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Bharati Vidyapeeth (Deemed to be University),
Centre for Distance and Online Education, Pune
School of Online Education

Project Report
On
"ShopEasy"

Submitted in Partial Fulfilment of the Requirements for the Award of Degree of
Master of Computer Applications (Online Mode)
2023-2024

Submitted by
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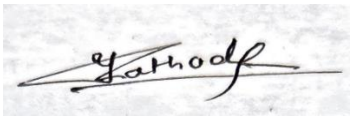
PRN No - 2445101593

Guided by
Dr. Pratima Gund

Declaration

The project report entitled **ShopEasy** Submitted to Bharati Vidyapeeth (Deemed to be University), Centre for Distance and Online Education, School of Online Education Pune in partial fulfilment of the requirement for the award of the degree of MCA (Online Mode) is an original work carried out under the guidance of **Dr. Pratima Gund.** The matter embodied in this project is a genuine work done by me to the best of my knowledge and belief and has not been submitted before, neither to this University nor to any other University for the fulfilment of the requirement of any course of study.



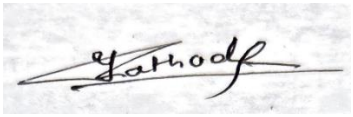
Miss. Yogita Chinnarathod
PRN No. 2445101593

Acknowledgement

Apart from my efforts, the success of my project depends largely on the encouragement and guideline of many others. I take this opportunity to express my gratitude to the people who have been instrumental in the successful completion of this project.

I am gratefully indebted to our esteemed guide **Dr. Pratima Gund** for his sincere guidance and priceless support which would have been impossible for us to complete this project.

Finally, I thank Centre for Distance and Online Education, Pune (CDOE) School of Online Education (SOE) for giving me this golden opportunity to do my minor project.



Miss. Yogita Chinnarathod
PRN No. 2445101593

CHAPTER 1 : INTRODUCTION

1.1. Introduction about Project

ShopEasy is a comprehensive e-commerce web application built using Java Spring Boot framework that enables users to browse products, add items to cart, place orders, and manage their account profiles. The application also provides administrative capabilities for managing products, categories, and monitoring order statuses.

1.2. Need of Computerization of System

Traditional retail systems face numerous challenges in today's digital economy :

-Limited market reach constrained by physical store locations

- Inefficient inventory management leading to stockouts or overstocking

- Manual order processing causing delays and errors

- Lack of data-driven insights for business decisions

- Inability to provide personalized shopping experiences

1.3. Proposed Software.

ShopEasy aims to accomplish: -

Create an intuitive platform for customers to browse and purchase products online

- Implement secure user authentication and authorization systems

- Provide comprehensive product management for administrators

- Enable efficient order processing and tracking

- Offer insight analytics for business decision-making

- Ensure seamless cart functionality and checkout process

- Support multiple product categories with hierarchical organization

1.4. Importance of the Work

The ShopEasy application delivers significant value by:

- Expanding business reach beyond geographical limitations
- Reducing operational costs associated with physical retail
- Improving inventory management through real
-time tracking
- Enhancing customer satisfaction through streamlined shopping experiences
- Providing valuable data insights for strategic business decisions
- Enabling 24/7 availability for shopping without staffing constraints

CHAPTER 2 : SYSTEM ANALYSIS

2.1. Feasibility Study of s/w includes its types

VSCode :

Visual Studio Code (VS Code) is a free, open-source code editor developed by Microsoft. Due to its lightweight, quick, and highly configurable design, developers for a wide range of programming languages and frameworks find it to be rather popular. Here are some essential details regarding VS Code:

1. Cross-Platform: VS Code ensures a uniform development experience across several operating systems and is available for Windows, macOS, and Linux.
2. Features: It provides a wide range of features, such as support for extensions, syntax highlighting, code completion, code refactoring, linting, debugging, and version control integration (Git). These functions improve output and simplify the development process.
3. Extensions: The community has created a wide range of extensions for Visual Studio Code that increase the program's capability for particular languages, frameworks, and tools. Popular programming languages including JavaScript, Python, and Java as well as frameworks like Angular, React, and Vue.js have extensions available.
4. Customization: With VS Code's wide range of customization options, developers may tailor their editor to their own tastes. To fit the editor to your workflow, you can install extensions, change the keyboard shortcuts, themes, and settings.

Eclipse :

A **feasibility study** is conducted to evaluate whether the proposed eCommerce shopping website can be successfully developed and deployed using the Eclipse IDE. It involves analyzing technical, economic, operational, and schedule-related factors.

1. **Technical Feasibility**

- The project utilizes established technologies like Spring Boot, MySQL, and modern web standards

- Development team possesses the necessary expertise in Java and related frameworks

- Required infrastructure for hosting and deployment is readily available

2. Economic Feasibility

- Initial development costs are justified by long-term operational savings

- ROI is expected within the first year of implementation

- Reduced need for physical retail space offsets digital infrastructure costs

3. Operational Feasibility

- Streamlined user interfaces ensure ease of adoption for both customers and administrators

- Training requirements for staff are minimal due to intuitive design

- The system integrates smoothly with existing business processes

4. Schedule Feasibility

2.2. Analysis Methodology

The ShopEasy project employs multiple analysis methodologies:

Objectives of Analysis Modelling:

- Used to model the system using object-oriented concepts (classes, inheritance, etc.)

- Identities key entities such as Products, Users, Orders, and their relationship

Structured Analysis:

- Employed for process modeling using Data Flow Diagrams

- Helps visualize data movement between system components

Agile Methodology:

- Iterative development approach with regular stakeholder feedback

- User stories drive feature development prioritization,

2.3. Choice of Platforms s/w & h/w

2.3.1. Software used

Front-end : HTML, CSS, Javascript

Back-end : Java

Database : MySql

2.3.2. Hardware used

Processor : Modern multi-core processor

Memory (RAM) : At least 4 GB

Storage : Solid-state drive (SSD) preferred

CHAPTER 3 : SYSTEM DESIGN

3.1. Design methodology

While design methodology is employed in many industries, it is commonly applied in technology fields, including web application development and information systems. Several design methodology approaches are used in this project:

- MVC (Model-View-Controller) :

The application follows the MVC pattern where models (Beans) represent data, views (JSP pages) handle presentation, and controllers (Servlets) manage the flow of the application.

- Object-Oriented Design :

The application is designed using object-oriented principles, with classes representing real-world entities (Users, Products, Orders, etc.) and their relationships.

- Component-Based Design :

The application is built using reusable components that can be developed, tested, and maintained independently.

3.2. Database Design

1. tblproduct

Column Header	Data Type
Pid	Varchar(45)
Pname	Varchar (100)
Ptype	Varchar (20)
Pinfo	Varchar (350)
Pprice	Varchar (12,2)
Pquantity	Int
Pquantity	Longblob

2. tbluser

Column Header	Data Type
Email	Varchar(60)
Name	Varchar(30)
MobileNumber	Char(10)
Address	Varchar(70)
Pincode	Int
Password	Varchar(20)

3. tblorders

Column Header	Data Type
Orderid	Varchar(45)
Prodid	Varchar(40)
Quantity	Varchar(50)
Amount	Decimal(10,2)
Shipped	Int(11)

4.tbltransactions

Column Header	Data Type
Transid	Varchar(40)
Username	Varchar(30)
Time	Int(3)
Amount	Decimal(10,2)

5.tblusercart

Column Header	Data Type
Username	Varchar(60)
Prodid	Varchar(40)
Quantity	Int(45)

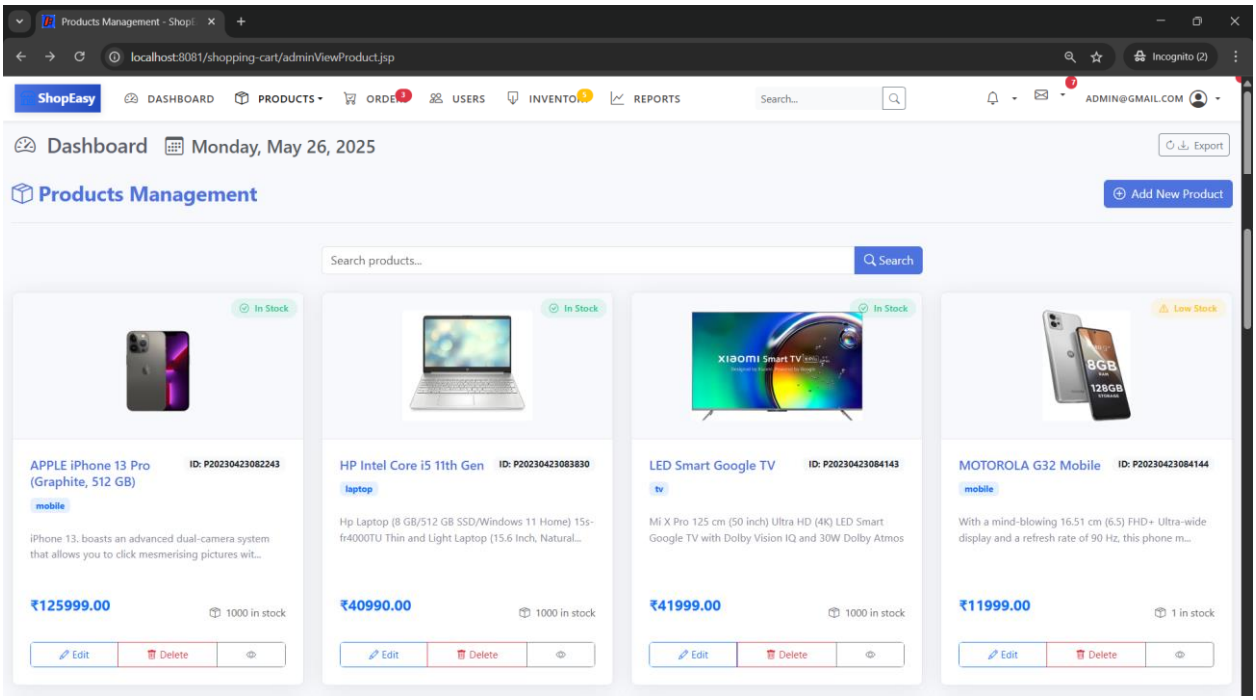
6.tbluser_demand

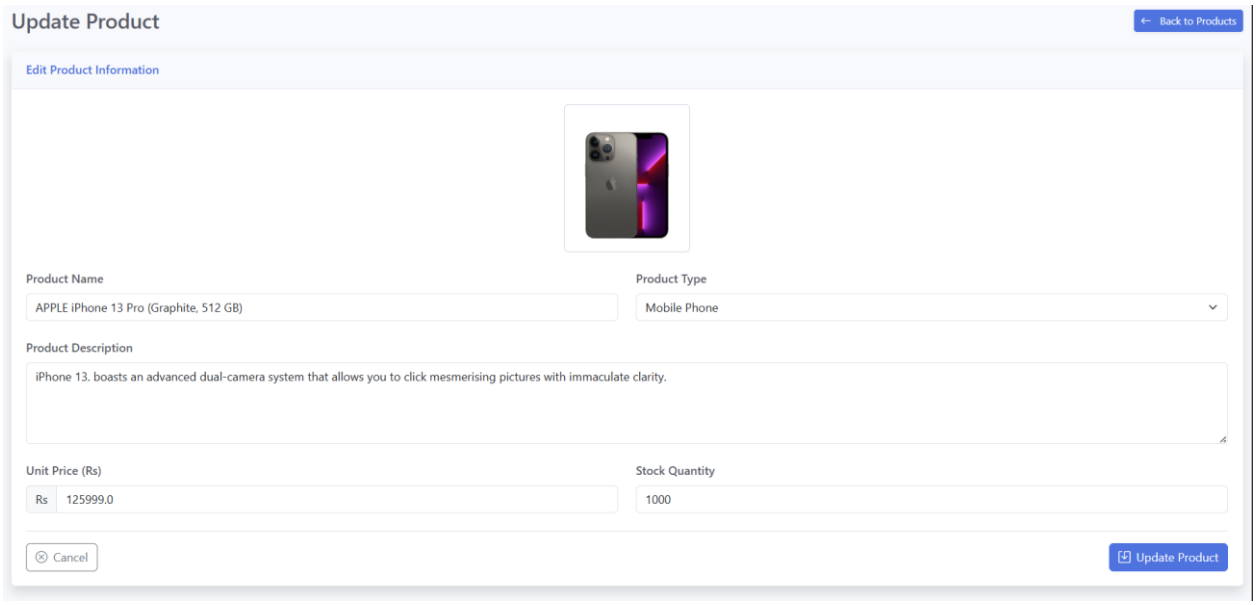
Column Header	Data Type
prodid	Varchar(40)
Username	Varchar(30)
Quantity	Int(3)

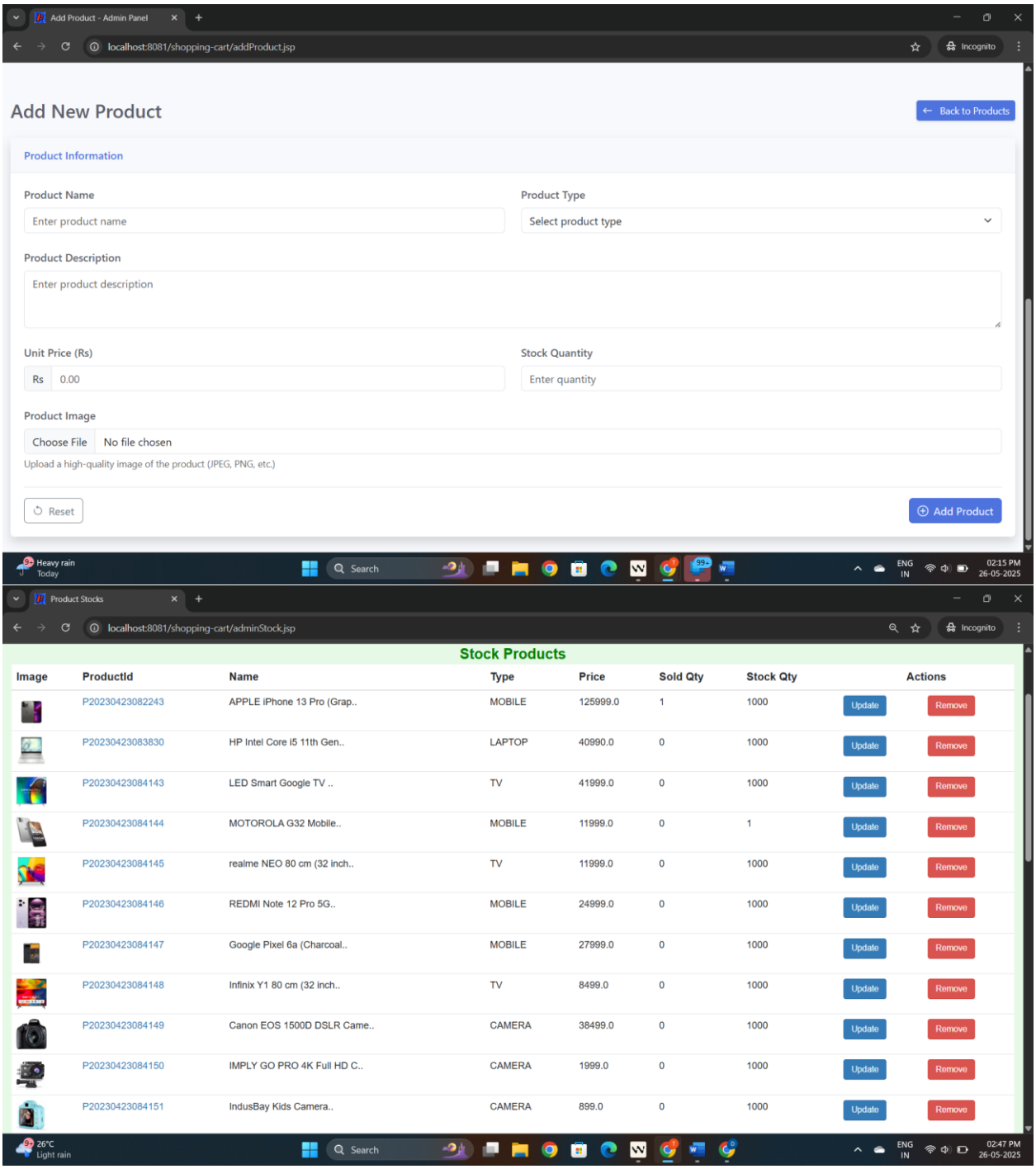
3.3. Screen Design

Admin Pages

adminViewProduct.jsp






Add Product - Admin Panel
localhost:8081/shopping-cart/addProduct.jsp
Incognito
Add New Product
Back to Products
Product Information
Product Name
Enter product name
Product Type
Select product type
Product Description
Enter product description
Unit Price (Rs)
Rs 0.00
Stock Quantity
Enter quantity
Product Image
Choose File
No file chosen
Upload a high-quality image of the product (JPEG, PNG, etc.)
Reset
Add Product
Heavy rain
Today
Search
ENG
IN
02:15 PM
26-05-2025
Product Stocks
localhost:8081/shopping-cart/adminStock.jsp
Incognito
Stock Products
Image
ProductId
Name
Type
Price
Sold Qty
Stock Qty
Actions
P20230423082243
APPLE iPhone 13 Pro (Grap..
MOBILE
125999.0
1
1000
Update
Remove
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HP Intel Core i5 11th Gen..
LAPTOP
40990.0
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1000
Update
Remove
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LED Smart Google TV ..
TV
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1000
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P20230423084144
MOTOROLA G32 Mobile..
MOBILE
11999.0
0
1
Update
Remove
P20230423084145
realme NEO 80 cm (32 inch..
TV
11999.0
0
1000
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Remove
P20230423084146
REDMI Note 12 Pro 5G..
MOBILE
24999.0
0
1000
Update
Remove
P20230423084147
Google Pixel 6a (Charcoal..
MOBILE
27999.0
0
1000
Update
Remove
P20230423084148
Infinix Y1 80 cm (32 inch..
TV
8499.0
0
1000
Update
Remove
P20230423084149
Canon EOS 1500D DSLR Came..
CAMERA
38499.0
0
1000
Update
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IMPLY GO PRO 4K Full HD C..
CAMERA
1999.0
0
1000
Update
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P20230423084151
IndusBay Kids Camera..
CAMERA
899.0
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Remove
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Light rain
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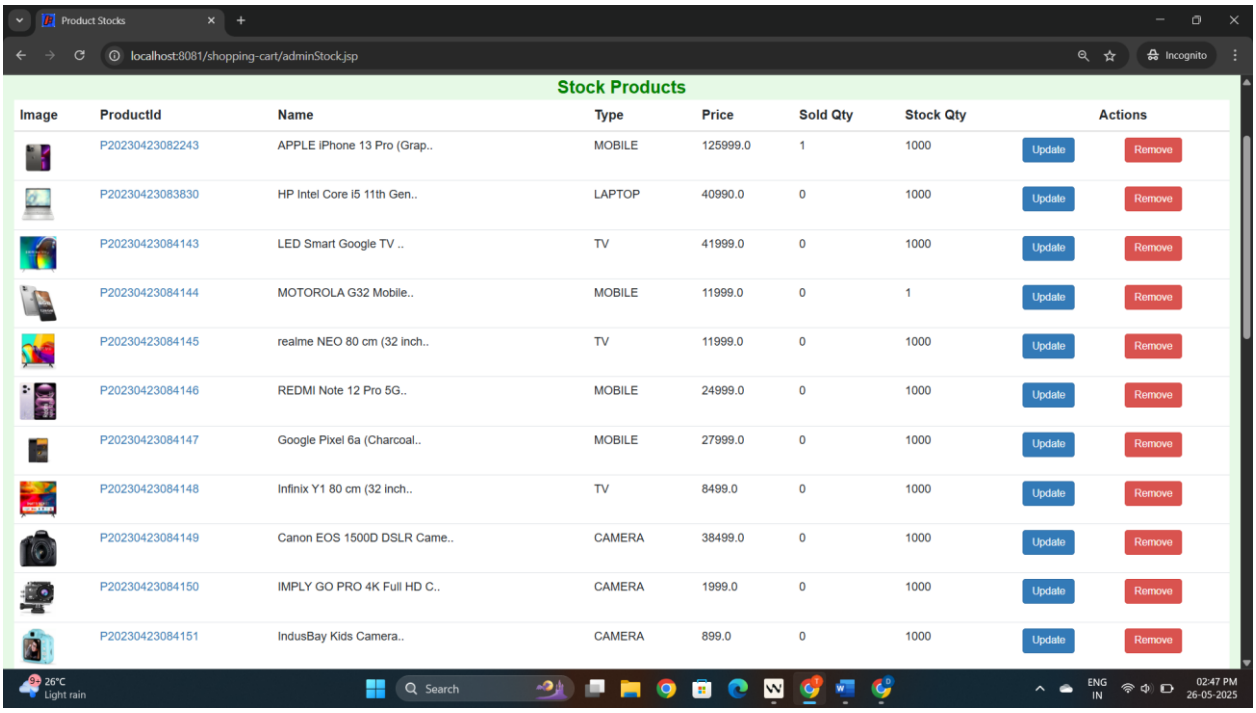
26-05-2025


Product Stocks
localhost:8081/shopping-cart/adminStock.jsp
Incognito
Stock Products
Image
ProductId
Name
Type
Price
Sold Qty
Stock Qty
Actions
P20230423082243
APPLE iPhone 13 Pro (Grap..
MOBILE
125999.0
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Update
Remove
P20230423083830
HP Intel Core i5 11th Gen..
LAPTOP
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P20230423084143
LED Smart Google TV ..
TV
41999.0
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1000
Update
Remove
P20230423084144
MOTOROLA G32 Mobile..
MOBILE
11999.0
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Update
Remove
P20230423084145
realme NEO 80 cm (32 inch..
TV
11999.0
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Update
Remove
P20230423084146
REDMI Note 12 Pro 5G..
MOBILE
24999.0
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Update
Remove
P20230423084147
Google Pixel 6a (Charcoal..
MOBILE
27999.0
0
1000
Update
Remove
P20230423084148
Infinix Y1 80 cm (32 inch..
TV
8499.0
0
1000
Update
Remove
P20230423084149
Canon EOS 1500D DSLR Came..
CAMERA
38499.0
0
1000
Update
Remove
P20230423084150
IMPLY GO PRO 4K Full HD C..
CAMERA
1999.0
0
1000
Update
Remove
P20230423084151
IndusBay Kids Camera..
CAMERA
899.0
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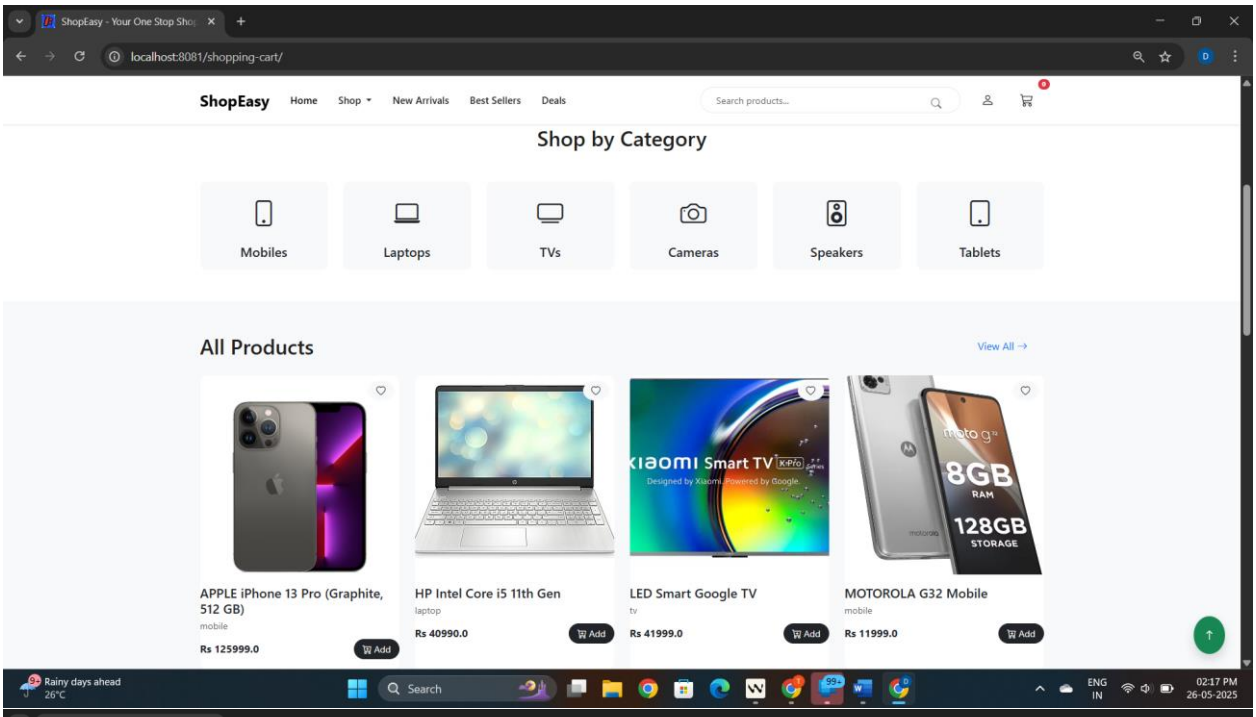
26-05-2025

User Pages


ShopEasy - Your One Stop Sho
localhost:8081/shopping-cart/
ShopEasy
Home
Shop
New Arrivals
Best Sellers
Deals
Search products...
Shop by Category
Mobiles
Laptops
TVs
Cameras
Speakers
Tablets
All Products
View All
APPLE iPhone 13 Pro (Graphite, 512 GB)
mobile
Rs 125999.0
Add
HP Intel Core i5 11th Gen
laptop
Rs 40990.0
Add
LED Smart Google TV
tv
Rs 41999.0
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Add
Rainy days ahead
26°C
Search
ENG
IN
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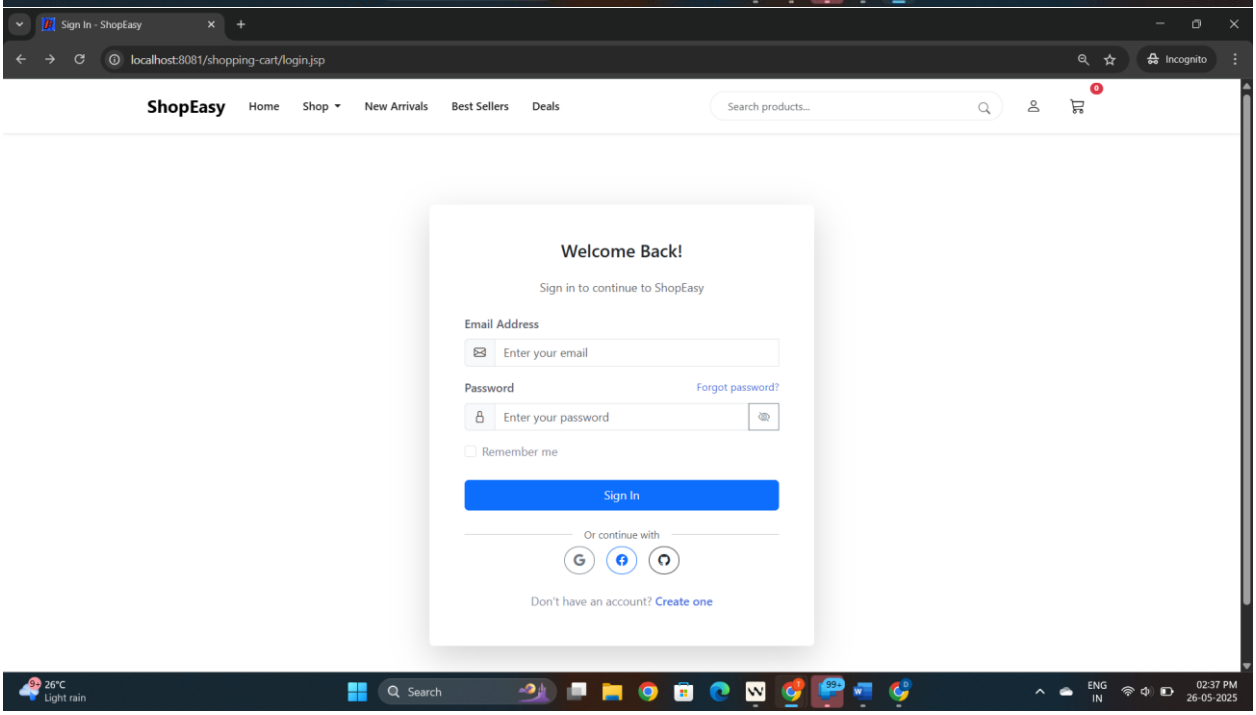
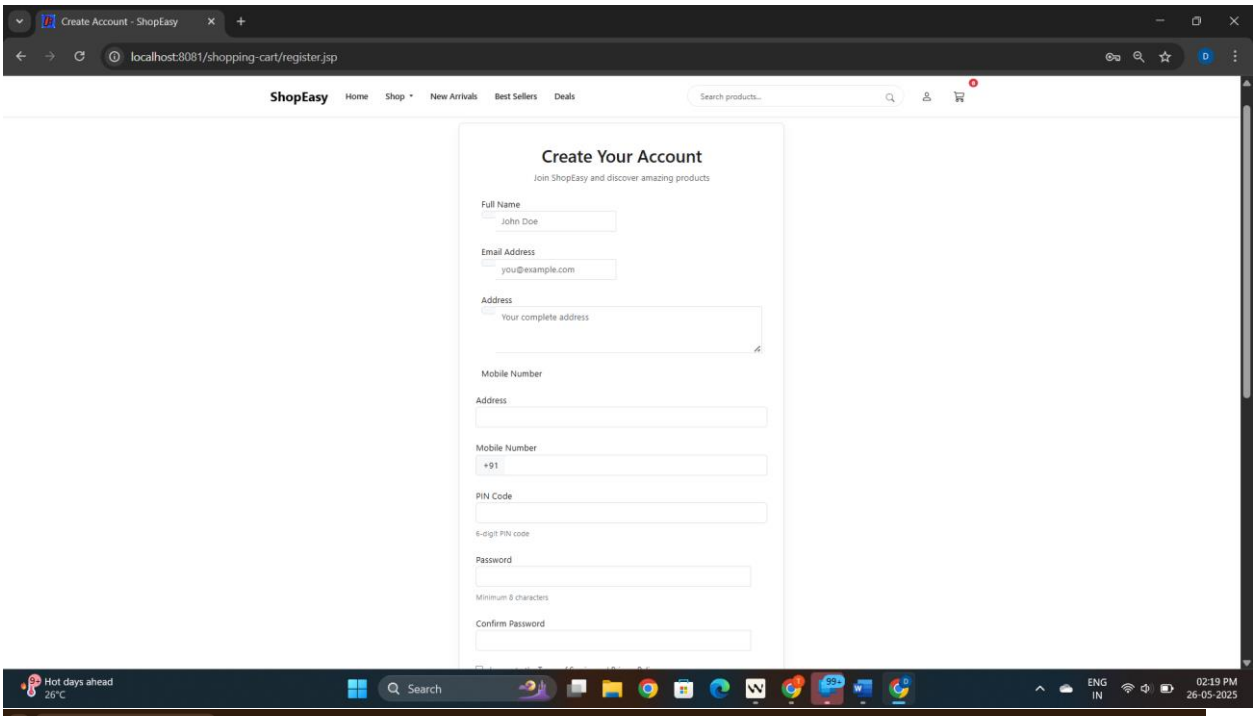
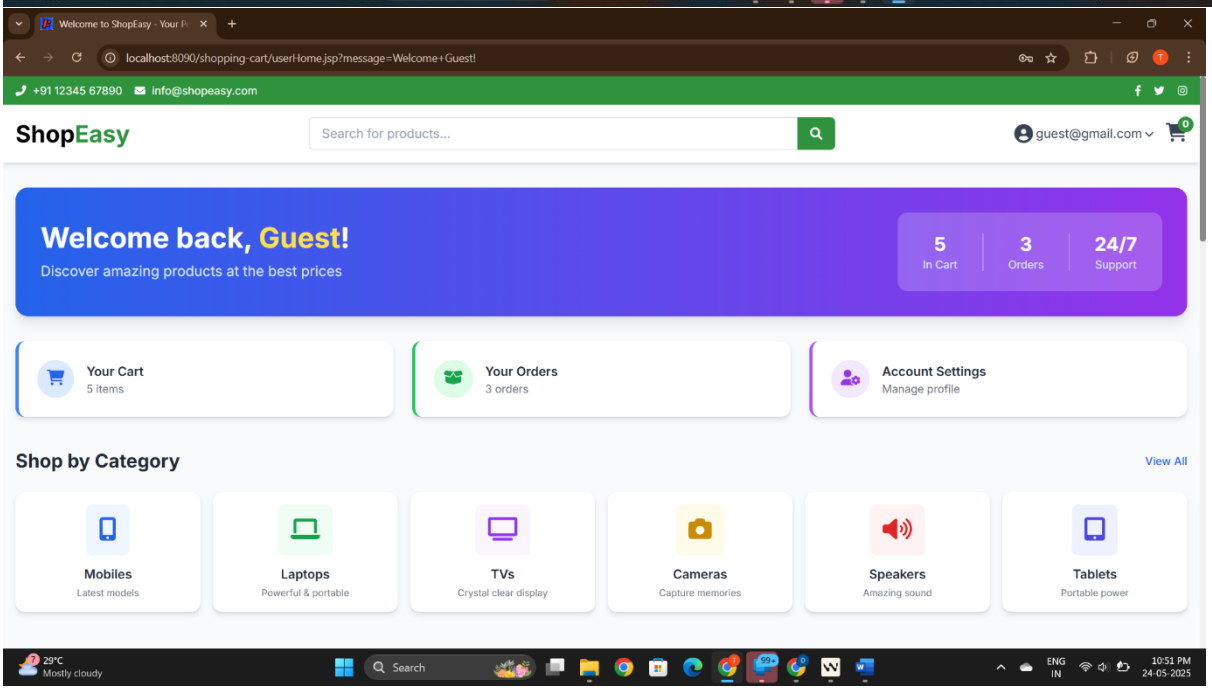
26-05-2025


Sign In - ShopEasy
localhost:8081/shopping-cart/login.jsp
Incognito
ShopEasy
Home
Shop
New Arrivals
Best Sellers
Deals
Search products...
Welcome Back!
Sign in to continue to ShopEasy
Email Address
Enter your email
Password
Forgot password?
Enter your password
Remember me
Sign In
Or continue with
Don't have an account? Create one
26°C
Light rain
Search
ENG
IN
02:37 PM
26-05-2025


Create Account - ShopEasy
localhost:8081/shopping-cart/register.jsp
ShopEasy
Home
Shop
New Arrivals
Best Sellers
Deals
Search products...
Create Your Account
Join ShopEasy and discover amazing products
Full Name
John Doe
Email Address
you@example.com
Address
Your complete address
Mobile Number
Address
Mobile Number
+91
PIN Code
6-digit PIN code
Password
Minimum 8 characters
Confirm Password
Hot days ahead
26°C
Search
ENG
IN
02:19 PM
26-05-2025


Welcome to ShopEasy - Your P
localhost:8090/shopping-cart/userHome.jsp?message=Welcome+Guest!
+91 12345 67890
info@shopeasy.com
ShopEasy
Search for products...
guest@gmail.com
Welcome back, Guest!
Discover amazing products at the best prices
5
In Cart
3
Orders
24/7
Support
Your Cart
5 items
Your Orders
3 orders
Account Settings
Manage profile
Shop by Category
View All
Mobiles
Latest models
Laptops
Powerful & portable
TVs
Crystal clear display
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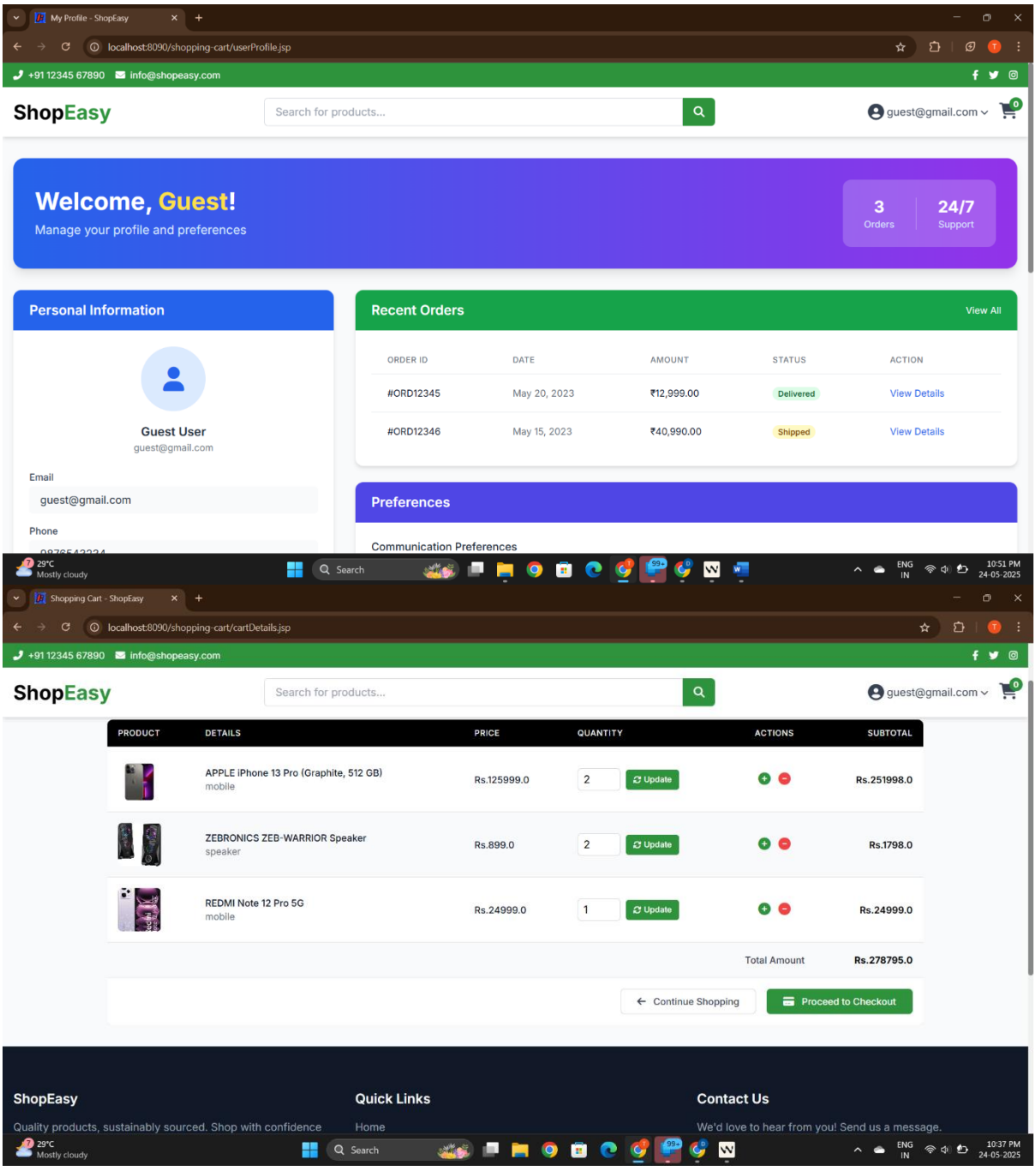
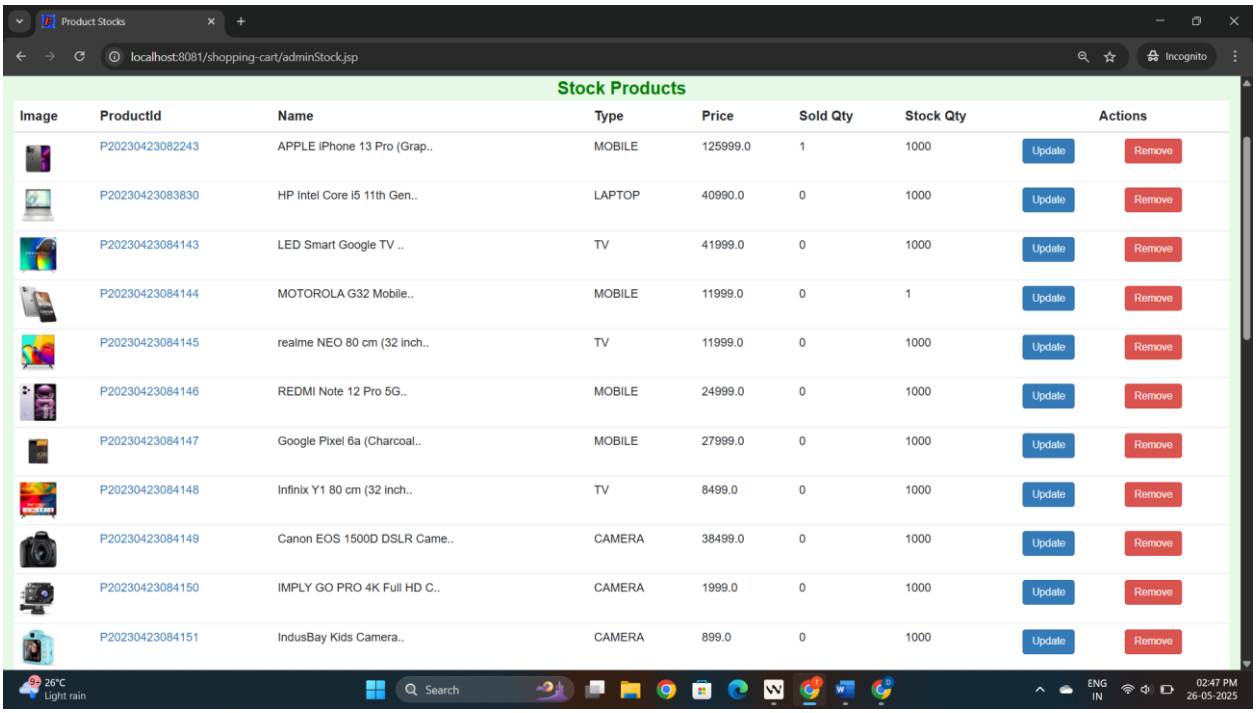
24-05-2025


My Profile - ShopEasy
localhost:8090/shopping-cart/userProfile.jsp
+91 12345 67890
info@shopeasy.com
ShopEasy
Search for products...
guest@gmail.com
Welcome, Guest!
Manage your profile and preferences
3
Orders
24/7
Support
Personal Information
Guest User
guest@gmail.com
Email
guest@gmail.com
Phone
Recent Orders
View All
ORDER ID
DATE
AMOUNT
STATUS
ACTION
#ORD12345
May 20, 2023
₹12,999.00
Delivered
View Details
#ORD12346
May 15, 2023
₹40,990.00
Shipped
View Details
Preferences
Communication Preferences
Shopping Cart - ShopEasy
localhost:8090/shopping-cart/cartDetails.jsp
PRODUCT
DETAILS
PRICE
QUANTITY
ACTIONS
SUBTOTAL
APPLE iPhone 13 Pro (Graphite, 512 GB)
mobile
Rs.125999.0
Update
Rs.251998.0
ZEBRONICS ZEB-WARRIOR Speaker
speaker
Rs.899.0
Update
Rs.1798.0
REDMI Note 12 Pro 5G
mobile
Rs.24999.0
Update
Rs.24999.0
Total Amount
Rs.278795.0
Continue Shopping
Proceed to Checkout
ShopEasy
Quality products, sustainably sourced. Shop with confidence
Quick Links
Home
Contact Us
We'd love to hear from you! Send us a message.

3.4. Report Design



CHAPTER 4 : TESTING AND IMPLEMENTATION

4.1. Testing Methodology

Testing methodologies in Software Testing are nothing more than strategies designed to tackle one of the biggest problems in development; finding errors and fixing them. With every passing minute, the deck of technologies, coding languages, possible integrations, and more is growing in sheer number. We cannot expect to have only one set methodology for every other kind of development process.

4.2. Unit Testing

I have used Unit Testing Methodology. Unit testing is the process of testing different units or components of a tour management system to make sure they work properly in isolation. Here is how unit testing works:

1. Functional Testing : Verifying all features work according to specification.
2. Performance Testing: Assessing response times under various loads.
3. Security Testing: Identifying vulnerabilities in authentication and authorization.
4. Usability Testing: Evaluating user interface and experience

4.3. Module Testing

In software development, module testing, also called component testing, is the process of testing individual modules (units of code) within the software system. It's the process of testing each component (unit of code) of a software system separately from the rest. The goal of module testing is to make sure that each module does what it is supposed to do and performs as expected. This usually includes testing the module's input and output, boundary condition testing, and verifying the behavior of the module under various conditions. By testing each component separately, developers can identify and fix problems in individual components before they can be integrated into a larger system. This makes it easier to isolate and debug issues, resulting in a more reliable and robust software system.

4.4. System Testing

Software systems are tested as a whole during the system testing step of the testing process. System testing entails putting the integrated system to the test to make sure it satisfies requirements and operates as intended in its intended setting. Instead of testing specific parts of the system, it evaluates the system's overall functionality, performance, dependability, and security.

System testing confirms that the software performs as anticipated and satisfies user needs. In order to make sure that every feature functions as intended, it usually consists of both functional and non-functional testing to assess factors like scalability, performance, and usability.

4.5. Alpha/ Beta Testing

Alpha and beta testing are two stages of user acceptance testing (UAT) that involve testing the software with real users. Here's a brief description of each:

Alpha Testing:

The organization's software development team handles alpha testing, usually in a controlled setting.

Its goal is to find any defects, usability problems, or other problems with the software before it is made available to outside users.

Developers, testers, and other stakeholders in the company can all serve as testers.

Testing the software's overall quality, performance, and functioning is the main goal.

Beta Testing:

A small group of outside users, often referred to as beta testers or beta users, conduct beta testing.

It is carried out outside of the organization's authority in a real-world setting.

Before the program is made available to the public, the goal is to get input from actual users in order to find any problems or potential areas for development.

Feedback on the software's performance, usability, bugs, and other factors can be given by beta testers.

4.6. White Box Black Box Testing

White-box testing

White-box testing, sometimes referred to as structural or glass-box testing, entails dissecting the software's core logic and structure.

A comprehension of the code, including the paths, branches, and conditions, is the basis for test cases.

In order to make sure that every section of the code is tested, testers have access to the source code and employ strategies including path testing, code coverage analysis, and statement coverage.

Black-box testing

Functional testing, sometimes referred to as "black-box" testing, focuses on testing the software's exterior behavior without being aware of how it is implemented within.

The needs, features, and specifications of the software are the source of test cases.

The focus of testers is on inputs and outputs, boundary conditions, and expected behaviors; they do not have access to the source code.

4.7. Implementation

Implementing a tour management system involves several key steps to develop and deploy the software effectively. Here's an outline of the implementation process:

Acquisition of Requirements:

Document functional and non-functional requirements, including features, user roles, security requirements, and performance expectations.

System Design:

Design the architecture and data model of the tour management system based on the gathered requirements.

Development:

Develop the tour management system according to the specified requirements and design.

Testing:

Conduct unit testing to verify the functionality of individual components or modules.

Perform integration testing to ensure that different parts of the system work together seamlessly.

Deployment:

Prepare the tour management system for deployment to production or staging environments.

Configure servers, databases, and other infrastructure components as needed.

Maintenance and Support:

Monitor the performance and stability of the tour management system in production.

Address any bugs, issues, or enhancement requests that arise post-deployment.

4.8. Post Implementation

Monitoring and Evaluation:

Keep an eye on how the ShopEasy E-commerce website is being used and how well it is doing.

Track system parameters including response time, uptime, and resource usage with monitoring tools.

Support and Maintenance:

Continue to offer administrators and users technical support.

Create a procedure, like a help desk or ticketing system, for reporting and resolving concerns.

User Training and Adoption:

Provide extra instruction or resources to users who might want help utilizing the technology.

By using incentives and communication, promote system adoption and usage.

Data Management and Backup:

Adopt rules and processes for data management to guarantee the availability, confidentiality, and integrity of data.

Make frequent backups of your system's data and save extra copies in safe places.

Security and Compliance:

Evaluate the tour management system's security posture on a regular basis and put precautions in place to lessen threats.

Continuous Improvement:

Create a procedure for gathering and examining user, stakeholder, and system metrics feedback.

Prioritize improvements and new features based on insights from performance data and user input.

CHAPTER 5 : CONCLUSION AND REFERENCES

5.1. Conclusion

The ShopEasy e-commerce application successfully addresses the need for a robust online retail solution. By implementing a comprehensive set of features for both customers and administrators, the system provides a seamless shopping experience while offering powerful management tools.

5.2. Limitation of System

- Limited to a few payment gateways.
- Currently supports English language only
- No dedicated mobile application yet, only responsive web design
- Limited recommendation system functionality
- Limited third-party service integrations

5.3. Future Scope for Modification

- Implementing more robust data analytics tools
- Developing dedicated iOS and Android applications
- Enhanced product recommendation system
- Expanding language options
- Integration with more payment providers
- Enhanced social sharing and login options

5.4.1. H/W Requirement

Front-end : HTML, CSS, Javascript

Back-end : PHP

Database : MySql

5.4.2. S/W Requirement

Front-end : HTML, CSS, Javascript

Back-end : PHP

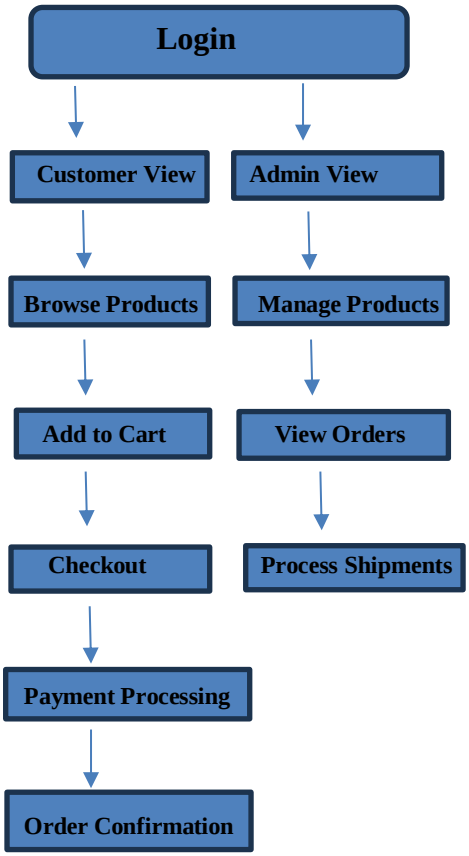
Database : MySql

5.5. References/ Bibliography

- https://docs.spring.io/spring-framework/reference/
- https://docs.spring.io/springboot/docs/current/reference/html/
- https://hibernate.org/orm/documentaϴon/
- https://getbootstrap.com/docs/
- https://dev.mysql.com/doc/

CHAPTER 6 : ANNEXURES

- **Menu Flow Diagram**



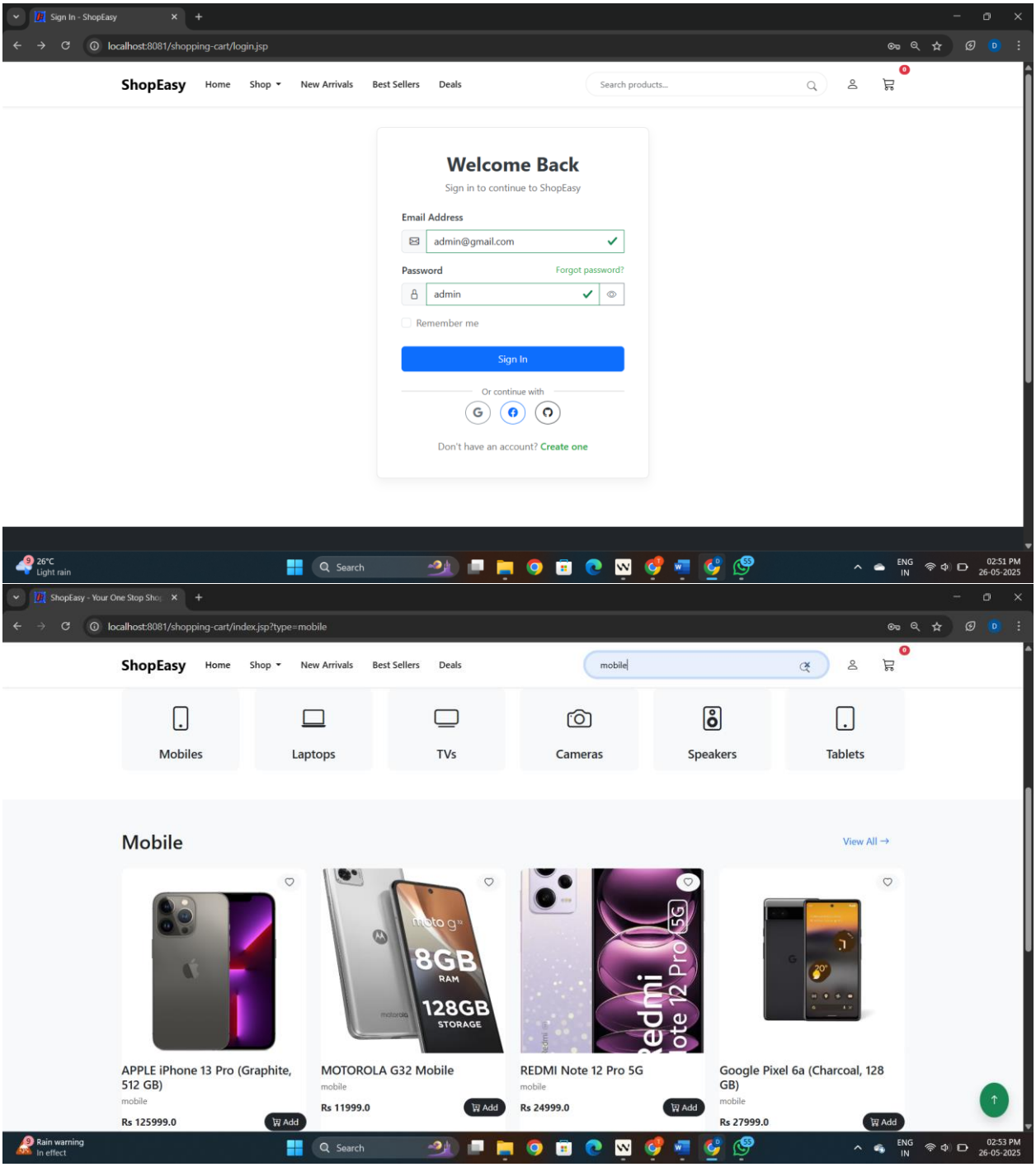
- **Data Dictionary**

```
-- Database: `shopping-cart`

-- Table structure for table `product`
CREATE TABLE IF NOT EXISTS `shopping-cart`.`product` (
  `pid` VARCHAR(45) NOT NULL,
  `pname` VARCHAR(100) NULL DEFAULT NULL,
  `ptype` VARCHAR(20) NULL DEFAULT NULL,
  `pinfo` VARCHAR(350) NULL DEFAULT NULL,
  `pprice` DECIMAL(12,2) NULL DEFAULT NULL,
  `pquantity` INT NULL DEFAULT NULL,
  `image` LONGBLOB NULL DEFAULT NULL,
  PRIMARY KEY (`pid`)
);

-- Table structure for table `user`
CREATE TABLE IF NOT EXISTS `shopping-cart`.`user` (
  `email` VARCHAR(60) NOT NULL,
  `name` VARCHAR(30) NULL DEFAULT NULL,
  `mobile` BIGINT NULL DEFAULT NULL,
  `address` VARCHAR(250) NULL DEFAULT NULL,
  `pincode` INT NULL DEFAULT NULL,
  `password` VARCHAR(20) NULL DEFAULT NULL,
  PRIMARY KEY (`email`)
);

-- Table structure for table `orders`
CREATE TABLE IF NOT EXISTS `shopping-cart`.`orders` (
  `orderid` VARCHAR(45) NOT NULL,
  `prodid` VARCHAR(45) NOT NULL,
  `quantity` INT NULL DEFAULT NULL,
```

```
  `amount` DECIMAL(10,2) NULL DEFAULT NULL,
  `shipped` INT NOT NULL DEFAULT 0,
  PRIMARY KEY (`orderid`, `prodid`),
  INDEX `productid_idx` (`prodid` ASC) VISIBLE,
  CONSTRAINT `productid`
    FOREIGN KEY (`prodid`)
    REFERENCES `shopping-cart`.`product` (`pid`)
);

-- Table structure for table `transactions`
CREATE TABLE IF NOT EXISTS `shopping-cart`.`transactions` (
  `transid` VARCHAR(45) NOT NULL,
  `username` VARCHAR(60) NULL DEFAULT NULL,
  `time` DATETIME NULL DEFAULT NULL,
  `amount` DECIMAL(10,2) NULL DEFAULT NULL,
  PRIMARY KEY (`transid`),
  INDEX `truserid_idx` (`username` ASC) VISIBLE,
  CONSTRAINT `truserid`
    FOREIGN KEY (`username`)
    REFERENCES `shopping-cart`.`user` (`email`),
  CONSTRAINT `transorderid`
    FOREIGN KEY (`transid`)
    REFERENCES `shopping-cart`.`orders` (`orderid`)
);

-- Table structure for table `usercart`
CREATE TABLE IF NOT EXISTS `shopping-cart`.`usercart` (
  `username` VARCHAR(60) NOT NULL,
  `prodid` VARCHAR(45) NOT NULL,
  `quantity` INT NULL DEFAULT NULL,
  PRIMARY KEY (`username`, `prodid`),
  INDEX `productid_idx` (`prodid` ASC) VISIBLE,
  CONSTRAINT `username`
```

```
    FOREIGN KEY (`username`)
    REFERENCES `shopping-cart`.`user` (`email`),
  CONSTRAINT `prodid`
    FOREIGN KEY (`prodid`)
    REFERENCES `shopping-cart`.`product` (`pid`)
);

-- Table structure for table `user_demand`
CREATE TABLE IF NOT EXISTS `shopping-cart`.`user_demand` (
  `username` VARCHAR(60) NOT NULL,
  `prodid` VARCHAR(45) NOT NULL,
  `quantity` INT NULL DEFAULT NULL,
  PRIMARY KEY (`username`, `prodid`),
  INDEX `demandproductid_idx` (`prodid` ASC) VISIBLE,
  CONSTRAINT `demanduserid`
    FOREIGN KEY (`username`)
    REFERENCES `shopping-cart`.`user` (`email`),
  CONSTRAINT `demandproductid`
    FOREIGN KEY (`prodid`)
    REFERENCES `shopping-cart`.`product` (`pid`)
);
```

- **Sample Input**



- **Sample Output**