E-COMMERCE WEBSITE

A Project Report

Submitted by:

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DECLARATION

I hereby declare that the project entitled "E-Commerce Website" submitted for the B. Tech. (Computer Science and Engineering) degree is my original work and the project has not formed the basis for the award of any other degree, diploma, fellowship or any other similar titles.

Signature of the Student

Place:

Date:

CERTIFICATE

This is to certify that the project titled " E-Commerce Website " is the bona fide work carried out by Nandish Patel, a student of B. Tech. (Computer Science and Engineering) of School of Engineering and Applied Sciences at Ahmedabad University during the academic year 2022-2023, in partial fulfillment of the requirements for the award of the degree of Bachelor of Technology (CSE) and that the project has not formed the basis for the award previously of any other degree, diploma, fellowship or any other similar title.

This project was at E-Seller Hub under the supervision of the industry mentor Janki Suthar.

Signature of the Industry Mentor   **Signature of the Faculty**

Place: **Place:**

Date: **Date:**

Acknowledgement

It is my great pleasure and profound sense of reverence that I express my deepest gratitude and thanks to my respected professor Mr Ashok Ranade, Professor at the School of Engineering and Applied Sciences, Ahmedabad University for his constant guidance throughout the project work.

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I would also like to thank Professor Mr Anurag Lakhlani, Senior Lecturer at the School of Engineering and Applied Science, Ahmedabad University, for offering a wonderful course on Human-Computer Interaction which was one of the major reasons behind this project.

I would also like to acknowledge that this entire project was completed by me and not by someone else.

Signature

Nandish Patel

Abstract

In a developing country like India where the number of e-commerce users is growing rapidly at a rate of 51% annually according to Dristi IAS, there is a need for an e-commerce website for each and every shopkeeper to expand their business and to reach out to a wider audience base to increase their sales and also to survive in the industry. So, to provide a great user interface to all possible shopkeepers and to provide the best and most seamless user experience to the consumers I have created the E-Shoppy website. It is an e-commerce website created using HTML, CSS and JavaScript languages with the help of Human-Computer Interaction concepts like consistency, no prior memorization etc. to provide the simplest user interface with beautiful animations to the users which is very smooth to use.

List of Figures

Time-Line

Task Name	Duration (in days)
Research work	5
Pen-paper designs	3
Creation of basic structure using HTML	7
Applying basic CSS code	9
Usage of HCI concepts to make it more user friendly	4
Adding more hover effects and animations to the website	6
Creation of Add to Cart webpage using HTML and CSS	6
Applying JavaScript	10
Making website responsive at 500px screen width	5
Testing and removing bugs	7
Deletion of unnecessary code to make code more concise	3
Making final report	6
Presentation and poster creation	5

Table Of Contents

1. INTRODUCTION

This section talks about the main motivation behind choosing the frontend technology and why I choose the e-commerce platform only as the frontend project and not any other project. The section will also talk about the project definition as well as the main objectives of the E-Shoppy website which was to provide a seamless and hassle-free experience to the users.

1.1 Motivation

One of the significant reasons behind choosing the frontend project was the course HCI (Human Computer Interaction). I took this course in the third year of my undergraduate year as a major elective. Here I learned about the different concepts related to website design. It includes topics like the design of the website, the colour combination of a website, consistency of font colours, font sizes, font style across the website etc. Some of the usability goals learned during the HCI course were;

- Effectiveness - The website should be capable of allowing users to learn on their own and the website should be capable of selling the goods which are expected from the customer's end.
- Efficiency - The website should be efficient to use so that after the initial learning the user should be able to maintain a high level of productivity.
- Safety - The website should be designed in such a way that users do not make errors or even if they do make errors some guidance should be provided there to recover from that error.
- Learnability - The website should provide a simple and easy interface for users so that it becomes easy to learn. The design should be created in a way that first-time users should take as much less as time possible for learning. The error rate should be minimal. It should provide an interface that users can learn on their own by just exploring the website without any guidance.
- Memorability - The interface of the website should be easy to remember. The design should be created in a way that users should not require any pre-memorisation before using the website.

Some of the design principles learned during that course were;

- Consistency - It should be achieved in terms of colours, font style, and button sizes across the website. Similar operations should have similar designs to make things easy to learn for the users.
- Cater for Universal Usability - Recognize the need of diverse users, and the website should include an explanation of every button to novice users it should also include content shortcuts which can be helpful to the expert users.
- Feedback - The system should send some feedback after the action has been completed by the user which keeps the users updated about what to do next after the action.

Here, I have listed very few of the essential concepts which were helpful while making the E-Shoppy website. During the HCI course, we were taught to design the website using the Figma software so I wanted to enhance that web designing experience not only to design it using the tools but also to make it using coding languages like HTML, CSS and JavaScript. So, I decided to work as a frontend trainee and made the website.

1.2 Project Definition

E-Shoppy is an e-commerce clothing website which provides a seamless and hassle-free experience to users with its simple and attractive webpages, which also is very easy and quick to learn for first-time users as well as they do not require prior memorisation to use the website for purchasing clothes, wristwatches and vest belts.

1.3 Project Objectives

- Main objective of the E-Shoppy website is to provide a user-friendly experience by using the animations and hover effects created using HTML, CSS and JavaScript to help users with quick learnability.

- Application of HCI (Human Computer Interaction) essential concepts like the consistency of font size, font colours and font style across the website and also the minimal usage of various colours and usage of high-quality images of clothes to design a beautiful user interface which eventually helps to improve the user experience.

- To provide attractive features like high-quality images, engaging animations while hovering over the sections or images, and the usage of many CSS properties, which makes the website more engaging and helps improve the user interface, which leads to a better user experience.

- After integrating the backend to the E-Shoppy, it can be helpful to shopkeepers for developing their business relationship directly with the consumers. It leads to expanding the customer base to the country and the entire world.

- E-commerce website also helps increase brand awareness with cost-effective marketing techniques. When customers are introduced to a company's product online, it creates a stronger connection between the brand and customers.

- E-commerce platform is also one of the great ways to identify the target audience who are genuinely interested in buying the product. These user data can be beneficial in making the right type of product for the target audience. Data helps in the creation of future products and in developing the long-term market plan.

1.4 Requirement Analysis

1.4.1 Software Requirement

- For proper full-screen visuals of the E-Shoppy website, a minimum of 1536px screen width is required inside a laptop or computer.
- For the responsive design of the E-Shoppy website, which is made for the smaller screen width, can be seen at 500px or less than 500px screen width.

1.4.2 Hardware Requirement

- Processor: Intel Pentium 4 or later
- Memory: 2 GB minimum, 4 GB recommended
- Internet Connection: Required
- Operating System:
  - Windows: Windows 8 or Later
  - Mac: macOS High Sierra 10.13 or later
  - Linux: 64-bit Ubuntu 14.04+, Fedora Linux 24+

2. LITERATURE SURVEY

Literature survey talks about the amount of research work done before started implementing the project of E-Shoppy website. This related work section reflects the research work and the tools and technologies which are used to make the E-Shoppy website is discussed in another section.

2.1 Related Work

According to IJCRT, one of the most important factors behind the growth of the e-commerce market in India is because of the emergence of mobile phones having internet connectivity. Significant growth in m-commerce is expected in the near years because of the rapid growth of internet connectivity and the number of mobile phones. According to this study, almost 178 percent of growth is seen between 2015 to 2020 over six years, having almost an average of 30 percent growth per year. There were 250 million mobile users in the year 2015, which number increased to 700 million in the year 2020. As a result, online spending saw a growth of almost 238 percent over these six years, from 50 million to 168 million in 2020. The growth of 1.93 percent in the e-commerce market is seen in proportion to the 1 percent growth of internet users between the years 2005 to 2015 in India.[1]

E-commerce market in India is expected to grow to $200 billion by the year 2026, which was only $38.5 billion in 2017, according to Dristi IAS. Moreover, the Indian e-commerce market is growing at a 51 percent growth rate annually. It is expected that India will surpass the US in the year 2034 to become the world's second-largest e-commerce industry. [2]

Moreover, the adoption of E-commerce Websites in India has increased due to the COVID-19 pandemic. According to Economic Times, 84% growth is expected in e-commerce platform consumers by 2024, which takes the mobile shopping revenue to $111 billion from $60 billion in 2020, with an average growth of 21 percent annually. Some of the popular methods involved in online shopping were digital wallets at 40 percent, followed by debit cards and credit cards at 15 percent. Also, the method of buy now and pay later is expected to increase by 6 percent to a total of 9 percent in the year 2024 from 3 percent in 2023. [3]

Loading time for the website should be as low as possible, as users don't prefer to wait for a longer time for a website to open or for any website actions like adding to a cart while making the payment or browsing to another section of the website. The ideal loading time of the website should be between 0-2 seconds. [4]

High-quality pictures should be used as users always want to see crystal clear images of the products, especially for clothes. So, the developer has to make sure to use high-quality images so that every bit of the cloth is visible to the user. The product name should be readable for the consumers as it helps to make the purchase decision easier. Security of the website is a crucial factor nowadays, especially the website which saves vital information about credit cards and debit cards. Customers continuously seek the security of whether the website is worth being trusted because of the confidentiality of information. The slogan of the website should be eye catchy, lucid and straightforward enough so that consumers can easily remember it, as these slogans play an essential role in the marketing of any fashion business. The price should be visible on the main page near to the product image.

According to McKinsey & Company, in the year 2021, it was found that in the US consumers, from the total respondents, almost 76% said that price is the top priority over the quality of the product. In that survey, it was also found that only 53% of the respondents considered quality as the top factor for purchasing the product. [5]

So, to cope with today's world technology and to expand the business plan not only limited to the brick-and-mortar stores, most of the shop owners would require a website to sell their products across the country. Using the E-Shoppy website, the business can be expanded not only to a few brick-and-mortar store but it can reach every citizen of the world who want to buy their products. Also, customers can buy their products from the website at any time they want. Online shopping removes the time constraint for buying at a specific time. Because of the 24/7 availability of the website, customers can buy at any time.

2.2 Tools and Technologies

Languages like HTML (Hyper Text Markup Language), CSS (Cascading Style Sheets), and JavaScript are used to make the E-Shoppy e-commerce website. HTML is used to make the basic structure of the website. After that CSS is applied to make the website layout more human-readable and to improve the user interface by using several font colours, background images, and font weights to enhance the user experience. After CSS, JavaScript is applied to make the website more functional. So, whenever the user clicks on add to cart the display message of the product successfully added to cart will be displayed, to make the image slider and to go to another webpage like men's wear or women's wear js plays an important role. Also, the font awesome library is used to put the icons like shopping carts, mobile phones, location markers etc. inside the website.

3. METHODOLOGY

The section of methodology starts with the flowchart which represents the flow of the work undertaken while making the website. It represents the entire flow of the website starting from research work till the deployment of the website. After that the DFD (Data Flow Diagram) illustrates how the website works after integrating with the backend API. DFD starts with user sign in till the payment of add to cart products for buying the clothes. The pen paper designs were made with the help of HCI concepts. After that the section of HTML, CSS and JavaScript represents the coding part of E-Shoppy website.
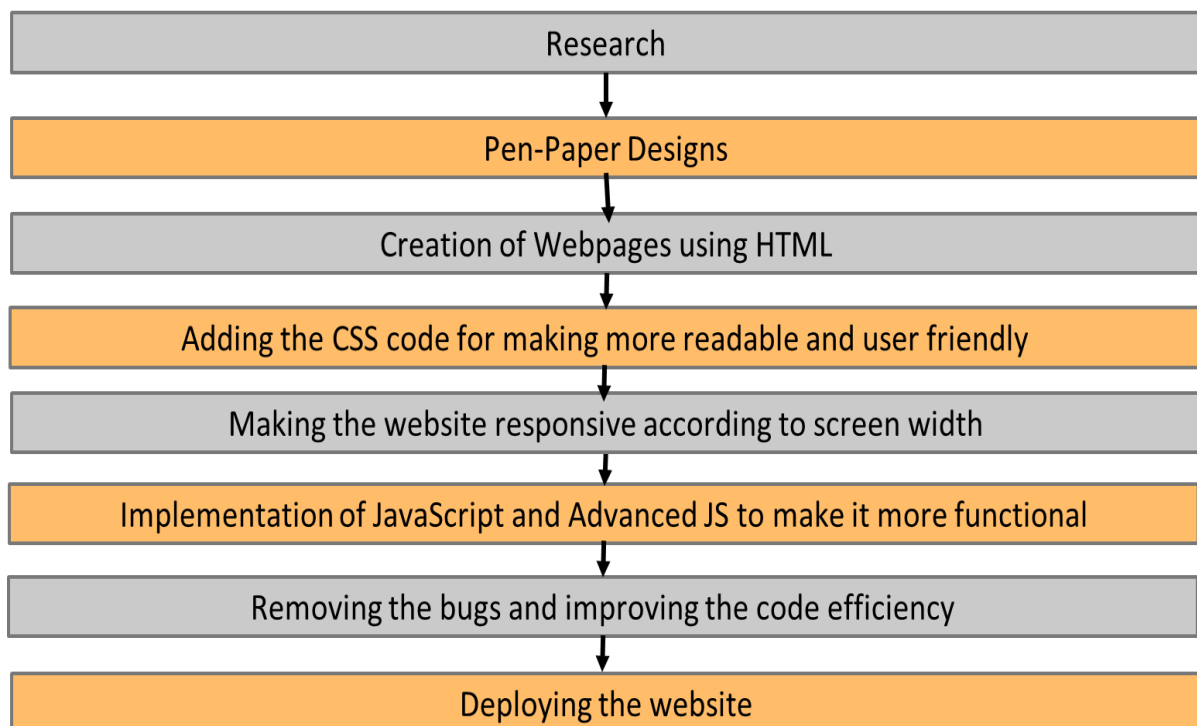
3.1 Flowchart

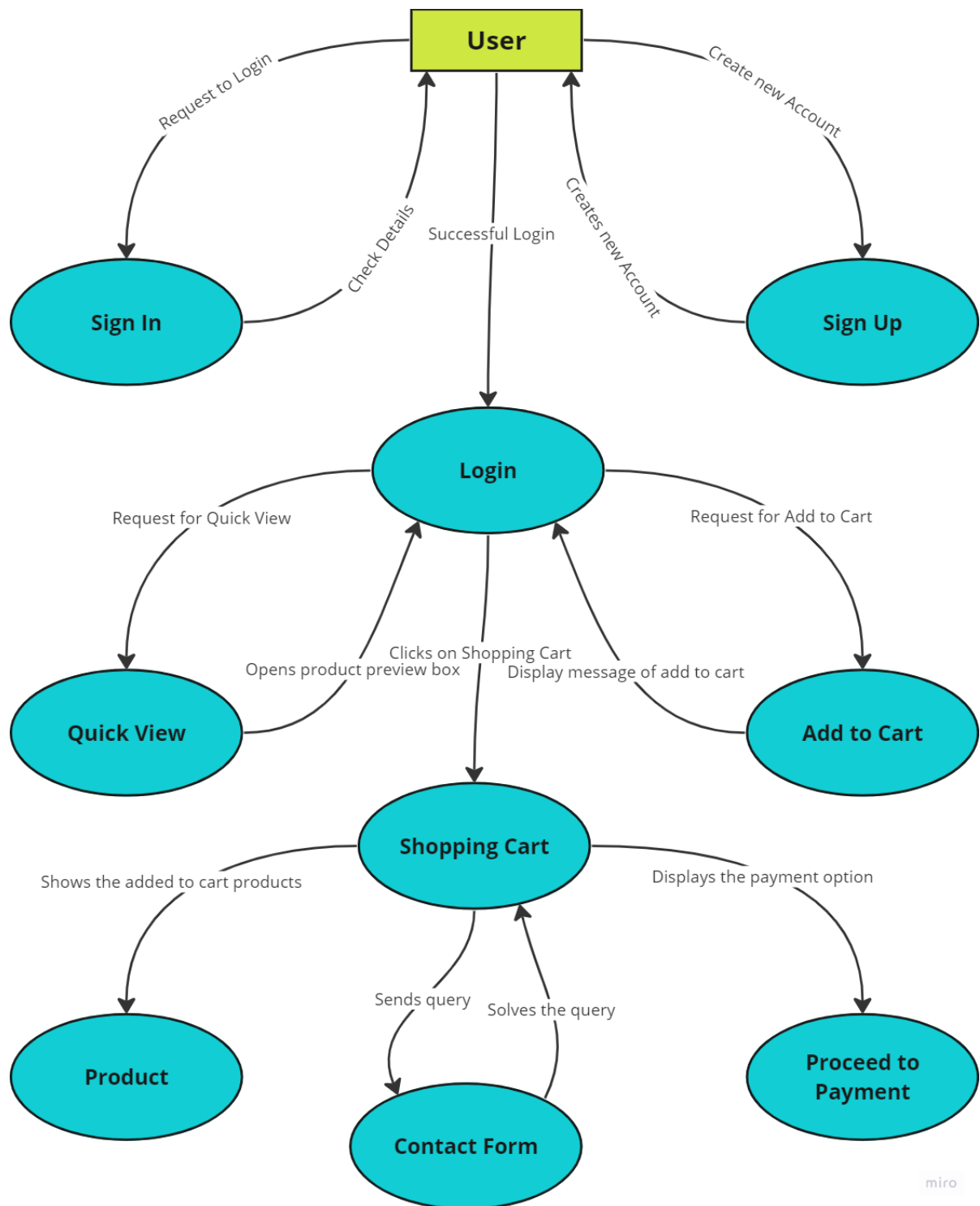*Figure 3.1 Flowchart*

3.2 DFD

Figure 3. 2 Data Flow Diagram

3.3 Pen Paper Designs

Pen paper design is always useful before making any website. According to the Standford Publication, when a user steps away from the computer screen the user feels the work to be more personable. User creates more creative ideas while using the pen-paper technique. User feels more comfortable and satisfying while using pen and paper to create layouts of a website. User feels more personal about it.
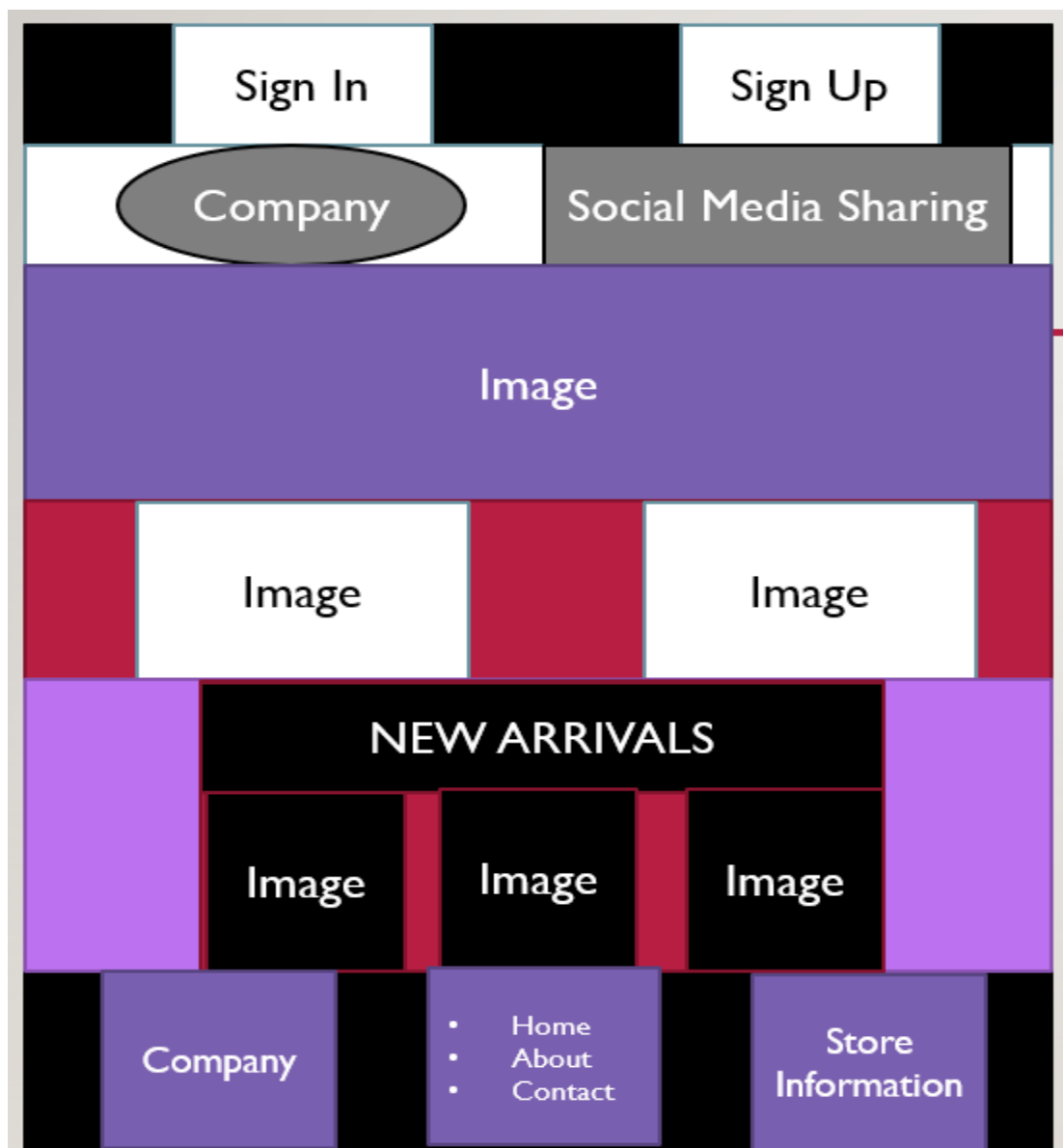
3.3.1 Home Page

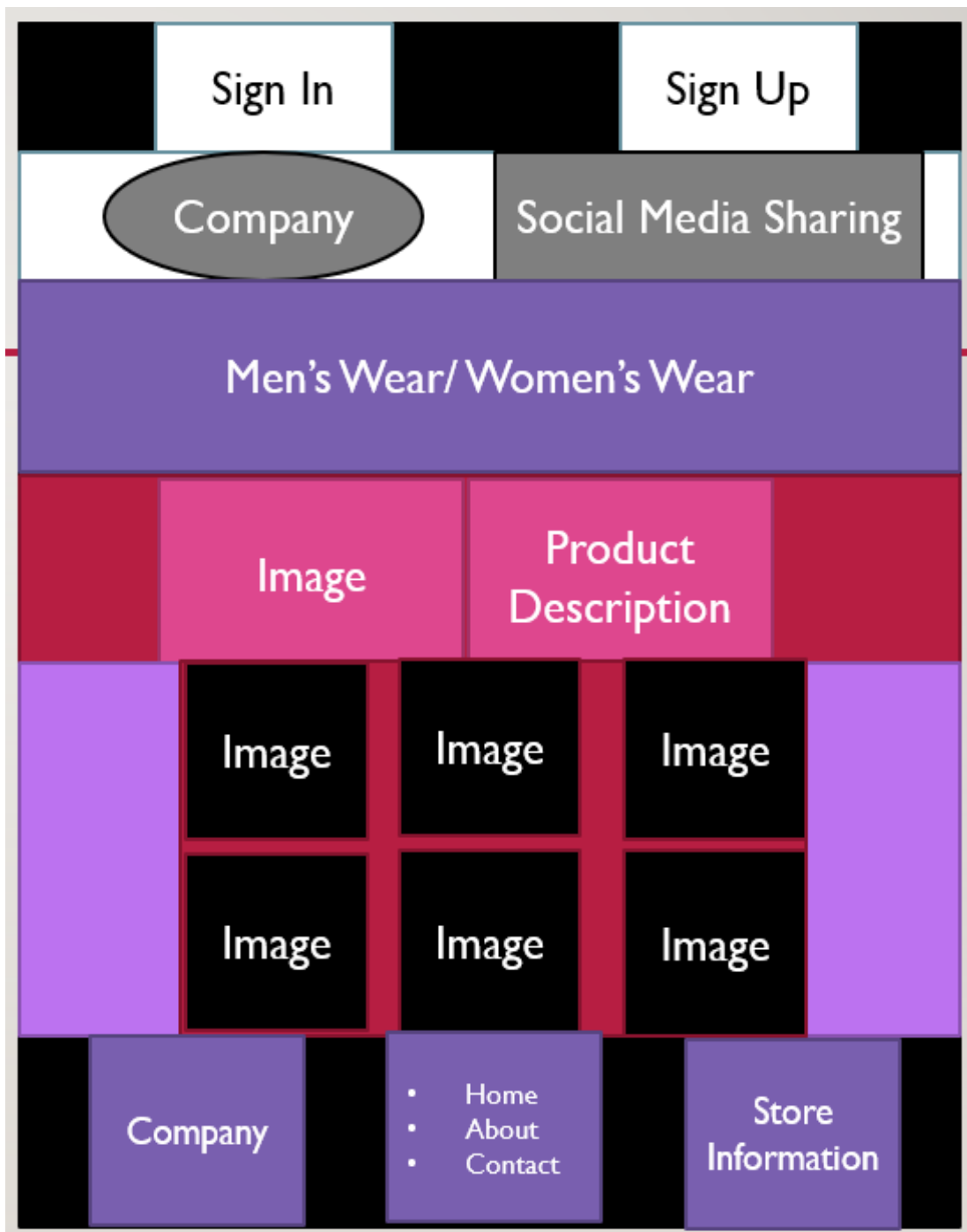*Figure 3.3.1 Home Page (pen-paper design)*

3.3.2 Men's Wear / Women's Wear Page

Figure 3.3.2 Men's Wear / Women's Wear

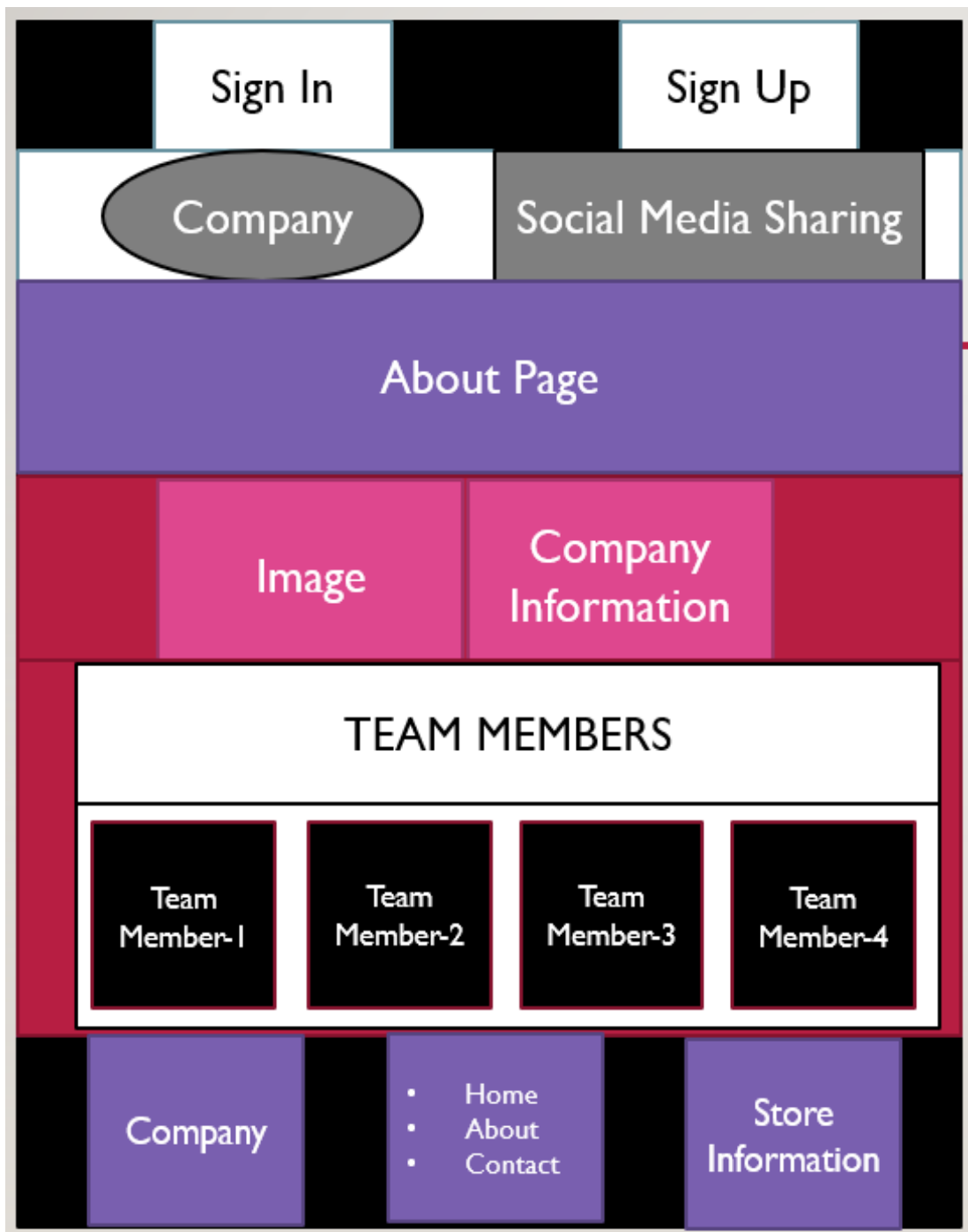12

3.3.3 About Page

Figure 3.3.3 About Page

3.3.4 Contact Page

Figure 3.3. 4 Contact Page

3.4 HTML

After the creation of basic layout of the webpages using pen and paper the coding starts. Coding starts with creating the basic structure of website by using the HTML code. The code includes tags like div (division), p (paragraph), h (heading), img (image), a (anchor), button etc. During HTML coding I created six webpages basic structure which includes:

1. Home Page
2. Men's Wear
3. Women's Wear
4. About Page
5. Contact Page
6. Add To Cart Page

3.5 CSS

After the creation of the basic structure using HTML, for making the content more human-readable and to improve the user experience by making a better user interface, we need to apply CSS. CSS includes various properties like background colour, font colour, font size, font weight, absolute and fixed positioning, padding, margin etc.

3.5.1 Header

Created the header part, using the contrasting colour combination learned during HCI subject concepts like the same colour combination across the website, same consistency of buttons shape, font style and font size and kept the important buttons in separate colour to highlight it.
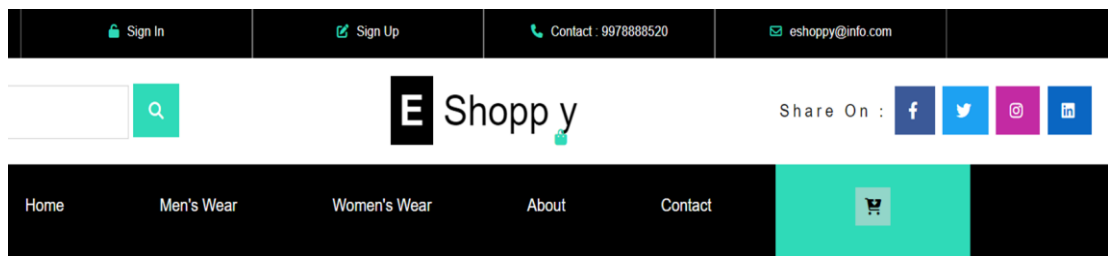

Figure 3.5.1 Header (CSS)

Underline hover effect under the home, men's wear, about section is achieved with the help of absolute positioning of another div relative to the main div. The header and footer's layout remain the same across the website.

3.5.2 Footer

Created the footer part using the margin, padding and grid display properties of CSS. Included a total of four columns with the first indicating the main mission of the E-Shoppy, the second indicating the list of webpages, the third indicating the store information followed by the customer posts.
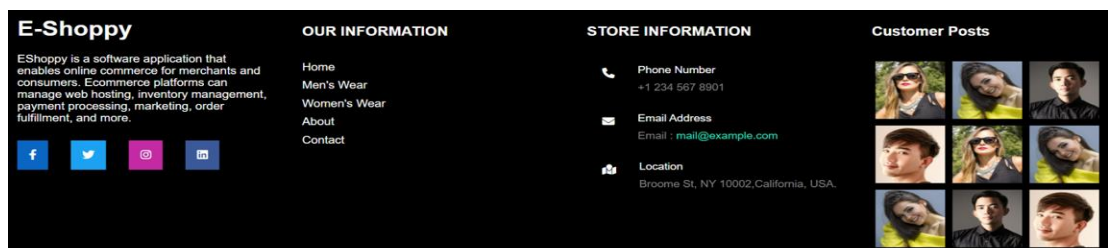

Figure 3.5.2 Footer

16

3.5.3 Home Page

Created the home page with the help of padding, margin, background-clip, and CSS's absolute and relative positions properties. The hovering effect of cross divs over some images is achieved using the display block and display none property of CSS.
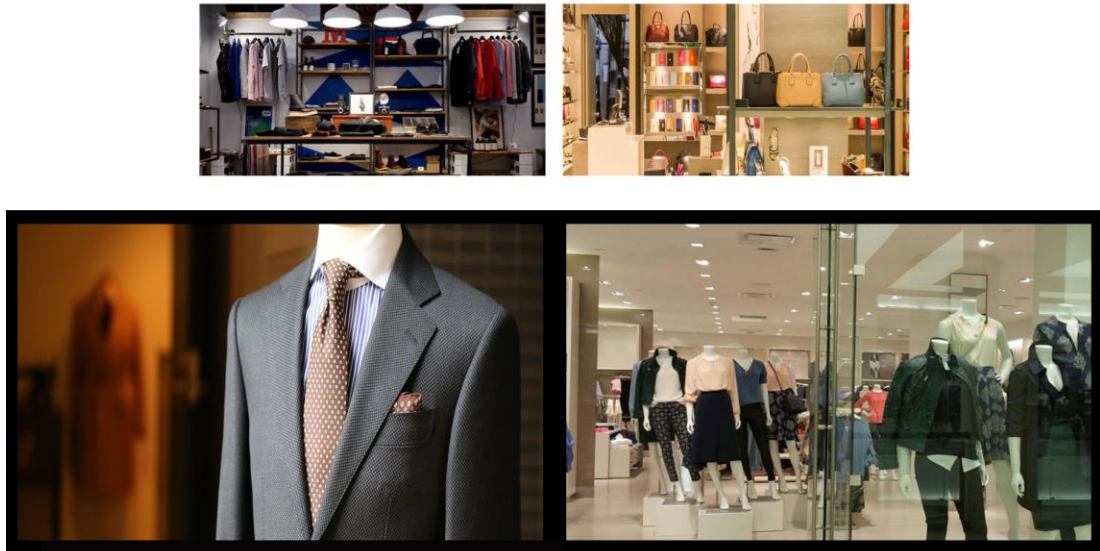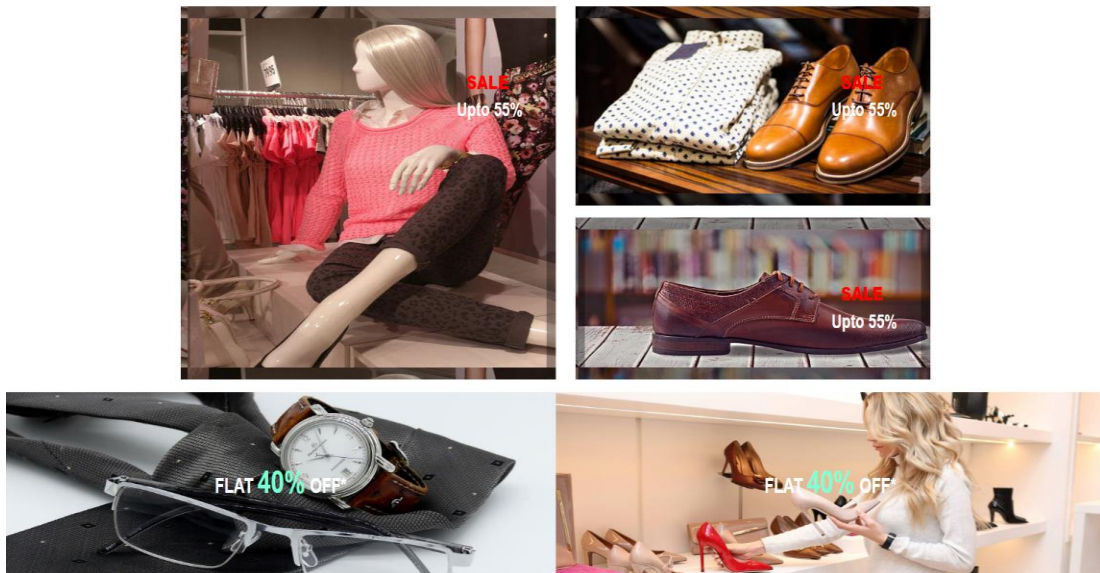

Figure 3.5.3 Home Page-1

Figure 3.5.4 Home Page-2

3.5.4 Men's Wear/ Women's Wear page

These pages show information about different wearable clothes like blazers, wristwatches, shoes, west belts, jeans, pants, etc., with the help of high-quality images. Created the men's wear and women's wear products animation with the help of back face visibility, grid and display none property of CSS.

Figure 3.5.5 Men's Wear / Women's Wear

Moreover, with the combination of backface visibility and absolute positioning, I created beautiful animation over the different products for add-to-cart options and quick view options.

Figure 3.5.6 Without Hover　　　　　*Figure 3.5.7 With Hover Effect*

3.5.5 About Page

It includes the team members' information about the E-Shoppy website and the mission of E-Shoppy which they are trying to achieve. Behind each team member, photograph their office position, and their bio information is put using the absolute positioning.
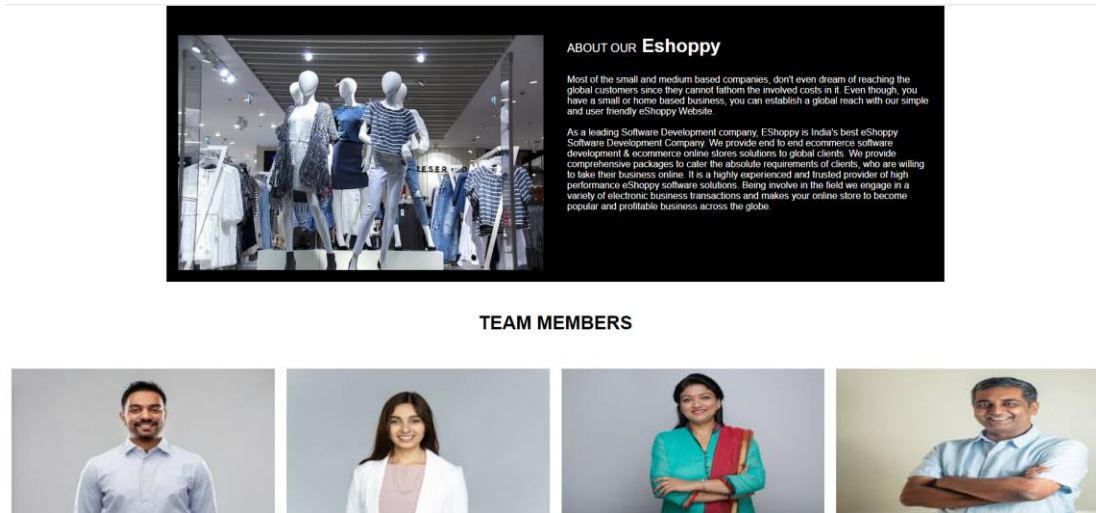

Figure 3.5.8 About Page

3.5.6 Contact Page

Contact page shows the store address, mobile number as well as the email id in case customers have any query. Also, the inclusion of google map improves the user experience, because in case the consumer wants to go physically to the store, then Google Maps would be really helpful. The contact form is placed at the bottom of the page in case a user has any query regarding the product, delivery or anything else, which helps customers to reach out to owners very quickly.
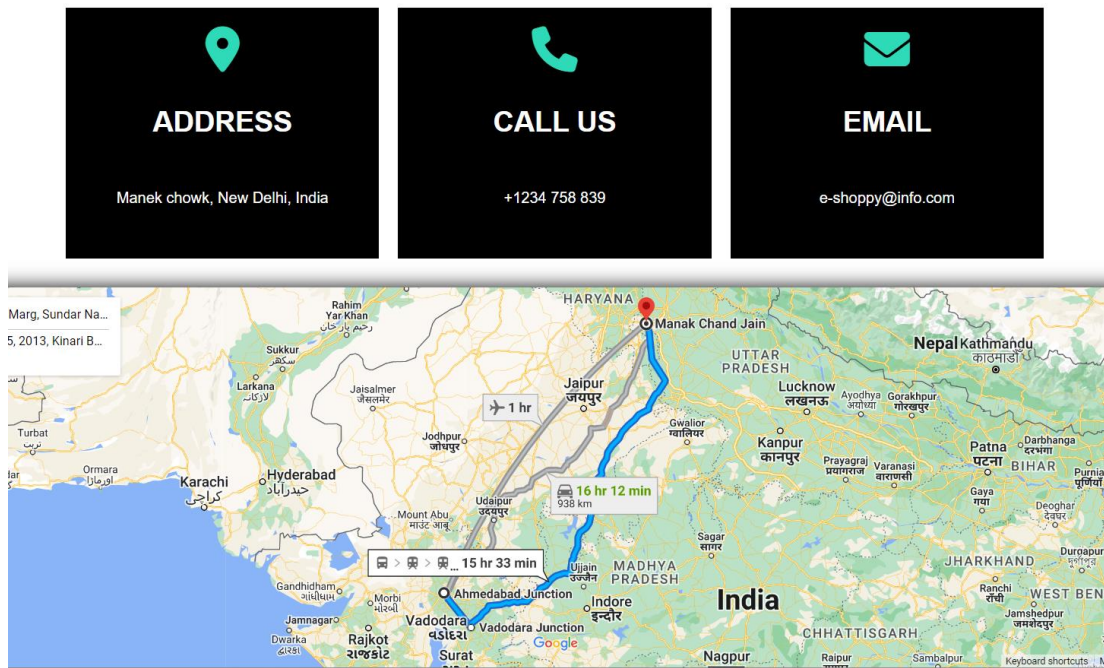
Figure 3.5.9 Contact Page

3.5.7 Add to Cart

Add to Cart webpage will show the products which are added to the card from men's wear and women's wear. It will show the same real products when integrated with the backend. As of now, there are three products placed inside the add-to-cart from which you can change the quantity of the products, which will reflect the change in the estimated total.
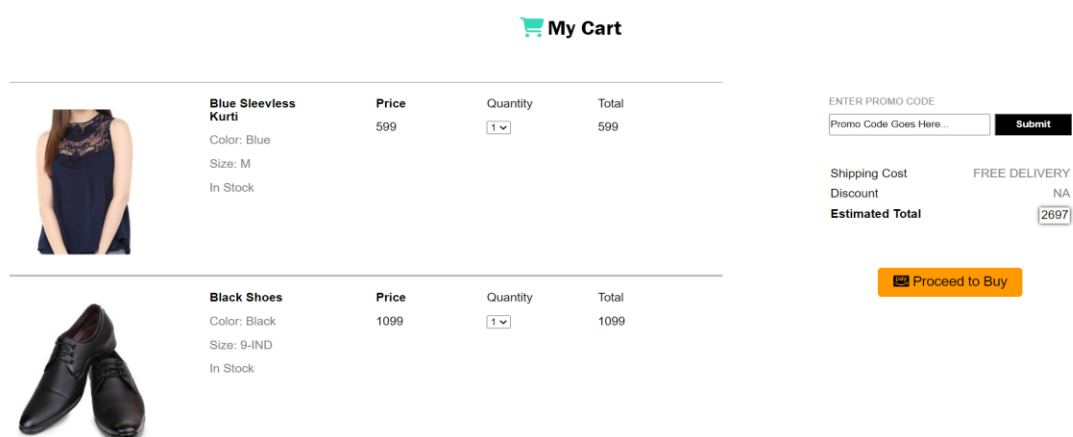

Figure 3.5.10 Add to Cart Page

3.6 JavaScript

After applying CSS to the code, I applied the JavaScript to the E-Shoppy. Using JavaScript, I created the automatic slider, which continuously changes the banner images after every two seconds.

Figure 3.6.1 JavaScript-1

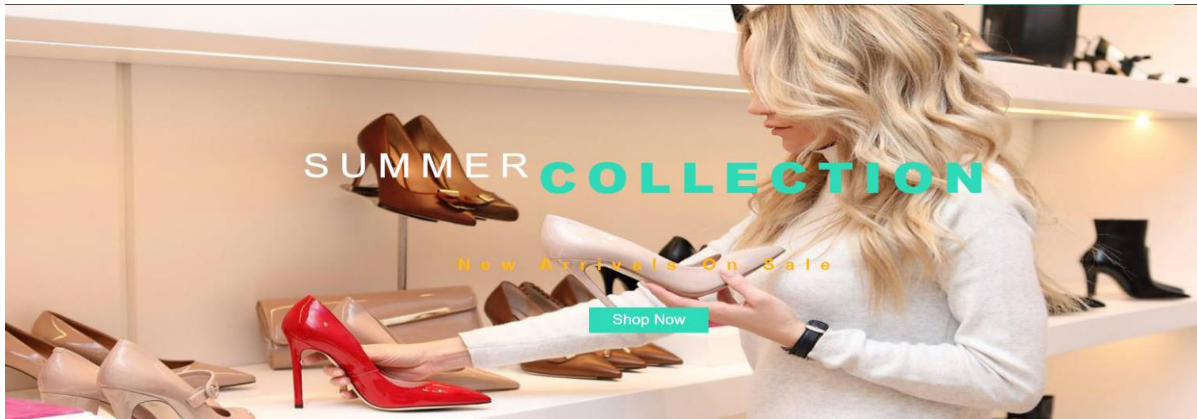Also using, the js counter is created for a number of customers who visited the website, events and awards using the js set timeout and clear interval properties. The real-time number of customers will be shown after the backend integration.
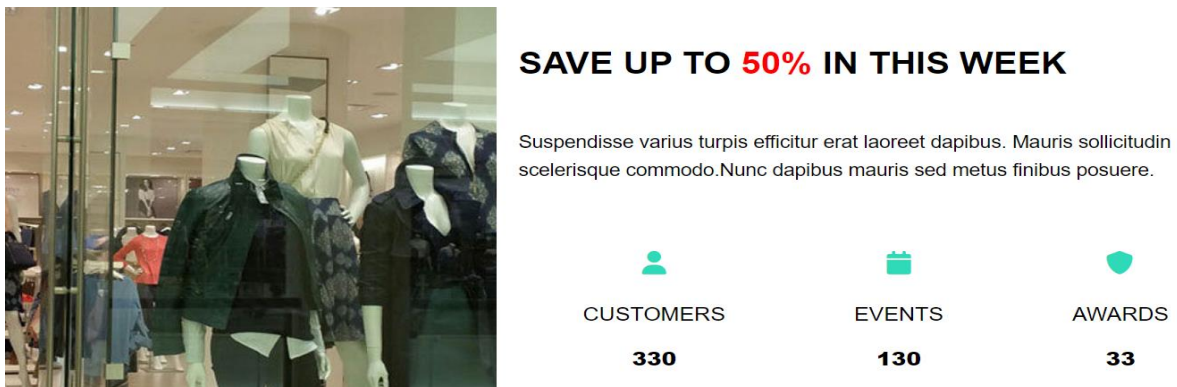
Figure 3.6.2 JavaScript-2

Moreover, using the js properties of the array, for each loop and event listener, the preview box for the clicked product will pop up.
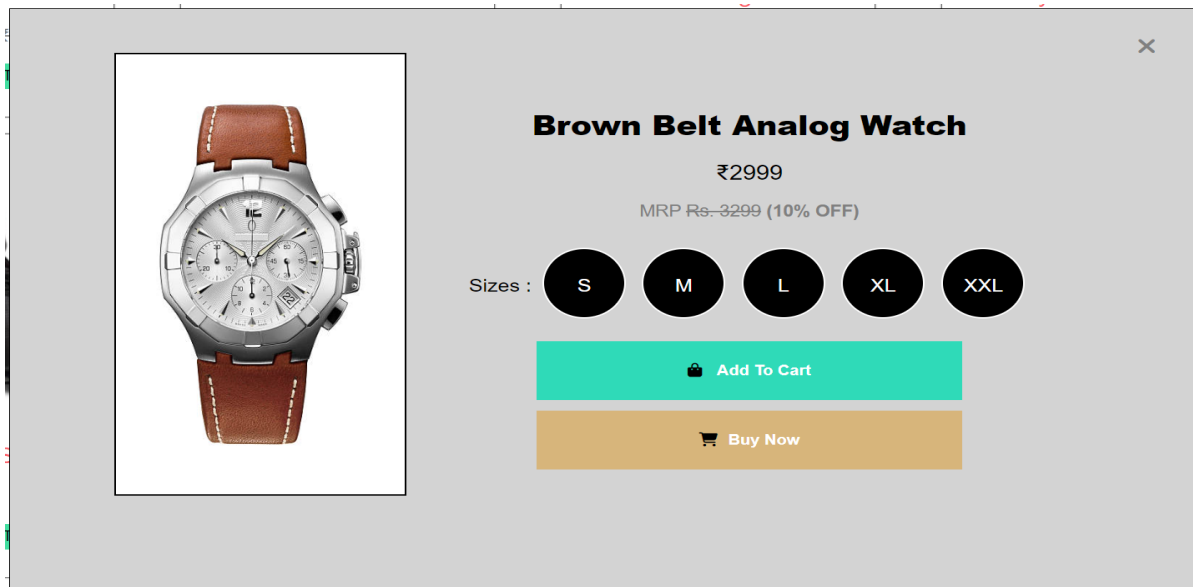
Figure 3.6.3 JavaScript-3

The contact form validation is completed using the JavaScript properties like if-else conditions, email and mobile patterns for checking the valid email id and mobile number inside the contact page.

Figure 3.6.4 JavaScript-4

If the user forgets to enter something and clicks the send button for submitting the form, then the required field will be shown, and the form won't be submitted.

Figure 3.6. 5 JavaScript-5

3.7 Responsive design

Using the media query in CSS created the responsive version of the E-Shoppy website at 500 pixels screen width. In responsive, we have to apply the 100 per cent width to all the main divs like banner, footer, header etc., to set them in proper dimensions. On the full-size E-Shoppy website, there are four products displayed in a single row. While, in responsive design, only two products are displayed, which is possible using the grid template column property.
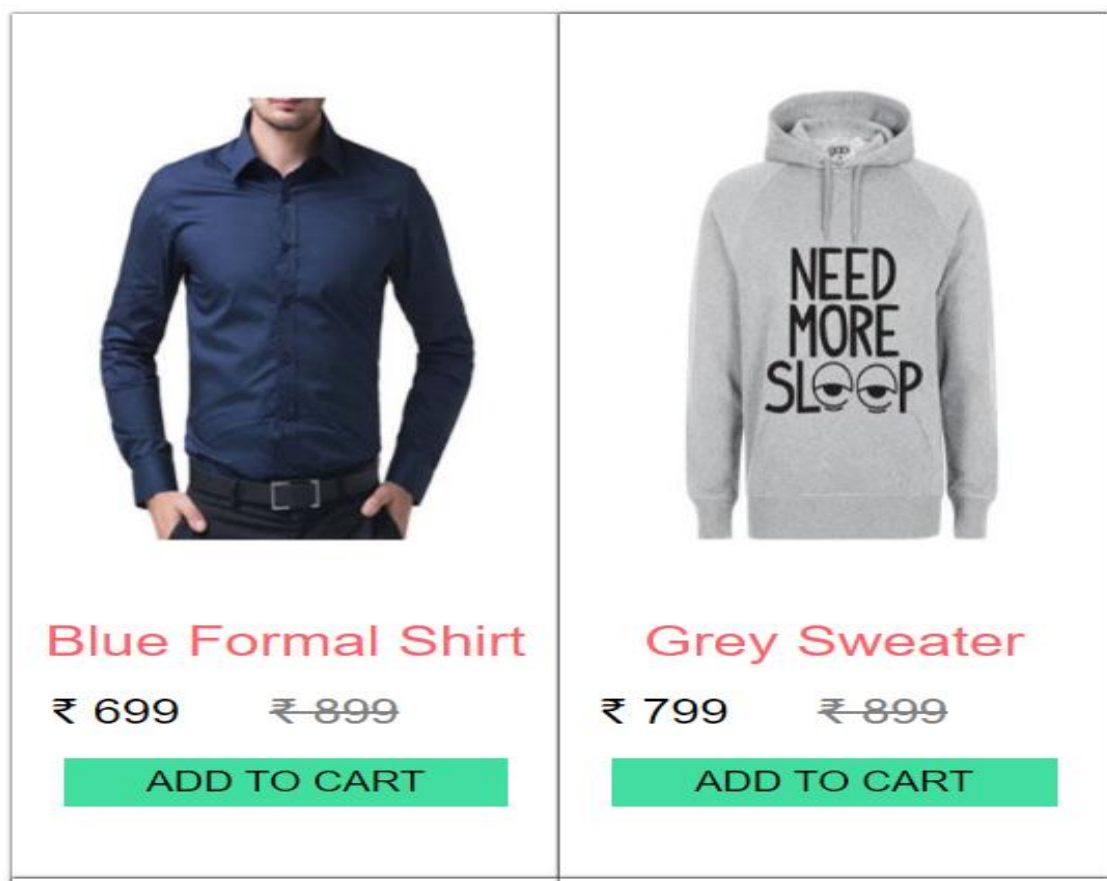

Figure 3.7. 1 Responsive Design

3.8 Testing Process

During the testing procedure, there were some issues found which were not working correctly. The first one was the background of the product in the responsive design was not coming correctly because of the larger width of the photo, which was addressed by using the lesser width in the media query of the backside image. A similar issue was also seen inside the two images section because of the larger width. Another issue was contacted form validation created using JS. Display messages required were displayed even though the user entered the field, which was corrected by improvising the coding structure of JS. Moreover, the padding inside the fall ahead sections needed to be more proper inside the responsive section. This happened because of the width changes of the fall ahead image in the responsive size, which was corrected by modifying the padding.

4. RESULTS

This chapter talks about the major project outcomes which can be obtained after the completion of the E-Shoppy website. Moreover, the section talks about the learning outcomes which I experienced while making the project and also it talks about the real-world application of the E-Shoppy website that can be achieved after the completion of the project.

4.1 Project Outcomes

E-Shoppy helps to expand its customer base by not only limiting itself to just brick-and-mortar stores but also expanding its base to every customer in the world. It provides the option of buying clothes anywhere in the country at any time, which provides convenience for customers. Using an e-commerce website like E-Shoppy leads to increase customer traffic which eventually helps to improve the number of sales. The website helps to increase brand awareness by minimal expenses of advertising. Simple and creative layout design of the user interface can lead to a better user experience, which helps to increase customer traffic with an increase in revenue at the end.

4.2 My Contributions to the Project

Entire project is made by myself. The project includes the design making decisions like choice of colours, pen and paper layout design and the content written inside a website. An attractive user interface is achieved using the hover, background visibility, display block and none and rotation effects used inside CSS coding.

4.3 Learning Outcomes

Gained the experience of making a nearly real-world website which was never achieved before. Learned how to apply HCI concepts like the consistency of font style, font size, and focus on main buttons using contrasting colours in the website using coding. The project taught me the difference between semantic and non-semantic elements, the concept of foreground and background, the difference between absolute, relative, fixed, static and sticky positions and when to apply what position and also when to use the display flex and grid property. Moreover, I get to learn how to design a website using the proper structure of header, footer and content inside a website.

4.4 Real-World Applications

It can help to expand the business's sales and customer base and does not limit customers to come only to its physical location. Reduces the overhead of brick-and-mortar stores. More wide range of options is given to customers in terms of cloth size, body type, and style preferences. Customers are provided with social benefits like convenience, accessibility and affordability. The website is ready to launch in the real world after the integration of the backend. It can be beneficial to customers as well as they can purchase the products anywhere in the world at any time.

5. CONCLUSION

A website like E-Shoppy can provide an incredible asset that can assist organisations, businessmen and shopkeepers with contacting a more extensive crowd. The website must be planned in view of the target audience with a simple checkout process. With the proper methodology, a web-based business site can be a profoundly compelling method for growing a business and prevailing in the cutthroat web-based commercial centre.

6. REFERENCES

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7. APPENDICES

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E-COMMERCE WEBSITE

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