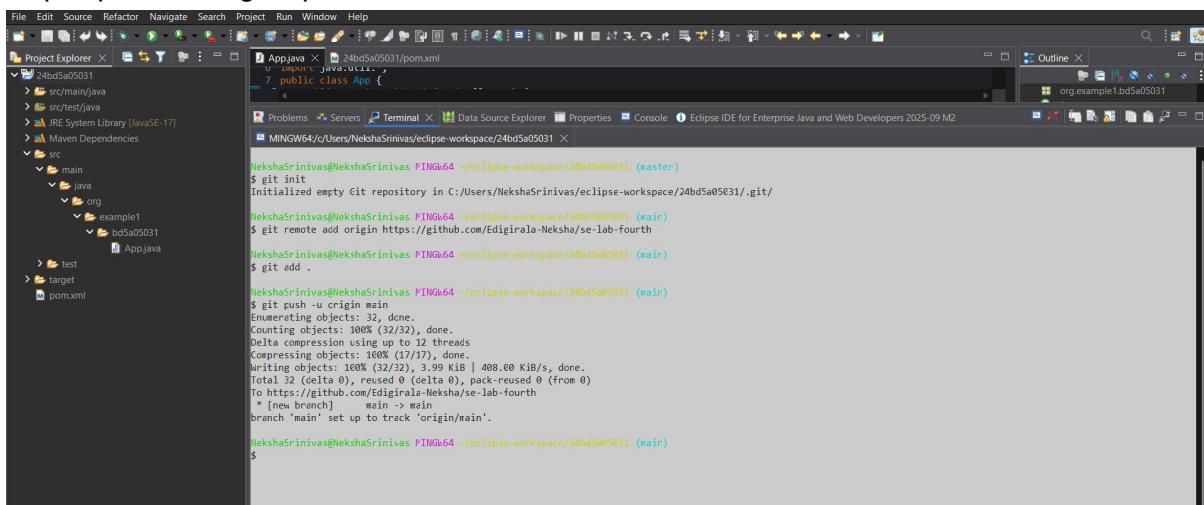
```
1 package org.example1.bd5a05031;
2
3 /**
4  * Hello world!
5  */
6
7 import java.util.*;
8
9 public class App {
10     public static void main(String[] args) {
11         Scanner sc = new Scanner(System.in);
12         double a, b, result = 0;
13         char op;
14         System.out.print("Enter first number: ");
15         a = sc.nextDouble();
16         System.out.print("Enter operator (+, -, *, /): ");
17         op = sc.next().charAt(0);
18         System.out.print("Enter second number: ");
19         b = sc.nextDouble();
20         switch (op) {
21             case '+': result = a + b; break;
22             case '-': result = a - b; break;
23             case '*': result = a * b; break;
24             case '/': result = b != 0 ? a / b : Double.NaN; break;
25             default: System.out.println("Invalid operator");
26         }
27         System.out.println("Result: " + result);
28     }
29 }
```
- Console:** Shows the terminal output of the application's execution:

```
Enter first number: 5
Enter operator (+, -, *, /): +
Enter second number: 15
Result: 20.0
```

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



Step-8: push to the git repo



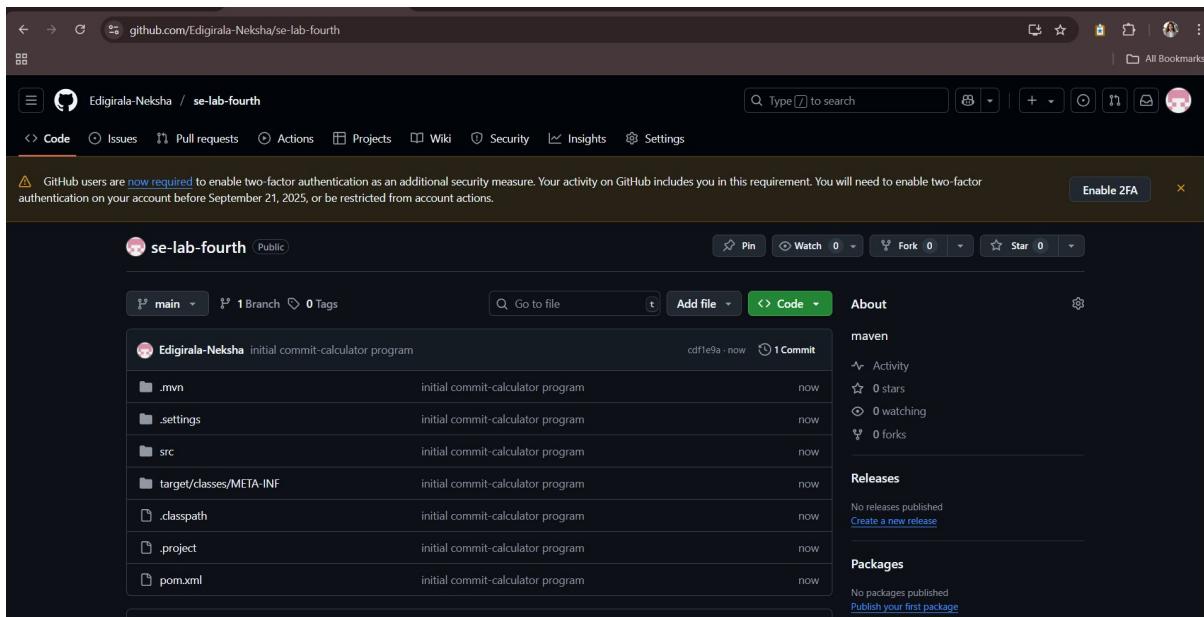
The screenshot shows the Eclipse IDE interface with the terminal window open. The terminal output shows the user navigating to their workspace, initializing a git repository, adding a remote origin, and pushing the 'main' branch to GitHub.

```
NekshaSrinivas@NekshaSrinivas MINGW64 ~/eclipse-workspace/24bd5a05031 (master)
$ 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 8 threads
Compressing objects: 100% (17/17), done.
Writing objects: 100% (32/32), 3.99 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 following details:

- Project Explorer** (left): Shows the project structure for "2bed5a9031". It includes a main folder containing Java and example subfolders, and a Maven Dependencies folder.
- Outline** (right): Shows the XML structure of the pom.xml file, with sections like Grammars, project, and properties.
- Overview** (bottom left): Displays the Maven dependency hierarchy for the project.
- Bottom Bar**: Includes tabs for Problems, Servers, Terminal, Data Source Explorer, Properties, Console, and Help.

pom.xml Content (Excerpt):

```
<!-- I'll change it to the project's website -->
<url>http://www.example.com/relese</url>

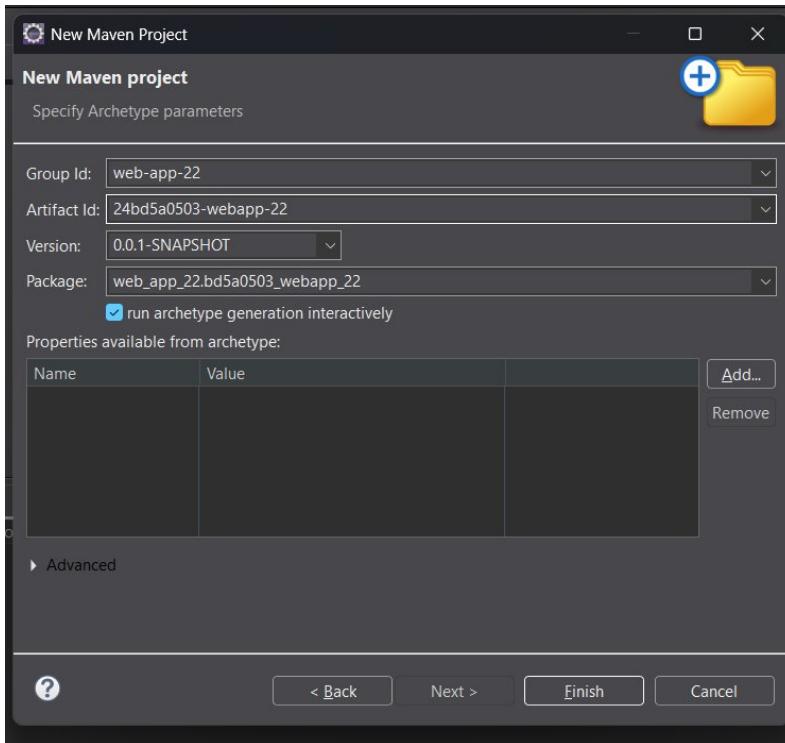
<properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    <project.compiler.release>17</project.compiler.release>
</properties>

<dependencyManagement>
    <dependencies>
        <dependency>
            <groupId>org.junit.jupiter</groupId>
            <artifactId>junit-jupiter</artifactId>
            <version>5.8.1</version>
            <type>pom</type>
            <scope>import</scope>
        </dependency>
        <dependency>
            <groupId>org.junit.jupiter</groupId>
            <artifactId>junit-jupiter-api</artifactId>
            <scope>text</scope>
        </dependency>
    </dependencies>
</dependencyManagement>

<dependencies>
    <dependency>
        <groupId>org.junit.jupiter</groupId>
        <artifactId>junit-jupiter-api</artifactId>
        <scope>text</scope>
    </dependency>
</dependencies>
```

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_21.0.8v20250724-1412\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

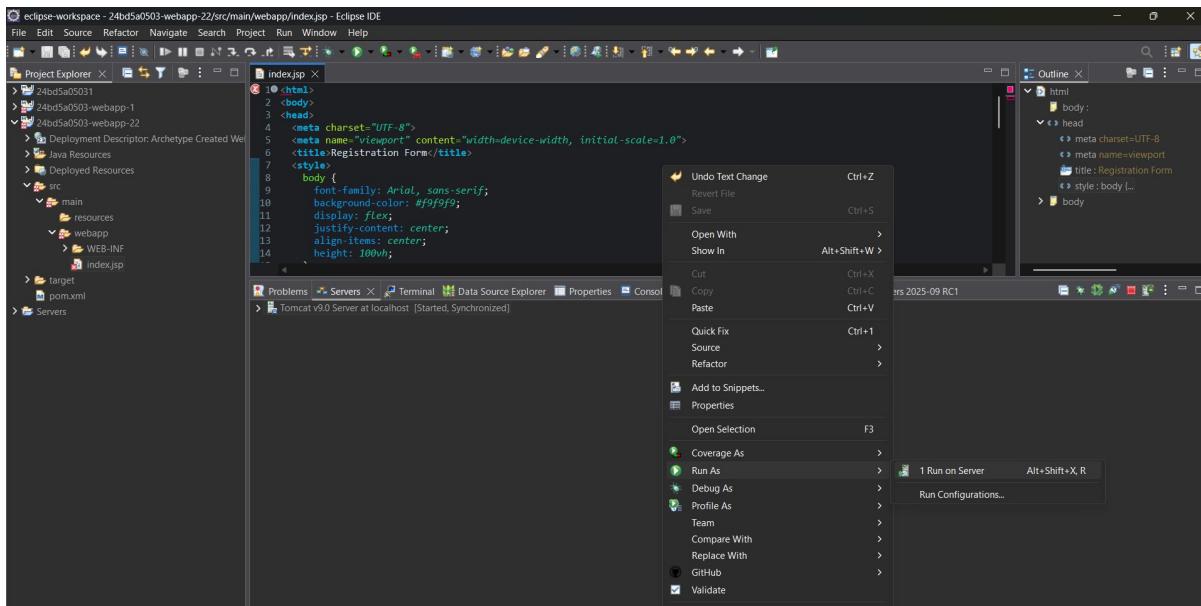
```
package: web_app_22.bd5a0503_webapp_22
Y: y
[INFO] -----
[INFO] Using following parameters for creating project from Old (1.x) Archetype: maven-archetype-webapp:1.0
[INFO] -----
[INFO] Parameter: basedir, Value: C:\Users\NekshaSrinivas\eclipse-workspace
[INFO] Parameter: package, Value: web_app_22.bd5a0503_webapp_22
[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
1 <html>
2   <body>
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: #f9f9f9;
11          display: flex;
12          justify-content: center;
13          align-items: center;
14          height: 100vh;
15        }
16        .form-container {
17          background: #fff;
18          padding: 20px 30px;
19          border-radius: 10px;
20          box-shadow: 0 4px 10px rgba(0,0,0,0.1);
21          width: 300px;
22        }
23        .form-container h2 {
24          text-align: center;
25          margin-bottom: 20px;
26        }
27        .form-container input {
28          width: 100%;
29          padding: 10px;
30          margin: 8px 0;
31          border: 1px solid #ccc;
32          border-radius: 5px;
33        }
34        .form-container button {
35          width: 100%;
36          padding: 10px;
37          background: #4CAF50;
38          color: white;
```

```
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. The address bar shows the URL: `localhost:8080/24bd5a0503-webapp-22/index.jsp`. Below the address bar is a dark header bar with icons for back, forward, and search. The main content area displays a registration form titled "Registration Form". The form has five input fields: "Full Name" (placeholder: "Enter your name"), "Email" (placeholder: "Enter your email"), "Password" (placeholder: "Enter password"), and "Confirm Password" (placeholder: "Confirm password"). A green "Register" button is at the bottom right of the form.

← → ⌂ ⓘ localhost:8080/24bd5a0503-webapp-22/index.jsp

Registration Form

Full Name
Enter your name

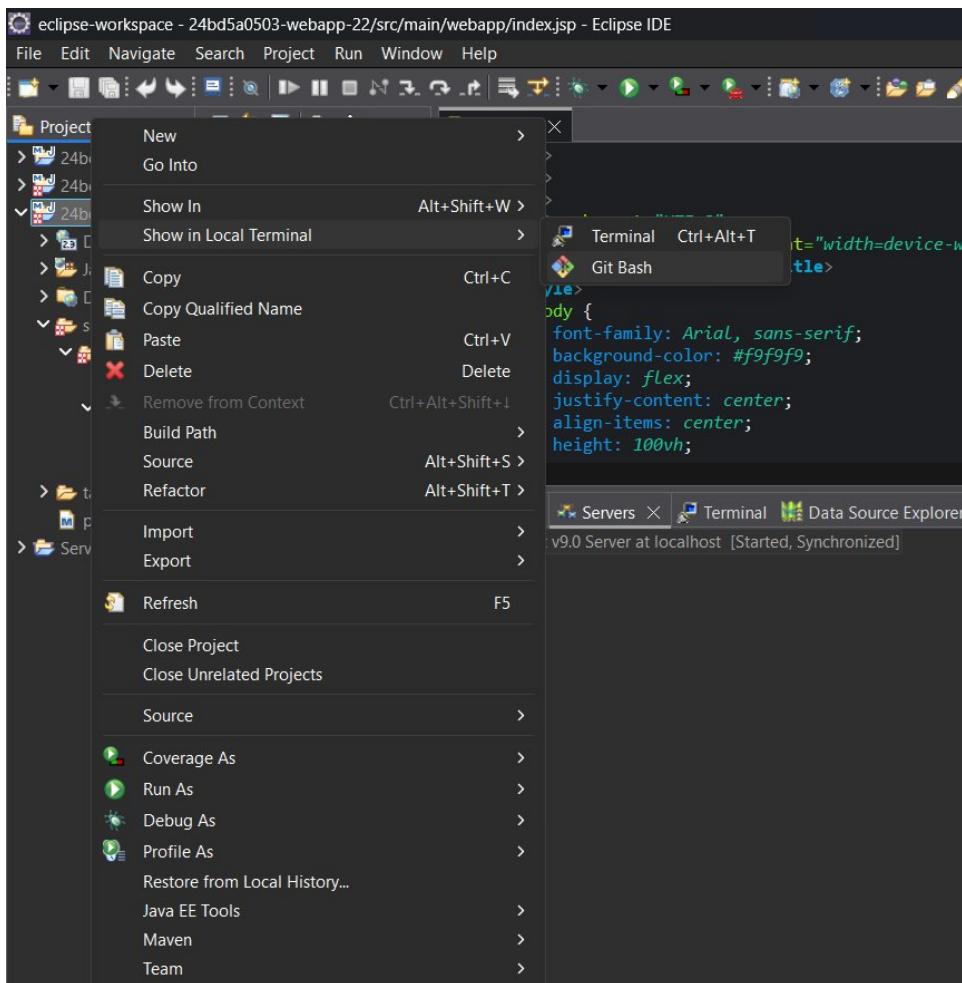
Email
Enter your email

Password
Enter password

Confirm Password
Confirm password

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/crg.eclipse.jdt.coreprefs
 create mode 100644 .settings/crg.eclipse.m2e.coreprefs
 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 a GitHub repository page for 'se-webapp-22'. The repository is public and owned by 'Edigirala-Neksha'. The 'Code' tab is selected, showing the 'main' branch with 1 commit. The commit details are as follows:

- File: .settings, Type: initial form, Date: 2 minutes ago
- File: src/main/webapp, Type: initial form, Date: 2 minutes ago
- File: target/m2e-wtp/web-resources/META-INF, Type: initial form, Date: 2 minutes ago
- File: .classpath, Type: initial form, Date: 2 minutes ago
- File: .project, Type: initial form, Date: 2 minutes ago
- File: pom.xml, Type: initial form, Date: 2 minutes ago

The repository has 0 stars, 0 forks, and 0 releases. It also shows no packages published and no languages used.

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

Configure

General

Source Code Management

Triggers

Environment

Build Steps

Post-build Actions

Verify it's you

Dashboard > Mavenjava > Configuration

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

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

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 interface for the same job. Under the 'Build Steps' section, there are two entries of the 'Invoke top-level Maven targets' step. Both entries have 'Maven Version' set to 'MAVEN_HOME' and 'Goals' set to 'clean'. The 'Save' and 'Apply' buttons are visible at the bottom.

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 'Configuration' and shows the 'Build Steps' section. A 'Goals' input field contains 'clean' and 'install'. Below it is a 'Invoke top-level Maven targets' step configuration with 'MAVEN_HOME' set in the 'Maven Version' dropdown and 'install' in the 'Goals' dropdown. At the bottom of the configuration area are 'Save' and 'Apply' buttons.

Mavenjava Config [Jenkins]

localhost:8888/job/Mavenjava/configure

Dashboard > Mavenjava > Configuration

Configure

- General
- Source Code Management
- Triggers
- Environment
- Build Steps**
- Post-build Actions

Goals

clean

Advanced

Invoke top-level Maven targets

Maven Version

MAVEN_HOME

Goals

install

Advanced

Add build step

Post-build Actions

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

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 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, there are 'Save' and 'Apply' buttons.

If the build is success:

The screenshot shows the Jenkins web interface for the 'maven_web_build' job. The page title is 'maven_web_build [Jenkins]'. The main header includes a Jenkins logo, the job name 'maven_web_build', and navigation links for 'Dashboard', 'maven_web_build', 'Status', 'Changes', 'Workspace', 'Build Now', 'Configure', 'Delete Project', 'Rename', 'Edit description', and 'Last Successful Artifacts'. Below the header, there's a section for 'Downstream Projects' showing 'maven_web_test' with a green checkmark. A 'Permalinks' section lists recent builds: 'Last build (#2), 27 min ago', 'Last stable build (#2), 27 min ago', 'Last successful build (#2), 27 min ago', and 'Last completed build (#2), 27 min ago'. On the left, a 'Builds' sidebar shows two entries: '#2 11:43 AM' and '#1 11:42 AM'. At the bottom, the Windows taskbar shows the search bar, pinned icons for File Explorer, Edge, Mail, Photos, OneDrive, Google Chrome, and Mozilla Firefox, and system status icons for battery, signal, and date/time.

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

Configure General

Enabled

General

Description
Test demo.

Plain text [Preview](#)

Discard old builds [?](#)

GitHub project

Configure 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', 'None' is selected. Under 'Environment', the checkbox 'Delete workspace before build starts' 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. 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: **/*). Both steps have an 'Advanced' dropdown menu. At the bottom of the configuration page 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 for '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). The main area displays a table of jobs with columns: S (Status), W (Last Build), Name, Last Success, Last Failure, and Last Duration. The table includes rows for INTERNAL_JAVA (#34), Mavenjava (#2), MavenJava_Test (#3), new (#3), web_build (#8), web_deploy (N/A), and web_test (#12).

S	W	Name	Last Success	Last Failure	Last Duration
🟡	rainy	INTERNAL_JAVA	9 mo 3 days #34	40 sec #15454	0.67 sec
🟢	sun	Mavenjava	13 days #2	N/A	11 sec
🟢	sun	MavenJava_Test	13 days #3	N/A	3.4 sec
🟡	rainy	new	9 mo 3 days #3	13 days #4	31 sec
🟢	sun	web_build	9 mo 9 days #8	N/A	8.2 sec
🟡	rainy	web_deploy	N/A	9 mo 9 days #15	0.31 sec
🟢	sun	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', 'MavenJava', 'Build Now', 'Configure', 'Delete Project', and 'Rename'. The main content area has tabs for 'Status' (highlighted), 'Changes', 'Workspace', and 'Build Now'. Under 'Status', there's a 'Builds' section with three entries: #2 (11:46 AM), #2 (11:46 AM), and #1 (11:45 AM). The 'Last Successful Artifacts' section lists various files with their sizes and 'view' links. Below this is a 'Downstream Projects' section showing 'MavenJava_Test'. The 'Permalinks' section contains a link to the last build.

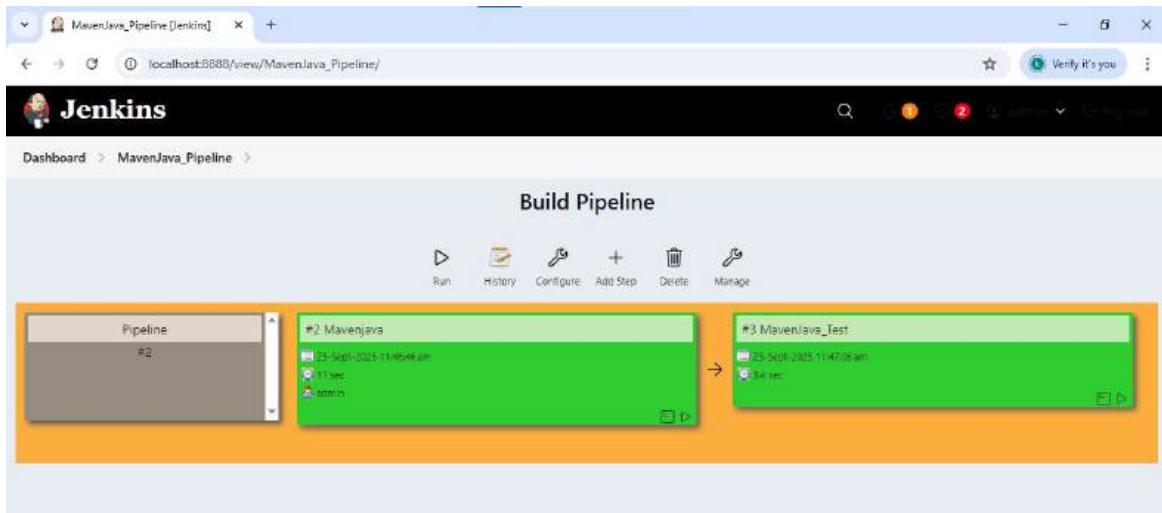
Name	Size	Action
.classpath	1.65 KiB	view
.project	1.06 KiB	view
.jstscope	639 B	view
org.eclipse.jdt.coreprefs	616 B	view
org.eclipse.m2e.coreprefs	90 B	view
org.eclipse.wst.common.component	665 B	view
org.eclipse.wst.common.project.facet.core.xml	252 B	view
org.eclipse.wst.jdtui.superType.container	49 B	view
org.eclipse.wst.jdtui.superType.name	6 B	view
org.eclipse.wst.validation.prefs	50 B	view
Dockerfile	131 B	view
pom.xml	738 B	view
webapp/index.jsp	57 B	view
webapp/WEB-INF/web.xml	222 B	view
pom.properties	71 B	view
org.demo/index.jsp	57 B	view
org.demo/WEB-INF/web.xml	222 B	view
org.demo.war	1.64 KiB	view

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', 'MavenJava_Test', 'Build Now', 'Configure', 'Delete Project', and 'Rename'. The main content area has tabs for 'Status' (highlighted), 'Changes', 'Workspace', and 'Build Now'. Under 'Status', there's a 'Builds' section with three entries: #3 (11:47 AM), #2 (11:46 AM), and #1 (11:45 AM). The 'Last Successful Artifacts' section lists various files with their sizes and 'view' links. Below this is a 'Upstream Projects' section showing 'Mavenjava'. The 'Permalinks' section contains links to both the last and stable builds.

Name	Size	Action
.classpath	1.65 KiB	view
.project	1.06 KiB	view
.jstscope	639 B	view
org.eclipse.jdt.coreprefs	616 B	view
org.eclipse.m2e.coreprefs	90 B	view
org.eclipse.wst.common.component	665 B	view
org.eclipse.wst.common.project.facet.core.xml	252 B	view
org.eclipse.wst.jdtui.superType.container	49 B	view
org.eclipse.wst.jdtui.superType.name	6 B	view
org.eclipse.wst.validation.prefs	50 B	view
Dockerfile	131 B	view
pom.xml	738 B	view
webapp/index.jsp	57 B	view
webapp/WEB-INF/web.xml	222 B	view
pom.properties	71 B	view
org.demo/index.jsp	57 B	view
org.demo/WEB-INF/web.xml	222 B	view
org.demo.war	1.64 KiB	view

MavenJava_pipeline

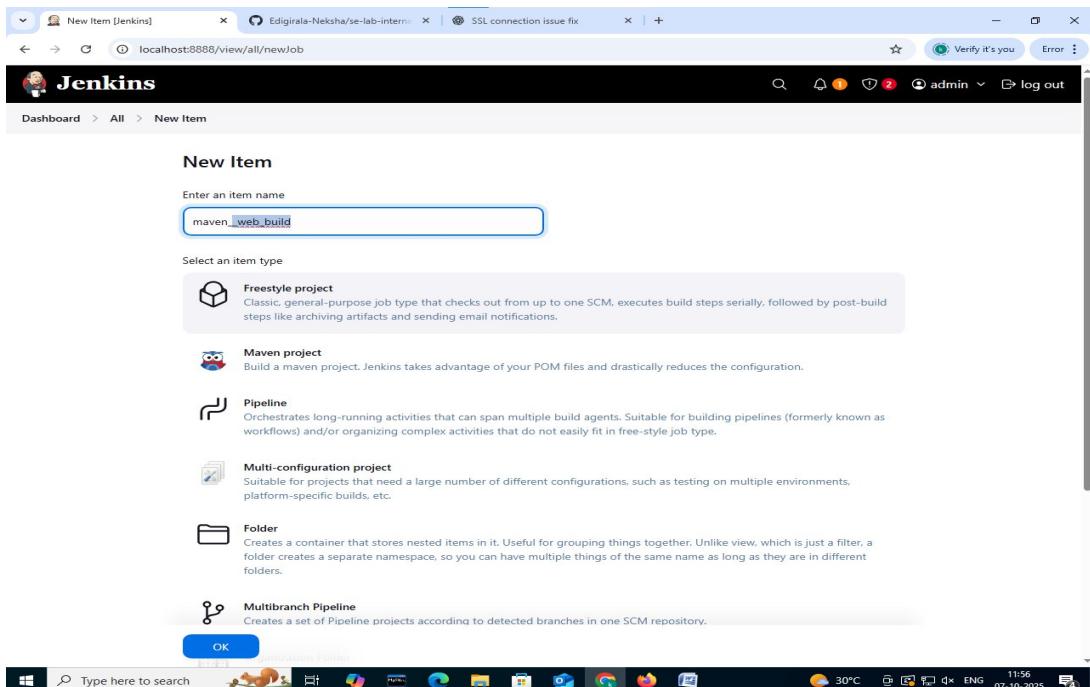


II. Maven Web Automation Steps:

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 URL in the address bar is 'localhost:8888/job/maven_web_build/configure'. The main header says 'Jenkins' with a user icon and 'Dashboard > maven_web_build > Configuration'. On the left, a sidebar lists 'Configure' sections: General, Source Code Management, Triggers, Environment, Build Steps, and Post-build Actions. The 'General' section is selected, showing a 'Description' field containing 'web build demo'. To the right, an 'Enabled' toggle switch is turned on. Below the General section, there's a 'Plain text' preview area with several checkboxes for build options: 'Discard old builds', 'GitHub project', 'Permission to Copy Artifact', 'This project is parameterized', 'Throttle builds', and 'Execute concurrent builds if necessary'. A 'Save' button is at the bottom.

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

The screenshot shows the Jenkins configuration interface for a job named "maven_web_build". The left sidebar lists several tabs: General, Source Code Management (which is selected and highlighted in grey), Triggers, Environment, Build Steps, and Post-build Actions. The main content area is titled "Source Code Management" and contains instructions to "Connect and manage your code repository to automatically pull the latest code for your builds." There are two radio button options: "None" and "Git". The "Git" option is selected, indicated by a blue circle. Below it, there is a section for "Repositories" with a "Repository URL" input field containing the value "https://github.com/Edigirala-Neksha/se-lab-internal-1.git". Under "Credentials", there is a dropdown menu set to "- none -" and a "+ Add" button. An "Advanced" dropdown menu is also present. At the bottom of this section is a "Add Repository" button. Below this is a "Branches to build" section with a "Branch Specifier (blank for 'any')?" input field containing the value "*main". At the bottom of the configuration page are "Save" and "Apply" buttons. The status bar at the bottom of the browser window shows the date and time as "07-10-2025 11:57".

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 configuration page for the job 'maven_web_build'. The 'Post-build Actions' section is open, displaying two actions:

- Archive the artifacts**: Set to archive files matching the pattern '**/*'. An 'Advanced' dropdown is visible.
- Build other projects**: Set to build the project 'maven_web_test'. Trigger options include 'Trigger only if build is stable' (selected), 'Trigger even if the build is unstable', and 'Trigger even if the build fails'.

At the bottom of the configuration page are 'Save' and 'Apply' buttons. The status bar at the bottom right indicates 'REST API' and 'Jenkins 2.489'. The taskbar at the very bottom shows various application icons.

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"

New Item

Enter an item name
maven_web_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 2: Configuration of maven_web_test project

Give the description

Configure

General

Enabled

Description
test demo

Plain text: Preview

Source Code Management

Discard old builds

GitHub project

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

The screenshot shows the Jenkins configuration interface for the 'maven_web_test' job. The left sidebar lists several tabs: 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 checkbox for 'Delete workspace before build starts', which has an 'Advanced' dropdown menu with options: '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 of the configuration page are 'Save' and 'Apply' buttons. The browser's address bar shows the URL as 'localhost:8888/job/maven_web_test/configure'. The system tray at the bottom right of the screen displays various icons and information, including the date '07-10-2025' and time '11:59'.

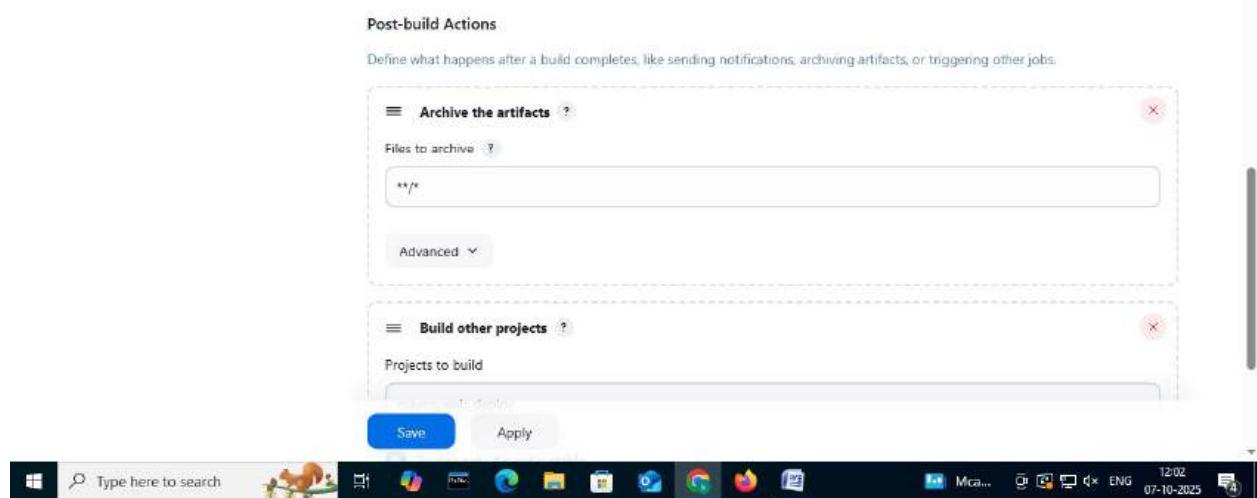
In the build steps click on add build step > select copy artifacts from another project > give project name as maven_web_build > give artifacts to copy as */*

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 'Project name' set to 'maven_web_build' and 'Which build' set to 'Latest successful build'. The 'Artifacts to copy' field contains '**/*'. The 'Save' and 'Apply' buttons are visible at the bottom.

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 'Maven Version' set to 'MAVEN_HOME' and 'Goals' set to 'test'. The 'Advanced' dropdown is expanded. The 'Add build step' button is visible at the bottom.

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 a Jenkins pipeline status page for the job 'maven_web_test'. The top navigation bar includes tabs for 'maven_web_test [Jenkins]', 'Edigirala-Neksha/se-lab-intern...', 'Apache Tomcat/9.0.98', and 'Jenkins support for Java 21'. The main header features the Jenkins logo and the pipeline name 'maven_web_test'. A sidebar on the left contains links for 'Status', 'Changes', 'Workspace', 'Build Now', 'Configure', 'Delete Project', and 'Rename'. Below this is a 'Builds' section with a 'Filter' input, showing builds from 'Today': #4 (12:36 PM), #3 (12:36 PM), #2 (11:43 AM), and #1 (11:43 AM). The main content area displays the pipeline status as 'test demo' with a green checkmark icon. It includes sections for 'Upstream Projects' (maven_web_build) and 'Downstream Projects' (maven_web_deploy). The 'Permalinks' section lists recent builds: Last build (#4), Last stable build (#4), Last successful build (#4), and Last completed build (#4), all from 1 min 30 sec ago. The bottom right corner shows links for 'REST API' and 'Jenkins 2.489'.

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 Cancel

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". The "Enabled" switch is turned on. On the left sidebar, there are tabs for General, Source Code Management, Triggers, Environment, Build Steps, and Post-build Actions. Under "Post-build Actions", several options are listed with checkboxes: Discard old builds, GitHub project, Permission to Copy Artifact, This project is parameterized, Throttle builds, and Execute concurrent builds if necessary. Below the General tab, there is a "Source Code Management" section with a "Connect and manage your code repository to automatically pull the latest code for your builds." message. At the bottom of the configuration page, there are "Save" and "Apply" buttons. The browser's address bar shows the URL "localhost:8888/job/maven_web_deploy/configure". The operating system taskbar at the bottom includes icons for File Explorer, Edge, FileZilla, Google Chrome, Mozilla Firefox, and Notepad, along with system status indicators like battery level and network connection.

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 "Source Code Management" section is set to "None". The "Environment" section has the checkbox "Delete workspace before build starts" checked. The Jenkins status bar at the bottom indicates "NIFTY" and the date "07-10-2025".

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

Reschedule a build if it's stuck

Save **Apply**

Windows taskbar at the bottom:

- Type here to search
- Start button
- Icons for File Explorer, Edge, Google Chrome, and others
- Network connection icon
- NIFTY
- Date: 07-10-2025
- Time: 12:07
- Notification icon

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. Within 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/*****" 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, there's a link to 'deploy demo'. A sidebar on the left lists options: 'Changes', 'Workspace', 'Build Now', 'Configure', 'Delete Project', and 'Rename'. The 'Builds' section displays a list of recent builds, with the most recent one (#13) marked as successful (green checkmark). The system tray at the bottom shows icons for battery, signal, temperature (30°C), and date/time (07-10-2025).

Status maven_web_deploy

deploy demo

Upstream Projects

maven_web_test

Permalinks

- Last build (#13), 1 min 54 sec ago
- Last stable build (#13), 1 min 54 sec ago
- Last successful build (#13), 1 min 54 sec ago
- Last failed build (#11), 6 min 58 sec ago
- Last unsuccessful build (#11), 6 min 58 sec ago
- Last completed build (#13), 1 min 54 sec ago

Build	Date
#13	12:36 PM
#12	12:35 PM
#11	12:31 PM
#10	12:28 PM
#9	12:20 PM
#8	12:19 PM
#7	12:12 PM
#6	11:50 AM
#5	11:50 AM
#4	11:48 AM

Type here to search

30°C

12:38

07-10-2025

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 'New view' creation interface. On the left, there's a sidebar with links: 'New Item', 'Build History', 'Project Relationship', 'Check File Fingerprint', 'Manage Jenkins', and 'My Views'. Below this is a 'Build Queue' section showing 'No builds in the queue.' and a 'Build Executor Status' section showing '0/2'. The main area is titled 'New view' and contains two sections: 'Name' (with the value 'maven_web_pipeline') and 'Type'. Under 'Type', 'Build Pipeline View' is selected (indicated by a blue circle), while 'List View' and 'My View' are unselected (indicated by grey circles). A detailed description for 'Build Pipeline View' 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.' At the bottom right is a large blue 'Create' button.

Give the description and in the upstream directly the maven_web_build will be shown

Dashboard > maven_web_pipeline > Edit View

Edit View

Name: maven_web_pipeline

Description: Describe the purpose of this view.

Plain text: Preview

Build Pipeline View Title:

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

Dashboard > maven_web_pipeline > Edit View

Column Headers

No header

Do not show any column headers

Refresh frequency (in seconds): 3

URL for custom CSS files:

Console Output Link Style

Lightbox

Widgets

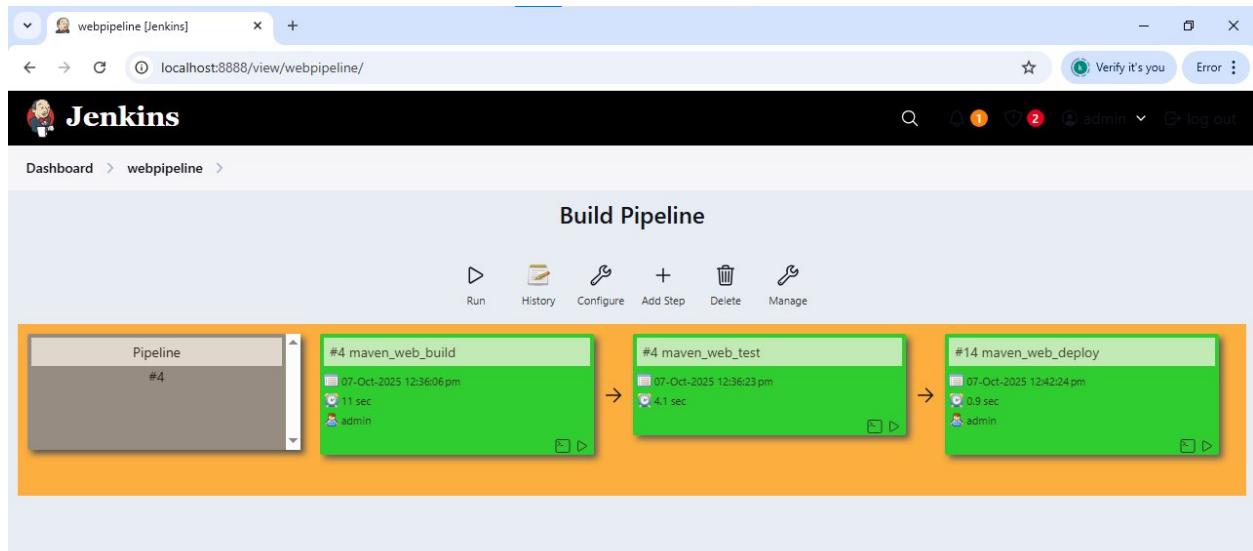
Customize the widgets that show in this view.

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.

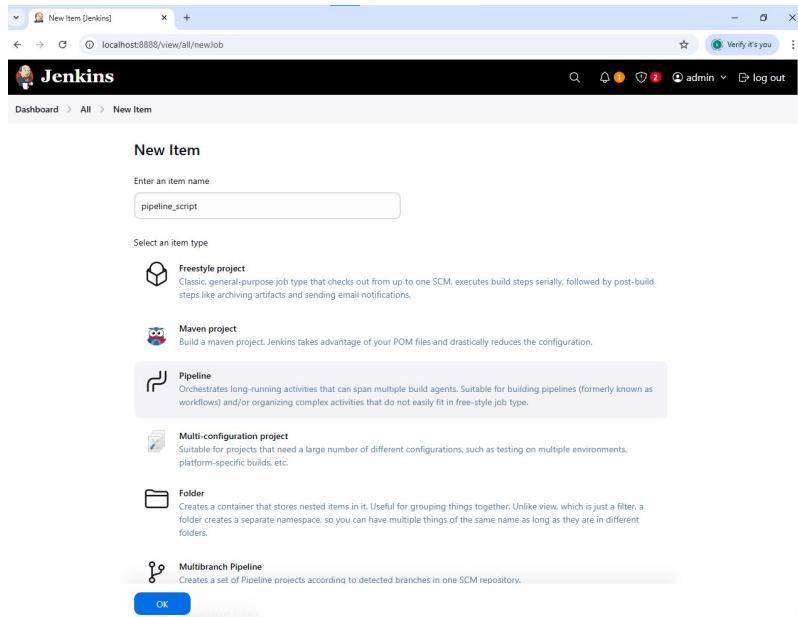
Save Apply

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

Configure

General

Enabled

Description

here we are creating using scripted

Plain text Preview

Discard old builds ?

Do not allow concurrent builds

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 configuration interface for a job named "pipeline_script". The "General" tab is selected. Under "Build Triggers", several options like "Build after other projects are built" and "GitHub hook trigger for GITScm polling" are listed. The "Advanced Project Options" section has an "Advanced" dropdown. The "Pipeline" section shows the "Definition" set to "Pipeline script" and contains a script editor with the following Groovy code:

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

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 script is defined 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".

At the very bottom of the window, a taskbar is visible with various icons and system status information.

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 the Jenkins logo, user information (Verify it's you, admin), and a log out link. Below the header, the breadcrumb navigation shows 'Dashboard > pipeline_script >'. On the left, a sidebar menu lists options: Status (highlighted with a green checkmark), Changes, Build Now, Configure, Delete Pipeline, Full Stage View, Stages, Rename, and Pipeline Syntax. The main content area is titled 'Stage View' and displays a table of stage times. The 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. A tooltip for the first stage indicates 'Oct 07 11:02' and 'No Changes'. Below the table, a 'Builds' section shows a single build entry: '#2 11:02 AM'. The 'Permalinks' section lists four build links: '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', and 'Last completed build (#2), 4 min 29 sec ago'.

Declarative: Tool Install	git repo & clean	install	test	package
296ms	5s	9s	3s	4s
Oct 07 11:02	No Changes			
296ms	5s	9s	3s	4s

Builds

Oct 07 11:02 AM

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

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:
```

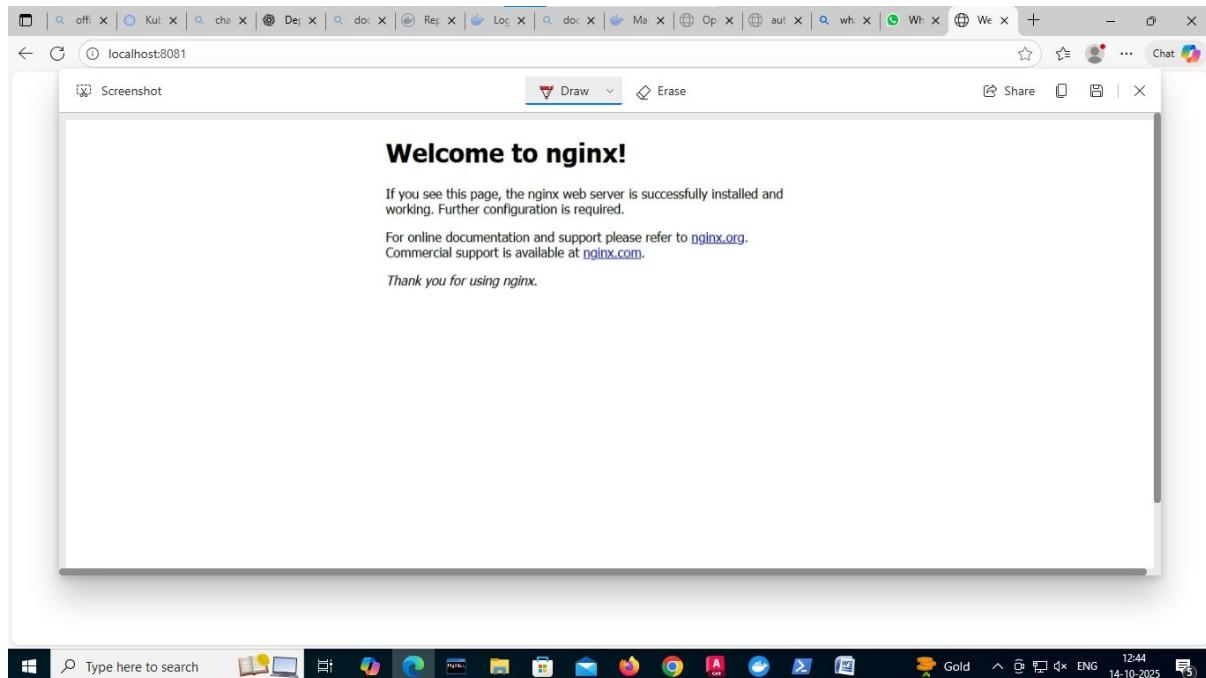
Step-6:Check the NGINX Service Details

- 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'. Under 'Source Code Management', the 'Git' option is selected. In the 'Repositories' section, the 'Repository URL' is set to 'https://github.com/Edigirala-Neksha/se-lab-internal-1.git'. The 'Branches to build' section shows a 'Branch Specifier' of '/main'. Other tabs like General, Triggers, Environment, Build Steps, and Post-build Actions are visible.

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'. Under 'Triggers', the 'GitHub hook trigger for GITScm polling' checkbox is checked. Other options like 'Trigger builds remotely' and 'Build periodically' are available but unchecked. The 'Save' and 'Apply' buttons are at the bottom.

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 'General' settings, including the repository name 'se-lab-internal-1', a 'Template repository' section, and a 'Require contributors to sign off on web-based commits' section. Below that is the 'Default branch' section, which shows 'main' as the default branch. At the bottom right of this section is a checkbox for 'Enable release immutability'. A 'Copilot' section is also visible.

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' page for the same repository. The 'Payload URL' field contains the value '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 the 'Enable SSL verification' radio button selected. The 'Which events would you like to trigger this webhook?' section has the 'Just the push event.' option selected.

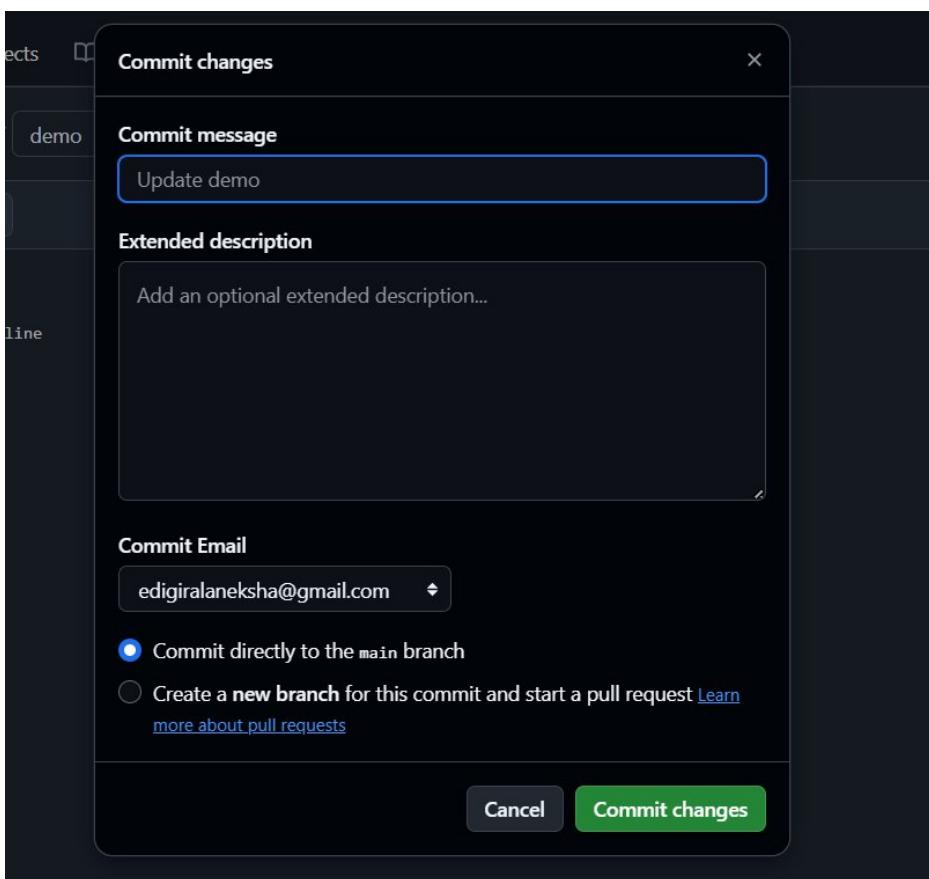
Step 8: make changes in the files in github

A screenshot of a GitHub repository interface. The repository name is "Edigirala-Neksha / se-lab-internal-1". The "Code" tab is selected. In the main pane, there is a file named "demo" which contains the following code:

```
1 demooooooo
2 webhook
3 xxxxxxx-new line|
```

The "Commit changes" button is visible at the top right of the editor area.

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 project name '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 red circle icon, followed by the note 'In the quiet period. Expires in 2.9 sec'. Under the 'Today' heading, there is a successful build labeled '#2' with a green checkmark icon.

- Last build (#2), 3 min 46 sec ago
- Last stable build (#2), 3 min 46 sec ago
- Last successful build (#2), 3 min 46 sec ago
- Last completed build (#2), 3 min 46 sec ago

Builds
Pending
#3 In the quiet period. Expires in 2.9 sec
Today
#2 11:36 am



- [Status](#)
- [Changes](#)
- [Workspace](#)
- [Build Now](#)
- [Configure](#)
- [Delete Project](#)
- [GitHub Hook Log](#)
- [Rename](#)
- [Credentials](#)

job_webhook_java

Permalinks

- Last build (#2), 3 min 46 sec ago
- Last stable build (#2), 3 min 46 sec ago
- Last successful build (#2), 3 min 46 sec ago
- Last completed build (#2), 3 min 46 sec ago

Builds

Filter /

Today

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

You can check status : started by git hub push

Jenkins / job_webhook_java / #3

Status #3 (28-Oct-2025, 11:41:02 am) Add description Keep this build forever

</> Changes Started by GitHub push by Edigirala-Neksha Started 20 sec ago
Console Output Took 2.1 sec

Edit Build Information 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>

Git Build Data • refs/remotes/origin/main

<- Previous Build 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

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

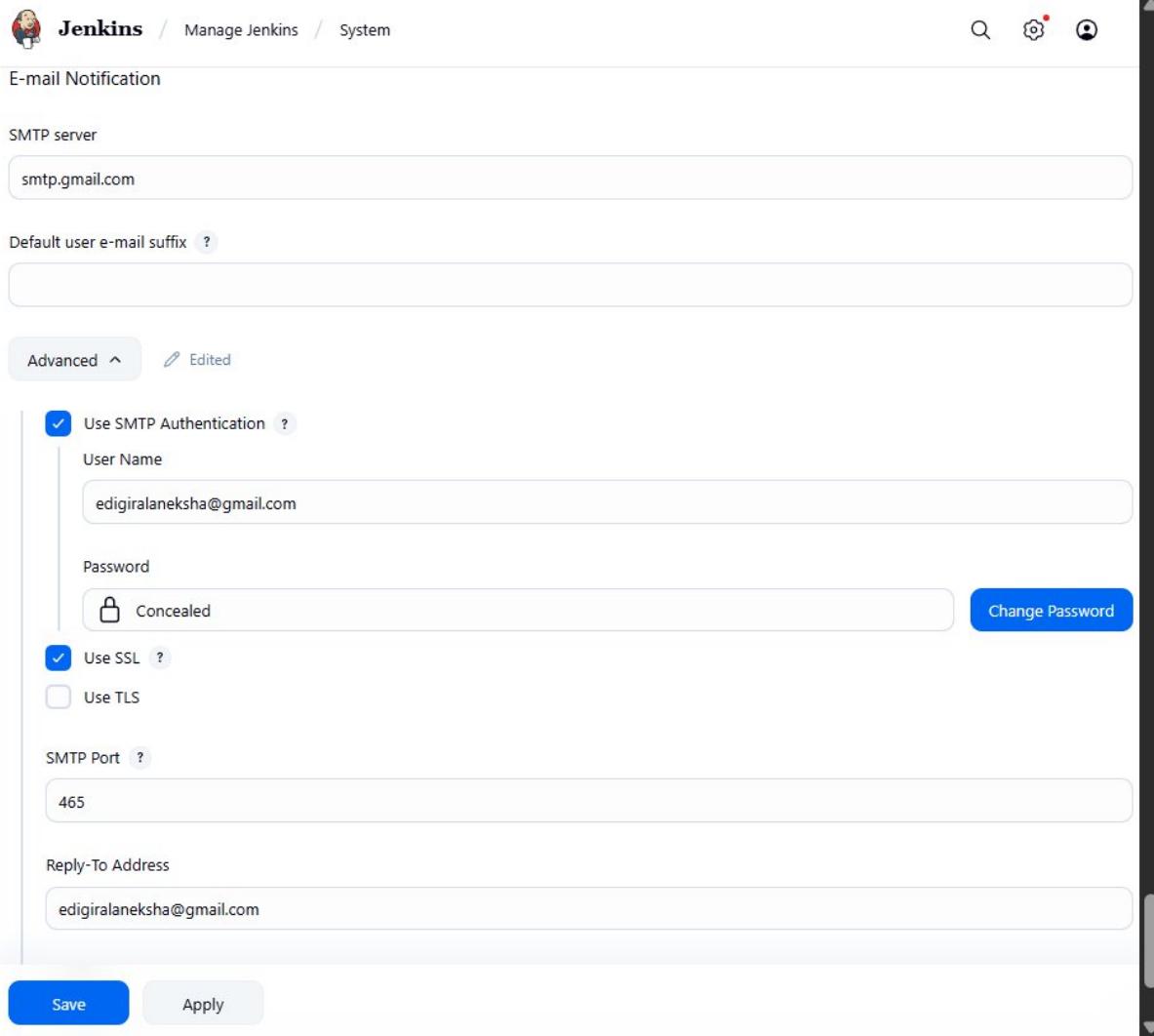
Use SSL ?

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	✓ Enabled
Credentials	Add Gmail ID and App Password as Jenkins credentials
Default Content Type	text/html or leave default

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

Extended E-mail Notification

SMTP server

SMTP Port

Advanced ^ Edited

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 top navigation bar includes the Jenkins logo, the job name, and links for Configuration, Help, and Logout. On the left, a sidebar lists 'General', 'Source Code Management', 'Triggers', 'Environment', 'Build Steps', and 'Post-build Actions'. The 'General' tab is selected. The main content area is titled 'General' and contains a 'Description' field with the value 'java webhook'. Below this are several checkboxes for build options: 'Discard old builds', 'GitHub project', 'Notify when Job configuration changes', 'This project is parameterized', 'Throttle builds', and 'Execute concurrent builds if necessary'. A 'Plain text Preview' link is also present. An 'Advanced' dropdown menu is at the bottom. The 'Source Code Management' section is expanded, showing 'None' and 'Git' as options, with 'Git' selected. Below it is a 'Repositories' link. At the bottom 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
Project Recipient List	Add recipient email addresses (comma-separated)
Content Type	Default (text/plain) or text/html
Triggers	Select events (e.g., Failure, Success, etc.)
Attachments	(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

edigiralaneksha@gmail.com, nekshasri99@gmail.com

Project Recipient List ?

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

edigiralaneksha@gmail.com, nekshasri99@gmail.com

Project Reply-To List ?

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

\$DEFAULT_REPLYTO

Save **Apply**

 Jenkins / job_webhook_java

[Create new job](#)

[Rename](#)

[Credentials](#)

Builds

Filter

Today

 #4 11:45 am

28 October 2025

 #3 11:41 am

 #2 11:36 am

 #1 11:35 am

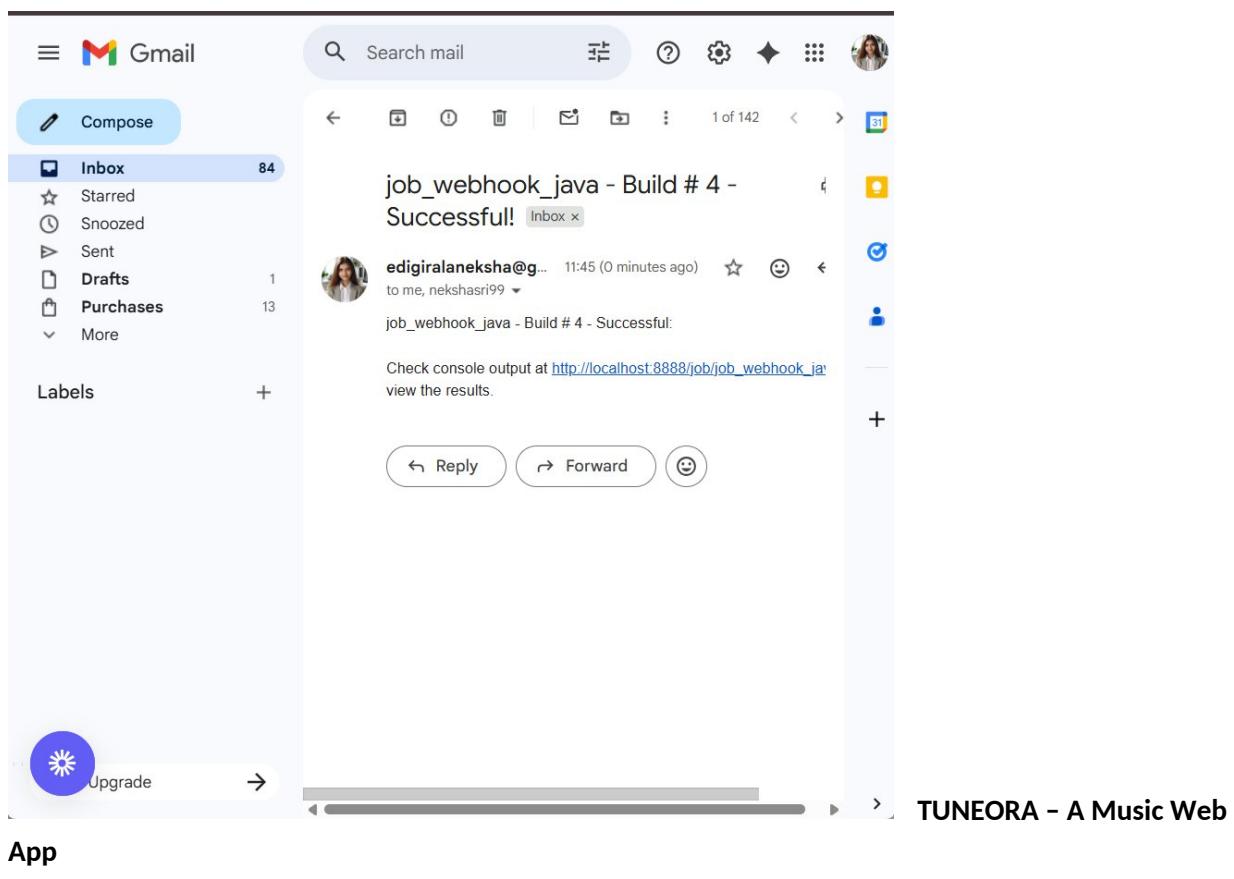
 **job_webhook_java**

[Add description](#)

Permalinks

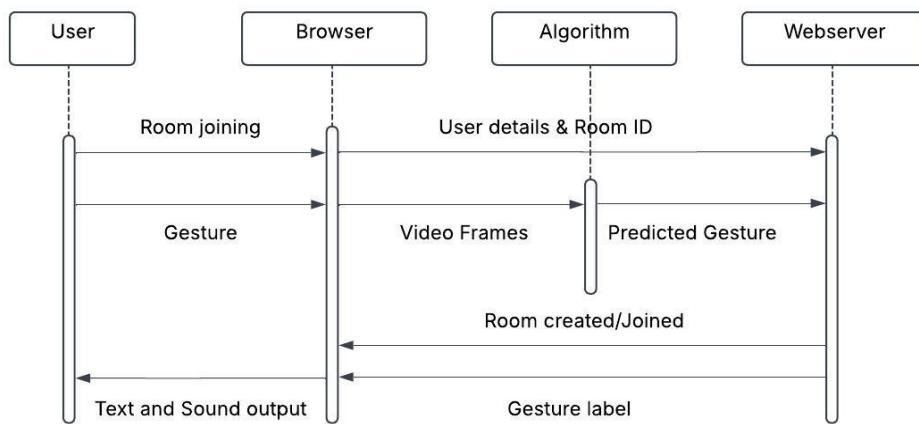
- [Last build \(#3\), 3 days 0 hr ago](#)
- [Last stable build \(#3\), 3 days 0 hr ago](#)
- [Last successful build \(#3\), 3 days 0 hr ago](#)
- [Last completed build \(#3\), 3 days 0 hr ago](#)

[REST API](#) Jenkins 2.516.3



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.

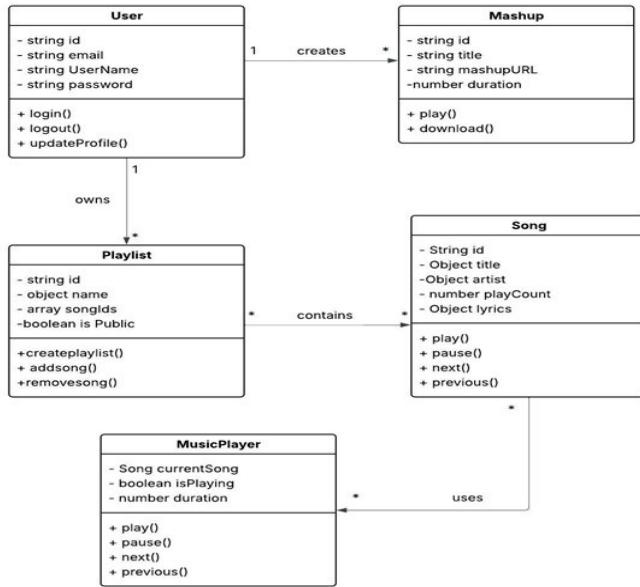
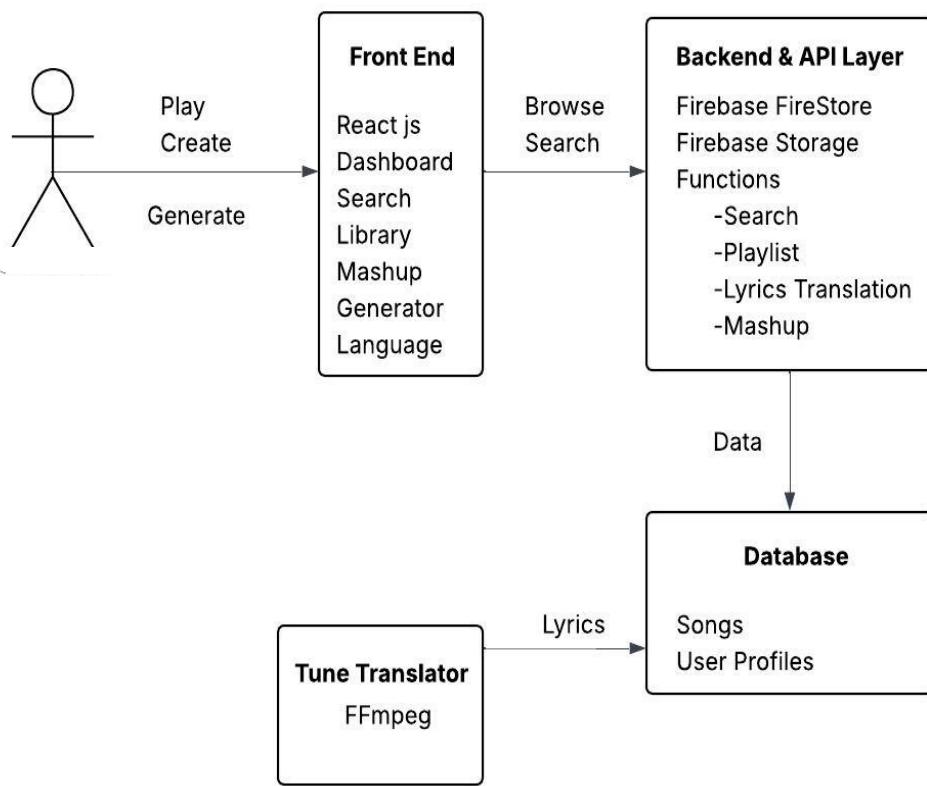


Fig 5: Class Diagram for TuneOra

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 is a dark sidebar with icons for Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main navigation bar at the top has 'ALLv2EN-US...' as the course name, followed by 'Modules', 'AWS Academy', and 'Launch AWS Academy Learner Lab'. Below the navigation is a toolbar with 'Used \$0 of \$50', a timer set to '00:00', and buttons for 'Start Lab', 'End Lab', 'AWS Details', 'Readme', and 'Reset'. A dropdown menu shows 'en-US'. The central area features a large blue downward-pointing arrow with a red curved arrow above it, indicating the direction of the lab flow. To the right is a 'Learner Lab' section with a table of contents:

- 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
- SSH Access from Windows

At the bottom are 'Previous' and 'Next' buttons.

Step 2: Scroll down and select Lunch AWS Academy Lab

This screenshot shows the same AWS Academy Learner Lab interface as the previous one, but with a different focus. The 'AWS Academy Learner Lab' section is expanded, and the 'Launch AWS Academy Learner Lab' item is highlighted with a blue background. The rest of the interface remains the same, including the sidebar, navigation bar, and table of contents on the right.

Step 3: click on start lab

The screenshot shows the AWS Academy Learner Lab interface. On the left is a dark sidebar with icons for Account, Dashboard, Courses, Calendar, Inbox, History, and Help. The main area has a top navigation bar with 'ALLv2EN-US-LTI13-141967 > Modules > AWS Academy Learner Lab > Launch AWS Academy Learner Lab'. Below this is a toolbar with 'AWS' (red dot), 'Used \$0 of \$50', '00:00', and buttons for 'Start Lab', 'End Lab', 'AWS Details', 'Readme', 'Reset', and close. A terminal window shows the command 'eee_W_5353255@runweb195092:~\$'. To the right is a 'Learner Lab' panel with a dropdown for 'EN-US'. The 'Learner Lab' section contains a title and 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. Navigation buttons 'Previous' and 'Next' are at the bottom.

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

This screenshot is identical to the one above, except the 'AWS' icon in the top navigation bar now has a green dot, indicating it is selected. The rest of the interface, including the terminal window, learner lab panel, and navigation buttons, remains the same.

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

Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:

Instances (running)	0	Auto Scaling Groups	0	Capacity Reservations	0
Dedicated Hosts	0	Elastic IPs	0	Instances	0
Key pairs	1	Load balancers	0	Placement groups	0
Security groups	1	Snapshots	0	Volumes	0

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Service health

AWS Health Dashboard

Regions

US East (N. Virginia)

Status

This service is operating normally.

Zones

Zone name | Zone ID

Account attributes

Default VPC

vpc-0da3310938e1da95f

Settings

Data protection and security
Allowed AMIs
Zones
EC2 Serial Console
Default credit specification
EC2 console preferences

Explore AWS

Get Up to 40% Better Price Performance
T4g instances deliver the best price performance for burstable general purpose workloads in Amazon EC2.
Learn more

10 Things You Can Do Today to Reduce AWS Costs
Explore how to effectively manage your AWS costs without compromising on performance or capacity.
Learn more

Step 6: Give the name of the machine "week-122"

Launch an instance

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags

Name: week-122 | Add additional tags

Application and OS Images (Amazon Machine Image)

An AMI contains the operating system, application server, and applications for your instance. If you don't see a suitable AMI below, use the search field or choose [Browse more AMIs](#).

Summary

Number of instances: 1

Software Image (AMI)

Canonical, Ubuntu, 24.04, amd64... [read more](#)

ami-0ec62995f6bb549

Virtual server type (instance type)

t3.micro

Firewall (security group)

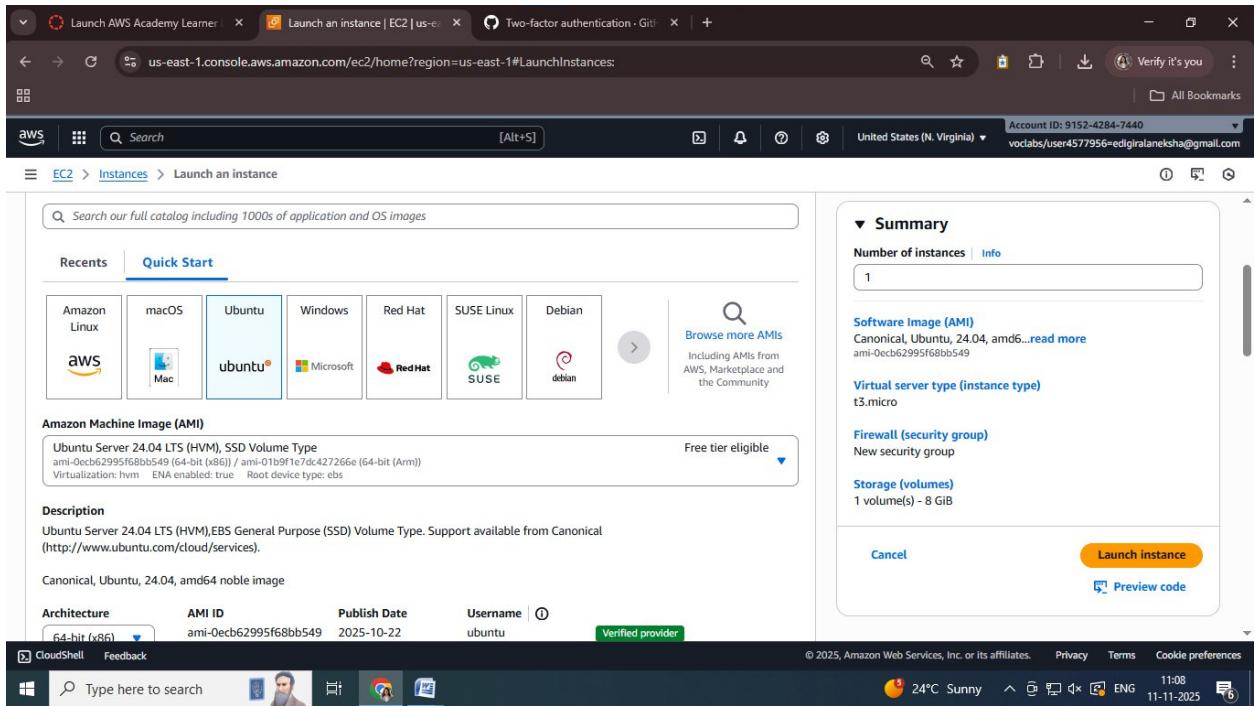
New security group

Storage (volumes)

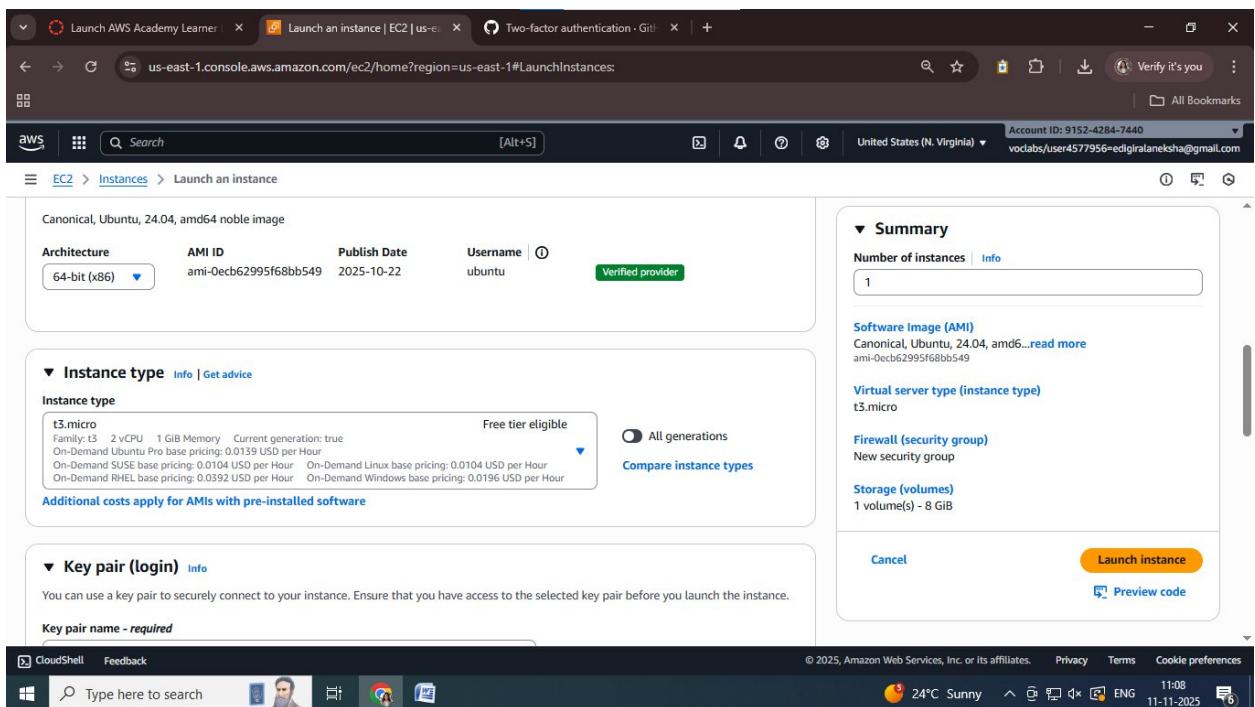
1 volume(s) - 8 GiB

Launch instance | [Preview code](#)

Step 6: Select the ubuntu server



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



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

Create key pair

X

Key pair name

Key pairs allow you to connect to your instance securely.

week-122

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

RSA

RSA encrypted private and public key pair

ED25519

ED25519 encrypted private and public key pair

Private key file format

.pem

For use with OpenSSH

.ppk

For use with PuTTY

⚠️ When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more ↗](#)

Cancel

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 [L](#)

Availability Zone | [Info](#)

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

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](#) Remove

ssh TCP 22

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-0ecb62995168bb5e9

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, 1x 8 GiB gp3 volume is selected. The 'Number of instances' dropdown is set to 2. The 'Software image (AMI)' dropdown is set to Canonical, Ubuntu, 24.04, amd64. The 'Virtual server type (instance type)' dropdown is set to 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 is currently at 33% completion, showing the step 'Creating security group rules'. A message below the progress bar 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. A green success message at the top states: 'Successfully initiated launch of Instances (i-0f868fd463f89656, i-0a5aa6fe5d0039e34)'. Below this, there is a 'Launch log' section and a 'Next Steps' section with several options:

- 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
- Manage CloudWatch alarms

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

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public
week-12	i-0d69dc97b6767aaaf3	Terminated	t3.micro	-	View alarms	us-east-1a	-	-
week-122	i-0a5aa6fe5d0039e34	Running	t3.micro	Initializing	View alarms	us-east-1c	ec2-13-220-246-239.co...	13.220
webapp	i-0f868f6d463f89656	Running	t3.micro	Initializing	View alarms	us-east-1c	ec2-13-222-21-231.co...	13.222

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

EC2 Instance Connect | Session Manager | **SSH client** | EC2 serial console

Instance ID
i-0f868f6d463f89656 (week-122)

- Open an SSH client.
- Locate your private key file. The key used to launch this instance is week-122.pem.
- Run this command, if necessary, to ensure your key is not publicly viewable.
`chmod 400 week-122.pem`
- Connect to your instance using its Public DNS:
`ssh -i "week-122.pem" ubuntu@ec2-13-222-21-231.compute-1.amazonaws.com`

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.

Command copied

Cancel

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/1AVLsqfmafnMphv5Ad4AlMwo8qECo.
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.

00 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, 288 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 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates/main amd64 dnsmasq-base amd64 2.90-2ubuntu0.1 [376 kB]
Get:6 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: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 kB]
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: Pull complete
```

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

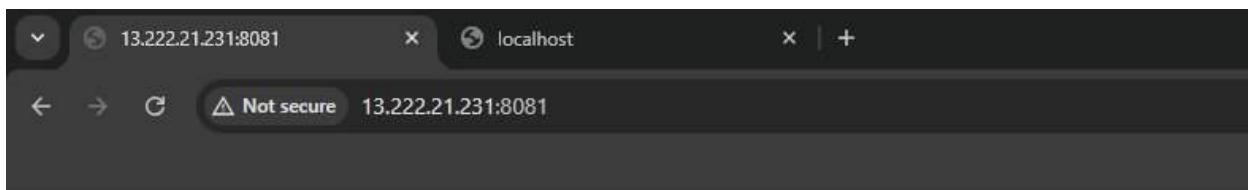
```
root@ip-172-31-9-83:/home/ubuntu/ar/maven-practice# sudo docker images
REPOSITORY      TAG      IMAGE ID      CREATED      SIZE
img1           latest    a67a112ce8ac  2 minutes ago  413MB
dep1           latest    28efbe56e633  29 minutes ago  413MB
tomcat          9.0     2e4887a16e43  12 hours ago   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