

An E-Commerce Web Application for Electricals and Electronics Store

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Abstract: *E&E Wizard is an e-commerce web application that provides a seamless shopping experience for its users. With a user-friendly interface and a wide range of products to choose from, E&E Wizard makes it easy for customers to find what they are looking for and make purchases quickly and easily. The application also offers a number of features to enhance the shopping experience, including compare products, product recommendations, wish lists, and a secure checkout process including various payment options, & other features like tracking warranty/guarantee of purchased products & take appropriate actions. Whether you are a seasoned online shopper or new to the world of e-commerce, E&E Wizard is the perfect choice for all of your shopping needs.*

Keywords: E-commerce, Web-application, Online-Shopping, web-development, Front-end, Back-end, online-payment.

I. INTRODUCTION

An interactive and informative web application for electronic and electrical business. Where customer can roam through categories of products take a view, gets stock alerts, advertisements of offers and products and customer can also compare the products to get clear and better idea about what to buy and what not to buy. Customer also gets recommendations according to the products they are searching. This web application also includes the functionality where customer can also track warranty of the product. It includes the secure and multiple payment options. And customer can have on call support. This website will be accessible for all the customers/users and shop owner/admin. They can login/register to the website. After successful login or register, their data will be stored in the database. Customers/users will be directed to homepage (After Login/Register) Where they can search their desired product. If buyer wants to buy the product, then he will be taken to cart & then to payment gateway or if he wants to buy it later, he can store it in the cart/wish-list. After successful payment order orders will be placed. Customers/users will be having multiple secure payment options to make payments. This web application also includes feature for admin/shop owner to add or show the advertisement, discount/offer flyers, news about products. And can also make the announcements like new product alert or stock alert. While customer roaming throughout the web pages or searching the products their searching pattern will be noticed and the recommendations of products will be generated accordingly.

As this web application is all about electrical and electronic products, generally these product holds warranty or guarantee of amount of period, so after purchasing products from this web application customer/user will be able to track the details about warranty or guarantee of their product. This functionality will clear the things between customers & shop owner & customers can take appropriate actions after things happen to their purchased products. This project of web application make sense in several directions, first is that if the customers don't want to make visit to shop in physical mode the he can just do online shopping or if customers just want to take a look at products the they can just sit at their place and get information about products. By tracking the purchase date, it will be ease to both customer & shop owner to track the warranty and guarantee, and shop owner can provide services accordingly.

II. RELATED WORK/FUTURE SCOPE

The customers now a days are adopting the habit of shopping online, they do not want to go to shop and purchase things, they just go through the product online & decide. The online business is increasing the profit by increasing sells & at the same time cutting extra expenses like rents, bills, etc. In the current era which is leaning or already leaned

towards the internet, doing business in offline mode won't put you in competition. To survive the today's competition one should have to move towards e-commerce (electronic-commerce). The existing system is the typical shop running between four walls, targeting less public. There are several cons of typical offline business or we can say there are lot of pros of e-commerce/online market over offline market. There are several potential drawbacks to operating an offline business:

1. Limited market reach: An offline business is typically limited to a certain geographical area, which can limit its potential customer base.
2. Competition: There is often a lot of competition in offline markets, which can make it difficult for a business to stand out.
3. High overhead costs: Offline businesses often have higher overhead costs, such as rent, utilities, and insurance, which can cut into profits.
4. Limited flexibility: An offline business is typically tied to a specific location, which can make it difficult to adapt to changes in the market or pivot to a new direction.
5. Limited scalability: It can be challenging for an offline business to expand beyond its current location, which can limit its growth potential.

[1] The scope of E-Business is as wide as an ocean & there by the implementation hurdles. When one thinks of the Electronic Business even through final goal remains the same as that of the traditional business, but the way in which they function in order to improve the performance is different. [2] An e-commerce is the movement of business onto the World Wide Web. [3] Evolution of E-commerce also become one of the key components of various organizations for daily running business lives. It is continuously developing and more people are connecting to internet. The growth of the internet and advancements in technology have led to a proliferation of e-commerce websites in recent years. E-commerce, or electronic commerce, refers to the buying and selling of goods and services over the internet. E-commerce websites have become an increasingly popular way for businesses to reach a wider audience and for customers to shop for products and services from the convenience of their own homes. E-commerce has a number of advantages over traditional brick-and-mortar stores. It allows businesses to reach a global market and to operate 24/7. It also allows for more efficient and cost-effective operations, as businesses do not have to worry about the overhead costs associated with physical storefronts. For customers, e-commerce offers a wide range of products, the ability to easily compare prices, and the convenience of being able to shop from anywhere with an internet connection. [4] it's very faster and cost effective as compared with the traditional business. Bill Gates, co-founder of Microsoft Corporation stated, "The information highway will... carry us into a new world of low-friction, low-overhead capitalism, in which market information will be plentiful and transaction costs low. It will be a shopper's heaven." (Albert H., Judd, Rivers, 2006). However, e-commerce also presents its own set of challenges. One of the main concerns for both businesses and consumers is the issue of security. With the exchange of sensitive personal and financial information, it is important for e-commerce websites to have secure systems in place to protect against cyber-attacks and identity theft. In addition, businesses must also consider issues such as website design, user experience, and the integration of social media and other technologies.

There are many factors that contribute to the success of an e-commerce web application, including the user experience, the range and quality of products being offered, and the effectiveness of marketing and promotion efforts. A well-designed and intuitive e-commerce web application can provide a competitive advantage for businesses and help drive sales and revenue. Overall, the e-commerce industry has experienced rapid growth and shows no signs of slowing down. It is an essential aspect of the modern business landscape, and the development of effective e-commerce web applications is crucial for businesses looking to succeed in this digital age.

III. METHODOLOGY

Architecture of this website consists of three tiers which are divided into frontend and backend.

1. Front End / Presentation Tier: Just as it sounds, the presentation layer is the part that is presented to the customer. It is the user interface and communication layer of the architecture, where the customer interacts with the website on the frontend, and the application collects data and processes requests from the backend. In our case we have developed Front end in React.js, HTML, CSS, Bootstrap.

2. App Logic (Web Server) / Business Logic Tier: The business layer, also known as the application or service layer, is at the center of the application. It uses business logic, a specific set of business rules, to gather and process information, and it can also add, delete or change information in the data layer. For example, this layer will perform the actions when a user initiates login requests such as fetching user details from database, also it will perform logic required for purchasing products (Customer actions) or adding or deleting products (Admin actions). In our case we have used Node.js and Express.js to build this layer.
3. Database / Data Tier: The data tier, also known as the database layer, is the final layer used to store data and process requests. In our case we have used NoSQL database MongoDB.

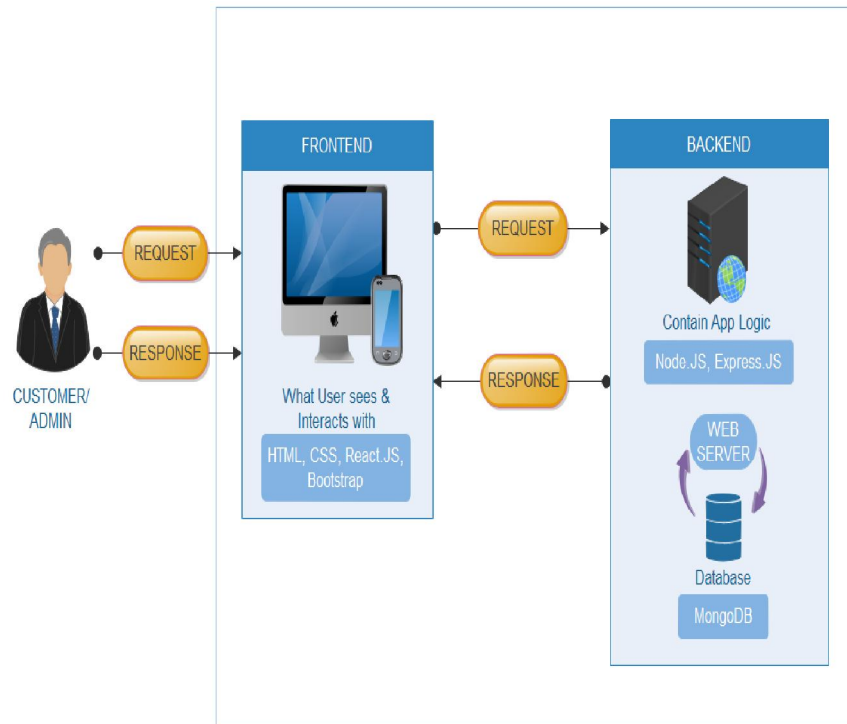


Fig. 1 System architecture.

User will be able to do following activities:

1. User will be able to create an account by using mobile number or using Gmail.
2. User will be able to roam freely through the products of different categories and have a view of them via images.
3. User will be able to compare products to that they can have clear idea of what to buy & what not.
4. User can track the status of warranty/guarantee of the purchased products & can take appropriate action.
5. At the emergency situations users can also have the on-call assistance.
6. Users also have facility of both cart & wish list so that they can store products they are going to purchase or they want to purchase further.
7. At last they can make payment through multiple options like UPI, Credit/Debit card, etc.

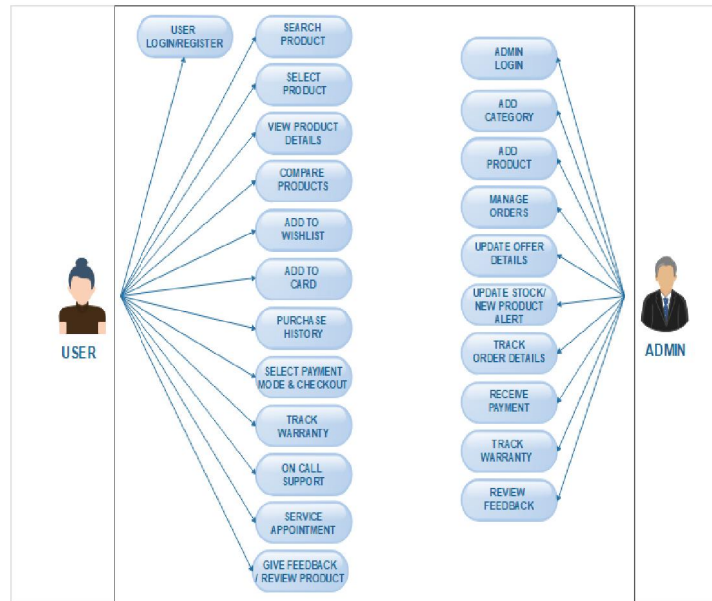


Fig.02 Use case diagram.

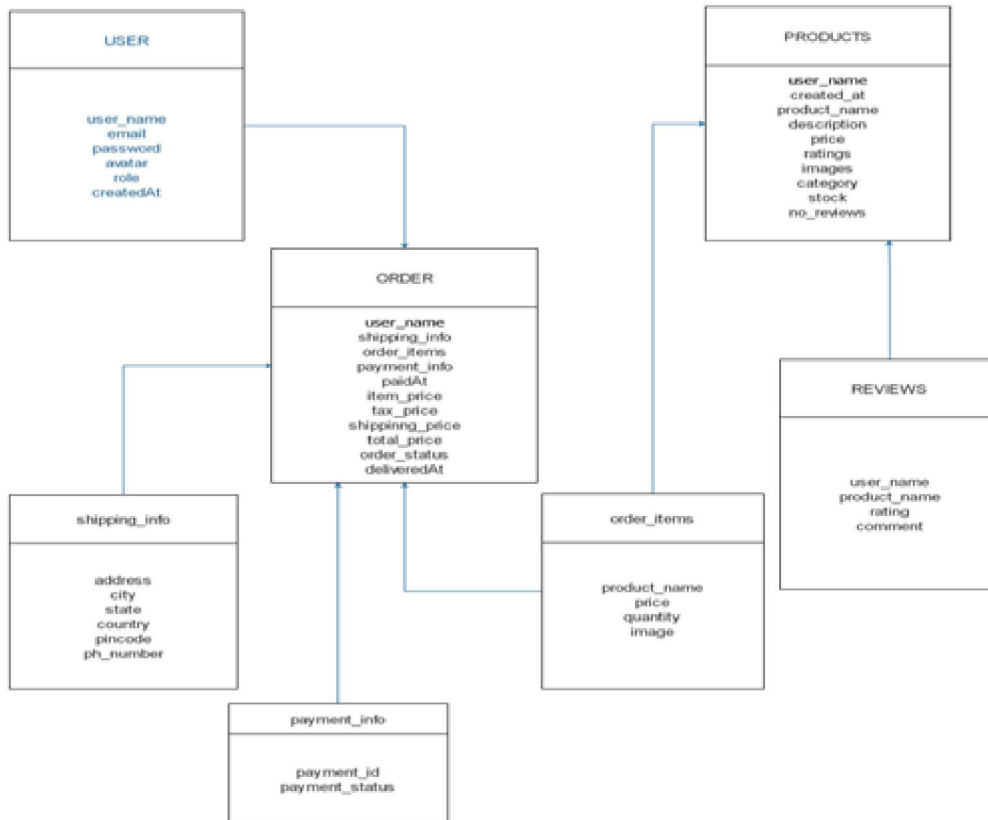


Fig.03 Class diagram.

IV. WIREFRAMES

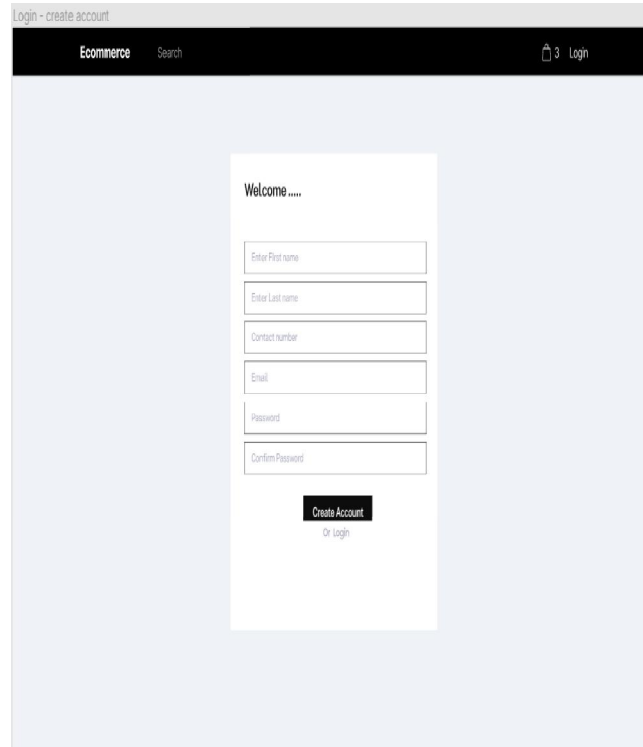


Fig.04 Create account.

A create account web page allows users to create a new account for a website or application.

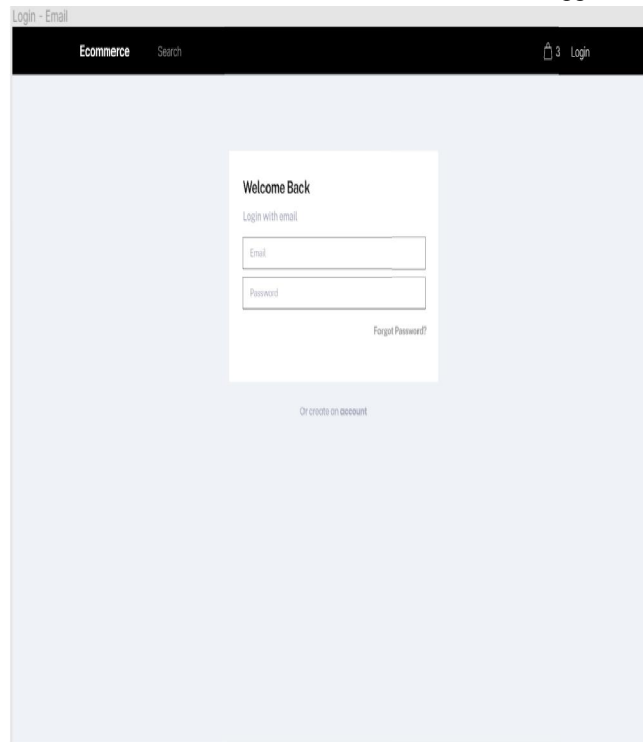


Fig.05 Login-existing user.

A login web page is a webpage that allows a user to enter their credentials, such as a username and password, in order to access a website or application.

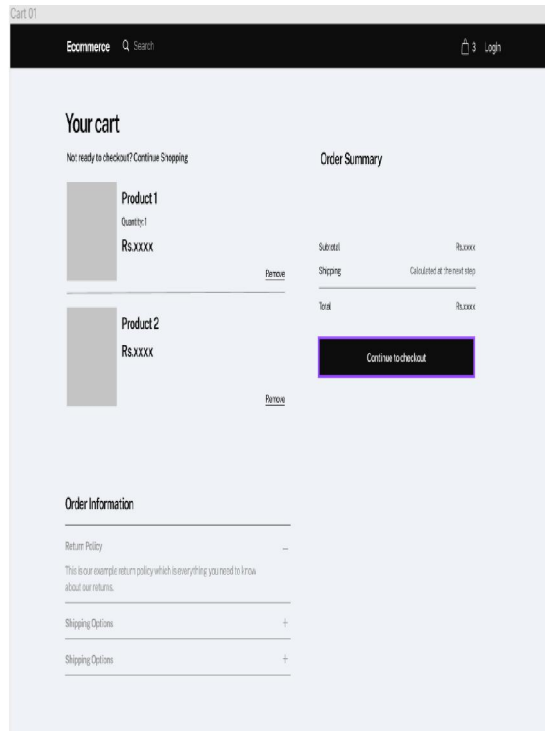


Fig.06 Cart.

A cart page is an essential part of an e-commerce website. It is the page where users can pile up what they want to buy from the website and then simply checkout by paying online.

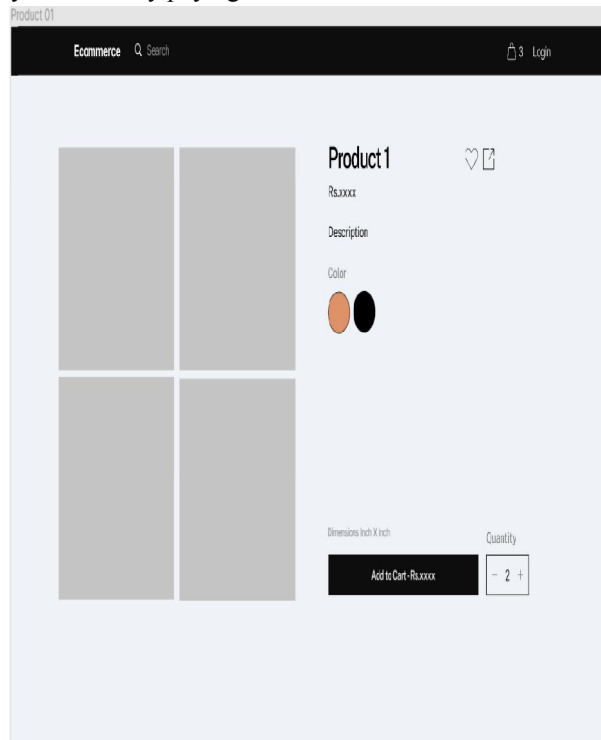


Fig.08 Product description.

In this page the user can see the details of the product like the pictures, dimensions, features, etc.

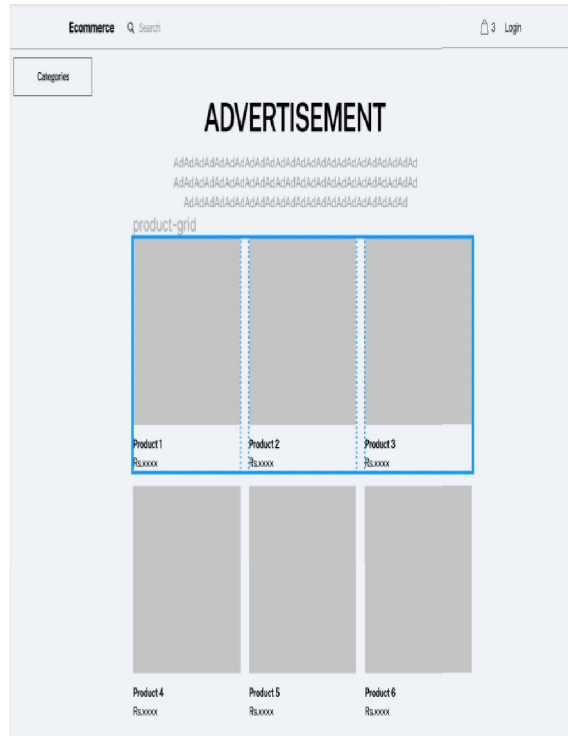


Fig.07 Home page.

A home page is the primary web page that a visitor will view when they navigate to a website via a search engine.

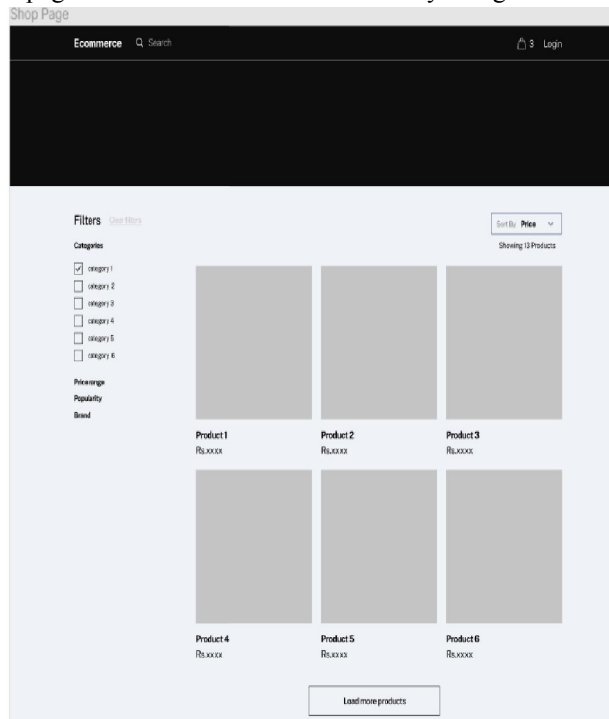


Fig.09 Product page with filters.

On this page the users can apply filters to precisely get desired products on the window. Like price range, color, size, etc.

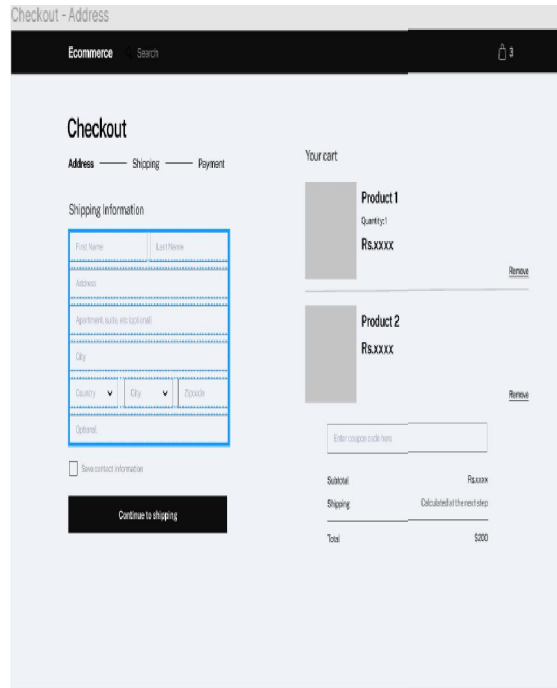


Fig.10 Checkout & address information.

This is the page where users will put their shipping information to proceed payment.

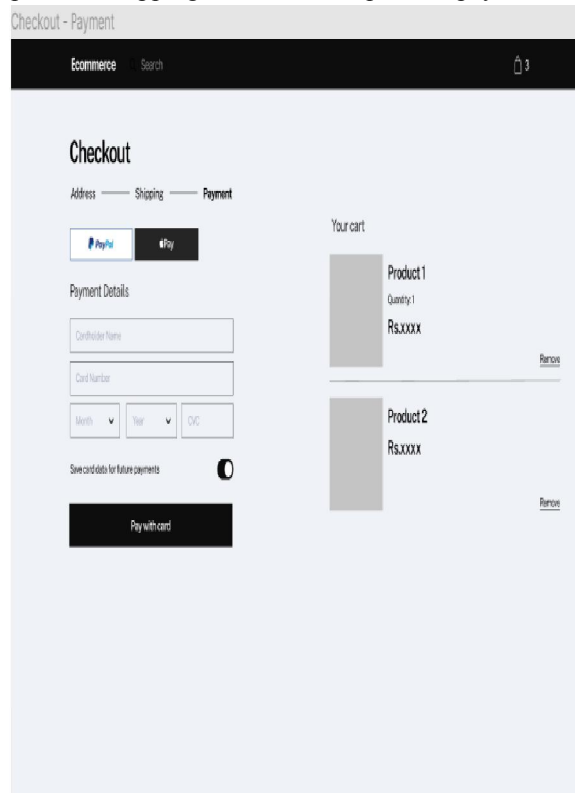


Fig.11 Checkout-payment.

This is the page where users complete the payment for their product with various payment options/ways.

V. CONCLUSION/SUMMARY

In summary, this project involves building a web application that includes following functionalities.

- In this project, the main idea is to provide a neat & clean web application E-commerce platform for Swastik electronics & electrical store.
- This platform/web application includes different categories of products & electric components like TV, Fridge, Wires, Switches, etc. Probably these products have warranty or guarantee.
- In this project users/customers will be able to check their products warranty and guarantee status & will be able to claim them accordingly.
- Users will also be able to have an on-call assistance in emergency situations.
- Users will also be able to book and service appointment with well-versed electrician.

To build the web application, we will use React for the front-end, and node.JS for database and Bootstrap for styling. The project involves several pages, starting from login page, home page, category page, cart page, wish-list page, etc.

Overall, this project aims to provide a reliable and efficient e-commerce web-application platform for electronics and electrical business, which will be useful for society, where customers can save their time and shop from their place and get plenty of facilities.

VI. TECHNOLOGIES USED

In this project, we will use several technologies to build a web application e-commerce platform.

1. HTML (the Hypertext Markup Language) and CSS (Cascading Style Sheets) are two of the core technologies for building Web pages. HTML provides the structure of the page, CSS the (visual and aural) layout, for a variety of devices. Along with graphics and scripting, HTML and CSS are the basis of building Web pages and Web Applications.
2. React: React is a popular JavaScript library for building user interfaces. It is widely used for building web applications due to its efficient rendering, reusable components, and ability to handle complex UI interactions. React is a useful technology for this project because it allows us to build a dynamic and interactive web application. With React, we can create reusable components that can be easily integrated into our application, which makes it easier to manage and maintain the codebase.
3. Bootstrap: Bootstrap is a popular front-end framework that provides pre-designed HTML, CSS, and JavaScript components for building responsive and mobile-first web applications. It is useful for this project as it allows us to quickly design and style our web application without having to start from scratch. Bootstrap is a useful technology for this project because it provides a range of pre-designed components that can be easily integrated into our application. With Bootstrap, we can quickly style and design our web application without having to write all the CSS and HTML from scratch.
4. node.JS: Node.js is a cross-platform, open-source server environment that can run on Windows, Linux, Unix, macOS, and more. Node.js is a back-end JavaScript runtime environment, runs on the V8 JavaScript Engine, and executes JavaScript code outside a web browser.
5. 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.
6. Express.JS: Express.JS is a Node.js web application framework that provides broad features for building web and mobile applications. It is used to build a single page, multipage, and hybrid web application. It's a layer built on the top of the Node.js that helps manage servers and routes.

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