DESIGN AND SCALABLE SAAS ARCHITECTURE FOR AN E-COMMERCE PLATFORM

A NAAN MUDHALVAN REPORT

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BONAFIDE CERTIFICATE

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ABSTRACT

This e-commerce website is developed using a combination of **HTML**, **CSS**, and **PHP**, aimed at delivering a dynamic and responsive online shopping experience. The website provides users with a visually appealing and intuitive interface built with **HTML** and **CSS**, ensuring a user-friendly design that works seamlessly across desktop and mobile devices.**HTML** serves as the backbone for structuring the web pages, while **CSS** enhances the visual appeal through custom styles, responsive layouts, and animations, ensuring an optimal shopping experience on all screen sizes. The website's core functionality is driven by **PHP**, which is utilized for server-side scripting. This includes handling user authentication, processing product orders, managing shopping carts, and facilitating secure transactions.The platform incorporates advanced features such as product search, filtering options, user accounts, and order management. PHP scripts dynamically fetch and display product data from a MySQL database, enabling real-time updates for product availability, pricing, and promotions. A secure checkout process is implemented with form validation and payment gateway integration to ensure secure transactions.Additionally, the site is designed for easy management by administrators, who can update product listings, process orders, and view customer insights through a back-end interface. By combining HTML, CSS, and PHP, the website offers a robust, scalable, and secure e-commerce solution that enhances user experience, drives conversions, and supports long-term business growth.

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CHAPTER 1

INTRODUCTION OF E-COMMERCE WEBSITE

INTRODUCTION TO E-COMMERCE WEBSITE:

An e-commerce website is a digital platform that enables businesses and individuals to buy and sell products or services over the internet. It provides a convenient and efficient way for customers to browse, compare, and purchase items from anywhere in the world, using various devices such as smartphones, tablets, or desktop computers. E-commerce websites have revolutionized the retail industry by eliminating geographical barriers, enabling 24/7 shopping, and offering a wide range of products and services at the click of a button.

The core objective of an e-commerce website is to create a user-friendly environment where customers can easily search for products, view detailed information, and complete transactions securely. The website typically features a product catalog, a shopping cart, and a secure checkout system integrated with payment gateways such as credit cards, digital wallets, or other online payment methods.

In addition to providing basic functionality like product listings and order processing, a well-designed e-commerce website incorporates features such as user accounts, personalized recommendations, real-time inventory tracking, and customer support channels. It also ensures that the shopping experience is both seamless and enjoyable, with fast loading times, responsive design, and easy navigation.

For businesses, e-commerce websites offer an efficient way to reach a global audience, increase sales, and collect valuable customer data for targeted marketing and inventory management. From a technological standpoint, an e-commerce website can be built using various programming languages and frameworks, such as HTML, CSS and server-side technologies like PHP integrated with databases like MySQL for managing product and customer information.

Overall, an e-commerce website not only serves as a sales platform but also acts as an essential marketing tool, customer relationship builder, and an integral part of modern business operations.

USES OF E-COMMERCE WEBSITE:

1. Product Sales and Transactions:

The primary use of an e-commerce website is to enable businesses to sell their products or services online. It provides a platform for customers to view product catalogs, read descriptions, compare prices, and make purchases securely through integrated payment gateways (credit cards, PayPal, digital wallets, etc.).

2. Market Reach and Global Presence:

E-commerce websites allow businesses to reach a global audience. Unlike traditional brick-and-mortar stores, an online store is accessible 24/7 and can cater to customers from anywhere in the world, vastly expanding a business's potential market.

3. Customer Convenience:

E-commerce platforms provide consumers with the ability to shop anytime, anywhere. With the click of a button, they can browse products, check prices, read reviews, and place orders from the comfort of their homes, making shopping more convenient than ever before.

4. Cost-Effective Marketing:

Through an e-commerce website, businesses can leverage digital marketing techniques such as SEO (search engine optimization), social media marketing, and email campaigns to drive traffic to their site. It provides a cost-effective way to reach a large audience with targeted ads and promotions.

5. Product and Order Tracking:

E-commerce websites often allow customers to track the status of their orders in real time, from purchase to delivery. Businesses can also use the website to manage returns and exchanges more efficiently, improving overall customer satisfaction.

6. Business Analytics and Insights:

E-commerce platforms collect valuable data on customer behavior, product trends, sales patterns, and more. This data can be analyzed to optimize product offerings, improve marketing strategies, and enhance overall business performance.

7. Subscription and Membership Models:

Many businesses use e-commerce websites to sell subscription-based services or membership products. This model allows businesses to generate recurring revenue, while customers enjoy regular access to products or services (e.g., subscription boxes, streaming services, or exclusive memberships).

8. Mobile Shopping:

With the increasing use of smartphones, e-commerce websites often provide mobile-optimized versions or dedicated apps, enabling customers to shop on-the-go. This expands the convenience of shopping beyond desktop devices, making e-commerce even more accessible.

9. Multichannel Integration:

E-commerce websites can integrate with physical retail stores, allowing businesses to offer "click-and-collect" services, where customers order products online and pick them up in-store. This omnichannel approach enhances customer convenience and satisfaction.

CHAPTER 2

TOOLS TO DEVELOP E-COMMERCE WEBSITE

TOOLS TO DEVELOP E-COMMERCE WEBSITE:

In this project of developing an E-Commerce website the major part is taken from the **Front-end** and the **Back-end** and the user's data is stored in a **Database** .Here are the tools that I used to develop an **e-commerce** website .

Front-end Development:

- HTML (HYPER TEXT MARKUP LANGUAGE)
- CSS (CASCADING STYLE SHEET)

Back-end Development:

- PHP (PERSONAL HOME PAGE)

Database :

- MYSQL (Using XAMPP)

FRONT-END DEVELOPMENT:

HTML:

The full form of HTML is HyperText Markup Language.

HTML is the standard markup language used to create and design web pages. It provides the basic structure for web content, such as text, images, links, and other media. HTML uses a system of tags (or elements) to define the different parts of a webpage, making it possible for browsers to render content properly.

Key Features of HTML:

1. **Structure of Web Pages:** HTML defines the structure and layout of a webpage, using elements like headings, paragraphs, links, lists, tables, images, and forms.
2. **Markup Language:** As a markup language, HTML doesn't perform any computation; it merely describes the structure of a document using tags.
3. **Tags:** HTML uses a series of tags enclosed in angle brackets (e.g., , <h1>, <p>, <img>) to format text, create hyperlinks, embed media, and more.
4. **Semantic Elements:** HTML provides semantic tags like <header>, <footer>, <article>, and <section>, which help structure content in a meaningful way, both for browsers and search engines.
5. **HTML5:** The latest version of HTML, HTML5, includes new elements (like <video>, <audio>, and <canvas>) and features for better multimedia integration, mobile optimization, and performance improvements.

CSS:

CSS (Cascading Style Sheets) is a stylesheet language used to control the layout and presentation of HTML elements on a webpage. It separates the content (HTML) from the design (CSS), allowing for better organization, flexibility, and maintenance of the website's visual presentation.

USES OF CSS:

1.**Separation of Content and Style:** CSS allows you to define the presentation (fonts, colors, margins, etc.) separately from the HTML content, making the code cleaner and easier to maintain.

2.**Consistency:** With CSS, you can apply the same style across multiple pages, ensuring consistency across your website.

3.**Responsive Design:** CSS enables you to create responsive layouts that adapt to various screen sizes (mobile, tablet, desktop).

4.**Customization:** CSS offers a wide range of styling options to customize the look and feel of your website, including fonts, colors, animations, transitions, and positioning.

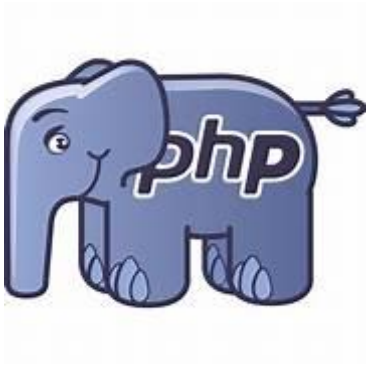
Types of CSS:

1. **Inline CSS**: Applied directly within an HTML element using the style attribute.
2. **Internal CSS**: Defined within a <style> tag in the <head> section of an HTML document.
3. **External CSS**: Linked to an external CSS file using the <link> tag. This is the most common method, especially for larger websites.

BACK-END DEVELOPMENT:

PHP:

PHP (Hypertext Preprocessor) is a widely-used open-source server-side scripting language primarily designed for web development. It allows developers to create dynamic and interactive websites and applications. Originally, PHP stood for Personal Home Page, but it now stands for Hypertext Preprocessor, which reflects its role in processing and generating dynamic HTML content based on user input, database queries, and more.



Key Features of PHP:

1. **Server-Side Scripting**:

   PHP is executed on the server, meaning the web server processes the PHP code and sends the resulting HTML to the client (browser). This ensures the separation of the application logic from the presentation layer (HTML, CSS).

2. **Dynamic Content Generation**:

   PHP allows web pages to be dynamically generated based on data from a database (such as MySQL) or user input. This makes PHP ideal for building data-driven websites like content management systems (CMS), e-commerce platforms, and blogs.

3. **Embedded with HTML**:

   PHP code is embedded directly within HTML using <?php ... ?> tags. This allows you to insert dynamic data into static web pages.

4. **Support for Databases**:

   PHP integrates seamlessly with databases like MySQL, PostgreSQL, SQLite, and others. This makes it perfect for building database-driven applications (such as user authentication systems, inventory systems, etc.).

DATABASE:

In this Project ,here I am using MYSQL with the help of XAMPP

MYSQL:

MySQL is an open-source relational database management system (RDBMS) that is widely used for managing and storing data in the form of tables. It is part of the LAMP stack (Linux, Apache, MySQL, PHP/Python/Perl), a popular platform for developing web applications. MySQL is developed, distributed, and supported by Oracle Corporation, and it is known for its speed, reliability, and ease of use.

MySQL uses SQL (Structured Query Language) for managing and manipulating data. SQL allows you to create, read, update, and delete data (often referred to as CRUD operations). MySQL is highly scalable, capable of handling very large databases and high-traffic websites.

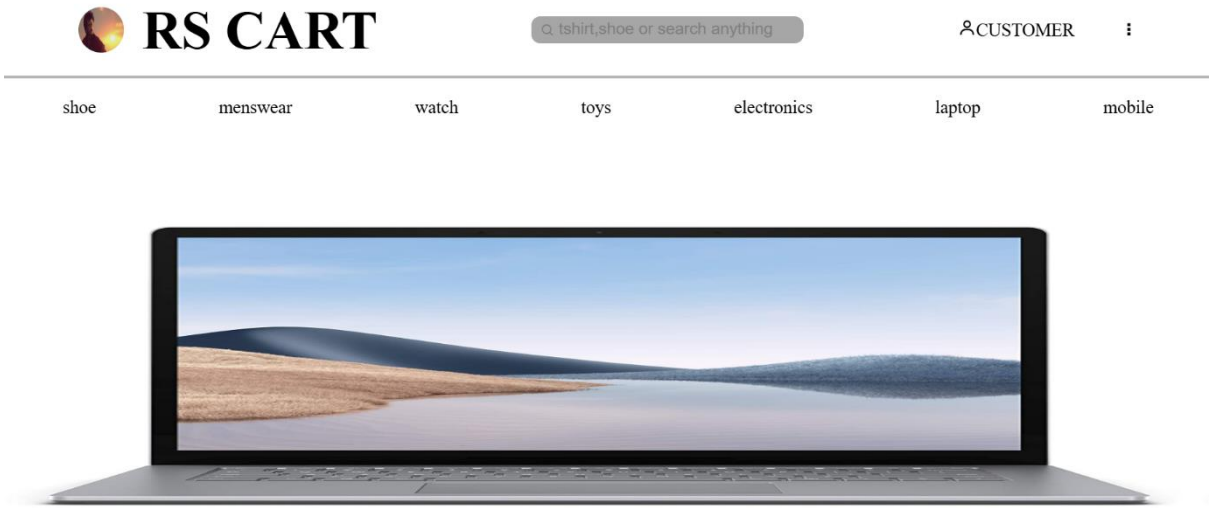
CHAPTER 3

PROJECT IMPLEMENTATION

CODES FOR PROJECT IMPLEMENTATION:

HTML CODE FOR MAIN PAGE:

```
<div class="logo">
   <img src="./Screenshot 2024-07-28 230518.png" alt="check" height="50" width="50" style="border-radius: 50%;">
   <h1>RS CART</h1>
</div>
<div class="search">
   <span><i class="bx bx-search"></i></span>
   <input type="search" placeholder="tshirt,shoe or search anything">
</div>
```



SCROLL TAB:

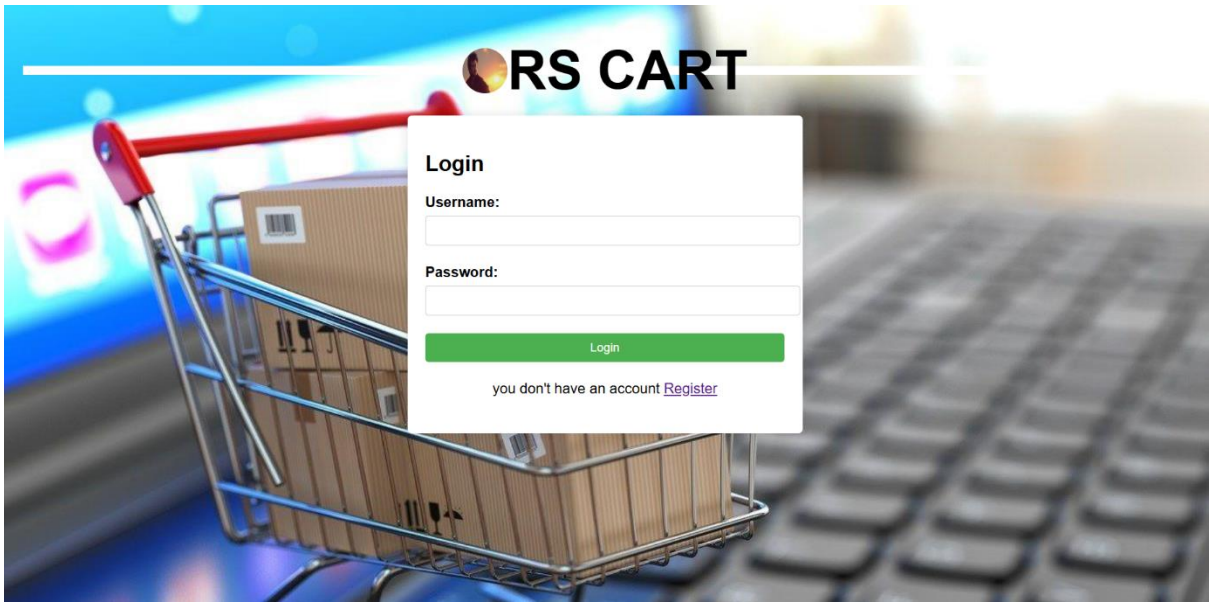
```
<div class="main">
   <img src="./LAP.jpg" alt="img" height="500px" width="1320">
   <img src="./LAP.jpg" alt="img" height="500px" width="1320">
   <img src="./LAP.jpg" alt="img" height="500px" width="1320">
```

```
</div>
```

HTML FOR LOGIN PAGE:

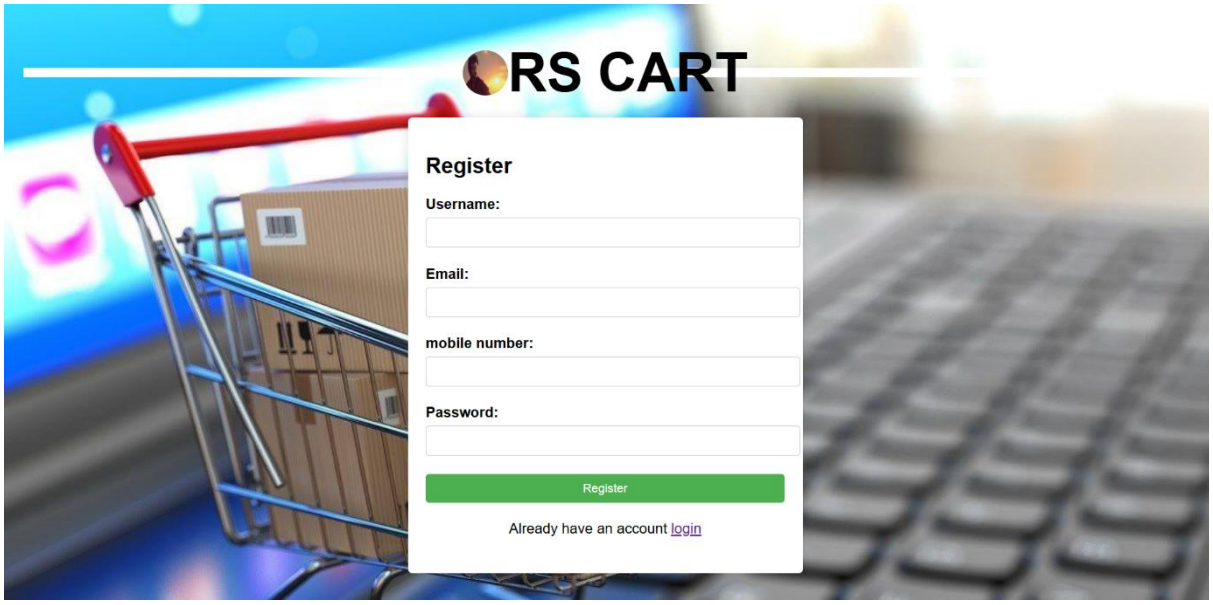
```
<div class="form-group">
        <label for="username">Username:</label>
        <input type="text" id="username" name="username" required>
    </div>

    <div class="form-group">
        <label for="password">Password:</label>
        <input type="password" id="password" name="pass" required>
    </div>
    <div class="form-group">
        <input type="submit" value="Login">
    </div>
    <div class="form-group">
        <center>
        you don't have an account    <a href="index.html">Register</a>
        </center>
    </div>
```



HTML FOR REGISTER PAGE:

```
<div class="form-group">
        <label for="username">Username:</label>
        <input type="text" id="username" name="username" required>
    </div>
    <div class="form-group">
        <label for="email">Email:</label>
        <input type="email" id="email" name="email" required>
    </div>
    <div class="form-group">
        <label for="mobile number">mobile number:</label>
        <input type="tel" id="mobile number" name="mobile number" required="">
    </div>
    <div class="form-group">
        <label for="password">Password:</label>
        <input type="password" id="password" name="pass" required="">
    </div>
    <div class="form-group">
        <input type="submit" value="Register">
    </div>
```



PHP CODE FOR SERVER SIDE:

Create connection

```
$conn = new mysqli ($host, $dbusername, $dbpassword, $dbname);


if (mysqli_connect_error()){
  die('Connect Error ('. mysqli_connect_errno() .') '
    . mysqli_connect_error());
}
else{
  $SELECT = "SELECT email From register Where email = ? Limit 1";
  $INSERT = "INSERT Into register (username , email ,mobile_number, pass)values(?,?,?,?)";
```

checking username

```
      if ($rnum==0) {
      $stmt->close();
      $stmt = $conn->prepare($INSERT);
      $stmt->bind_param("ssis", $username,$email,$mobile_number,$pass);
      $stmt->execute();
      echo "New record inserted sucessfully";
     } else {
```

```
    echo "Someone already register using this email";
  }
```

DATABASE:

DB FOR REGISTER:

	username	email	mobile_number	pass
Edit Copy Delete	Thalapathy	tvk@gmail.com	9955224488	Leodas
Edit Copy Delete	Ulaganayagan	rkfl@gmail.com	9966332255	Thuglife
Edit Copy Delete	ThalaAK	ak@gmail.com	9977441133	vidamuyarchi
Edit Copy Delete	SUPERSTAR	SSRK@GMAIL.COM	9988776655	Thalivar170

DB FOR LOGIN:

username	pass
ThalaAK	vidamuyarchi
Thalapathy	Leodas

OUTPUT:

The Output that we get in the project implementation is the figures ,codes and the HTML ,CSS and relevant Front-end and the Back-end that should be obtain from Visual Studio code.

CHAPTER 4
CONCLUSION

CONCLUSION:

In conclusion, implementing an eCommerce website using HTML, CSS, and PHP offers a flexible and foundational approach to building a functional online store. HTML and CSS handle the structure and style, providing the visual layout and user experience, while PHP offers powerful back-end functionality to handle dynamic content, manage databases, and support essential eCommerce features like shopping carts, product listings, and user authentication.

Using this combination allows for considerable customization, which can be ideal for businesses looking to create a tailored website without the limitations of pre-built platforms. However, maintaining and scaling this type of site requires careful planning in terms of database design, security practices, and site performance optimization. By following best practices in secure coding and efficient database management, this HTML-CSS-PHP stack can be a solid solution for developing a responsive, engaging, and secure eCommerce website that meets user needs effectively.