MINI PROJECT

(2021-2022)

"E-COMMERCE USING REACT"

PROJECT REPORT

Institute of Engineering & Technology

Submitted By:-

Himanshu Bansal (191500341)

Ronak Agrawal (191500678)

Lakshya Yadav (191500427)

Piyush Sharma (191500547)

Kanak Khandelwal (191500376)

Under the Supervision Of

Mrs. Harvinder Kaur

(Senior Trainer)

Department of Computer Engineering & Applications

Department of Computer Engineering and Applications
GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,
Chaumuha, Mathura – 281406 U.P (India)

Declaration

I/we hereby declare that the work which is being presented in the Bachelor of technology. Project **"ECommerce using React"**, in partial fulfillment of the requirements for the award of the ***Bachelor of Technology*** in Computer Science and Engineering and submitted to the Department of Computer Engineering and Applications of GLA University, Mathura, is an authentic record of my/our own work carried under the supervision of **Mrs. Harvinder Kaur, Senior Trainer, Dept. of CEA,GLA University.**

The contents of this project report, in full or in parts, have not been submitted to any other Institute or University for the award of any degree.

Sign:
Name of Candidate: Himanshu Bansal
University Roll No.: 191500341

Sign:
Name of Candidate: Ronak Agrawal
University Roll No. :191500678

Sign:
Name of Candidate: Lakshya Yadav
University Roll No.:191500427

Sign:
Name of Candidate: Piyush Sharma
University Roll No.:191500547

Sign:

Name of Candidate: Kanak Khandelwal

University Roll No: 191500376

Department of Computer Engineering and Applications
GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,
Chaumuha, Mathura – 281406 U.P (India)

Certificate

This is to certify that the project entitled "**E-Commerce using React**", carried out in Mini Project – I Lab, is a bonafide work by Himanshu Bansal, Ronak Agrawal, Lakshya Yadav, Piyush Sharma and Kanak Khandelwal and is submitted in partial fulfillment of the requirements for the award of the degree Bachelor of Technology (Computer Science & Engineering).

Signature of Supervisor:

Name of Supervisor: Mrs. Harvinder Kaur

Date: 29-11-2021

Department of Computer Engineering and Applications
GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,
Chaumuha, Mathura – 281406 U.P (India)

ACKNOWLEDGEMENT

Presenting the ascribed project paper report in this very simple and official form, we would like to place my deep gratitude to GLA University for providing us the instructor Mrs Harvinder Kaur, our Trainer and supervisor.

She has been helping us since Day 1 in this project. She provided us with the roadmap, the basic guidelines explaining on how to work on the project. She has been conducting regular meetings to check the progress of the project and providing us with the resources related to the project. Without her help, we wouldn't have been able to complete this project.

And at last but not the least we would like to thank our dear parents for helping us to grab this opportunity to get trained and also my colleagues who helped me find resources during the training.

Thanking You

Sign:

Name of Candidate: Himanshu Bansal

University Roll No.: 191500341

Sign:

Name of Candidate: Lakshya Yadav

University Roll No.: 191500427

Sign:

Name of Candidate: Ronak Agrawal

University Roll No: 191500678

Sign:

Name of Candidate: Piyush Sharma

University Roll No: 191500547

Sign:

Name of Candidate: Kanak Khandelwal

University Roll No: 191500376

ABSTRACT

An e-commerce website, by definition, is a website that allows you to buy and sell tangible goods, digital products or services online. Trade, be it barter exchange or buying and selling of goods and services has been prevalent for centuries. No one can be self-sufficient.

An ecommerce platform is a software application that lets you set up an online store and manage its marketing, sales, and operations.

There are 3 main types of ecommerce platforms on the market:
1.Open source.
2.SaaS.
3.Headless commerce.

CONTENTS

LIST OF FIGURES

Contributions

Himanshu Bansal(Team Leader): Managed project setup and created routes for pages and all bug fixes, code logic for searching and filtering.

Ronak Agrawal: Firebase setup, manage and frontend UI for login and register modules.

Lakshya Yadav: Documentation and node API using mongodb for security and request from database.

Piyush Sharma: Payment gateway using stripe for cards and orders and invoice management.

Kanak Khandelwal: Creating categories and subcategories using crud and image uploads.

CHAPTER-1

INTRODUCTION

1.1 CONTEXT

This Web Application "E-Commerce" has been submitted in partial fulfilment of the requirements for the award of the degree of Bachelor of Technology in Computer Science and Engineering at GLA University, Mathura supervised by Mrs. Harvinder Kaur. This project has been completed approximately two months and has been executed in modules, meetings have been organised to check the progress of the work and for instructions and guidelines.

1.2 MOTIVATION

- To introduce new products and services.
- To take advantage of the brand name.
- To enter the global marketplace.
- To react to pressure from competitors
- To meet customers' demand.
- To increase sales.
- To reduce transaction costs.
- To reduce customer support cost.

1.3 OBJECTIVE

The 'Online E-commerce Web application' Services department strives to provide solutions to develop and transfer easy and efficient ways in the digital age and to help reduce the human pressure and time. To help support shop collections, digital initiatives, and external partner institution digital projects, It provides services that include the digitization of analog objects, metadata management, digital preservation, and discovery and access of digital collections.

1.4 EXISTING SYSTEM

The E-commerce Management System has various flaws because most of the people don't use the system even though it has several advantages over traditional stores. The biggest problem is that it takes at least a day to deliver a product to the customer. While some other issues are a duplication of the product means the product is shown on the web some time differs with the original product due to which next time that customer goes to buy the product through the traditional type of store.

1.5 SOURCES

The source of our project (including all the project work, documentations and presentations) will be available at the following link- https://github.com/Himanshubansal155/mini-project-frontend

https://github.com/Himanshubansal155/mini-project-serve

CHAPTER - 2

SOFTWARE REQUIREMENT ANALYSIS

2.1 IMPACT OF E-COMMERCE WEBSITE ON DAILY LIFE

Today every one of us knows E-Commerce implies electronic commerce. E-Commerce basically means buy, sell and exchange products, services, and information through computers over the internet. On an E-Commerce platform, a person can deal with customers around the world. People perform buying and selling of goods and services over the internet network. Even payments can be made using credit cards. For its ease and simplicity E-Commerce has instantly become popular.

It's common to see people spending their time daily more on the internet for business, marketing, entertainment, work, and learning. Now a day's all the commercial and social activities are connected to the internet. And without E-Commerce, the world around the internet is impossible and unimaginable. For this reason, E-Commerce has become important in our daily life.

As E-Commerce is the demand of present time, businesses, customers, and nations, in a few years time will become compulsory to use for any transaction. Have you ever wondered what is the reason behind why E-Commerce is in so much demand?

E-Commerce being the online buying and selling process is the primary reason behind the growth of Internet users. E-Commerce for the Internet is as important as a heart is for a body.

2.2 PROBLEM STATEMENT

E-commerce provides an easy way to sell products to a large customer base. However, there is a lot of competition among multiple e-commerce sites. When users land on an e-commerce site, they expect to find what they are looking for quickly and easily. Also, users are not sure about the brands or the actual products they want to purchase. They have a very broad idea about what they want to buy. Many customers nowadays search for their products on Google rather than visiting specific e-commerce sites. They believe that Google will take them to the e-commerce sites that have their product.

The purpose of any e-commerce website is to help customers narrow down their broad ideas and enable them to finalize the products.

2.3 HARDWARE AND SOFTWARE REQUIREMENTS

Hardware Requirement

· Processor :intel i5
· Operating System : Google Chrome
· RAM : 8 GB (or higher)
· Hard disk : 256GB

Software Requirement

· Software used: Visual Code Editor
· Language used : React, Node, MongoDB
· Database: Firebase
· User Interface Design : Ecommerce website

2.4 MODULES AND FUNCTIONALITIES

▪ **Login Page**: This page is for those users who have already registered themselves on the web application and have a username and a password. There is also a way on this page for the new users to register themselves which will take them to the registration page.

▪ **Registration Page**: This is page is solely designed for the new users of the web application who are willing to register themselves. This page takes input of the various details of the user and stores it in the database, later helping the user to login into the account with credentials they have provided.

▪ **Forget Password Page**: This page comes into picture when one of the users forgets the login credentials. In this case this page asks for the email-id with which the user has already registered. The app will check if there is any entry in its database with the id and if there a mail will be sent to the same id for recovering the credentials and notification will be given to the user.

▪ **Navigation Drawer**: This is the most important part of the application that provides interactivity within the app as it connects the various activities together like it is a side bar on which the profile, the dashboard, the favourites section, the FAQ section ,the About page of the page are linked and on clicking on each you can visit the pages.

▪ **Dashboard Page**: This is the page displayed for every user after entering the web application successfully. It contains the search bar where the user can search the product according to the wish as well as some of the products are suggested with the genres recently searched or the most popular one.

▪ **Product Description Page**: After searching the product there are a number of product that appear, when the user selects the product the page will be displayed that will contain all the details of the product .

▪ **Profile**: This page will contain all the user details that the user entered while creating the account on the web application. The user can update and make changes to all this information as desired.

▪ **FAQ Pages**: This page contains some of the questions that might arise in the mind of the users while using the web application and to answer those, these answers are pre-written.

▪ **Logout page**: Then is this last panel for the users to sign out from the account. As soon as the users sign out they are brought back to the login page.

2.5 E-COMMERCE ON WEB APPLICATION

An e-commerce website, by definition, is a website that allows you to buy and sell tangible goods, digital products or services online. Trade, be it barter exchange or buying and selling of goods and services has been prevalent for centuries. No one can be self-sufficient.

An ecommerce platform is a software application that lets you set up an online store and manage its marketing, sales, and operations.

CHAPTER - 3

SOFTWARE DESIGN

3.1 USE-CASE DIAGRAM:

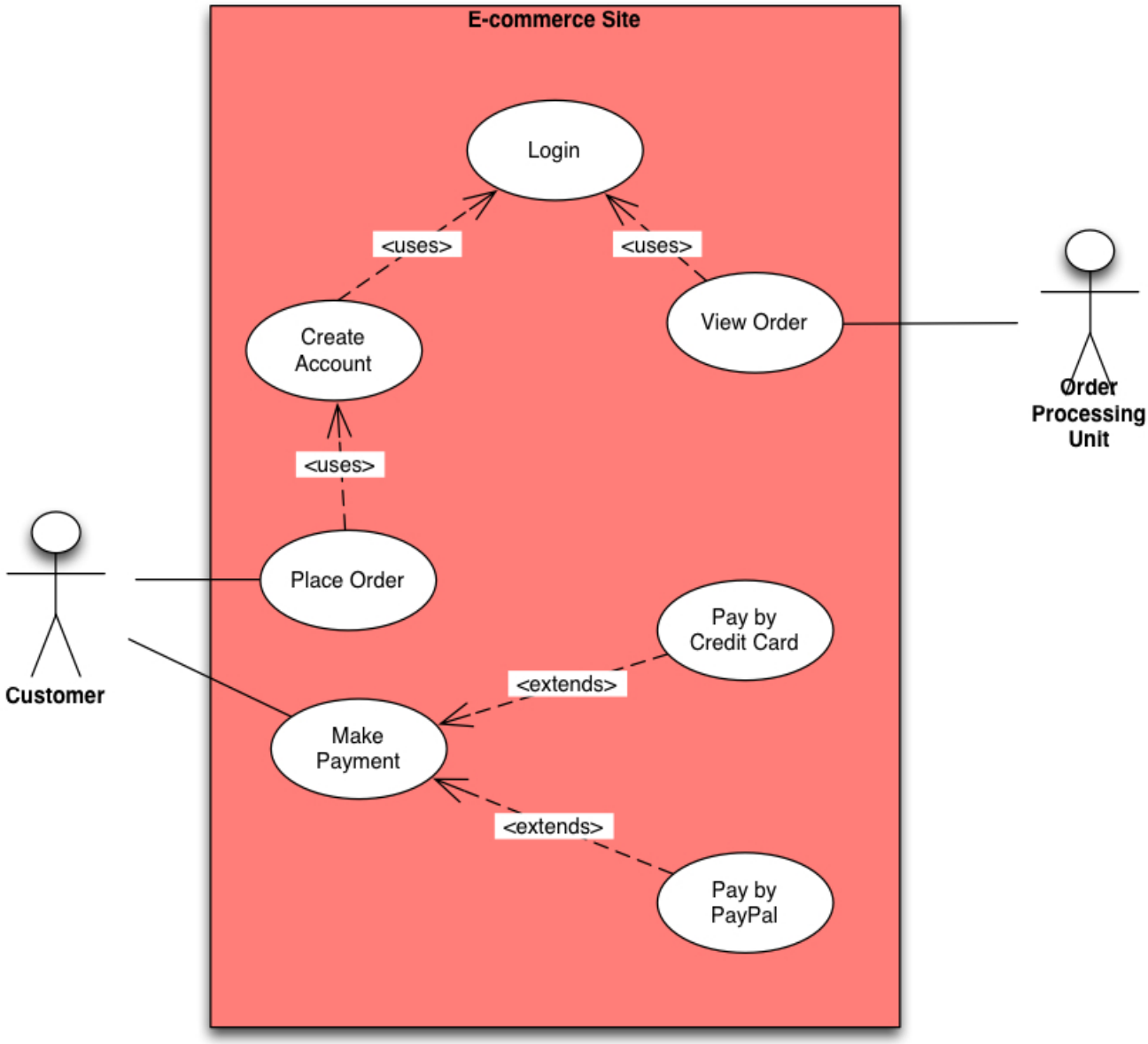


Fig 1 :- Use–Case Diagram

So the above diagram represents the point of view of the new user, the registered user, and the developer and the arrows to each module show the interactivity of the person.

The New user will first be required to create a new account so will interact with the “sign-up module” and fill up all the details that will be stored in the database. The next user will land into the dashboard where there will be a “search bar” where the user can enter the product he desires to buy. The list of products will appear on the screen and the new user will interact with the “select the product” module. Then the user can interact with the “Description of the Product” module to read more about the product.

For the registered user, the user will have the credentials to login and will interact with the “login module” and then the user will enter into the dashboard where there will be a “search bar” where the user can enter the product he desires to read or any related keyword to the product. The list of products will appear on the screen and the new user will interact with the “select the product” module. Then the user can interact with the “Description of the product” module to read more about the product.

For the developer he can connect with each and every module mentioned in the use case diagram. Apart from the modules mentioned in the use case diagram there are modules like profile, sign out, FAQ and about us section that every registered user can access.

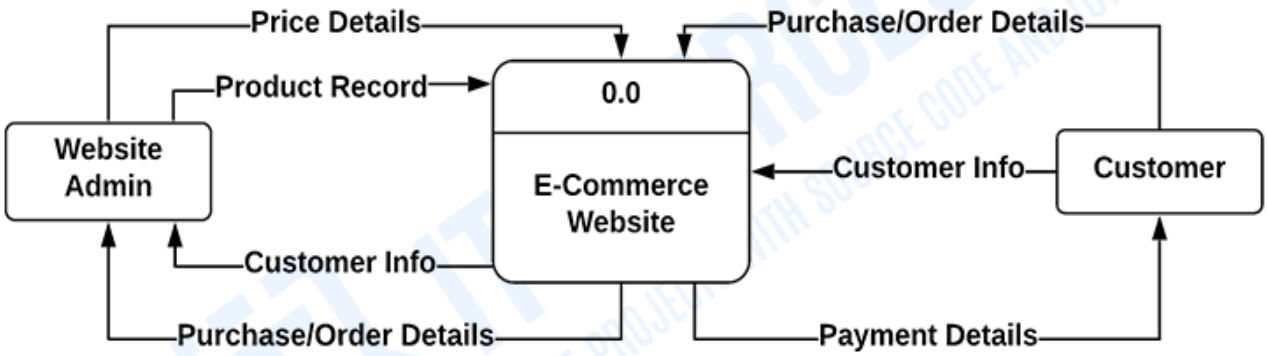
3.2 DATA FLOW DIAGRAM

The product list details contain the manufacturer name, the product poster, the product genre, and a short review about the product, the price of the product and the link to buy the product.

As soon as the user encounters the login module, we check the credentials of the user if the credentials are correct as per the database we proceed to the dashboard else if wrong we encounter the forget password module and then mail is sent to the registered mail id. From the dashboard module, we can interact with the favourites section, the profile module, the FAQ Section, The sign out section. On searching the product, from the dashboard module, we encounter the check product list activity, checking the product details activity and the published date activity.

The DFD for the E-commerce is shown in next page:-

E-COMMERCE WEBSITE SYSTEM



DATA FLOW DIAGRAM LEVEL 0

Fig2:-Data Flow Diagram

3.3 SEQUENCE DIAGRAM

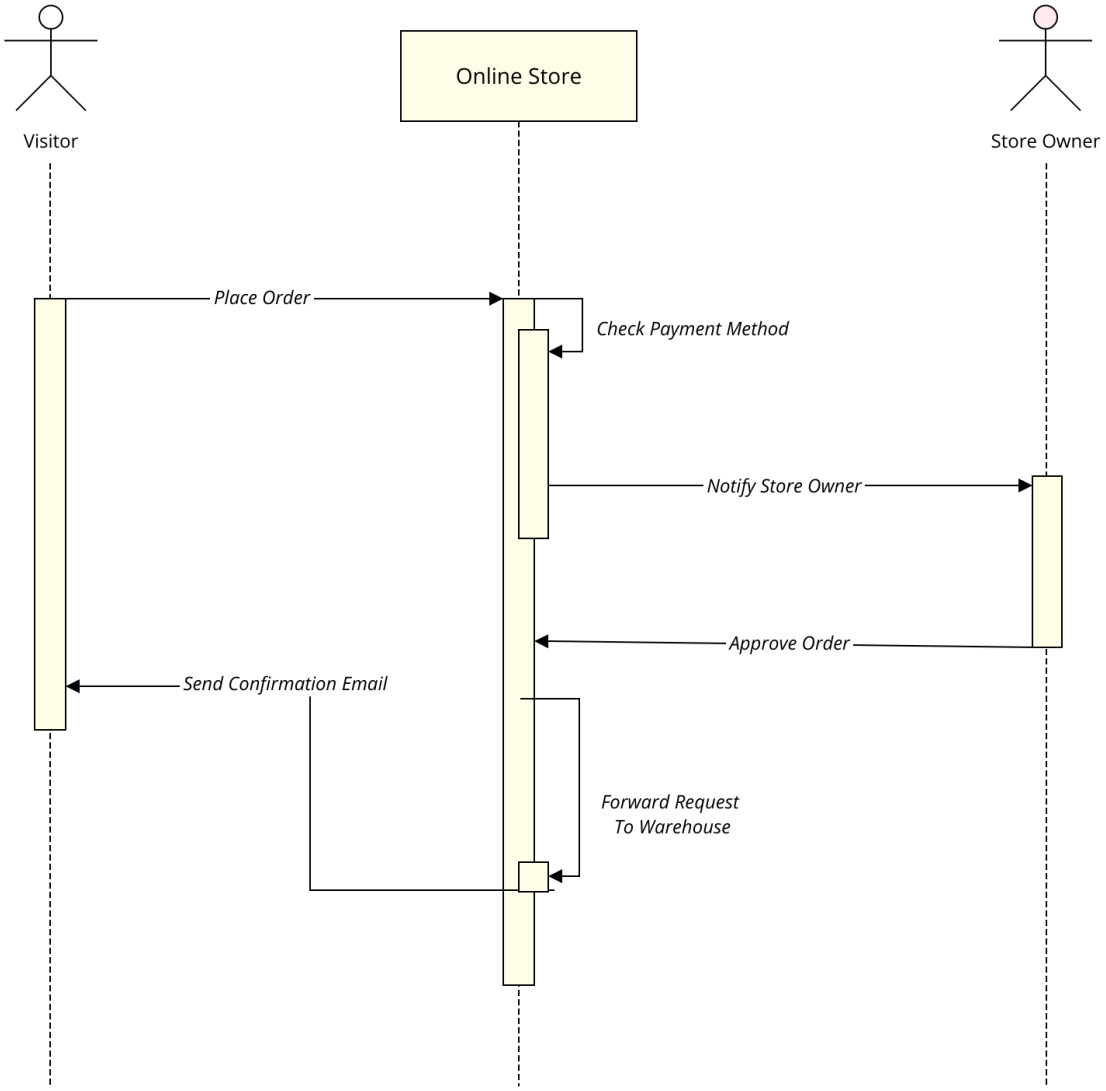


Fig 3 :- Sequence Diagram

CHAPTER - 4

TECHNOLOGY USED

4.1 REACT

React is the most popular front-end JavaScript library in the field of web development. It is used by large, established companies and newly-minted startups alike (Netflix, Airbnb, Instagram, and the New York Times, to name a few). React brings many advantages to the table, making it a better choice than other frameworks like Angularjs.If you're new to ReactJS or just refreshing yourself on the core concepts, this article will give you an introduction to What is React and all of React's fundamentals.

REDUX:-

Redux is simply a store to store the state of the variables in your app. Redux creates a process and procedures to interact with the store so that components will not just update or read the store randomly. Similar to the bank. It does not mean because you have money in the bank that you can go anytime, open the vault, and take money. You have to go through certain steps to withdraw money.

In the rest of the article, I will show how to create a Redux Hello World to explain how Redux works before adding it to React.

NODE:-

Node.js is an open-source, cross-platform, JavaScript runtime environment that executes JavaScript code outside of a web browser. Node.js is a popular, lightweight web framework for beginners, and it is used by many big companies like Netflix and Uber.

MongoDB:-

MongoDB is an open source NoSQL database management program. NoSQL is used as an alternative to traditional relational databases. NoSQL databases are quite useful for working with large sets of distributed data. MongoDB is a tool that can manage document-oriented information, store or retrieve information.

4.2 TOOLS AND LANGUAGES

Tools used to build the Web App are:-

Virtual Studio Code:-

Visual Studio Code combines the simplicity of a source code editor with powerful developer tooling, like IntelliSense code completion and debugging.
First and foremost, it is an editor that gets out of your way. The delightfully frictionless edit-build-debug cycle means less time fiddling with your environment, and more time executing on your ideas.

HTML:-

HTML stands for hyper text markup language – it is used to display web pages on the browser. In order to create web pages, one should learn HTML.

As its name suggests, HTML is a markup language, not a programming language. This means that we do not write programs using HTML; instead, markup language is mainly used to apply layout and formatting conventions to a text document. In other words, markup language makes text more interactive and dynamic.

CSS:-

(Cascading Style Sheets) describes how HTML elements will be displayed on a webpage. It controls the design elements of a web page such as color schemes, dimensions of the HTML elements, webpage layout, and variations in display for different devices and screen sizes.

JAVASCRIPT:-

JavaScript is a scripting or programming language that allows you to implement complex features on web pages — every time a web page does more than just sit there and display static information for you to look at — displaying timely content updates, interactive maps, animated 2D/3D graphics, scrolling video jukeboxes, etc.

4.3 BASIC TERMINOLOGY

Layout: Layout is the parent of view. It arranges all the views in a proper manner on the screen.

Activity: An activity can be referred to as your device's screen which you see. Users can place UI elements in any order in the created window of the user's choice.

View: A view is an UI which occupies a rectangular area on the screen to draw and handle user events.

Manifest file: Manifest file acts as a metadata for every application. This file contains all the essential information about the application.

API: Short for Application Programming Interface. APIs are functions that developers can call on to access specific features by calling upon programs, code, and services that others have written. For example, if a developer wants to draw a button on the screen, she can insert a small bit of code that says "draw this kind of button, with this color and size and style, at this location" instead of dozens of lines of code that tells the graphics processor, in detail, exactly how to draw a button. If the application wants your location, it can use the location API to "get the device's location" and let Google's code handle the rest, instead of requiring the developer to build an entire location service from scratch just for her own app. There are thousands of APIs in Android, covering everything from drawing interface elements, to the cameras, to location access, to accessing storage, to 3D graphics (see: OpenGL ES) and much more.

Implicit intent: It does not name a specific component, but instead declares a general action to perform, which allows a component from another app to handle it. ·

Explicit Intent: It specifies the component to start by name. You'll typically use an explicit intent to start a component in your own application, because you know the class name of the activity or service you want to start.

Navigation bar: Web Navigation Drawer is a sliding left menu that is used to display the important links in the application.

Fragment: A Fragment represents a behavior or a portion of the user interface in a Fragment Activity. You can combine multiple fragments in a single activity to build a multi-pane UI and reuse a fragment in multiple activities.

Firebase: Is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. It is built on Google's infrastructure.

JSON: Stands for JavaScript Object Notation. It is an independent data exchange format and is the best alternative for XML. JSON is used for data interchange (posting and retrieving) from the server.

CHAPTER -5

IMPLEMENTATION AND USER INTERFACE

Creating a web app concept design with screen sketches and functional flow diagrams is the best way to communicate your vision to the web app developer. Making the concept clear to the developer is probably the most important factor in successful web app development. Yet it is one of the most common problems or obstacles in a web app development outsourcing project.

No matter what the marketing and profit goals are or if you are outsourcing an app for your personal use, you need to fully design and document the app concept if you expect a programmer to make your vision a reality. Developers are not mind readers and even descriptions given during conversations can be very fleeting or interpreted differently. Fully documenting your concept, therefore, leaves little to chance. The two most important things to do are: A) make a comprehensive description of how the app works and what it does (functionality) and B) create a comprehensive description of what the user sees and does (look and feel).

5.1 Implementation of the E-Commerce Website:

Implementation of E-commerce websites takes place in various phases. Firstly we build the login interface then Navigation drawer i.e. make fragments for each of the list items using the Navigation view and then make various layouts for the supporting features and connect the app with the Google API to fetch the required product. And finally we parse the Jason object to get the data in the required format and then display the result.

5.1.1 Step to be followed to develop the web app:

1. Firstly we created the Navbar and home screen for choosing different screens for the app.
2. After that we create login phase which comprises of various phases that are mentioned below:
   · Login Page: allows user to login into the app if the user is existing one ·
   . Register Page: If the user is new to our app then firstly he/she has to register .
   · Forgot Password: allows users to reset the password if they forget the previous password.

· For authenticating the user we have used firebase authentication and mongo.

3. Now, we are going to create home page using different functionality of react and its libraries:

· React Router dom

· Bootstrap

· AntD Icons

· Redux as store for storing data

· Lodash for small functions

4. .Creating Backend for our web app. Our third party libraries used are:

· nodemon for better efficiency of running backend after changing data

· dotenv for env files

· express

· cors

· mongoose

· morgan

5. Now we have created various activities like shop, cart, home, login, register, search, filters and many more.

6. In this step we connect our web app with an API using Mongo .

7. After that we parse the JSON object that we have received as a response for our query to get the data in the standard form.

8. Now we add data (that we have received from API) to different activities .

9. In the description Activity there are various functionality. Some of them are mentioned below ·

· Buy Here: It will allow users to purchase that product and redirect the user to the buying page.

· Cart: it will add the product to the cart that you can read to later.

5.1.2 Step to be followed by the user

1. Firstly, we have the Login activity which consists of following steps

   · Register : for new User

   · Login: For existing as well as new user

   · Forgot Password: To reset your password

3. We authenticate and store the user information from the Firebase authentication and save it to mongo after login of the user. 4. After that, we made a structure of our ecommerce site which includes various functionality

   · Home Page: To check the latest products and view all products available.

   · Shop Page: It is used to select products on search or filter basis like on price, rating, category, brand, subCategory, color etc .

   · Cart Page: To see the selected product that you have added or you found interesting and have interest in buying it.

   · FAQ's Fragment: It comprises all the frequently asked questions.

   · Sign-out: logout from the site on hovering of your name.

5. In the Home Page we also include the search bar in which the user can search for the products of their interest.
6. After that list of product according to your search will appear
7. Select the product according to your choice.
8. Then the description page of the product will appear. It comprises of the following things: · Product's Name

   · Manufacturer's Name

   · Manufactured Date

   · Rating

   · Price

   · Remaining items

9. If you want to add the product into cart then in the product modal the Add to cart option is also given. You can see the products that are added in the cart into the Cart Page.
10. Now you can buy things from your cart product.

Preview of pages

1. Login page :-

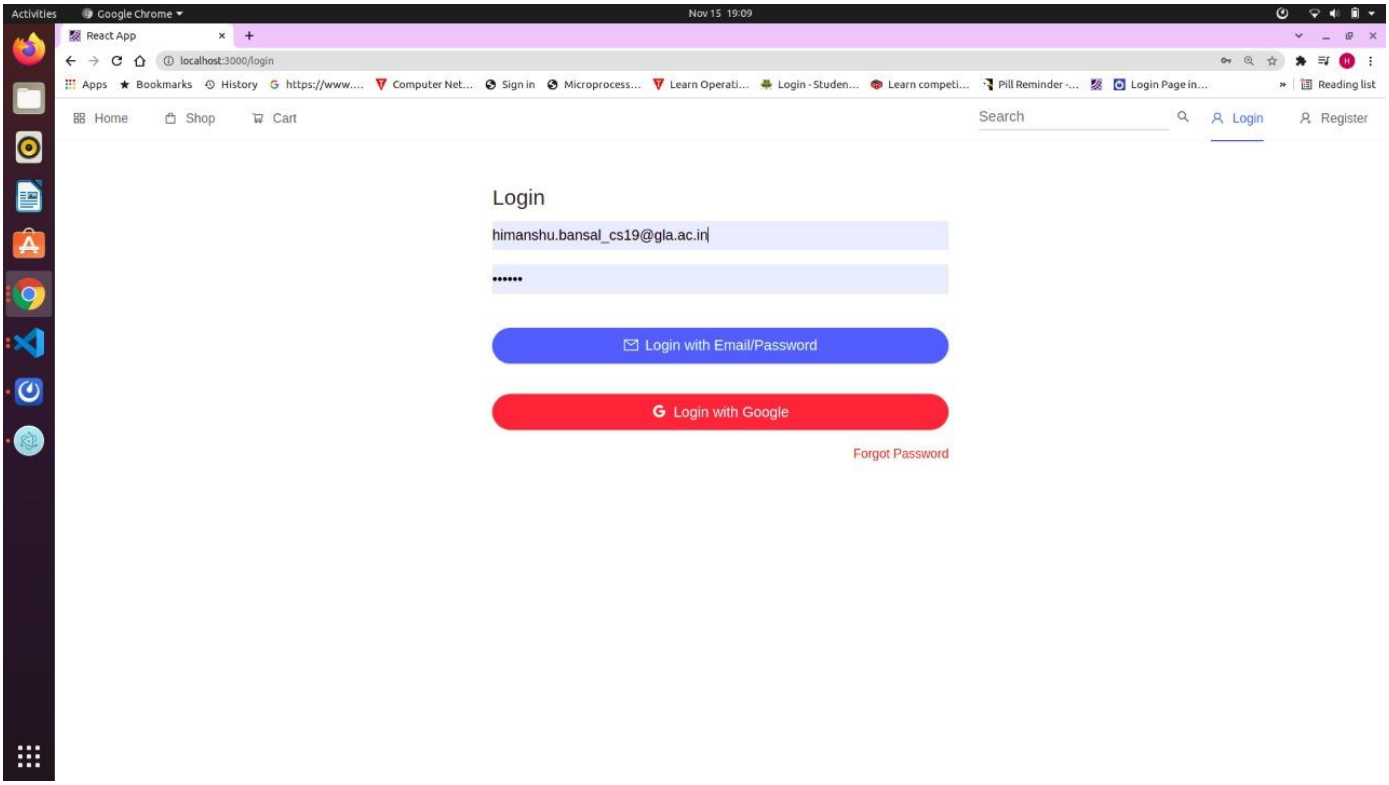


Fig 4:- Login page

2. Admin Dashboard :-

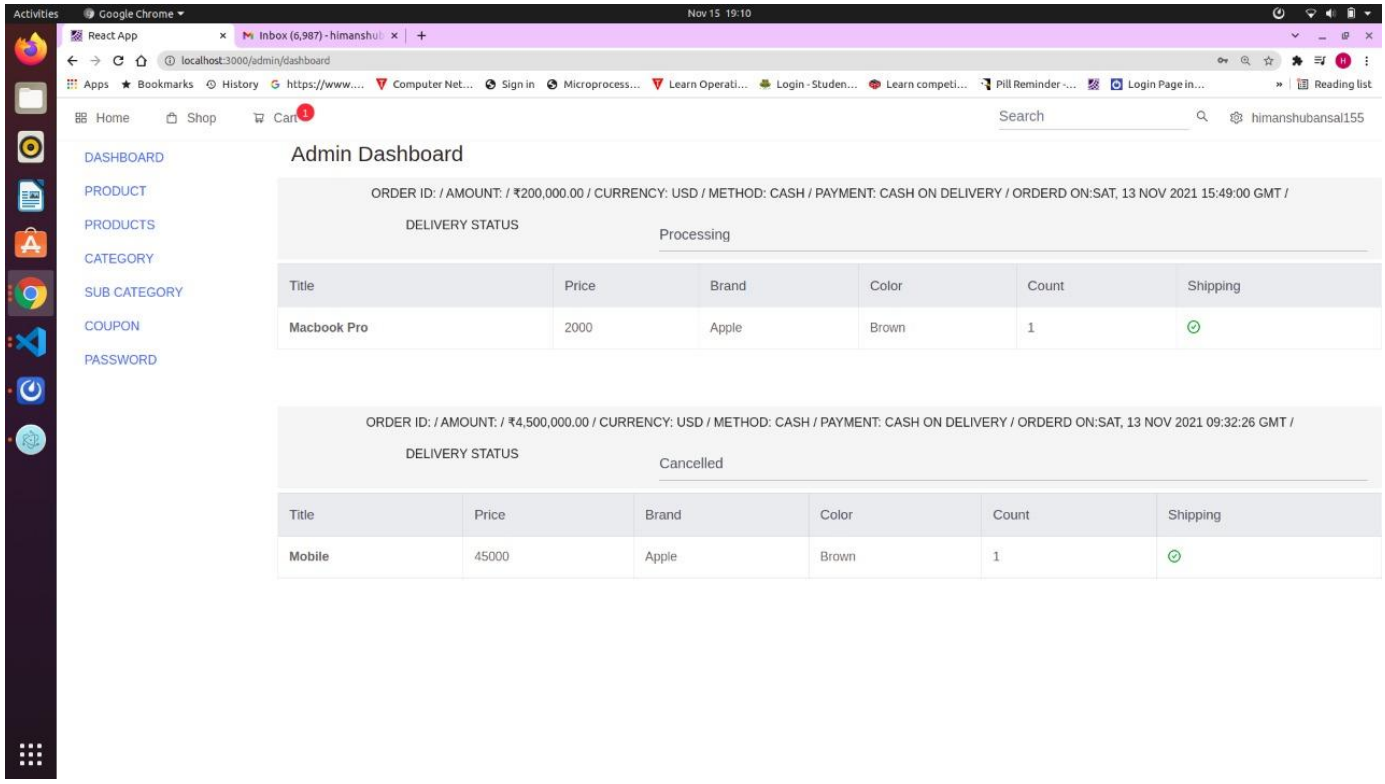


Fig 5:- Admin Dashboard

3. Cart

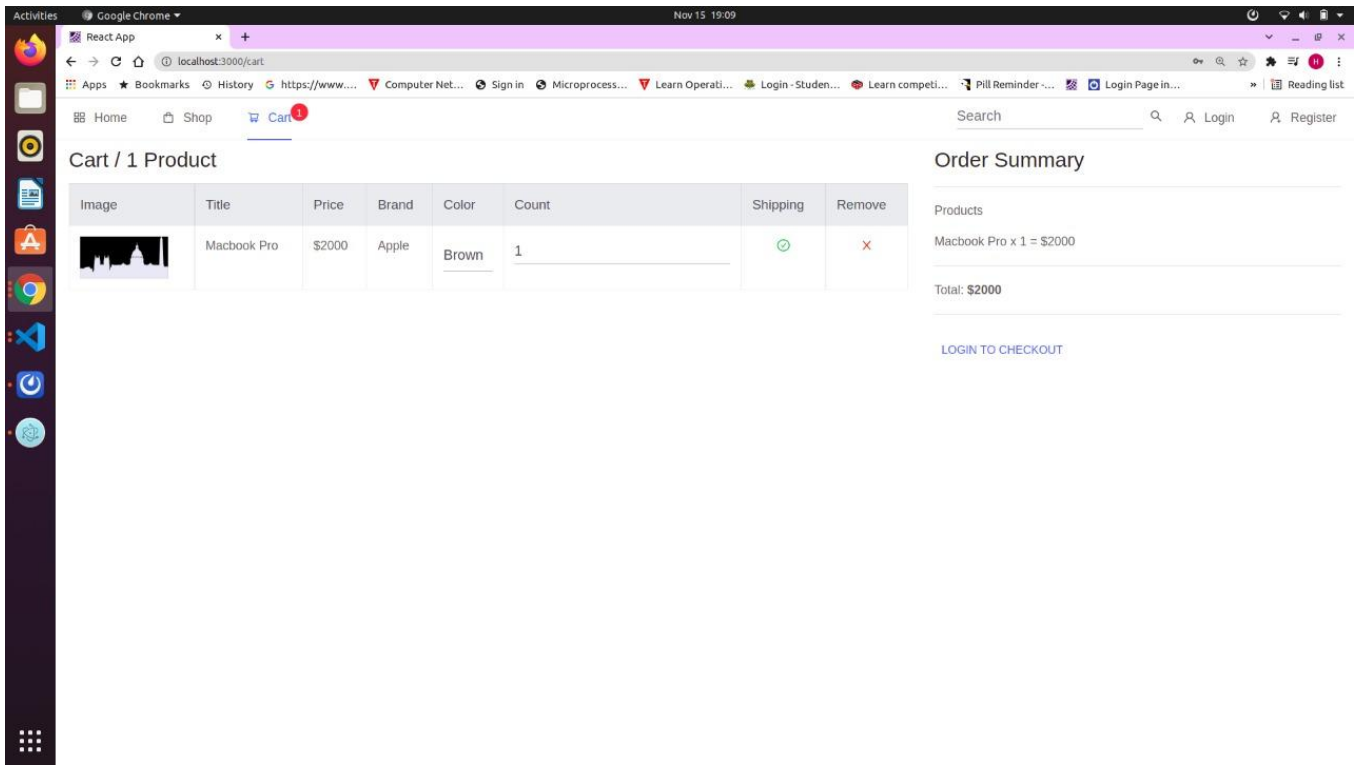


Fig 6:- Cart

4. Dashboard

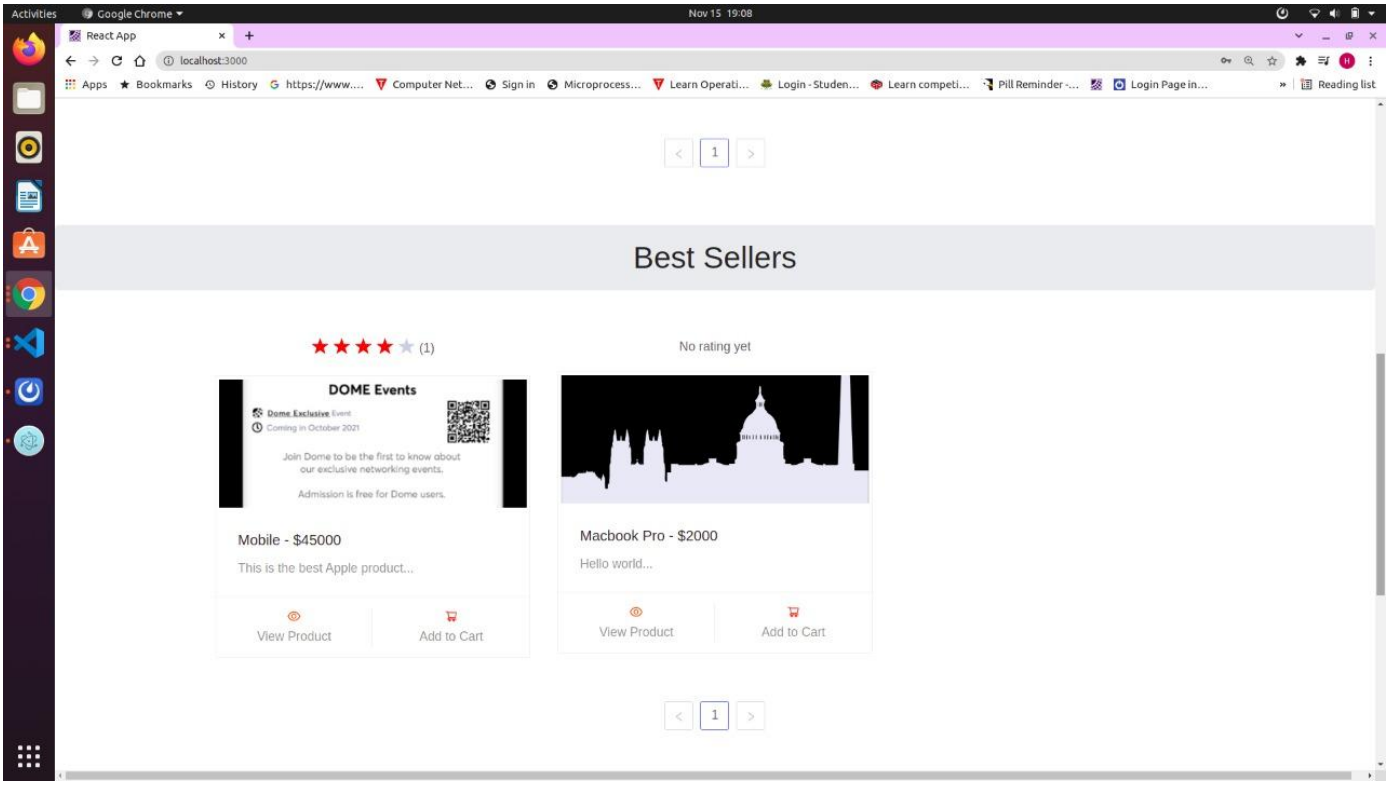


Fig 7.1 :- Dashboard

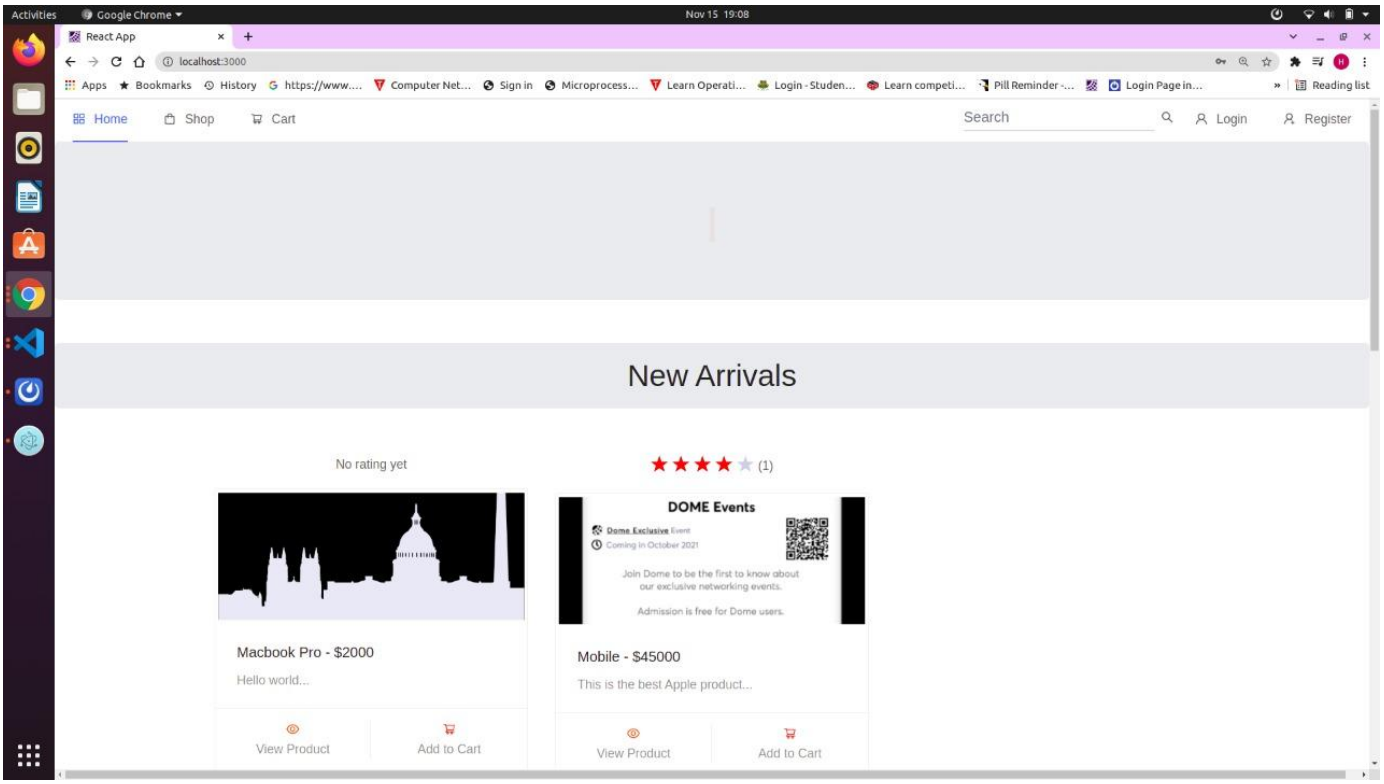


Fig 7.2:-Dashboard

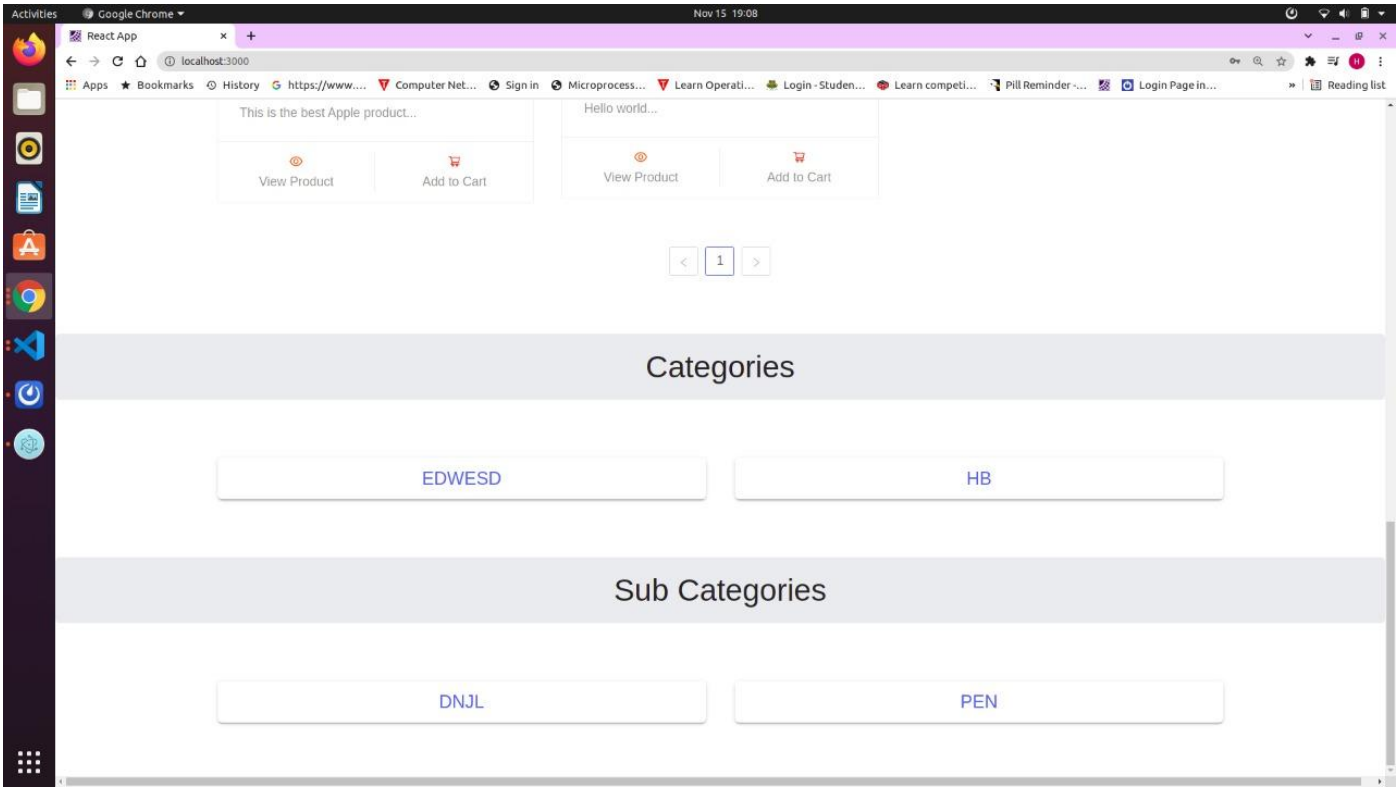


Fig 7.3:- Dashboard

5. Email

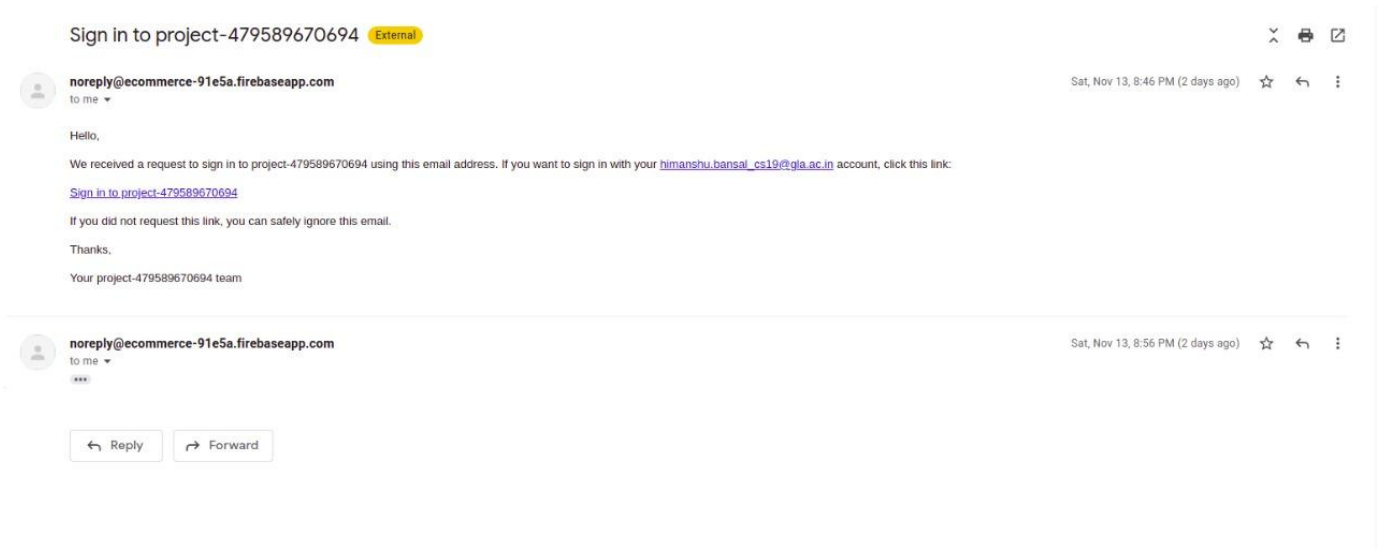


Fig 8:-Email

6. Forgot Password

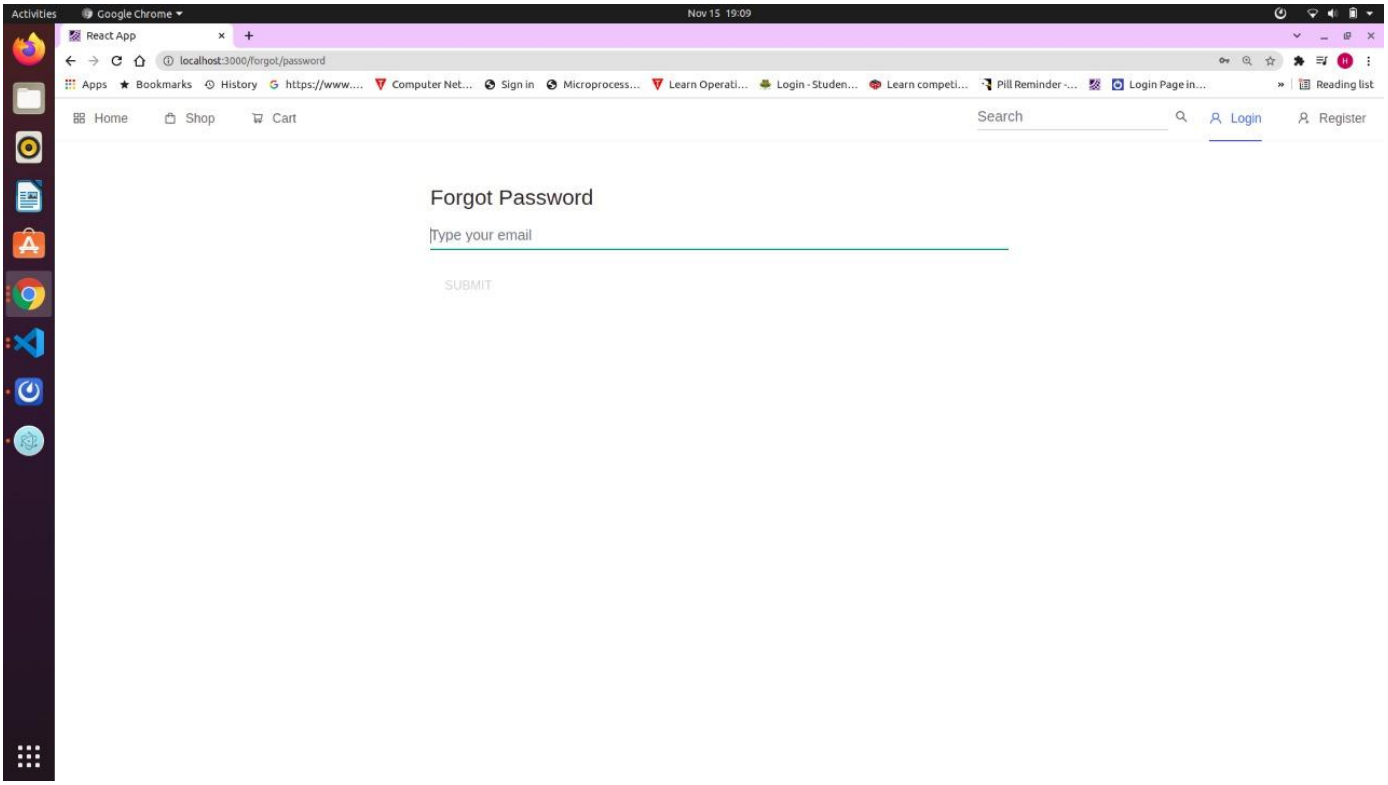


Fig 9:- Forgot Password

7.New Password

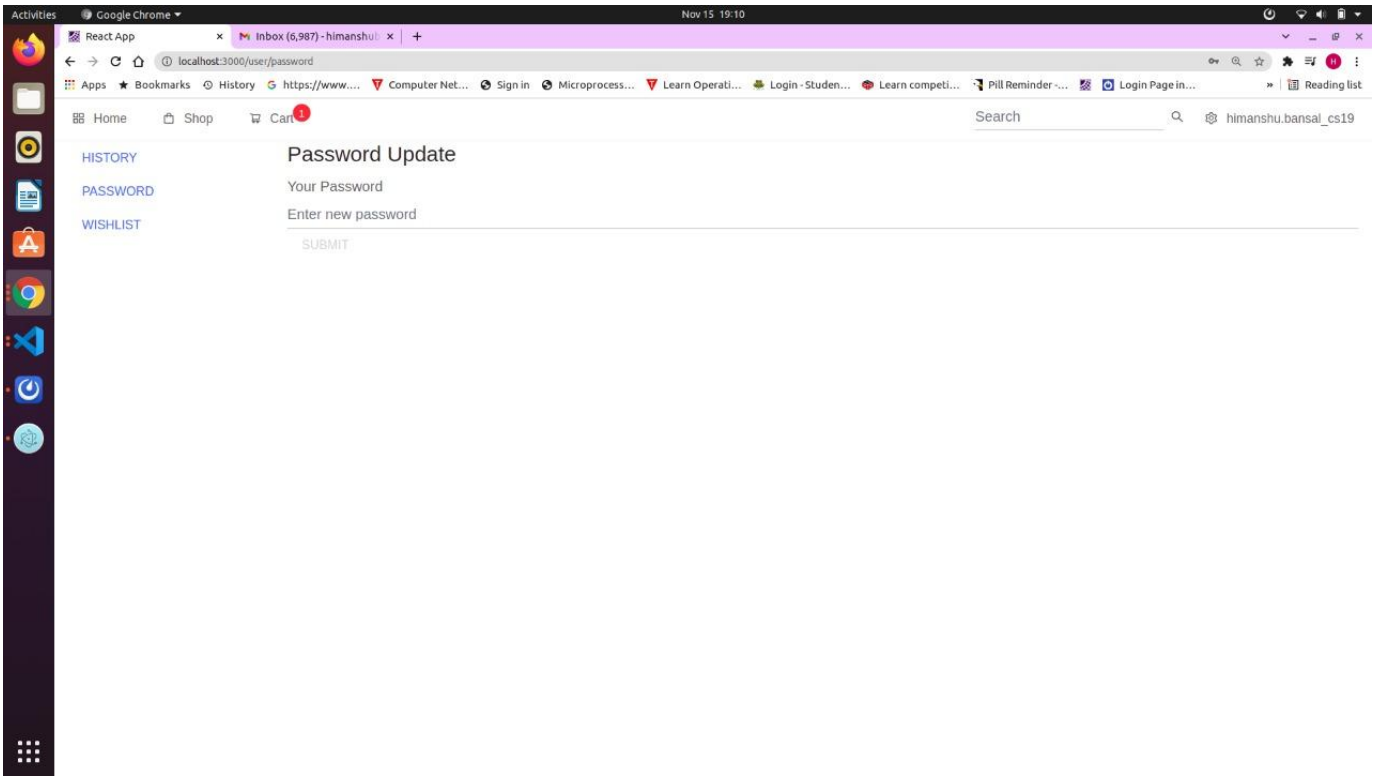


Fig 10:-New Password

8. Products

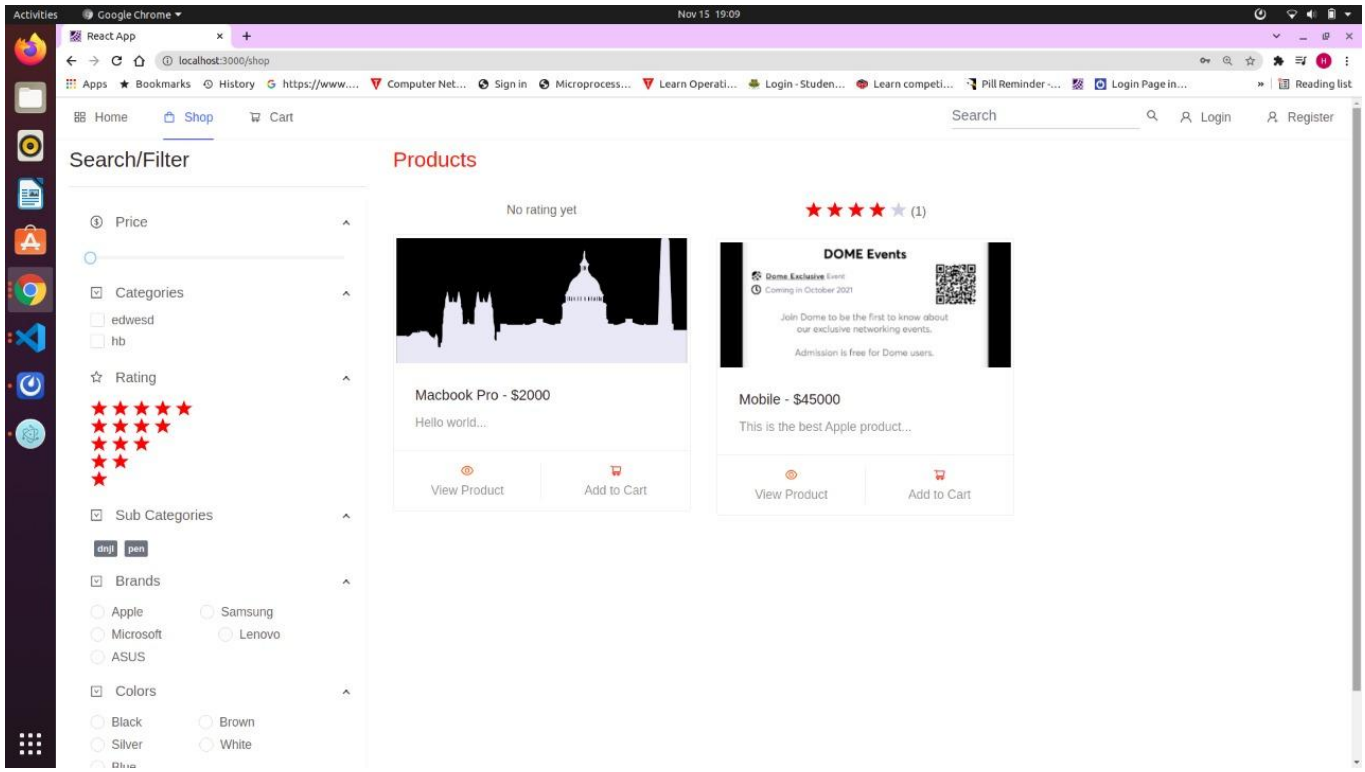


Fig 11:- Products

9. Registration

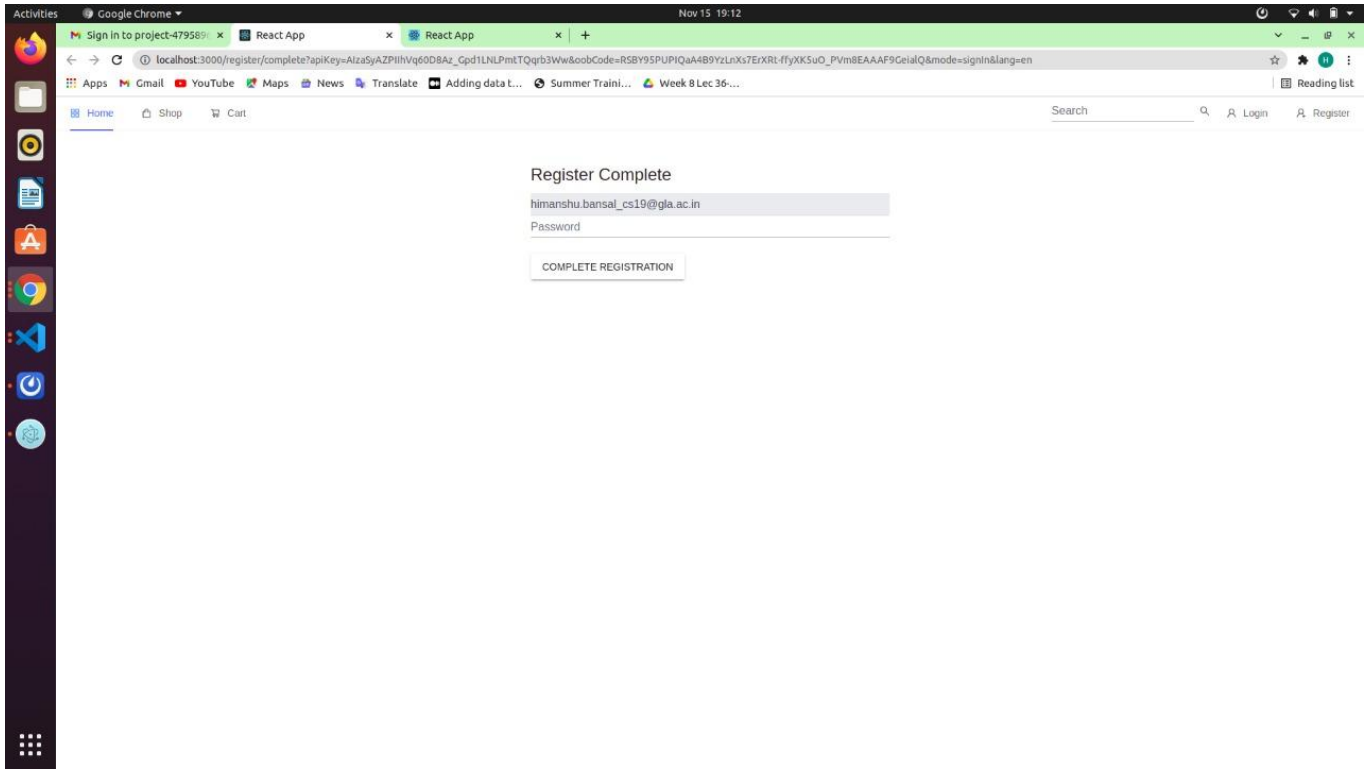


Fig 12:- Registration

10. Register page

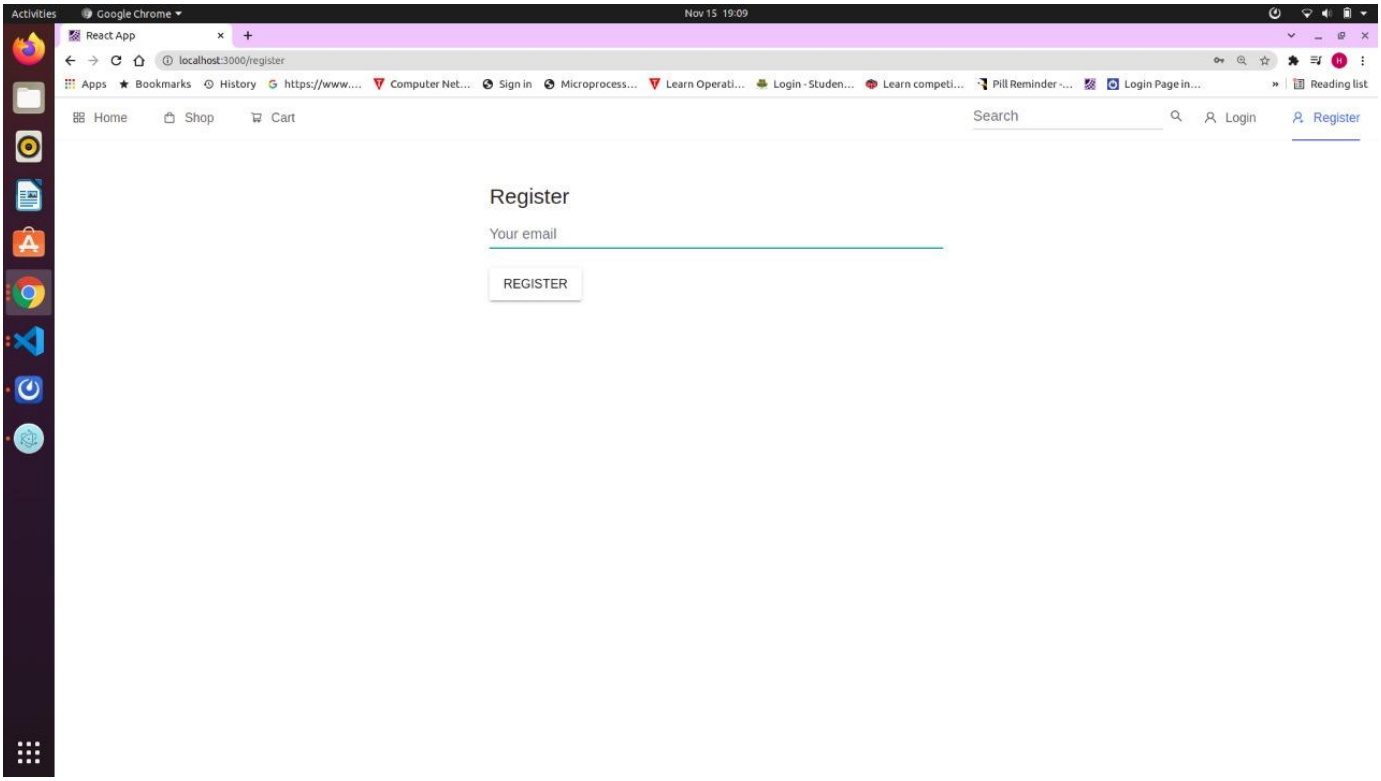


Fig 13:- Register Page

11. User History

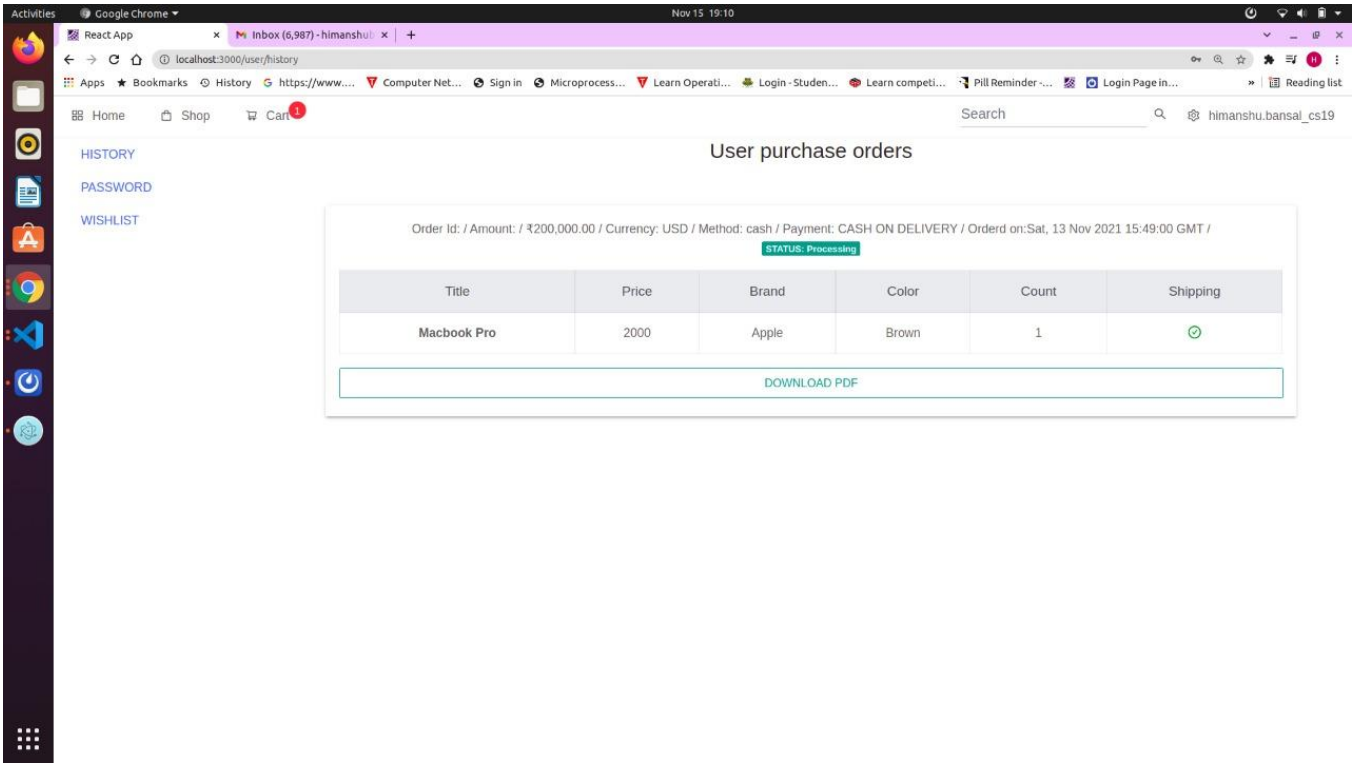


Fig 14:- User History

12. Wishlist

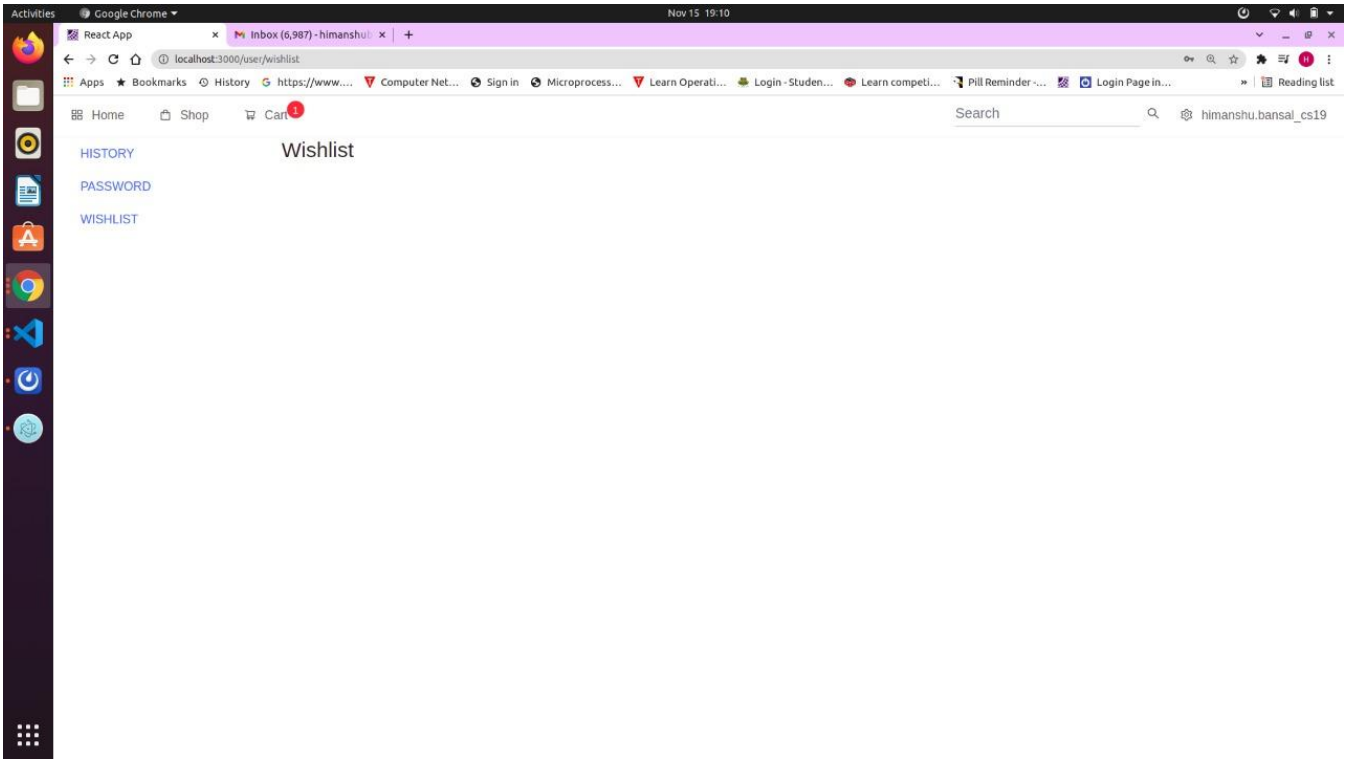


Fig 15:- Whishlist

CHAPTER - 6

TESTING

Once source code has been generated, software must be tested to uncover as many errors as possible before delivery. It is very important to work the system successfully and achieve high quality software. Testing includes designing a series of test cases that have a high likelihood of finding errors by applying software-testing techniques.

System testing makes logical assumptions that if all the parts of the system are correct, the goal will be successfully achieved. The system should be checked logically. Validations and cross checks should be there. Avoid duplications of record that cause redundancy of data.

In other Words, Testing is the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not. It is executing a system in order to identify any gaps, errors, or missing requirements in contrast to the actual requirements.

There are different types of testing some of them are listed below:

6.1 Installation Testing:-

Installation testing is carried out by our teammates. It is ensuring smooth working of the application without ending up in errors, partial installation etc.

6.2 Unit Testing:-

It focuses on the smallest unit of software design. In this we test an individual unit or groups of inter related units. It is often done by programmers by using sample input and observing its corresponding outputs. In this testing technique we are primarily focuses on:-

· Loop methods and functions are working fine or not.

· Misunderstood or incorrect Arithmetic precedence

· Incorrect Initialization

Unit Testing of the app:-

Test cases	Description	Expected Outcome	Result
1	Register Screen	Should display register activity where you need to fill the required details	Pass
2	Login Screen	Should display a login screen And ask for your credentials.	Pass

7	Profile	Should display the information that you have entered	Pass
8	View products	View Home Page	Pass
9	Search bar	Should give the details of the products that you have searched	Pass
10	View product Description page	Should show the information of the displayed product	Pass

11	Add to favourites	Should add the selected product into the favourites	Pass
12	Clear Favourites	Should remove the selected product from the favourites	Pass
13	Preview	Should display the preview of the product	Pass
14	Logout	Sign out you from the app	Pass

Table 1: Unit Testing of E-commerce website

6.3 User Testing

User testing is the process through which the interface and functions of a website, app, product, or service are tested by real users who perform specific tasks in realistic conditions. The purpose of this process is to evaluate the usability of that website and to decide whether the product is ready to be launched for real users.

This app was tested by our teammates and friends who are using different laptops and also tested on different emulators to check its performance and it seems to be working fine. Users of this application are satisfied with the facilities and performance of the application and like the way how the app is worked.

6.4 Compatibility Testing

This application was tested and used on different devices . The application worked fine and is stable. The application worked fine in portrait mode and there isn't any problem with compatibility.

CHAPTER -7

CONCLUSION

This project is only a humble venture to satisfy the needs in a shop. Several user-friendly coding have also been adopted. This package shall prove to be a powerful package in satisfying all the requirements of the organization. The objective of software planning is to provide a framework that enables the manager to make reasonable estimates made within a limited time frame at the beginning of the software project and should be updated regularly as the project progresses. This website provides a computerized version of the shop manipulation system which will benefit the users as well as the visitor of the shop. It makes the entire process online where users can search for products, and buy various products. It also has a facility for common users by login into the system where users can login and can see the status of ordered items as well as request for items or give some suggestions. It provide the facility of admin's login where admins can add various item, review users activity and also give occasional discount and also add info about different events for the customer

REFERENCES

1. Introduction to Web Development:

https://en.wikipedia.org/wiki/Web_development#:~:text=Among%20Web%20professionals%2C%20%22Web%20development,available%20with%20basic%20technical%20skills.

2. HTML:

https://developer.mozilla.org/en-US/docs/Web/HTML

3. CSS:

https://developer.mozilla.org/en-US/docs/Web/CSS

4. JAVASCRIPT

https://developer.mozilla.org/en-US/docs/Web/javascript

5. NODEJS

https://nodejs.org/en/docs/

6. REACT

https://reactjs.org/docs/getting-started.html

7. MONGODB:

https://www.mongodb.com/cloud/atlas/lp/try2?utm_content=rsatest091521_exp_rsaad&utm_source=google&utm_campaign=gs_footprint_row_search_brand_phrase_intent_test_atlas_desktop_rsaexp&utm_term=mongo&utm_medium=cpc_paid_search&utm_ad=p&utm_ad_campaign_id=14649527711&adgroup=124499090382&gclid=CjwKCAiAp8iMBhAqEiwAJb94z-AKDyPtrXcXK2Y3IJY0gcNFIWUA2i3urJSekqcchVBaefCV3rR80xoCtW4QAvD_BwE

8. For rectifying the error : https://stackoverflow.com/