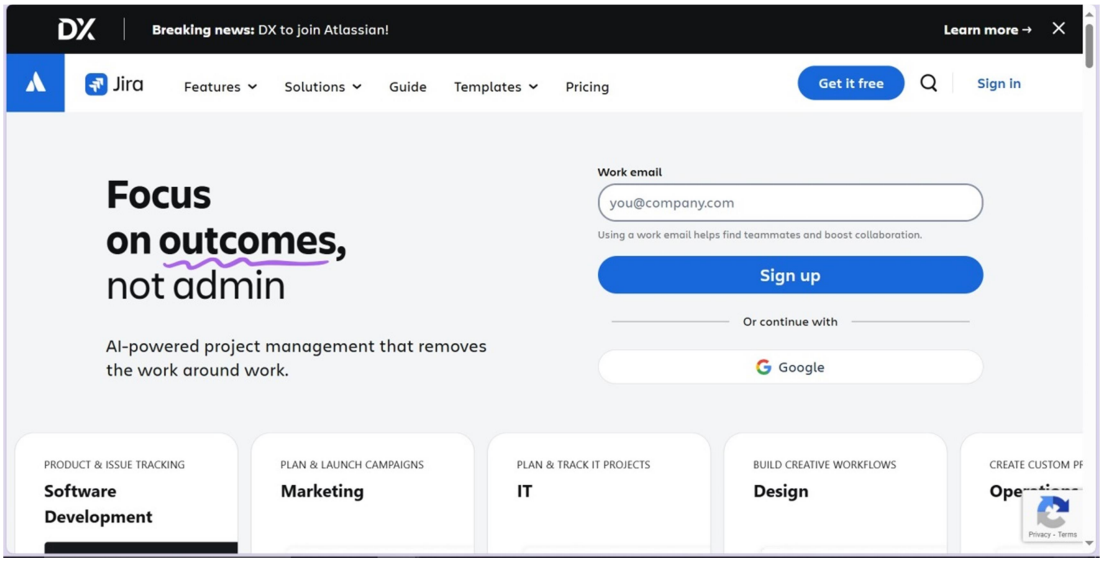
Table of Content

1. Create a Project Plan and Project Backlog for a Project and User Stories using Jira Software

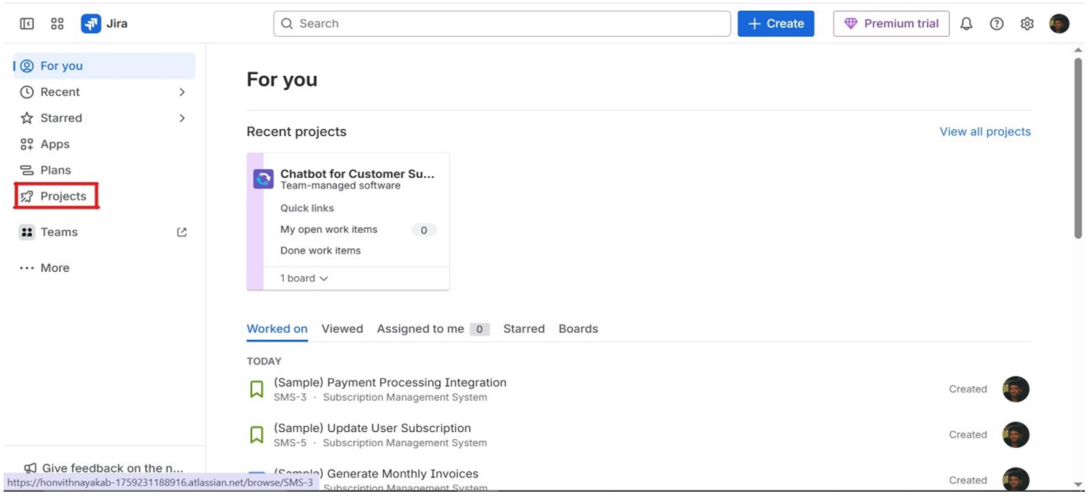
Step 1 : Login to Jira

- Open your browser and search for “Jira Login”.
- Login with you Gmail Account

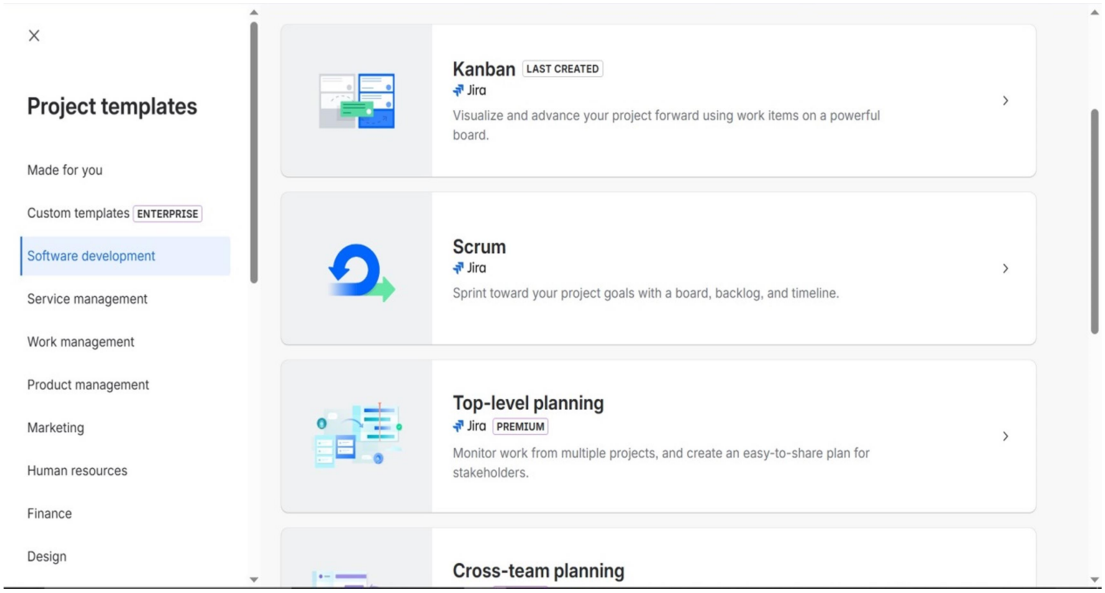


Step 2: Create a new Project

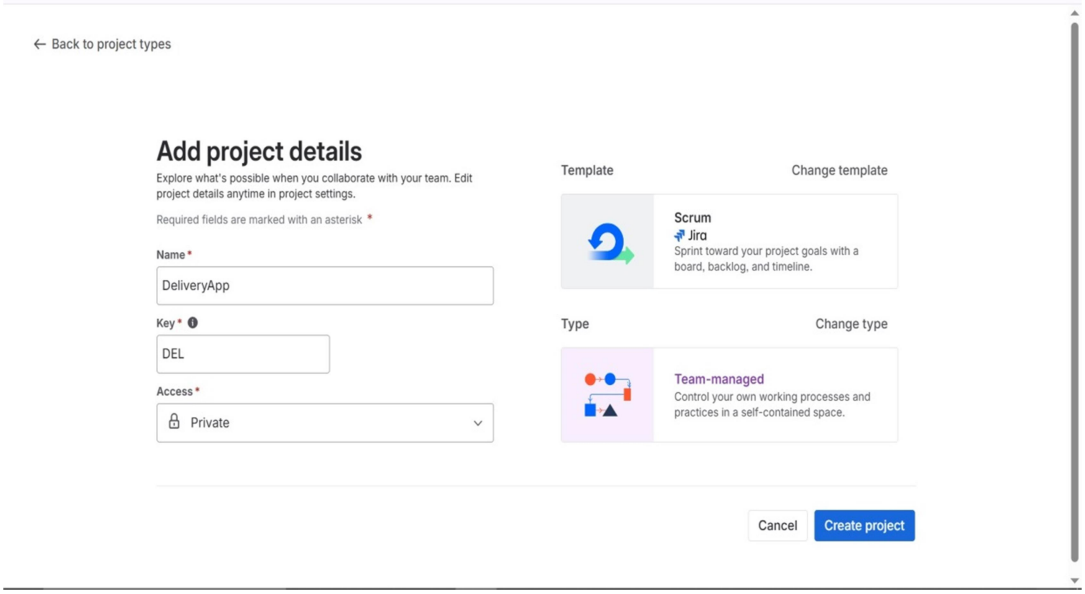
- In the side menu look for Project and select “Create Project”



- Select “Software Development” and in that use the “Scrum” Template to start you Project

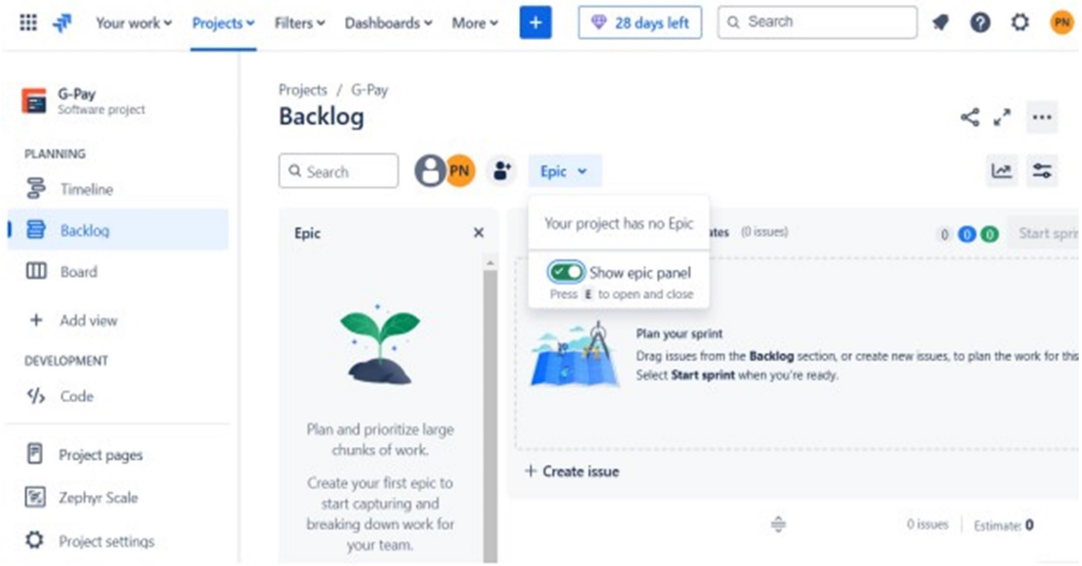


- Select “Team-Managed Project” as the project type
- Give your project a name, and click next to Proceed

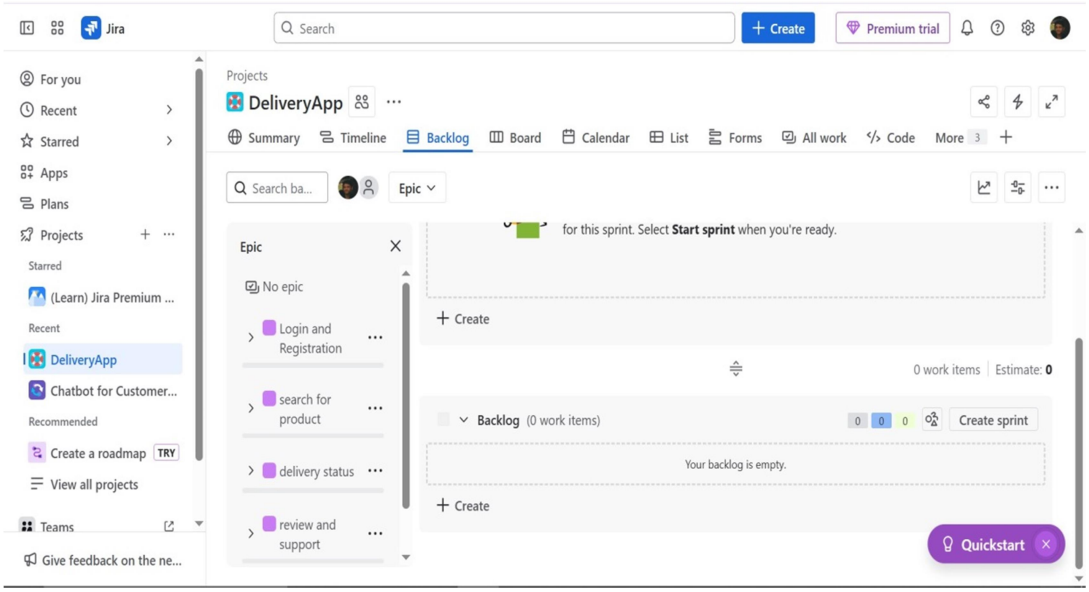


Step 3: Create your Project Backlogs

- Come to the “Backlog” tab in your project
- Enable “Epic” by selecting “Show epic panel”

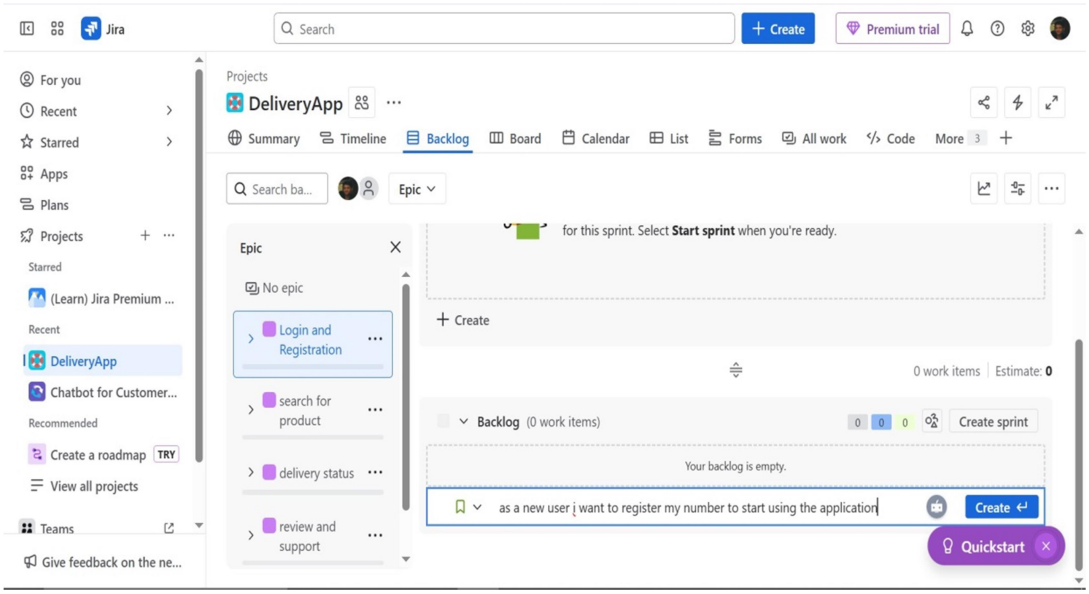


- In the Epic column create different Epics for different Issues Ex- “Login and Registration”.



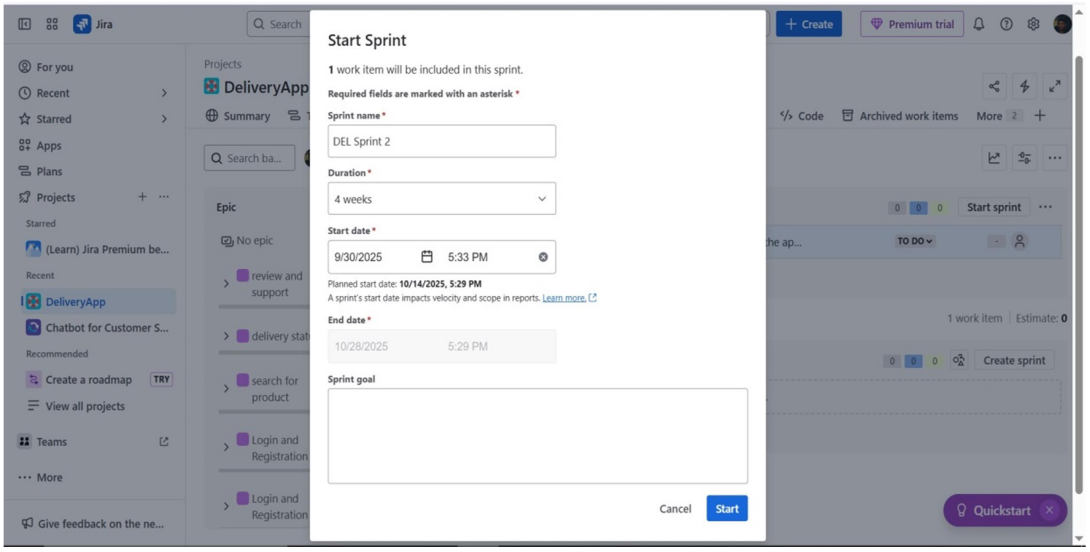
Step 4: Create User Stories

- For each epic, create related issues such as User Story, Acceptance Criteria, and Tasks by selecting appropriate issue types.
- Select a epic and create a user story related to that
- For each user story use appropriate acceptance criteria and task



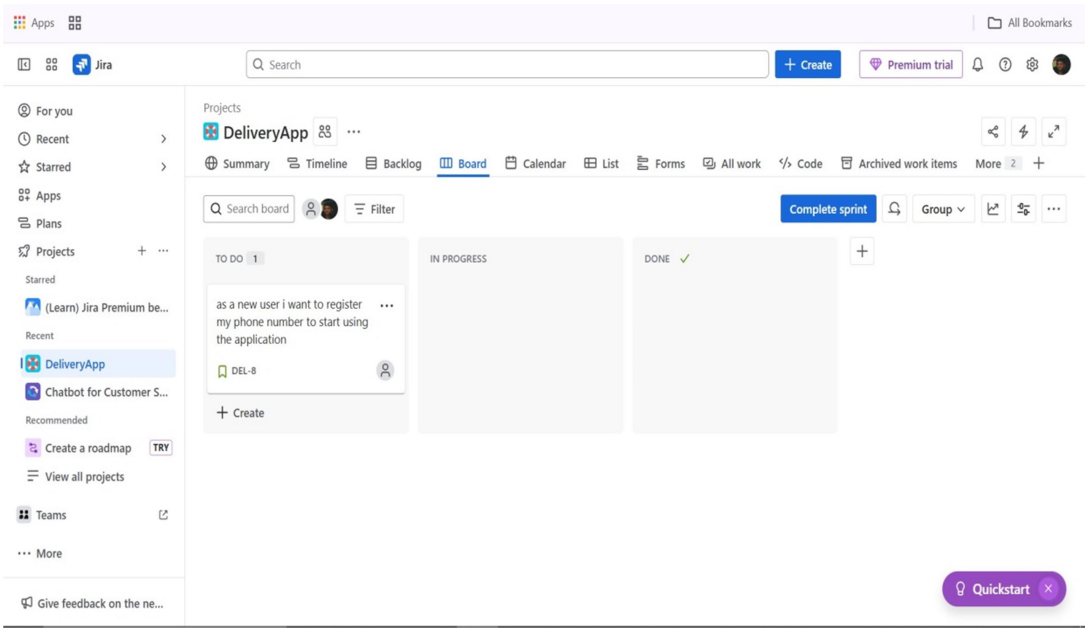
Step 5: Start a Sprint

- Once issues are created, drag and drop in the sprint above.
- After dropping click on “Create a Sprint”.
- Give the sprint details like name, duration, and start date.
- Click on “Start”.



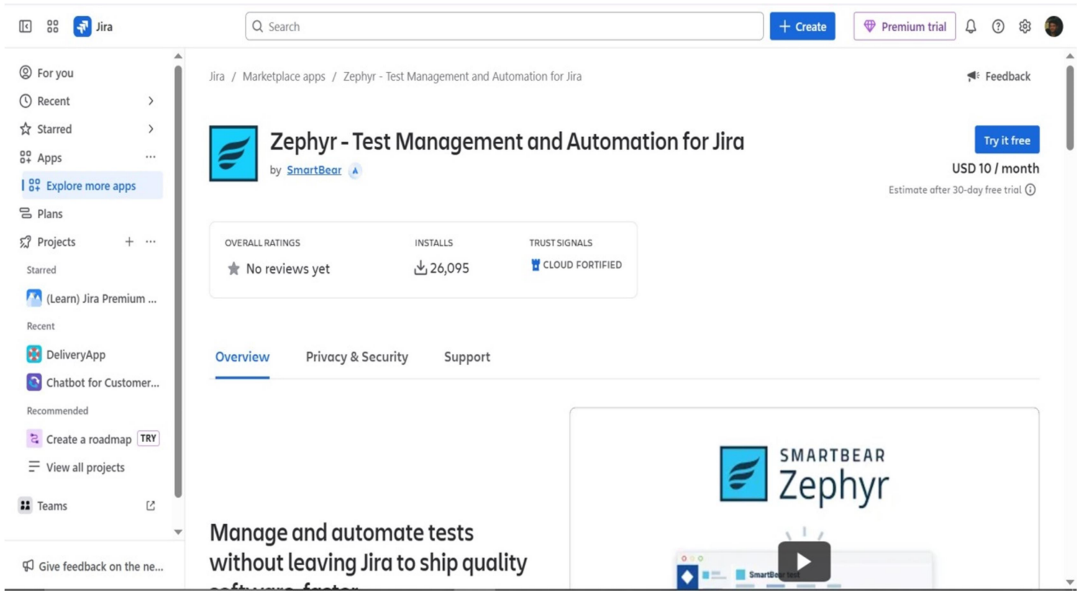
Step 6: Check the tasks status

- Come to the “Boards” tab and check the status of tasks of your current spring
- Move them “In Progress” and “Done” based on the task completion



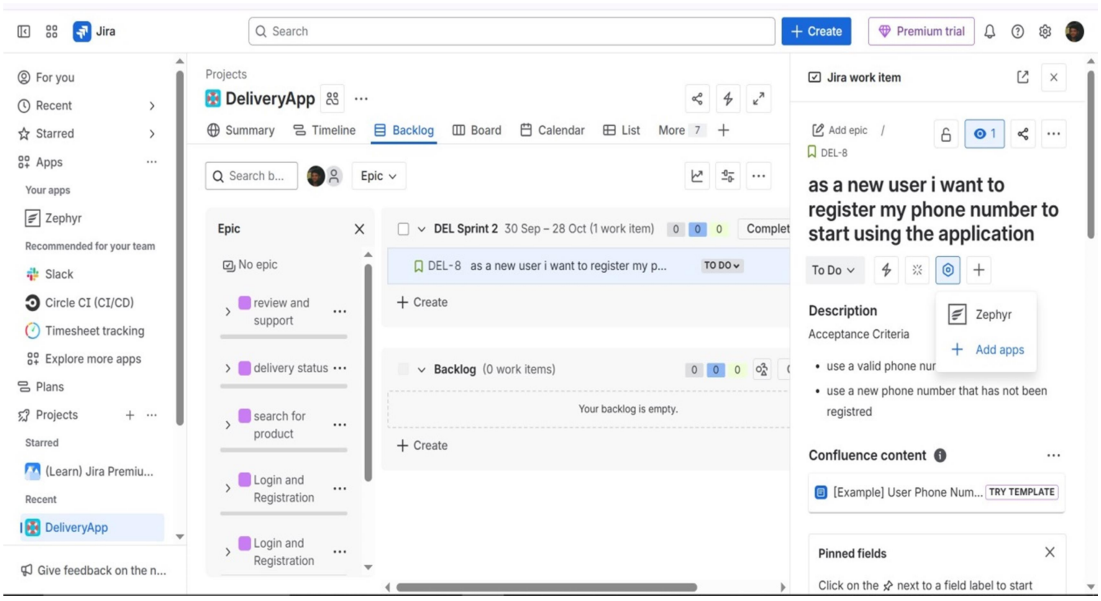
Step 7: Add Test Cases

- In the menu bar go to “Apps” and “Explore Apps”.
- Search for “Zephyr”.
- Select “Zephyr-Test Management and Automation for Jira”
- And click on “Try for Free”.



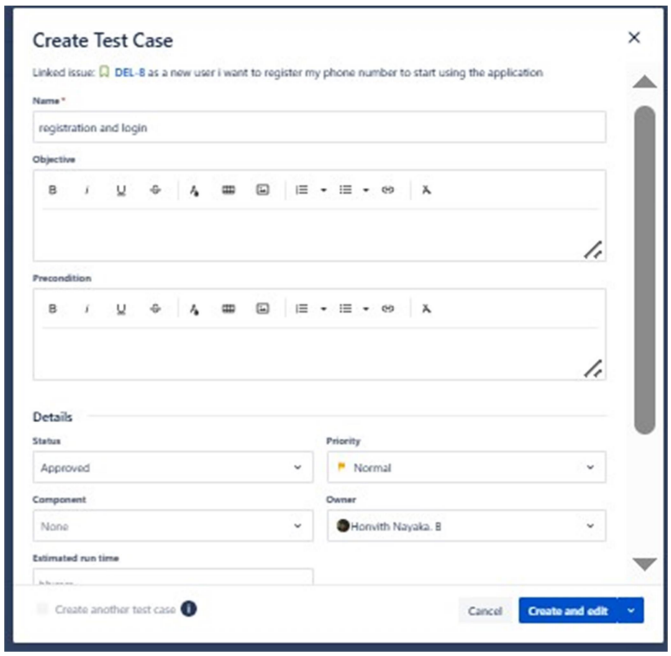
Step 8: Add Test Cases.

- Come to “Backlogs”.
- Select you User Story.
- Select the gear Symbol and add Zephyr Scale tool.
- Now it will appear in the gear menu.



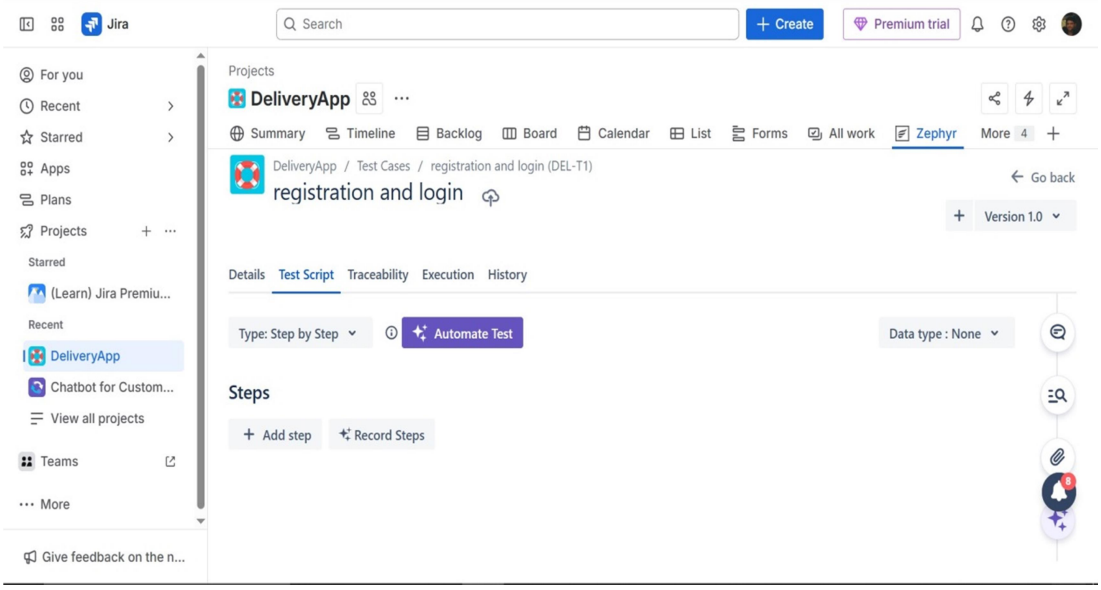
Step 9: Create Test Cases using Zephyr Scale.

- Select Zephyr in you user story as shown in the above picture
- Click on “Create a new Test Case”.
- Give test Details like name, state, priority.

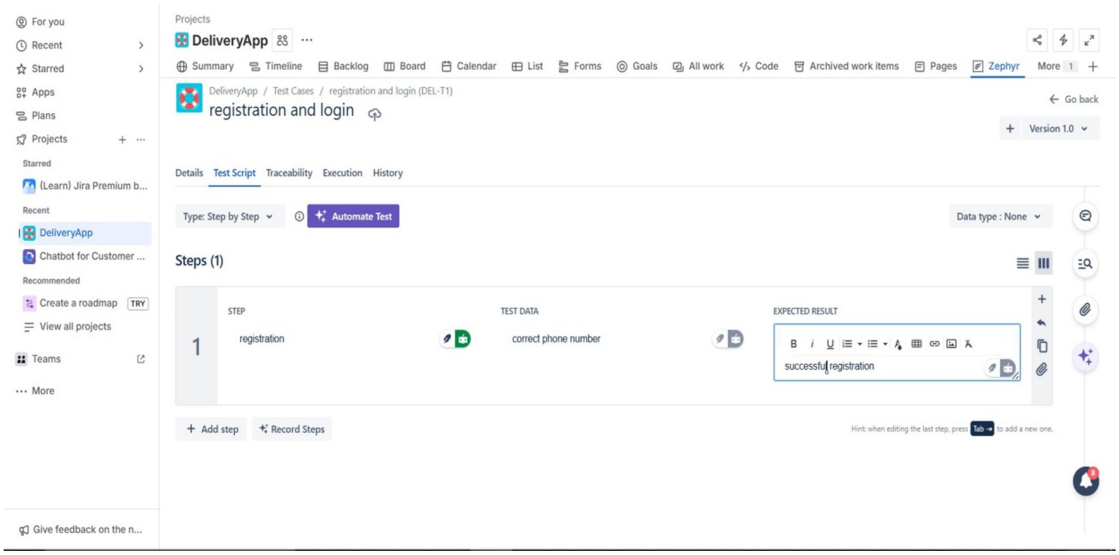


- Click on “Create and add”.

- It automatically directs you to a new page.

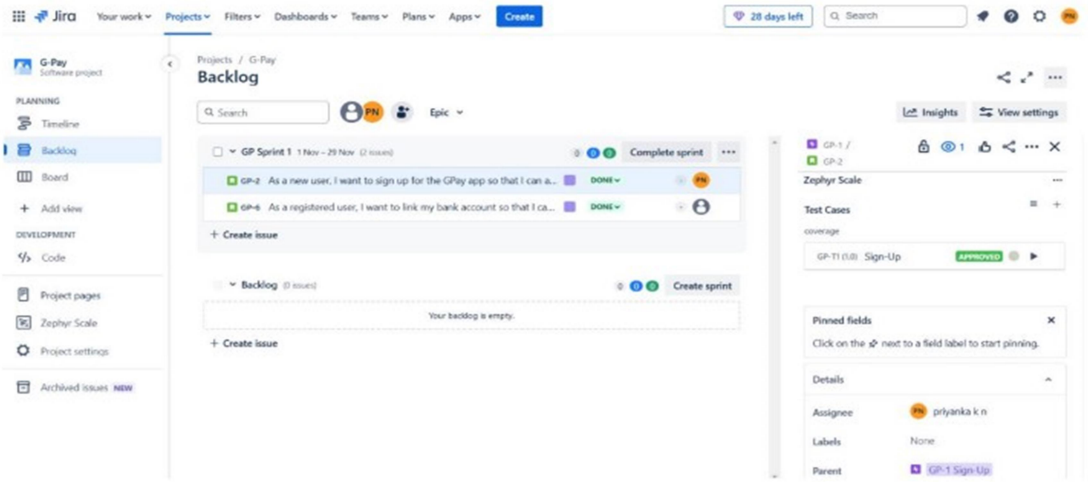


- Click on “Add step”.
- Create a step for that particular test.
- Ex- Step = Registration, Test data = Correct phone number, Expected Result = Successful Registration.
- Create multiple steps for both positive and negative test data.

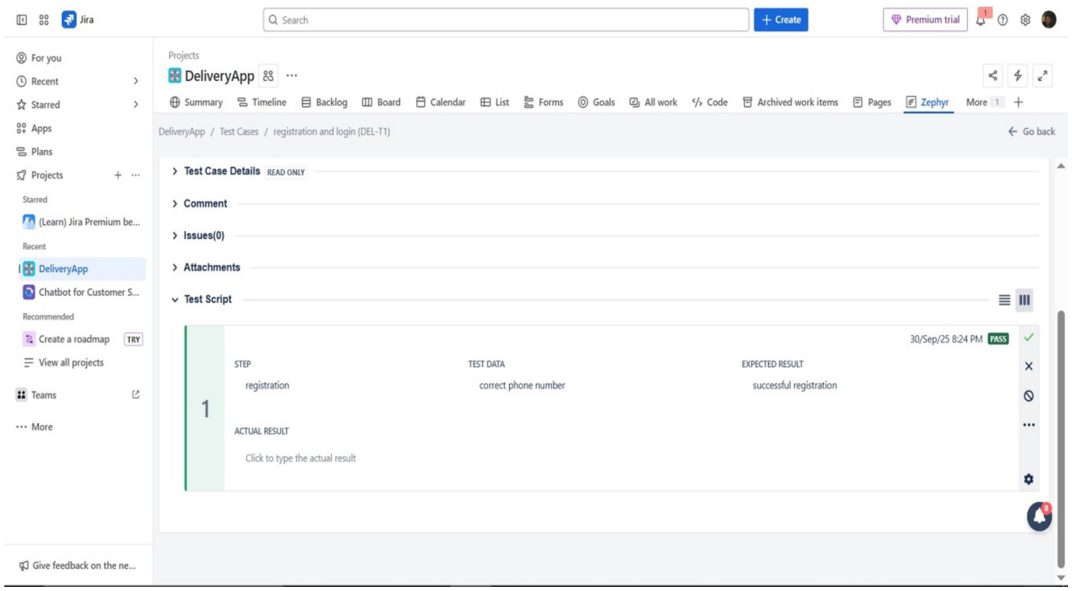


- Now come to backlogs and your test case for the selected user story will be added

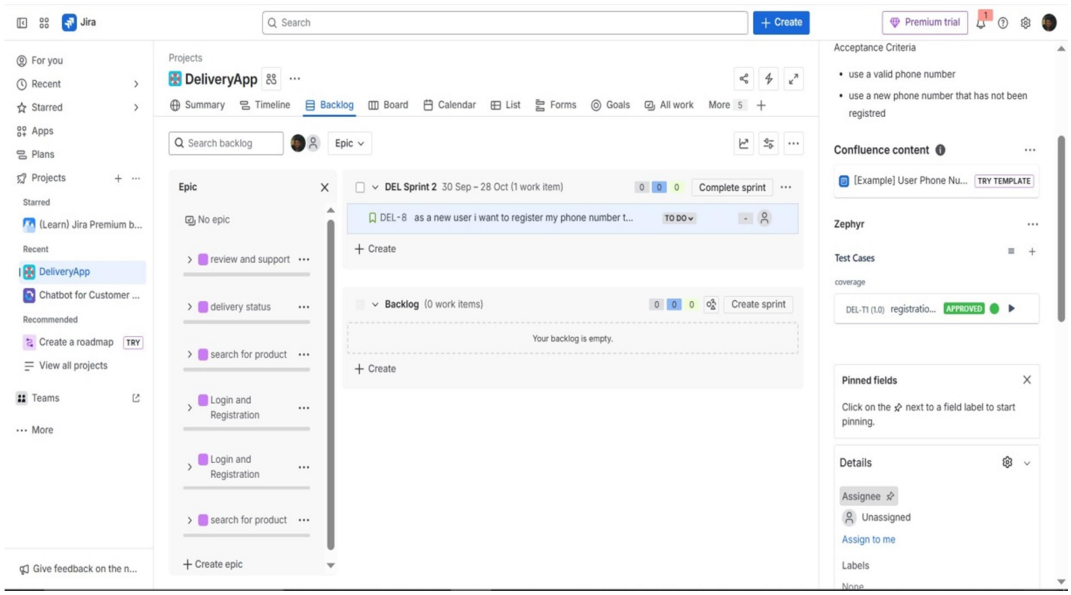
- Click on the "Start button" to start testing



- Now demonstrating the completing of tasks by right clicking on tasks.

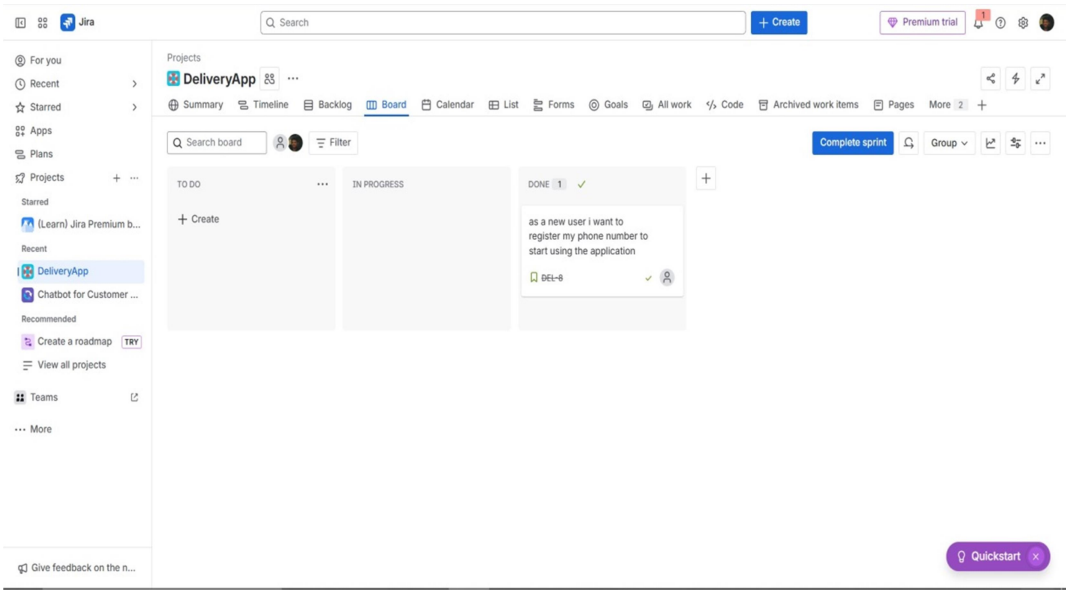


- Green color in user story indicates the completion of all tests for that user story.

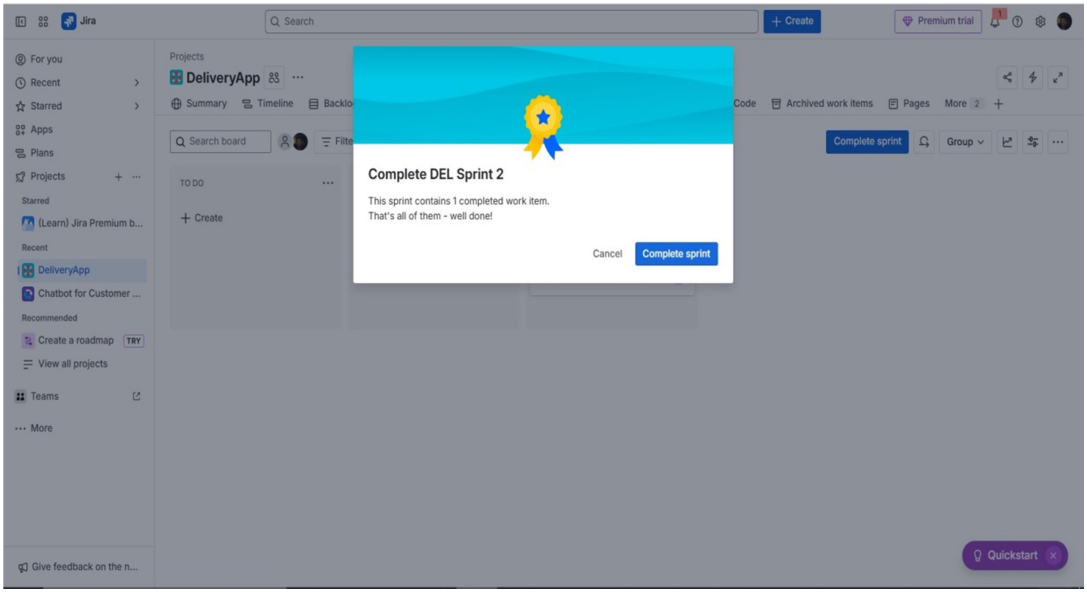


Step 10: Completion of sprint

- Go to the boards tab and move you user story from “To Do” to “Done” this show the task has been completed



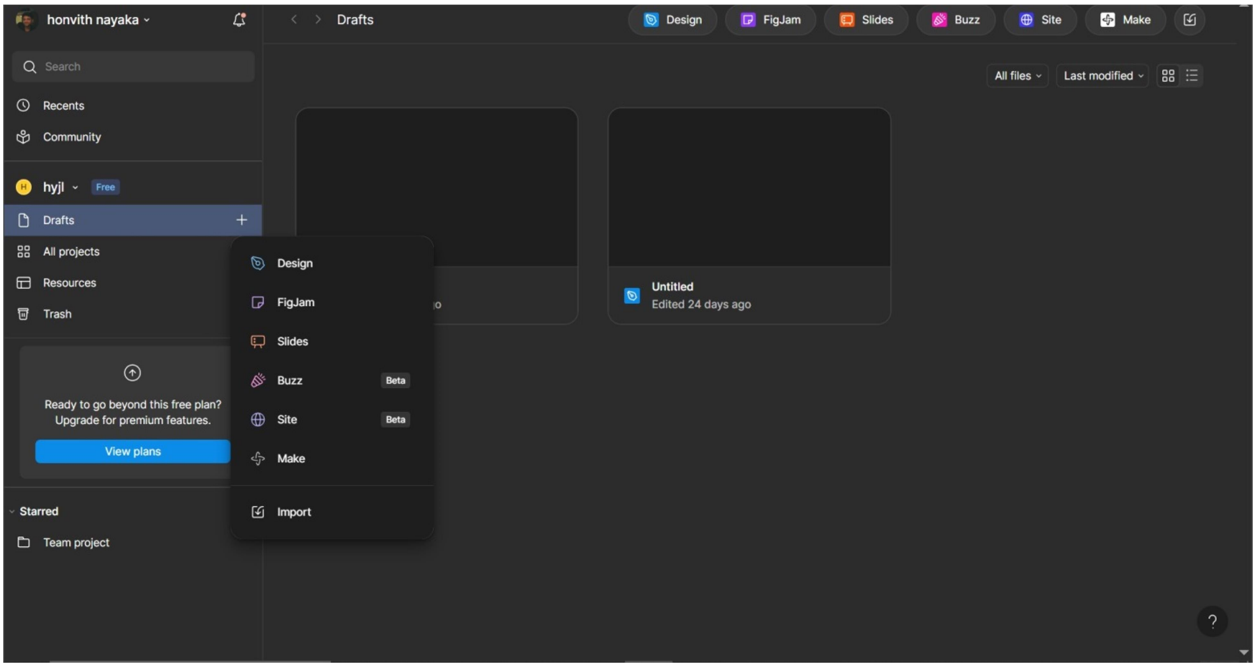
- Click on “Complete Sprint” to finish you Sprint



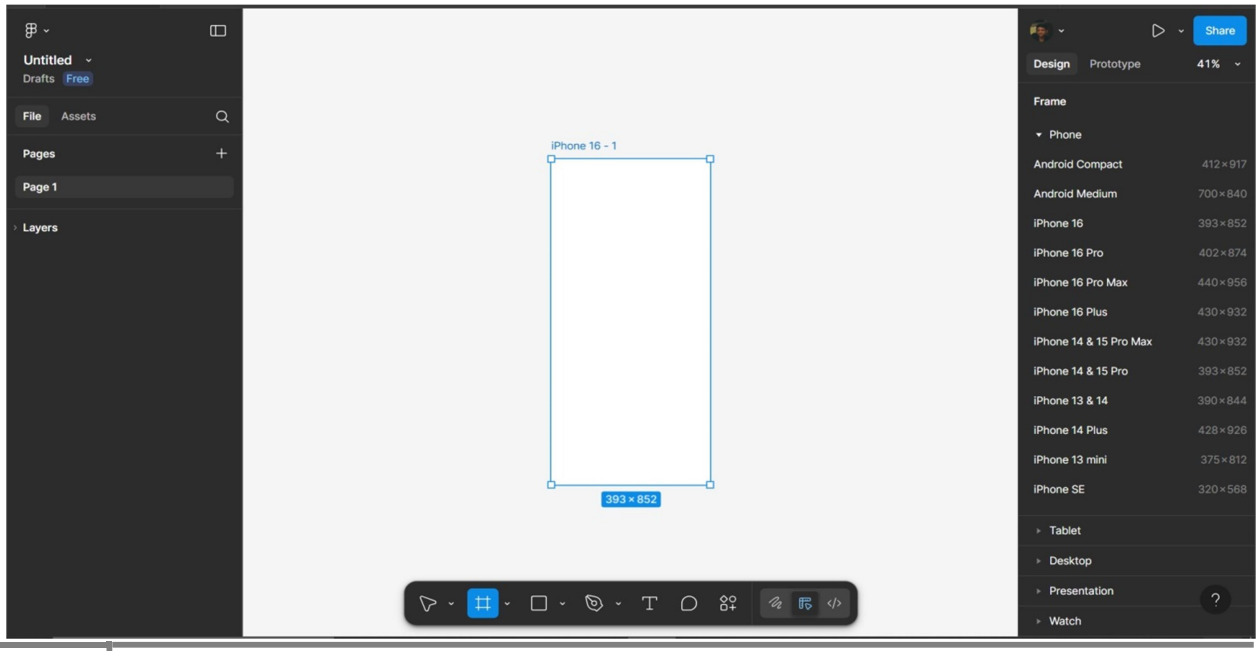
2. Create a UI/UX Design for an application using Figma

Step 1: Set up you frame

- Come to figma and in the side bar select “Draft” and “Design”

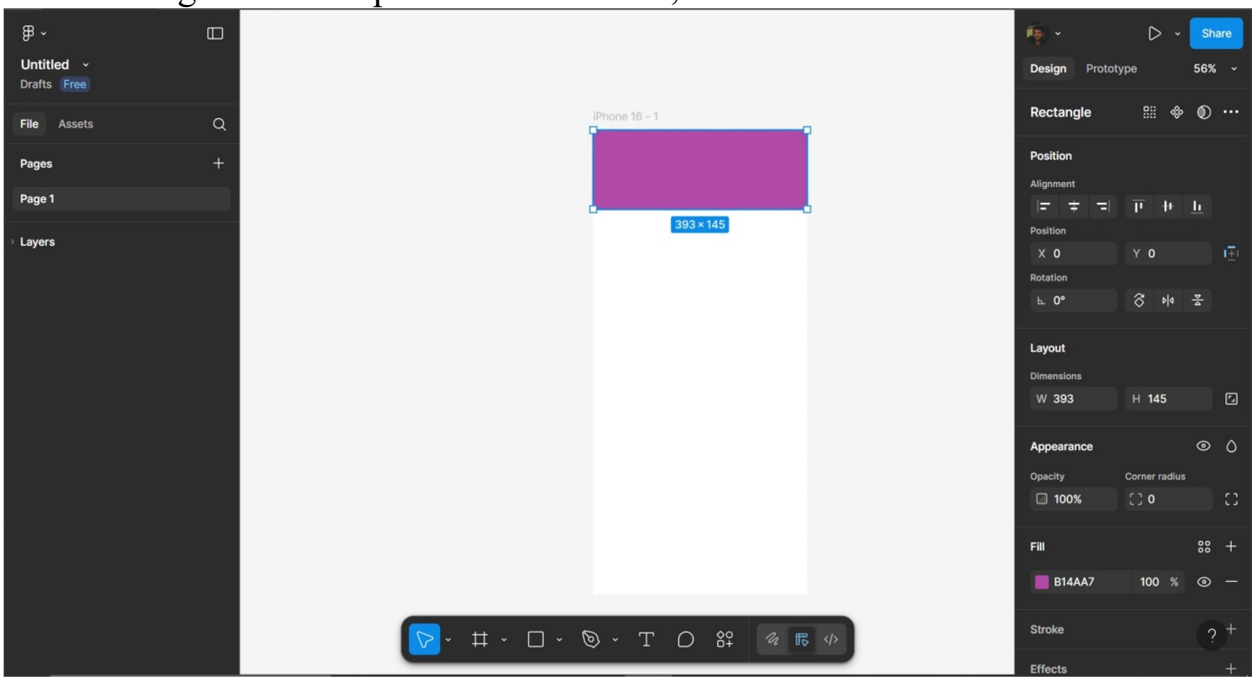


- Select “Frames” in the bottom menu and choose “I Phone 16”.

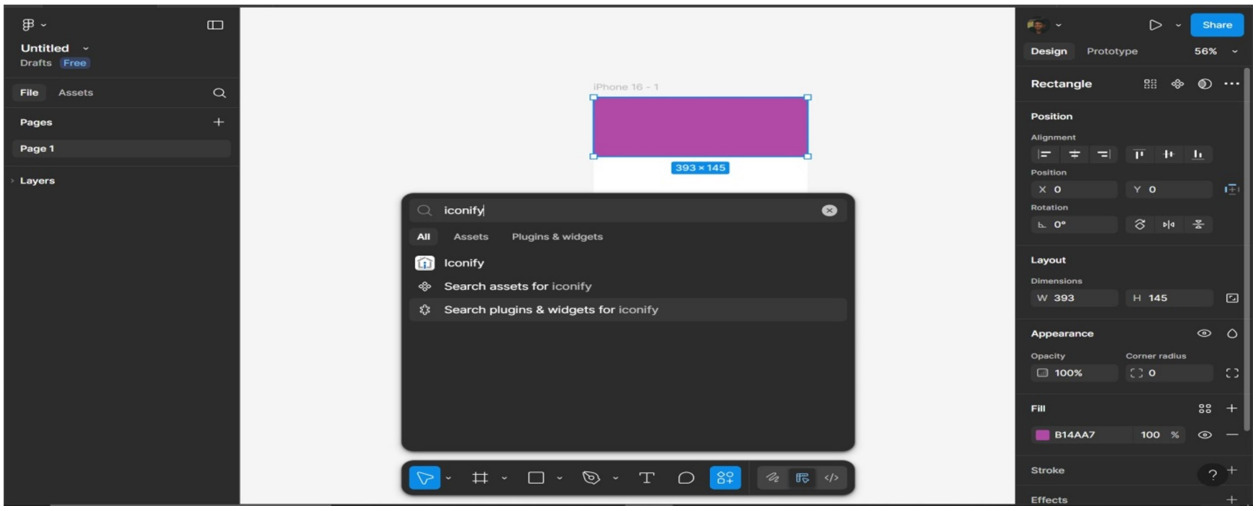


Step 2: Profile and Search Bar Section

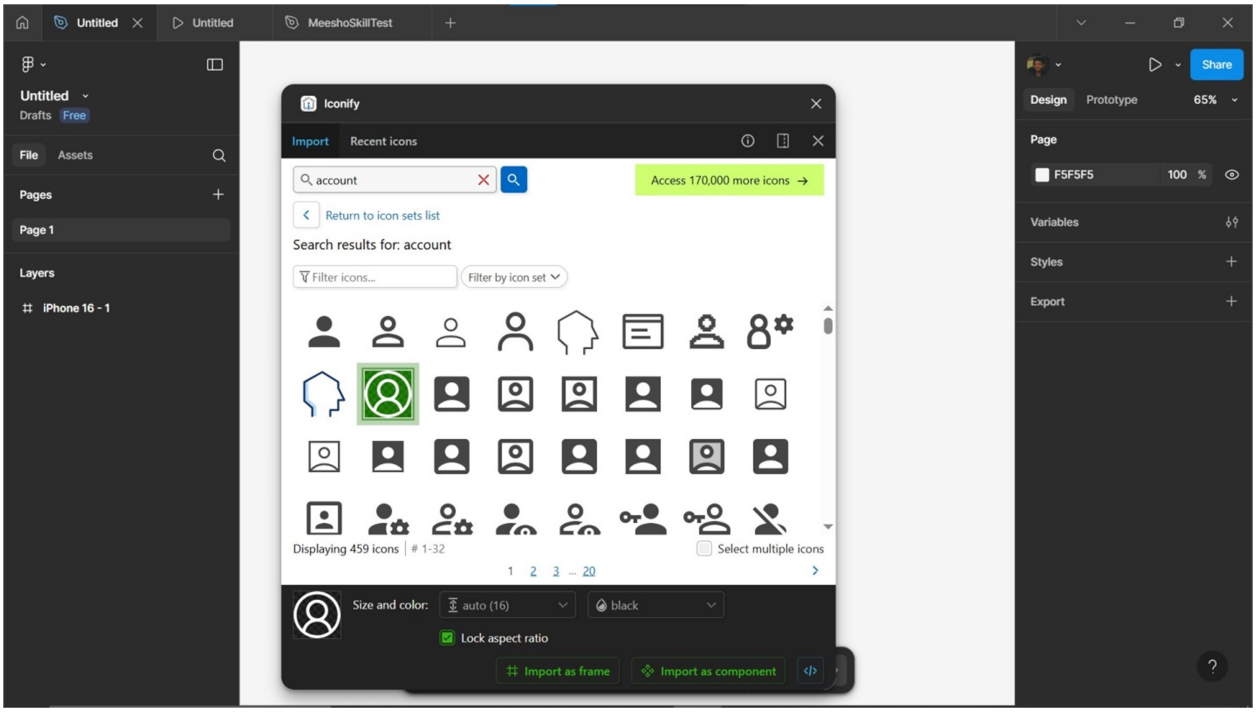
- Add a Rectangle using the “Shapes” Given in the bottom menu
- Place it on top of the Frame
- Using the “Fill” option in the side bar, add a different color



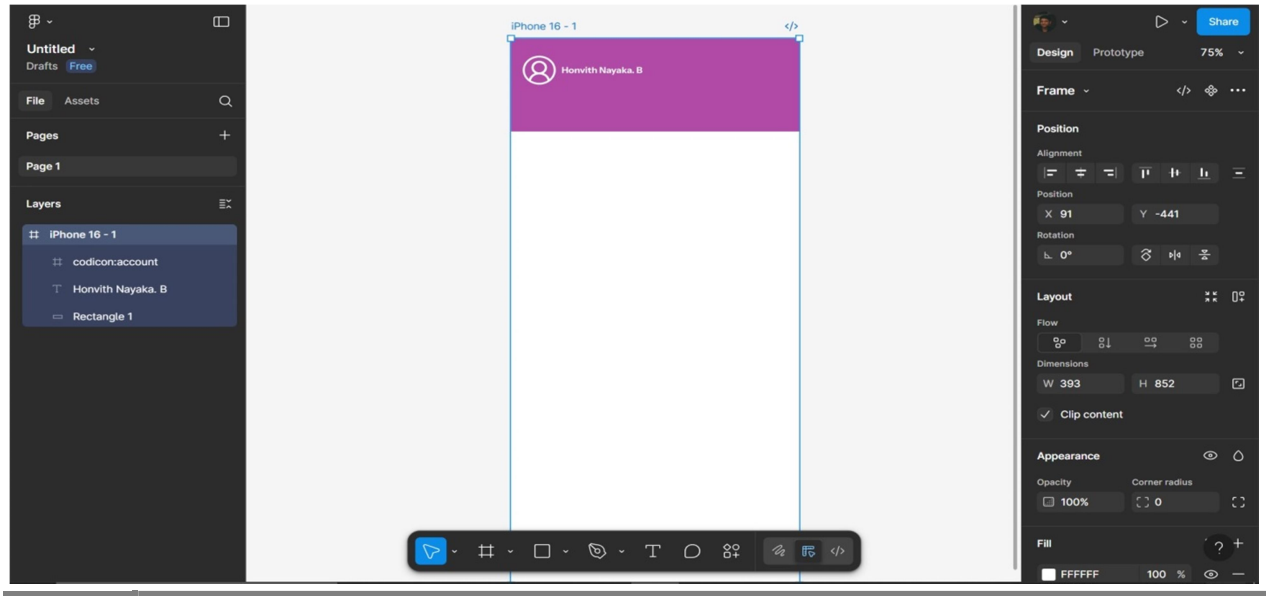
- Come to “Action” in the bottom menu and search for “Iconify” this gives you custom pre-made icons to use



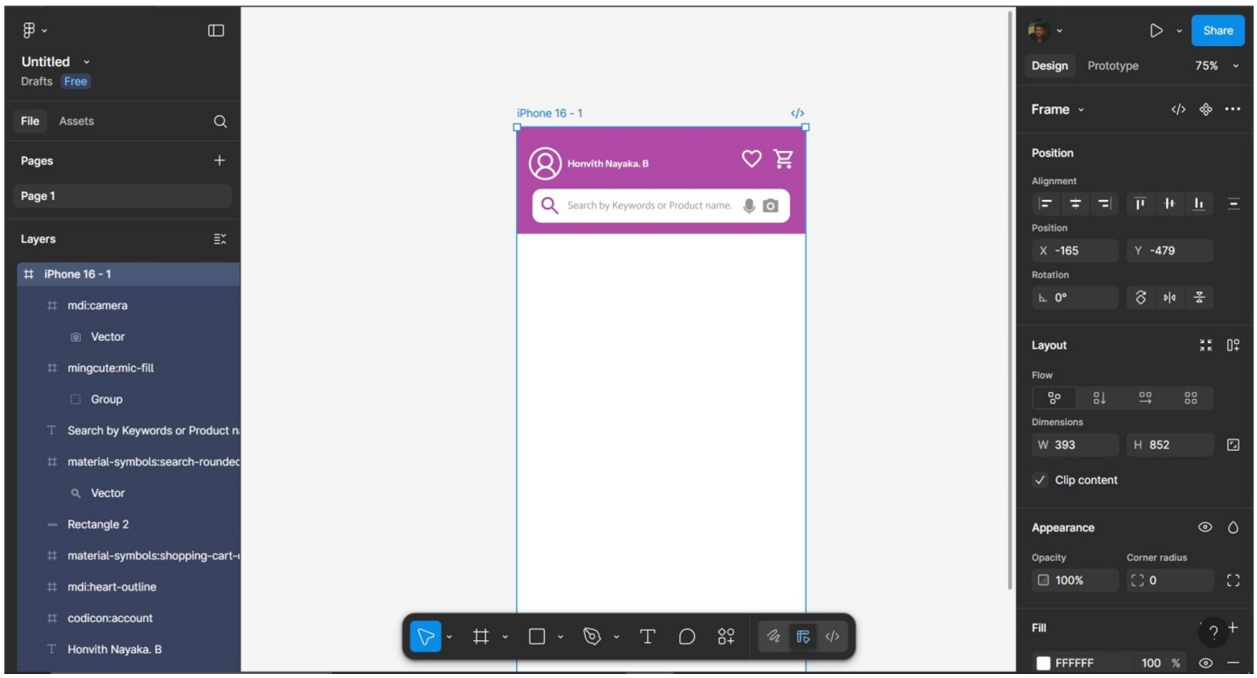
- Inside it search for “Account” and select a icon of your choice.
- And click on “Import as Frame”



- Adjust the size of and place it on top right corner of the frame
- Using the “Text” in the bottom menu add the username
- Adjust the test style in “Typography” Section given in the side bar

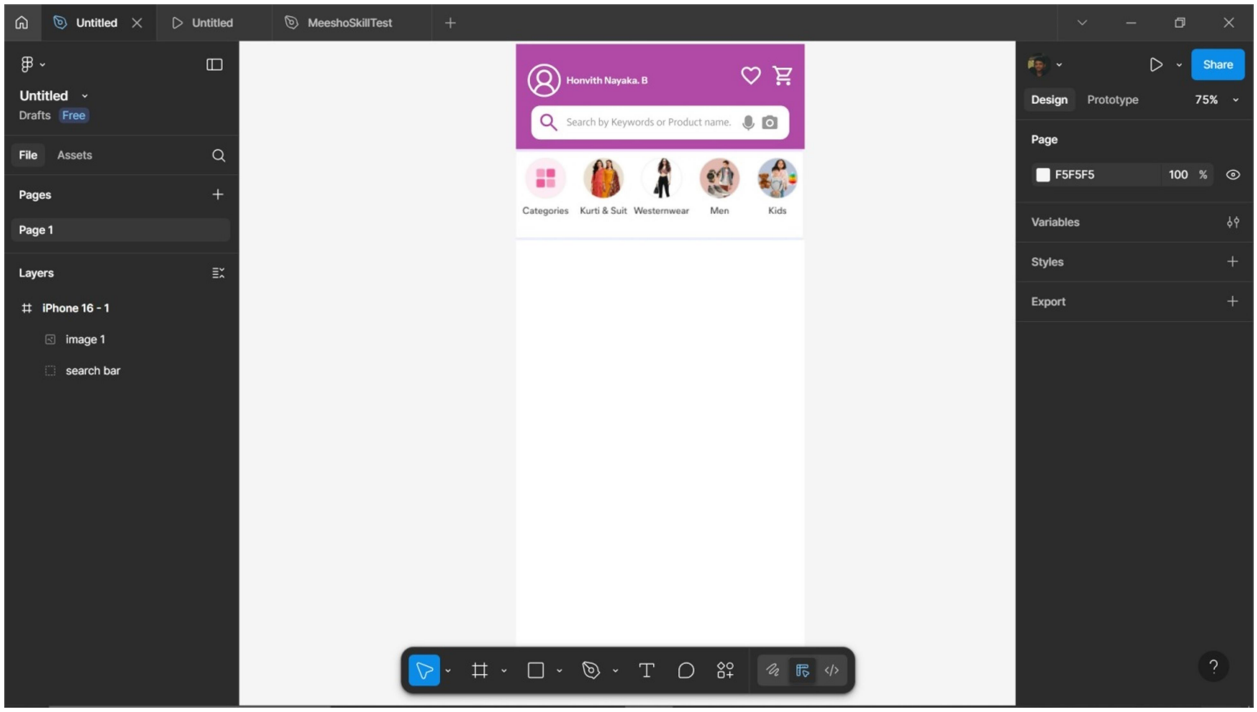


- Add a “Heart” and “Shopping cart” icons using Iconify
- Adding a search bar Draw a rectangle Below and Round its corners using the “Corner radius” in the “Appearance” section at side menu
- Add a search icon using Iconify inside the search bar
- Add a text saying “search by Keywords or Product name” inside the search bar
- Using Iconify add icons of a “mice” and “camera” also inside the search bar indicating the features



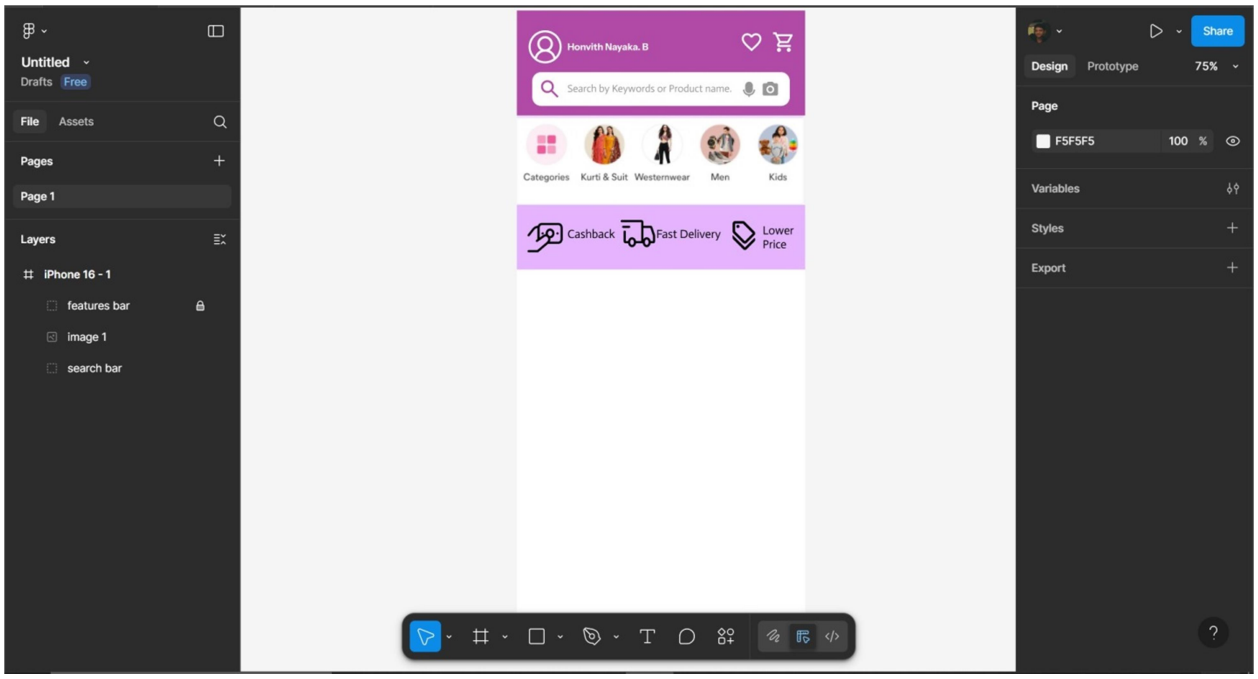
Step 3: Add a category section

- Take a images off different products from you browser and past them into your project arrange them to your liking creating the appearance of different category and name them appropriately



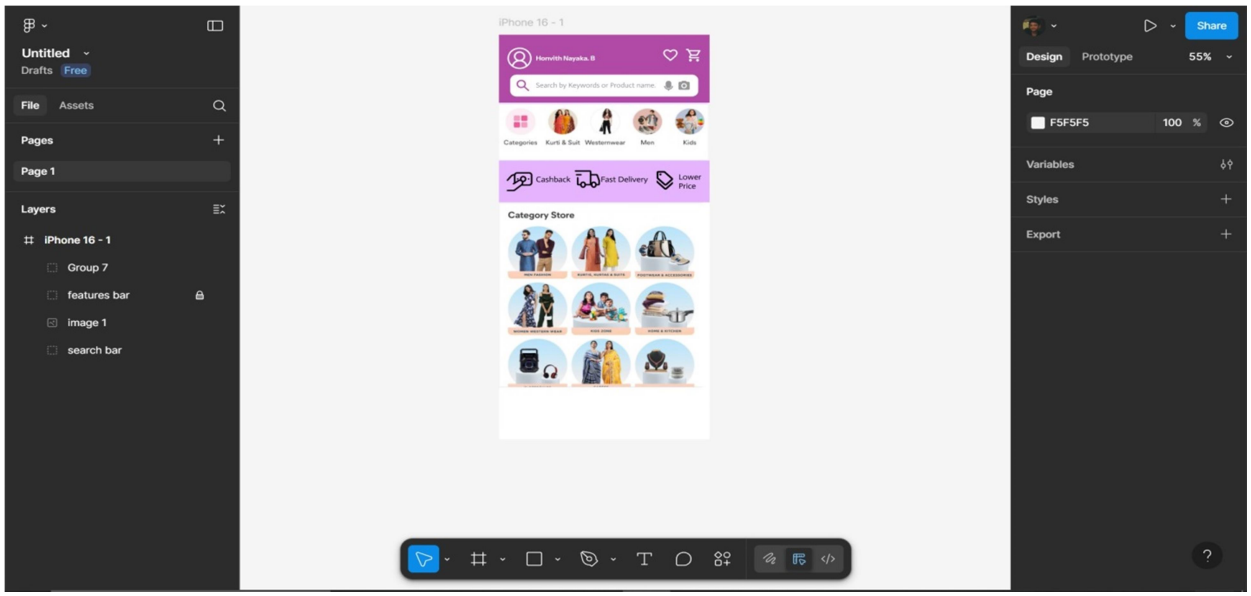
Step 4: Features Section

- Add a rectangle using the shapes in the bottom menu
- Change its color
- Add icons related to “Cash Backs”, “Fast Delivery”, and “Lowest price” and use the text tool to describe the features



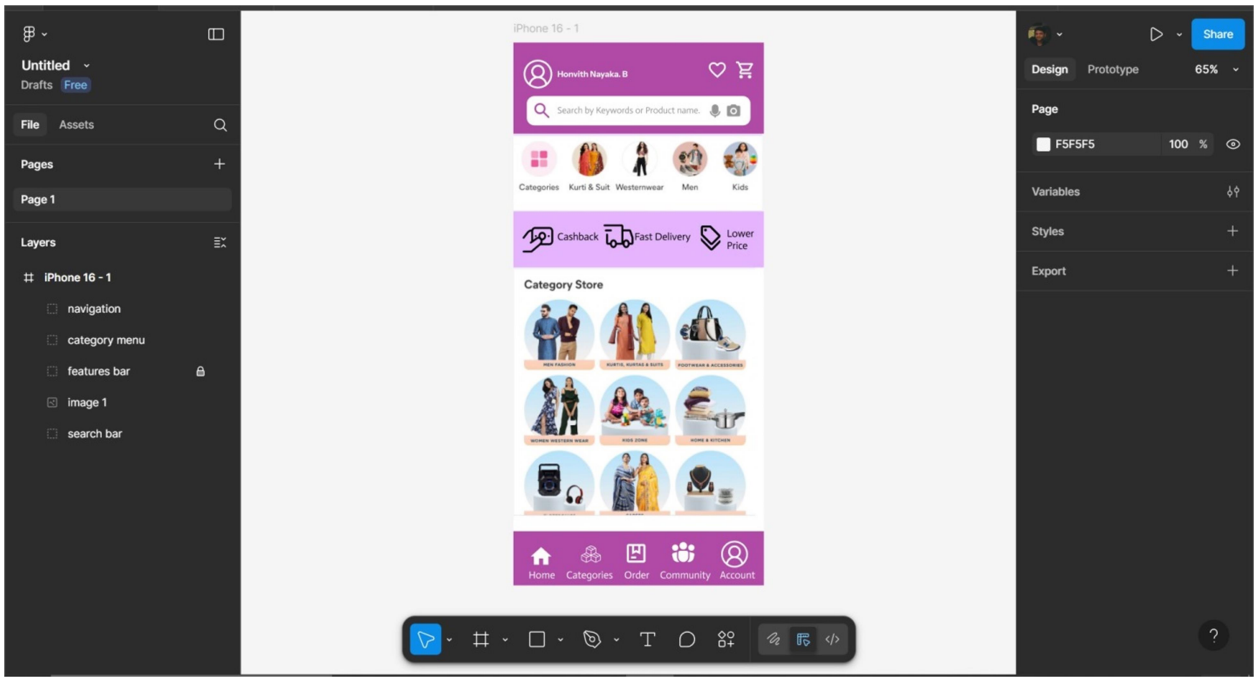
Step 5: Product Section

- Copy paste images of different products from the browser and arrange them in the format given in the picture below.
- Add related product details like “product name” and “Product price” etc.



Step 6: Navigation Bar

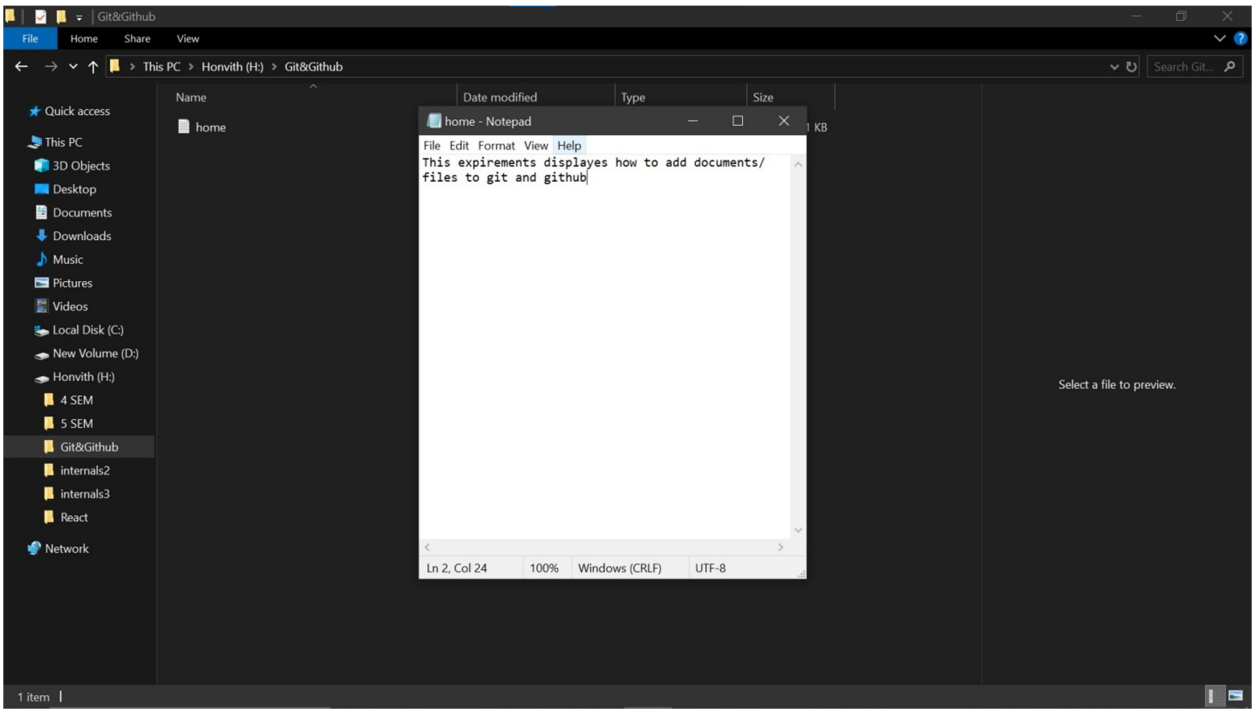
- Add a rectangle using the shapes in the bottom menu
- Change its color
- Add icons related to “Home”, “Categories”, “Orders”, ”Community”, and “Amount” and use the text tool to describe the features



3. Perform Git and Github operations using Cloud Version or Normal Application

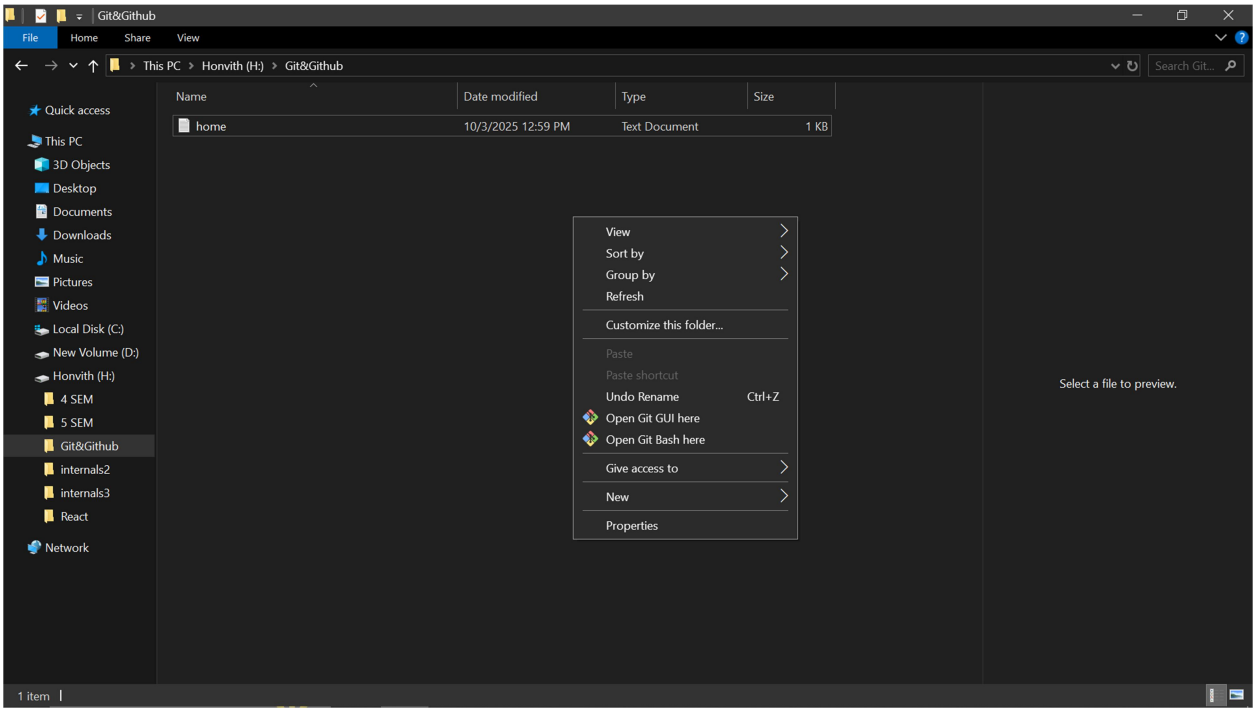
Step 1: Create your Document

- Create a folder named “Git&Github”
- Inside it create a text file named “Home”
- Add text inside the file.



Step 2: Enter the Git CLI

- Right click inside the folder and select “Open Git Bash Here”
- Execute the Commands



1. Configure User Identity

Command :

 # Set your name globally

git config --global user.name "Your Full Name"

 # Set your email globally

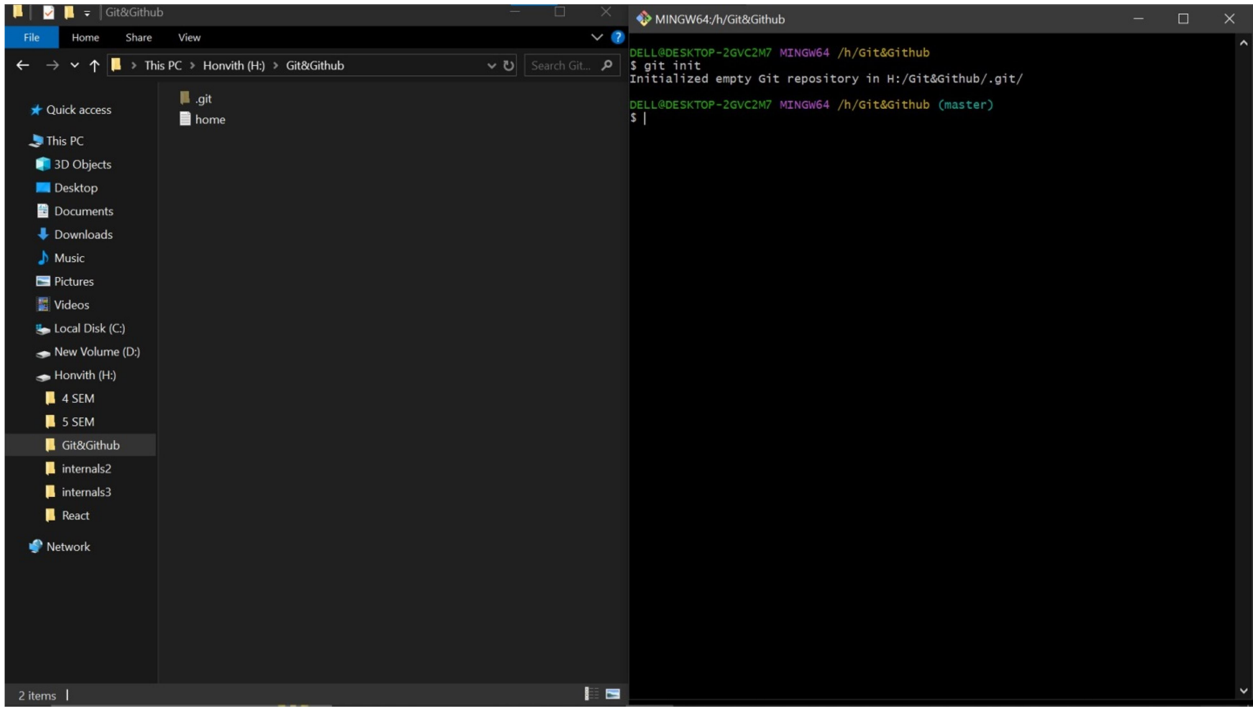
git config --global user.email "your.email@example.com"

What it Does: Every Git commit needs an author identity attached to it.

2. Initialize Git Repository

Command : git init

What it Does : Creates a new Git repository in your current directory by adding a hidden .git folder that tracks all version control information



3. Check Repository Status

Command: git status

What it does: Displays the current state of your working directory and staging area, showing which files are tracked, untracked, modified, or staged for commit.

```
DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git status
On branch master

No commits yet

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

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

4. Stage File for Commit

Command**:** git add home.txt

What it does: Adds the specified file (home.txt) to the staging area, preparing it for the next commit.

5. Verify Staging Status

Command: git status (Note: you wrote "get status" but meant "git status")

What it does: Confirms that home.txt is now staged and ready for commit.

```
DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git add home.txt

DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   home.txt
```

6. Commit Staged Changes

Command: git commit -m "add text file"

What it does: Creates a permanent snapshot of the staged changes with a descriptive commit message.

```
DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git commit -m "added a text file"
[master (root-commit) f2b8420] added a text file
 1 file changed, 2 insertions(+)
 create mode 100644 home.txt
```

7. View Commit History

Command: git log

What it does: Displays the commit history, showing commit hashes, author information, timestamps, and commit messages.

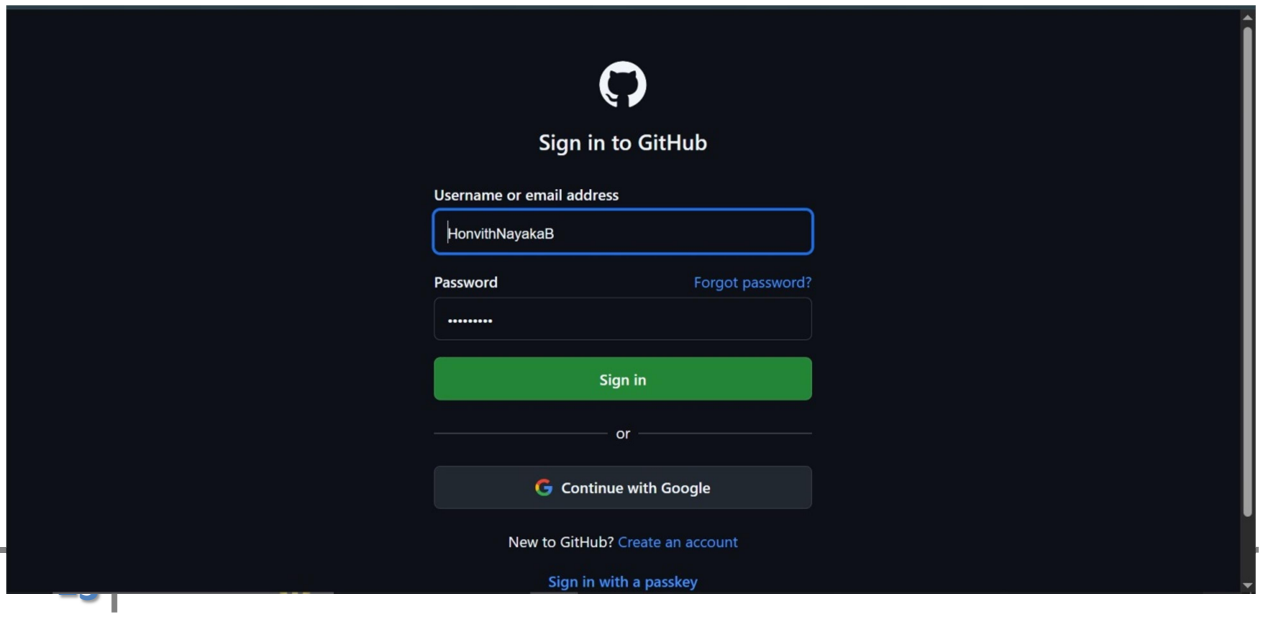
```
DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git log
commit f2b84202f0e491ae09502dc2f22a65f34cc4edd4 (HEAD -> master)
Author: HonvithNayakaB <honvithnayaka.b@gmail.com>
Date:   Fri Oct 3 13:11:41 2025 +0530

    added a text file
```

8. Add Remote Repository

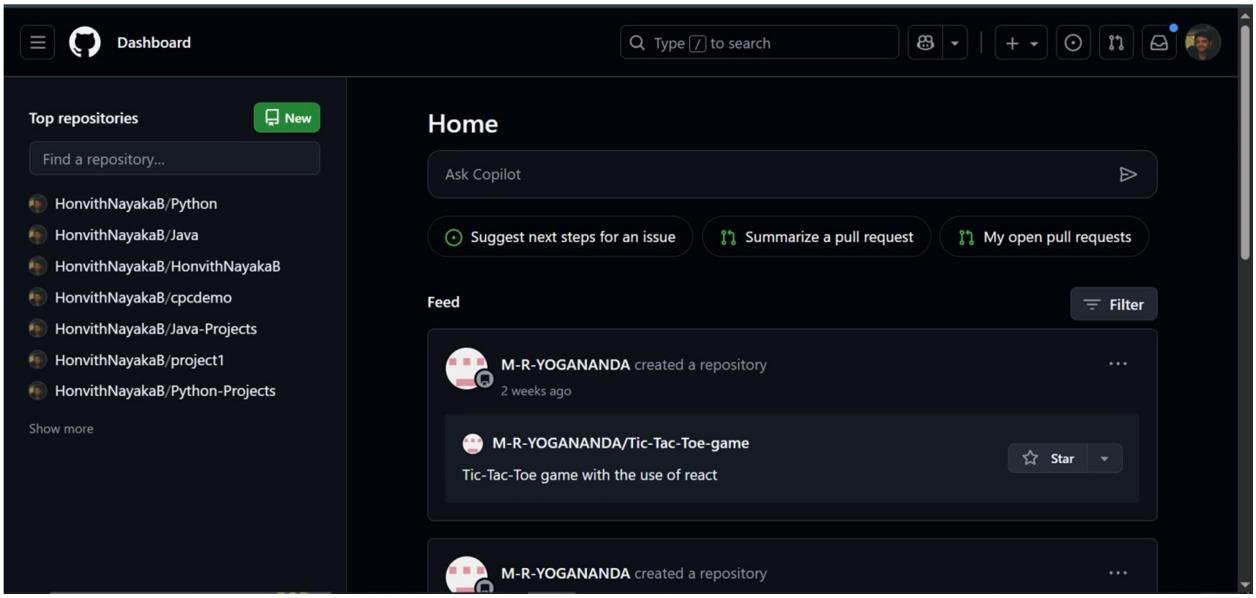
Command: git remote add origin “Github link to repository”

What it does: Links your local repository to a remote Github repository, establishing “origin” as the default remote name.

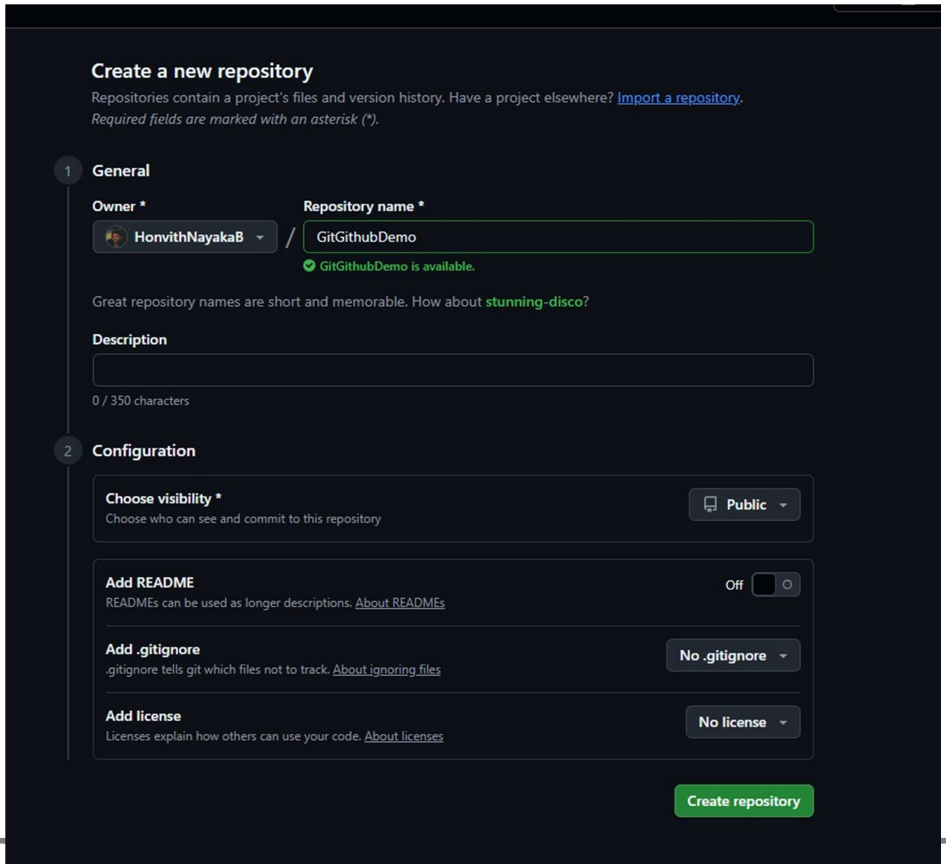
- Go to Github
- Login/register using your Gmail.



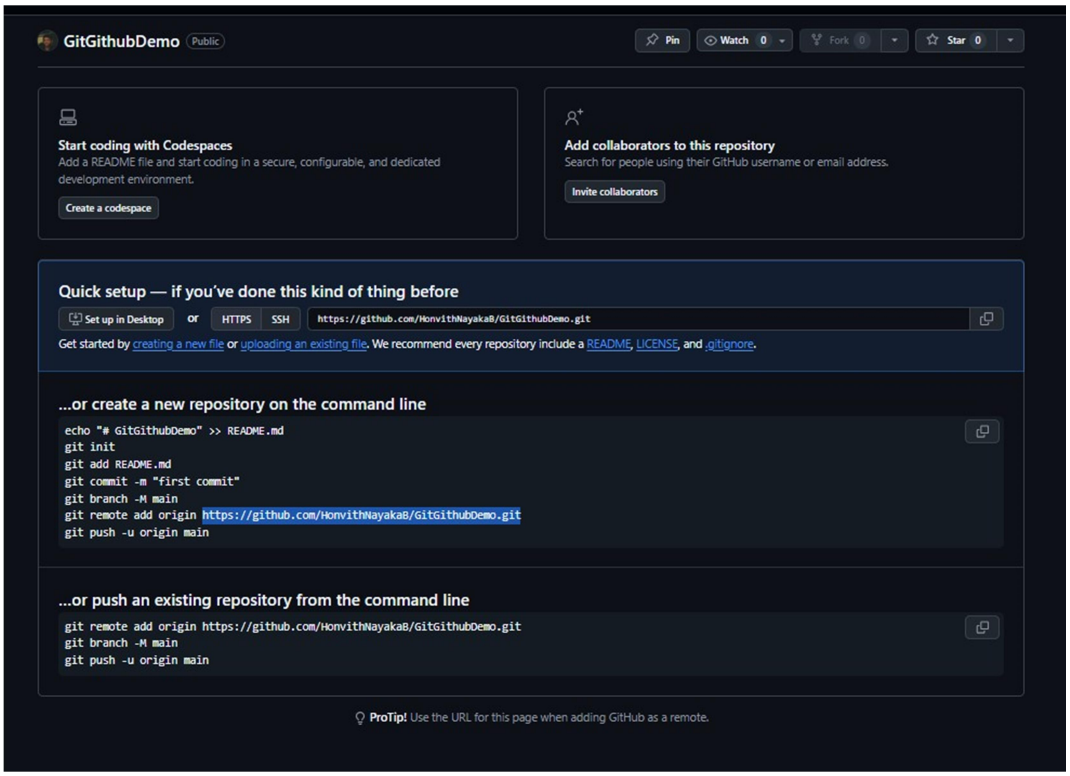
- Create a new repository by clicking on “New”



- Give the repository a name and click on “Create Repository”



- Copy the link Highlighted below and paste it in the command given below



- Come to the CLI and type = git remote add origin "link"

```
DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git remote add origin https://github.com/HonvithNayakaB/GitGithubDemo.git
```

9. Check Branch Information

Command : git branch

What it does : Lists all local branches and highlights the currently active branch with an asterisk.

```
DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git branch
* master
```

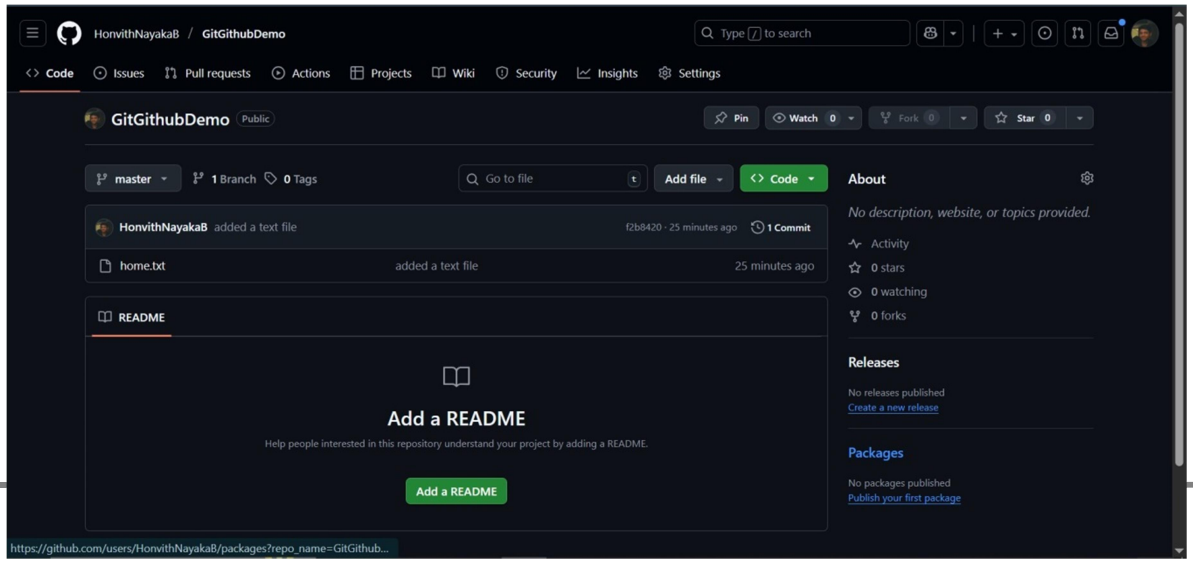
10. push to Remote Repository

Command : git push –u origin master

What it does:

1. Uploads your local main branch to the remote repository
2. –u flag sets up tracking between local main and remote origin/main
3. Future pushes can use just git push

```
DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git push -u origin master
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 287 bytes | 143.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/HonvithNayakaB/GitGithubDemo.git
 * [new branch]      master -> master
branch 'master' set up to track 'origin/master'.
```

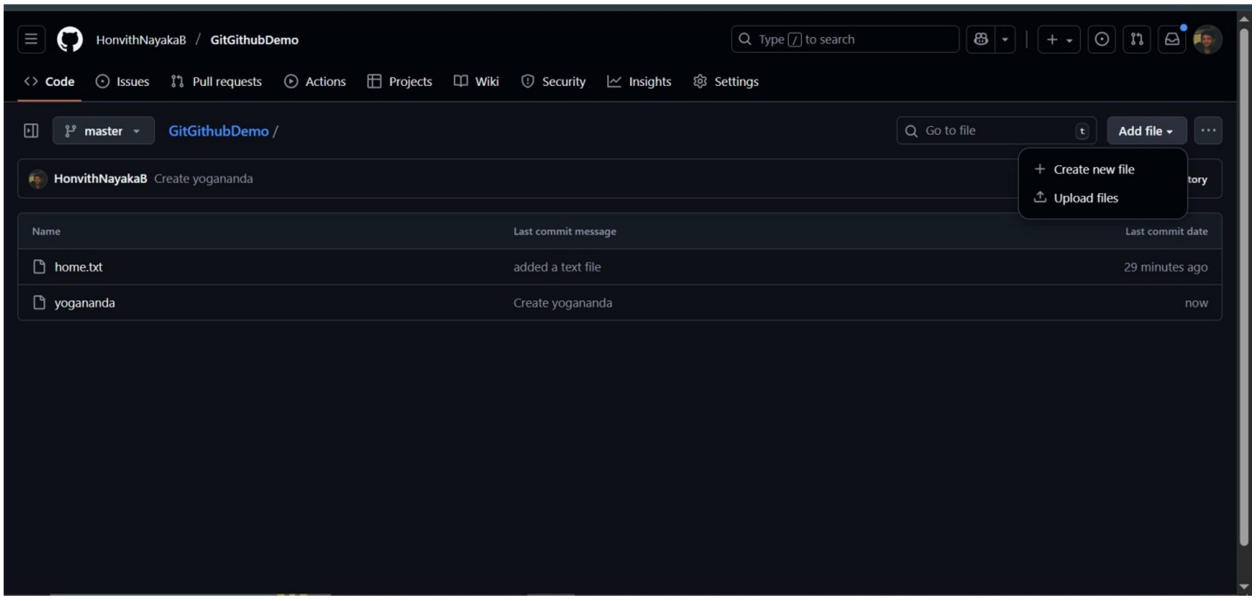


11. pull from Remote Repository

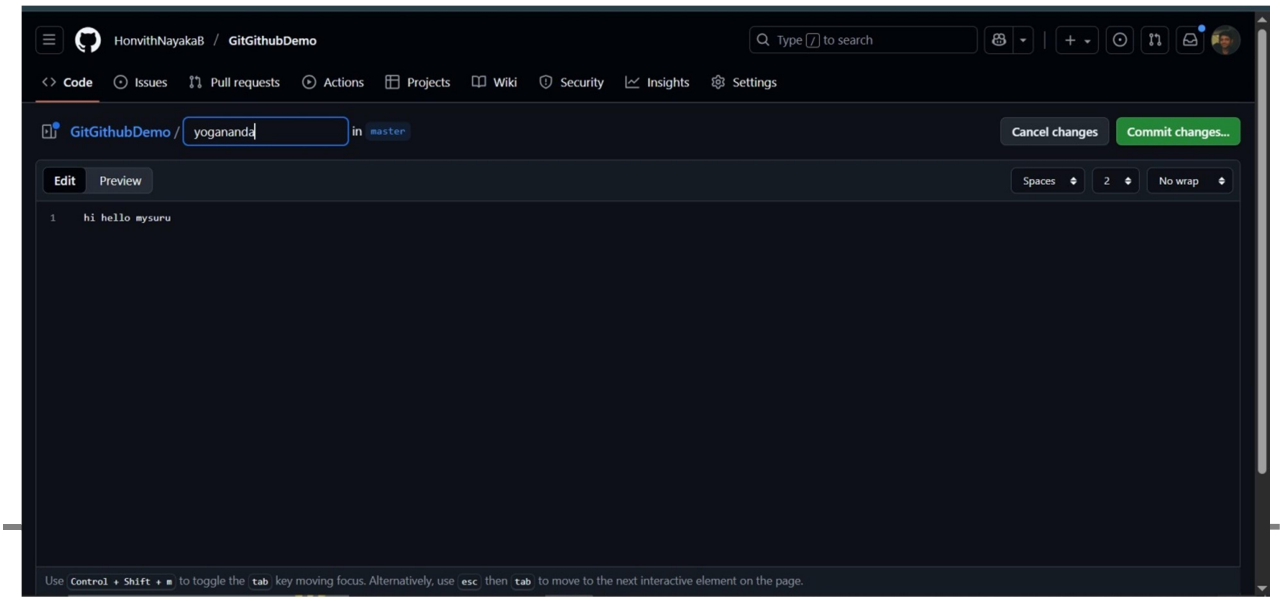
Command: git pull origin master

What it does: pull from specific remote branch

- In Github Repository click on “add file” and “+ Create new file”



- Add file content and name, click on “commit changes”

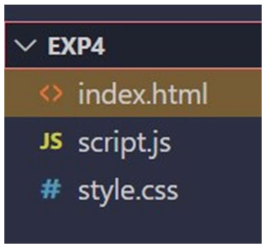


- Now in CLI type the command = git pull origin main

```
DELL@DESKTOP-2GVC2M7 MINGW64 /h/Git&Github (master)
$ git pull origin master
remote: Enumerating objects: 4, done.
remote: Counting objects: 100% (4/4), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Unpacking objects: 100% (3/3), 937 bytes | 27.00 KiB/s, done.
From https://github.com/HonvithNayakaB/GitGithubDemo
 * branch            master     -> FETCH_HEAD
   f2b8420..16d51a3  master     -> origin/master
Updating f2b8420..16d51a3
Fast-forward
 yogananda | 1 +
 1 file changed, 1 insertion(+)
 create mode 100644 yogananda
```

4. Design a Registration Page and preform Validation using JavaScript

Project Structure



Step 1: index.html

```
<!DOCTYPE html>
<html>
<head>
  <title>Sign Up Form</title>
  <link rel="stylesheet" href="style.css">
</head>
<body>

  <div class="container">
    <h2>Sign Up</h2>
    <form onsubmit="return validatePasswords()">
      <label>Full Name:</label>
      <input type="text" name="fullname" required pattern="[A-Za-z\s]{3,}"
title="Only letters and spaces, min 3 characters">

      <label>Email:</label>
      <input type="email" name="email" required title="Enter a valid email
address">

      <label>Username:</label>
      <input type="text" name="username" required minlength="4" maxlength="12"
title="4 to 12 characters allowed">

      <label>Password:</label>
      <input type="password" id="password" required minlength="6" title="Minimum
6 characters">

      <label>Confirm Password:</label>
```

```
      <input type="password" id="confirmPassword" required title="Re-enter the
password">

      <input type="submit" value="Sign Up">
    </form>

    <div class="success" id="successMessage"></div>
  </div>

  <script src="script.js"></script>
</body>
</html>
```

Step 2: script.js

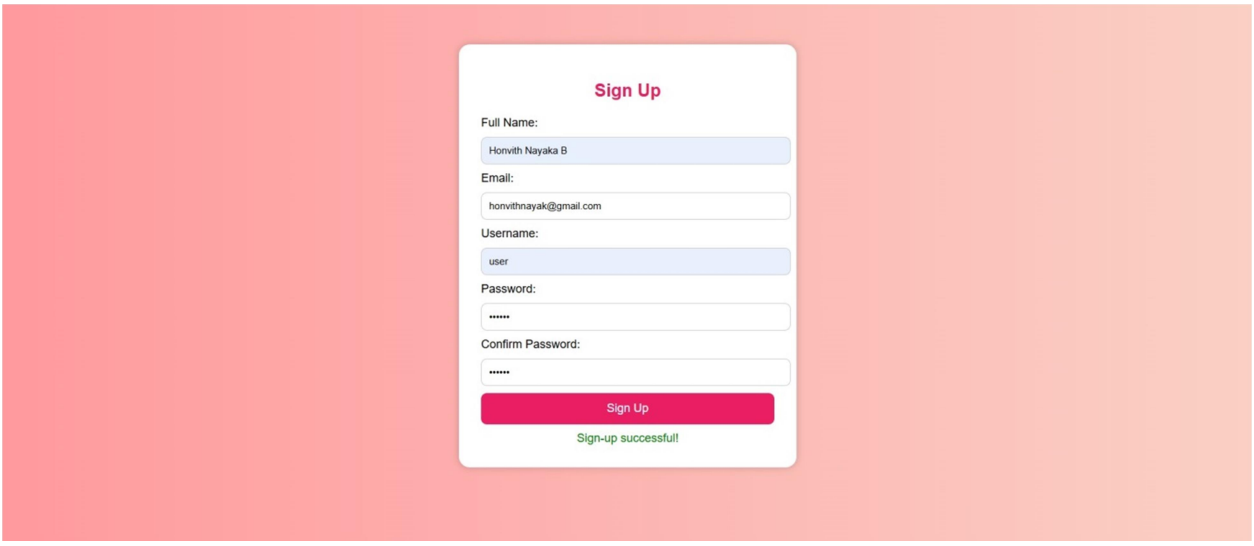
```
function validatePasswords() {
  const pwd = document.getElementById("password").value;
  const confirmPwd = document.getElementById("confirmPassword").value;

  if (pwd !== confirmPwd) {
    alert("Passwords do not match!");
    return false;
  }

  document.getElementById("successMessage").innerText = "Sign-up successful!";
  return false;
}
```

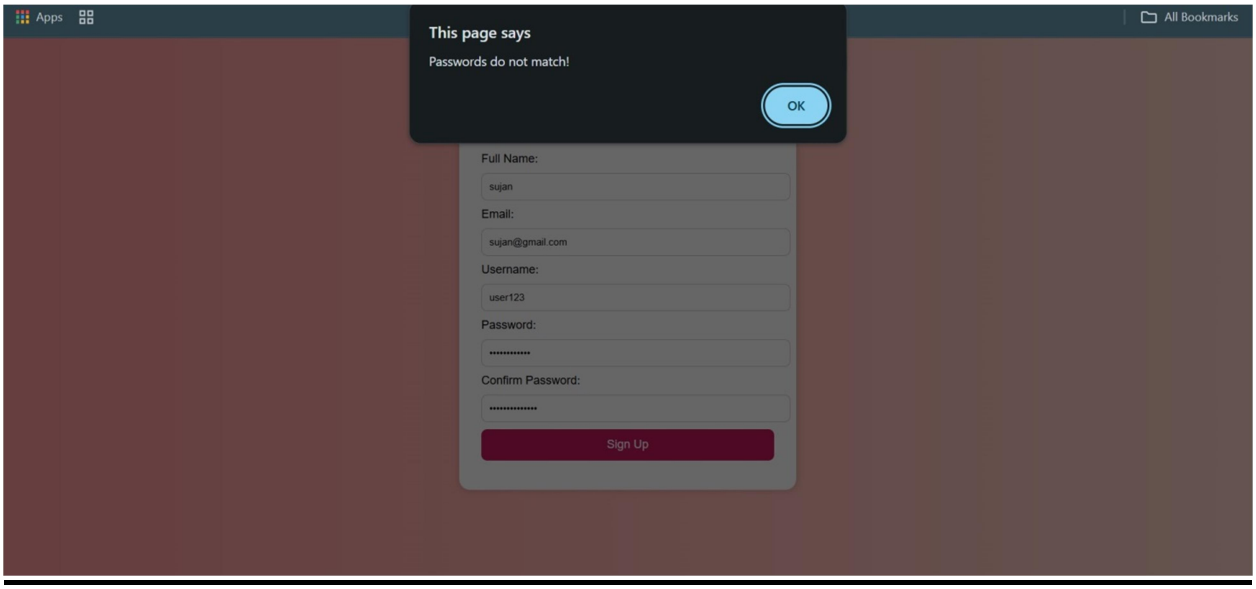
Step 3: style.css

```
body {
  font-family: Arial, sans-serif;
  background: linear-gradient(to right, #ff9a9e, #fad0c4);
  padding: 50px;
}

.container {
  max-width: 400px;
  margin: auto;
  background-color: white;
```

```
  padding: 30px;
  border-radius: 15px;
  box-shadow: 0 0 10px rgba(0, 0, 0, 0.2);
}

h2 {
  text-align: center;
  color: #e91e63;
}

input[type="text"],
input[type="email"],
input[type="password"] {
  width: 100%;
  padding: 10px;
  margin: 10px 0;
  border: 1px solid #ccc;
  border-radius: 8px;
}

input[type="submit"] {
  background-color: #e91e63;
  color: white;
  padding: 12px;
  width: 100%;
  border: none;
  border-radius: 8px;
  font-size: 16px;
  cursor: pointer;
}

input[type="submit"]:hover {
  background-color: #c2185b;
}

.success {
  text-align: center;
  color: green;
  margin-top: 10px;
}
```

Output:


Sign Up
Full Name:
Honvith Nayaka B
Email:
honvithnayak@gmail.com
Username:
user
Password:
Confirm Password:
Sign Up
Sign-up successful!


Apps
All Bookmarks
This page says
Passwords do not match!
OK
Full Name:
sujan
Email:
sujan@gmail.com
Username:
user123
Password:
Confirm Password:
Sign Up

5. Create a Registration Page using React-JS

Step 1: Create a react project

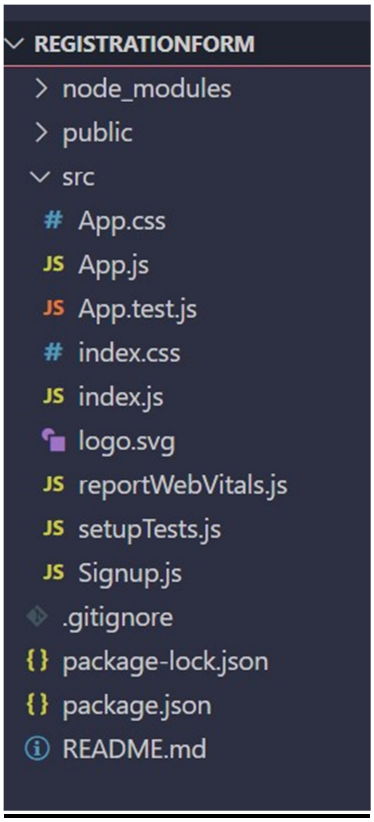
1. Create a new React project by running for following command in "Command Prompt":

• npx create-react-app registration-form

Step 2: Create the Signup.js Component

1. In the src folder, create a file named Signup.js.

File System:



3. Signup.js

```
import React, { useState } from "react";
import "./App.css";

function Signup() {
  const [name, setName] = useState("");
  const [email, setEmail] = useState("");
```

```
const [password, setPassword] = useState("");
const [submitted, setSubmitted] = useState(false);

function handleSubmit(e) {
  e.preventDefault();
  // show success message
  setSubmitted(true);

  // clear inputs after submit
  setName("");
  setEmail("");
  setPassword("");
}

return (
  <div className="signup-container">
    <h2>Registration Form</h2>
    <form onSubmit={handleSubmit} className="signup-form">
      <label>Full Name</label>
      <input
        type="text"
        placeholder="Enter your name"
        value={name}
        onChange={(e) => setName(e.target.value)}
        required
      />

      <label>Email</label>
      <input
        type="email"
        placeholder="Enter your email"
        value={email}
        onChange={(e) => setEmail(e.target.value)}
        required
      />

      <label>Password</label>
      <input
        type="password"
        placeholder="Enter password"
        value={password}
        onChange={(e) => setPassword(e.target.value)}
        required
      />
```

```
        <button type="submit">Register</button>
      </form>

      {/* success message */}
      {submitted && (
        <p className="success-message">Registered Successfully!</p>
      )}
    </div>
  );
}

export default Signup;
```

Step 4: App.js

```
.signup-container {
  max-width: 400px;
  margin: 60px auto;
  padding: 25px;
  background-color: #f9f9f9;
  border-radius: 10px;
  box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
  text-align: center;
}

.signup-form {
  display: flex;
  flex-direction: column;
  gap: 15px;
}

.signup-form label {
  text-align: left;
  font-weight: 500;
  color: #333;
}

.signup-form input {
  padding: 10px;
  border: 1px solid #ccc;
  border-radius: 5px;
```

```
  font-size: 14px;
}

.signup-form input:focus {
  border-color: #007bff;
  outline: none;
  box-shadow: 0 0 4px #007bff33;
}

.signup-form button {
  padding: 10px;
  background-color: #007bff;
  color: white;
  border: none;
  border-radius: 6px;
  cursor: pointer;
  font-size: 15px;
  transition: 0.2s;
}

.signup-form button:hover {
  background-color: #0056b3;
}
form {
  display: flex;
  flex-direction: column;
  gap: 10px;
}

input, button {
  padding: 8px;
  font-size: 14px;
}

button {
  background-color: #4CAF50;
  color: white;
  border: none;
}
.success-message {
  margin-top: 15px;
  color: green;
  font-weight: bold;
  animation: fadeIn 0.5s ease;
```

```
}

@keyframes fadeIn {
  from { opacity: 0; }
  to { opacity: 1; }
}
```

Step 5: App.js

```
import React from "react";
import Signup from "./Signup";

function App() {
  return (
    <div>
      <Signup />
    </div>
  );
}

export default App;
```

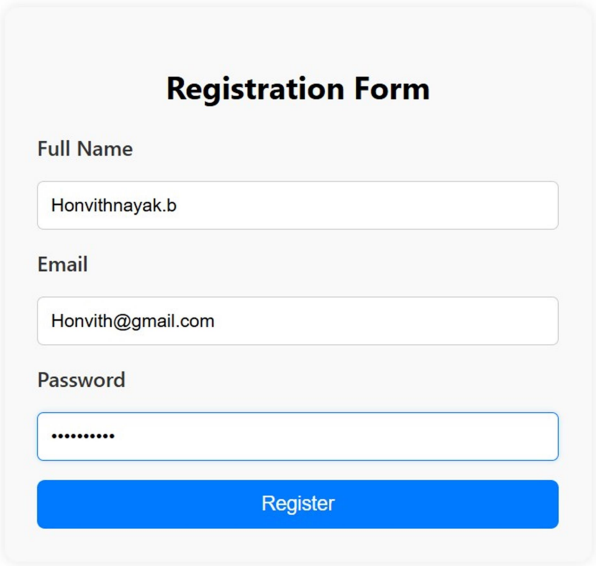
Step 6: Run the Application

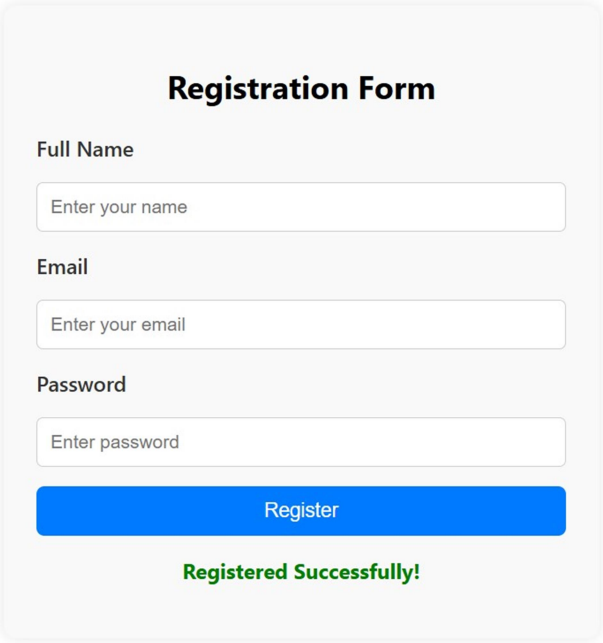
1. In the terminal, run the following command to start the application:

    • **npm start**

2. Open your browser and go to http://localhost:3000 to view your register form.

Output:


Registration Form
Full Name
Honvithnayak.b
Email
Honvith@gmail.com
Password
Register


Registration Form
Full Name
Enter your name
Email
Enter your email
Password
Enter password
Register
Registered Successfully!

6. Create a product catalog like Product name, Product ID, Product price and Product image using React-JS

Step 1: Create React App

npx create-react-app my-app

cd my-app

Step 2: Create products.json

Create a JSON file inside src folder with sample products:

```
[
{
   "id": 1,
   "name": "Apple iPhone 12",
   "description": "The Apple iPhone 12 features a 6.1-inch Super Retina XDR                display and A14 Bionic chip.",
   "price": 999.00,
   "category": "Electronics",
   "image":       "https://rukminim2.flixcart.com/image/704/844/kg8avm80/mobile/y/7/n/apple-iphone-12-dummyapplefsn-original-imafwg8dpyjvgg3j.jpeg?q=90&crop=false"
 }]
```

Step 3: Create Viewcart Component

Create Viewcart.js in src/pages/:

```
import { useState } from "react";
import data from "../products.json";
```

```
const Viewcart =()=>{
   const [products] = useState(data);



   return(
      <>
       <div className="header">
         <div className="logo">

         </div>
       </div>
       <div className="banner">

       </div>
       <div className="productlist">
          {products.map((product)=>(
           <div Key={product.id}>
            <div className="img">
           <img src={product.image} alt={product.name}/>
            </div>
            <div className="details">


              <h3>{product.name}</h3>

              <p>price Rs :{product.price}</p>
              <button>Add to Cart</button>
          </div>
         </div>

         ))}

       </div>
       <div className="footer">
         @copywrite CPC Polytechnic, Mysore
       </div>

      </>
   )

}
export default Viewcart;
```

Step 4: Add CSS (App.css)

```
.header{
  background-color: #f18317;
  padding:5px 30px;
}

.logo{
  background: url(/src/logo.jpeg);
  width:300px;
  height:75px;
}
.banner{
  background: url(/src/banner.jpeg);
  width: 100%;
  height: 400px;
  background-size: cover;
}
.productlist{
  display: flex;
  flex-wrap: wrap;
  gap: 40px;
  justify-content: center;
  padding: 30px 0px;
}
.productlist .img{
  width: 100%;
  height: 150px;
}
.productlist .img img{
  width: 100%;
  height: 100%;
  object-fit: cover;
}
.footer{
  background-color: #f9ad1c;
  Padding: 15px 30px;
}
.details button{
```

```
  background-color: #f84E4F;
  padding: 5px;
  border: none;
  border-radius: 3px;
  color: white;
  font-size: bolder;
}
.details button:hover{
  background-color: rgb(196, 89, 89);


}
```

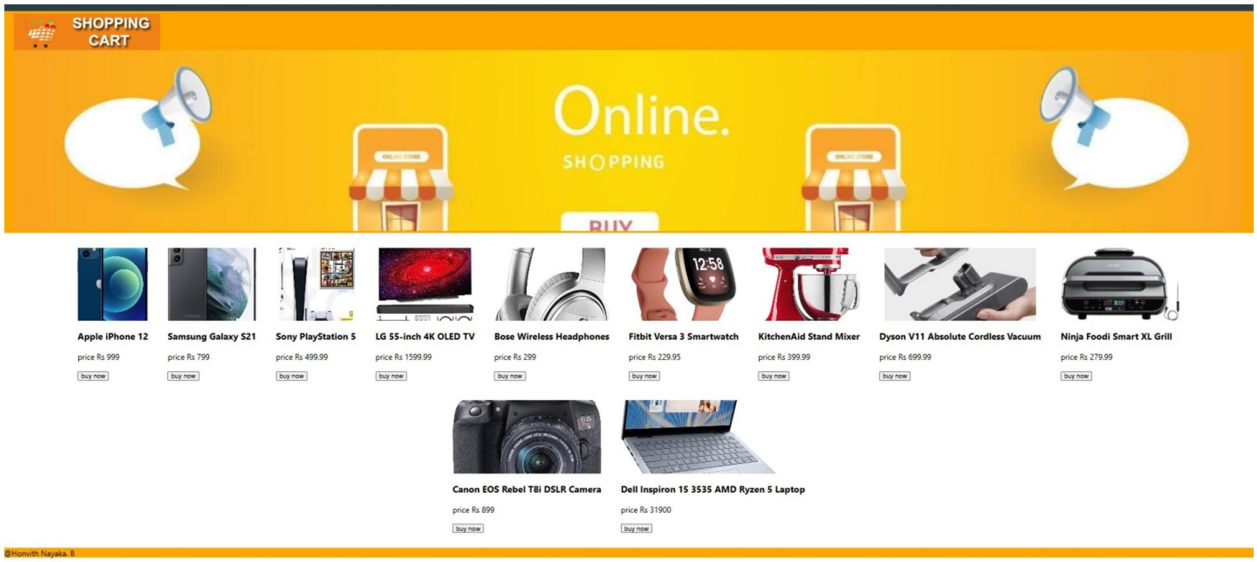
Step 5: Update App.js

```
import './App.css';
import Viewcart from './pages/Viewcart';

function App() {
  return (
    <Viewcart/>

  );
}

export default App;
```

Step 6: Run the Application:

npm start

Output:


SHOPPING CART
Online.
SHOPPING
BUY
Apple iPhone 12
price Rs 999
buy now
Samsung Galaxy S21
price Rs 799
buy now
Sony PlayStation 5
price Rs 499.99
buy now
LG 55-inch 4K OLED TV
price Rs 1599.99
buy now
Bose Wireless Headphones
price Rs 299
buy now
Fitbit Versa 3 Smartwatch
price Rs 229.95
buy now
KitchenAid Stand Mixer
price Rs 399.99
buy now
Dyson V11 Absolute Cordless Vacuum
price Rs 699.99
buy now
Ninja Foodi Smart XL Grill
price Rs 279.99
buy now
Canon EOS Rebel T8i DSLR Camera
price Rs 899
buy now
Dell Inspiron 15 3535 AMD Ryzen 5 Laptop
price Rs 31900
buy now
©Horwith Nayaka. B

7. Create a Navigation Page using React-Router-Dom with multiple react pages.

Step 1: Create React Project

npx create-react-app rdom

cd rdom

Step 2: Install React Router DOM

npm install react-router-dom

Step 3: Create Components

Navigation.js (inside src/components/)

This file contains the navigation menu for switching between pages.

```
1   import { Link } from "react-router-dom";
2   const  Navigation =()=>{
3       return(
4           <>
5
6           <Link to="/"className="my-link">Home</Link>
7           <Link to="/about"className="my-link">About </Link>
8           <Link to="/contact"className="my-link">Contact </Link>
9
10
11          </>
12      )
13  }
14  export default Navigation;
15
16
```

Home.js (inside src/pages/)

```
import { startTransition } from "react";
import { Link } from "react-router-dom";
import Navigation from "../components/Navigation";
const Home =()=>{

    return(
        <>
        <Navigation/>
        <h1>Home page</h1>



        </>
    )

}

export default Home;

```

About.js (inside src/pages/)

```
import { Link } from "react-router-dom";
import Navigation from "../components/Navigation";
const About =()=>{

    return(
        <>
        <Navigation/>
        <h1>About page</h1>


        </>
    )

}

export default About;

```

Contact.js (inside src/pages/)

```jsx
import { Link } from "react-router-dom";
import Navigation from "../components/Navigation";
const Contact =()=>{

    return(
       <>
       <Navigation/>
       <h1>Contact page</h1>

       </>
    )

}

export default Contact;
```

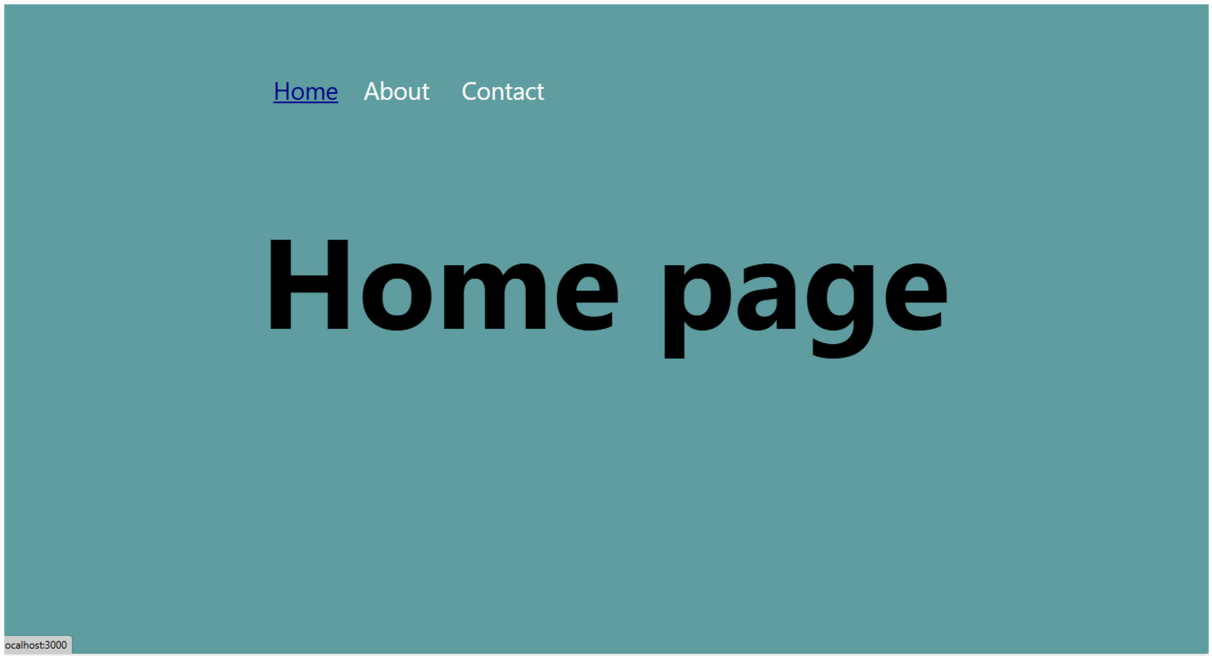
Step 4: Setup Routing in App.js

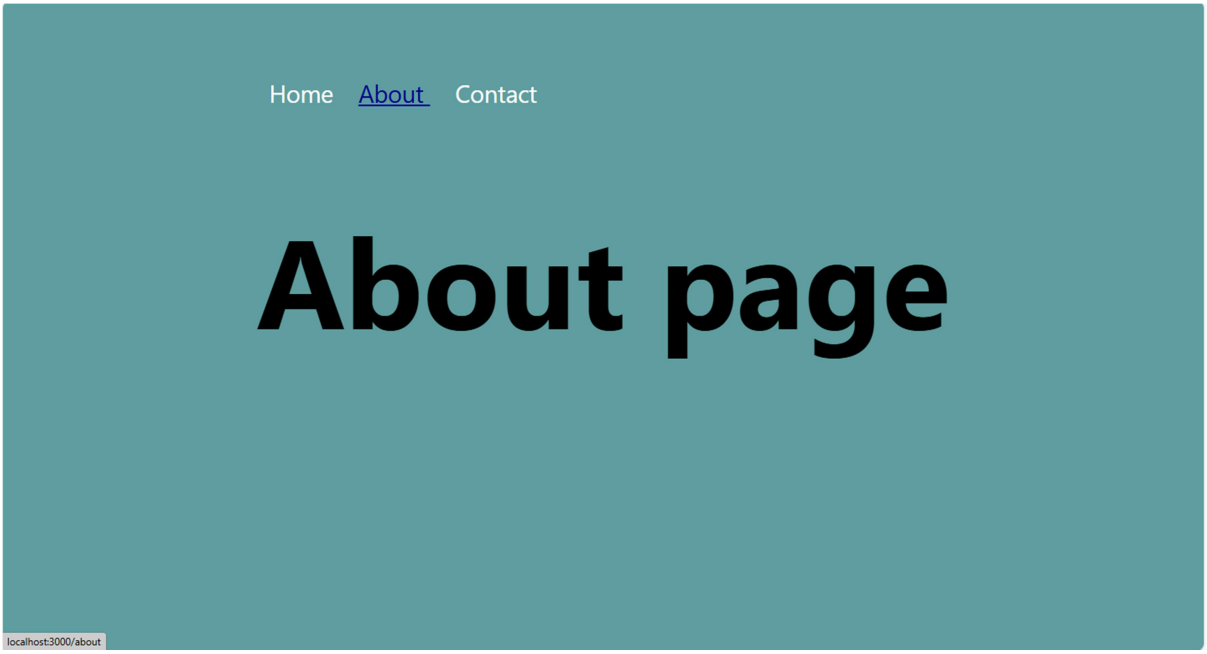
```jsx
import { RouterProvider,createBrowserRouter } from 'react-router-dom';
import './App.css';
import Home from './pages/Home';
import About from './pages/About';
import Contact from './pages/Contact';

const router = createBrowserRouter([
  {path:"/",element:<Home/>},
  {path:"/about",element:<About/>},
  {path:"/contact",element:<Contact/>}

])

function App() {
  return (
    <RouterProvider router={router}/>
  );
}

export default App;
```

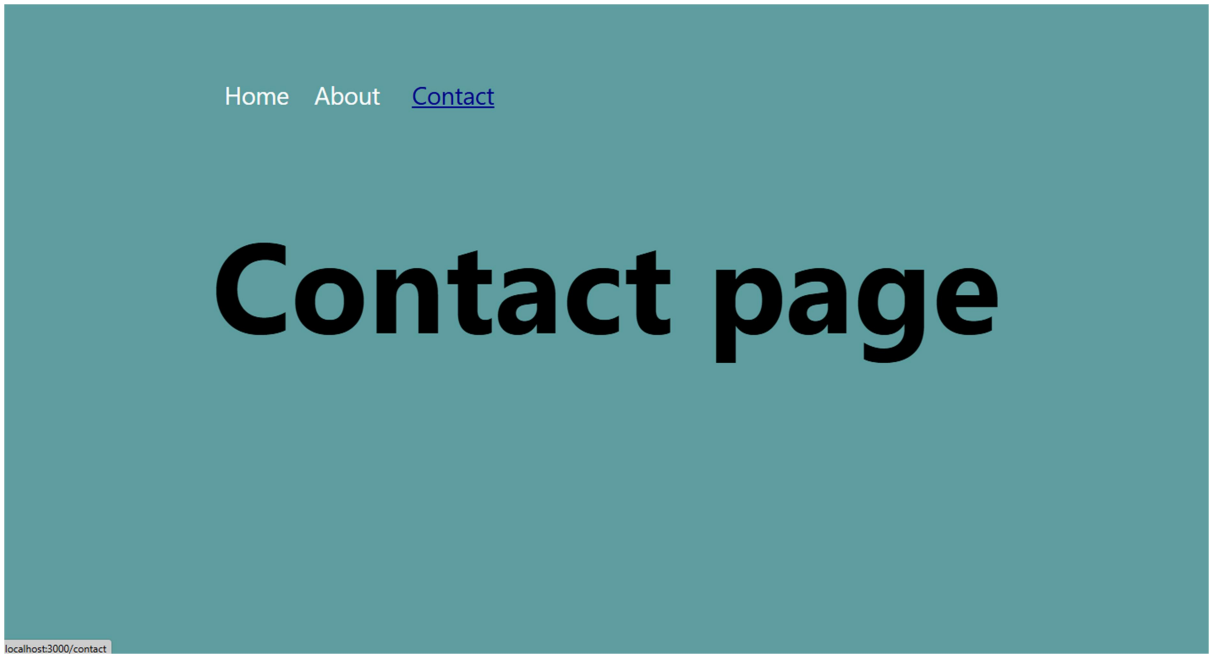
Step 5: **Add Styling (App.css)**

```css
body{
  background-color: cadetblue;
  display: flex;
  justify-content: center;
  align-items: center;
  min-height: 80vh;
}

h1{
  font-size: 100px;

}
.my-link{
  padding: 10px;
  font-size: 19px;
  color: white;
  text-decoration: none;
}
.my-link:hover{
  color: darkblue;
  text-decoration: underline;
}
```

Output:


Home About Contact
Home page
ocalhost:3000


Home About Contact
About page
localhost:3000/about


Home About Contact
Contact page
localhost:3000/contact

8. Perform CRUD Operations without using API with Spring Boot application

CRUD Operation:

- CRUD stands for Create, Read, Update, Delete
- It represents the four basic functions used to manage data in databases or applications. Almost every app you use (Instagram, Flipkart, Banking apps, etc.) is built around CRUD operations.

Create (C) → Adding new data (e.g., inserting a new user into a database).

- **Example**: INSERT INTO users (name, email) VALUES ('user', 'abc@mail.com');

Read (R) → Retrieving or viewing existing data without modifying it.

- **Example:** SELECT * FROM users WHERE id = 1;

Update (U) → Modifying existing data.

- **Example:** UPDATE users SET email = 'new@mail.com' WHERE id = 1;

Delete (D) → Removing data.

- **Example:** DELETE FROM users WHERE id = 1;

Prerequisite's :

Node.js

Eclipse

Web browser

Steps to Create a Spring Project :

Step 1 : Go to Google and Search for Spring initializer .

Step 2 : Select

Project : Maven

Language : Java

Spring Boot Version : 3.5.6 (By default)

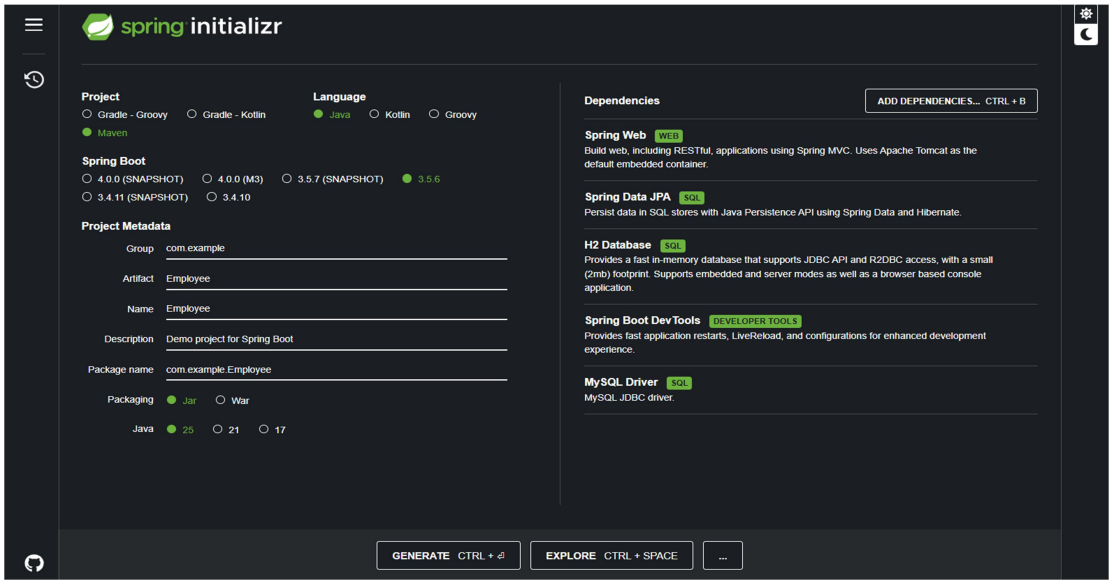
Step 3 : Enter your project Meta Data

Step 4 : Packaging : Jar , Java Version : Based on your System Configuration

Step 5 : Select your Required Dependencies

Uses of Dependencies :

- **Spring Web** → Builds REST APIs and web applications using Spring MVC and embedded Tomcat.
- **Spring Data JPA** → Simplifies database operations using JPA and Hibernate.
- **H2 Database** → Lightweight in-memory database for testing and development.
- **Spring Boot DevTools** → Provides auto-restart and developer productivity tools.
- **MySQL Driver** → Enables Spring Boot to connect with MySQL database.



Annotations and their use :

- **@Entity** → Marks a class as a JPA entity mapped to a database table.
- **@Id** → Specifies the primary key of the entity.
- **@Controller** → Marks the class as a Spring MVC controller that handles web requests.
- **@Autowired** → Automatically injects (wires) the required bean dependency.
- **@RequestMapping** → Maps a web request (URL) to a specific method or controller.
- **@RequestParam** → Binds a request parameter (like form input) to a method parameter

Step 1: Create the Entity class (Model)

Method to create Repositary: src/main/java => right click on default package => New =>Package => Model

Method to Create File : src/main/java => right click on Model Package => New => class =>Student

Create a new file:
src/main/java/com/cpc/crudcpc/model/Student.java

```
package com.cpc.crudcpc.model;


import jakarta.persistence.Entity;
import jakarta.persistence.Id;


@Entity
public class Student {


	@Id
	private int sid;
	private String sname;
	private String branch;
	private String college;
	public int getSid() {
		return sid;
	}
	public void setSid(int sid) {
		this.sid = sid;
	}
	public String getSname() {
		return sname;
	}
	public void setSname(String sname) {
		this.sname = sname;
```

```
	}
	public String getBranch() {
		return branch;
	}
	public void setBranch(String branch) {
		this.branch = branch;
	}
	public String getCollege() {
		return college;
	}
	public void setCollege(String college) {
		this.college = college;
	}
	@Override
	public String toString() {
		return "Student [sid=" + sid + ", sname=" + sname + ", branch=" + branch + ",
college=" + college + "]";
	}
}
```

Step 2: Repository Interface

Method to create Repositary: src/main/java => right click on default package => New =>Package => Repositary

Method to Create File : src/main/java => right click on Repositary Package => New => class =>StudentRepo

Create this file:
src/main/java/com/cpc/crudcpc/repository/StudentRepo.java

```
package com.cpc.crudcpc.repository;


import org.springframework.data.repository.CrudRepository;
```

```
import com.cpc.crudcpc.model.Student;

public interface StudentRepo extends CrudRepository<Student, Integer> {

}
```

This UserRepository automatically gives you CRUD methods like:

- save(user) → insert or update
- findAll() → get all users
- findById(id) → get one user
- deleteById(id) → delete user

Step 3: Add Dependencies in pom.xml

Make sure your pom.xml has these (you already added tomcat-jasper for JSP):

```
<dependency>
    <groupId>org.apache.tomcat</groupId>
    <artifactId>tomcat-jasper</artifactId>
</dependency>


<dependency>
    <groupId>jakarta.servlet</groupId>
    <artifactId>jakarta.servlet-api</artifactId>
    <scope>provided</scope>
</dependency>
```

Step 4: Controller (API Layer)

Method to create Repositary: src/main/java => right click on default package => New =>Package => Controller

Method to Create File : Method : src/main/java => right click on Controller Package => New => class =>StudentController

Create:
src/main/java/com/cpc/crudcpc/controller/UserController.java

```
package com.cpc.crudcpc.controller;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;
import org.springframework.web.servlet.ModelAndView;

import com.cpc.crudcpc.model.Student;
import com.cpc.crudcpc.repository.StudentRepo;

@Controller
public class StudentController {
	@Autowired
	StudentRepo studentrepo;
	@RequestMapping("index")
  public String index() {
	  return "index.jsp";
  }
	@RequestMapping("addStu")
	public String addStu(Student student) {
		studentrepo.save(student);
		return "index.jsp";
	}
	@RequestMapping("getStu")
	public ModelAndView getStu(@RequestParam int sid) {
		ModelAndView mv = new ModelAndView("display.jsp");
		Student student = studentrepo.findById(sid).orElse(new Student());
```

```
        mv.addObject(student);
        return mv;
    }

    @RequestMapping("delStu")
    public ModelAndView delStu(@RequestParam int sid) {
        ModelAndView mv = new ModelAndView("delete.jsp");
        Student student = studentrepo.findById(sid).orElse(new Student());
        studentrepo.deleteById(sid);
        mv.addObject(student);
        return mv;
    }

    @RequestMapping("updStu")
    public ModelAndView updStu(Student student) {
        ModelAndView mv = new ModelAndView("update.jsp");
        student = studentrepo.findById(student.getSid()).orElse(new Student());
        mv.addObject(student);
        return mv;
    }
}
```

Step 5: Database Configuration

In your project you already have src/main/resources/application.properties. Add this:

```
# Database Configuration (MySQL Example)
spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver
spring.datasource.url=jdbc:mysql://localhost:3306/studentcpcdb
```

spring.datasource.username=root

spring.datasource.password=yourpassword

Hibernate Config

spring.jpa.hibernate.ddl-auto=update

Server port

server.port=8080

- Create database in MySQL:

CREATE DATABASE cruddb;

Step 6: Run the Application

- In Eclipse → Right click project → **Run As → Spring Boot App**
- Server starts on: http://localhost:8080

Step 7: JSP Pages

01. Index.jsp

Method to create jsp file : src => main => right click => new => file => index.jsp

```
<html>
<head>
</head>
<body>
<div Style="text-align:center">
<h1>CRUD Operation by using JSP and Mysql(Without API)</h1>
</div>
<div Style="padding-left:50px">
  <h2>Add Student</h2>
  <form action="addStu">
  Student Id:<input type="text" name="sid"/> <br/>
  Student Name:<input type="text" name="sname"/> <br/>
```

```
Branch:<input type="text" name="branch"/> <br/>
College:<input type="text" name="college"/> <br/>
<input type="submit"/>
</form>

<h2>Get Student</h2>
<form action="getStu">
Student Id:<input type="text" name="sid"/> <br/>
<input type="submit"/>
</form>

<h2>Delete Student</h2>
<form action="delStu">
Student Id:<input type="text" name="sid"/> <br/>
<input type="submit"/>
</form>

<h2>Update Student</h2>
<form action="updStu">
Student Id:<input type="text" name="sid"/> <br/>
<input type="submit"/>
</form>

</div>
</body>
</html>
```

02. Update.jsp

Method to create jsp file : src => main => right click => new => file => Update.jsp

```
<html>
<head>
</head>
<body>
<div Style="text-align:center">
<h1>CRUD Operation by using JSP and Mysql(Without API)</h1>
</div>
<div Style="padding-left:50px">
  <h2>Add Student</h2>
  <form action="addStu">
  Student Id:<input type="text" name="sid" value=${student.sid }> <br/>
  Student Name:<input type="text" name="sname" value=${student.sname }> <br/>
  Branch:<input type="text" name="branch" value=${student.branch }> <br/>
  College:<input type="text" name="college" value=${student.college }> <br/>
  <input type="submit"/>
  </form>
</div>
</body>
</html>
```

03. Display.jsp

Method to create jsp file : src => main => right click => new => file => Display.jsp

```
Student Id:${student.sid}<br/>
Student Name:${student.sname}<br/>
Branch:${student.branch}<br/>
College:${student.college}<br/>
```

04. Delete.jsp

Method to create jsp file : src => main => right click => new => file => delete.jsp

${student.sid} Record is Deleted Sucessfully.....

Now when you run CrudcpcApplication:

- http://localhost:8080/ → opens index.jsp
- Add/Get/Delete/Update → handled by JSPs (display.jsp, update.jsp, delete.jsp)

Output :

Crud Operation using JSP and Mysql (Without API)

Add Student

Student Id:
Student Name:
Branch:
College:
Submit

Get Student

Student Id:
Submit

Delete Student

Student Id:
Submit

Update Student

Student Id:
Submit

Insert :

Crud Operation using JSP and Mysql (Without API)

Add Student

Student Id: 1
Student Name: Shakthi shree B
Branch: CS
College: CPC
Submit

- **Database Record :**

	sid	branch	college	sname
Edit Copy Delete	1	CS	CPC	Shakthi shree B

Update :

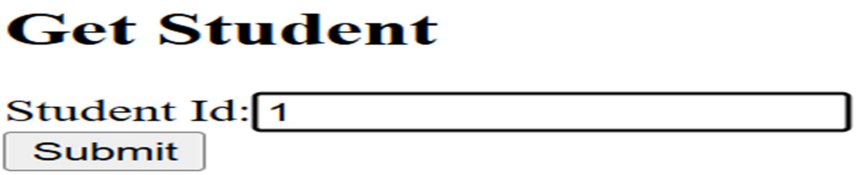
Update Student

Student Id: 1
Submit

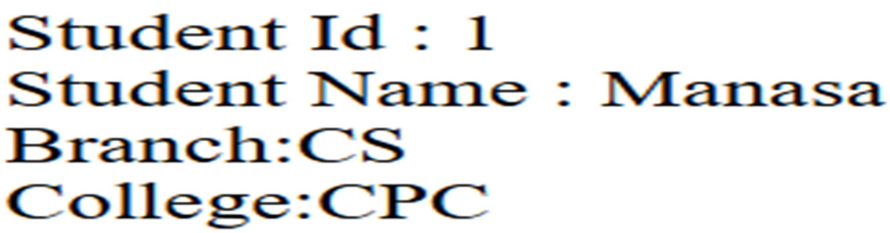
- **Database Record :**

	sid	branch	college	sname
Edit Copy Delete	1	CS	CPC	Manasa

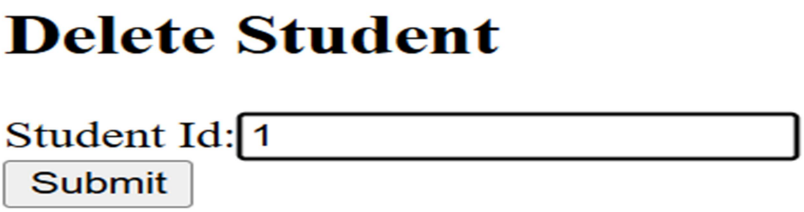
View :

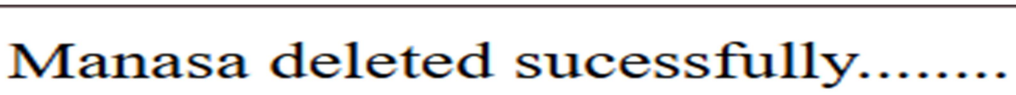


- **Database Record :**

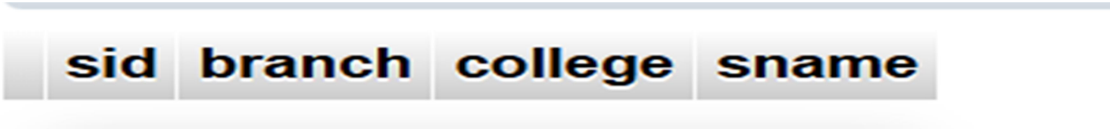


Delete :





- **Database Record :**



9.Perform CRUD Operations using API with Spring Boot application

CRUD Operation with API:

API:

API stands for Application Programming Interface.

It is a set of rules and methods that allows one software application to communicate with another.

Types of APIs:

- REST API → most common, uses HTTP (e.g., GET, POST, PUT, DELETE).
- GraphQL API → lets you request only the data you need.
- SOAP API → older, uses XML.
- Web APIs → used in browsers and web apps (like Google Maps API).

CRUD:

CRUD stands for the four basic operations you can perform on data in a database or an API:

1. C → Create → Add new data
2. R → Read → Get/retrieve data
3. U → Update → Modify existing data
4. D → Delete → Remove data.

Prerequisite's :

Node.js

Eclipse

Postman tool

Web browser

Steps to Create a Spring Project :

Step 1 : Go to Google and Search for Spring initializer .

Step 2 : Select

Project : Maven

Language : Java

Spring Boot Version : 3.5.6 (By default)

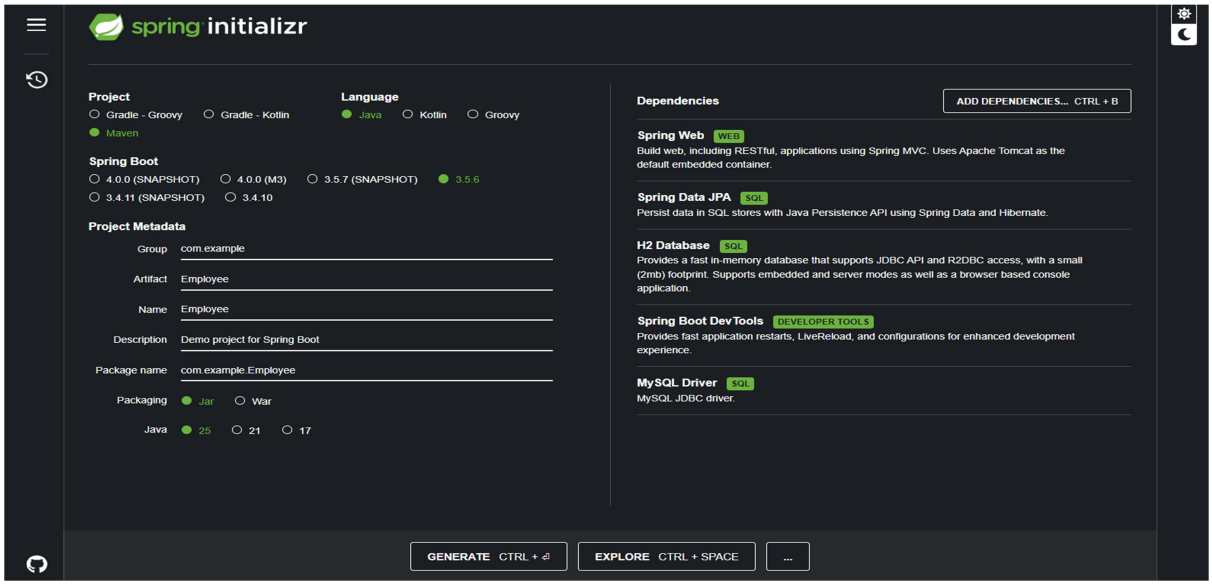
Step 3 : Enter your project Meta Data

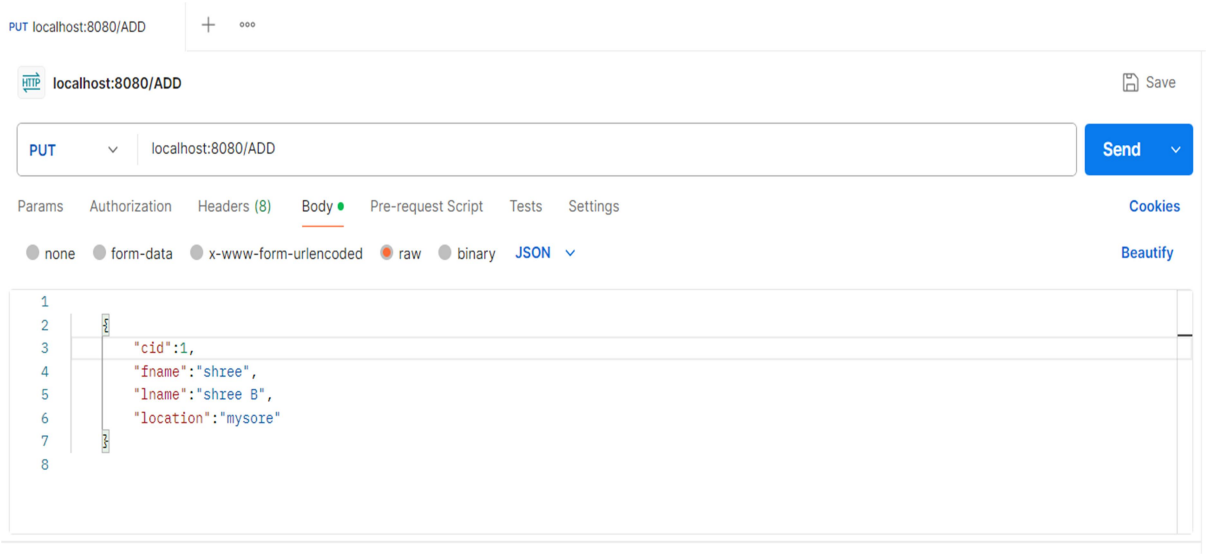
Step 4 : Packaging : Jar , Java Version : Based on your System Configuration

Step 5 : Select your Required Dependencies

Uses of Dependencies :

- **Spring Web** → Builds REST APIs and web applications using Spring MVC and embedded Tomcat.
- **Spring Data JPA** → Simplifies database operations using JPA and Hibernate.
- **H2 Database** → Lightweight in-memory database for testing and development.
- **Spring Boot DevTools** → Provides auto-restart and developer productivity tools.
- **MySQL Driver** → Enables Spring Boot to connect with MySQL database.





Annotations and their use:

- **@SpringBootApplication** → Marks the main class as a Spring Boot application with auto-configuration.
- **@RestController** → Creates REST APIs by combining @Controller and @ResponseBody.
- **@Autowired** → Injects required dependencies automatically.
- **@PostMapping** → Handles HTTP POST requests for creating data.
- **@GetMapping** → Handles HTTP GET requests for fetching data.
- **@DeleteMapping** → Handles HTTP DELETE requests for deleting data.
- **@PutMapping** → Handles HTTP PUT requests for updating data.
- **@RequestBody** → Maps the request JSON body to a Java object.
- **@PathVariable** → Maps a URL path variable to a method parameter.
- **@Entity** → Declares a class as a JPA entity mapped to a database table.
- **@Id** → Marks a field as the primary key of the entity.

CrudapiApplication.java : Default Package

package com. cpcapi. crudapi;

```
import org. spring framework. boot. Spring Application;
import org. spring framework. boot. autoconfigure. SpringBootApplication;

@SpringBootApplication
public class CrudapiApplication {

 public static void main (String [] args) {
  SpringApplication.run (CrudapiApplication.class, args);
 }

}
```

3. EmpController.java:

Method to create Repositary: src/main/java => right click on default package => New =>Package => Controller

Method to Create File : src/main/java => right click on Controller Package => New => class =>EmpController

```
package com. cpcapi. crudapi. Controller;

import java.util.List;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.DeleteMapping;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.PathVariable;
import org.springframework.web.bind.annotation.PostMapping;
import org.springframework.web.bind.annotation.PutMapping;
import org.springframework.web.bind.annotation.RequestBody;
import org.springframework.web.bind.annotation.RestController;

import com.cpcapi.crudapi.model.Employee;
import com.cpcapi.crudapi.repository.EmpRepo;

@RestController
public class EmpController {

 @Autowired
 EmpRepo emprepo;

 @PostMapping("/addEmp")
 public String addEmp(@RequestBody Employee employee) {
```

```
 emprepo.save(employee);
 return "Record Inserted Sucessfully";
}
@GetMapping("/getEmp")
public List<Employee> getEmp() {
 return(List<Employee>) emprepo.findAll();

}

@DeleteMapping("/delEmp/{eid}")
public String delEmp(@PathVariable int eid) {
 emprepo.deleteById(eid);
 return "Record Delete Sucessfully";
}

@PutMapping("/updEmp")
public String updEmp(@RequestBody Employee employee) {
 Employee empupdate =
emprepo.findById(employee.getEid()).get();
 empupdate.setEname(employee.getEname());
 empupdate.setCompany(employee.getCompany());
 empupdate.setLocation(employee.getLocation());
 emprepo.save(empupdate);
 return "Record Updated Sucessfully";
}

}
```

4. Employee. Java:

Method to create Repositary: src/main/java => right click on default package => New =>Package => Model

Method to Create File :src/main/java => right click on Model Package => New => class =>Employee.java

```
package com.cpcapi.crudapi.model;

import jakarta.persistence.Entity;
import jakarta.persistence.Id;
```

```
@Entity
public class Employee {

 @Id
 private int eid;
 private String ename;
 private String company;
 private String location;
 public int getEid() {
  return eid;
 }
 public void setEid(int eid) {
  this.eid = eid;
 }
 public String getEname() {
  return ename;
 }
 public void setEname(String ename) {
  this.ename = ename;
 }
 public String getCompany() {
  return company;
 }
 public void setCompany(String company) {
  this.company = company;
 }
 public String getLocation() {
  return location;
 }
 public void setLocation(String location) {
  this.location = location;
 }
 @Override
 public String toString() {
  return "Employee [eid=" + eid + ", ename=" + ename + ",
company=" + company + ", location=" + location + "]";
 }



}
```

5. EmpRepo.java:

Method to create Repositary: src/main/java => right click on default package => New =>Package => Repositary

Method to Create File : src/main/java => right click on Repositary Package => New => Interface =>EmpRepo

```
package com.cpcapi.crudapi.repository;

import
org.springframework.data.repository.CrudReposito
 ry;

import com.cpcapi.crudapi.model.Employee;

public interface EmpRepo extends
CrudRepository<Employee, Integer> {

}
```

6.application.properties:

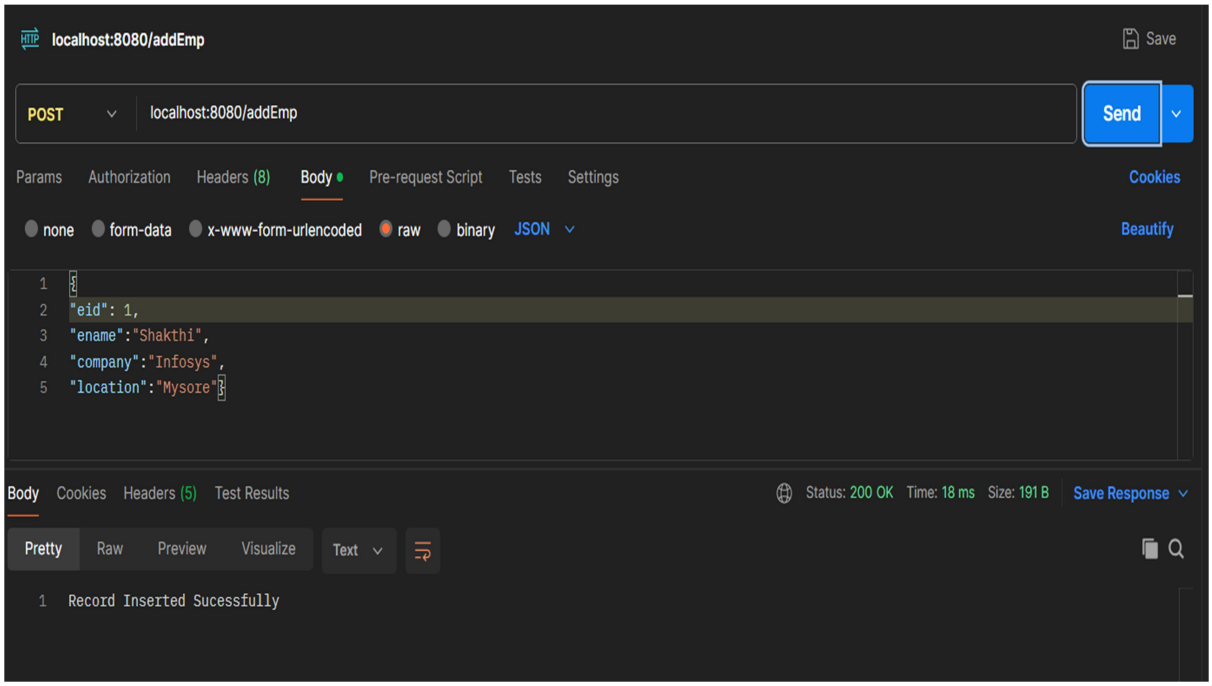
```
spring.datasource.driver-class-name=com.mysql.cj.jdbc.Driver
spring.datasource.url=jdbc:mysql://localhost:3306/crudapicpc_db
spring.datasource.username=root
spring.datasource.password=

spring.jpa.hibernate.ddl-auto = update

server.port=8082
```

6. Add Dependencies in pom.xml:

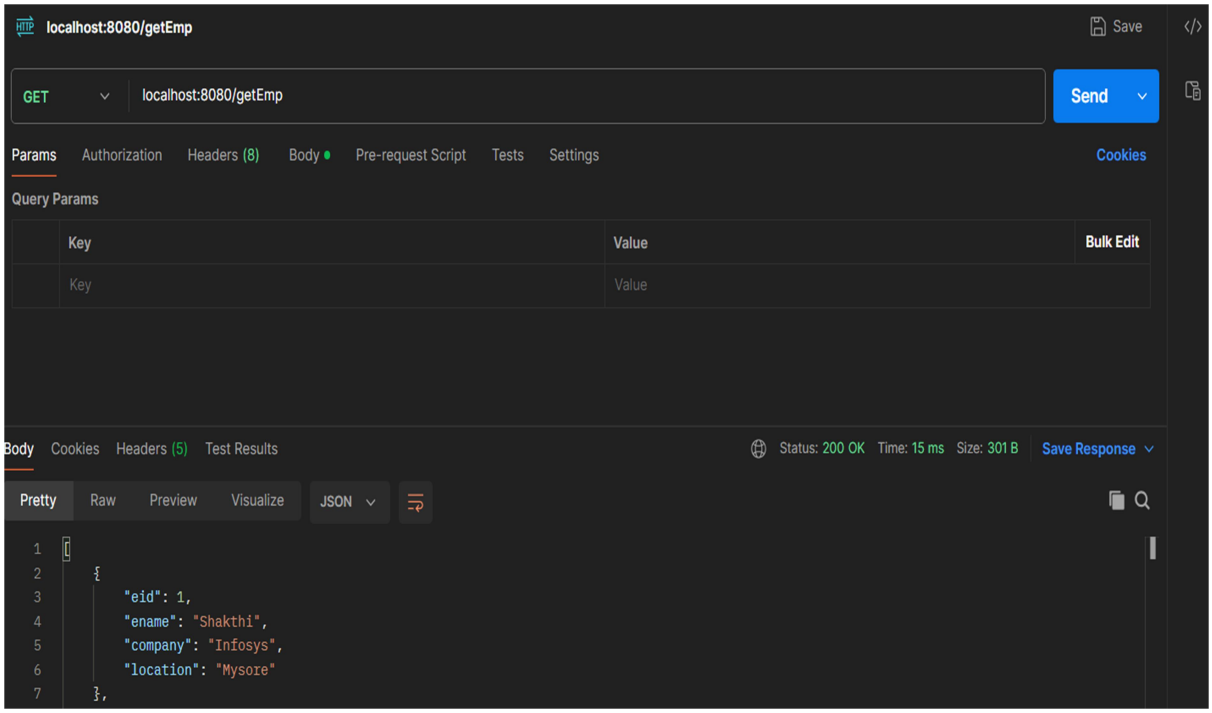
```
<dependency>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-data-jpa</artifactId>
 </dependency>
 <dependency>
  <groupId>org.springframework.boot</groupId>
  <artifactId>spring-boot-starter-web</artifactId>
 </dependency>
```

Output :

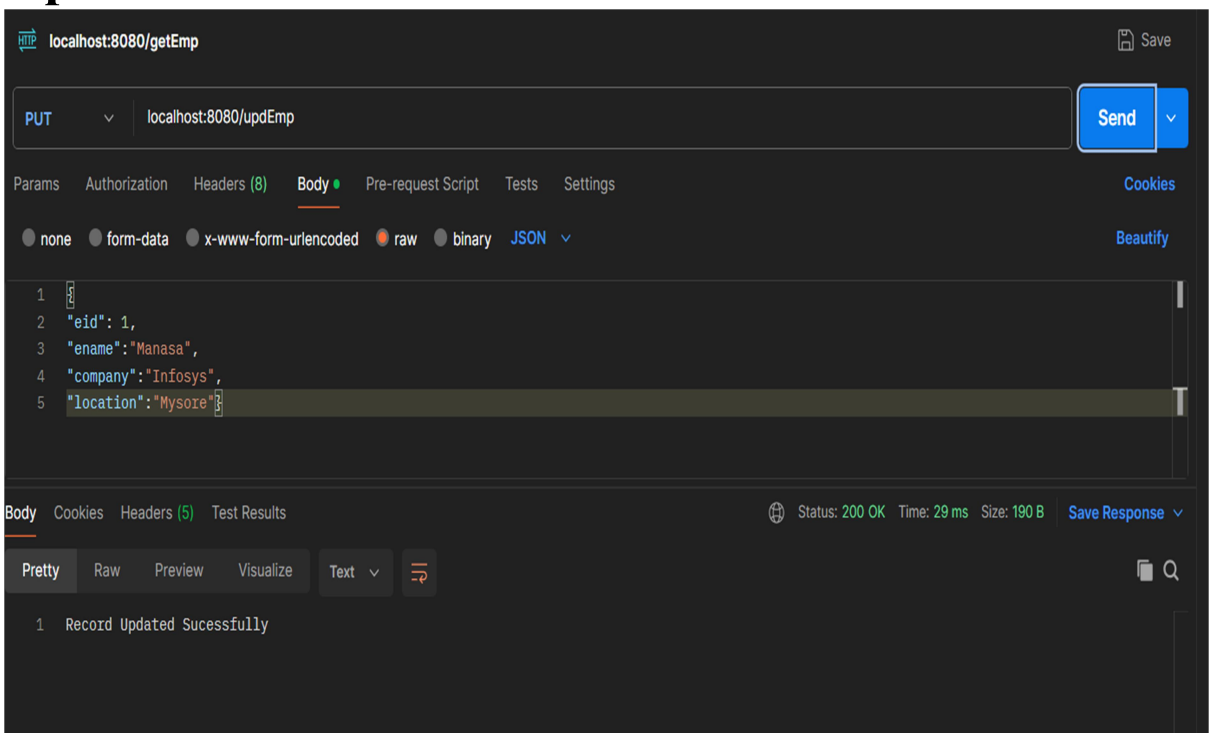
Insert Record :



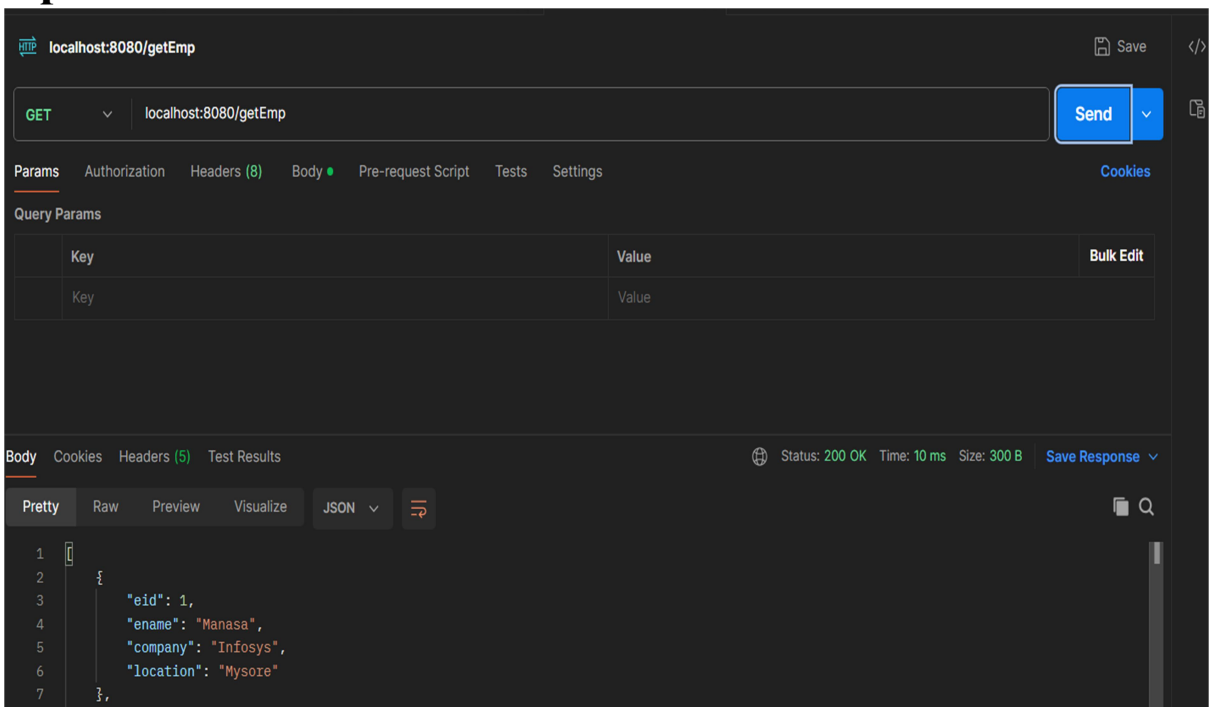
View Record :



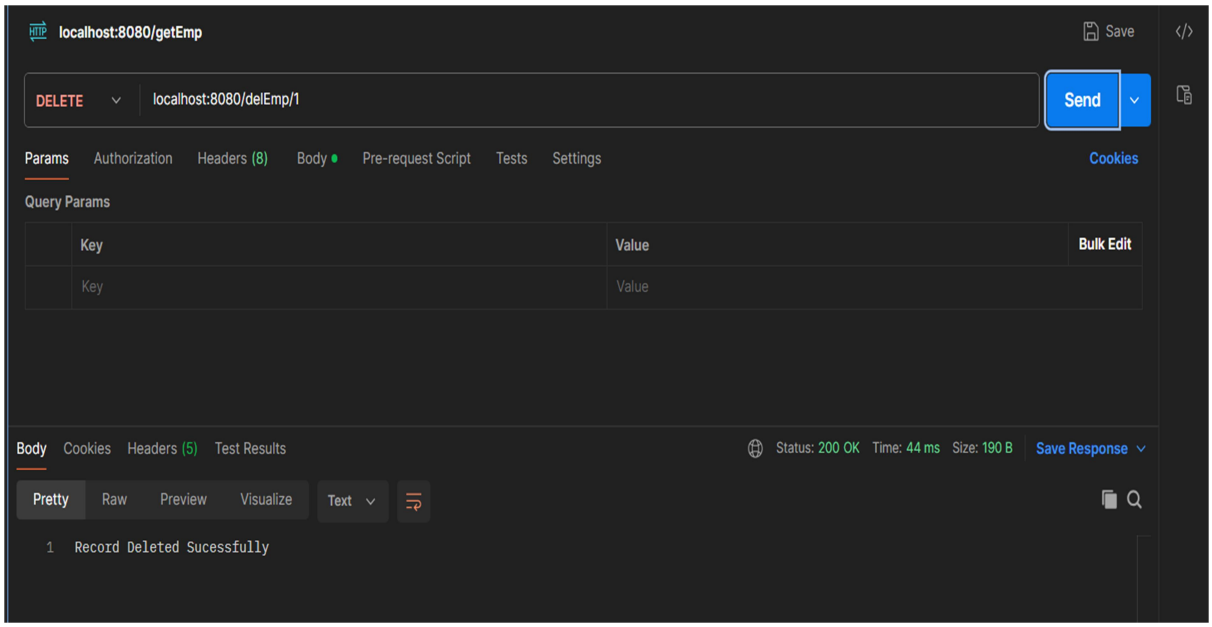
Update Record :



Updated Record :



Delete Record :



10. Perform A) Create and Drop Database, B) Create and Drop Table. C) Insert one and Insert many. D) Delete one and Delete Many, operations using Mongo DB Shell

What is MongoDB?

- MongoDB is a **NoSQL database** that stores data in **documents** (similar to JSON format).
- Data is stored in **collections**, and each collection contains multiple **documents**.
- It is widely used because it is **flexible**, **fast**, and **easy to use**.

What is MongoDB Shell?

- MongoDB Shell (mongosh) is a **command-line interface** used to interact with MongoDB.
- You can use it to **create databases**, **insert data**, **query data**, **update**, and **delete documents**.

Pre-Requisites:

1. MongoDB must be installed on your system.
2. MongoDB server should be running.
3. Open **MongoDB Shell (mongosh)** from your terminal or command prompt.

How to Open MongoDB Shell:

1. Open **Command Prompt** (Windows) or **Terminal** (Mac/Linux).
2. Type:mongosh
3. Press **Enter** — it connects you to the local MongoDB server.
4. You'll see a prompt like:

   test>

This means MongoDB Shell is ready to use.

Basic Commands:

1. Create Database

use studentdb

- Creates or switches to a database named studentdb.

```
test> use CollegeDB
switched to db CollegeDB
```

2. Create Collection

db.createCollection("student")

- Creates a collection named student.

```
CollegeDB> db.createCollection("Student")
{ ok: 1 }
```

3. Insert Documents (Create)

db.student.insertOne({ name: "Honvith Nayaka. B", age: “18”, course: "CSE" })

- Inserts a single document into the student collection.

```
CollegeDB> db.Student.insertOne({name:"Honvith Nayaka. B", age:"18", course:"CSE"})
{
  acknowledged: true,
  insertedId: ObjectId('68e9f6644d150c8548cebea4')
}
```

db.student.insertMany([

{ name: "M R Yogananda", age: “20”, course: "CSE" },

{ name: "Jamuna", age: “20”, course: "CSE"}

])

- Inserts multiple documents at once.

```
CollegeDB> db.Student.insertMany([{name:"M R Yogananda", age:"18", course:"CSE"},{name:"Jamuna", age:"18", course:"CSE"}])
{
  acknowledged: true,
  insertedIds: {
    '0': ObjectId('68e9f70d4d150c8548cebea5'),
    '1': ObjectId('68e9f70d4d150c8548cebea6')
  }
}
```

4. Display Data (Read)

db.student.find()

- Displays all documents in the student collection.

db.student.find().pretty()

- Displays the data in a readable (formatted) way.

```
CollegeDB> db.Student.find().pretty()
[
  {
    _id: ObjectId('68e9f6644d150c8548cebea4'),
    name: 'Honvith Nayaka. B',
    age: '18',
    course: 'CSE'
  },
  {
    _id: ObjectId('68e9f70d4d150c8548cebea5'),
    name: 'M R Yogananda',
    age: '18',
    course: 'CSE'
  },
  {
    _id: ObjectId('68e9f70d4d150c8548cebea6'),
    name: 'Jamuna',
    age: '18',
    course: 'CSE'
  }
]
```

5. Delete Data (Delete)

db.student.deleteOne({ name: "Honvith Nayaka. B" })

- Deletes one document matching the condition.

```
CollegeDB> db.Student.deleteOne({name:"Honvith Nayaka. B"})
{ acknowledged: true, deletedCount: 1 }
```

db.student.deleteMany({ age: "18" })

- Deletes all documents where age is “18”.

```
CollegeDB> db.Student.deleteMany({age:"18"})
{ acknowledged: true, deletedCount: 2 }
```

6 . **Show database**

- **Show dbs**

```
>_MONGOSH
> show dbs
< Shakthi     112.00 KiB
  admin       192.00 KiB
  config       48.00 KiB
  cruddbcpc   108.00 KiB
  local        80.00 KiB
test>
```

7. Drop Collection or Database

db.student.drop()

- Deletes the student collection.

```
CollegeDB> db.student.drop()
true
```

db.dropDatabase()

- Deletes the current database.

```
CollegeDB> db.dropDatabase()
{ ok: 1, dropped: 'CollegeDB' }
```

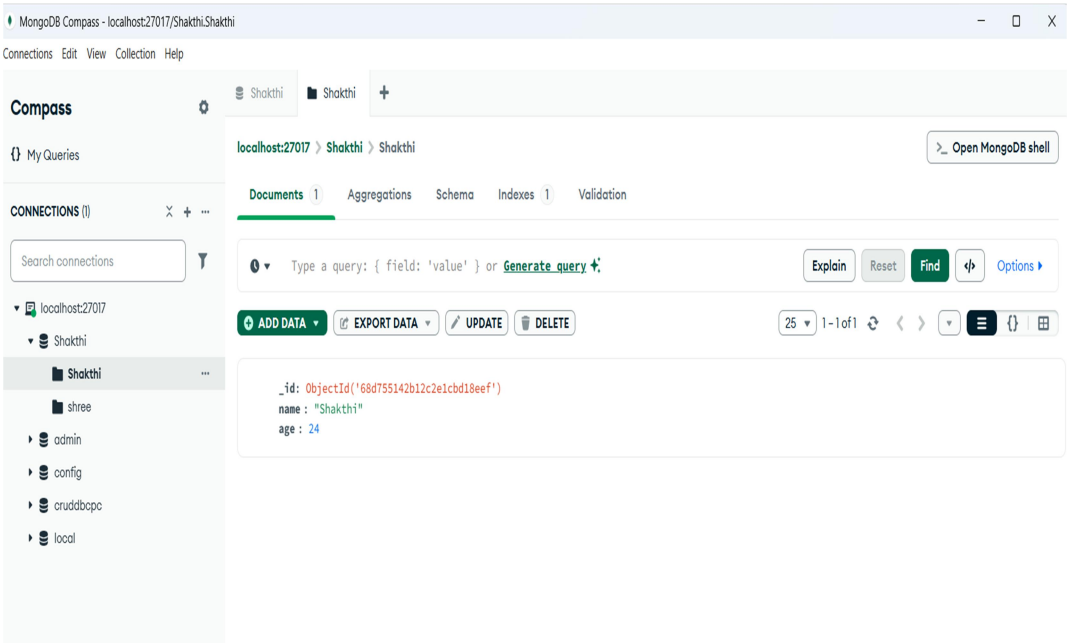
11. Perform CRUD Operations using Mongo DB Compass with Spring Boot application

What is MongoDB?

- MongoDB is a **NoSQL database** used to store data in a **document (JSON-like)** format.
- It is **non-relational**, **fast**, and **flexible** for handling large amounts of data.
- Data is stored in **collections** (similar to tables) and **documents** (similar to rows).

What is MongoDB Compass?

- MongoDB Compass is a **Graphical User Interface (GUI)** for MongoDB.
- It allows users to **view**, **insert**, **update**, and **delete** documents easily without writing code.
- It helps to visualize database structure and run queries interactively.



CRUD Operations:

Operation Description

Create Add new documents

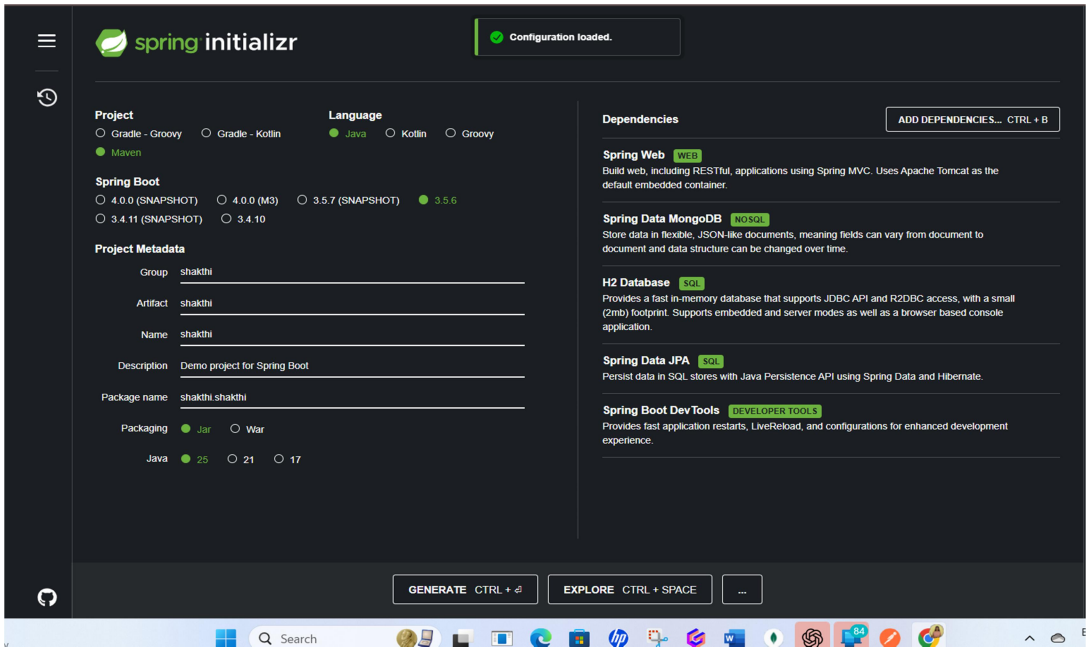
Operation	Description
Read	Retrieve data from collection
Update	Modify existing data
Delete	Remove data from collection

Pre-Requisites:

- MongoDB Server installed and running
- MongoDB Compass installed
- Eclipse IDE installed
- MongoDB Java Driver added to the project.

Dependencies and their Uses :

- **Spring Web** – Used to build web applications and RESTful APIs using Spring MVC.
- **Spring Data MongoDB** – Enables connection and CRUD operations with MongoDB (NoSQL database).
- **H2 Database** – Provides an in-memory database for testing and quick data storage during development.
- **Spring Data JPA** – Simplifies working with relational (SQL) databases using the Java Persistence API.
- **Spring Boot DevTools** – Speeds up development with automatic restarts and live reload on code changes.



Annotations and their uses :

- **@SpringBootApplication** – Marks the main class of a Spring Boot project; enables auto-configuration and component scanning.
- **@RestController** – Used to define a RESTful web controller that returns data as JSON.
- **@Autowired** – Automatically injects required objects or dependencies into a class.
- **@RequestMapping** – Maps a specific URL or path to a method in the controller.
- **@GetMapping** – Handles HTTP **GET** requests to fetch data from the server.
- **@PathVariable** – Captures values from the URL and passes them as method parameters.
- **@RequestBody** – Binds JSON data from the request body to a Java object.
- **@Document** – Maps a Java class to a MongoDB collection.
- **@Id** – Marks a field as the unique identifier (primary key) in a MongoDB document.

crudmongo12.application = > Default package

package com.cpcmongo.crudmongo12;

import org.springframework.boot.SpringApplication;

import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication

```
public class Crudmongo12Application {

	public static void main(String[] args) {
		SpringApplication.run(Crudmongo12Application.class, args);
	}

}
```

Step 1: Controller (API Layer)

Method to create Repositary: src/main/java => right click on default package => New =>Package => Controller

Method to Create File : src/main/java => right click on Controller Package => New => class =>StudentController

```
package com.cpcmongo.crudmongo12.controller;

import java.util.List;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.PathVariable;
import org.springframework.web.bind.annotation.RequestBody;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RestController;

import com.cpcmongo.crudmongo12.model.Customer;
import com.cpcmongo.crudmongo12.repositary.CustRepo;
```

```
@RestController
public class CustController {
	@Autowired
	CustRepo custrepo;
	@RequestMapping("/add")
	public String addcust(@RequestBody Customer customer) {
		custrepo.save(customer);
		return "Record Inserted Sucessfully";
	}
	@GetMapping("/get")
	public List<Customer> getCust(){
		return custrepo.findAll();
	}
	@RequestMapping("/del/{cid}")
	public String delcust (@PathVariable int cid) {
		custrepo.deleteById(cid);
		return "Record Deleted Sucessfully";
	}
	@RequestMapping("/upd/{cid}")
	public String updcust(@RequestBody Customer customer) {
		Customer newCust=custrepo.findById(customer.getCid()).get();
		newCust.setCname(customer.getCname());
		newCust.setFname(customer.getFname());
		newCust.setLname(customer.getLname());
		newCust.setLocation(customer.getLocation());
		custrepo.save(newCust);
		return "Record Updated Sucessfully";
}
```

```
}
```

Step 2: Create the Entity class (Model)

Method to create Repositary: src/main/java => right click on default package => New =>Package => Model

Method to Create File : src/main/java => right click on Model Package => New => class =>Customer

```
package com.cpcmongo.crudmongo12.model;


import org.springframework.data.annotation.Id;
import org.springframework.data.mongodb.core.mapping.Document;



@Document("tblcust")
public class Customer {
	@Id
	private int cid;
	private String cname;
	private String fname;
	private String lname;
	private String location;
	public int getCid() {
		return cid;
	}
	public void setCid(int cid) {
		this.cid = cid;
	}
	public String getCname() {
```

```
		return cname;
	}
	public void setCname(String cname) {
		this.cname = cname;
	}
	public String getFname() {
		return fname;
	}
	public void setFname(String fname) {
		this.fname = fname;
	}
	public String getLname() {
		return lname;
	}
	public void setLname(String lname) {
		this.lname = lname;
	}
	public String getLocation() {
		return location;
	}
	public void setLocation(String location) {
		this.location = location;
	}
	@Override
	public String toString() {
		return "Customer [cid=" + cid + ", cname=" + cname + ", fname=" + fname + ",
lname=" + lname + ", location="
				+ location + "]";
```

```
    }
}
```

Step 3 :Repository Interface

Method to create Repositary: src/main/java => right click on default package => New =>Package => Repositary

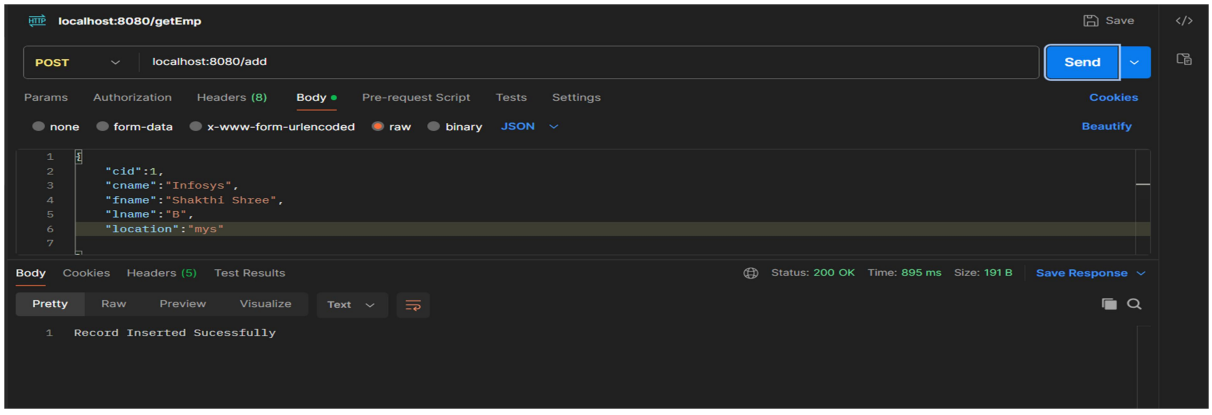
Method to Create File : src/main/java => right click on Repositary Package => New => Interface=>CustRepo

```
package com.cpcmongo.crudmongo12.repositary;

import org.springframework.data.mongodb.repository.MongoRepository;

import com.cpcmongo.crudmongo12.model.Customer;

public interface CustRepo extends MongoRepository<Customer,Integer> {}
```

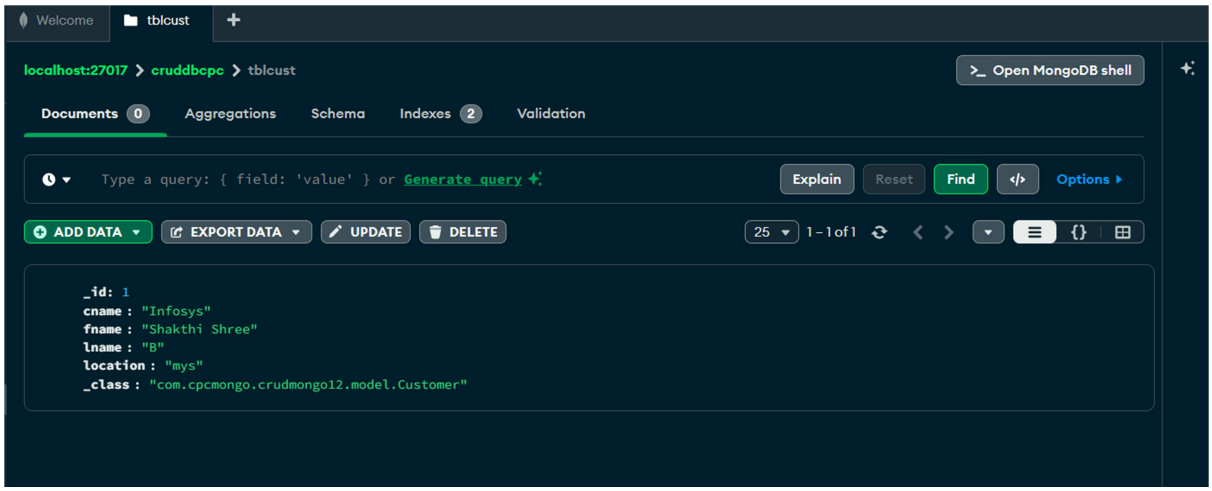
Output :

Insert a document :

- **Postman :**

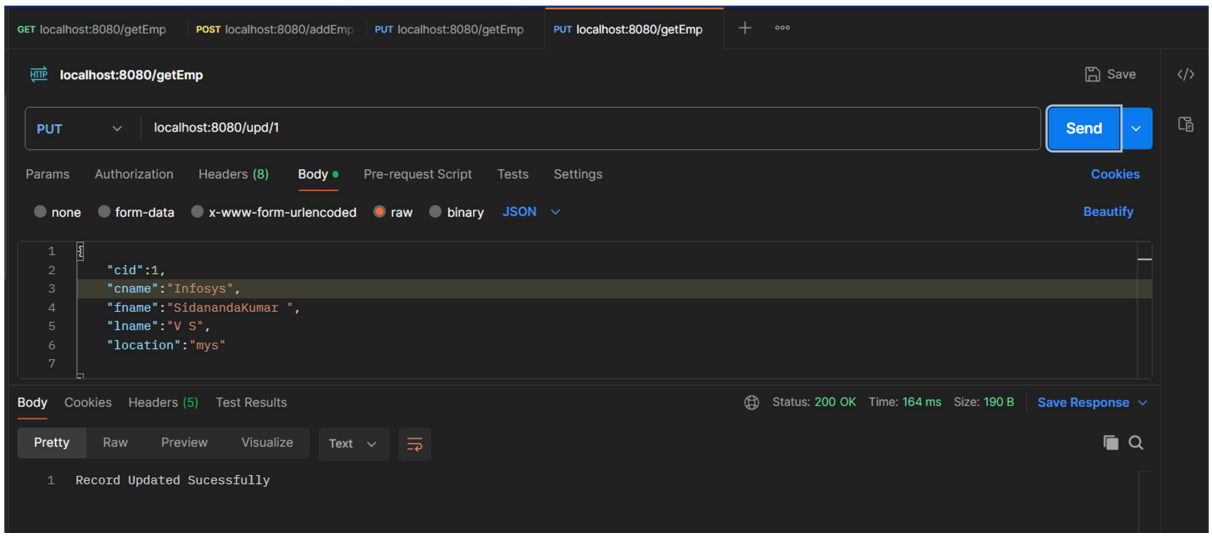


➢ **MongoDB Compass :**



Udpate a Document :

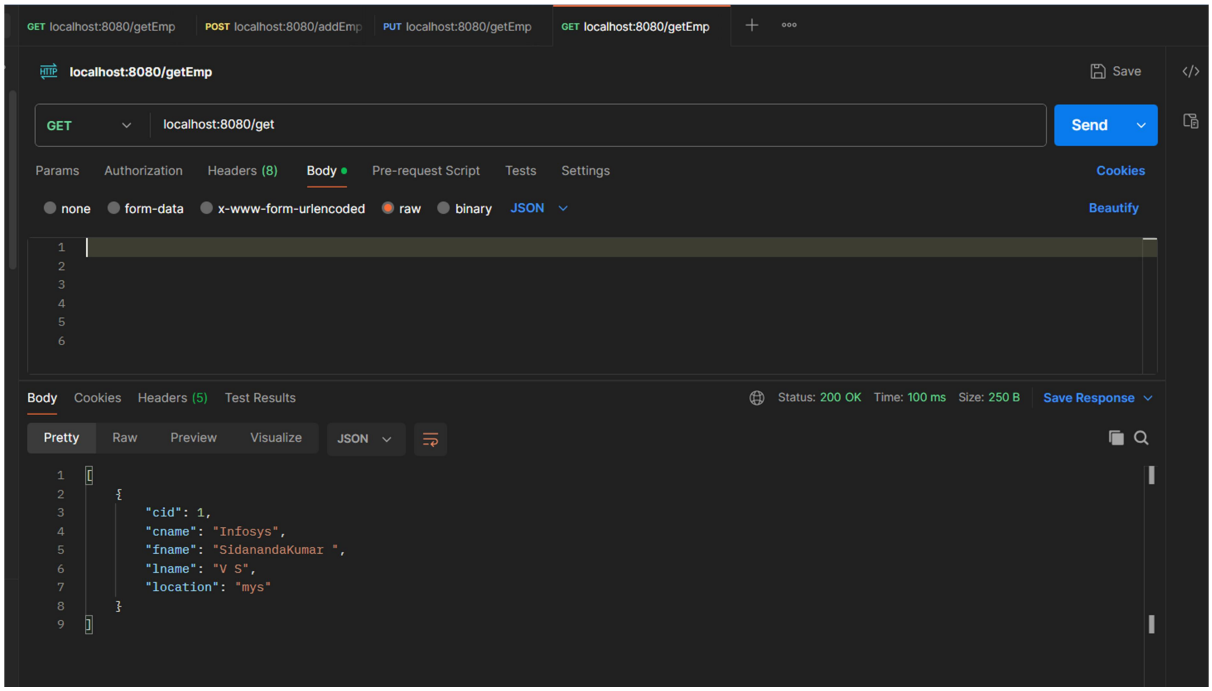
➢ **Postman :**



➢ **MongoDB Compass :**

View Document :

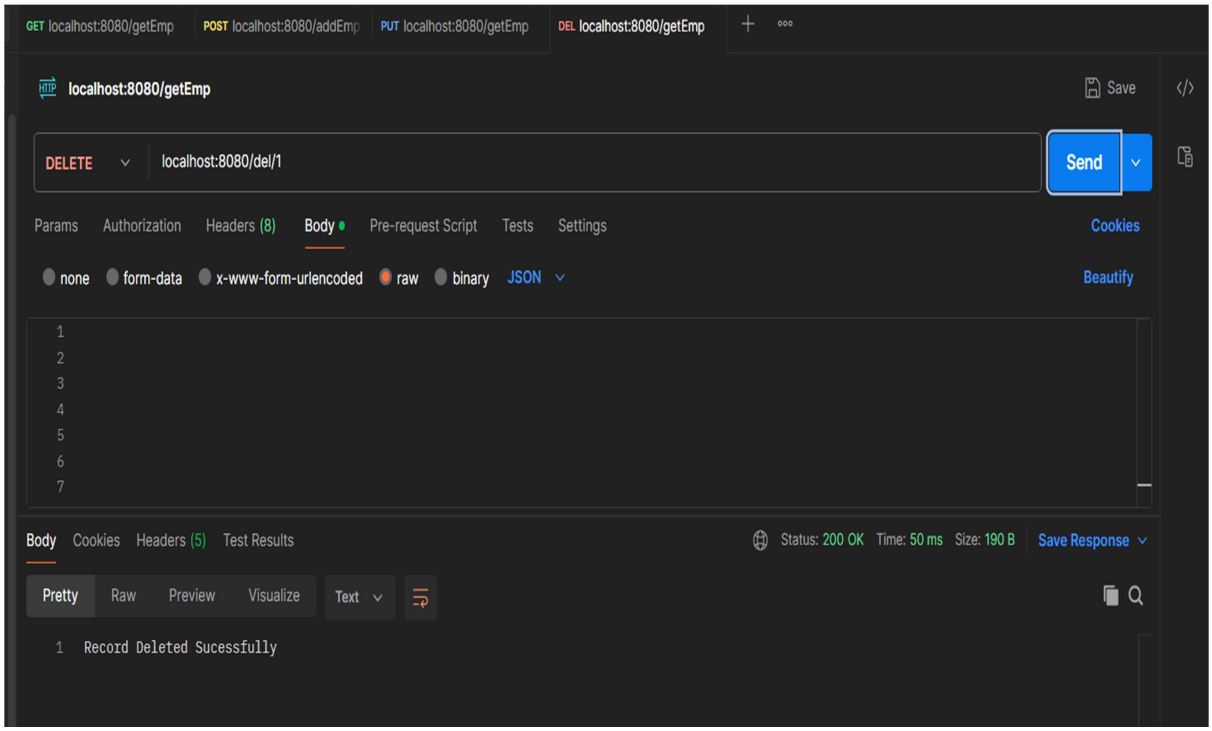
- **Postman :**



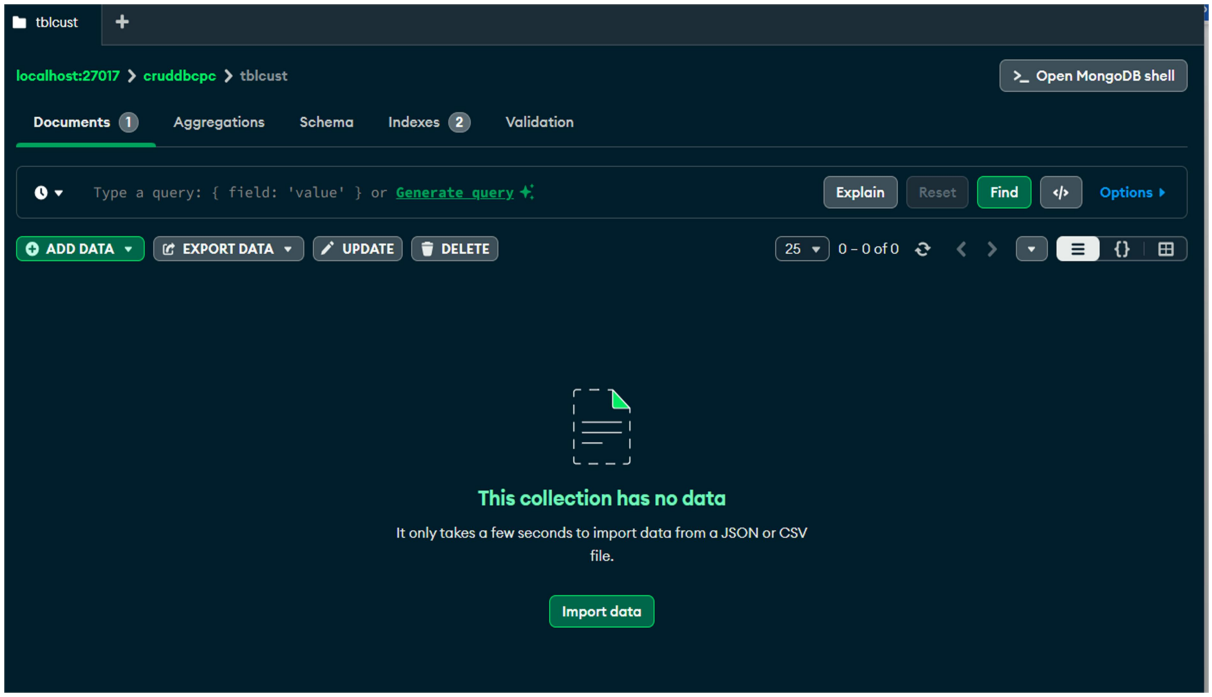
- **MongoDB Compass :**

Delete Document :

- **Postman :**



- **MongoDB Compass :**


tblcust
localhost:27017 > cruddbcpc > tblcust
Open MongoDB shell
Documents 1
Aggregations
Schema
Indexes 2
Validation
Type a query: { field: 'value' } or Generate query
Explain
Reset
Find
Options
ADD DATA
EXPORT DATA
UPDATE
DELETE
25
0 – 0 of 0
This collection has no data
It only takes a few seconds to import data from a JSON or CSV file.
Import data

12. Create Junit test cases for CRUD Operations and execute the test cases

Step 1: Create a Spring Boot Project

1. File → New → Spring Boot Project → Maven
2. Name the project: `HotelJUnitProject`
3. Select dependencies:
   - Spring Data JPA
   - H2 Database
   - Spring Boot DevTools (optional)
4. Finish project creation.

Step 2: Create Package

- Right-click **src/main/java** → New → Package → Name: `com.cpcjunit.junittest`

Step 3: Add Hotel Entity

Create `Hotel.java` inside the package.

```
package com.cpcjunit.junittest;

import jakarta.persistence.Entity;
import jakarta.persistence.GeneratedValue;
import jakarta.persistence.GenerationType;
import jakarta.persistence.Id;
import jakarta.persistence.Table;

@Entity
@Table(name="tbl_hotel")
public class Hotel {

	@Id
	@GeneratedValue(strategy = GenerationType.IDENTITY)
	private int hid;
	private String hname;
	private String haddress;
	private String fitem;
	public Hotel(String hname, String haddress, String fitem) {
```

```
		this.hname = hname;
		this.haddress = haddress;
		this.fitem = fitem;
	}
	public Hotel() {

		// TODO Auto-generated constructor stub
	}
	public int getHid() {
		return hid;
	}
	public void setHid(int hid) {
		this.hid = hid;
	}
	public String getHname() {
		return hname;
	}
	public void setHname(String hname) {
		this.hname = hname;
	}
	public String getHaddress() {
		return haddress;
	}
	public void setHaddress(String haddress) {
		this.haddress = haddress;
	}
	public String getFitem() {
		return fitem;
	}
	public void setFitem(String fitem) {
		this.fitem = fitem;
	}


}
```

Step 4: Add Repository Interface

Create `HotelRepo.java`:

```
package com.cpcjunit.junittest;

import org.springframework.data.jpa.repository.JpaRepository;

public interface HotelRepo extends JpaRepository<Hotel, Integer>{

}
```

JUnit Test Class for CRUD Operations

Step 5: Create `HotelRepoTest.java`

```
package com.cpcjunit.junittest;

import static org.junit.jupiter.api.Assertions.assertFalse;
import static org.junit.jupiter.api.Assertions.assertTrue;

import java.util.List;

import org.assertj.core.api.Assertions;
import org.junit.jupiter.api.MethodOrderer;
import org.junit.jupiter.api.MethodOrderer.OrderAnnotation;
import org.junit.jupiter.api.Order;
import org.junit.jupiter.api.Test;
import org.junit.jupiter.api.TestMethodOrder;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.boot.test.autoconfigure.orm.jpa.DataJpaTest;
import org.springframework.test.annotation.Rollback;

@DataJpaTest
@TestMethodOrder(MethodOrderer.OrderAnnotation.class)
public class HotelRepoTest {

	@Autowired
	private HotelRepo hotelrepo;

	@Test
	@Order(1)
	@Rollback(value=false)
	public void saveHotelTest() {
		Hotel hotel = new Hotel("radisonblue","mysore","dosa");
		hotelrepo.save(hotel);
		Assertions.assertThat(hotel.getHid()).isGreaterThan(0);

	}
	@Test
	@Order(2)
	public void getHotelTest() {
		List<Hotel> hotel = hotelrepo.findAll();
		Assertions.assertThat(hotel.size()).isGreaterThan(0);


	}
	@Test
	@Order(3)
	@Rollback(value=false)
	public void updHotelTest() {
		Hotel hotel = hotelrepo.findById(1).get();
		hotel.setFitem("biriyani");
```

```
		Hotel newHotel = hotelrepo.save(hotel);
		Assertions.assertThat(newHotel.getFitem()).isEqualTo("biriyani");
	}

	@Test
	@Order(4)
	@Rollback(value=false)

	public void delHotel() {
		boolean beforeDelete = hotelrepo.findById(1).isPresent();
		hotelrepo.deleteById(1);
		boolean afterDelete = hotelrepo.findById(1).isPresent();
		assertTrue(beforeDelete);
		assertFalse(afterDelete);

	}


}
```

Run the JUnit Tests in Eclipse

Step 6: Run Test

1. Right-click on `HotelRepoTest.java` → Run As → JUnit Test.
2. Observe the **JUnit view**:
   - **Green bar** → All tests passed
   - **Red bar** → Test failed → check assertion or ID

Output: