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## **E – COMMERCE ONLINE SHOPPING**

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### **CHAPTER 1**

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#### **1 INTRODUCTION :**

This project is Entitled as “E commerce management system” developed using React as a Front End and Microsoft SQL server 2005 and spring Boot as a Back End. This project is ideal for customers of any size. The Ecommerce control panel can be access anywhere in any time. Ecommerce management system describes the complete process of selling a product to a customer from the dealer’s showroom. Before selling, the product belongs to the Ecommerce category in the Ecommerce platform. So the main point of this scenario is selling the product at a fixed amount to purchase. While executing the process, the customer can manually add the product into cart which means, the product can be delivered to the customer. This scenario shows the process of new product sales.

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#### **PROBLEM DEFINITION :**

The objective of this project is to purchase a product online through Ecommerce Management System which helps to manage their valuable time and saves a lot of time going to shops and purchase. Most of the showrooms today are running at a high prices and asking high delivery charges to deliver the products.

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#### **OVERVIEW :**

The assessment of technical feasibility must be based on an outline design of system requirements in terms of input, output, files, programs, and procedures. This can be qualified in terms of volume of data, trends, frequency of updating, availability of products etc. in order to give an introduction of technical system. “Ecommerce management system” satisfies technical feasibility because it need not require any additional hardware or system configuration for implementation and execution. engagement and healthy competition. The app will also offer comprehensive sports news, updates, and live streaming, ensuring users stay connected with their favorite sports. This report provides an overview of the project's objectives, methodology, implementation plan, and anticipated outcomes.

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#### **OBJECTIVE :**

Continue to provide the high quality of sales and services that Ecommerce sites is known for. Manage a seamless transfer of ownership. Maintain a financially healthy business and validate the trust and advocacy of other people in support of this business purchase. Repay the start-up loan provided by family members within the first year. Achieve monthly and yearly sales equal to or better than the previous year under the former owner. Aim to improve sales of products specific garments and rainwear over the year. Focus marketing on new student influx to maintain current growth in sales and service revenue

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## CHAPTER 2

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### 2 SYSTEM STUDY AND ANALYSIS

#### 2.1 PROPOSED SYSTEM

The proposed system for the Ecommerce Online shopping App project comprises a user-friendly desktop application with personalized purchase plans, order tracking tools, and community engagement features. It will incorporate filter elements, offering virtual rewards and rankings to enhance user motivation. Renowned customers will provide expert mentorship through various orders and personalized feedback. The app will deliver comprehensive products, live filters, and event updates across various orders. It will be compatible with different devices and scalable for future expansion. The system will be designed to be compatible with various mobile devices and operating systems, ensuring accessibility for a wide range of users. It will also be built with scalability in mind, allowing for future expansion, integration of new features, and inclusion of additional sports disciplines. Data security and privacy measures will be implemented to protect user information. The app will offer up-to-date products, personalization, and product updates across a variety of products. Users can customize their preferences and receive personalized orders, ensuring they stay informed and connected to the latest happenings. The proposed system aims to provide various products with a holistic platform for easy shopping, performance analysis, community building, and staying informed about their favorite ecommerce platforms

#### ADVANTAGES

- **Personalized Shopping:** The app provides customers with personalized shopping plans tailored to their specific likes, favorites, and products filters, enabling them to optimize their performance.
- **Performance Tracking:** Customers can track their progress, monitor key metrics, and analyze their orders over time. This data-driven approach helps athletes make informed decisions and continuously improve their performance.
- **Community Engagement:** The app fosters a vibrant shopping community by offering interactive features such as challenges, real-time competitions, and communication channels. Customers can connect with peers, share experiences, and receive support, creating a sense of belonging and motivation.
- **Personalization and Motivation:** The incorporation of Personalization elements, including virtual rewards, products, and filters, enhances user motivation, encourages healthy competition, and boosts engagement in shopping platforms.
- **Expert Mentorship:** Renowned Members and experts provide mentorship and guidance through virtual sessions and personalized feedback. Customers can benefit from the
- knowledge and expertise of industry professionals, accelerating their growth and development.
- **Comprehensive Shopping Coverage:** The app offers comprehensive shopping experience, Personalization and event updates across a variety of purchases. Customers can stay informed about the latest happenings in their favorite products.
- **Accessibility and Compatibility:** The app is designed to be compatible with various mobile devices and operating systems, ensuring accessibility for a wide range of users. Customers can conveniently access the app and its features anytime, anywhere.
- **Data-Driven Decision Making:** The app collects and analyzes data on user performance, enabling users to make data-driven decisions for shopping, setting order goals, and improving performance. This data-driven approach leads to more efficient and effective shopping strategies.
- **Enhanced User Experience:** The Ecommerce App provides a seamless and user-friendly experience, ensuring customers enthusiasts can easily navigate and utilize its features. The intuitive interface and user-centric design contribute to an enjoyable and engaging user experience.
- By harnessing these advantages, the Ecommerce Academy App project offers athletes and customers enthusiasts a comprehensive and innovative platform to enhance their orders, performance, and overall shopping ex

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## CHAPTER 3

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### 3 SYSTEM DESIGN AND DEVELOPMENT

#### 3.1 INPUT DESIGN

The input design for an online shopping project should prioritize user convenience and efficiency. This entails creating intuitive registration and login forms, streamlined product search and listing interfaces, detailed product descriptions with easy-to-use add-to-cart functionality, and a smooth checkout process. Additionally, implementing features like order tracking, account management, and responsive design ensures a seamless shopping experience across devices. Attention to security measures, error handling, and accessibility further enhances usability and trust. Regular feedback collection and iteration based on user insights help refine the interface to meet evolving needs and preferences, ultimately fostering customer satisfaction and loyalty.

#### 3.2 DATABASE DESIGN

The design of the database was similar to the analysis phase. The database has been developed using SQL Server 2005.

### **3.3 OUTPUT DESIGN**

The output design for an online shopping project should prioritize clear presentation of product listings, detailed product information, and streamlined checkout processes. It should guide users seamlessly from product browsing to purchase confirmation, ensuring transparency in order details and providing easy access to order tracking and account management features. A visually appealing and responsive interface, coupled with accessibility considerations, enhances user engagement and satisfaction, ultimately fostering trust and loyalty in the online shopping experience.

### **3.4 MODULE DESCRIPTION**

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#### **ADMINISTRATIVE MODULE**

Implement functionalities for managing products, categories, orders, customers, and deliveries. Admins should be able to add/edit/delete products, view orders, manage customers, assign orders to delivery persons, etc.

#### **CUSTOMER MODULE**

Develop features for customers to browse products, add them to cart, place orders, track order status, manage their profile, view order history, provide feedback, etc.

#### **DELIVERY PERSON MODULE**

Create functionalities for delivery persons to view assigned orders, update order status (e.g., picked up, in transit, delivered), view delivery details, communicate with admins/customers, etc.

## **CHAPTER 4**

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### **4 SYSTEM TESTING AND IMPLEMENTATION**

#### **4.1 SYSTEM TESTING**

##### **4.1.1 UNIT TESTING**

Unit testing emphasizes the verification effort on the smallest unit of software design i.e.; a software component or module. Unit testing is a dynamic method for verification, where program is actually compiled and executed. Unit testing is performed in parallel with the coding phase. Unit testing tests units or modules not the whole software.

I have tested each view/module of the application individually. As the modules were built up testing was carried out simultaneously, tracking out each and every kind of input and checking the corresponding output until module is working correctly.

The functionality of the modules was also tested as separate units. Each of the three modules was tested as separate units. In each module all the functionalities were tested in isolation.

In the Shop Products Module when a product has been added to cart it has been made sure that if the item already exists in the shopping cart then the quantity is increased by one else a new item is created in the shopping cart. Also the state of the system after a product has been dragged in to the shopping cart is same as the state of the system if it was added by clicking the add to cart button. Also it has been ensured that all the images of the products displayed in the shop products page are drag gable and have the product property so that they can be dropped in the cart area.

In the Product Description Module it has been tested that all the images are displayed properly. Users can add review and the as soon as a user adds a review it is updated in the view customer review tab. It has been checked to see if the whole page refreshes or a partial page update happens when a user writes a review.

In the Cart Details it has been tested that when a user edits a quantity or removes a product from the cart, the total price is updated accordingly. It has been checked to see if the whole page refreshes or a partial page update happens when a user edits the cart.

Methods were written to retrieve all the manufacturers from the database, strings that match a certain search term, products that match certain filter criteria, all images that belong to a particular product etc. Unit test cases were automatically generated for these methods and it can be seen in figure 6.1 that the tests have passed.

##### **4.1.2 INTEGRATION TESTING**

In integration testing a system consisting of different modules is tested for problems arising from component interaction. Integration testing should be developed from the system specification. Firstly, a minimum configuration must be integrated and tested.

In my project I have done integration testing in a bottom up fashion i.e. in this project I have started construction and testing with atomic modules. After unit testing the modules are integrated one by one and then tested the system for problems arising from component interaction.

### 4.1.3 VALIDATION TESTING

It provides final assurances that software meets all functional, behavioral & performance requirement. Black box testing techniques are used. There are three main components

- Validation test criteria (no. in place of no. & char in place of char)
- Configuration review (to ensure the completeness of s/w configuration.)
- Alpha & Beta testing-Alpha testing is done at developer's site i.e. at home & Beta testing once it is deployed. Since I have not deployed my application, I could not do the Beta testing.

Test Cases- I have used a number of test cases for testing the product. There were different cases for which different inputs were used to check whether desired output is produced or not.

1. Addition of a new product to the cart should create a new row in the shopping cart.
2. Addition of an existing product to the cart has to update the quantity of the product.
3. Any changes to items in the cart have to update the summary correctly.
4. Because same page is inserting data into more than one table in the database atomicity of the transaction is tested.
5. The state of the system after a product has been dragged in to the cart should be same as the state of the system if the same product is added to the cart by clicking a button.

### 4.1.4 WHITE BOX TESTING

In white box testing knowing the internal working of the product, tests can be conducted to ensure that internal operations are performed according to specification and all internal components have been adequately exercised. In white box testing logical path through the software are tested by providing test cases that exercise specific sets of conditions and loops.

Using white-box testing software developer can derive test case that

- Guarantee that all independent paths within a module have been exercised at least once.
- Exercise all logical decisions on their true and false side.
- Exercise all loops at their boundaries and within their operational bound.
- Exercise internal data structure to ensure their validity.

At every stage of project development I have tested the logics of the program by supplying the invalid inputs and generating the respective error messages. All the loops and conditional statements are tested to the boundary conditions and validated properly.

### 4.1.5 PERFORMANCE TESTING

Jakarta JMeter, a tool for testing applications was used to simulate the virtual users (clients) and test the performance of the system. It can be used to test performance both on static and dynamic resources (files, Servlets, Perl scripts, Java Objects, Data Bases and Queries, FTP Servers and more). It can be used to simulate a heavy load on a server, network or object to test its strength or to analyze overall performance under different load types. It can be used to make a graphical analysis of performance and test the server/script/object behavior under heavy concurrent load.

I have done performance testing to achieve an estimate of the peak and sustained load the application. This has done with few pages like the Shop Products (extensive Database access, business logic Intensive and more Images) and the Cart Details (simple page). A few sample Screenshots of test results are shown below. The tests have been conducted by running the application (server) and JMeter on same machine. These test results do not include factors like network bandwidth etc as the server is running on the same machine along with JMeter.

## 4.2 IMPLEMENTATION

### 4.2.1 FRONT-END

Frontend refers to the client-side of a web application or website that users interact with directly. It involves designing and developing the user interface (UI) and user experience (UX) components of a web application, including the layout, visual elements, and interactive features. Frontend technologies typically encompass HTML for structure, CSS for styling, and JavaScript for interactivity. Frontend development focuses on creating responsive and visually appealing interfaces, optimizing performance, and ensuring cross-browser compatibility. It involves implementing design mock ups, handling user input, making API requests, and updating the UI dynamically. Frontend development plays a crucial role in delivering a seamless and engaging user experience on the web.

#### FRONT-END TOOLS:

- i. Code Editor:
- ii. Visual Studio Code
- iii. Package Manager:
- iv. npm (Node Package Manager)
- v. Frontend Framework/Library:
- vi. React.js ii) React Router iii)Axios
- vii. iv) Material-UI

**SIGNUP PAGE:**

A signup page, also known as a registration page, is a web page or user interface component that allows users to create a new account or profile for a system, application, or website. It serves as a means for users to provide their information and create a unique identity within the platform

**4.2.2 BACK-END**

Backend refers to the server-side of a web application that handles data processing, business logic, and database operations. It involves the development of server-side scripts, APIs, and infrastructure required to support the frontend of an application. Backend technologies typically include programming languages like Python, Java, or Node.js, along with frameworks and libraries. Backend development focuses on tasks such as data storage, security, authentication, handling requests from the frontend, processing data, and generating dynamic responses. It involves working with databases, servers, and other backend systems to ensure the efficient and reliable functioning of the application. Backend development forms the backbone of a web application, enabling the frontend to interact with the necessary resources and deliver the desired functionality.

**BACK-END TOOLS:**

a) Code Editor:

Eclipse

b) Version Control System:

Git , GitHub

Package Manager:

Maven

Backend Framework:

Java Spring Boot

Spring Data JPA

Database Tools:

**4.2.3 CONTROLLER CLASS**

The controller is a component that handles incoming requests and controls the flow of data between the client and the server. It plays a crucial role in processing the requests, executing the appropriate business logic, and generating the responses.

**4.2.4 SERVICE CLASS**

A service refers to a component or module that encapsulates specific business logic or functionality related to a particular resource or set of operations. It provides a higher-level abstraction for handling complex operations and helps maintain a modular and organized code structure.

**CHAPTER 5****5 CONCLUSION :**

In order to purchase a product through online, the knowledge with computer aid, we chose to implement a ecommerce full features method with admin full control. This type of ecommerce tool was not previously available to our user community, there searchers who regularly perform manual segmentations at the Surgical Planning Lab at Brigham and Women's Hospital in Boston. To give an idea of the Ecommerce showroom management system project report workload, it suffices to say that at any time during an average day at the Surgical Planning Lab, one can expect to find approximately ten people performing manual segmentations. In many cases, manual segmentation is used to complete a product purchase dealers segmentation that was started with an automatic algorithm, and the manual segmentation can become the time bottleneck in react source code image processing pipeline.

**5.1.1 SCOPE OF FUTURE ENHANCEMENT**

The Ecommerce management app project has exciting future prospects, including integration of additional features disciplines, augmented reality (AR) and virtual reality (VR) implementation, AI and ML integration for personalized recommendations, products device compatibility, social media integration, virtual competitions, advanced analytics, partnerships and sponsorships, continuous user feedback, and international expansion. These developments will enhance user experience better.

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