A PROJECT REPORT

ON

EasyBuyz

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Bachelor of Engineering

IN

Computer Science

BONAFIDE CERTIFICATE

Certified that this project report **"EasyBuyz"** is the bonafide work of "**Mudit Jadon, Tushar Saini, Umang Gautam and Aditya Dubey"** who carried out the project work under my/our supervision.

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INTERNAL EXAMINER

EXTERNAL EXAMINER

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ABSTRACT

Mini project is the requirement for all engineering students in order to complete their Bachelor of Engineering degree at the GLA University, Mathura. This project is a very important for us, since it complements both the academic and professional aspects of the engineering education. It exposed us to the practical experience and actual working environment, where we were able to develop our skills and capabilities, as well as enhancing our intellectual and emotional personal. The Mini Project also provides strong linkages between university-industries that shall pave opportunities for "smart partnerships" and industrially driven research. The outcomes of the EIT that are mainly based on the assessment covering the company's and university's evaluation will provide the feedback for student's performance after 75% completion of their engineering study. The remarks from the companies on the students will very much helpful for the university to have a continuous quality improvement especially on curriculum practiced.

CHAPTER 1

INTRODUCTION

1.1 INTDUCTION TO WEB DEVLOPMENT

Web development is the work involved in developing a website for the Internet (World Wide Web) or an intranet (a private network). Web development can range from developinga simple single static page of plain text to complex web applications, electronic businesses, and social network services. A more comprehensive list of tasks to which Web development commonly refers, may include Web engineering, Web design, Web content development, client liaison, client-side/server-side scripting, Web server and network security configuration, and e-commerce development. In a simpler way it Web development refers to the building, creating, and maintaining of websites. It includes aspects such as web design, web publishing, web programming, and database management. It is the creation of an application that works over the internet i.e., websites.

The word Web Development is made up of two words, that is:

- **Web:** It refers to websites, web pages or anything that works over the internet.
- **Development:** Building the application from scratch.

1.2 DIFFERENT AREAS IN WEB DEVELOPMENT

Web Development can be classified into two ways:

- Frontend Development
- Backend Development

Frontend Development: The part of a website that the user interacts directly is termed as front end. It is also referred to as the ‘client side’ of the application.

Backend Development: Backend is the server side of a website. It is the part of the

website that users cannot see and interact. It is the portion of software thatdoes not come in direct contact with the users. It is used to store and arrange data.

In a nutshell, Front-End Web Development, also called client-side development, refers to writing HTML, CSS and JavaScript code for a website or web application so that users can see and interact directly with them. It is important to know the basic differences between Front-End development, Back-End development, and Full-Stack deve Front-End developer works on the aspects of an application or a website that users get to see and interact with whereas a Back-End developer handles the behind-the-scenes aspects of the application or website, saying the infrastructure and databases. On the other hand, a Full- Stack developer does both, so it's someone who deals with the whole designing and functional process of an application or a website from start to finish. There are some websites and web applications that only need Front-End development.

For an instance, a single page information website, however, anything functional generally needs Back-End development. Anything that provides data from a server comes under Back- End Development. The Front-End renders the web page with styling, whereas the Back end isthe code on the server, and its job is to communicate with the database

CHAPTER 2

TRANING AND CONCEPT

2.1 FRONTEND DEVELOPMENT

Front-end web development is the development of the graphical user interface of a website, using HTML, CSS, and JavaScript, so that users can view and interact with that website.

2.2 TOOLS FOR DEVELOPMENT

There are several tools and platforms, such as WordPress, Joomla, and Drupal, available thatcan be used to develop the front end of a website.

2.2.1 HYPER TEXT MARKUP LANGUAGE (HTML)

Hyper Text Markup Language (HTML) is the backbone of any website development process, without which a web page does not exist. Hypertext means that text has links, termed hyperlinks, embedded in it. When a user clicks on a word or a phrase that has a hyperlink, it will bring another web-page. A markup language indicates text can be turned into images, tables, links, and other representations. It is the HTML code that provides an overall framework of how the site will look. HTML was developed by Tim Berners-Lee.

2.2.2 CASCADING STYLE SHEETS (CSS)

Cascading Style Sheets (CSS) controls the presentation aspect of the site and allows your siteto have its own unique look. It does this by maintaining style sheets that sit on top of other style rules and are triggered based on other inputs, such as device screen size and resolution.

2.2.3 JAVASCRIPT (JS)

JavaScript is an event-based imperative programming language (as opposed to HTML's declarative language model) that is used to transform a static HTML page into a dynamic interface. JavaScript code can use the Document Object Model (DOM), provided by the HTML standard, to manipulate a web page in response to events, like user input.

Using a technique called AJAX, JavaScript code can also actively retrieve content from the web (independent of the original HTML page retrieval), and react to server-side events as well, adding a truly dynamic nature to the web page experience.

2.3 AIM FOR DEVELOPMENT

The developer of the front end keeps these points in mind, utilizing available tools and techniques to reach this end.

2.3.1 ACCESSIBILTY

With continuing development for mobile devices, such as smart phones and tablets, designers need to ensure that their site comes up correctly in browsers on all devices. This can be done by creating a responsive web design using stylesheets in CSS.

2.3.2 PERFORMANCE

Performance goals are chiefly concerned with render time, manipulating the HTML, CSS, and JavaScript to ensure that the site opens quickly.

2.4 BACKEND DEVELOPMENT

Back-end development means working on server-side software, which focuses on everything you cannot see on a website. Back-end developers ensure the website performs correctly, focusing on databases, back-end logic, application programming interface (APIs), architecture, and servers. They use code that helps browsers communicate with databases, store, understand, and delete data.

2.5 BACKEND RESPONSIBILITIES

It includes various tasks from development to maintenance.

2.5.1 BUILDING AND MAINTAINING WEBSITES

A back-end developer's main responsibility is to use various tools, frameworks, and languages to determine how best to develop intuitive, user-friendly prototypes and turn them into websites. This requires an understanding of cross-platform functionality and compatibility.

2.5.2 TROUBLESHOOT AND DEBUG

Be able to troubleshoot issues and resolve them, while communicating them to project managers,stakeholders, and QA teams.

2.5.3 TRAINING AND SUPPORT

Maintain workflows with client teams to ensure ongoing support, along with leading training andmentorship for junior developers.

2.6 TOOLS FOR BACKEND DEVELOPMENT

Web developers use a variety of tools to develop, test, and maintain web applications.Some common tools for back-end developers include:

- Programming languages
    - Python
    - PHP
    - JavaScript
    - Ruby
- Frameworks
    - Laravel
    - Django
    - Node.js

CHAPTER 3

Web Development includes various technologies from front-end to back-end integrated to perform various responsibilities. Different languages and frameworks are used for web development such as Python (Django/Flask), Ruby on Rails, Java, JavaScript (Node.js,React.js, etc).

The back-end also includes different data storage utilities like DBMS, cloud storage, file systems. Tech stack for JavaScript based web development has been discussed below which uses different JavaScript based frameworks and packages for development.

3.1 USAGE OF HTML

The Hyper Text Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript. Web browsers receive HTML documents from a web server or from local storage and renderthe documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document. HTML elements are the building blocks of HTML pages. With HTML constructs, images, and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes, and other items. HTML elements are delineated by tags, written using angle brackets.Tags such as <img /> and <input /> directly introduce content into the page. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags but use them to interpret the content of the page.

HTML can embed programs written in a scripting language such as JavaScript,

which affects the behaviour and content of web pages. Inclusion of CSS defines the look and layoutof content.

USAGE OF JAVASCRIPT

JavaScript, often abbreviated as JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. As of 2022, 98% of websites use JavaScript on the client side for webpage behaviour, often incorporating third- party libraries. All major web browsers have a dedicated JavaScript engine to execute the code on users' devices.

JavaScript is a high-level, often just-in-time compiled language that conforms to the ECMAScript standard. It has dynamic typing, prototype-based object-orientation, and first- class functions. It is multi-paradigm, supporting event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model (DOM).

The ECMAScript standard does not include any input/output (I/O), such as networking, storage, or graphics facilities. In practice, the web browser or other runtime system provides JavaScript APIs for I/O. JavaScript engines were originally used only in web browsers, but are now core components of some servers and a variety of applications. The most popular

runtime system for thisusage is Node.js.

Although Java and JavaScript are similar in name, syntax, and respective standard libraries, the two languages are distinct and differ greatly in design.

3.1 USAGE OF CSS

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML or XML (including XML dialects such as SVG, MathML or

XHTML). CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript. CSS is designed to enable the separation of presentation and content, including layout, colours, and fonts. This separation can improve content accessibility; provide more flexibility and control in the specification of presentation characteristics; enable multiple web pages to share formatting by specifying the relevant CSS in a separate.css file, which reduces complexity and repetition in the structural content; and enable the.css file to be cached to improve the page load speed between the pages that share the fileand its formatting.

3.1 NODE.js

Node.js is an open-source, cross-platform, back-end JavaScript runtime environment that runs on a JavaScript Engine (i.e., V8 engine) and executes JavaScript code outside a web browser, which was designed to build scalable network applications. Node.js lets developers use JavaScript to write command line tools and for server-side scripting - running scripts server-side to produce dynamic web page content before the page is sent to the user's web browser. Consequently, Node.js represents a "JavaScript everywhere" paradigm, unifying web-application development around a single programming language, rather than different languages for server-side and client-side scripts.Node.js has an event-driven architecture capable of asynchronous I/O. These design choices aim to optimize throughput and scalability in web applications with many input/output operations, as well as for real-time Web applications (e.g., real-time communication programs and browser games).

The Node.js distributed development project was previously governed by the Node.js Foundation, and has now merged with the JS Foundation to form the OpenJS Foundation, which is facilitated by the Linux Foundation's Collaborative Projects program.

3.2 EXPRESS.js

Express.js, or simply Express, is a back-end web application framework for building RESTful APIs with Node.js, released as free and open-source software under the MIT License. It is designed for building web applications and APIs. It has been called the de facto standard server framework for Node.js.

The original author, TJ Holowaychuk, described it as a Sinatra-inspired server, meaning that it is relatively minimal with many features available as plugins. Express is the back-end component of popular development stacks like the MEAN, MERN or MEVN stack, together with the MongoDB database software and a JavaScript front-end framework or library.Express is a minimal and flexible Node.js web application framework that provides a robust set of features to develop web and mobile applications. It facilitates the rapid development of Node based Web applications. Following is some of the core features of Expressframework -

- Allows to set up middleware's to respond to HTTP Requests.
- Defines a routing table which is used to perform different actions based on HTTPMethod and URL.
- Allows to dynamically render HTML Pages based on passing arguments totemplates.

3.2 PASSPORT.js

Passport is authentication middleware for Node.js. Extremely flexible and modular, Passport can be unobtrusively dropped in to any Express-based web application. A comprehensive set of strategies support authentication using a username and password, Facebook, Twitter, and more. passport-google-oauth is a passport strategy for authenticating with Google. It is a meta-module that combines passport-google-oauth1 and passport-google-oauth20.

3.3 DATABASE

The database is a collection of inter-related data which is used to retrieve, insert, and

delete the data efficiently. It is also used to organize the data in the form of a table, schema, views, and reports, etc.

For example: The college Database organizes the data about the admin, staff, students, and faculty etc. Using the database, you can easily retrieve, insert, and delete the information.

3.4 DATABASE MANAGEMENT SYSTEM

Database management system is a software which is used to manage the database. For example: MySQL, Oracle, etc are a very popular commercial database which is used in different applications.

DBMS provides an interface to perform various operations like database creation, storing data in it, updating data, creating a table in the database and a lot more.It provides protection and security to the database. In the case of multiple users, it also maintains data consistency.DBMS allows users the following tasks:

- **Data Definition:** It is used for creation, modification, and removal of definition that defines the organization of data in the database.
- **Data Updation:** It is used for the insertion, modification, and deletion of the actual data in the database.
- **Data Retrieval:** It is used to retrieve the data from the database which can be used by applications for various purposes.
- **User Administration:** It is used for registering and monitoring users, maintain data integrity, enforcing data security, dealing with concurrency control, monitoring performance, and recovering information corrupted by unexpected failure.

3.9.1 SQL

SQL (Structured Query Language) is a domain-specific language used in programming and designed for managing data held in a relational database

management system (RDBMS), or for stream processing in a relational data stream management system (RDSMS). It is particularly useful in handling structured data, i.e., data incorporating relations among entities and variables.

- **MySQL:** It is an open-source relational database management system (RDBMS). MySQL is free and open-source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL has stand-alone clients that allow users to interact directly with a MySQL database using SQL, but more often, MySQL is used with other programs to implement applications that need relational database capability. MySQL is written in C and C++. Its SQL parser is written in yacc, but it uses a home-brewed lexical analyser.
- **PostgreSql:** PostgreSQL also known as Postgres, is a free and open-source relational database management system (RDBMS) emphasizing extensibility and SQL compliance. It was originally named POSTGRES. PostgreSQL features transactions with Atomicity, Consistency, Isolation, Durability (ACID) properties, automatically updatable views, materialized views, triggers, foreign keys, and stored procedures. It is designed to handle a range of workloads, from single machines to data warehouses or Web services with many concurrent users. It is the default database for macOS Server and is also available for Windows, Linux, FreeBSD, and OpenBSD.

MONGODB

MongoDB is a source-available cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with optional schemas. MongoDB is developed by MongoDB Inc. and licensed under the Server- Side Public License (SSPL) which is deemed non-free by several distributions. It is written in C++.

CHAPTER 4

PROJECT WORK AND RESULT

4.1 PROBLEM STATEMENT

“EazyBuyz” is your one-stop destination for a seamless online shopping experience. Powered by the robust MERN Stack technology, this E-commerce web app offers a user-friendly interface, a vast product catalog, and secure transactions. Whether you're in search of fashion, electronics, home essentials, or more, EazyBuyz ensures a convenient and efficient shopping journey for every user. Shop with confidence and convenience at EazyBuyz.

- E- commerce

4.2 OVERVIEW

An website is one that allows people to buy and sell physical goods, services, and digital products over the internet rather than at a brick-and-mortar location. It’s tough to imagine daily life without e-commerce. We order food, clothes, and furniture; we register for classes and other online services; we download books, music, and movies; and so much more. E-commerce has taken root and is here to stay.

RESULT ANALYSIS AND VALIDATION

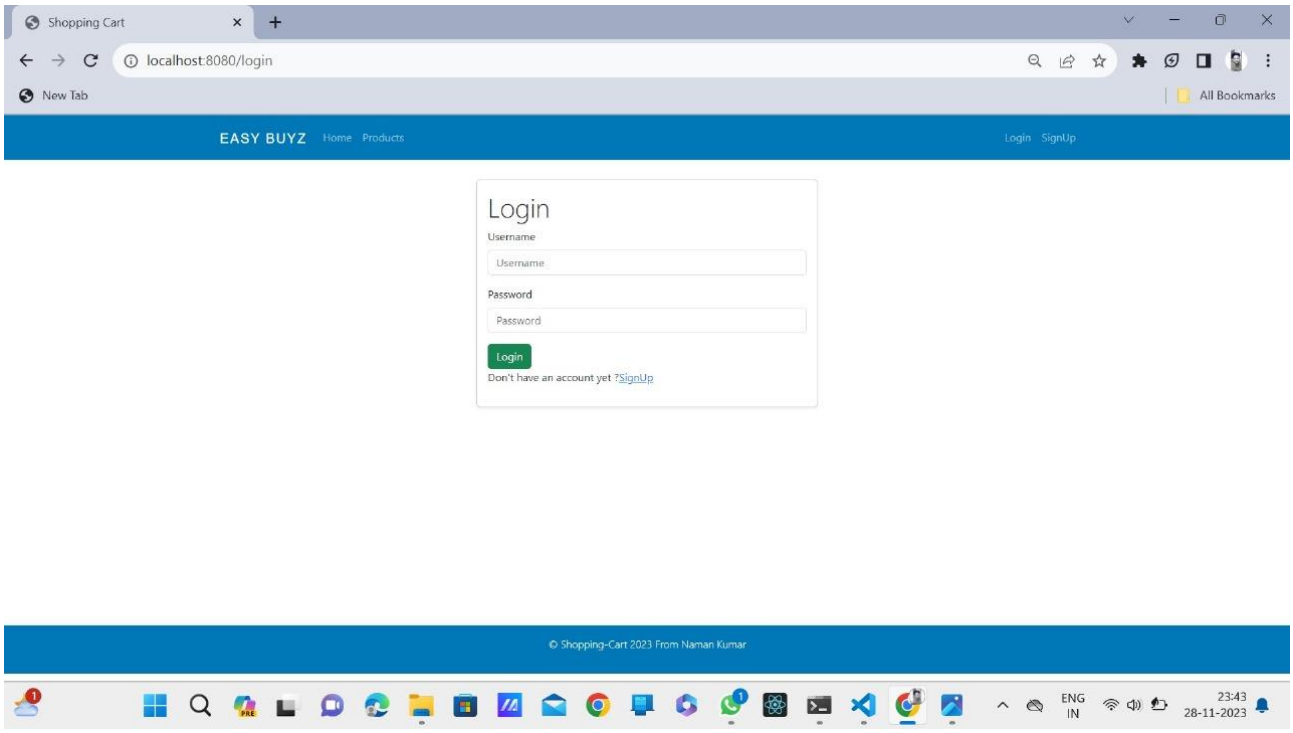

Figure 4.1 : Sign up

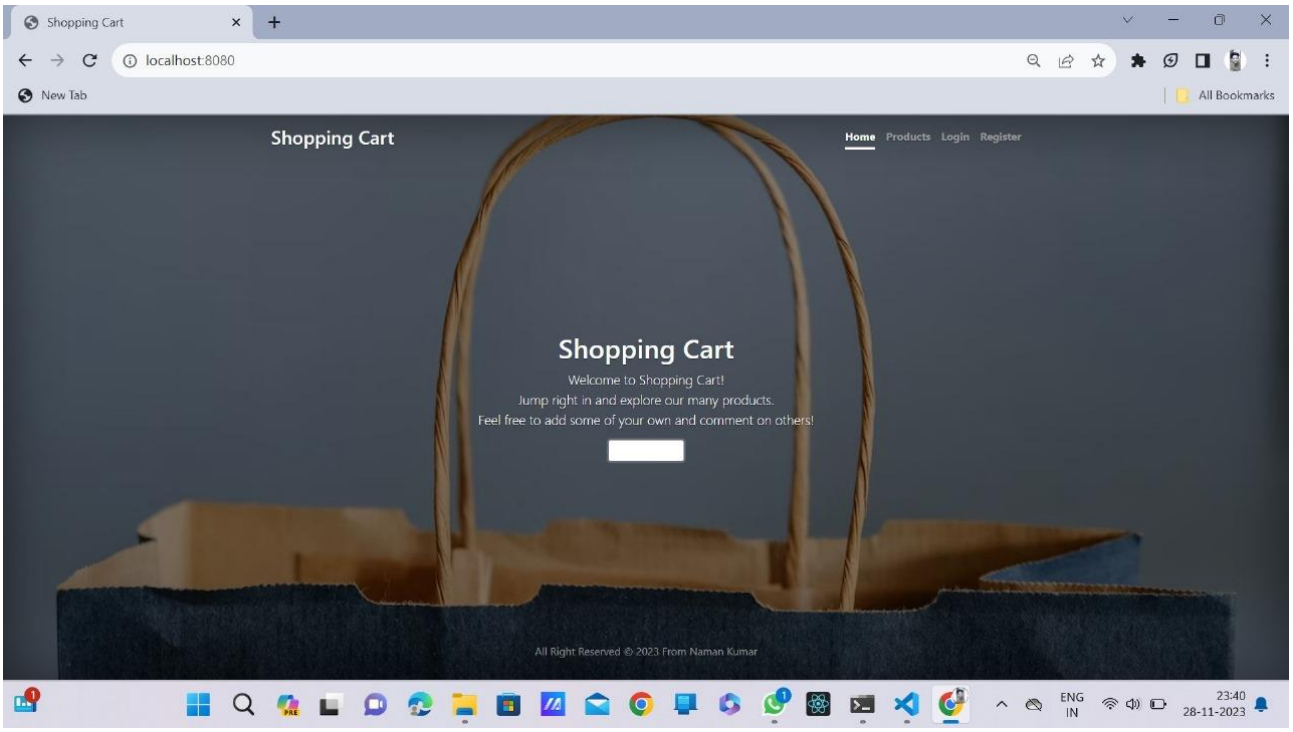

Figure 4.2: Home Section

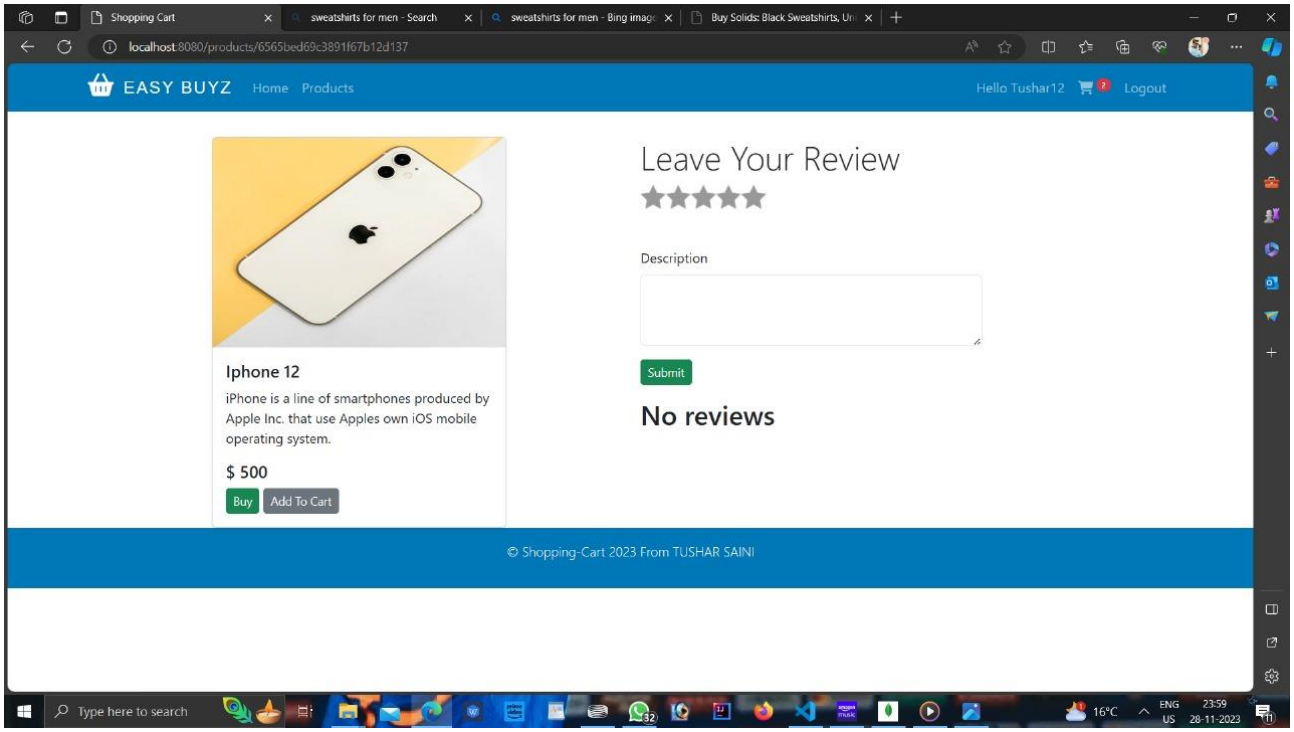

Figure 4.3: Review Section

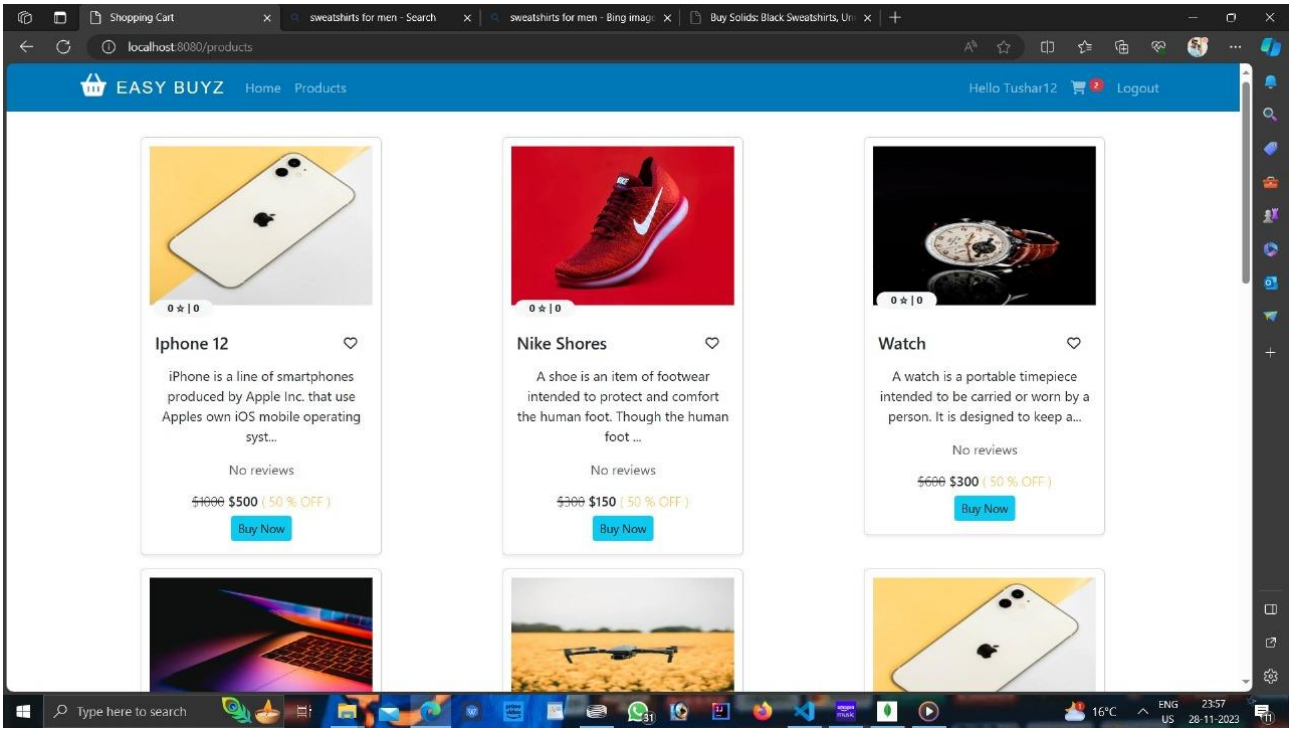

Figure 4.4 Product Details Section

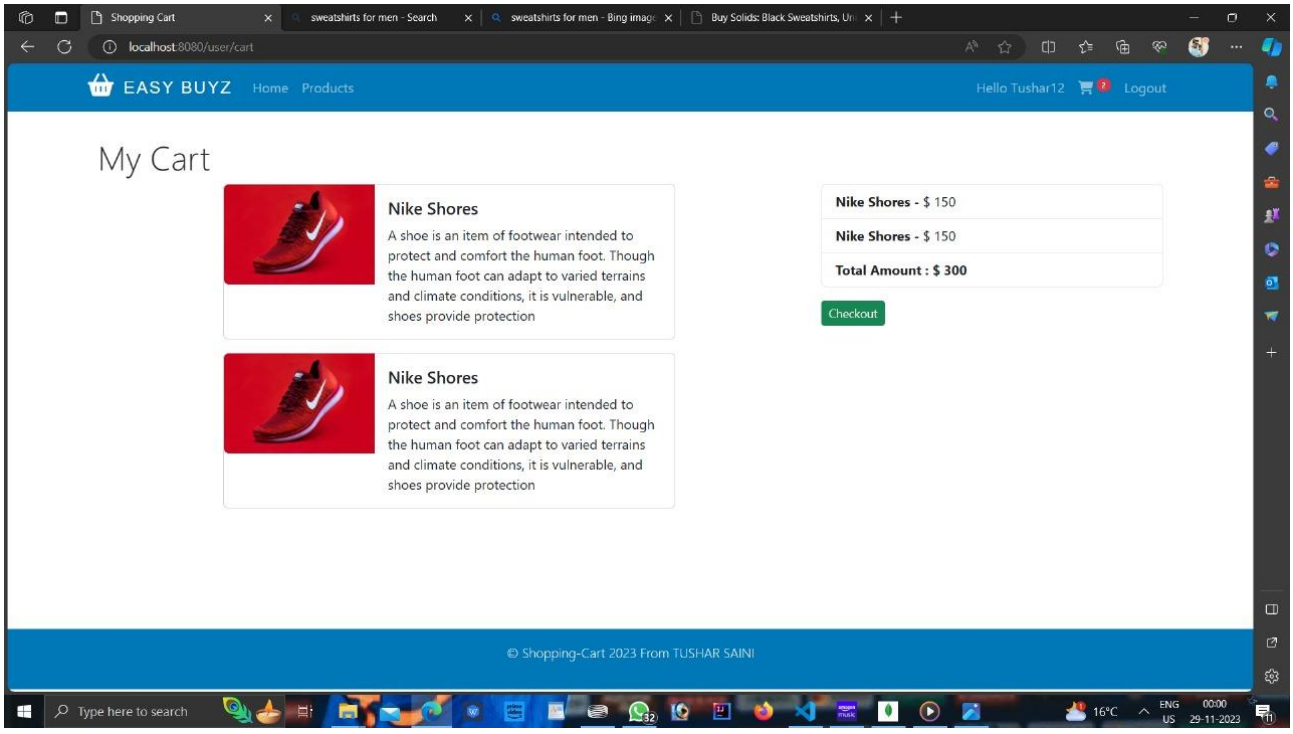

Figure 4.5: My Cart Page

CHAPTER 5

CONCLUSION AND FUTURE WORK

6.1. CONCLUSION

The Easy Buyz project seeks to create a convenient platform for college students to exchange items, fostering a sense of community and sustainability on campus. By leveraging modern web technologies and a user-centered design, the project aims to demonstrate the positive impact technology can have on student life within academic communities.

6.2. FUTURE WORK

As the platform continues to evolve, future work should focus on enhancing its capabilities and expanding its reach.

Integration of AI and Machine Learning: Exploring the integration of AI andmachine learning algorithms could enhance the platform's ability to understanduser behavior, leading to more accurate item recommendations and improved search functionality.

Blockchain Technology for Security: Researching and incorporating blockchaintechnology could provide an additional layer of security and transparency in transactions, further addressing trust concerns and ensuring the integrity of the marketplace.

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