PROJECT REPORT

ON

CRAFT VERSE

SUBMITTED

TO

ROURKELA INSTITUTE OF MANAGEMENT STUDIES

(As a partial fulfilment of the requirement for the award of Degree)

FOR

MASTER IN COMPUTER APPLICATION

SUBMITED BY

MADHUSMITA SAHOO

REGD NO: 2305260011

MCA 4TH SEMESTER (2023-2025)

ROURKELA INSTITUTE OF MANAGEMENT STUDIES

(Affiliated to Biju Patnaik University of Technology)

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CERTIFICATE OF EXAMINATON

This is to certify that this project report entitled **"CRAFT VERSE"** submitted by **MADHUSMITA SAHOO** of 4th semester, **Rourkela Institute of Management Studies, Rourkela,** is accepted as partial fulfillment of requirements for the degree in Master in Computer Applications, under **Biju Patnaik University of Technology, Rourkela** this has been verified by us and found be original up to our satisfaction.

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CERTIFICATE

This is to certify that this project entitled **"CRAFT VERSE"** has been and submitted by **MADHUSMITA SAHOO,** M.C.A 2023-2025, **Rourkela Institute of Management Studies, Rourkela,** has been examined by us.

She is found fit and approved for the award of **"Master in Computer Application "**Degree.

To the best my knowledge this work has not been submitted for the award of any other degree.

DEAN ACADEMICRIMS, ROURKELA

Prof. Bibhudendu Panda Head of The
Department, MCA
Rourkela Institute of Management StudiesRourkela

CERTIFICATE

This is to certify that **MADHUSMITA SAHOO** student of **M.C.A, Rourkela Institute of Management Studies, Rourkela, Odisha** of Session 2023-2025 has completed the project successfully.

(Prof. Bibhudendu Panda)

DECLARATION

I, **MADHUSMITA SAHOO**, hereby declare that the project report entitled "**CRAFT VERSE**" is of my work. The above work I submitted to "**Biju PatnaikUniversity of Technology, Rourkela"** for the award of **"Master in Computer Applications**" Degree.

To the best of my knowledge, this work has not been submitted or published anywhere for the award of any degree.

MADHUSMITA SAHOO

ACKNOWLGEMENT

I would like to express my heartfelt gratitude to **Mr. Rashmi Kanta Das** (Java Technocrat) and **Mr. Smruti Ranjan Nayak** for their invaluable guidance and support throughout my project work. Their insights and encouragement have been instrumental in shaping this project.

I am deeply grateful to Rourkela Institute of Management Studies (RIMS), Chhend, Rourkela, for providing me with the opportunity to undertake this project, "CRAFT VERSE." The learning experience has been truly enriching.
A special thanks to my project guide**, Prof. Bibhudendu Panda**, whose constant support, constructive feedback, and expert guidance made it possible for me to complete this project successfully.

I also extend my appreciation to my team members for their cooperation, dedication, and collaborative efforts in making this project a success.

Lastly, I consider myself fortunate to have successfully completed this project, and I sincerely acknowledge the contributions of everyone whose ideas and efforts have helped me throughout this journey.

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ABSTRACT

Craft Verse is an e-commerce platform designed to provide a seamless shopping experience for craft enthusiasts, offering a wide range of handcrafted products. The website is developed using **Spring Boot**, ensuring a robust, scalable, and efficient backend for managing products, user interactions, and secure transactions.

The primary objective of **Craft Verse** is to connect artisans with buyers by providing a digital marketplace for unique and artistic craft items such as paintings, sculptures, resin art, and DIY kits. The platform is designed with a **responsive UI**, enabling smooth navigation, product browsing, and an easy checkout process. Key features include **user authentication, order tracking, wishlist management, and a secure payment gateway**.

By leveraging **Spring Boot**, the project ensures high performance, security, and maintainability. The backend architecture efficiently handles product management, user data, and order processing while integrating with a relational database for seamless data storage and retrieval.

Through **Craft Verse**, we aim to promote handmade crafts, support artisans, and enhance the online shopping experience by delivering a well-structured, scalable, and user-friendly platform.

CONTRIBUTION OF INDIVIDUAL TEAM MEMBERS

Name of the Student(s)	Registration Number	Contributions
Madhusmita Sahoo	2305260011	Frontend ,Database & Backend
Rajalaxmi Majhi	2305260018	Frontend ,Database & Security

GANTT CHART

ID	Task Name	No. of days	Bar Representation
1	Project Management		
1.1	Project Initiation	10	
1.2	Project planning	5	
2	Analysis	15	
3	Design	20	
4	Implementation	25	
5	Testing	5	
6	Evaluation	2	

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CHAPTER-1

INTRODUCTION

1.1 Preface

- **Craft Verse** is an e-commerce platform dedicated to selling handcrafted products, providing a seamless shopping experience for craft enthusiasts.
- The platform connects skilled artisans with customers by offering a diverse range of handmade goods, including paintings, sculptures, resin art, DIY kits, and other unique craft items. The website is built using **Spring Boot and Java**, ensuring a scalable, secure, and high-performance system for managing products, user interactions, and transactions.

1.2 Understanding the Problem Statement

Before diving into the implementation, it is essential to define the core problem we aim to solve. Traditional marketplaces often lack a dedicated space where artisans can **showcase and sell their handcrafted items effectively**. Many existing platforms either focus on mass-produced goods or fail to provide a tailored experience for craft lovers.

To address this, **Craft Verse** is designed to:

- **Provide an online marketplace** where artisans can list and sell their handmade crafts.
- **Ensure a user-friendly shopping experience** with seamless navigation, product browsing, and a secure checkout process. **Offer backend efficiency** with robust inventory management, order processing, and payment integration using **Spring Boot and Java**

1.3 Motivation for Work

The demand for **handmade and artistic products** is increasing, but independent artisans often struggle to reach a wider audience due to the lack of an efficient digital marketplace. **Craft Verse** is built to bridge this gap by providing:

- A **platform where artisans can showcase their creativity** without facing logistical and marketing challenges.
- A **secure and scalable e-commerce solution** using modern web technologies.
- A system that allows **smooth order management, customer engagement, and transaction handling**.
- By leveraging **Spring Boot** for backend development, **Craft Verse** ensures a **structured, high-performance, and reliable** e-commerce platform for craft lovers.

Project Overview

Craft Verse is a fully functional e-commerce platform that facilitates the buying and selling of handcrafted products. The platform provides:

- **Product Listings**: Artisans can upload product images, descriptions, and prices.
- **User Authentication**: Secure login and registration for buyers and sellers.
- **Shopping Cart & Wishlist**: Users can save and manage their favourite products.
- **Order Management**: Efficient tracking of orders from placement to delivery.
- **Payment Gateway Integration**: Secure transactions with multiple payment options.
- **Responsive UI**: A visually appealing and easy-to-navigate interface for users.

The platform ensures smooth backend operations using **Spring Boot**, which handles **product inventory, user authentication, and order processing** seamlessly.

1.4 Purpose

The The primary goal of **Craft Verse** is to create an **efficient, scalable, and secure online marketplace** dedicated to handcrafted products. The website:

- Provides a **dedicated space** for artisans to sell their unique craft items.
- Ensures **a seamless user experience** with smooth navigation and secure transactions.
- Supports **a structured backend system** using **Spring Boot and Java** for efficient management of products, orders, and users.

With the growing demand for unique handmade products, **Craft Verse** serves as a **digital bridge** between artisans and customers, making handcrafted goods more accessible.

1.5 Project Scope

The project is designed to **simplify online craft shopping and selling** by offering:

- **A structured product catalog** for efficient browsing.
- **A secure and scalable backend** to handle user data, product listings, and orders.
- **A responsive and intuitive UI** for enhanced user experience.
- **Secure payment gateways** to ensure smooth transactions.

By using **Spring Boot and Java**, the project ensures a **reliable and maintainable** architecture, making it easy to scale as demand grows.

1.6Project Goals and Objectives

1.6.1Goals

- To develop a **dedicated online marketplace** for handcrafted products.
- To implement **a secure and scalable e-commerce system** using **Spring Boot and Java**.
- To enhance **user experience and backend efficiency** for seamless transactions.

Objectives

- **E-commerce Platform:** Provide a well-structured online marketplace for artisans and craft lovers.
- **User-Friendly Interface:** Design an intuitive UI for easy navigation and shopping.
- **Efficient Backend Management:** Develop a robust backend to handle product listings, orders, and transactions.
- **Scalability and Security:** Ensure a secure and scalable platform using Spring Boot and Java.

1.7 Requirements Specifications

1.7.1 Hardware Specifications

- RAM- 4 Gb or Higher
- HDD- 1TB
- SSD- 120Gb
- Processor- i5

1.7.2 Software Specifications

Windows- win-10, win-11

Frontend Language- HTML, CSS, JavaScript

Backend Language- Java

Database: MySQL

Framework: SpringBoot Framework

Source Controller-Github

CHAPTER-2

LITERETURE SURVEY

The main objective of this study is to develop an **efficient and scalable e-commerce platform** for selling handcrafted products. While analyzing various web development frameworks and technologies, we found that platforms like **WordPress and Shopify** have limitations when it comes to customization and scalability for niche marketplaces. In this paper, we present and review a more **feasible approach using Spring Boot and Java** to build a robust, secure, and feature-rich **craft-selling platform**.
The first step in our development process was to design a **structured database** for storing product details, user information, and transactions. The database was optimized for efficient data retrieval and management.

Our study also focuses on implementing **backend logic with Spring Boot**, ensuring seamless order processing, product management, and user authentication. Additionally, we have incorporated **secure payment gateways and responsive UI designs** to enhance the overall user experience.

2.1.1 Advantages of Paper

a) **Customizable and Scalable Platform** – Unlike third-party e-commerce solutions, our system provides full customization and scalability tailored for the craft industry.

c) **Secure Transactions and User Authentication** – The platform integrates **secure payment gateways and authentication mechanisms** to ensure data privacy and safe transactions.

2.1.1 Disadvantages of Paper

2.1.2 **a) Limited Customization –** Many existing platforms do not offer customized features for niche markets like handcrafted goods**.**

b) High Transaction Fees – Third-party e-commerce services charge high commission fees, reducing artisans' profits.

c) Scalability Issues – Some platforms are not optimized for performance, causing delays in high-traffic scenarios.

2.1.3How to overcome the problems mentioned in Paper

1. **Spring Boot for Backend Development** – Our platform uses **Spring Boot**, providing a structured and high-performance backend.
2. **Optimized Database Management** – We use **MySQL** to handle large datasets efficiently while ensuring fast query responses.
3. **Secure Payment Gateway Integration** – The platform integrates **multiple payment options** for seamless transactions.

2.4 Technical Review

Modern e-commerce platforms rely on **highly optimized backend frameworks** to ensure smooth transactions, secure user data, and efficient product management. **Spring Boot** is a powerful framework for building large-scale applications, making it an ideal choice for **Craft Verse**.

Our study focuses on:

- **Developing a secure and scalable backend using Spring Boot and Java**.
- **Implementing an optimized relational database (MySQL) for product, order, and user data storage**.
- **Enhancing frontend responsiveness** using **HTML, CSS, JavaScript, and Angular**.
- **Integrating secure payment systems** for fraud prevention and transaction security.

By leveraging **Spring Boot's REST API capabilities**, we ensure seamless communication between the frontend and backend, improving **data flow, scalability, and performance**.

2.4.1 Advantages of Using Spring Boot & Java for E-commerce

a) High Performance & Scalability – Spring Boot provides a lightweight and efficient framework for handling large datasets and multiple transactions.
b) Secure Transactions & Authentication – Java's security features allow for strong user authentication, data encryption, and fraud prevention.
c) Seamless API Integration – RESTful APIs enable smooth integration with third-party payment gateways and analytics tools.

2.4.2 Reasons for Choosing Spring Boot & Java

a) Custom E-commerce Development – Unlike pre-built solutions, Spring Boot allows full customization,
making it ideal for niche marketplaces like Craft Verse.

b) Robust Backend System – Ensures secure user management, order tracking, and payment processing.

c) Future Scalability – The platform is built to handle increasing traffic and product listings as the business
grows

CHAPTER-3

PROJECT PLANNING

1.Craft Verse is an e-commerce platform designed to connect artisans and craft vendors with customers seeking handmade and artistic products. The project follows a structured **Software Development Life Cycle (SDLC)** approach, ensuring **efficient development, scalability, and seamless user experience**.
This document outlines the **project planning process**, covering scope, objectives, milestones, resource allocation, risk management, and expected deliverables.

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2. Project Scope

2.1 Objectives

- Develop a **user-friendly** and **secure** craft marketplace for artisans and buyers.
- Implement a **robust backend** using **Spring Boot & MySQL** for efficient data management.
- Ensure a **responsive and interactive UI** using **React.js & Bootstrap**.
- Integrate **secure payment gateways** (Razorpay, Stripe, PayPal) for smooth transactions.
- Provide **vendor dashboards** for inventory and sales tracking.
- Implement **real-time order tracking and customer support**.

2.2 Features

- ✅ **User Authentication & Role Management** (Customer, Vendor, Admin).
- ✅ **Product Listing & Search Functionality** (Categories, Filters, Recommendations).
- ✅ **Shopping Cart & Checkout System** with multiple payment options.
- ✅ **Order Management** (Processing, Tracking, Delivery Updates).
- ✅ **Vendor Management Portal** (Product Uploads, Sales Reports, Earnings).
- ✅ **Customer Reviews & Ratings System**.

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3. Project Timeline & Milestones

The project follows an **Agile development approach** with iterative releases.

Phase	Tasks	Duration
Requirement Gathering	Identify project goals, user needs, and technology stack.	Week 1–2
System Design	Create UI wireframes, database schema, and system architecture.	Week 3–4
Backend Development	Develop REST APIs using Spring Boot, database setup (MySQL).	Week 5–7
Frontend Development	Implement UI using React.js and integrate APIs.	Week 8–10
Payment Integration	Implement Razorpay, Stripe, and PayPal for transactions.	Week 11
Testing & Bug Fixing	Conduct unit, integration, and performance testing.	Week 12–14
Deployment & Launch	Host platform on AWS/GCP and finalize user testing.	Week 15

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4. Resource Allocation & Team Responsibilities

Team Member	Role	Responsibilities
Frontend Developer	UI/UX Development	Design responsive UI using React.js, Bootstrap, and HTML/CSS.
Backend Developer	API Development	Implement business logic using Spring Boot and REST APIs.
Database Engineer	Data Management	Manage database schemas and optimize queries in MySQL.
QA Engineer	Testing & Debugging	Perform unit testing, integration testing, and bug tracking.
Project Manager	Planning & Coordination	Oversee progress, manage risks, and ensure timely delivery

3.1 Project Management Approach

Project Planning & Scope Definition

Identify key functionalities (e.g., product management, order tracking).

Establish project milestones and deliverables.

Sprint-Based Development

Divide the project into **weekly development sprints** with clear goals.

Conduct regular **code reviews and feature testing**.

Time & Resource Management

Allocate appropriate time for **design, development, and testing**.

Track progress using **Gantt charts and sprint reports**.

Task Assignment & Collaboration

Assign specific tasks to team members based on expertise.

Utilize **GitHub for version control** and real-time collaboration.

Progress Reporting & Continuous Testing

Weekly check-ins with **project guides and mentors** to assess progress.

Perform **unit testing, integration testing, and security testing** before deployment.

3.2 Ground Rules for the Project

a) Properly planning and gathering relevant information is very important.
b) Developing a Blueprint of the project and work accordingly.
c) All the members should report to the guide whenever required
d) Setting up small goals every week.
e) Achieving the small goal within that span of time.
f) Keeping tracks of the progress towards project.

3.3Project Budget

Comprehensive Planning & Research – Every aspect of the project must be well-documented before execution.

Blueprint & Wireframe Development – UI/UX and system architecture must be finalized before development begins.

Regular Team Check-ins – Weekly stand-up meetings to discuss progress, roadblocks, and upcoming tasks.
Task Deadlines & Sprint Goals – Each task must be completed within the assigned sprint cycle.
Issue Tracking & Documentation – All changes, bugs, and updates must be **logged on GitHub**.
Security & Data Protection – Ensure that user data, transactions, and authentication systems are secured.

CHAPTER-4

ENVIRONMENT SETTINGS

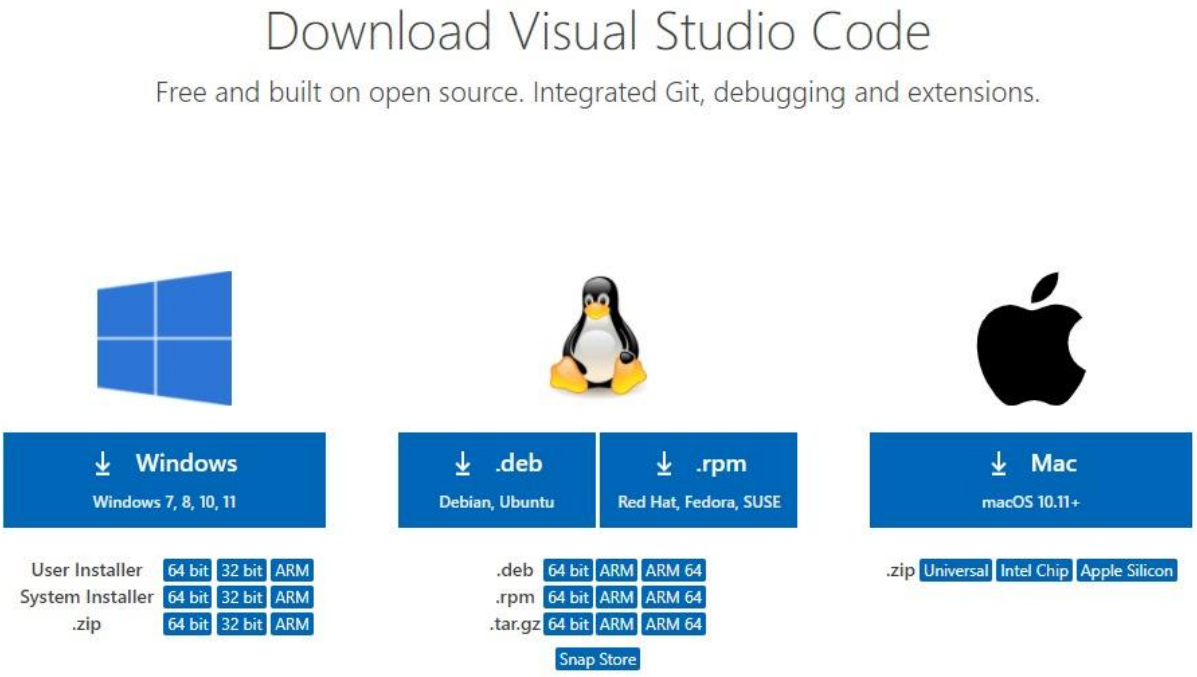
Prerequisite

- JAVA 17 or above
- HTML, CSS, JS
- Microsoft Visual Studio Code
- Git Bash and GitHub
- Spring Boot Dependencies:
    1. Thyme-Leaf
    2. Spring Web
    3. Spring Boot Dev tools
    4. MySQL Driver
    5. Spring data JPA
    6. Validation I/O
    7. Lombok Developer Tools
    8. Spring Security

Developed any Project need a IDLE (Integrated Development Environment), so Developer can easily Create, Run, Compile and Execute Programs.

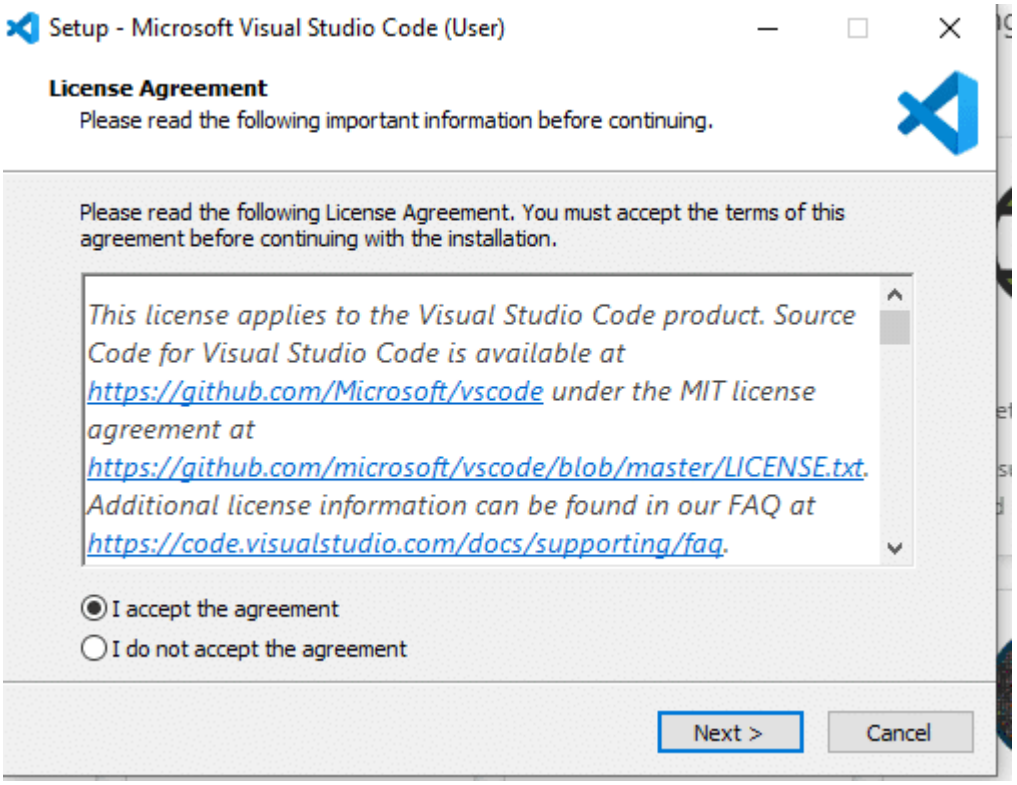
How to Install Visual Studio Code on Windows?

Firstly, download the Visual Studio Code installer for Windows. Once it is downloaded, run the installer (*VSCodeUserSetup-{version}.exe*). It will only take a minute.

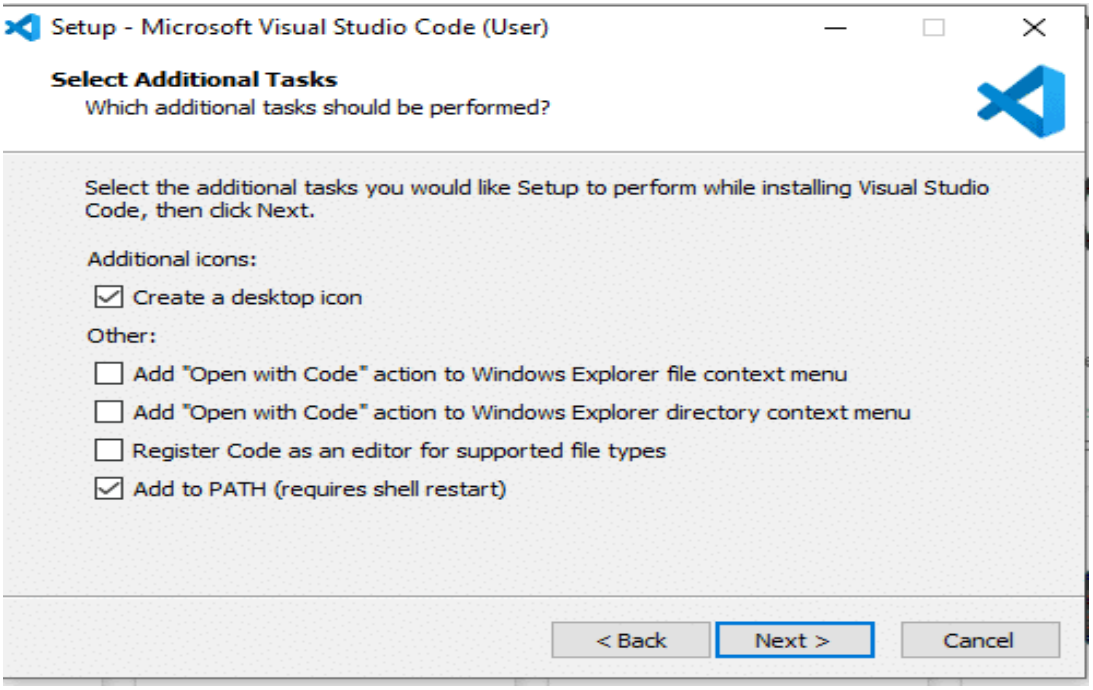


Then double Click on Download folder .exe file and Follow the step by step instruction Process .

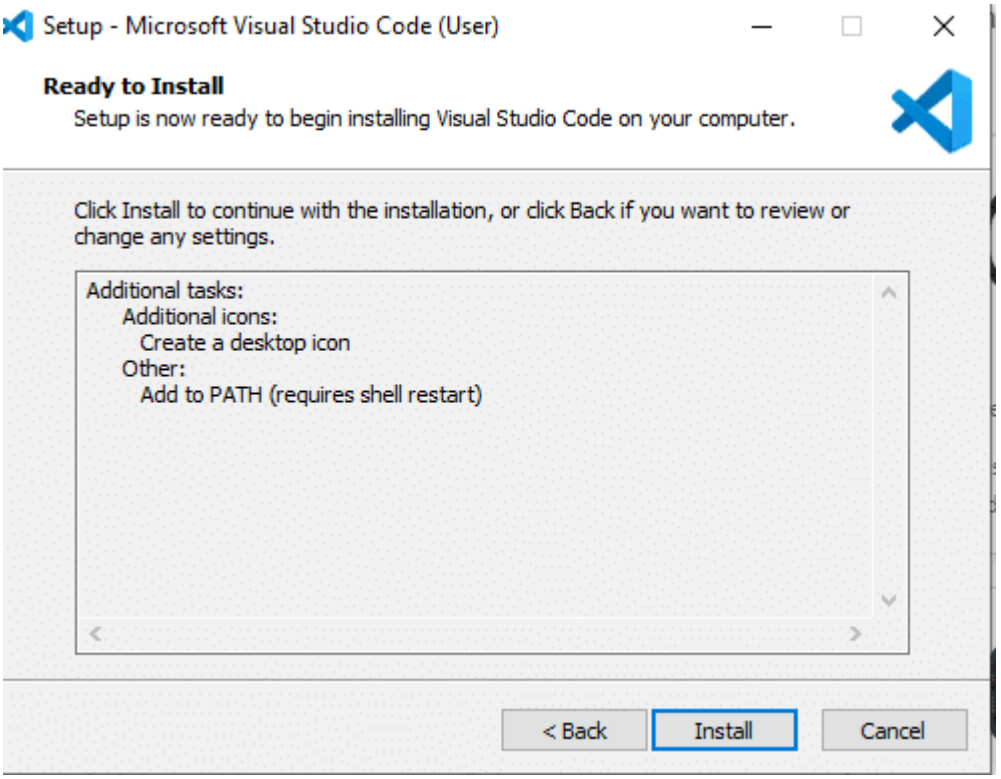
Secondly, accept the agreement and click on next.



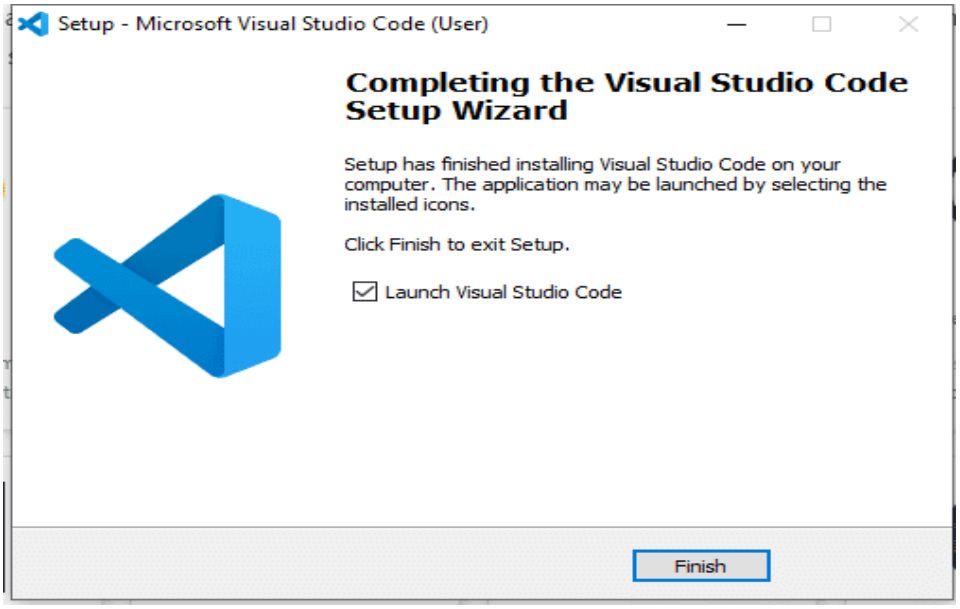
Thirdly, click on "**create a desktop icon**" so that it can be accessed from desktop and click on Next.



After that, click on the install button.



Finally, after installation completes, click on the finish button, and the visual studio code will get open.



Steps to Install SPRING BOOT

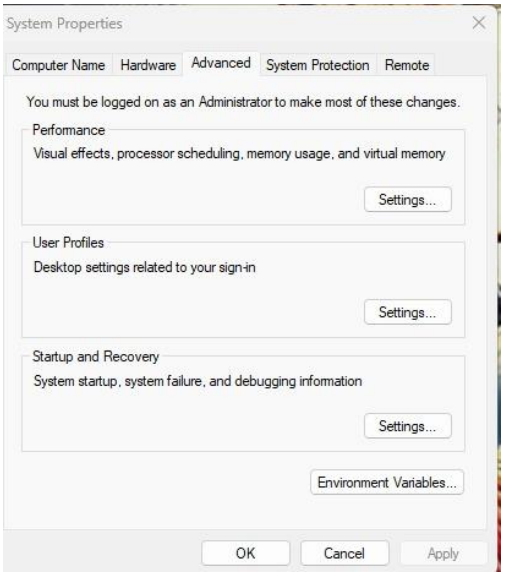
Follow the steps below to easily install Spring on Windows.

Step 1: Install Java Development Kit (JDK)

Spring Boot requires **JDK 17 or later**.

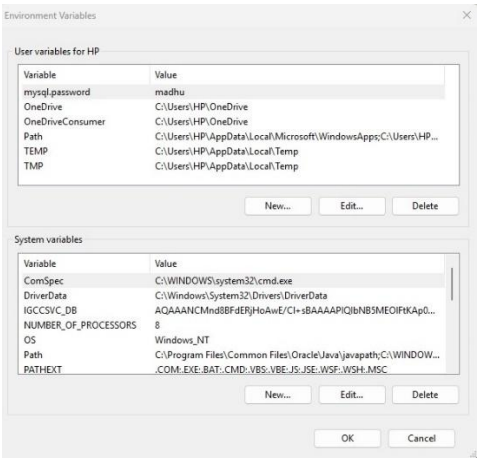
1. Download JDK

- Go to Oracle JDK Download .
- Download the **Windows x64 Installer**.



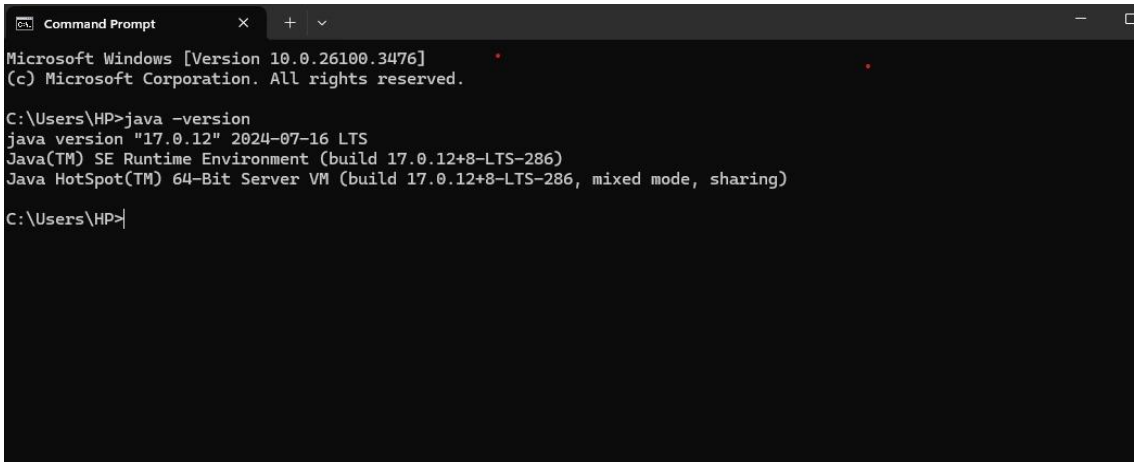
2. Run the downloaded .exe file and follow the installation instructions.

3.Set up Environment Variables



- Open **Windows Search**, type Environment Variables, and open **Edit the system environment variables**.
- Under **System Properties**, click **Environment Variables**.
- In **System Variables**, find **Path**, click **Edit**, and add the JDK bin path:
- C:\Program Files\Java\jdk-17\bin
- Add a new variable:
    - **Variable name:** `JAVA_HOME`
    - **Variable value:** `C:\Program Files\Java\jdk-17`

3. Verify Installation



Open **Command Prompt (cmd)** and type:

java -version

javac -version

Step 2: Install Maven (Optional, but Recommended)

Maven helps in managing Spring Boot dependencies.

1. Download Apache Maven

- Go to Maven Download Page.
- Download **Binary zip archive**.

2. Install and Configure Maven

- Extract the ZIP file to a location (e.g., C:\apache-maven-3.9.5).
- Set up Environment Variables:
    - Add C:\apache-maven-3.9.5\bin to the **Path** variable.
    - Create a new system variable:
        - **Variable name:** MAVEN_HOME
        - **Variable value:** C:\apache-maven-3.9.5

3. Verify Installation

Open **Command Prompt** and type:

mvn -version

Step 3: Install Spring Boot CLI (Optional)

If you want to use **Spring Boot CLI** for rapid development, follow these steps:

1. Download Spring Boot CLI

- Go to Spring Boot CLI Download
- Download the latest **spring-boot-cli-x.x.x-bin.zip** file.

2. Install and Configure

- Extract it to C:\spring-boot-cli.
- Add C:\spring-boot-cli\bin to the **Path** variable.

3. Verify Installation

Open **Command Prompt** and type:

Step 4: Install an IDE (Eclipse/IntelliJ IDEA/VS Code)

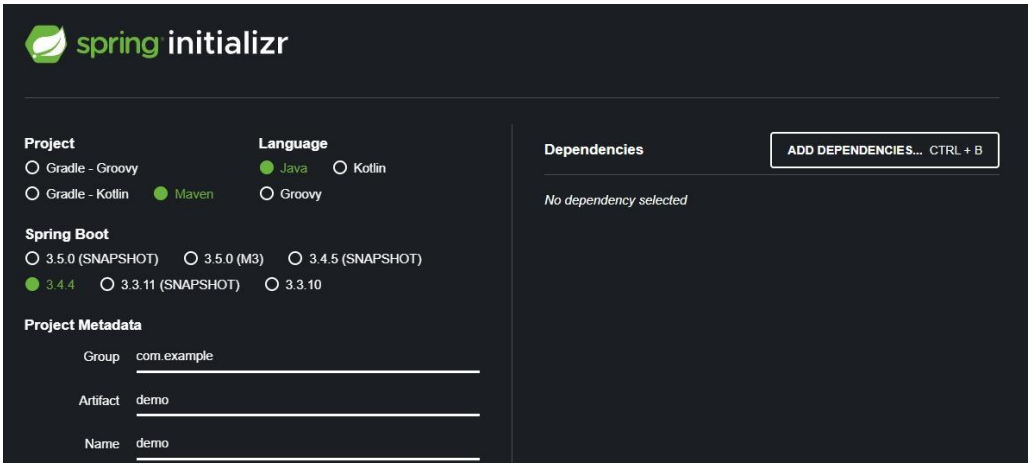
1. Install Eclipse (STS)

- Download **Spring Tool Suite (STS)** from Spring Tools 4.
- Install it and open the IDE.

2. Install IntelliJ IDEA

- Download **IntelliJ IDEA Community Edition** from JetBrains.
- Install and set up the **Spring Boot plugin**.

Step 5: Create a Spring Boot Project



1. Use Spring Initializer (Recommended)

- Go to Spring Initializer
- Select:
  - **Project:** Maven
  - **Language:** Java
  - **Spring Boot Version:** Latest Stable
  - **Dependencies:** Spring Web, Spring Boot DevTools, Lombok, etc.
- Click **Generate** to download a pre-configured Spring Boot project.

2. Open in IDE

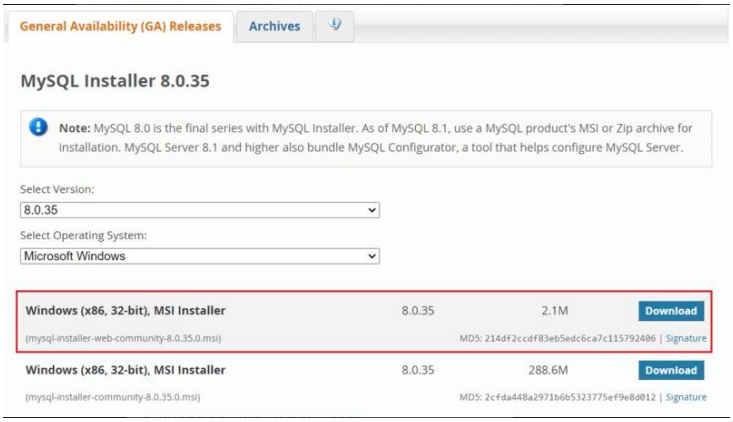
- Extract the ZIP file.
- Open it in Eclipse, IntelliJ, or VS Code.
- Run the main class:

Step 6: Test Your Spring Boot App

- Open a browser and go to: http://localhost:1211

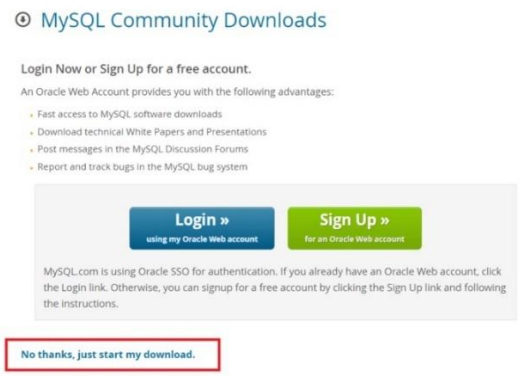
Download and Install MySQL for Windows Steps

Step 1: Visit the Official MySQL Website



Open web browser and navigate to the official MySQL website. Now, Simple click on first download button.

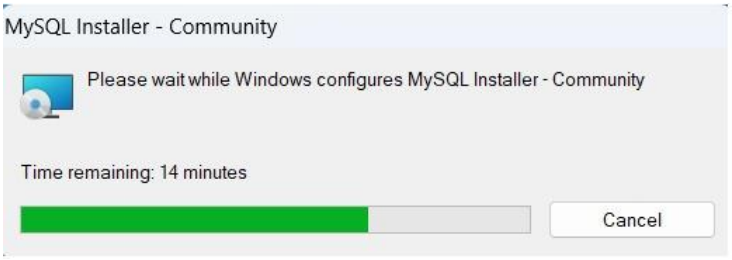
Step 2: Go to the Downloads Section



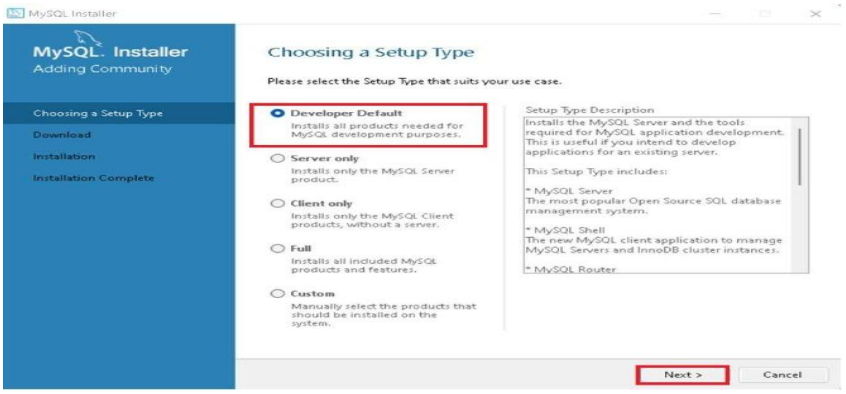
On the MySQL homepage, Click on the " No thanks, just start my download" link to proceed MySql downloading.

Step 3: Run the Installer

After MySQL downloading MySQL.exe file, go to your Downloads folder, find the file, and double-click to run the installer.

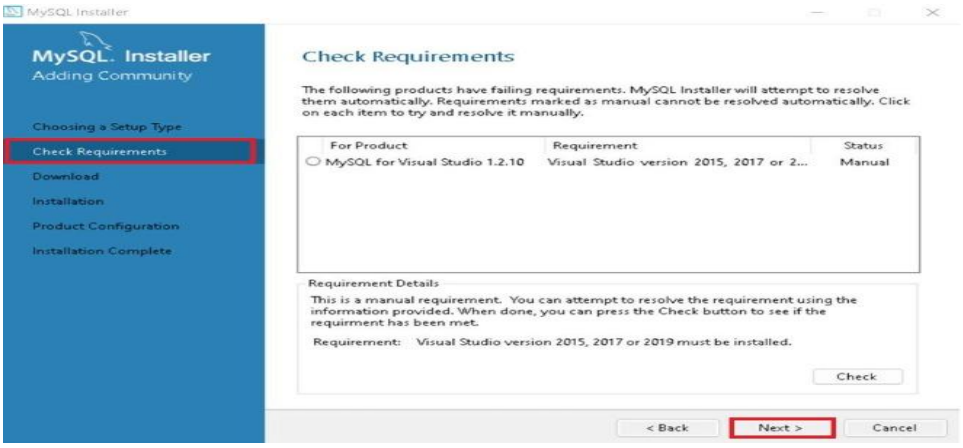


Step 4: Choose Setup Type



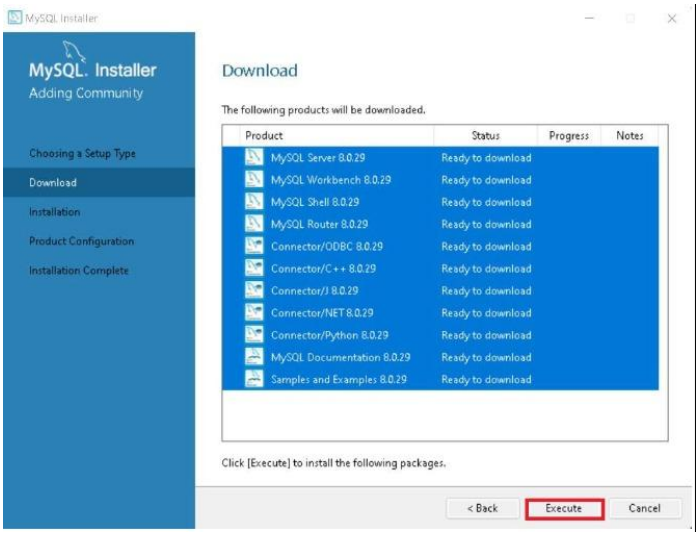
The installer will instruct you to choose the setup type. For most users, the "Developer Default" is suitable. Click "Next" to proceed.

Step 5: Check Requirements



You might be prompted to install necessary MySQL software, typically Visual Code. The installer can auto-resolve some issues, but not in this case.

Step 6: MySQL Downloading



Now that you're in the download section, click "Execute" to start downloading the components you selected.

Wait a few minutes until all items show tick marks, indicating completion, before moving forward.

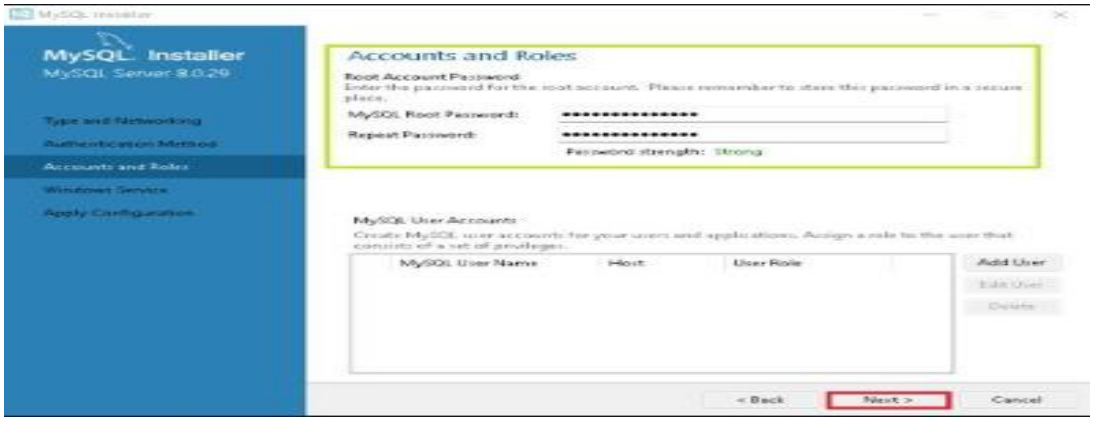
Step 7: MySQL Installation

Now the downloaded components will be installed. Click "Execute" to start the installation process. MySQL will be installed on your Windows system. Then click Next to proceed.

Step 8: Navigate to Few Configuration Pages

Proceed to "Product Configuration" > "Type and Networking" > "Authentication Method" Pages by clicking the "Next" button.

Step 9: Create MySQL Accounts



Create a password for the MySQL root user. Ensure it's strong and memorable. Click "Next" to proceed.

Step 10: Connect To Server

Enter the root password, click Check. If it says "Connection succeed," you've successfully connected to the server.

Step 11: Complete Installation

Once the installation is complete, click “Finish.” Congratulations! MySQL is now installed on your Windows system.

Step 12: Verify Installation

To ensure a successful installation of MySQL, open the MySQL Command Line Client or MySQL Workbench, both available in your Start Menu. Log in using the root user credentials you set during installation.

How to Download and Setup GITBASH

Step 1: Visit the Official Git Bash

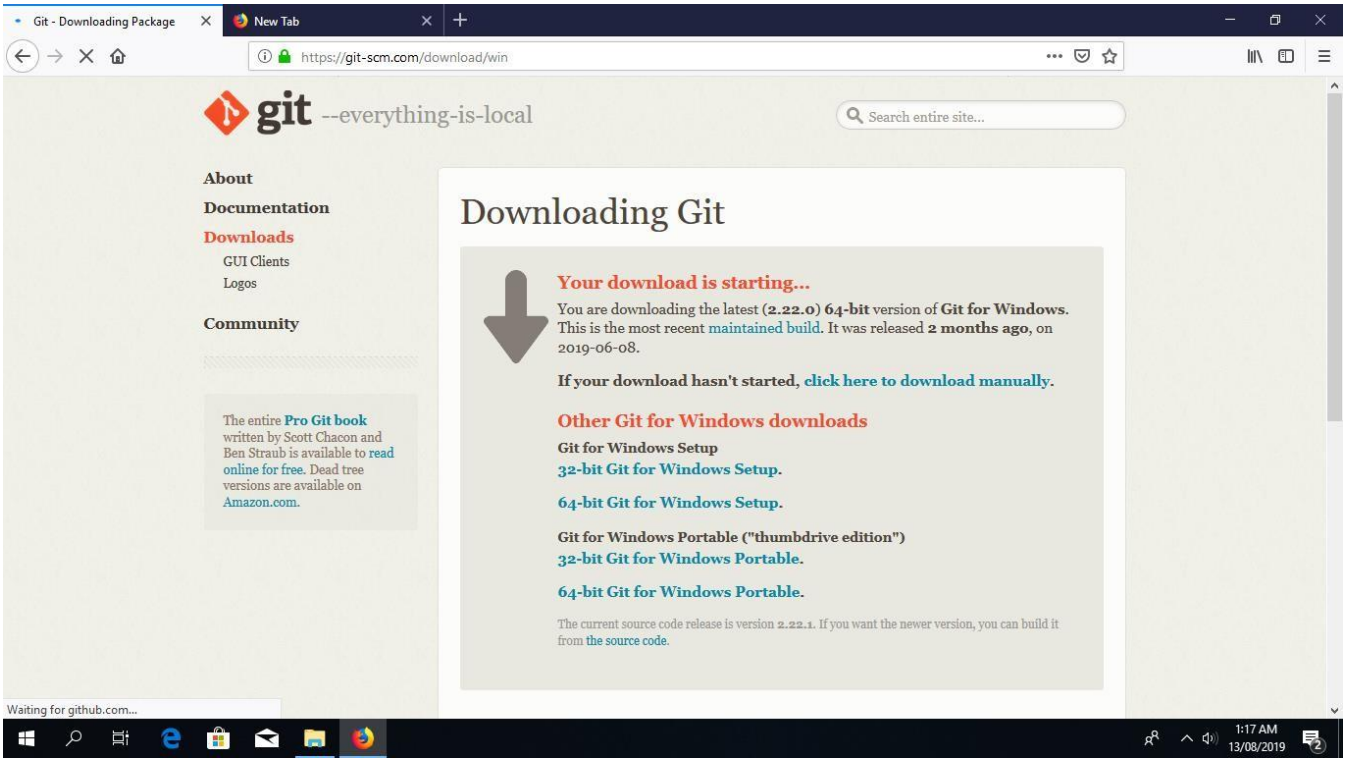
Download the latest version of Git Bash from their official website: https://git-scm.com/

Click the “Download for windows” button.

Step 2: Start Git Bash Download

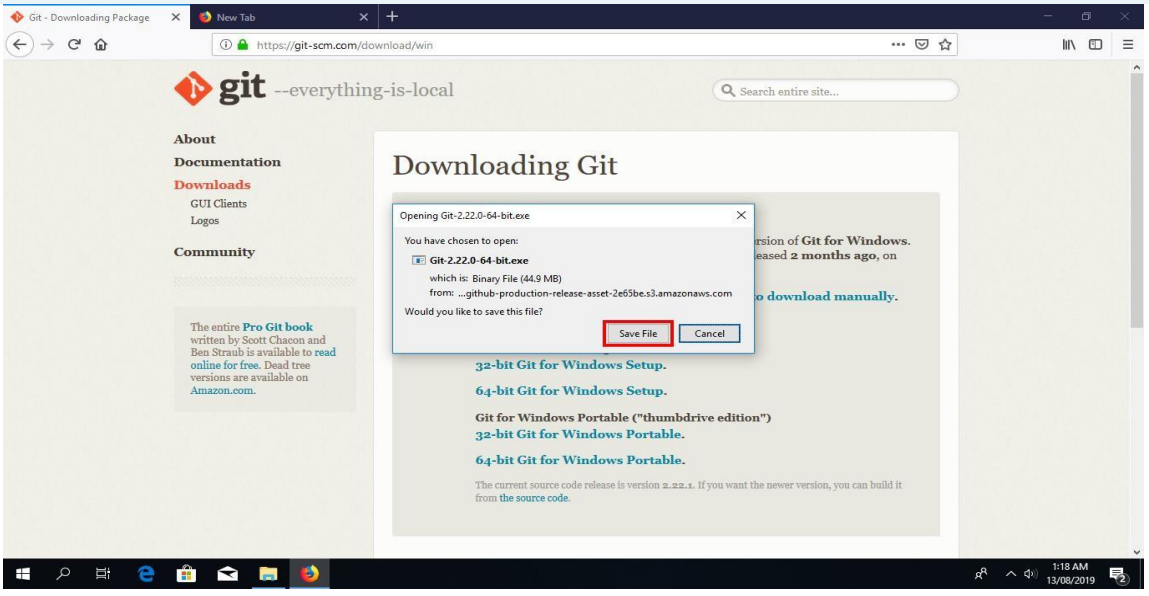
Next, you will be redirected to a page that lets you know that you are about to start download

Click the “Download for windows” button. Step 2: Start Git Bash Download
Next, you will be redirected to a page that lets you know that you are about to start downloading.



If all goes well, the download should start automatically.

Tip: If the download doesn't start, click on the "click here to download manually" link.



Click on “Save File” to start downloading the executable.

Install Git Bash

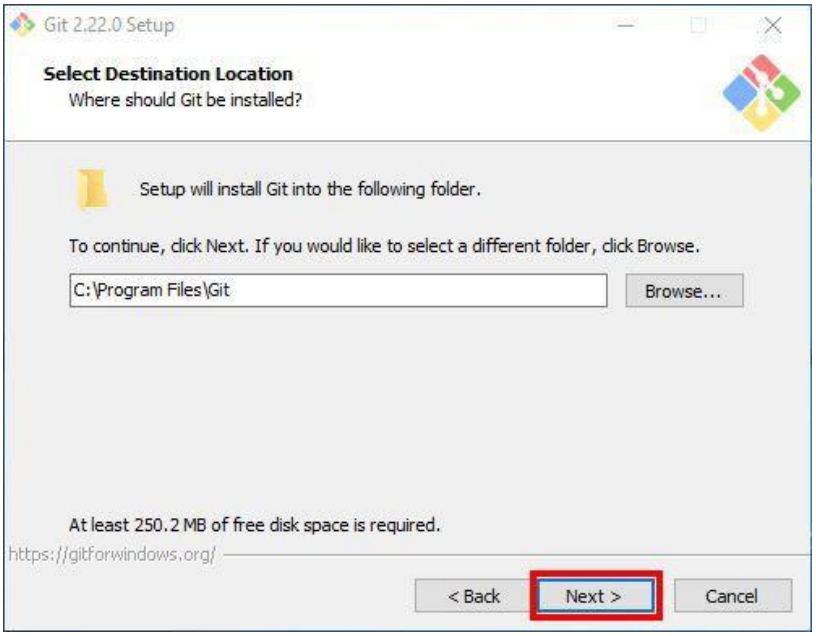
Step 3: Run the Installer

Once you have downloaded the Git Bash executable, click it to run the installer.

Click “Next” after you have read the license.

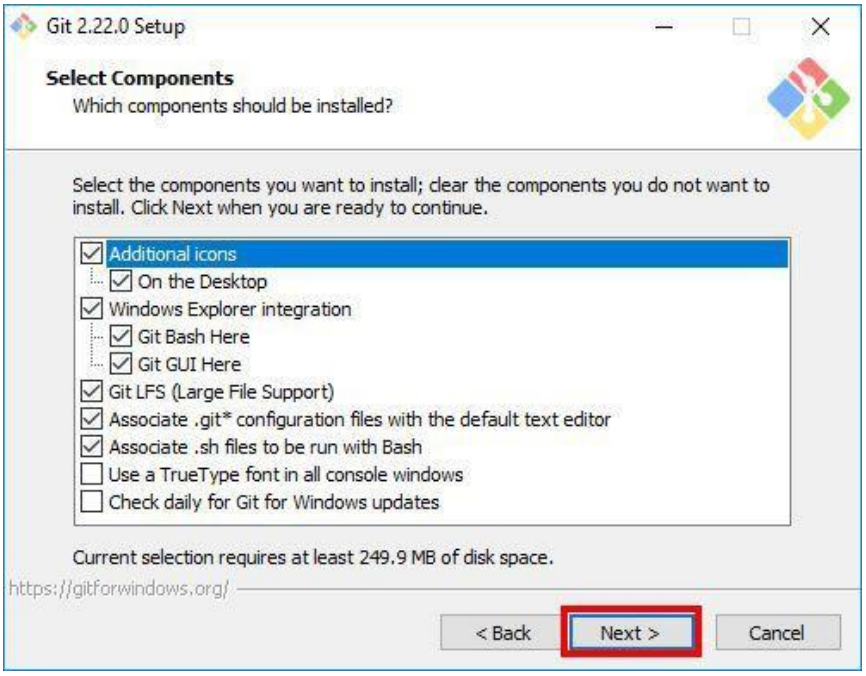
Step 4: Select Destination Location Permalink

Next, select the location you want to install Git Bash. I would recommend you just leave the default option as it is, and click “Next”.



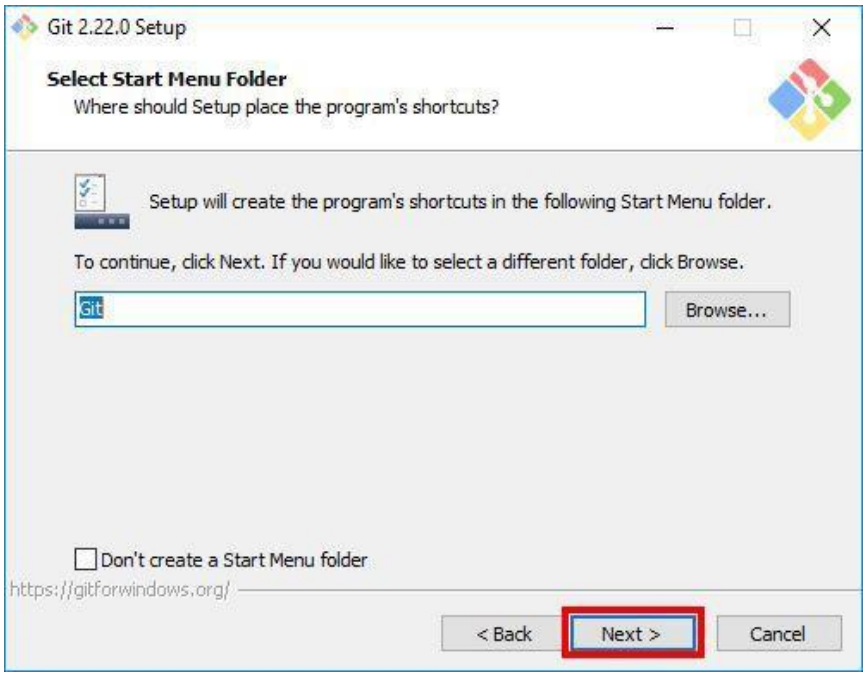
Step 5: Select Components

Choose the components you want to install, or you can just proceed with the default options and click “Next”. I prefer selecting the “Additional icons” component which creates a Git Bash shortcut on the desktop.



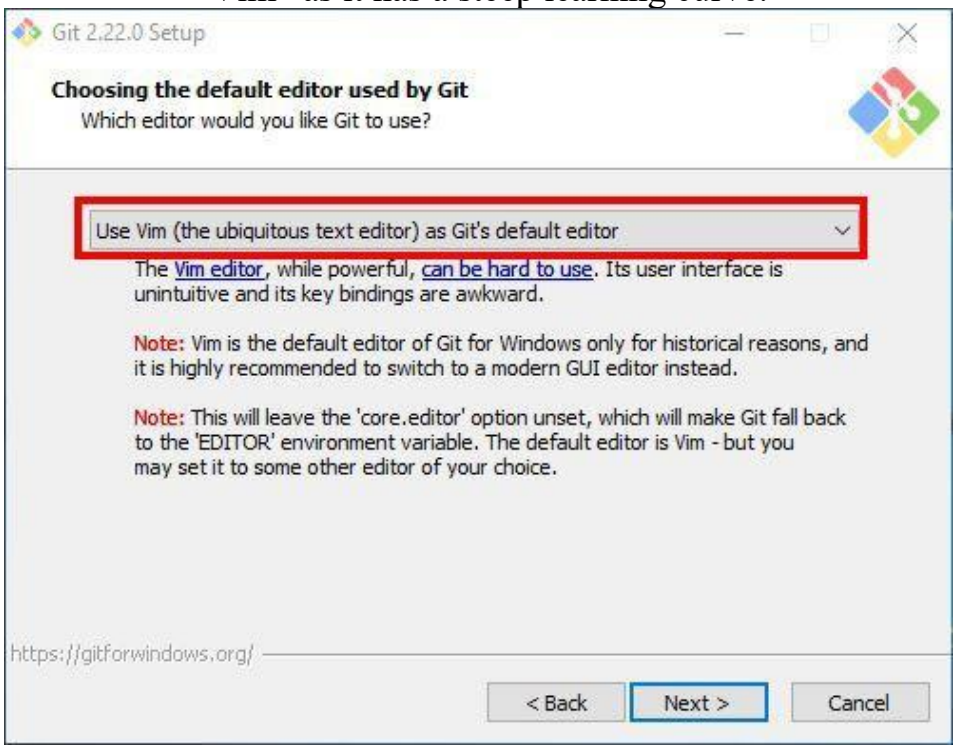
Step 6: Select Start Menu Folder

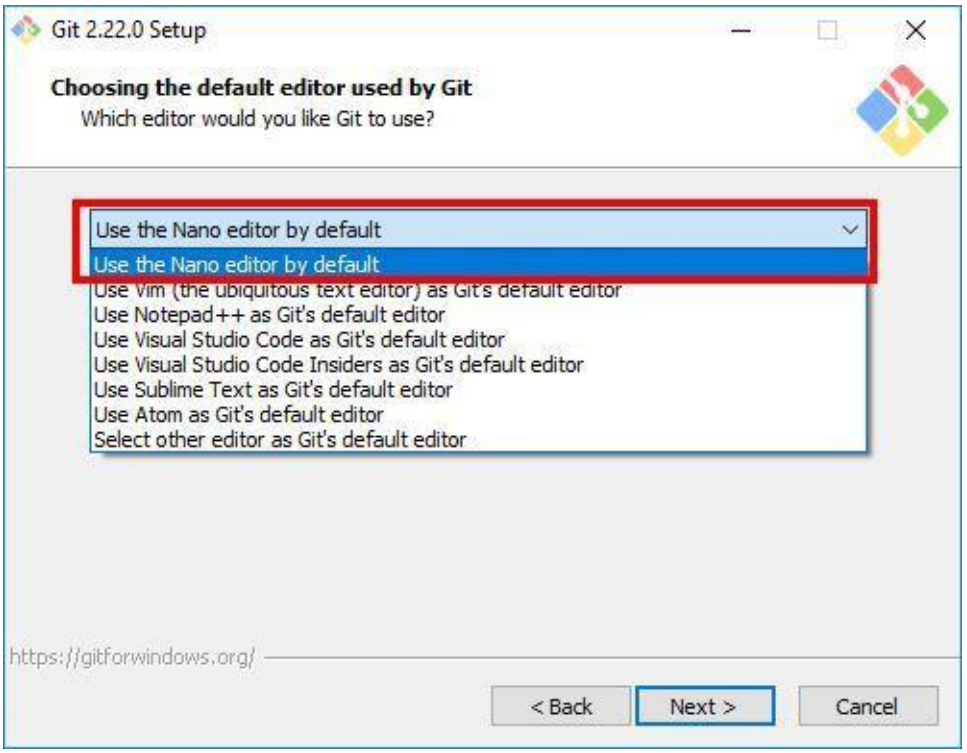
You can change the name of start menu folder here if you want, or just leave the default name and click "Next".

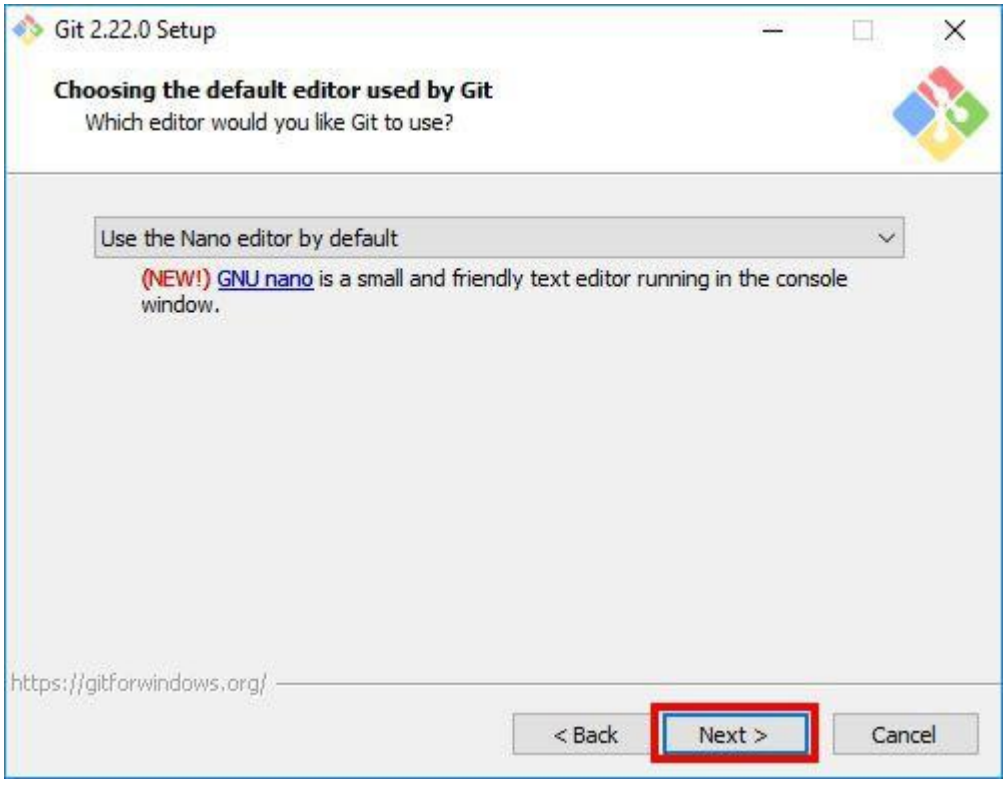


Step 7: Choose the Default Editor used by Git

Next, select the default editor for Git to use. Choose the one you like and click "Next". I would recommend you proceed with **Nano** or **Notepad++**. Don't proceed with the default option "Vim" as it has a steep learning curve.







Step 8: Adjust your PATH Environment

Choose the option you want depending on where you want to use Git and click "Next".

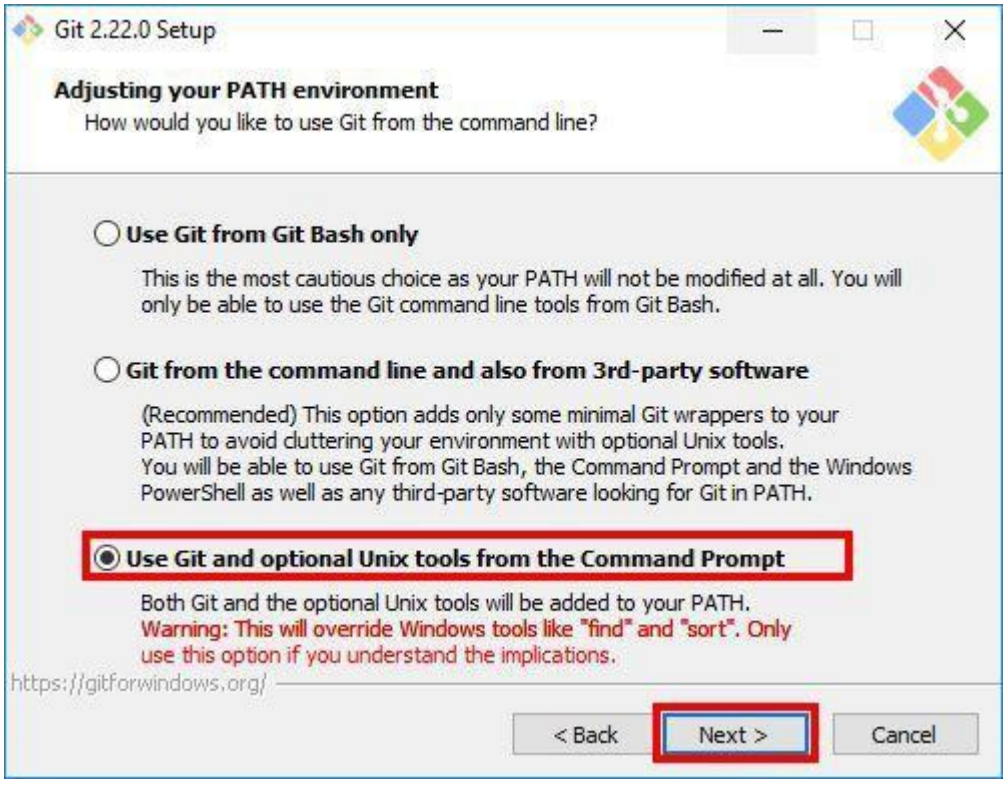
Select **"Use Git from Git Bash only"** option if want to run Git and Bash commands from Git Bash only. This means that you won't be able to run Git commands such as `git status` on Windows Command Prompt or Powershell. They will only be found on Git Bash.

Select **"Git from the command line and also from 3rd-party software"** option if you want to run Git commands on Windows Command Prompt or Powershell.

Notice: Bash commands won't work on Command Prompt or Powershell with this option, but only Git commands will work.

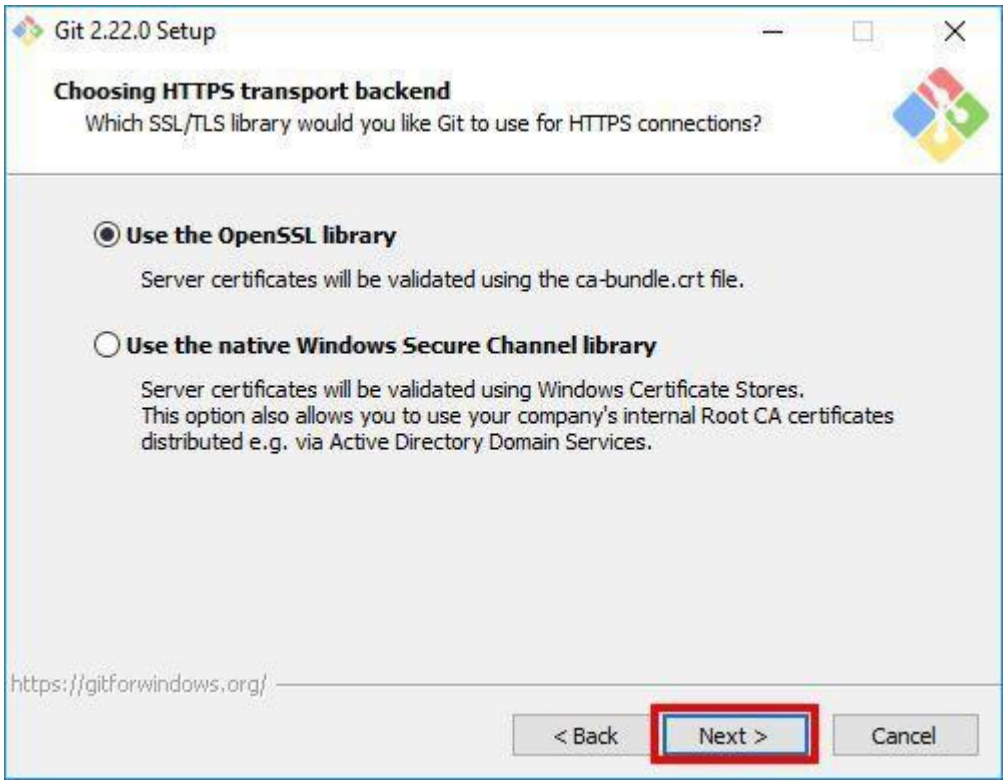
Tip: If you need run bash commands, you will have to open the Git Bash. So go ahead with this option if that is what you want.

Select **"Use Git and optional Unix tools from the Command Prompt"** option if you want to use both Git and Bash commands on Windows Command Prompt or Powershell. This option will override some default Windows Command Prompt tools like find and sort. I don't use CMD or Powershell that much to worry about that. So I will go ahead with this option by clicking "Next".



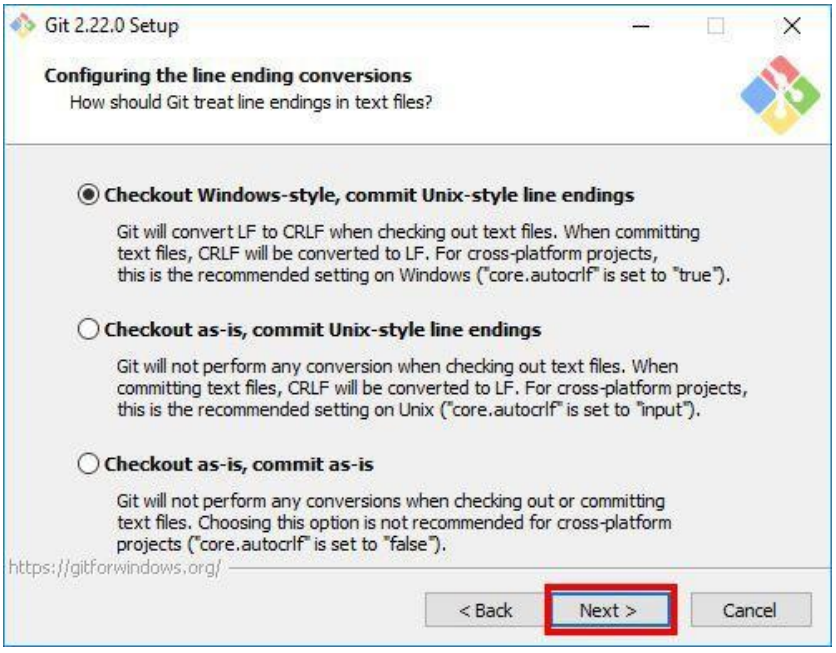
Step 9: Choose HTTPS Transport BackendPermalink

Next, select "Use the OpenSSL library" and click "Next".



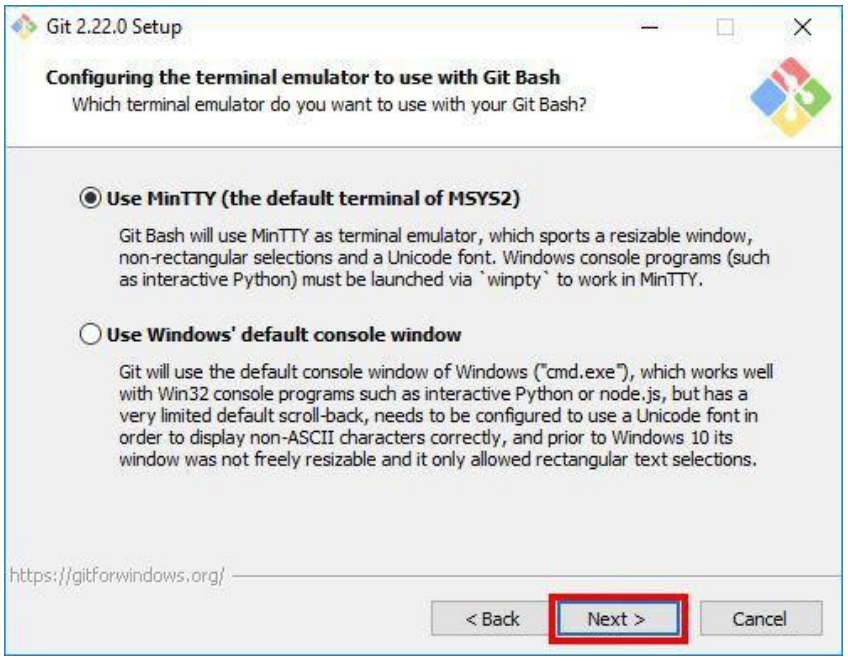
Step 10: Configure the Line Ending Conversions

Select how Git should treat line endings in text files. It's probably safe to go with the default option "Checkout Windows-Style, commit Unix-style line endings". Click "Next" to proceed.



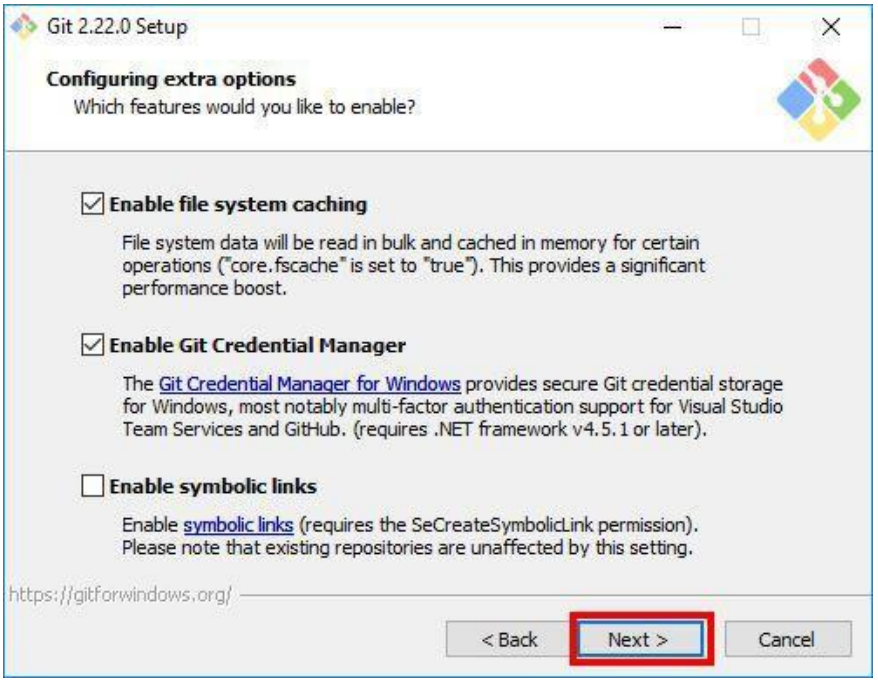
Step 11: Configure the Terminal Emulator to use with Git BshPermalink

Next, select the terminal emulator you want Git Bash to use. I will proceed with the default option "Use MinTTY(the default terminal of MSYS2) and click "Next".



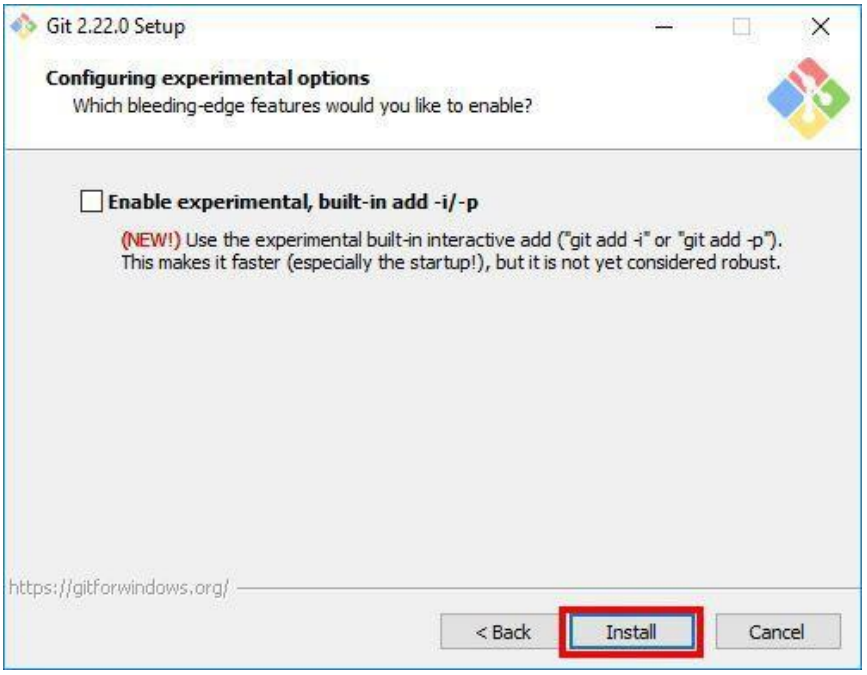
Step 12: Configuring Extra Options

Select the features you want (the default options are fine) and click “Next”.



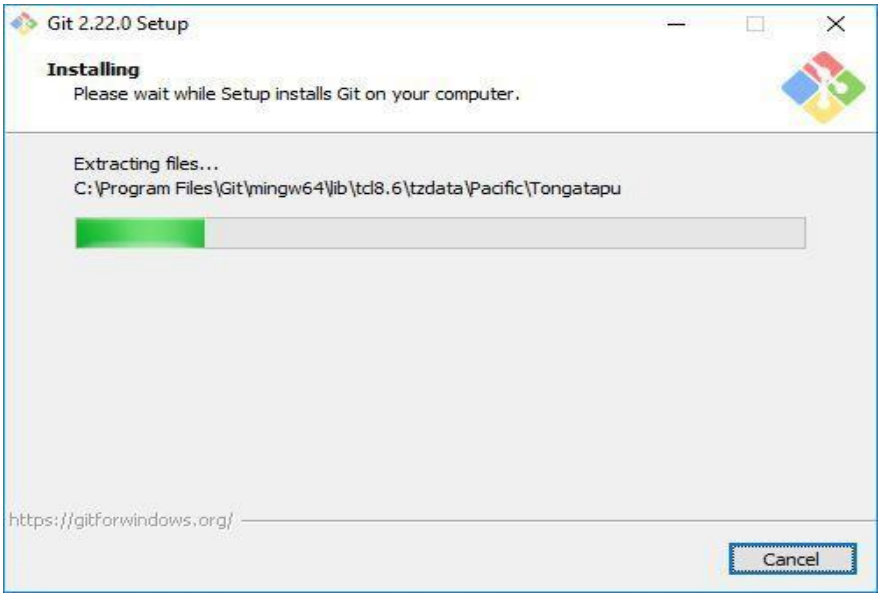
Step 13: Configuring Extra Options

Enable experimental options if you want. Enabling them allows you to try out newer features that are still in development. I don’t enable this, so I will just proceed by clicking “Install” to start the installation process.



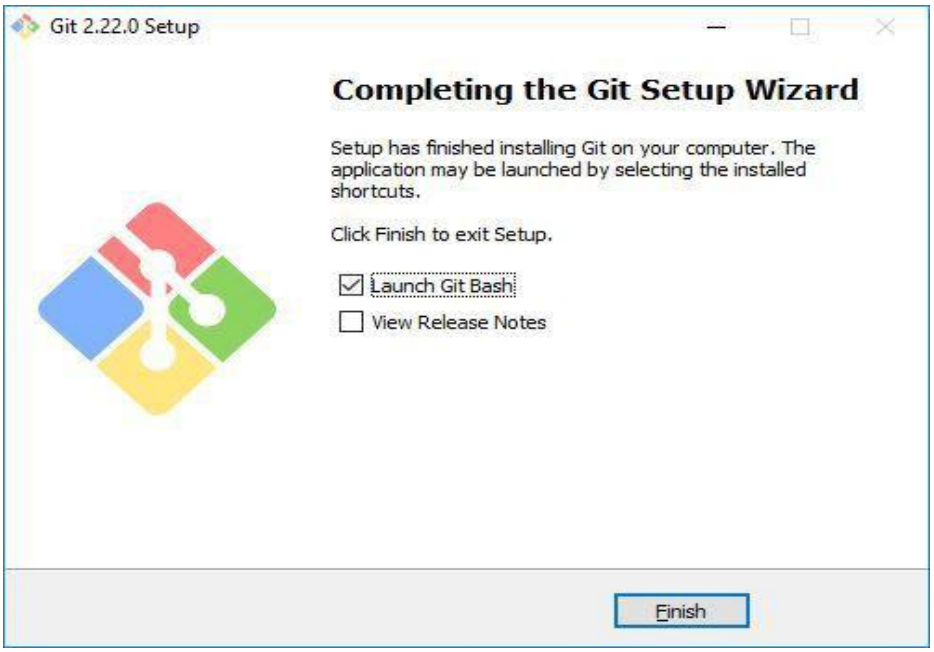
Step 14: Wait for Installation

Now, wait for a few minutes as the Setup Wizard installs Git on your computer.



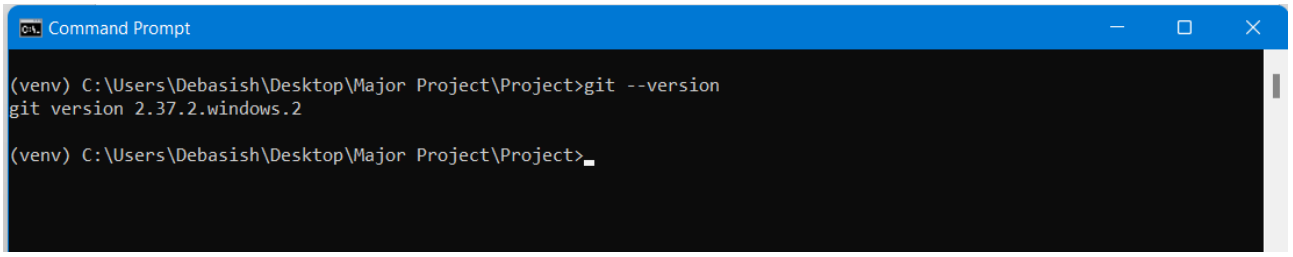
Step 15: Complete the Git Setup Wizard

After the installation has finished, check the “Launch Git Bash” and click “Finish” launching Git Bash.



Git –version

Run this command in command prompt to know the git version and git is successfully installed or not.



The Git Bash terminal will now open and you will be able to enter Git and Bash commands.

CHAPTER-5

Selected Software or Platform

What is Visual Studio Code?

Visual Studio Code (VS Code) is a **free, open-source code editor** by Microsoft, design for efficiency and flexibility in software development. It supports **Windows, Linux, and macOS** and is widely used for **front-end, back-end, and full-stack development**.

Key Features of VS Code:

Fast & Lightweight – Optimized for quick code editing and debugging.

Intelligent Code Assistance – Syntax highlighting, auto-completion, and IntelliSense for various languages.

Built-in Debugger – Simplifies testing and debugging processes.

Extensive Extensions Marketplace – Offers plugins for Git, Python, JavaScript, and more.

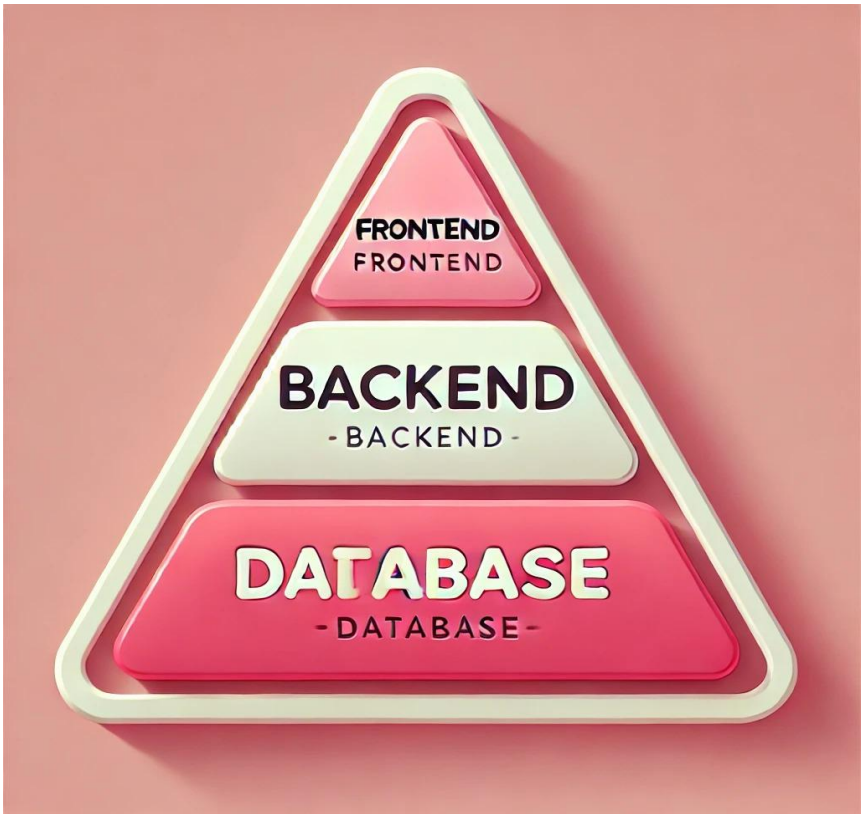
Integrated Terminal & Git Support – Enables seamless version control and terminal commands.

Customizable Interface – Themes, shortcuts, and workspace settings for personalization.

Multi-Language Support – Works well with **HTML, CSS, JavaScript, Python, Java, C++, and frameworks like React, and Node.js**.

How to Developed a Project.

In every Application Development or Project Development basically Follow Three basic step: -



Developing a project requires a **structured approach** to ensure smooth functionality, scalability, and performance.

A successful project typically follows three key stages:

1. Front-End Development – Building the User Interface (UI) and User Experience (UX)

Front-end development is responsible for the **visual and interactive elements** of a website or application. It

focuses on creating an intuitive, responsive, and engaging interface that enhances user experience.

Key Aspects of Front-End Development:

User Interface Design (UI) – Ensures a visually appealing layout using HTML, CSS, and JavaScript.

User Experience (UX) – Enhances interactivity, responsiveness, and accessibility.

Cross-Browser Compatibility – Ensures the application works smoothly on all modern browsers.

Responsive Design – Uses frameworks like **Bootstrap or Tailwind CSS** to make the website adaptable across devices.

Dynamic Interactivity – Incorporates JavaScript frameworks like **React, Angular, or Vue.js** for better user engagement.

2. Back-End Development – Managing the Core Logic, Authentication, and Server Operations

Back-end development is the **brain of the application**, handling all the processes behind the scenes.

It is responsible for **data processing, user authentication, security, and server-side logic**.

Key Aspects of Back-End Development:

Business Logic Implementation – Defines how the application processes data and responds to user actions.

User Authentication & Authorization – Manages login systems, user roles, and access control.

API Development – Ensures smooth communication between the front-end and back-end using RESTful APIs.

Error Handling & Security – Implements encryption, data validation, and security measures to protect user data.

Scalability & Performance Optimization – Uses caching techniques, load balancing, and efficient algorithms for speed.

Common **back-end technologies** include **Spring Boot (Java), Node.js, Django (Python), and Laravel (PHP).**

3.Database Management – Handling Data Storage, Retrieval, and Security

A database is the **foundation of any data-driven application**, storing **user details, product information, transactions, and other critical data**. Database management ensures **efficient data handling, security, and scalability**.

Key Aspects of Database Management:

Data Storage & Organization – Structures data using relational (SQL) or NoSQL databases.

Efficient Query Processing – Optimizes data retrieval using indexing and caching techniques.

Data Security & Integrity – Implements encryption, access control, and backup strategies.

Scalability & Performance Optimization – Uses database replication and load balancing for handling high traffic.

SPRING BOOT

1. Introduction to Spring Boot

Spring Boot is an open-source **Java-based framework** designed to simplify the development of **standalone, production-ready Spring applications**. It is built on top of the **Spring Framework** and eliminates the need for extensive configurations, making it easier to develop enterprise applications, web services, and microservices.

Unlike traditional Spring applications that require complex XML configurations, Spring Boot follows a **"convention over configuration"** approach, offering a faster and more streamlined development process.

2. Why Use Spring Boot?

Spring Boot provides several advantages that make it one of the most widely used frameworks for Java development:

Auto-Configuration: Reduces manual configuration, allowing applications to work with minimal setup.

Embedded Web Servers: Comes with **built-in Tomcat, Jetty, and Undertow**, eliminating the need for external web server installations.

Microservices Ready: Offers seamless support for developing and deploying **scalable microservices architectures**.

Spring Boot Starters: Pre-configured dependencies that simplify project setup (e.g., spring-boot-starter-web, spring-boot-starter-data-jpa).

Actuator for Monitoring: Provides built-in production monitoring and management capabilities.

Dependency Management: Uses **Spring Boot Starter** dependencies to avoid version conflicts.

Flexible Database Support: Easily integrates with **MySQL, PostgreSQL, MongoDB, H2, and more**.

Security Integration: Supports **Spring Security** for authentication, authorization, and protection against vulnerabilities.

3. Key Features of Spring Boot

3.1 Spring Boot Starters

Spring Boot introduces **starter dependencies** that help in **quick project setup**. Instead of manually adding dependencies, Spring Boot provides predefined starter packs for common functionalities:

spring-boot-starter-web → For building RESTful APIs and web applications.

spring-boot-starter-data-jpa → For database interactions using JPA and Hibernate.

spring-boot-starter-security → For implementing authentication and authorization.

spring-boot-starter-validation → For unit testing using JUnit and Mockito.

spring-boot-starter-thymeleaf → For creating UI templates using Thymeleaf.

3.2 Auto-Configuration

Spring Boot automatically detects and configures components based on the dependencies added to the project. This feature eliminates the need for complex XML or Java-based configuration.

3.3 Embedded Web Servers

Spring Boot comes with **embedded web servers** (Tomcat, Jetty, Undertow) that allow applications to run as standalone services. This removes the need for external application servers like Apache Tomcat.

3.4 Spring Boot Actuator

Spring Boot Actuator provides **monitoring and management** features for production environments.
It offers built-in endpoints like:

- /actuator/health → Checks application health status.
-
- /actuator/info → Provides application metadata.
- /actuator/metrics → Displays performance and usage statistics.

3.5 Spring Boot CLI (Command-Line Interface)

Spring Boot CLI allows developers to **write and run Spring Boot applications quickly** using Groovy scripts.

4.Setting Up a Spring Boot Project

4.1 Prerequisites

Before starting with Spring Boot, ensure the following tools are installed:

Java Development Kit (JDK) 8 or higher

Maven or Gradle for dependency management

Spring Boot CLI (optional) for quick project setup

Integrated Development Environment (IDE) such as IntelliJ IDEA, Eclipse, or VS Code

4.2 Creating a Spring Boot Project Using Spring Initializer

Spring Initializer is an online tool that generates Spring Boot project templates.

Steps to create a project:

1. Visit Spring Initializer.

2.Select **Project Type**: Maven or Gradle.

3.Choose **Spring Boot Version** (latest stable release).

4.Add **Project Dependencies** (e.g., spring-boot-starter-web, spring-boot-starter-data-jpa).

5.Click **Generate** and download the project.

6.Import the project into your IDE and start coding!

5. Writing a Basic Spring Boot Application

5.1 The Main Class

Spring Boot applications are bootstrapped with a **main class** that includes the @SpringBootApplication annotation.java

```
package com.example.demo;

 import org.springframework.boot.SpringApplication;
 import org.springframework.boot.autoconfigure.SpringBootApplication;

 @SpringBootApplication
  public class DemoApplication {
  public static void main(String[] args) {



    SpringApplication.run(DemoApplication.class, args);
   }
 }
```

6. Creating a Simple REST API in Spring Boot

Spring Boot simplifies the process of building **RESTful web services**. Here's how you can create a basic REST API:

6.1 Creating a Controller

java

```
package com.example.demo.controller;

 import org.springframework.web.bind.annotation.GetMapping;
 import org.springframework.web.bind.annotation.RequestMapping;
 import org.springframework.web.bind.annotation.RestController;

@RestController
 @RequestMapping("/api")
  public class HelloController {

 @GetMapping("/hello")
  public String sayHello() {
  return "Hello, Welcome to Spring Boot!";
    }
}
```

7. Connecting Spring Boot to a Database

Spring Boot supports various **databases**, including MySQL, PostgreSQL, and MongoDB.

7.1 Configure Database in application.properties

properties

```
spring.datasource.url=jdbc:mysql://localhost:1211/mydatabase

spring.datasource.username=root
```

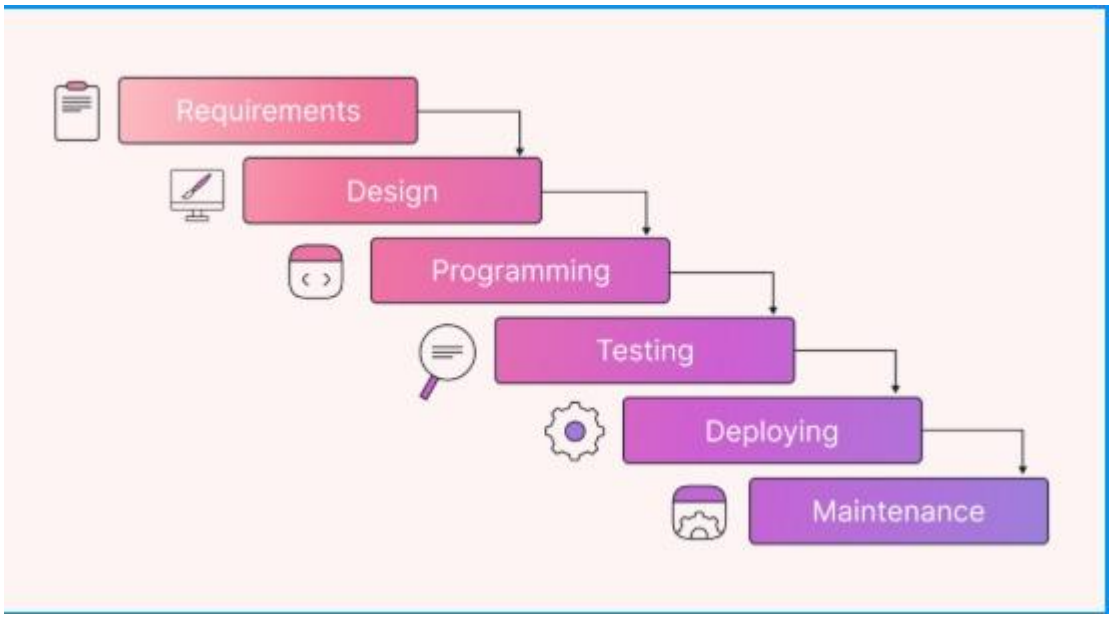
```
spring.datasource.password=admin
        spring.jpa.hibernate.ddl-auto=update
```

7.2 Creating a JPA Entity Class

```
java
package com.example.demo.model;
import jakarta.persistence.*;
@Entity
@Table(name = "products")
public class Product {
@Id
 @GeneratedValue(strategy = GenerationType.IDENTITY)
  private Long id;

private String name;
 private double price;
```

CHAPTER-6

Software Development Life Cycle



1. Introduction

The **Software Development Life Cycle (SDLC)** is a systematic process used to develop software applications with high quality, efficiency, and cost-effectiveness. It provides a structured approach that helps software teams **plan, design, develop, test, deploy, and maintain software** in a well-organized manner.

SDLC ensures that software is built **on time, within budget, and meets customer requirements** while reducing risks and errors.

---

2. Phases of SDLC

2.1 Planning Phase

The **Planning Phase** is the foundation of the SDLC process, where project feasibility is assessed, and a roadmap is created.

Key Activities:

- Define project goals, scope, and objectives.
- Conduct **feasibility studies** (technical, operational, and financial).
- Identify potential **risks and mitigation strategies**.
- Allocate budget, resources, and define timelines.

Deliverables:

- Project feasibility report.
- High-level project roadmap.
- Risk assessment and mitigation strategies.

2.2 Requirement Analysis Phase

The **Requirement Analysis Phase** involves gathering, documenting, and validating software requirements.

Key Activities:

- Gather **functional and non-functional requirements** from stakeholders.
- Define **user needs, system inputs/outputs, and performance expectations**.
- Create a **Software Requirement Specification (SRS)** document.
- Review and finalize requirements with stakeholders.

Deliverables:

- **SRS Document** (Software Requirement Specification).
- Requirement approval from stakeholders.

2.3 Design Phase

The **Design Phase** creates the blueprint of the software, defining its architecture, components, and user interface.

Key Activities:

- **High-Level Design (HLD):** Define system architecture, modules, and technology stack.
- **Low-Level Design (LLD):** Detailed design of each module, algorithms, and database schema.
- **UI/UX Design:** Create wireframes, prototypes, and user interface elements.

Deliverables:

- System architecture diagram.
- Database schema design.
- UI/UX wireframes and prototypes.

2.4 Development (Coding) Phase

The **Development Phase** involves writing the actual code for the application based on design specifications.

Key Activities:

- Implement business logic, database integration, and frontend/backend development.
- Follow coding standards, version control, and best practices.
- Perform **unit testing** to validate individual components.
- Use **Git/GitHub** for source code management.

Deliverables:

- Source code repository.
- Fully developed software modules.

2.5 Testing Phase

The **Testing Phase** ensures the software is **bug-free, functional, and meets requirements**.

Key Testing Methods:

- **Unit Testing** – Tests individual components.
- **Integration Testing** – Checks interaction between modules.
- **System Testing** – Validates the complete software functionality.
- **User Acceptance Testing (UAT)** – Ensures the software meets business needs.
- **Performance & Security Testing** – Verifies speed and security compliance.

Deliverables:

- Test Plan & Test Cases.
- Bug Reports & Fixes.

2.6 Deployment Phase

In the **Deployment Phase**, the software is released for production use.

Key Activities:

- Use **deployment strategies** like **rolling deployment** or **blue-green deployment**.
- Deploy the application to **cloud platforms** (AWS, Azure, Google Cloud) or on-premises.
- Conduct **post-deployment monitoring** and bug tracking.

Deliverables:

- Live software in production.
- Deployment documentation.

2.7 Maintenance & Support Phase

After deployment, the software enters the **Maintenance Phase**, where updates, bug fixes, and optimizations are performed.

Key Activities:

- Monitor system performance and logs.
- Fix **bugs, performance issues, and security vulnerabilities**.
- Release software updates and feature enhancements.

Deliverables:

- Regular software updates and patches.
- Customer support and issue resolution reports.

CHAPTER-7

SYSTEM DESIGN

Use-case Diagram

Use Case represents the interactions between **users (actors)** and a system (Craft Verse website) to achieve specific goals. It defines **how different users interact with the system** and what functionalities the system provides.

- **Customer** – Browses products, adds them to the cart, makes purchases.
- **Admin** – Manages users, products, orders, and website content.
- **Vendor (Artisan)** – Adds and manages craft products, tracks orders.
- **Payment Gateway System** – Handles transactions securely.
- **Delivery System** – Manages shipping and order tracking.

Data-flow Diagram

A **Data Flow Diagram (DFD)** is a visual representation of how data flows within a system. It provides a structured overview of how different **users, processes, and external systems** interact with the **Craft Verse** website. The DFD helps in understanding system functionality, optimizing workflows, and ensuring seamless data exchange.

---

2. Level 0 DFD (Context Diagram)

2.1 Overview

The Level 0 **(Context Diagram)** provides a high-level representation of the entire Craft Verse system, showing how external entities interact with the system. It does not include internal processing details but focuses on data flow between users and the system.

2.2 Key Components

Actors (External Entities)

- **Customer**: Browses products, adds items to the cart, places orders, makes payments, and tracks orders.
- **Vendor (Artisan/Seller)**: Adds and manages craft products, tracks orders, and monitors sales.
- **Payment Gateway**: Processes secure transactions.
- **Delivery System**: Handles order shipping and updates tracking details.

Data Flow Overview

- **Customer → Craft Verse System**: Browse products, place orders, make payments, track shipments.

- **Craft Verse System → Payment Gateway**: Processes payments securely.
- **Payment Gateway → Craft Verse System**: Sends payment confirmation.
- **Craft Verse System → Vendor**: Notifies vendors of new orders.
- **Vendor → Craft Verse System**: Updates product listings and processes orders.
- **Craft Verse System → Delivery System**: Sends shipment details for dispatch.
- **Delivery System → Craft Verse System**: Updates delivery status for customers.
- **Admin → Craft Verse System**: Manages system operations, user activities, and generates reports.

---

3. Level 1 DFD (Detailed System Breakdown)

3.1 Key Subsystems and Data Flow

Customer Interactions

- **User Registration & Login**: Customers create accounts and log in securely.
- **Product Browsing & Search**: Customers explore products based on categories.
- **Shopping Cart & Checkout**: Customers add products to the cart and proceed to payment.
- **Order Tracking**: Customers check their order status post-purchase.
- **Reviews & Ratings**: Customers provide feedback on purchased products.

Admin Interactions

- **User Management**: Admin approves, suspends, or removes user accounts.
- **Product Approval & Moderation**: Admin reviews vendor product listings before publishing.
- **Order & Transaction Monitoring**: Admin oversees system transactions and payment settlements.
- **Report Generation**: Admin extracts business performance analytics.

External System Interactions

- **Payment Gateway**: Handles transaction authorization and payment verification.
- **Delivery System**: Manages shipping logistics and order tracking updates.

CLASS DIAGRAM

Is a structural diagram in **Unified Modeling Language (UML)** that represents the **blueprint of the Craft Verse system**. It defines the **classes, attributes, methods, and relationships** between various entities in the system.

The **Craft Verse** website is an **e-commerce platform** where customers can browse and purchase craft products, vendors can manage their listings, and administrators oversee system operations. This class diagram provides a **detailed object-oriented view** of the system.

---

2. Key Components of the Class Diagram

2.1 Major Classes & Their Responsibilities

1. Customer Class

Attributes:

- customerID: Unique identifier for each customer.
- name: Customer's full name.
- email: Contact email.
- password: Encrypted password.
- address: Shipping address.
- orderHistory: List of past orders.

Methods:

- register(): Creates a new customer account.
- login(): Authenticates customer credentials.
- placeOrder(): Processes order checkout.
- trackOrder(): Retrieves order status.
- writeReview(): Allows customers to rate and review products.

---

3. Product Class

Attributes:

- productID: Unique identifier for each product.
- productName: Name of the craft item.
- description: Brief product details.
- price: Cost of the product.
- stockQuantity: Available stock count.
- category: Type of craft item.
- vendorID: The seller who owns the product.

Methods:

- updateStock(): Adjusts stock levels after a sale.
- applyDiscount(): Sets promotional discounts.

4️⃣ Order Class

Attributes:

- orderID: Unique order identifier.
- customerID: ID of the customer placing the order.
- productList: Items purchased in the order.
- totalAmount: Total payment for the order.
- orderStatus: Current order stage (Pending, Shipped, Delivered).
- paymentStatus: Paid/Unpaid status.
- shippingAddress: Delivery location.

Methods:

- processOrder(): Confirms order placement.
- cancelOrder(): Cancels an order if applicable.
- updateStatus(): Updates shipping progress.

5️⃣ Payment Class

Attributes:

- paymentID: Unique transaction identifier.
- orderID: Associated order number.
- customerID: Paying customer's ID.
- amount: Total amount paid.
- paymentMethod: Mode of payment (Credit Card, PayPal, UPI).
- paymentStatus: Confirmation of successful payment.

Methods:

- processPayment(): Handles transaction requests.
- validatePayment(): Ensures payment security.

6️⃣ Admin Class

Attributes:

- adminID: Unique identifier for administrators.
- username: Login credentials.
- email: Contact details.

Methods:

- manageUsers(): Adds, removes, or updates customers and vendors.
- approveProducts(): Moderates product listings.
- generateReports(): Creates business performance analytics.

System Architecture Design

A **1. Introduction**

The **System Architecture Design** defines the overall structure of the **Craft Verse** platform, including its **components, data flow, and interactions between different system layers**. This architecture ensures the platform is **scalable, efficient, and secure** for both customers and vendors.

Craft Verse follows a **three-tier architecture**, consisting of:

1. **Presentation Layer** (Frontend) – Handles user interactions.
2. **Business Logic Layer** (Backend) – Processes requests and manages business rules.
3. **Data Layer** (Database) – Stores and retrieves data efficiently.

---

2. System Components & Layers

📌 **2.1 Presentation Layer (Frontend)**

- Technologies: **HTML, CSS, JavaScript, React.js**
- Responsibilities:

✅ Provides an intuitive user interface for customers, vendors, and admins.

✅ Manages product browsing, cart operations, order tracking, and profile management.

✅ Sends user requests to the backend via REST APIs.

📌 **2.2 Business Logic Layer (Backend)**

- Technologies: **Spring Boot (Java), REST APIs**
- Responsibilities:

✅ Handles authentication & authorization (user login, role-based access).

✅ Processes product listings, order management, and payments.

✅ Implements business rules for discounts, stock updates, and notifications.

📌 **2.3 Data Layer (Database Management)**

- Technologies: **MySQL (Relational Database)**
- Responsibilities:

✅ Stores customer, vendor, product, order, and payment data.

✅ Ensures **data integrity and security** using encryption & backup mechanisms.

✅ Manages transactional consistency for orders and payments.

📌 **2.4 External Services & APIs**

1. **Payment Gateway (Razorpay, PayPal, Stripe)** – Handles secure transactions.
2. **Shipping & Delivery System** – Updates order tracking & delivery status.
3. **Cloud Hosting (AWS, Google Cloud, Azure)** – Deploys the platform for scalability.

system through new functionalities provided by connecting functions of different systems.

Class Diagram

In software engineering, a class diagram in the Unified Modeming Language is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations, and the relationships among objects.

CHAPTER-8

METHODOLOGY

PROPOSED SYSTEMS

1. Introduction

The **Craft Verse** project follows a structured **Software Development Life Cycle (SDLC)** approach combined with **Agile Methodology** to ensure efficient execution, continuous improvements, and flexibility in development. This methodology helps in delivering a **scalable, secure, and user-friendly e-commerce platform** where customers can purchase craft items, vendors can manage their products, and administrators can oversee system operations.

The Agile approach allows for **incremental development**, ensuring adaptability to changing requirements and quicker releases.

---

2. Development Approach

The **Agile Methodology** has been chosen for the development of Craft Verse due to its **iterative nature, frequent feedback cycles, and focus on customer satisfaction**.

2.1 Key Features of Agile Methodology

- **Incremental Development** – Features are developed and delivered in multiple iterations.
- **User-Centric Approach** – Regular feedback from customers, vendors, and admins ensures system improvements.
- **Continuous Testing & Bug Fixing** – Reduces defects and enhances system reliability.
- **Flexibility in Requirements** – Allows modifications based on market trends and stakeholder needs.

3. Methodology Phases

3.1 Requirement Gathering & Analysis

In this phase, the project team collaborates with stakeholders to define **functional and non-functional requirements**.

Identifying system requirements from customers, vendors, and administrators. Conducting market research to understand user expectations. Documenting requirements in the **Software Requirement Specification (SRS)**.

3.2 System Design

The system is designed to provide a **scalable and efficient architecture** using **three-tier architecture (Frontend, Backend, and Database)**.

Database Design: Structuring tables for customers, vendors, products, orders, and payments.
System Architecture Design: Defining the interactions between different system layers.
Wireframing & UI/UX Design: Creating a responsive and intuitive user interface.

3.3 Development Phase

This phase involves **coding and implementation** of the planned design using **Spring Boot (Backend) and React.js (Frontend)**.

Frontend Development: Developing interactive UI components using **React.js, HTML, CSS, and JavaScript**.
Backend Development: Implementing business logic, authentication, and APIs using **Spring Boot**.
Database Integration: Storing and retrieving data efficiently using **MySQL**.
Security Implementation: Applying **JWT authentication and role-based access control**.

3.4 Testing Phase

The testing phase ensures that the platform functions correctly, is **secure**, and meets **user expectations**.

Unit Testing: Verifying individual components and functions.

Integration Testing: Ensuring seamless interaction between system modules.
User Acceptance Testing (UAT): Gathering feedback from stakeholders and making improvements.

3.5 Deployment Phase

Once testing is complete, the application is deployed for **public access**.

Hosting the application on **cloud platforms (AWS, Google Cloud, Azure)** for scalability.
Integrating **third-party payment gateways (Razorpay, PayPal, Stripe)** for secure transactions.
Enabling **real-time order tracking** via third-party logistics APIs.

3.6 Maintenance & Support

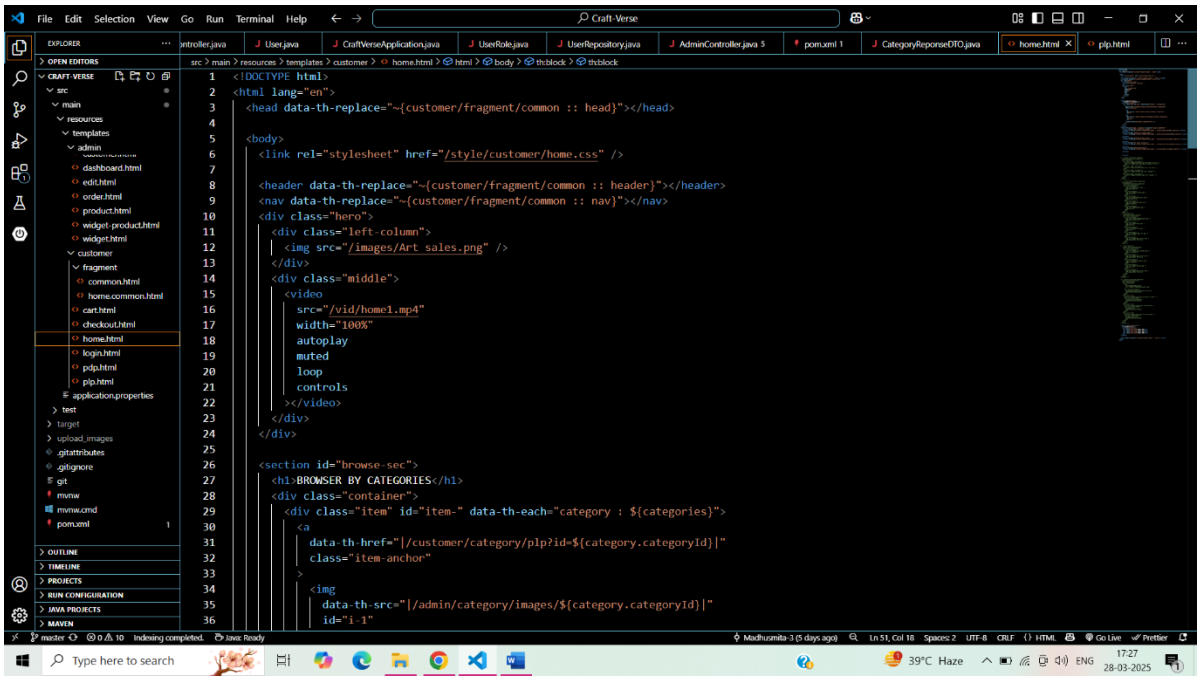
Post-deployment, regular monitoring and updates are performed to ensure optimal performance and security.

Continuous **monitoring of system performance** and fixing security vulnerabilities.
Enhancing **features** based on user feedback.

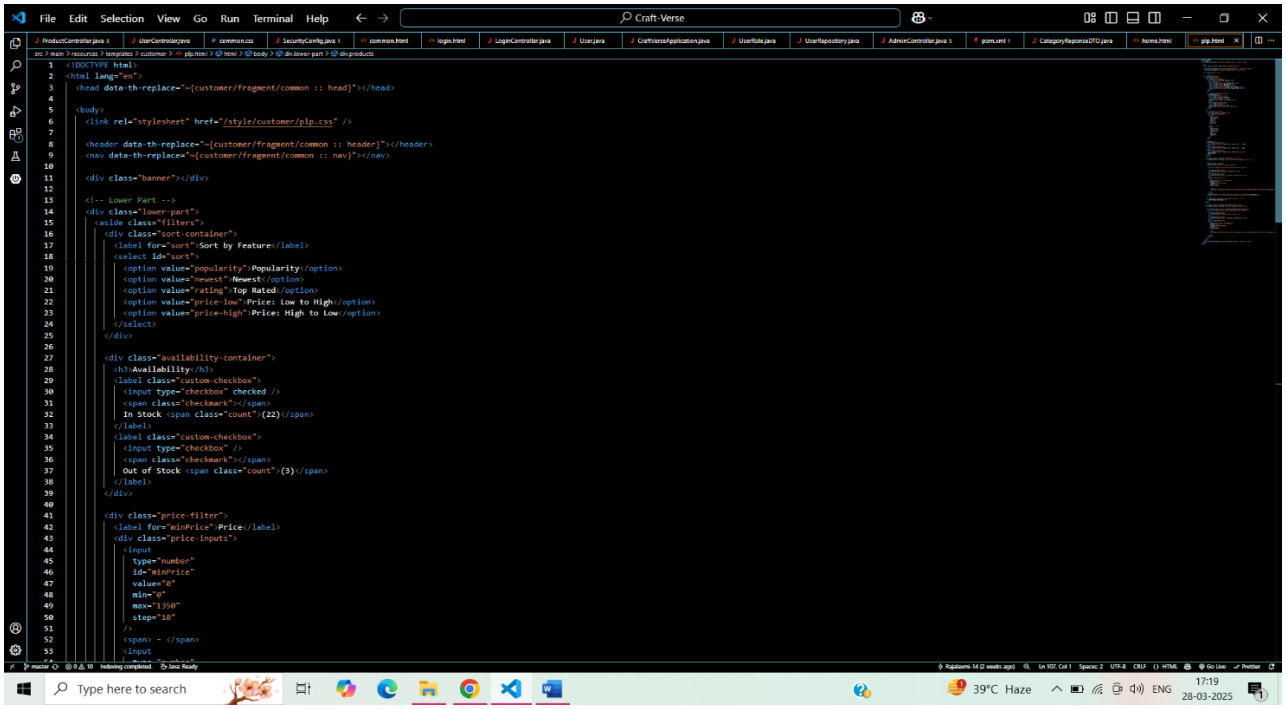
CHAPTER-9

CODING

Landing page

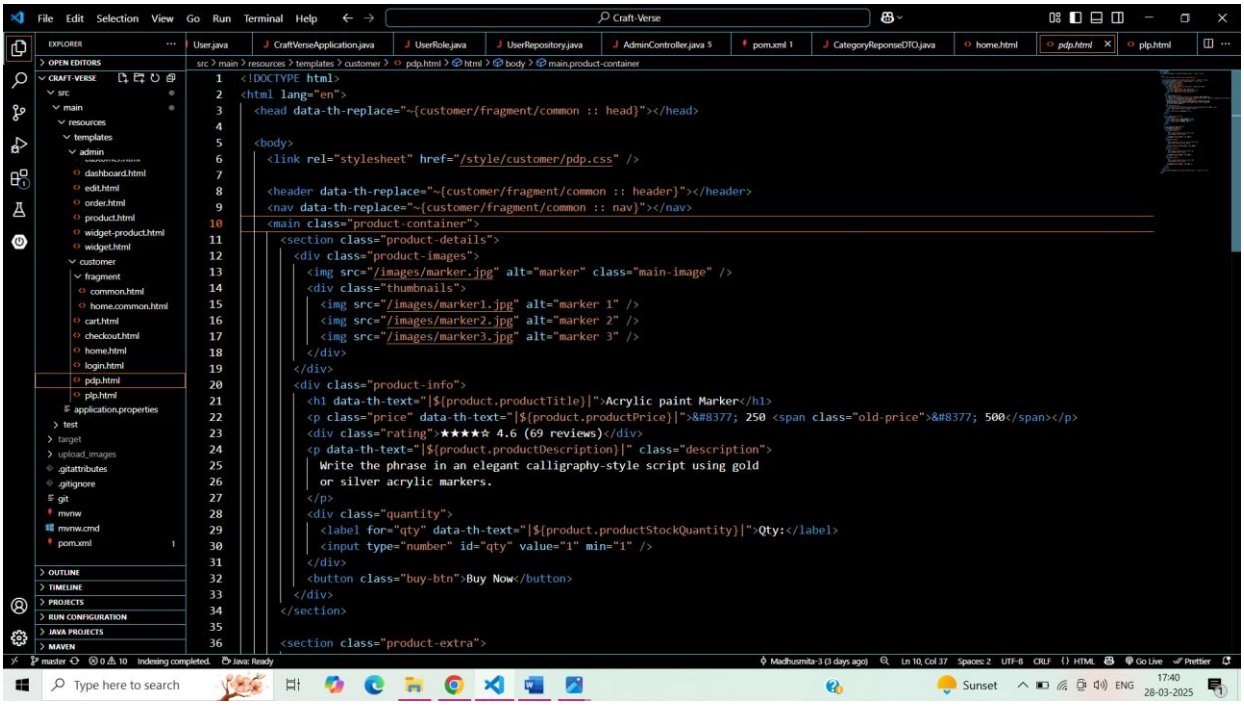


Product Listing Page (PLP)



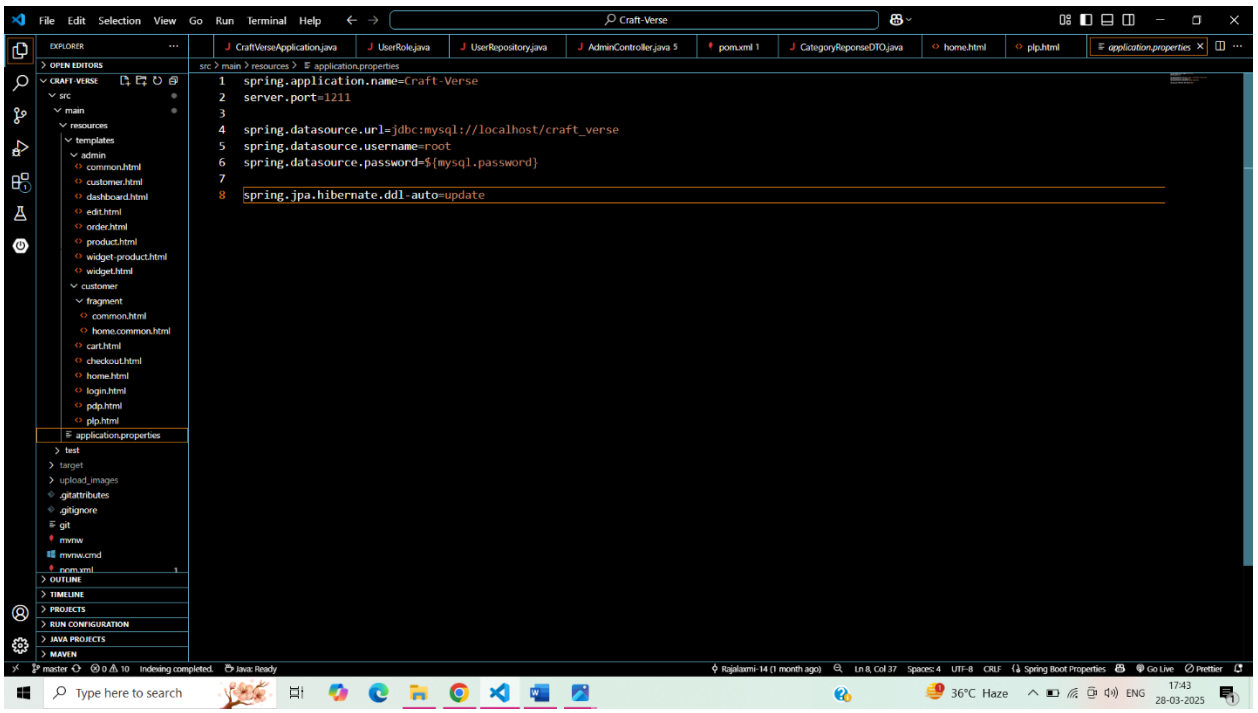
```
<!DOCTYPE html>
<html lang="en">
  <head data-th-replace="~{customer/fragment/common :: head}"></head>

  <body>
    <link rel="stylesheet" href="/style/customer/plp.css" />

    <header data-th-replace="~{customer/fragment/common :: header}"></header>
    <nav data-th-replace="~{customer/fragment/common :: nav}"></nav>

    <div class="banner"></div>

    <!-- Lower Part -->
    <div class="lower-part">
      <aside class="filters">
        <div class="sort-container">
          <label for="sort">Sort by Feature</label>
          <select id="sort">
            <option value="popularity">Popularity</option>
            <option value="newest">Newest</option>
            <option value="rating">Top Rated</option>
            <option value="price-low">Price: Low to High</option>
            <option value="price-high">Price: High to Low</option>
          </select>
        </div>

        <div class="availability-container">
          <h3>Availability</h3>
          <label class="custom-checkbox">
            <input type="checkbox" checked />
            <span class="checkmark"></span>
            In Stock <span class="count">(22)</span>
          </label>
          <label class="custom-checkbox">
            <input type="checkbox" />
            <span class="checkmark"></span>
            Out of Stock <span class="count">(3)</span>
          </label>
        </div>

        <div class="price-filter">
          <label for="minPrice">Price</label>
          <div class="price-inputs">
            <input
              type="number"
              id="minPrice"
              value="0"
              min="0"
              max="1350"
              step="10"
            />
            <span> - </span>
            <input
```

Product Detail Page

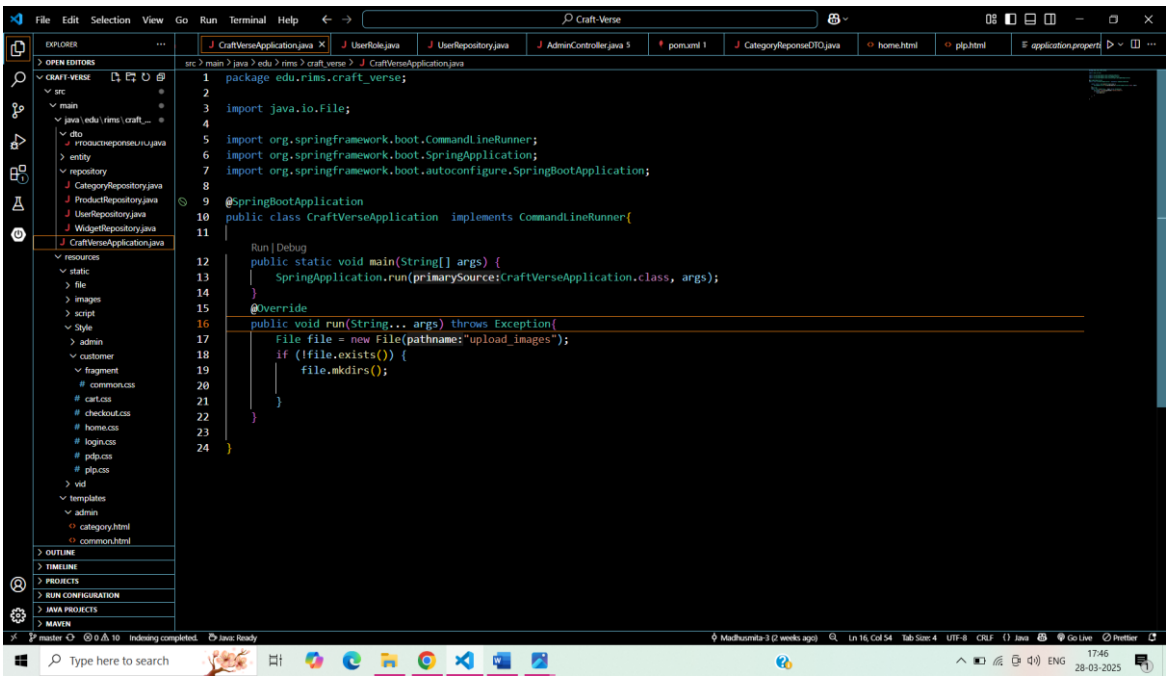


```
<!DOCTYPE html>
<html lang="en">
  <head data-th-replace="~{customer/fragment/common :: head}"></head>

  <body>
    <link rel="stylesheet" href="/style/customer/pdp.css" />

    <header data-th-replace="~{customer/fragment/common :: header}"></header>
    <nav data-th-replace="~{customer/fragment/common :: nav}"></nav>
    <main class="product-container">
      <section class="product-details">
        <div class="product-images">
          <img src="/images/marker.jpg" alt="marker" class="main-image" />
          <div class="thumbnails">
            <img src="/images/marker1.jpg" alt="marker 1" />
            <img src="/images/marker2.jpg" alt="marker 2" />
            <img src="/images/marker3.jpg" alt="marker 3" />
          </div>
        </div>
        <div class="product-info">
          <h1 data-th-text="|${product.productTitle}|">Acrylic paint Marker</h1>
          <p class="price" data-th-text="|${product.productPrice}|">&#8377; 250 <span class="old-price">&#8377; 500</span></p>
          <div class="rating">★★★★★ 4.6 (69 reviews)</div>
          <p data-th-text="|${product.productDescription}|" class="description">
            Write the phrase in an elegant calligraphy-style script using gold
            or silver acrylic markers.
          </p>
          <div class="quantity">
            <label for="qty" data-th-text="|${product.productStockQuantity}|">Qty:</label>
            <input type="number" id="qty" value="1" min="1" />
          </div>
          <button class="buy-btn">Buy Now</button>
        </div>
      </section>

      <section class="product-extra">
```

Application Properties

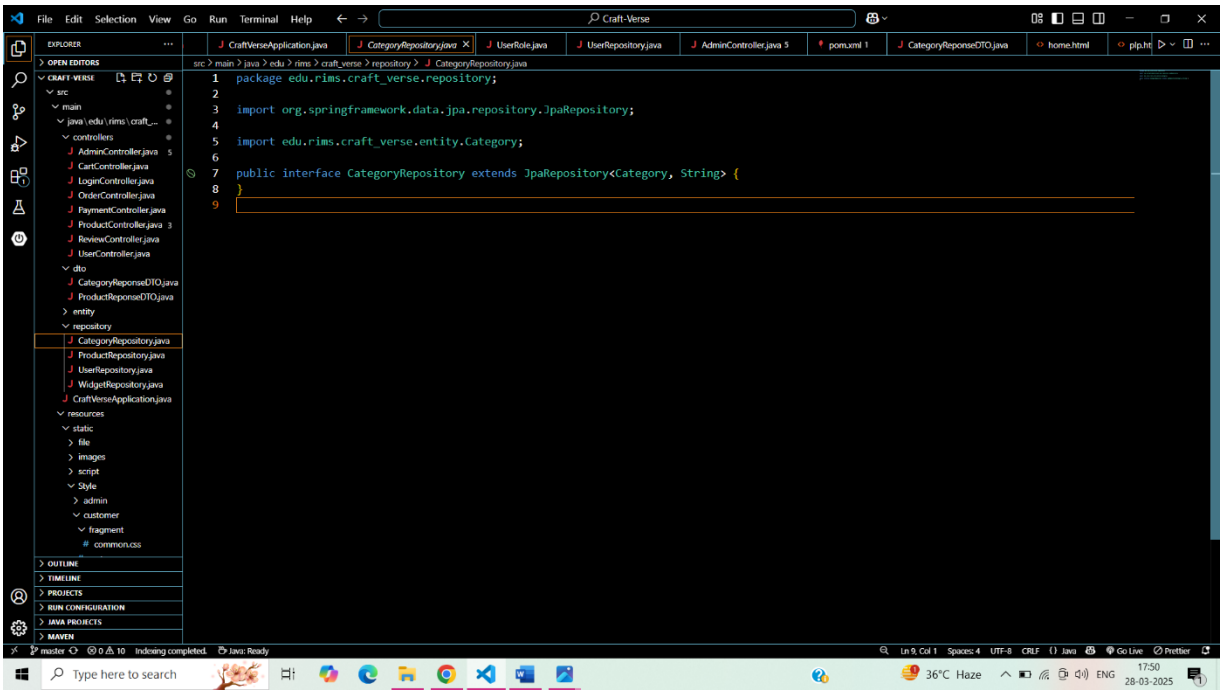


Craft-Verse Application

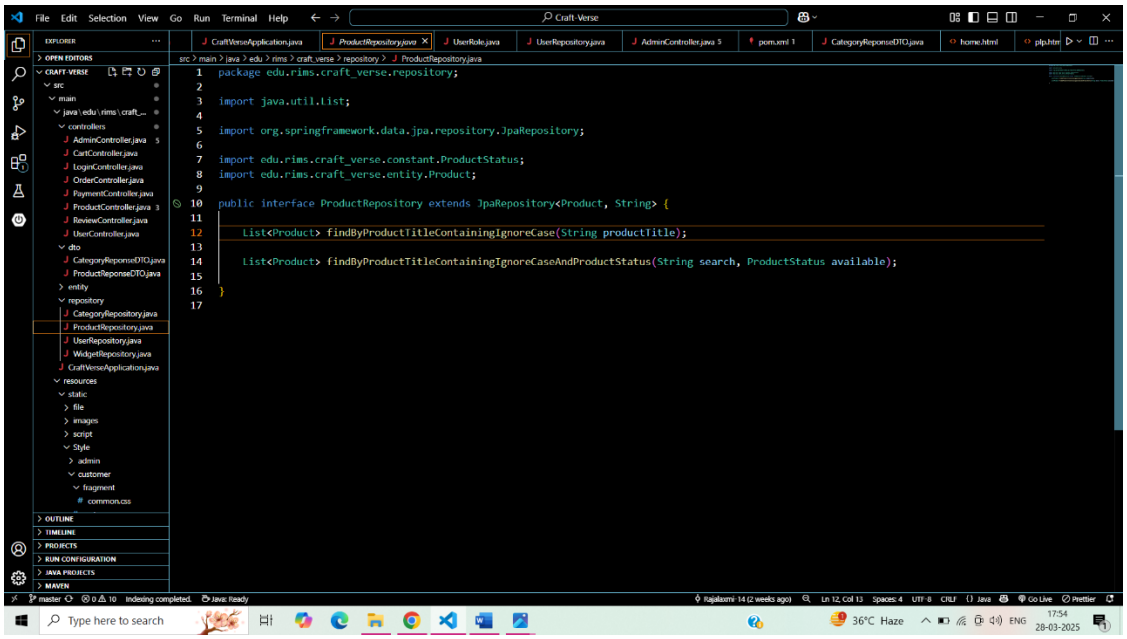


1.Repository

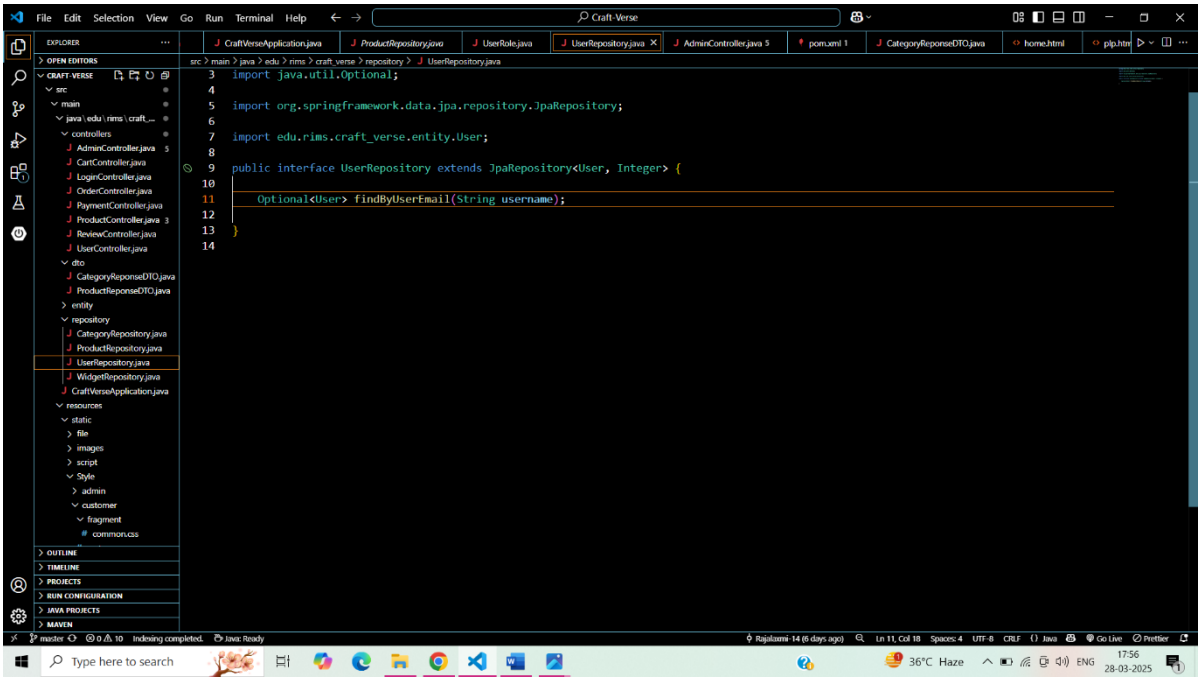
1.1 Category Repository



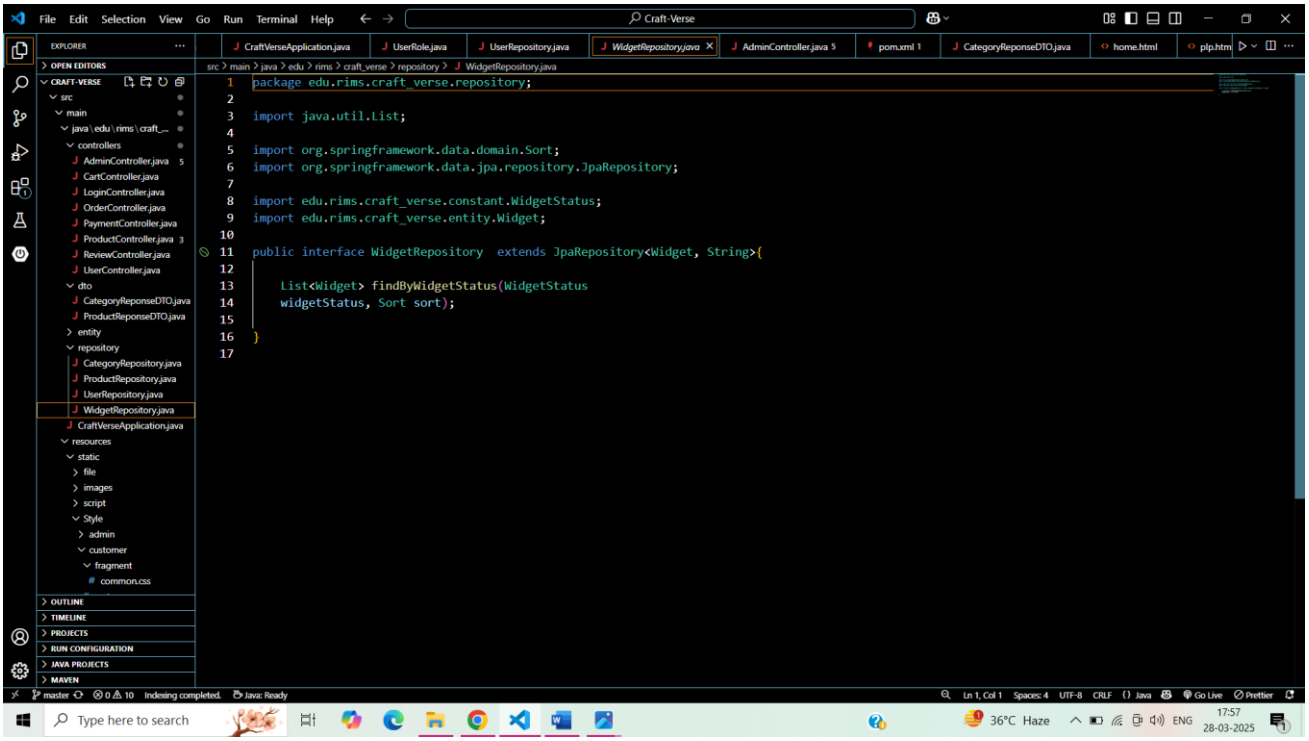
1.2Product Repository



1.3 User Repository



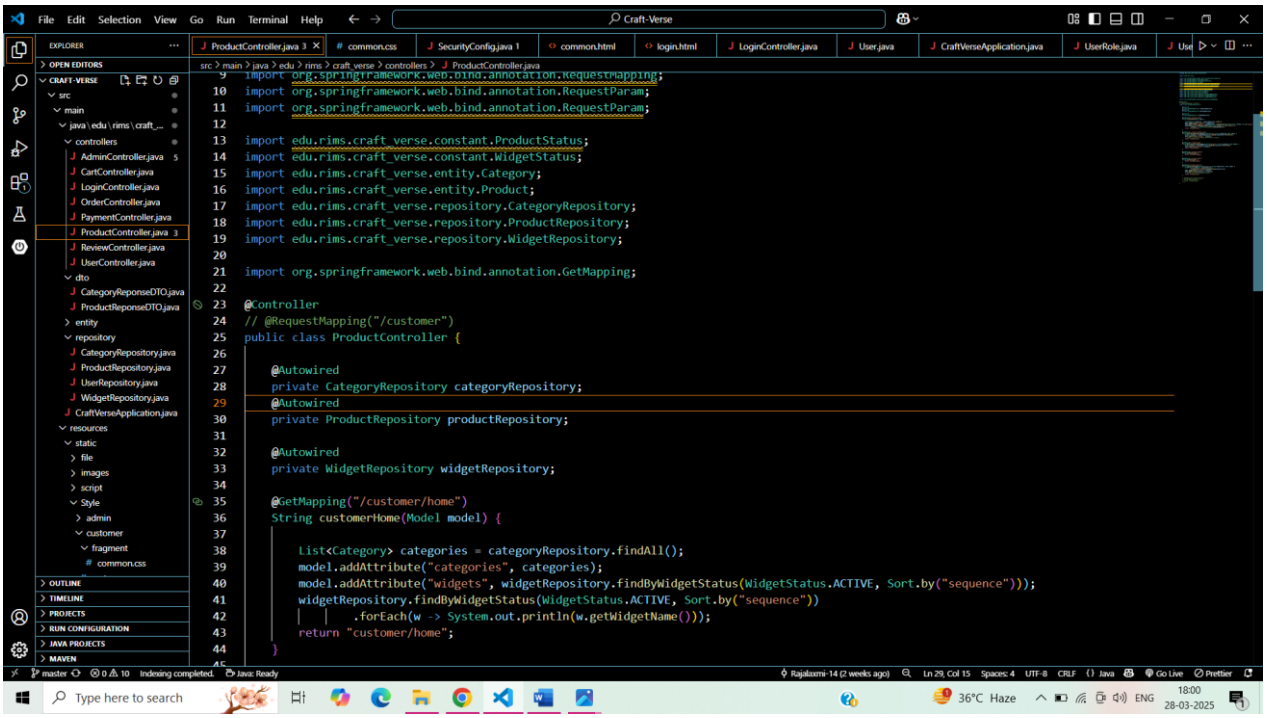
1.4 Widget Repository



```
package edu.rims.craft_verse.repository;

import java.util.List;

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

import edu.rims.craft_verse.constant.WidgetStatus;
import edu.rims.craft_verse.entity.Widget;

public interface WidgetRepository  extends JpaRepository<Widget, String>{

    List<Widget> findByWidgetStatus(WidgetStatus
    widgetStatus, Sort sort);

}
```

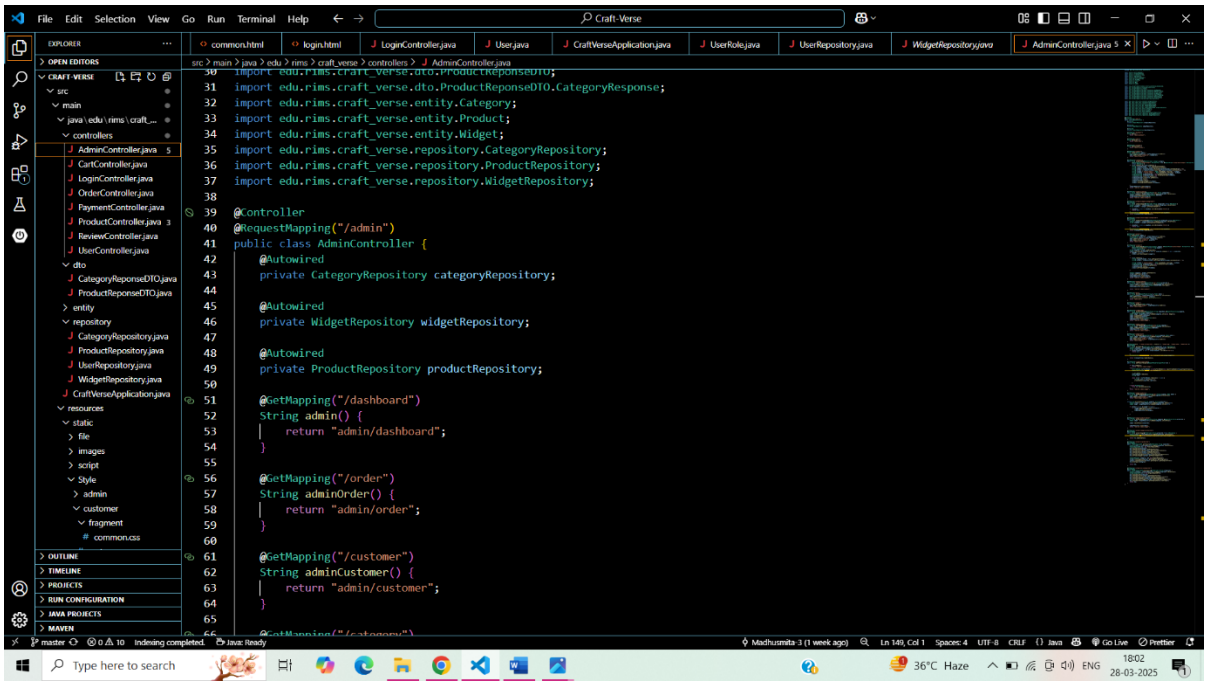
2. Controller

2.1 Product controller



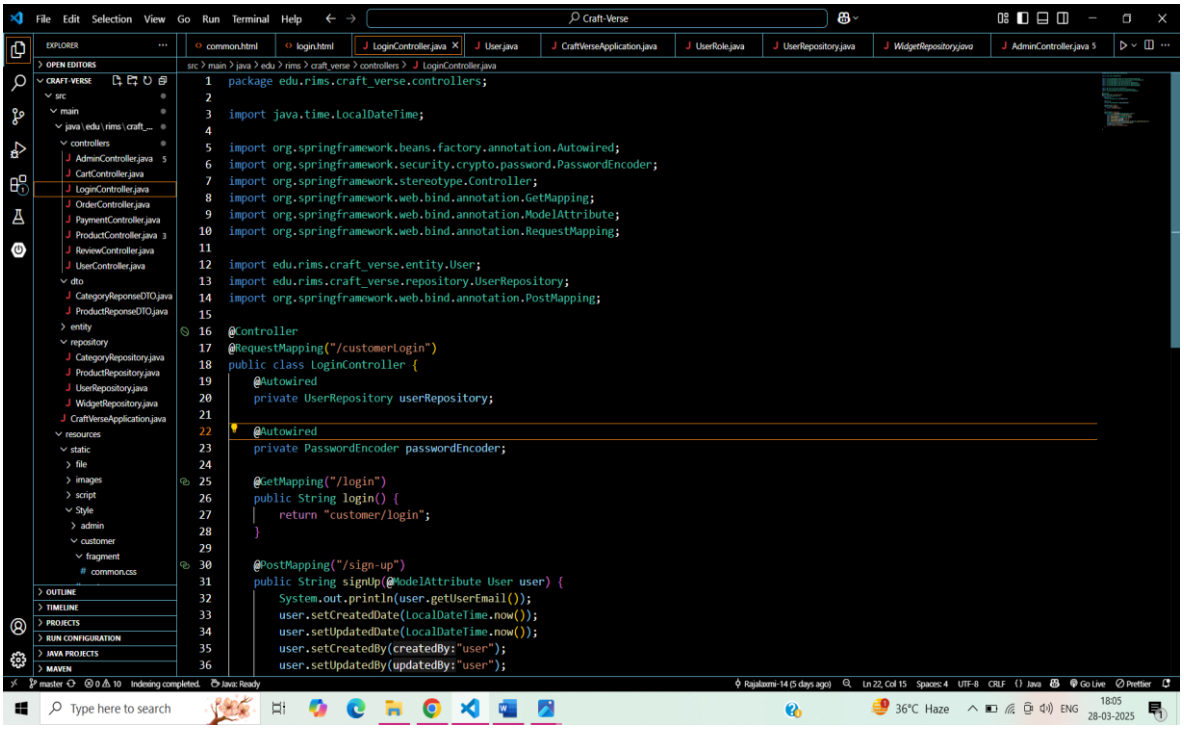
```
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestParam;

import edu.rims.craft_verse.constant.ProductStatus;
import edu.rims.craft_verse.constant.WidgetStatus;
import edu.rims.craft_verse.entity.Category;
import edu.rims.craft_verse.entity.Product;
import edu.rims.craft_verse.repository.CategoryRepository;
import edu.rims.craft_verse.repository.ProductRepository;
import edu.rims.craft_verse.repository.WidgetRepository;

import org.springframework.web.bind.annotation.GetMapping;

@Controller
// @RequestMapping("/customer")
public class ProductController {

    @Autowired
    private CategoryRepository categoryRepository;
    @Autowired
    private ProductRepository productRepository;

    @Autowired
    private WidgetRepository widgetRepository;

    @GetMapping("/customer/home")
    String customerHome(Model model) {

        List<Category> categories = categoryRepository.findAll();
        model.addAttribute("categories", categories);
        model.addAttribute("widgets", widgetRepository.findByWidgetStatus(WidgetStatus.ACTIVE, Sort.by("sequence")));
        widgetRepository.findByWidgetStatus(WidgetStatus.ACTIVE, Sort.by("sequence"))
                .forEach(w -> System.out.println(w.getWidgetName()));
        return "customer/home";
    }
```

2.2 Admin Controller



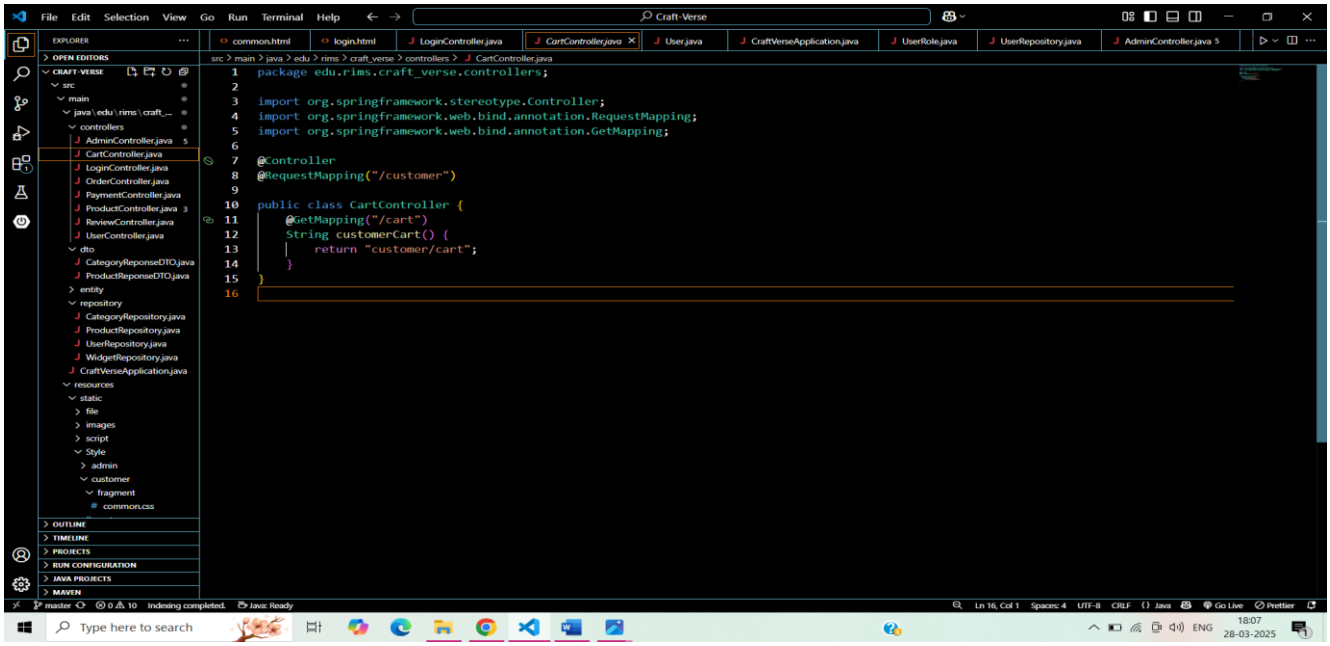
```java
import edu.rims.craft_verse.dto.ProductReponseDTO;
import edu.rims.craft_verse.dto.ProductReponseDTO.CategoryResponse;
import edu.rims.craft_verse.entity.Category;
import edu.rims.craft_verse.entity.Product;
import edu.rims.craft_verse.entity.Widget;
import edu.rims.craft_verse.repository.CategoryRepository;
import edu.rims.craft_verse.repository.ProductRepository;
import edu.rims.craft_verse.repository.WidgetRepository;

@Controller
@RequestMapping("/admin")
public class AdminController {
    @Autowired
    private CategoryRepository categoryRepository;

    @Autowired
    private WidgetRepository widgetRepository;

    @Autowired
    private ProductRepository productRepository;

    @GetMapping("/dashboard")
    String admin() {
        return "admin/dashboard";
    }

    @GetMapping("/order")
    String adminOrder() {
        return "admin/order";
    }

    @GetMapping("/customer")
    String adminCustomer() {
        return "admin/customer";
    }
```

2.3 Login Controller



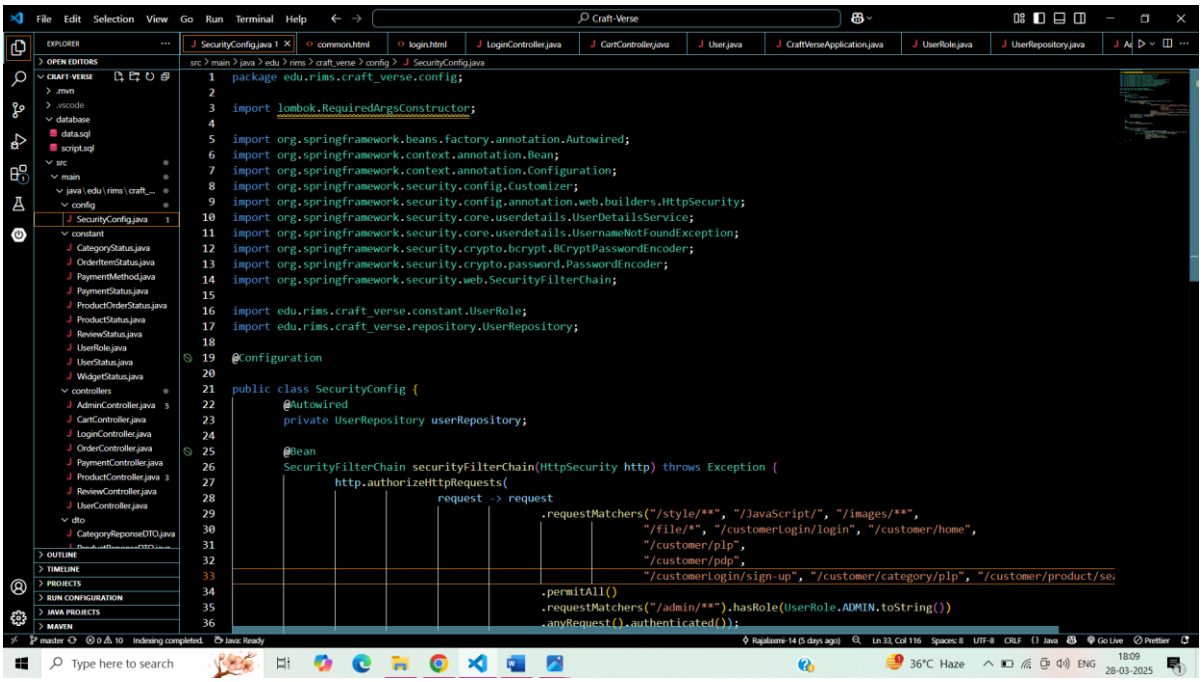
```java
package edu.rims.craft_verse.controllers;

import java.time.LocalDateTime;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.security.crypto.password.PasswordEncoder;
import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.GetMapping;
import org.springframework.web.bind.annotation.ModelAttribute;
import org.springframework.web.bind.annotation.RequestMapping;

import edu.rims.craft_verse.entity.User;
import edu.rims.craft_verse.repository.UserRepository;
import org.springframework.web.bind.annotation.PostMapping;

@Controller
@RequestMapping("/customerLogin")
public class LoginController {
    @Autowired
    private UserRepository userRepository;

    @Autowired
    private PasswordEncoder passwordEncoder;

    @GetMapping("/login")
    public String login() {
        return "customer/login";
    }

    @PostMapping("/sign-up")
    public String signUp(@ModelAttribute User user) {
        System.out.println(user.getUserEmail());
        user.setCreatedDate(LocalDateTime.now());
        user.setUpdatedDate(LocalDateTime.now());
        user.setCreatedBy("user");
        user.setUpdatedBy("user");
```

2.4 Cart Controller



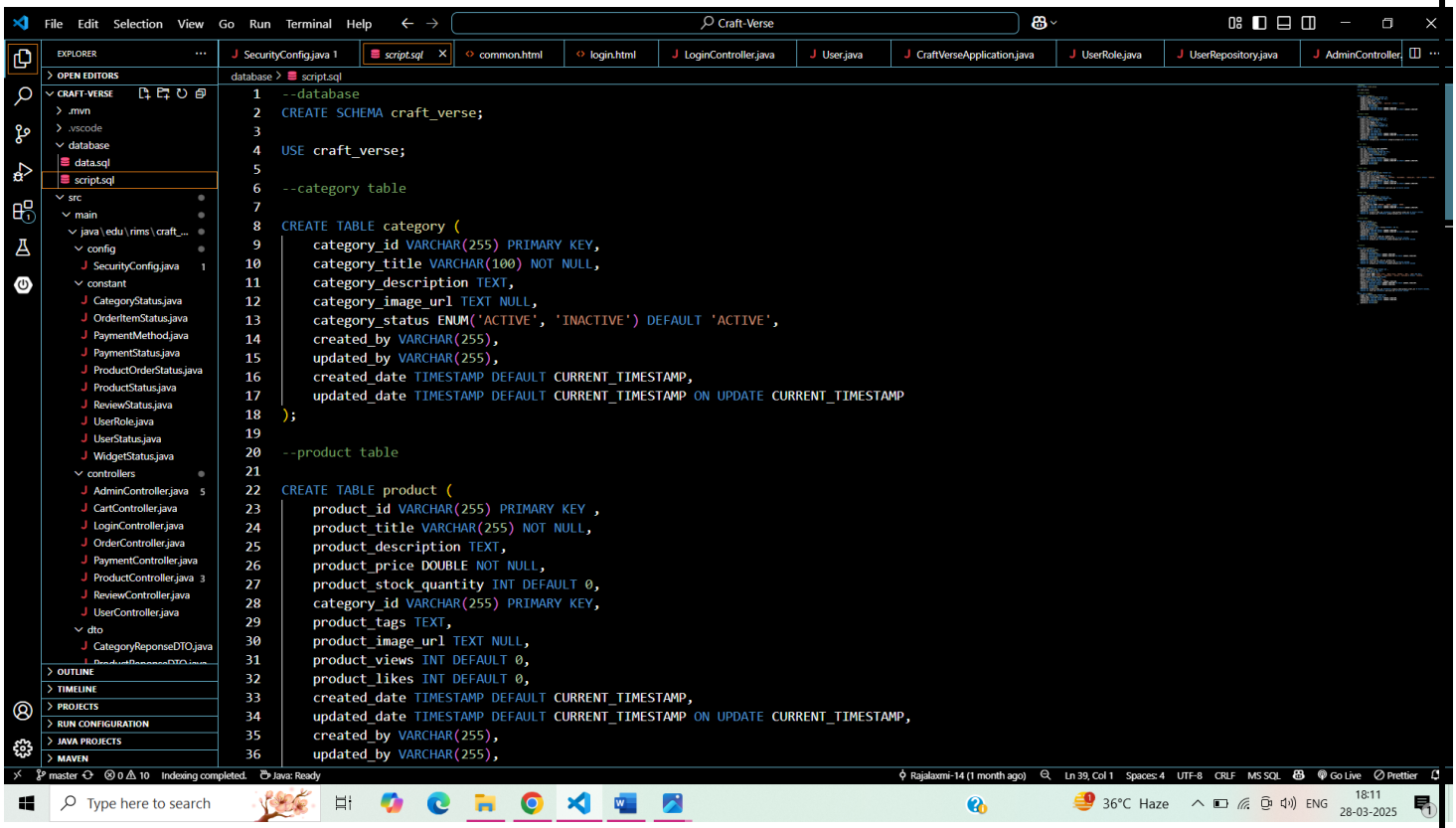
```java
package edu.rims.craft_verse.controllers;

import org.springframework.stereotype.Controller;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.GetMapping;

@Controller
@RequestMapping("/customer")

public class CartController {
    @GetMapping("/cart")
    String customerCart() {
        return "customer/cart";
    }
}
```

4. Spring Security



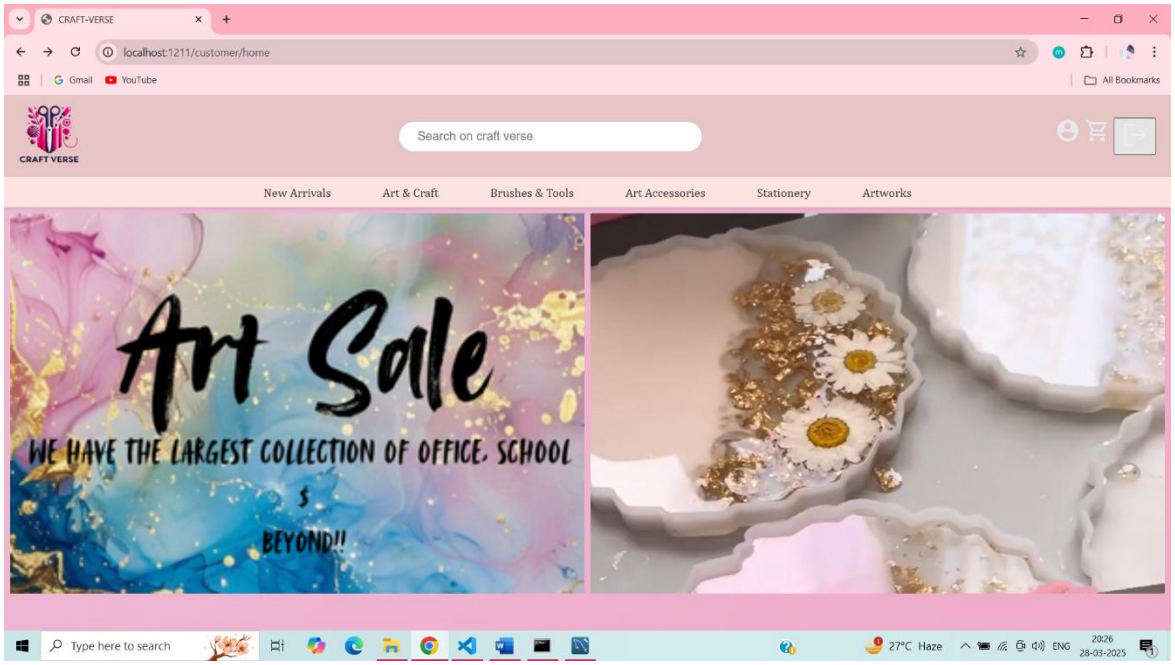
```java
package edu.rims.craft_verse.config;

import lombok.RequiredArgsConstructor;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.context.annotation.Bean;
import org.springframework.context.annotation.Configuration;
import org.springframework.security.config.Customizer;
import org.springframework.security.config.annotation.web.builders.HttpSecurity;
import org.springframework.security.core.userdetails.UserDetailsService;
import org.springframework.security.core.userdetails.UsernameNotFoundException;
import org.springframework.security.crypto.bcrypt.BCryptPasswordEncoder;
import org.springframework.security.crypto.password.PasswordEncoder;
import org.springframework.security.web.SecurityFilterChain;

import edu.rims.craft_verse.constant.UserRole;
import edu.rims.craft_verse.repository.UserRepository;

@Configuration

public class SecurityConfig {
        @Autowired
        private UserRepository userRepository;

        @Bean
        SecurityFilterChain securityFilterChain(HttpSecurity http) throws Exception {
                http.authorizeHttpRequests(
                                request -> request
                                                .requestMatchers("/style/**", "/JavaScript/", "/images/**",
                                                                "/file/*", "/customerLogin/login", "/customer/home",
                                                                "/customer/plp",
                                                                "/customer/pdp",
                                                                "/customerLogin/sign-up", "/customer/category/plp", "/customer/product/se
                                                .permitAll()
                                                .requestMatchers("/admin/**").hasRole(UserRole.ADMIN.toString())
                                                .anyRequest().authenticated());
```

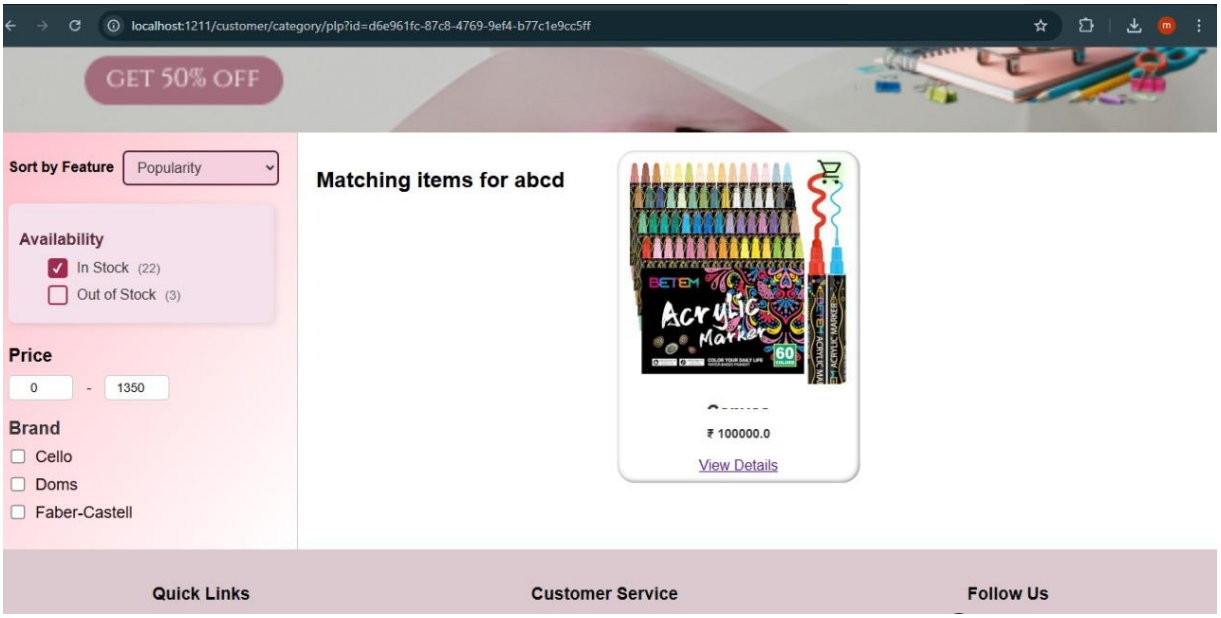
4.Database

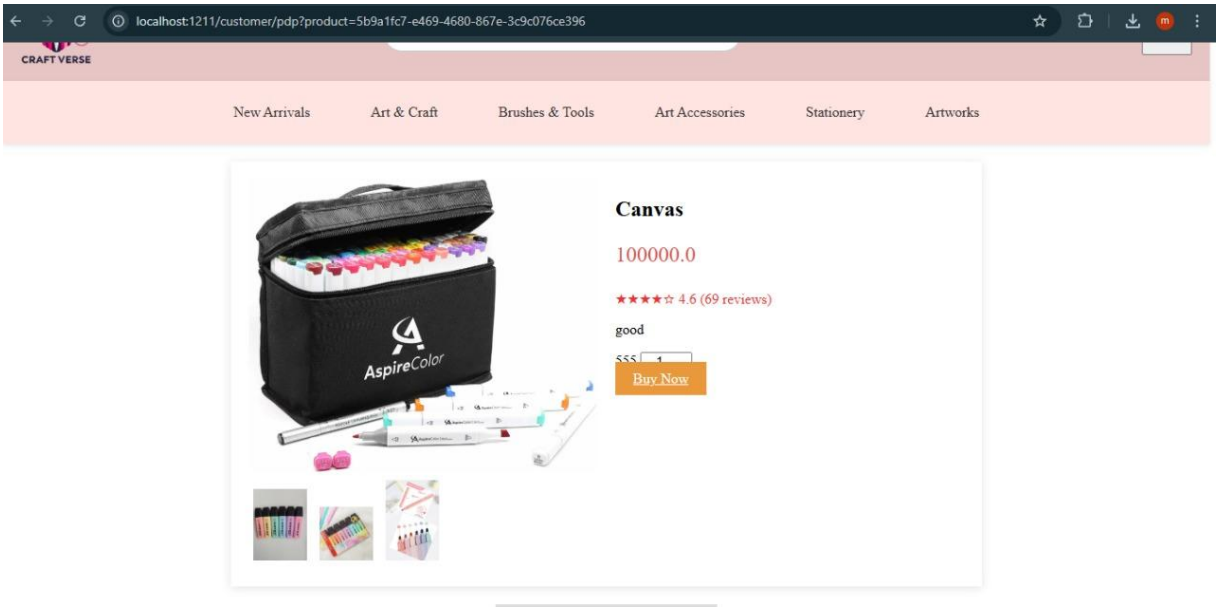

File Edit Selection View Go Run Terminal Help
Craft-Verse
EXPLORER
OPEN EDITORS
CRAFT-VERSE
.mvn
.vscode
database
data.sql
script.sql
src
main
java \ edu \ rims \ craft_...
config
SecurityConfig.java
constant
CategoryStatus.java
OrderItemStatus.java
PaymentMethod.java
PaymentStatus.java
ProductOrderStatus.java
ProductStatus.java
ReviewStatus.java
UserRole.java
UserStatus.java
WidgetStatus.java
controllers
AdminController.java
CartController.java
LoginController.java
OrderController.java
PaymentController.java
ProductController.java
ReviewController.java
UserController.java
dto
CategoryReponseDTO.java
OUTLINE
TIMELINE
PROJECTS
RUN CONFIGURATION
JAVA PROJECTS
MAVEN
SecurityConfig.java 1
script.sql
common.html
login.html
LoginController.java
User.java
CraftVerseApplication.java
UserRole.java
UserRepository.java
AdminController.
database > script.sql
1 --database
2 CREATE SCHEMA craft_verse;
3
4 USE craft_verse;
5
6 --category table
7
8 CREATE TABLE category (
9 category_id VARCHAR(255) PRIMARY KEY,
10 category_title VARCHAR(100) NOT NULL,
11 category_description TEXT,
12 category_image_url TEXT NULL,
13 category_status ENUM('ACTIVE', 'INACTIVE') DEFAULT 'ACTIVE',
14 created_by VARCHAR(255),
15 updated_by VARCHAR(255),
16 created_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
17 updated_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP
18);
19
20 --product table
21
22 CREATE TABLE product (
23 product_id VARCHAR(255) PRIMARY KEY ,
24 product_title VARCHAR(255) NOT NULL,
25 product_description TEXT,
26 product_price DOUBLE NOT NULL,
27 product_stock_quantity INT DEFAULT 0,
28 category_id VARCHAR(255) PRIMARY KEY,
29 product_tags TEXT,
30 product_image_url TEXT NULL,
31 product_views INT DEFAULT 0,
32 product_likes INT DEFAULT 0,
33 created_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
34 updated_date TIMESTAMP DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,
35 created_by VARCHAR(255),
36 updated_by VARCHAR(255),
master Indexing completed. Java: Ready
Rajalaxmi-14 (1 month ago) Ln 39, Col 1 Spaces: 4 UTF-8 CRLF MS SQL Go Live Prettier
Type here to search
36°C Haze
ENG
18:11
28-03-2025

Snapshot

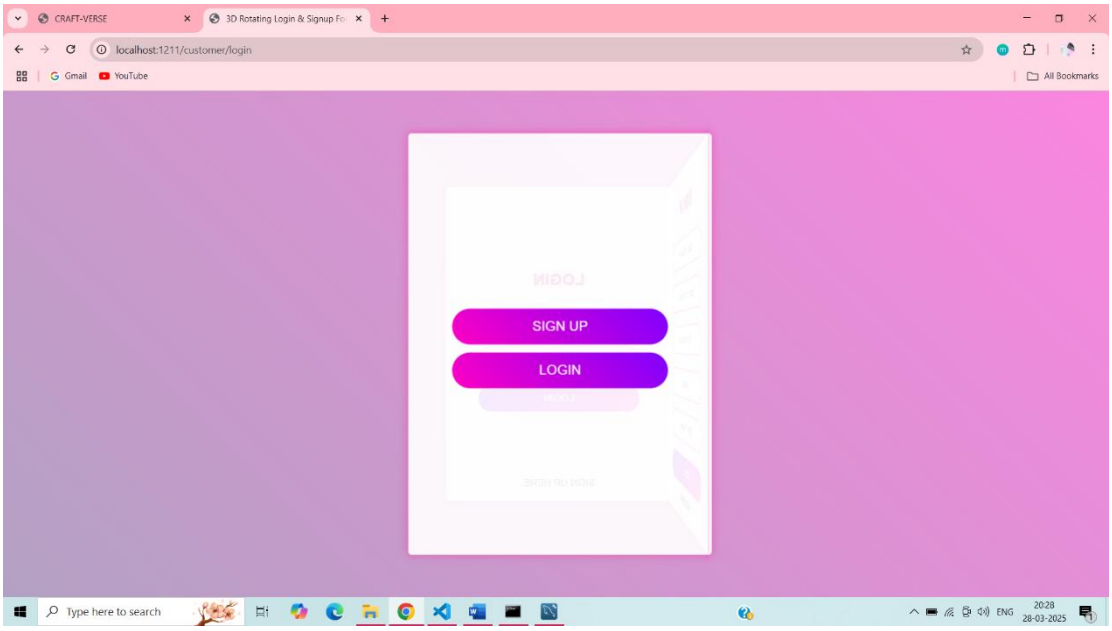
Homepage

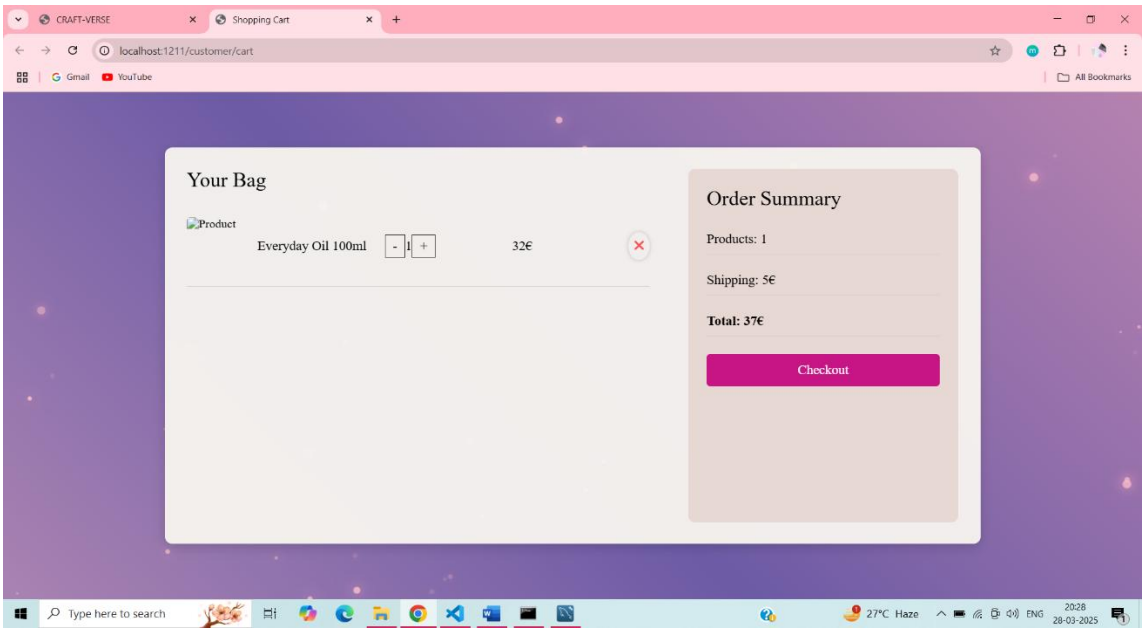






LOGIN/SIGN-IN PAGE




CRAFT-VERSE
Shopping Cart
localhost:1211/customer/cart
Gmail
YouTube
All Bookmarks
Your Bag
Product
Everyday Oil 100ml
-
1
+
32€
Order Summary
Products: 1
Shipping: 5€
Total: 37€
Checkout
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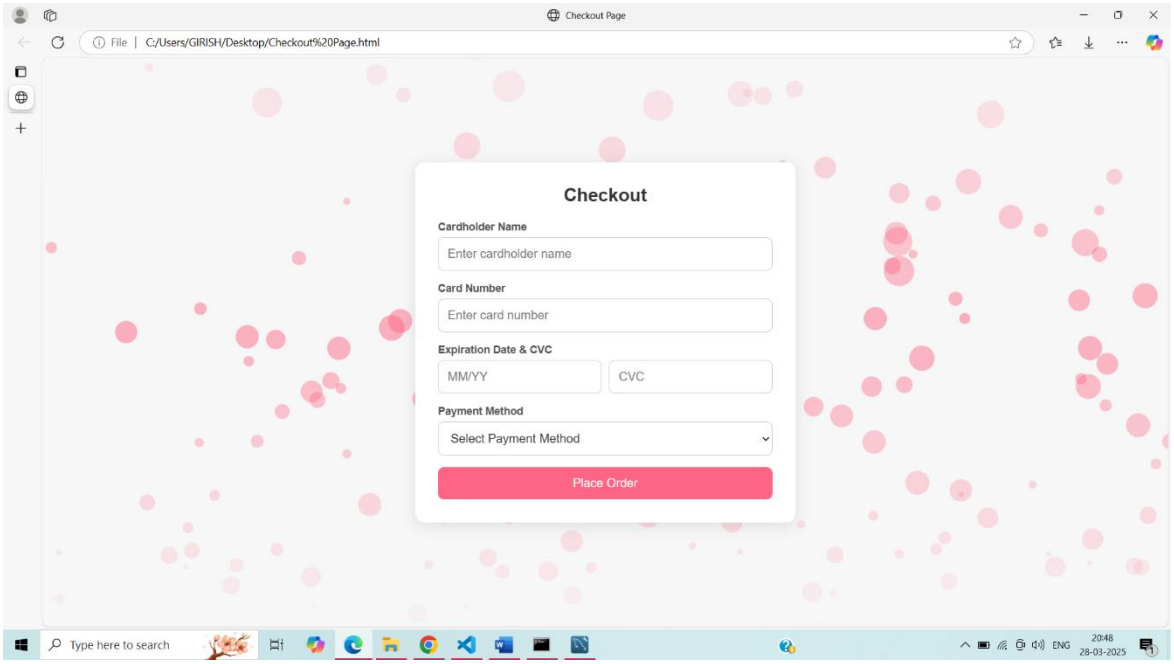
Checkout Page
File | C:/Users/GIRISH/Desktop/Checkout%20Page.html
Checkout
Cardholder Name
Enter cardholder name
Card Number
Enter card number
Expiration Date & CVC
MM/YY
CVC
Payment Method
Select Payment Method
Place Order
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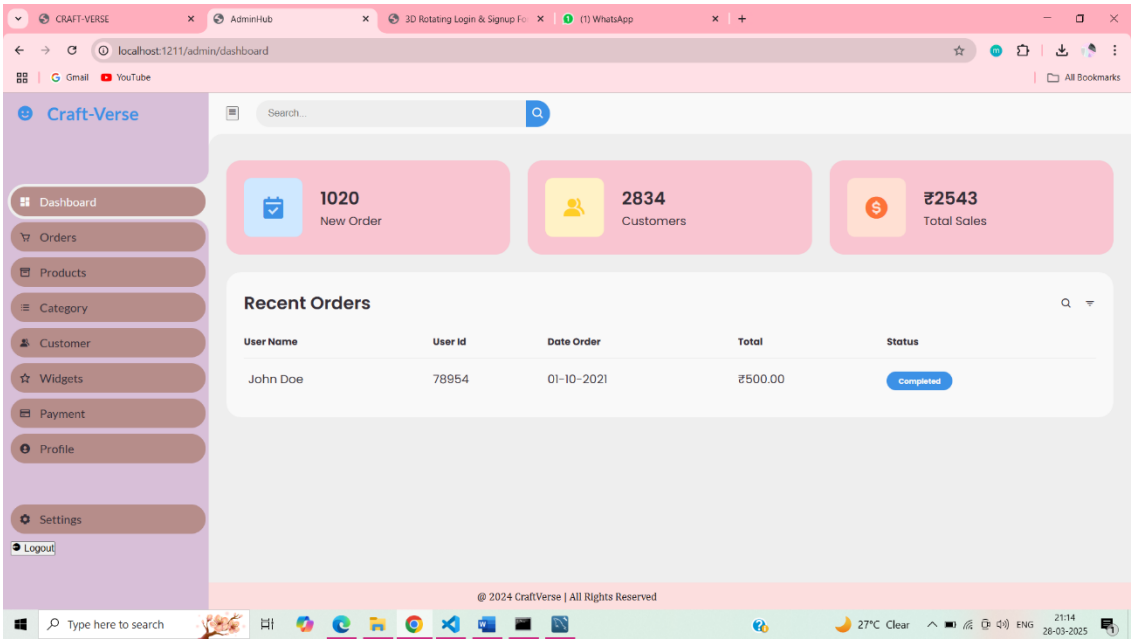
28-03-2025


CRAFT-VERSE
AdminHub
3D Rotating Login & Signup Fo
(1) WhatsApp
localhost:1211/admin/dashboard
Gmail
YouTube
All Bookmarks
Craft-Verse
Search...
Dashboard
Orders
Products
Category
Customer
Widgets
Payment
Profile
Settings
Logout
1020
New Order
2834
Customers
₹2543
Total Sales
Recent Orders
User Name
User Id
Date Order
Total
Status
John Doe
78954
01-10-2021
₹500.00
Completed
@ 2024 CraftVerse | All Rights Reserved
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ENG
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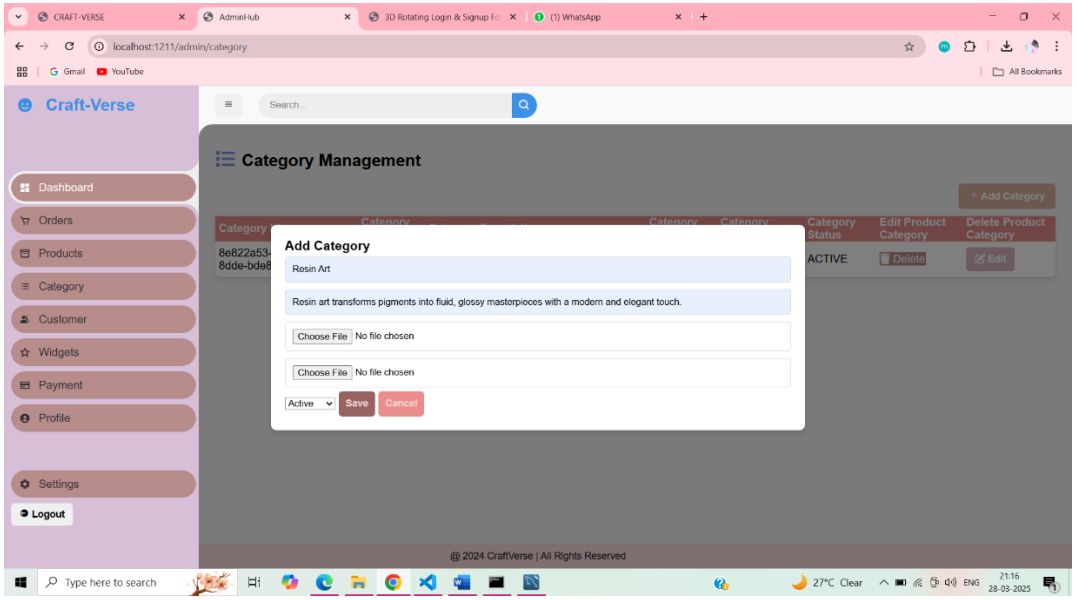
28-03-2025


CRAFT-VERSE
AdminHub
3D Rotating Login & Signup Fo
(1) WhatsApp
localhost:1211/admin/category
Gmail
YouTube
All Bookmarks
Craft-Verse
Search...
Dashboard
Orders
Products
Category
Customer
Widgets
Payment
Profile
Settings
Logout
Category Management
+ Add Category
Category
Category Status
Edit Product Category
Delete Product Category
ACTIVE
Delete
Edit
Add Category
Resin Art
Resin art transforms pigments into fluid, glossy masterpieces with a modern and elegant touch.
Choose File No file chosen
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Save
Cancel
@ 2024 CraftVerse | All Rights Reserved
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CHAPTER-10

Testing

Testing

Testing is a critical phase in the **Craft Verse** development process, ensuring that the **e-commerce platform functions smoothly, remains secure, and provides a seamless user experience**. The platform must be tested for **usability, security, performance, and compatibility** to meet the expectations of **customers, vendors, and administrators**.

This document outlines the **types of testing implemented in Craft Verse**, covering **functional, non-functional, and security aspects**.

2. Testing Phases Implemented for Craft Verse

2.1 Functional Testing (Ensuring Core Features Work Properly)

Key Areas Tested :-

User Registration & Login – Ensures customers and vendors can securely register and log in.
Product Listing & Search – Tests if vendors can upload products and if customers can search/filter items correctly.
Shopping Cart & Checkout – Verifies adding/removing items, updating quantities, and placing orders.
Payment Processing – Ensures transactions via Razorpay, PayPal, or Stripe are processed securely.
Order Tracking & Notifications – Tests order status updates, vendor processing, and delivery tracking.
Review & Rating System – Validates user feedback and spam protection measures.

2.2 Usability Testing (Ensuring a User-Friendly Experience)

This testing focuses on how **intuitive and accessible** the website is for customers and vendors.

Key Areas Tested:

UI/UX Responsiveness – Checks navigation, ease of use, and page load speed.
Customer Journey Testing – Simulates a typical user's interaction with the platform (browsing, adding items to the cart, purchasing, and tracking orders).

2.3 Compatibility Testing (Cross-Browser & Device Testing)

Ensures the website works correctly across **different browsers and operating systems**.

Key Areas Tested:

✅ **Multi-Browser Support** – Chrome, Firefox, Safari, Edge.
✅ **Device Compatibility** – Windows, macOS, iOS, and Android.
✅ **Responsive Design Testing** – Ensures images, buttons, and text scale correctly on different screens.

🔹 **Tools Used: CrossBrowserTesting, BrowserStack**

📌 2.4 Performance Testing (Ensuring Speed & Scalability)

This testing ensures **Craft Verse can handle high traffic and large product listings** without slowing down.

Key Areas Tested:

✅ **Load Testing** – Tests how the platform performs with multiple concurrent users.
✅ **Database Optimization** – Ensures MySQL queries are optimized for fast transactions.

2.5 Security Testing (Protecting User Data & Transactions)

Security testing ensures that **customer and vendor data is protected**, and the payment system is secure from fraud.

Key Areas Tested:

User Authentication & Role-Based Access Control – Ensures only authorized users can access sensitive information.
Data Encryption – Validates that user passwords and payment details are encrypted.
SQL Injection & XSS Protection – Tests for vulnerabilities against hacking attacks.
Secure Payment Processing – Ensures third-party payment integration follows PCI-DSS compliance.

2.6 Database Testing (Ensuring Data Integrity & Efficiency)

Database testing ensures **data consistency, retrieval speed, and error handling**.

Key Areas Tested:

Data Consistency – Ensures product stock updates correctly after purchases.
Backup & Recovery – Tests data restoration in case of system failures.
Query Performance – Ensures fast response times for product searches and transactions.

2.7 Payment Gateway Testing (Ensuring Secure Transactions)

Since Craft Verse integrates **multiple payment gateways**, this testing ensures **error-free transactions**.

Key Areas Tested:

✅ **Successful Transactions** – Ensures payments go through correctly.
Failed Payment Handling – Checks how the system reacts to declined transactions.
✅ **Refund & Cancellation Process** – Verifies refund requests are processed correctly.

- **Tools Used: Razorpay, PayPal, Stripe Sandbox Testing**

CHAPTER-11

Conclusion and Future Scope

1. Conclusion

The **Craft Verse** platform has been successfully developed as an **e-commerce solution** catering to artisans and craft vendors, providing them with a **user-friendly, scalable, and secure online marketplace**. The project effectively meets its objective of enabling customers to explore and purchase unique handmade products while ensuring vendors have a streamlined process for listing and managing their crafts.

Through the implementation of **Spring Boot for backend development, React.js for frontend UI, and MySQL for database management**, the platform ensures:

- **Seamless user experience** with an intuitive and interactive interface.
- **Robust security** through role-based access control and secure payment gateways.
- **Scalability and performance optimization** using cloud-based deployment.
- **Efficient order processing** and real-time order tracking for customers.
- **Vendor management system** allowing artisans to list and sell products effortlessly.

Additionally, **comprehensive testing strategies** including **functional, usability, performance, and security testing** have ensured the platform is **reliable, bug-free, and optimized for smooth operations**.

In conclusion, **Craft Verse successfully bridges the gap between artisans and craft buyers, creating a sustainable marketplace that promotes traditional and contemporary handmade crafts**.

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2. Future Scope

As technology and customer expectations evolve, Craft Verse has immense potential for **future enhancements** to expand its functionalities, improve performance, and grow into a globally recognized craft-selling platform.

2.1 Feature Enhancements

- **AI-Powered Craft Recommendations** – Implementing **machine learning algorithms** to provide personalized product recommendations based on user preferences.
- **Augmented Reality (AR) Product Visualization** – Allowing customers to **preview craft items in their home environment** before making a purchase.
- **Live Bidding System for Exclusive Handmade Products** – Introducing an **auction-style selling model** where users can place bids on unique craft items.
- **Social Media Integration** – Enabling direct sales via **Facebook, Instagram, and Pinterest** to increase vendor reach and sales.

2.2 Performance & Scalability Improvements

- **Adoption of Microservices Architecture** – Transitioning from a monolithic system to **microservices** to enhance **scalability and flexibility**.
- **Serverless Computing for Cost Optimization** – Utilizing **AWS Lambda, Google Cloud Functions** to optimize **cost and performance**.
- **Implementation of Caching Mechanisms** – Using **Redis/Memcached** for **faster product retrieval and improved search performance**.

CHAPTER-12

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