

A
PROJECT REPORT ON

UrbanKart
ONLINE SHOPPING SYSTEM

SUBMITTED IN PARTIAL FULFILLMENT OF
DIPLOMA IN ADVANCED COMPUTING (PG-DAC)



UNDER THE GUIDANCE OF
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AT
CENTER FOR DEVELOPMENT OF ADVANCED COMPUTING C-DAC,
PUNE

ACKNOWLEDGEMENT

The project “UrbanKart (Online Shopping System)” was a great learning experience for us and we are submitting this work to Advanced Computing Training School (C-DAC ACTS, Pune).

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From:

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ABSTRACT

E-commerce websites have become an integral part of our lives, offering convenience and accessibility. They enable us to explore and purchase products from the comfort of our homes, eliminating the need to visit physical stores. This convenience has made online shopping a preferred choice for many, providing a wide range of options and hassle-free shopping experiences.

Our website is like an online store where you can buy all sorts of things easily. We have lots of different products for you to choose from, like clothes and gadgets. You can trust that our website is safe to use, and we'll make sure your purchases get to you quickly. If you ever need help, our friendly customer support team is here for you. Whether you're a regular online shopper or trying it out for the first time, our website makes shopping online simple and enjoyable. Come visit us and discover a better way to shop online!

1. INTRODUCTION

This project focuses on creating an online shopping web application using J2EE, Spring Boot, MySQL, and React. This application offers a convenient way for buyers to shop for products from their homes using the internet, whether on a mobile device or computer. It simplifies the shopping process for customers, similar to how they would shop in a physical store but in a virtual environment.

Online shopping, or e-commerce, involves consumers purchasing products or services online. This web application emulates the experience of shopping at a traditional brick-and-mortar store or a mall, but it's all done online. It's a form of electronic commerce, specifically catering to business-to-consumer (B2C) transactions.

The Online Shopping System is designed to be user-friendly, providing an interactive web interface where users can search for products, see product details, and place orders. Additionally, it offers administrative features to manage products and customers, all presented through an attractive and intuitive user interface.

2. PRODUCT OVERVIEW AND SUMMARY

2.1. PURPOSE

Our project, “UrbanKart”, is a web-based application which aims to provide users with an easy to navigate and visually appealing medium to browse through a category of products and shop for the products they desire.

2.2. SCOPE

“UrbanKart” aims to deliver a web-based application that hosts a wide collection of products that users can browse through. Users can place orders for each product. They can view their order history as well. If they no longer wish to be associated with the site, they can deregister themselves. Admins can manage various product details like stock, price, adding new customers, etc. Admins can even delete users if the need arises.

This project does not support the actual logistics and delivery of products and actual payment logic. We are assuming that the organization that implements it will be using third-party payment API which can easily be integrated in our application if needed. Urbankart is only an interface for both customers (for browsing and shopping) and admins (for managing inventory and customers).

2.3. OVERVIEW

A. TECHNOLOGIES USED

i. FRONT END

- HTML
- CSS
- JavaScript
- Bootstrap
- React
- Axios

ii. BACK END

- Spring Boot
- Spring Data JPA
- Hibernate
- REST
- JWT Based Security

iii. DATABASE MANAGEMENT SYSTEM

- MySQL

B. FEATURES PROVIDED

i. FOR CUSTOMERS

- a. **Browse** – Customers can browse the homepage to explore the entire collection of products available.
- b. **Register, Login & Logout** – New customers can register on the site. Existing customers can then login to access their account information and logout when the account is not in use.
- c. **Add to Cart & Place Orders** – If customers find products that they like, they can save the product in the cart until they decide to purchase it. When they wish to purchase it, they can place orders for those products .

ii. FOR ADMINS

- a. **Login & Logout** – Similar to customers, admins can login & logout to access their account.
- b. **Add Category & products** – Admins can add category and products
- c. **Delete Customer** –The admins can delete a customer account if they need to for any purpose.
- d. **Manage Inventory** – If the admins find that the available stock of some products has depleted, they can replenish it by adding more to the stock.
- e. **Change Status of Orders** – Manipulate state of orders.

2.4. FEASIBILITY STUDY

Feasibility is the determination of whether a project is worth undertaking or not. Before actually recommending the new system, it is important to investigate if it is feasible to develop it.

Before developing and implementing a system, we have to make sure that the system is feasible in the following ways:

A. TECHNICAL FEASIBILITY

In this type of feasibility study, the system analyst has to check whether it is possible or not to develop the requested system with the available manpower, software, hardware, etc.

This project makes use of cross-platform software and solutions like Java, and hence can run on any operating system. React, used in front-end, is swift and light weight framework when it comes to delivering the requested page as it doesn't reload the entire page for every HTTP request. It only re-renders the components that need to fetch new data. Also, as React is modular in nature, it is easy to develop new components and scale up existing components in order to add new features to the system. The combination of Spring Boot, Spring Data JPA and Hibernate for backend make for a fast, easy to set-up and reliable system to interact with the database, as they are secure and transactional in nature. Since the sensitive data of customers and admins need to be stored in a robust and secure database, MySQL database management system was chosen as it is an industry standard.

B. OPERATIONAL FEASIBILITY

In this type of feasibility study, we assess whether the system can function effectively. We analyze if it's practical for the user department to utilize the application. Operational feasibility means the proposed system is only feasible if users can easily understand and use it.

In our project's design, we prioritized user experience. We created a user-friendly interface with a consistent theme and attractive design to engage users. We used familiar icons and clear instructions, ensuring that users don't need special technical knowledge to use the application. Information is organized logically and consistently, ensuring a seamless and enjoyable user experience throughout the application.

C. ECONOMIC FEASIBILITY

In this type of feasibility study, the benefits of the system to the organization are considered by taking into consideration the cost-benefit analysis. All the software and technologies used in our project free, open-source, and widely available, with each of the technologies having an extensive community support. This makes “UrbanKart” an economically feasible solution to the organizations that wish to implement it.

3. REQUIREMENTS FULFILLED

3.1. FUNCTIONAL REQUIREMENTS

Following are the functional requirements fulfilled by our project:

- Customers can browse through all available products.
- Customers can place orders for products.
- Admins can manage various product details like inventory, price, adding new products and customers, etc.
- Admins can view all customers.
- JWT Security for Authentication and Authorization

3.2. NON-FUNCTIONAL REQUIREMENTS

Following are the non-functional requirements fulfilled by our project:

- Since the application uses lightweight and established software components that are also cross-platform, it is remarkably performant and has good support for every operating system.
- The use of React for front end and Spring Boot, Spring Data JPA and Hibernate for back end delivers quick response times to admins and customers alike.
- Card-style UI and well-known icons and symbols used throughout the application provides a consistent theme and user-friendly interface that anyone can grasp easily, even without a technical background.

4. PROJECT DESIGN

4.1. DATA MODEL

The following tables depict the database design used for “UrbanKart” application:

A. Tables Related to User Details

a. users Table

```
mysql> desc users;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| id             | bigint        | NO   | PRI | NULL    | auto_increment |
| email          | varchar(50)   | NO   | UNI | NULL    |                |
| first_name     | varchar(25)   | YES  |     | NULL    |                |
| last_name      | varchar(25)   | YES  |     | NULL    |                |
| mobile_number  | varchar(10)   | NO   |     | NULL    |                |
| password       | varchar(300)  | NO   |     | NULL    |                |
| role           | varchar(15)   | YES  |     | NULL    |                |
+-----+-----+-----+-----+-----+-----+
7 rows in set (0.08 sec)
```

b. delivery_address Table

```
mysql> desc delivery_address;
+-----+-----+-----+-----+-----+-----+
| Field          | Type          | Null | Key | Default | Extra          |
+-----+-----+-----+-----+-----+-----+
| id             | bigint        | NO   | PRI | NULL    | auto_increment |
| adress_line1   | varchar(50)   | NO   |     | NULL    |                |
| adress_line2   | varchar(50)   | NO   |     | NULL    |                |
| city           | varchar(50)   | NO   |     | NULL    |                |
| state          | varchar(50)   | NO   |     | NULL    |                |
| zip_code       | varchar(8)    | NO   |     | NULL    |                |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

B. Tables Related to Orders

a. carts Table

```
mysql> desc carts;
+-----+-----+-----+-----+-----+-----+
| Field      | Type   | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| id         | bigint | NO   | PRI | NULL    | auto_increment |
| created    | date   | YES  |     | NULL    |                 |
| total_items | int    | YES  |     | NULL    |                 |
| total_price | double | YES  |     | NULL    |                 |
| updated    | date   | YES  |     | NULL    |                 |
| user_id    | bigint | YES  | MUL | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

b. cart_items Table

```
mysql> desc cart_items;
+-----+-----+-----+-----+-----+-----+
| Field      | Type   | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| id         | bigint | NO   | PRI | NULL    | auto_increment |
| quantity   | int    | YES  |     | NULL    |                 |
| total_price | double | NO   |     | NULL    |                 |
| cart_id    | bigint | YES  | MUL | NULL    |                 |
| product_id | bigint | YES  | MUL | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

c. order_details Table

```
mysql> desc order_details;
+-----+-----+-----+-----+-----+-----+
| Field      | Type   | Null | Key | Default | Extra           |
+-----+-----+-----+-----+-----+-----+
| id         | bigint | NO   | PRI | NULL    | auto_increment |
| quantity   | int    | YES  |     | NULL    |                 |
| total_price | double | YES  |     | NULL    |                 |
| order_id   | bigint | YES  | MUL | NULL    |                 |
| product_id | bigint | YES  | MUL | NULL    |                 |
+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

d. orders Table

```
mysql> desc orders;
```

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
delivery_date	date	NO		NULL	
order_date	date	NO		NULL	
shipping_price	double	YES		NULL	
status	varchar(255)	NO		NULL	
total_price	double	NO		NULL	
address_id	bigint	YES	MUL	NULL	
user_id	bigint	YES	MUL	NULL	

8 rows in set (0.00 sec)

C. Tables Related to Product

a. categories Table

```
mysql> desc categories;
```

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
category_name	varchar(50)	NO		NULL	
description	varchar(1000)	NO		NULL	

3 rows in set (0.00 sec)

b. products Table

```
mysql> desc products;
```

Field	Type	Null	Key	Default	Extra
id	bigint	NO	PRI	NULL	auto_increment
description	varchar(255)	YES		NULL	
exp_date	date	YES		NULL	
image_path	varchar(255)	YES		NULL	
name	varchar(20)	NO		NULL	
price	double	NO		NULL	
stock	int	YES		NULL	
category_id	bigint	YES	MUL	NULL	

8 rows in set (0.00 sec)

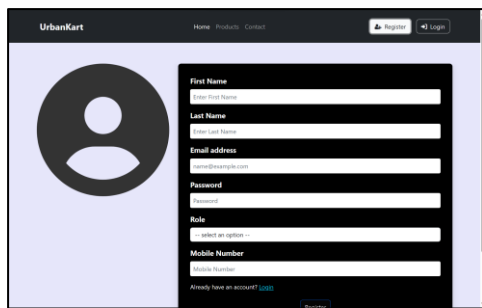
4.2. PAGE FLOW DIAGRAM

1.Admin flow

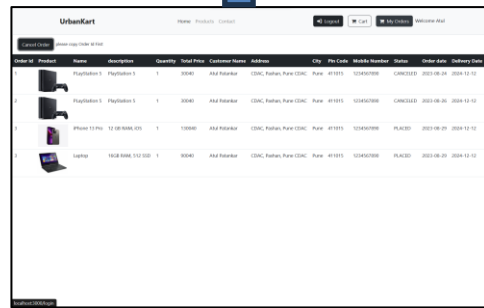


2.Customer Flow

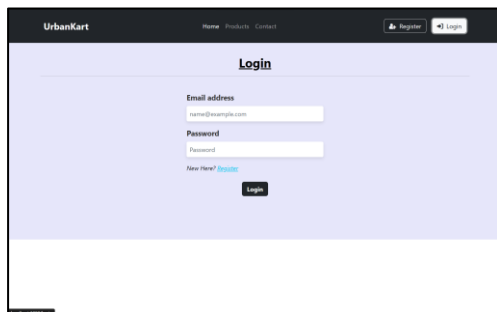
LOGOUT



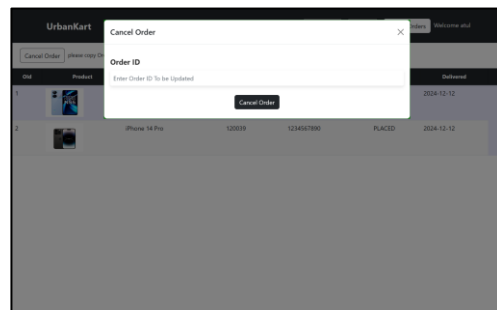
Registration form for UrbanKart. Fields include First Name, Last Name, Email address, Password, Role (dropdown), and Mobile Number. A link for 'Already have an account?' is at the bottom.



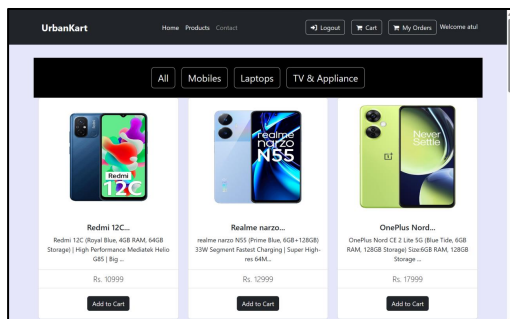
Order ID	Product	Name	Description	Quantity	Total Price	Customer Name	Address	City	Pin Code	Mobile Number	Status	Order date	Delivery Date
1	PlayStation 5	PlayStation 5		1	39990	Ashu Kishan	CSMC, Farhadi, Pune CSMC, Pune	411015	1234567890	9876543210	CANCELLED	2023-08-20	2024-12-12
2	PlayStation 5	PlayStation 5		1	39990	Ashu Kishan	CSMC, Farhadi, Pune CSMC, Pune	411015	1234567890	9876543210	PLACED	2023-08-20	2024-12-12
3	iPhone 11 Pro	12 GB 64GB, 128 GB		1	70999	Ashu Kishan	CSMC, Farhadi, Pune CSMC, Pune	411015	1234567890	9876543210	PLACED	2023-08-20	2024-12-12
4	iPhone 11 Pro	128 GB 512 GB		1	99990	Ashu Kishan	CSMC, Farhadi, Pune CSMC, Pune	411015	1234567890	9876543210	PLACED	2023-08-20	2024-12-12



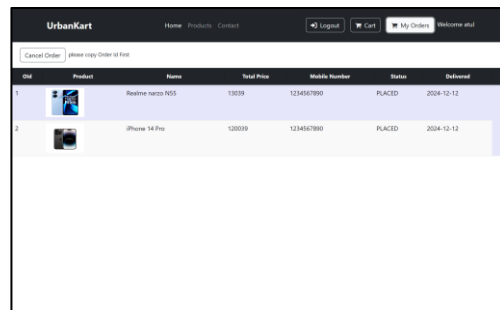
Login form for UrbanKart. Fields include Email address and Password. A link for 'New Here? Register' is at the bottom.



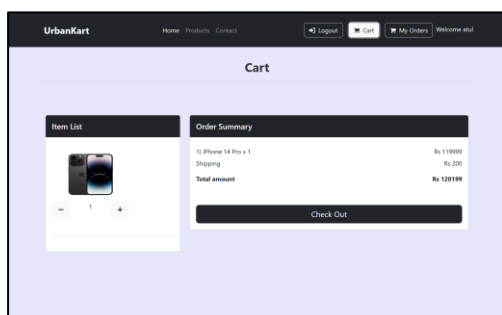
Cancel Order modal. Fields include Order ID and a Cancel Order button.



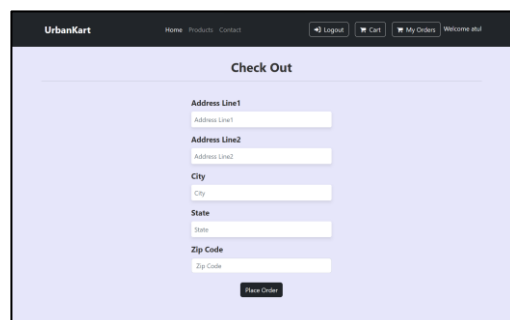
Product grid showing three smartphones: Redmi 12C, Realme narzo N55, and OnePlus Nord CE 2 Lite 5G. Each product has an 'Add to Cart' button.



Order ID	Product	Name	Total Price	Mobile Number	Status	Delivery Date
1	Realme narzo N55		13859	1234567890	PLACED	2024-12-12
2	iPhone 14 Pro		120039	1234567890	PLACED	2024-12-12

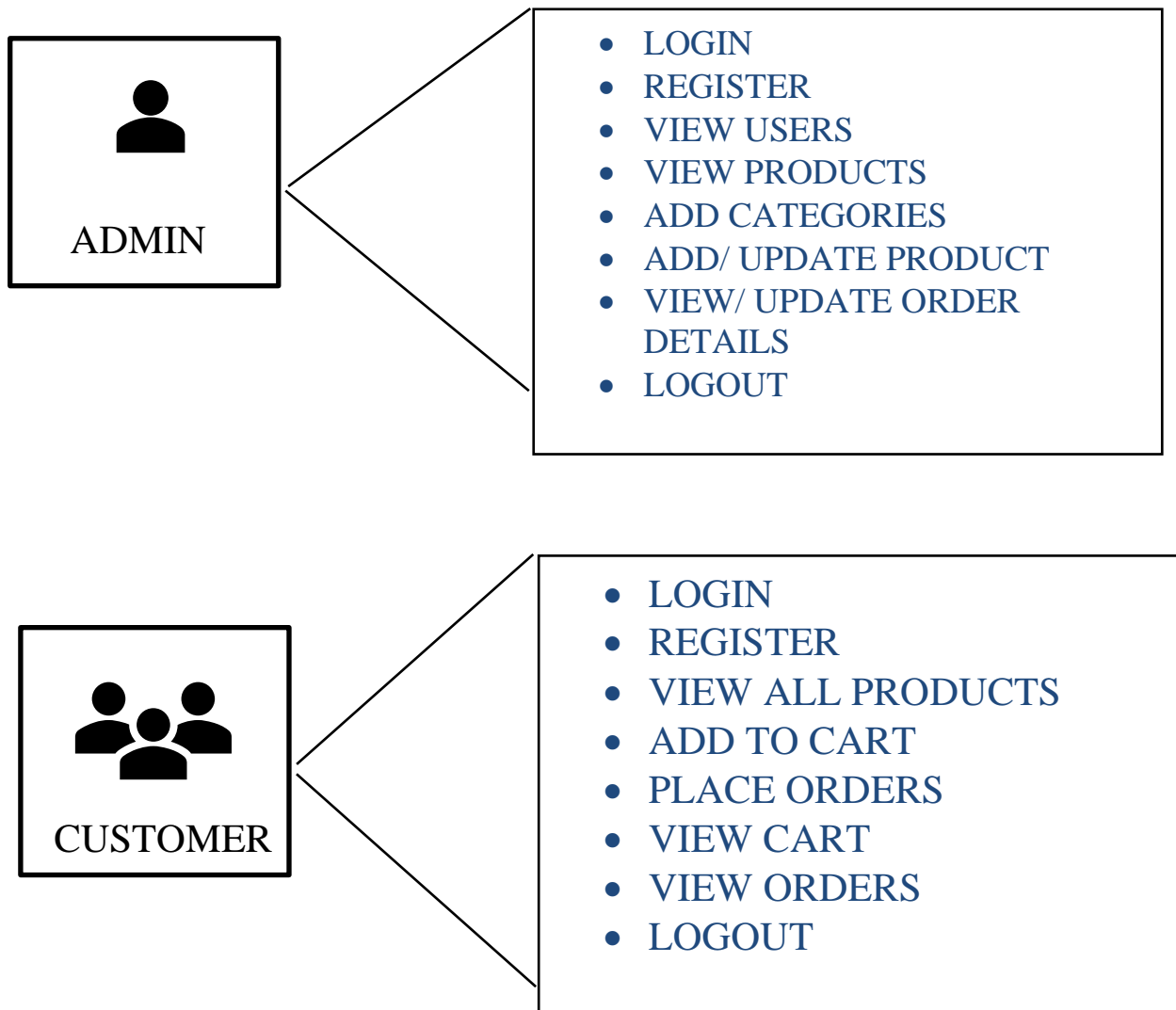


Cart page showing an item list and an order summary. The order summary includes a total amount of Rs 120199 and a 'Check Out' button.

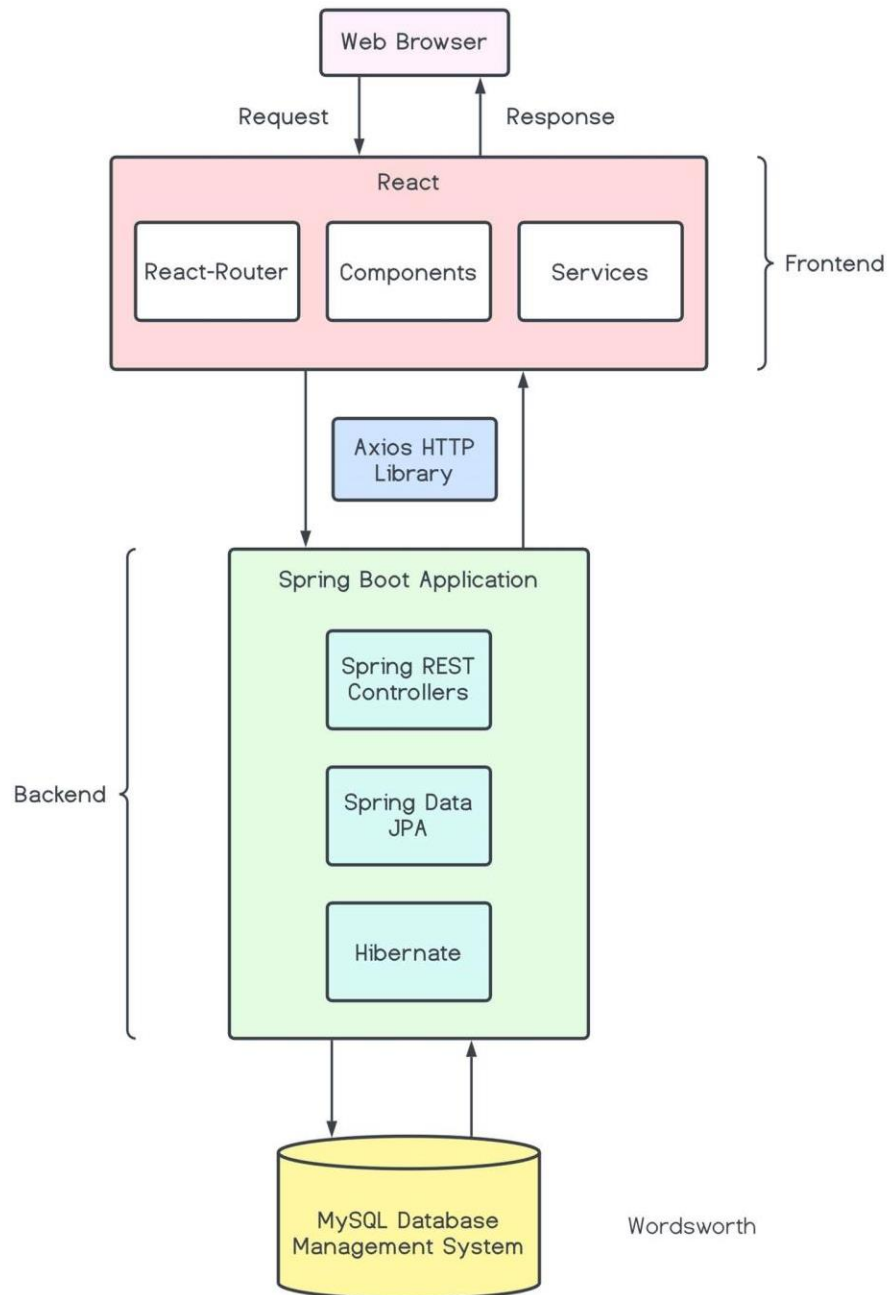


Check Out form. Fields include Address Line1, Address Line2, City, State, and Zip Code. A 'Place Order' button is at the bottom.

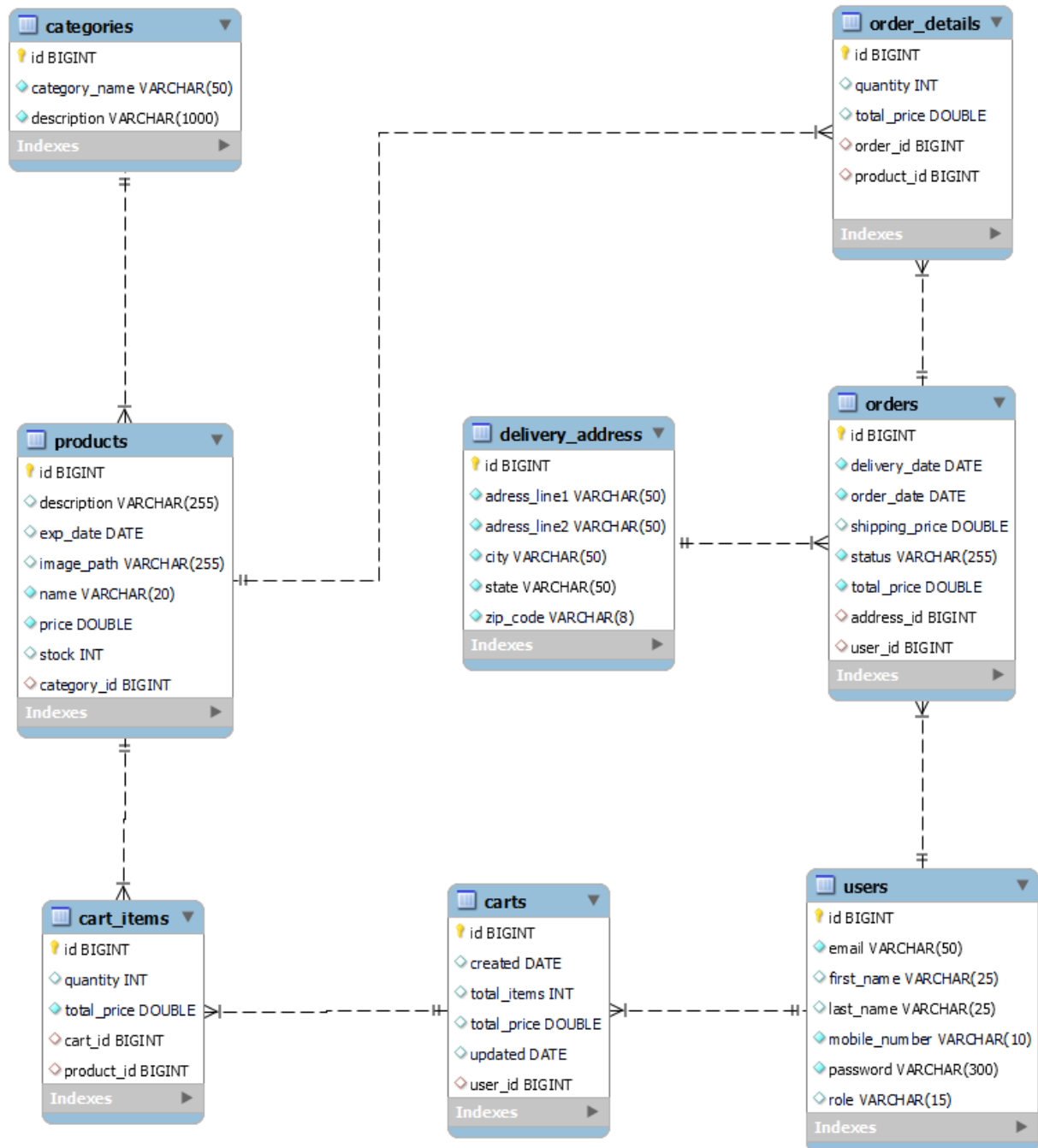
4.3. USE CASE DIAGRAM



4.4. PROJECT ARCHITECTURE



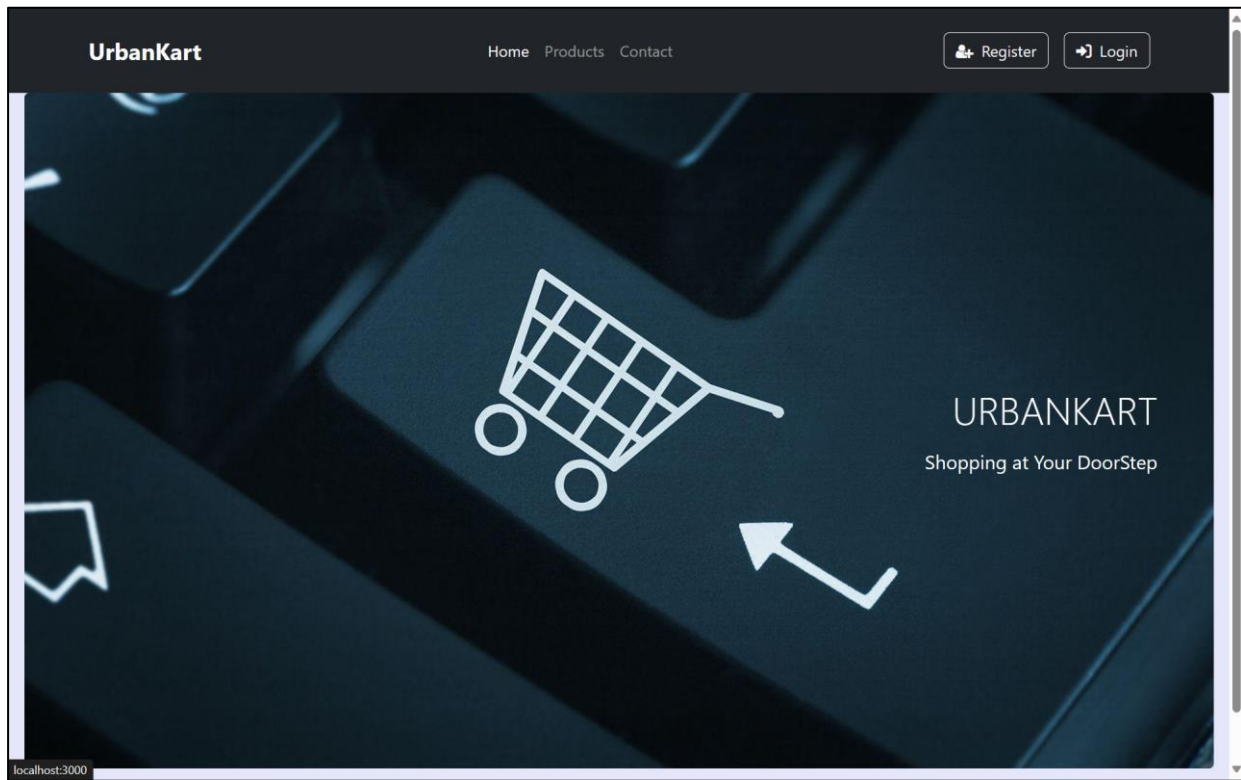
4.5. ER DIAGRAM



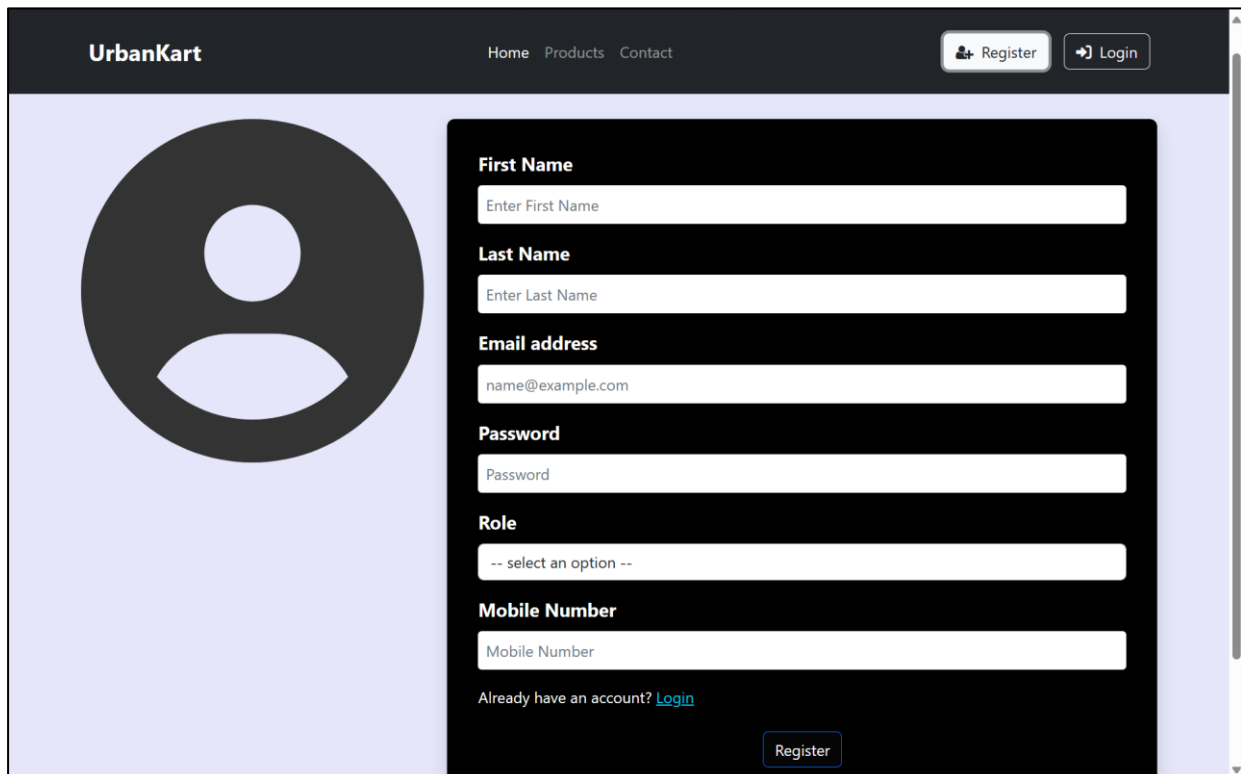
5. PROJECT SCREENSHOTS

5.1. CUSTOMER

HOME PAGE



REGISTRATION PAGE



The screenshot shows the UrbanKart registration page. The top navigation bar is identical to the home page. The main content area has a light blue background. On the left side, there is a large, dark blue circular icon representing a user profile. On the right side, there is a dark blue registration form with white text and input fields. The form contains the following fields: 'First Name' (placeholder: 'Enter First Name'), 'Last Name' (placeholder: 'Enter Last Name'), 'Email address' (placeholder: 'name@example.com'), 'Password' (placeholder: 'Password'), 'Role' (placeholder: '-- select an option --'), and 'Mobile Number' (placeholder: 'Mobile Number'). Below the 'Mobile Number' field, there is a link that says 'Already have an account? [Login](#)'. At the bottom right of the form is a 'Register' button.

LOGIN PAGE

UrbanKart

HomeProductsContact

RegisterLogin

Login

Email address

name@example.com

Password

Password

New Here? Register

Login

localhost:3000/login

VIEW PRODUCTS FROM CATEGORIES

UrbanKart

HomeProductsContact

LogoutCartMy OrdersWelcome atul

AllMobilesLaptopsTV & Appliance

Redmi 12C

Redmi 12C...

Redmi 12C (Royal Blue, 4GB RAM, 64GB Storage) | High Performance Mediatek Helio G85 | Big ...

Rs. 10999

Add to Cart

realme narzo N55

Realme narzo...

realme narzo N55 (Prime Blue, 6GB+128GB) 33W Segment Fastest Charging | Super High-res 64M...

Rs. 12999

Add to Cart

Never Settle

OnePlus Nord...

OnePlus Nord CE 2 Lite 5G (Blue Tide, 6GB RAM, 128GB Storage) Size:6GB RAM, 128GB Storage ...

Rs. 17999

Add to Cart

MY CART VIEW


UrbanKart

[Home](#) [Products](#) [Contact](#)

[Logout](#) [Cart](#) [My Orders](#) Welcome atul

Cart

Item List



-

1

+

Order Summary

1) Realme narzo N55 x 1

Rs 12999

Shipping

Rs 200

Total amount

Rs 13199

Check Out

ADDRESS CHECKOUT PAGE

UrbanKart

[Home](#) [Products](#) [Contact](#)

[Logout](#) [Cart](#) [My Orders](#) Welcome atul

Check Out

Address Line1

Address Line1

Address Line2

Address Line2

City

City

State

State

Zip Code

Zip Code

Place Order

ORDER PLACED

UrbanKart

[Home](#) [Products](#) [Contact](#)

Logout


Cart

My Orders

Welcome atul

Cancel Order

please copy Order Id First

Old	Product	Name	Total Price	Mobile Number	Status	Delivered
1		Realme narzo N55	13039	1234567890	PLACED	2024-12-12

localhost:3000/myorders

CONTACT US

UrbanKart

[Home](#) [Products](#) [Contact](#)

Logout

Cart

My Orders

Welcome atul

Contact Us

Name

Enter your name

Email

name@example.com

Message

Enter your message

Send

localhost:3000/contact

5.1. ADMIN

LOGIN

UrbanKart

HomeProductsContact

RegisterLogin

Login

Email address

name@example.com

Password

Password

New Here? [Register](#)

Login

localhost:3000/login

ADMIN HOME PAGE


UrbanKart

ProductsContact

UsersAdd CategoryAdd ProductAll Orders DetailsLogout

Welcome Rama


AllMobilesLaptopsTV & Appliance



Redmi 12C

Redmi 12C (Royal Blue, 4GB RAM, 64GB Storage) | High Performance Mediatek Helio G85 | Big 17cm(6.71) HD+ Display with 5000mAh(typ) Battery


Stock : 150



Realme narzo N55

realme narzo N55 (Prime Blue, 6GB+128GB) 33W Segment Fastest Charging | Super High-res 64MP Primary AI Camera Colour:Prime Blue Size:6 GB Ram + 128 GB Storage

Stock : 299



OnePlus Nord

OnePlus Nord CE 2 Lite 5G (Blue Tide, 6GB RAM, 128GB Storage) Size:6GB RAM, 128GB Storage Colour:Blue Tide

Stock : 150

VIEW PRODUCT BY CATEGORIES

UrbanKart

Products

Contact

Users

+Add Category

+Add Product

All Orders Details

Logout


Welcome Rama

All

Mobiles

Laptops

TV & Appliance




Acer Aspire Lite

Acer Aspire Lite 11th Gen Intel Core i3 Premium Metal Laptop (8GB RAM/512GB SD/Windows 11 Home) Full HD Display, Metal Body, Steel Gray, 1.59 Kg

Stock : 150

Rs. 31999




MacBook Pro

Apple 2021 MacBook Pro (14-inch/35.97 cm, M1 Pro chip with 8-core CPU and 14-core GPU, 16GB RAM, 512GB SSD) - Space Grey

Stock : 150

Rs. 105990



ASUS Vivobook Go 14

ASUS Vivobook Go 14 (2023), AMD Ryzen 3 7320U, 14-inch (35.56 cm) FHD, Thin & Light Laptop (8GB/512GB SSD/Windows 11/Office 2021/Alexa Built-in/Mixed Black/1.38 kg)

Stock : 150

Rs. 35990

VIEW ALL USERS

UrbanKart					
Products					
Contact					
Users					
+Add Category					
+Add Product					
All Orders Details					
Logout					
Welcome Rama					
User Id	First Name	Last Name	Email	Role	MobileNumber
1	Rama	Shah	admin@gmail.com	ADMIN	1234567890
2	Shalini	Mitra	customer@gmail.com	CUSTOMER	9876543210
3	atul	Patankar	atul@gmail.com	CUSTOMER	1234567890

ADD CATEGORY

UrbanKart

Products

Contact

Users

+Add Category

+ Add Product

All Orders Details

Logout

Welcome Rama

Add Category

Category Name

Enter Category Name

Description

Enter Description Here

Add Category

localhost:3000/users

UPDATE PRODUCT

UrbanKart

Products

Contact

Users

+Add Category

+ Add Product

All Orders Details

Logout

Welcome Rama

Update Product

Product Name

Realme narzo N55

Product price

12999

Product Description

realme narzo N55 (Prime Blue, 6GB+128GB)
33W Segment Fastest Charging | Super High-res 64MP Primary AI Camera Colour:Prime Blue Size:6 GB Ram + 128 GB Storage

Product Stock

299

ADD PRODUCT

UrbanKart

Products Contact

Users

+Add Category

+ Add Product

All Orders Details

Logout

Welcome Rama

Add Product

Product Name

Product price

Product Description

Product Stock

Category

Product Image

 No file chosen

Product expdate



Add Product


ALL ORDER DETAILS

UrbanKart

[Products](#) [Contact](#) [Users](#) [+Add Category](#) [+ Add Product](#) [All Orders Details](#) [Logout](#) Welcome Rama

Update Order Status

please copy Order Id First

Order Id	Product	Name	description	Quantity	Total Price	Customer Name	Address	City	Pin Code	Mobile Number	Status	Order date	Delivery Date
1		Realme narzo N55	realme narzo N55 (Prime Blue, 6GB+128GB) 33W Segment Fastest Charging Super High-res 64MP Primary AI Camera Colour:Prime Blue Size:6 GB Ram + 128 GB Storage	1	13039	atul Patankar	CDAC, Pashan, Pune CDAC	Pune	411015	1234567890	PLACED	2023-08-30	2024-12-12

localhost:3000/placedorders

6. TESTING

One of the main purposes of testing is to validate and verify that the system works as intended. No program or system design is perfect. However, if we implement the system without proper testing, then it may cause problems and lead to a bad user experience.

Testing and checking outcomes of each test gives us the best chance to detect and correct errors before the system is implemented in a production environment.

In the course of our project, we made an effort to manually test each component. In all cases, we obtained the desired results as demonstrated below.

A. CUSTOMER FEATURES TEST

S. No.	Description	Outcome	Result
1.	Register	New customer details saved in the database.	Passed
2.	Login	Fetches authenticated user details saved in database.	Passed
3.	Browse Category	Fetches list of all products from the database.	Passed
4.	Add products to Cart	The products along with necessary details were saved in database in the customer's cart.	Passed
5.	Place Order	The cart items associated with the customer were saved in the form of a placed order in the database.	Passed
6.	Logout	The session was cleared.	Passed

B. ADMIN FEATURES TEST

S. No.	Description	Outcome	Result
1.	Login	Fetches authenticated user details saved in database.	Passed
2.	Add New Product	The details of a new product were updated in the database.	Passed
3.	Manage Product Inventory	The inventory of the products was updated in the database.	Passed
4.	Logout	The session was cleared.	Passed

7. CONCLUSION

Our team developed the "UrbanKart" application to simplify online buying and selling. We utilized cutting-edge, versatile technologies that work well across different platforms. Additionally, we consciously chose open-source software to minimize production costs.

We also paid careful attention to the user experience, ensuring that our website is easy to navigate and provides a smooth experience.

In summary, "UrbanKart" is an excellent choice for any product trading business looking to establish an online presence. We are confident that its numerous features and visually appealing design will significantly enhance the business's prospects.

8. FUTURE SCOPE

Throughout our course, we've strived to make our project user-friendly and packed it with as many features as possible within our project timeline. Nevertheless, there are additional features that could enhance our application:

1. Highlighting top-selling products to promote customer favorites.
2. Offering personalized discounts based on a customer's purchase history and the quantity of products they buy.
3. Allowing customers to interact with feedback by upvoting, downvoting, or reporting it.
4. Expanding payment options beyond just credit cards.
5. Sending email invoices to customers after confirming their purchases.
6. Implementing a 'reset password' feature for users who forget their passwords.
7. Enhancing security with CAPTCHA on the login page.
8. Sending email notifications to users when items in their cart, previously out of stock, become available.

These additions would further enrich the user experience and functionality of our application.

9. REFERENCES

Following is the list of websites we referred during the course of our project:

1. <https://getbootstrap.com/docs/5.1/getting-started/introduction/>
2. <https://reactjs.org/docs/getting-started.html>
3. <https://www.baeldung.com/>
4. <https://www.w3schools.com/>
5. <https://docs.spring.io/springdata/jpa/docs/current/reference/html/#reference>
6. <https://javaee.github.io/javaee-spec/javadocs/>
7. <https://javadoc.io/doc/org.springframework.data/spring-datajpa/latest/index.html>