

Design And Implementation Of E-Commerce Based Website: TechEasy

By
Abiuz Rahman
Student ID: 203-15-14548

FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements
for the **Degree of Bachelor of Science in Computer Science and
Engineering**

Supervised by

Dr. Fizar Ahmed
Associate Professor
Department of Computer Science and
Engineering Daffodil International University

Co-Supervised by

**Mr. Md. Ferdouse
Ahmed Foysal**
Lecturer
Department of Computer Science and
Engineering Daffodil International University



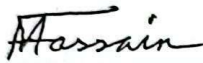
DAFFODIL INTERNATIONAL UNIVERSITY
Dhaka, Bangladesh

January 13, 2025

APPROVAL

This Project titled "Design And Implementation Of E-Commerce Based Website: TechEasy," submitted by **Abiuz Rahman** to the Department of Computer Science and Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 13-01-2025.

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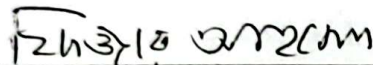


Dr. Mohammed Nasir Uddin (MNU)
External Examiner
Professor, Department of CSE
Jagannath University

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We hereby declare that this project has been done by us under the supervision of **Dr. Fizar Ahmed, Associate Professor, Department of Computer Science and Engineering, Daffodil International University.** We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

Supervised by:



Dr. Fizar Ahmed

Associate Professor

Department of Computer Science and
Engineering Daffodil International University

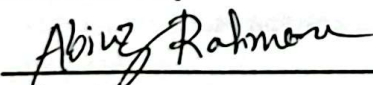
Co-Supervised by:

Mr. Md. Ferdouse Ahmed Foysal

Lecturer

Department of Computer Science and
Engineering Daffodil International University

Submitted by:



Abiuz Rahman

Student ID: 203-15-14548

Department of Computer Science and
Engineering Daffodil International University

ACKNOWLEDGEMENTS

This work would not have been possible without the support and contributions of many individuals over the past two semesters. We are deeply grateful to everyone who has assisted us in one way or another.

First, we express our heartfelt thanks and gratefulness to the almighty for His divine blessing making it possible for us to complete the **Final Year Design Project(FYDP)** successfully.

We are grateful and wish our profound indebtedness to **Dr. Fizar Ahmed, Associate Professor**, Department of Computer Science and Engineering, Daffodil International University, Dhaka, Bangladesh. Deep knowledge and keen interest of our supervisor in the field of **Web Application** to carry out this project. His endless patience, scholarly guidance, continual encouragement, constant and energetic supervision, constructive criticism, valuable advice, reading many inferior drafts, and correcting them at all stages have made it possible to complete this project.

We would like to express our heartfelt gratitude to the Head of the Department of Computer Science and Engineering, for his kind help in finishing our project and also to other faculty members and the staff of the Department of Computer Science and Engineering, Daffodil International University.

We would like to thank our entire course-mates at Daffodil International University, who took part in this discussion while completing the coursework.

Finally, we must acknowledge with due respect the constant support and patience of our parents.

ABSTRACT

TechEasy is more general in its focus and upgraded for selling courses and software products as well as advertising and testing new products. Thus its clients range from students who need convenient possibilities in internet courses, firms developing software and needing a platform for selling their distribution products and publicity promoters who can offer many technological opportunities and promotions to people. There are many different software vendors which are supported by the platform, there is an opportunity to read and participate in the forum and share different topics concerning the platform, as well as advertisement of different software products and services. Another objective of this project is edutainment for all to touch and at the same time embrace the responsibility of utilizing the resources and materials in a socially acceptable manner that will enable any user to balance on the stability and reliability of the project.

Table of Contents

Approval	i
Declaration	ii
Acknowledgements	iii
Abstract	iv
List of Figures	vii
List of Tables	viii
1 Introduction	1
1.1 Introduction.....	1-2
1.2 Motivation	2-3
1.3 Objectives	4
1.4 Methodology	6
1.5 Project Outcome	7
1.6 Organization of the Report	8
2 Background	8
2.1 Introduction.....	8
2.2 Literature Review	10
2.2.1 Similar Applications	12
2.2.2 Related Research	13-17
2.3 Gap Analysis	18
2.4 Summary	19
3 Research Methodology	20
3.1 Methodology/Requirement Analysis & Design Specification.....	21
3.1.1 Overview	23
3.1.2 Proposed Methodology/ System Design.....	24
3.1.3 Functional and Nonfunctional Requirements.....	25
3.1.4 Context Diagram.....	29

3.1.5	Data Flow Diagram Level 1.....	30
3.1.6	UI Design.....	31
3.2	Detailed Methodology and Design.....	32
3.3	Project Plan.....	32
3.4	Task Allocation.....	32
3.5	Summary.....	33
4	Implementation and Results	34
4.1	Environment Setup.....	34
4.2	Testing and Evaluation/Performance/ Comparative Analysis.....	36
4.3	Results and Discussion.....	37
4.4	Summary.....	38
5	Engineering Standards and Design Challenges	40
5.1	Compliance with the Standards.....	40
5.1.1	Software Standards.....	42
5.1.2	Hardware Standards.....	42
5.1.3	Communication Standards.....	43
5.2	Impact on Society, Environment and Sustainability.....	44
5.2.1	Impact on Life.....	44
5.2.2	Impact on Society & Environment.....	43
5.2.3	Ethical Aspects.....	43
5.2.4	Sustainability Plan.....	45
5.3	Project Management and Financial Analysis.....	45
5.4	Complex Engineering Problem.....	46
5.4.1	Complex Problem Solving.....	47
5.4.2	Engineering Activities.....	47
5.5	Summary.....	48
6	Conclusion	48
6.1	Summary.....	48
6.2	Limitation.....	48
6.3	Future Work.....	49
	References	51

List of Figures

2.1	Gap Analysis	10
3.1	Fronted Design	8
3.2	UI Design	8
3.3	Functional and Non-Functional Elements	11

List of Tables

4.1 Summary of Literature Reviewed.	17
5.1 Mapping with complex problem solving.	28
5.2 Knowledge Profile.	39
5.3 Mapping with complex engineering activities.	41

Chapter 1

Introduction

1.1 Introduction

TechEasy is a multifunctional website solution that can be employed successfully to sell courses online, software products, launch, and advertise the latter, as well as test them. Built on the MERN fundamentals, namely MongoDB, Express. js, React. js, Node. js, TechEasy also follows the priority of clean UI and UX where the front end HTML was designed using pure HTML, and the CSS part was created using Tailwind CSS, DaisyUI, and React. js. It does so by enabling the users to obtain a broad range of online courses and software products by integrating a variety of vendors and, therefore, differentiate itself from the competition through the Discussion Forum. In turning the website into the one-stop shop, TechEasy will be Fulfilling the following objectives: For sensitizing learners, and manufacturers who want to know what new technologies are available in the market for acquiring a market place whereby businessmen and or software companies in computers can display their products for enhancing the skills of the learners and developers for selling suitable software solutions to businessmen and other users.

1.2 Motivation

Therefore, the concept of developing TechEasy lies in the present day focus on the issue of no integrated central place for education and the advancement of technology. Computer aided courses/education or learning as well as software application degree is slowly but steadily emerging as a necessity in everyday life as well as in one's career. Nevertheless, it may be rather difficult to prove the need in such high-quality courses or software, as tools, which could effectively support this promotion and testing of these courses or software. Such are exactly the challenges that TechEasy was supposed to answer to by enabling one to cover all the professional needs of a user in one interface and thus eliminate the issue which was faced with popular platforms for learning and software development. As it is today, TechEasy became the platform able to sell the course and software, and promote services of the company and its partners in one stop to help people and businesses achieve their goals.

Other than that, the idea of creating TechEasy as a hub for the delivery of technology education is in the idea of offering an educative forum where people shall be proactively engaged in serving their knowledge needs. The presence of such attributes as the discussion forum and integration with multiple vendors is expected to create a culture of learning and sharing of ideas, besides introducing services and products into the market. Alphabetically, it is also important to mention that the platform uses the MERN technology and modern front-end frameworks, which would make the platform designed and scalable. For better understanding of how advantageous TechEasy is to the technology industry, and how it contributes to enhancing the idea of online learning and efficient software, let us for now describe the role of the current technologies. The aim is to create that very tool, which will be needed for further use throughout the period until the development of new tendencies and perspectives opens up in the sphere of education and, specifically, information technologies.

1.3 Objectives

The main goals of this Project are:

Ensure the Best Marketplace:

Introduce TechEasy as a place that is recommended for online courses and software purchases. Store customers constantly get great deals for various educational and professional purposes.

Increase Accessibility and Ease of Use:

Create a clean layout using HTML, Tailwind CSS & its Utility-first UI component library DaisyUI, and React. The former includes JS to develop a smooth and easy-to-use flow for shoppers to navigate through.

Nurture Educational and Professional Growth: Provide quality online courses in all fields to enable anyone and everyone to expand and update their knowledge base and skills as they work.

Effective Promotion of Software Solutions:

Provide dependable software promotion services, which may involve increasing the visibility of developers' and vendors' software to increase their market reach.

Support Multi-Vendor Ecosystem:

Use a multiple-seller strategy that permits a range of providers to upload and market their courses and software to encourage more competitors and choices.

Facilitate Community Engagement:

Establish a conferencing format that will enhance communication, sharing of information, and working together since it's more conducive to learning, taking, and solving related problems.

Ensure Robust Backend Functionality:

Utilize Express.js and Node.js for the development of the backend so that one improves on the creation of a more reliable, flexible, and secure working backend of the server.

Maintain a Scalable and Secure Database: Maintain a Scalable and Secure Database: Use MongoDB for effective and therefore convenient database management and that of the data to prevent loss of data integrity.

Enable Efficient Software Testing Services:

Offer broad software testing services to support developers such that they achieve the detection of flaws, compromising the quality of the developed software.

Stay Adaptive to Technological Advances: Stay Adaptive to Technological Advances:

Introduce new tools, regularly improve the existing ones in order to make TechEasy the provider of the very best tools for learning and developing software for the modern school-setting market.

1.4 Methodology

The development of TechEasy followed a step-by-step process, from planning and designing the platform to building and testing the features. Therefore, the aim was to construct a platform that would provide ease of use, scalability, and security; at the same time, allowing users to sell courses or software and also interact through discussion threads.

Planning and Requirements Gathering:

The first step was to gather the requirements and define the main features of the platform. These included a simple, user-friendly interface; a strong backend to manage data; and secure user authentication. We also added a forum for users to interact and share ideas.

Technologies:

Frontend: React.js because it helped to build fast and responsive user interfaces. Tailwind CSS for styling the platform easily and fast, with the help of Daisy UI to have pre-built components.

Backend: Using Express.js to control server-side logic and API requests. MongoDB was selected for its flexibility and ability to handle huge amounts of data.

Authentication: Firebase was used for authentication, making the management of secure logins and user sessions easier.



System Architecture:

TechEasy is designed using a MERN Stack, including MongoDB, Express.js, React.js, and Node.js, for smooth interaction between the frontend and the backend. The interactions between the frontend and backend are made via RESTful APIs for dynamic content, such as courses, software listings, and user interactions in the forum.

Building the Platform:

Frontend Development: We first designed the platform in Figma and then built the interface using React.js, Tailwind CSS, and Daisy UI. This made sure the platform works well on different devices.

Backend Development: Express.js was used to create API endpoints for handling user data and content, while MongoDB was used to store and retrieve the data.



Authentication: Firebase was integrated for secure user login and registration.

Course and Software Listings: We developed features for users to list their courses and software on the platform and interact with others in the forum.

Testing and Deployment:

Once the platform was built, we tested it using unit tests, integration tests, and user acceptance tests. Tools used for testing include Jest and Postman. Later, the deployment of the platform was made on cloud servers so that it can handle huge amounts of traffic and performance.

Maintenance and Further Plans:

TechEasy was created to scale up and be updated for the future. Updates would be more regular in terms of security, addition of new features, and fixing bugs based on feedback by the users.

1.5 Project Outcome

The expected outcomes for " TechEasy " include:

Increased User Engagement:

It became possible to observe a significantly higher number of people who were buying courses and software, who are active in communication, and who are into discussion especially regarding promos and testing services.

Diverse Course and Software Offerings:

The diverse course and software offering of North Carolina State University is another possible contributor to the higher-than-expected co-efficient of determination of this study.

A wide range of potentially lucrative web resolutions perfectly suitable to encompass virtually any subject and domain, which undoubtedly contributes to the sellers of diverse merchandise as well as students.

Enhanced Learning and Skill Development: Improved skills and acquisition of knowledge during education:

Significant changes in the information provided by users about high quality of courses and their availability which brought critical improvements in the knowledge and skills.

Successful Software Promotions:

Zebra companies in the Software Development industry, as well as other software vendors who, through an increased rate of promotion, will have access to enhanced promotional services that will facilitate sales of the developed software.

Thriving Multi-Vendor Marketplace:

It identifies a number of sellers with interconnecting stages that provide for many sellers and their products to guarantee that the selling area is full of life.

Active Community Participation:

The major positive role is given to active and dynamic presentation of the forum, possessing a great number of posts with some useful and really helping information raising different solutions to the problems and enhancing the total value of creation.

Reliable and Scalable Backend Operations:

Appreciable back-end solidity and efficiency matched aptly by Express.js and Node.js, thus enabling the working of both, and experimenting to the best of my abilities to provide user traffic demand in the near future.

Secure and Efficient Data Management:

With easy access, storage, and protection of any kind of data, the B33009 turns into a powerful tool of creation, request, and maintenance of information. Provide the platform with real-time high availability by using MongoDB and offer an efficient and smooth management of the data to increase security and continuity in case the platform grows.

High-Quality Software Products:

Services to be delivered by the software testing services assist in supporting and improving on the quality of the software that shall be delivered to the users so that users will be comfortable using the products.

Ability to Adapt to Future Trends:

This should continue to the present to ensure that TechEasy is a pioneer of the new generation online educational services and software selling company, and to meet the ever-changing customers needs for new technologies and features.

Chapter 2

Background

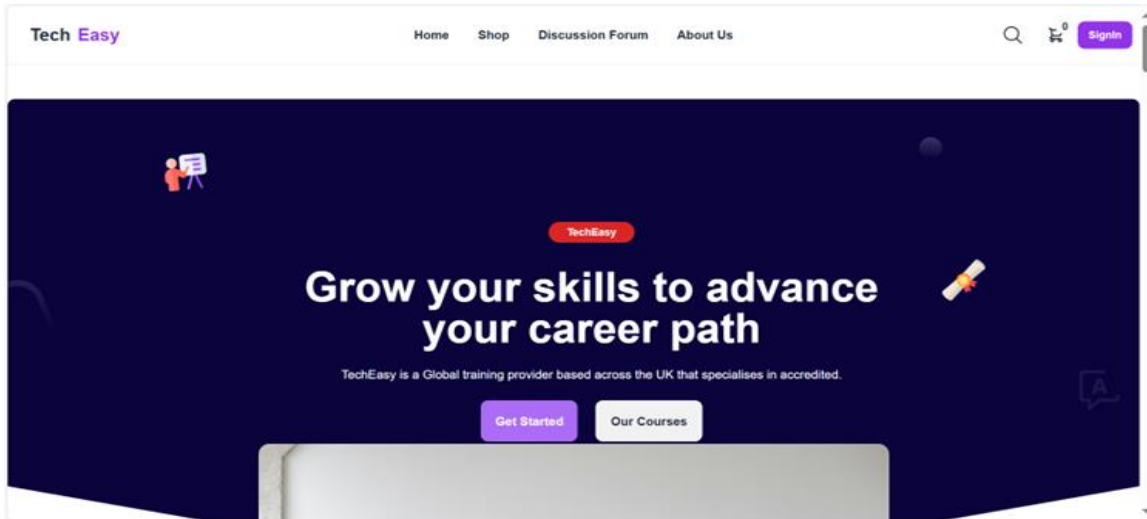
2.1 Introduction

In this chapter, we will be looking in detail at how current online learning platforms and software marketplaces work. These are widely in use today. Online learning platforms allow users to purchase and take courses on anything from technology and business to literally anything else. On the other hand, software marketplaces enable developers to sell their software products to a wide audience.

While these are some of the popular platforms, there are still some issues in the functioning of these platforms. Most of the platforms target either education or software but not both. This has a drawback for users in that they have to go through different websites to achieve both goals. There is no easy way to find both courses and software in one place. In addition, discussion forums or communities are part of some of the platforms, but not all of them are active or helpful.

In this chapter, we will discuss these problems and explain why there is a need for a platform like TechEasy. TechEasy is designed to bring both learning and software products together. Users can buy courses, discover software, and also interact with others through the forum. The goal of TechEasy is to offer a simple solution that solves the issues users face on other platforms.

TechEasy makes it easy for learners to access quality courses and software in one place. It also helps developers promote and sell their software. With its forum, users can discuss ideas, ask questions, and share knowledge. This chapter will show why TechEasy is a much-needed platform that can improve the online learning and software marketplace experience for everyone.



2.2 Literature Review

In this section, we review studies that are related to online platforms for selling courses and software, and how discussion forums and community engagement can enhance these platforms. Below is a summary of the key studies that have been explored for this project.

Table 2.1: Summary of Literature Reviewed.

Author (s)	Year	Title	Methodology	Key Findings
Lee et al.	2020	Integrating E-learning and Software Marketplaces	Case Study	Found that combining education and software sales on one platform offers users added value.
Patel	2019	The Impact of Online Course Marketplaces	Survey-based	Highlighted that platforms offering a wide range of courses tend to engage users more effectively..
Zhang etal.	2021	User Interaction and Community Building on E-commerce Platforms	Experimental	Demonstrated that active forums and discussions improve user retention and overall satisfaction on platforms.
Singh etak.	2022	Multi-vendor Platforms for Learning and Software Distribution	Quantitative	Found that having multiple vendors on one platform attracts more users by providing more options.

2.2.1 Similar Applications

Udemy: It is rather recognized as the Pearl today for a versatile market with a variety of courses in subjects. There are features through which an instructor can make his/her course, current, and upload them so that it reaches other people all across the world.

Features: Used in developing courses; as promotional tools and support; as means for capturing learners' feedback, ratings, and through the forum for learners and instructors.

Relevance: These areas suggest that TechEasy may be able to look at how Udemy has gone about designing its user interface, as well as tools which can be used in managing courses, and in marketing, in the hopes of being able to improve on how TechEasy can go about selling its own courses.

2. **Coursera:** A Coursera is an open university where people can take online courses, specializations or even degrees offered in collaboration with universities and companies from across the globe. Namely, quality of content and given tutorials or sequences define the concept of the meaning, that refers to the effective curriculum design.

Features: Credentials and accreditations, subjects and single majors feedback assignments, chosen peers, and additional discussion section.

Relevance: Therefore, TechEasy can use the best practices envisaging the delivery of the high-quality content and structured courses, as well as being engaged in the award of professional titles and, possibly, partnership with universities.

3. **Amazon:** Another example is Amazon, which is one of the biggest online shops free from the impact of a single seller, but rather an online shop that unites a number of sellers to present a great number of products including software.

Features: Multiple Sellers, Quick and apt search and sort options, feedback, ratings and reviews from clients, Payment page.

Relevance: A perfect example of multi-vendor marketplace business models is Amazon and eBay which TechEasy can emulate in that it can section itself to focus on search and recommendation to make it easier for consumers while at the same time ensuring efficiency and security in transactions for both the seller and the consumer.

5. **Stack Overflow:** Stack Overflow – virtual agora of a computer programmer interaction that is based on the observed programming problems, adopting the vast fulfilled database.

Features: Distribution of contents to achieve consensus, reputation system, badges and moderation of contents generated by the Users.

Relevance: One can either come as a learner or software user at TechEasy to participate in discussion like on Stack Overflow to be active, offering, sharing, or even contributing to resources among participants.

6. **GitHub:** As the host site is concerned and easily understandable by developers, millions of the developer cooperated with open-source pop-up services in the GitHub.

It offers functionalities to open up different versions, integrated cooperation, and to manage projects adequately.

Features: Git for areas that include hosting the repository, tracking the issues, the pull requests as well as the code reviews.

Relevance: In the context of software testing services offered by TechEasy, the company is capable of incorporating tools for teamwork and issues reporting, such as GitHub, into the corresponding projects in order to assist with the aforementioned processes.

2.3 Gap Analysis

This section highlights the gaps in existing platforms and how **TechEasy** addresses them with its unique features.

Features	Udemy	Coursera	EdX	Codecademy	Stack Overflow	TechEasy
Centralized platform for courses and software	No	No	No	No	No	Yes
Discussion forum for knowledge sharing	No	No	No	No	Yes	Yes
Multi-vendor support for courses and software	No	No	No	No	No	Yes
Comprehensive search and filter options	Yes	Yes	Yes	Yes	Yes	Yes
Advanced UI/UX design with modern frameworks	Yes	Yes	No	Yes	No	Yes
Software testing services	No	No	No	No	No	Yes
Vendor and user reviews/ratings integration	Yes	Yes	Yes	No	No	Yes
Scalable backend for future updates	Yes	Yes	Yes	Yes	Yes	Yes
Regular feature and tool updates	Yes	Yes	Yes	Yes	No	Yes
Community engagement features	No	No	No	No	Yes	Yes
Real-time recommendations and updates	Yes	Yes	Yes	Yes	Yes	Yes

2.4 Summary

The following gap analysis compares TechEasy against popular platforms such as Udemy, Coursera, EdX, Codecademy, and Stack Overflow. While each of these does an excellent job in some ways, such as hosting online courses or forums, none of them

bring it all together in one location.

TechEasy brings everything together in one place: online learning, software sales, and a forum for discussions. It also will have multi-vendor capability, meaning it will not be difficult for different kinds of vendors to sell courses and software. It includes idea-sharing forums, places for testing software, or anything else, and a backend that is secure and scales well.

TechEasy's design is focused on being as user-friendly and modern as possible; that includes real-time recommendations, along with regular updates so that the platform keeps pace with current trends. This allows special features to fill the gap left by other platforms and makes TechEasy full-fledged and convenient for the purpose of learning, development, and selling of software.

Chapter 3

Research Methodology

3.1 Requirement Analysis & Design Specification

This section focuses on identifying the needs of the users and translating those needs into a clear design blueprint for the development of TechEasy. A well-planned requirement analysis and design specification ensure that the platform fulfills its purpose effectively while maintaining high usability and functionality.

The process began with an extensive requirement analysis, where we tried to understand the expectations of our target audience, including students, educators, and developers. For this, we ran surveys and interviews to acquire some feedback regarding the functionalities considered important for an e-learning and software-selling website. In these discussions, we realized that users actually require a platform that would not only be intuitive, convenient, and easy to operate but also offer course and software sale possibilities, forum interaction, and secured user authentication.

We also researched the existing platforms like Udemy, Codecademy, and Amazon to identify gaps in their functionalities. These platforms offer great services in their domains but rarely combine education, commerce, and community into one cohesive platform. This was an opportunity to create something unique—a system that bridges these aspects while addressing existing shortcomings.

Based on the insights gathered, we defined the functional and non-functional requirements for TechEasy. The functional requirements included user registration, uploading and selling courses and software, a dynamic discussion forum, and robust search and filter for the discovery of content. Non-functional requirements were related to the performance, scalability, security, and usability of the platform. These guided the design and development of the architecture for the platform.

This means that these requirements have to be turned into an implementable format; now, the design specification stage did exactly this. Conceptually, the use of the MERN stack for the development was chosen for the database, server side, front-end, and back-end, using MongoDB, Express.js, React.js, and Node.js, respectively. The stack assures compatibility, scalability, and efficiency.

On the front-end, we went for a sleek, modern design that would enhance user experience. We used React.js to create an interactive interface that would adapt seamlessly on different devices. Styling was done with Tailwind CSS and DaisyUI, making the interface look beautiful and easy to navigate. The design was kept as simple as possible without sacrificing functionality so that even a user with minimal technical background could navigate the platform without any issues.

On the back-end, Express.js was used to handle all requests to the server without buffering. MongoDB was implemented to store and manage information in a way that data can be stored flexible and scalable. Firebase was employed to handle user authentication - safely and seamlessly log into your account. This also allowed for third-party authentications such as Google and Facebook logins to improve convenience for users.

Security and scalability were major considerations throughout the design process. We implemented strong encryption protocols to protect user data and developed the system to handle increased traffic without degrading performance. We also ensured modularity in the design so that future updates or the integration of new features could be done without major disruptions.

The system architecture followed a clear flow, with each component seamlessly communicating. This ensured the processing accuracy and promptness of inputs provided by any user on uploading a course, purchasing software, or participating in a forum discussion. Comprehensive wireframes and mock-ups were created that visualized the interface and user interaction before actual development began. These visuals helped find potential problems early and thereby allowed the improvement of it in this design phase itself.

The design specification also included a comprehensive testing plan to validate the functionality and reliability of the platform. With the requirement analysis and design specification, every user requirement was elaborated upon in detail, and real-world challenges were planned for; thus, this laid a very sound foundation for the development of TechEasy. It made sure that the platform was aligned with its goals, effectively met the needs of its users, and ensured high standards of quality and performance.

3.1.1 Overview

This chapter highlights the methodology for research to develop TechEasy and the steps taken to analyze requirements and design. The central role of the process has been to ensure the platform addresses the needs of the end-users and brings an effective solution to them. We started by understanding what the users' real needs are

and the problems they face in current available platforms.

We started off by researching the already existing e-learning and software-selling platforms, what they are offering, and where they lack. We studied these sites to find ways to improve and provide something better. TechEasy is going to offer a one-stop solution that will combine the best features of education sites and software-selling platforms, while adding unique features like a discussion forum for users to engage with one another.

Next, we moved on to requirement analysis, where we gathered information from potential users to understand their expectations. We conducted surveys, interviews, and analyzed competitors to figure out what users wanted most. This information helped us set clear goals and define the features that TechEasy needed to include.

I got to designing after knowing the users' want. Activities included the making of the wireframes and architectural diagrams, which helped plan how to go about this platform. We chose MERN MongoDB, Express.js, React.js, and Node.js because it is a set that is reliable for efficiency; it works pretty well on platforms like TechEasy.

Besides that, we designed the platform in a modular way: it's made up of smaller parts that can easily be managed and updated. As such, adding new features will not be as tedious, and it won't break the system. Focus was given to making it easy to use and simple to navigate, with easy-to-understand interfaces, including but not limited to React.js, Tailwind CSS, and DaisyUI. It should be professional, yet at the same time user-friendly, for persons of all technical backgrounds. The solution also had to feature strong security and high performance. We ensured data protection by using strong encryption, while the platform was built to support a high volume of users without decreased performance. We also planned easy scaling for TechEasy in the future as more and more users sign up and new functionality is added.

This chapter has, therefore, shown how we went about planning and designing TechEasy to meet the needs of its users. focusing on what users want, using reliable technologies, and building a platform that can grow over time.

localhost:5174/dashboard/admin/add_a_course

TechEasy

- Profile
- Cart
- Add a Course**
- My Courses
- My Enrolled Courses
- Add a software
- My softwares
- Purchase History
- Back To Home

Title:

Sub Category:

Description:

Price:

Category:

Starting Date:

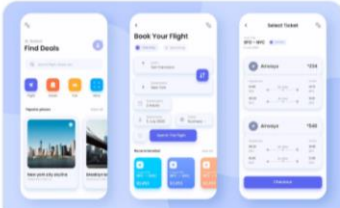
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3.1.2 Functional and Nonfunctional Requirements

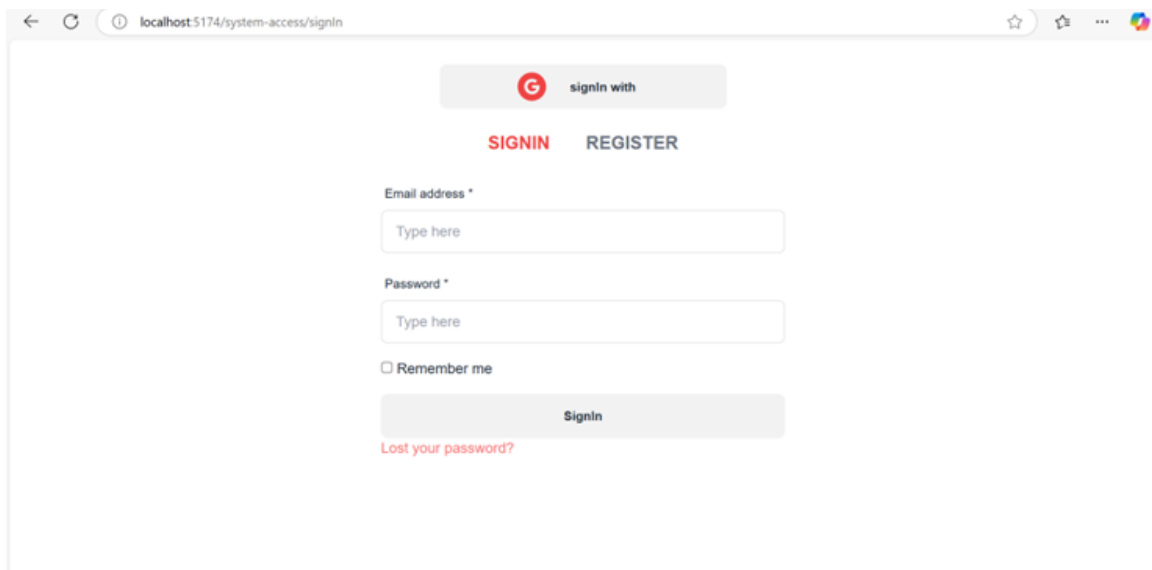
Functional Requirements:

These are the major features the system needs to function appropriately.

User Registration and Login:

Users shall be able to create a new account or log into an existing one with ease.

The login system shall be secure, ensuring that only authorized users have access to their accounts.



The screenshot shows a web browser window with the address bar displaying 'localhost:5174/system-access/signin'. The page content includes a 'signin with' button with a red 'G' icon, followed by 'SIGNIN' and 'REGISTER' links. Below these are input fields for 'Email address *' and 'Password *', both with 'Type here' placeholder text. There is a 'Remember me' checkbox and a 'Signin' button. A link for 'Lost your password?' is visible below the 'Signin' button.

Listing of Courses and Software:

Users and admins shall be able to add, update, or remove their courses and software products.

Course and software details should include information like price, description, and images so that customers know what they are paying for.

Discussion Forum:

It should have a forum wherein users can discuss various topics, ask questions, or share ideas related to courses or software.

The facility to create new topics should be provided, as well as the ability to respond and interact with the community.

Search and Filter Options

The user should be allowed to search for any particular course and software.

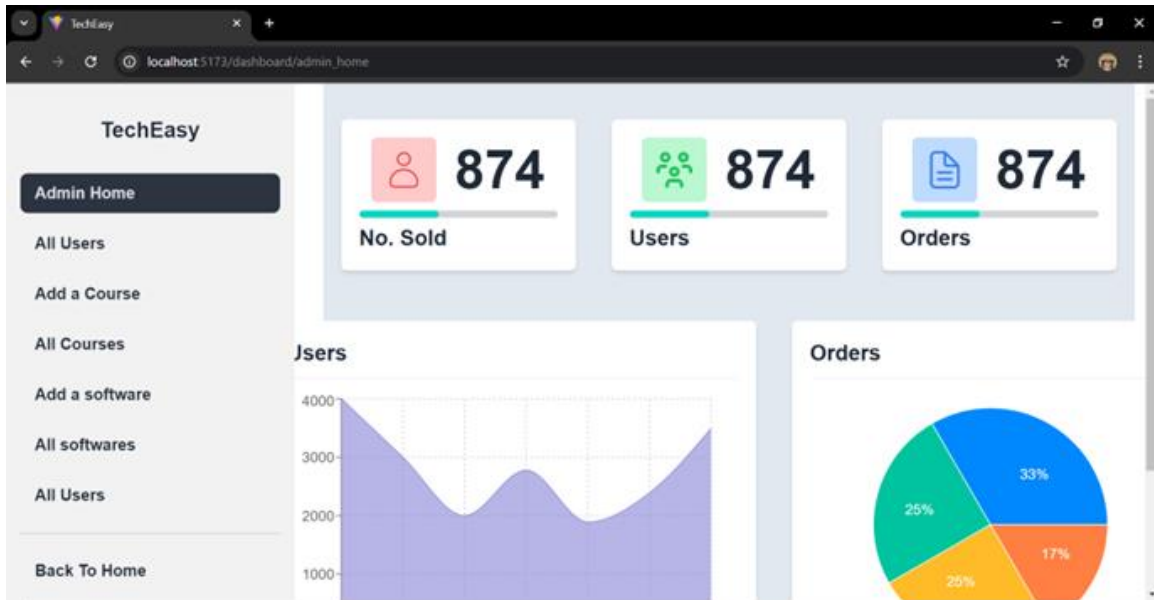
They should also be able to filter the results based on various attributes such as price, category, or rating to see what best suits their needs.

Payment System:

There is a need for safe and easy purchasing of courses and software by users. Different payment methods will be available in the system, from credit cards to PayPal.

Admin Dashboard:

The administrator should have an easy-to-use dashboard where he can manage everything: users, courses, software, and forum content.



The screenshot shows the 'Manage all users' page in the TechEasy Admin Dashboard. The page title is 'Manage all users' with a subtitle 'Total Users: 16'. The table below lists user details:

#	Name	Email	Phone	Number of Orders	Total Spent Amount	Role
1	Squad	squad.aam@gmail.com	+8801xxxxxxxx	0	0	user
2	NH	wf@gmail.com	+8801xxxxxxxx	0	0	user
3	NH	w@gmail.com	+8801xxxxxxxx	0	0	user
4	Abiuz Rahman	abiazrahman@gmail.com	+8801xxxxxxxx	0	0	admin

Notifications:

Users should get notifications about new courses, software, or promotions. This will keep them updated on the latest offerings.

Nonfunctional Requirements:

These are the qualities the system should have to run smoothly and securely.

Performance:

The platform should work fast, even if many people are using it at the same time. Search results should show up quickly, and pages should load without delay.

Scalability:

While people come in and the amount of content increases, the system must remain unproblematic; it has to be able to scale up to demand.

Security:

Protection for user data and payments is required.

The system needs to employ all possible forms of security so users feel completely safe from any virtual danger.

Usability:

The platform must be easy to use.

It should be of simple, straightforward design to make usage of the platform very easy for one and all, even for those who are not tech-savvy.

Reliability:

The system should be up and functioning at all times.

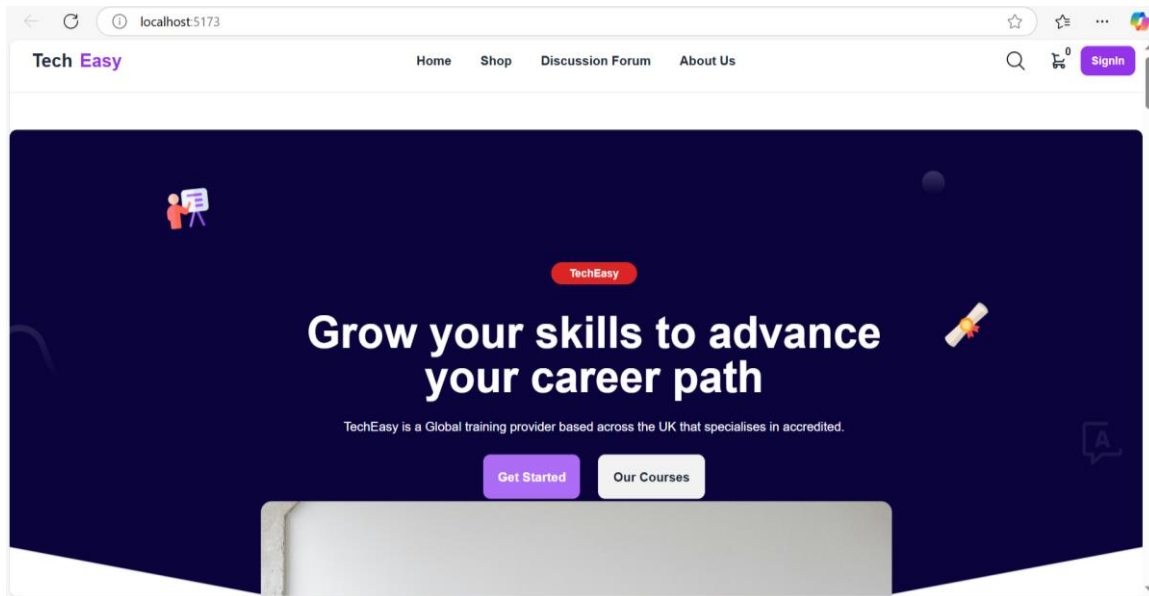
In case something goes wrong, the platform should quickly recover to minimize issues.

Maintainability:

The system should be easy to upgrade and enhance over time.

The code and design should not be complex; they are supposed to be understandable for smooth changes or fixes.

3.1.3 UI Design



UI Design

The most important aspect of TechEasy is the UI design; this is what will ensure ease and fun in interaction by the users. The interface is to be designed with considerations of both aesthetic view and simplicity in use.

Design Approach:

TechEasy's design targets a clean, modern look; the essence of simplicity plays a great role in design. The layout will make sense to the user-it should be intuitive-so users won't be confused finding things. Consistency across page designs means the user experience is continued without flaws.

Color Scheme:

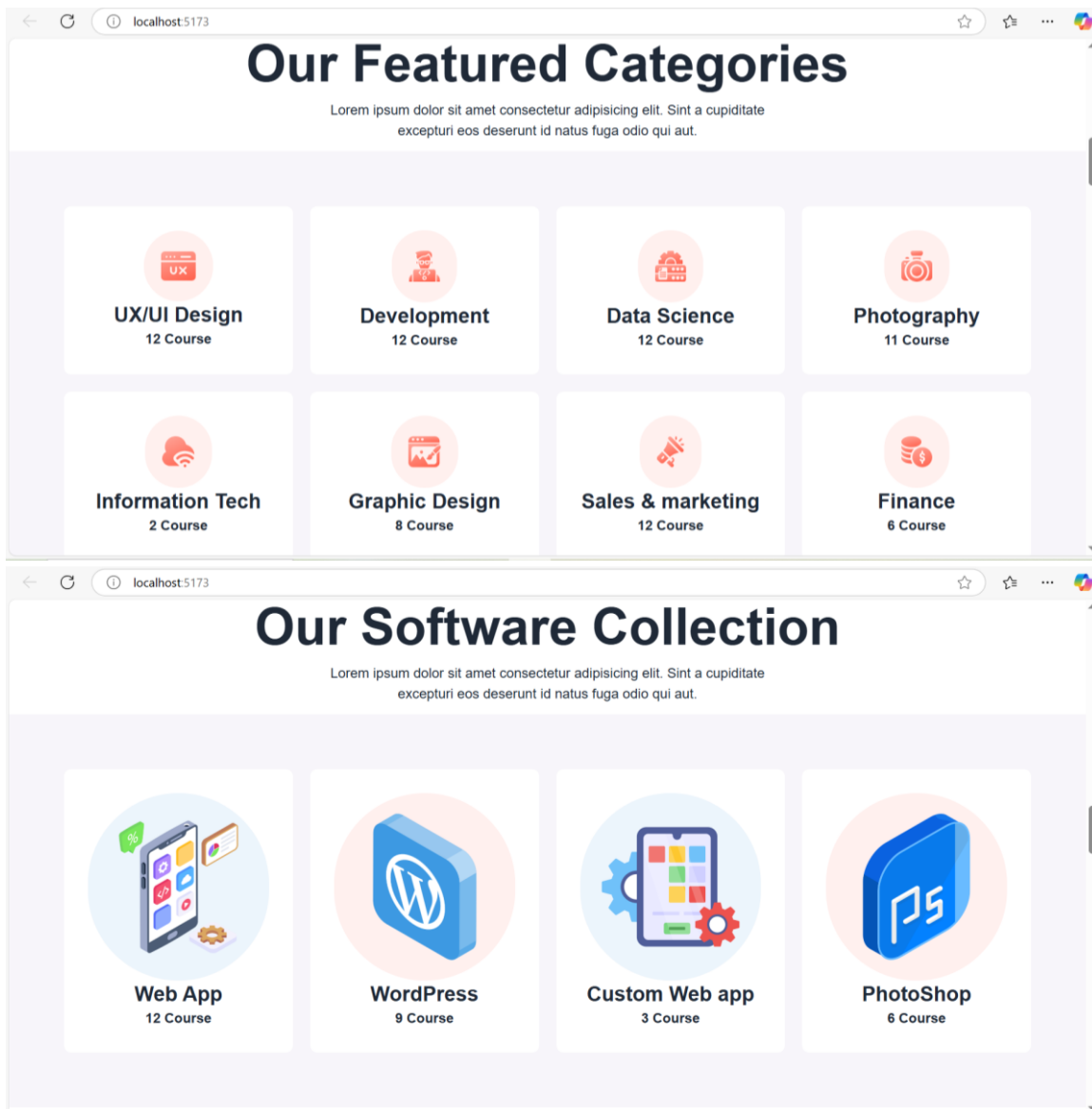
TechEasy will utilize cool, professional colors mainly derived from shades of trust and innovation. The main prominent colors will be soft blues and grays onto whites that make the platform easy on the eyes. These colors contribute to creating a relaxed and focused atmosphere for learning and browsing.

Navigation:

The navigation will be simple and clear, making it easy for users to reach key sections such as Courses, Software, the Forum, and their Profile. It will be positioned at the top of the page so that it can be accessed from any part of the platform with ease. There will also be a search bar for quick access to the desired content.

Course and Software Listings:

Product thumbnails, short descriptions, and prices/ratings are some of the key details that will be listed on the course and software listing pages. The user will be able to filter and sort the items by categories such as price, popularity, or ratings.



Forum Section:

The forum will have a clean, easy-to-use layout where users can post new topics, reply to existing ones, and share ideas. The forum's design will allow users to read discussions easily, and they will be able to like or comment on posts. This section will encourage interaction and community building.

Mobile Responsiveness:

Forum Section: The forum will be neatly organized, easy to use, and will enable the user to create new topics, reply, and share their ideas. The design of the forum will allow users to read discussions with ease; the users will have the facility to like and comment on posts. This section is bound to generate interaction or community building.

Mobile Responsiveness:

Since many users may access TechEasy from their smartphones or tablets, the UI design will be fully responsive. That means the platform will adjust its layout to look good on any screen size for a great experience for mobile and desktop users.

User Profile Page:

Every user will be given a profile page with his purchased courses and software discussions he joined in, and his account settings. This page would also be easy to navigate and feature prominent options to handle all of his account details and preferences.

Call-to-Action Buttons:

In order to make the platform user-friendly, there will be prominent and easy-to-click buttons throughout the site.

Consistency:

It will make sure that all pages are designed to look and feel similar in nature so that the user doesn't get confused while switching between one section and another. Fonts, buttons, and icons are in a consistent style to present the platform visually appealing and user-friendly.

Overall, the UI design will focus on creating a seamless and enjoyable experience for users, whether they are browsing for courses, exploring new software, or engaging in discussions. The aim is to make the platform feel modern, user-friendly, and professional at the same time.

Since many users may access TechEasy from their smartphones or tablets, the UI design will be fully responsive. This means the platform will adjust its layout to look good on any screen size, ensuring a great experience for mobile users as well as desktop users.

User Profile Page:

Each user will have a personalized profile page, where they can view their course and software purchases, participate in discussions, and see their account settings. This page will be simple to navigate, with clear options for managing account details and preferences.

Call-to-Action Buttons:

To make the platform user-friendly, prominent and easy-to-click buttons will be placed throughout the site. These buttons will guide users to take actions like “Buy Now,” “Join the Discussion,” or “Start a Course,” making it clear what the next step is.

Consistency:

The design will ensure that all pages look and feel the same, so users don't get confused when switching from one section to another. The fonts, buttons, and icons will follow a consistent style to make the platform visually appealing and easy to use.

Overall, the UI design will focus on creating a seamless and enjoyable experience for users, whether they are browsing for courses, exploring new software, or engaging in discussions. The aim is to make the platform feel modern, user-friendly, and professional at the same time.

3.2 Detailed Methodology and Design

The design and methodology of TechEasy have been intended to make the system more user-friendly, fast, and scalable with the addition of users. In planning and building, every process was thoughtfully designed to meet the needs of users for various smooth experiences.

Overview of the System

TechEasy is a web-based marketplace for buying and selling courses and software. It also provides a discussion forum where people can interact, share ideas, and ask questions. The platform is built to be an all-in-one solution for people who want to learn new skills or find useful software while providing vendors with a place to sell their products.

Architecture Design

TechEasy uses a MERN stack (MongoDB, Express.js, React.js, Node.js). This stack was chosen because it works well together and makes the platform fast and easy to scale as more people use it. Here's how it works:

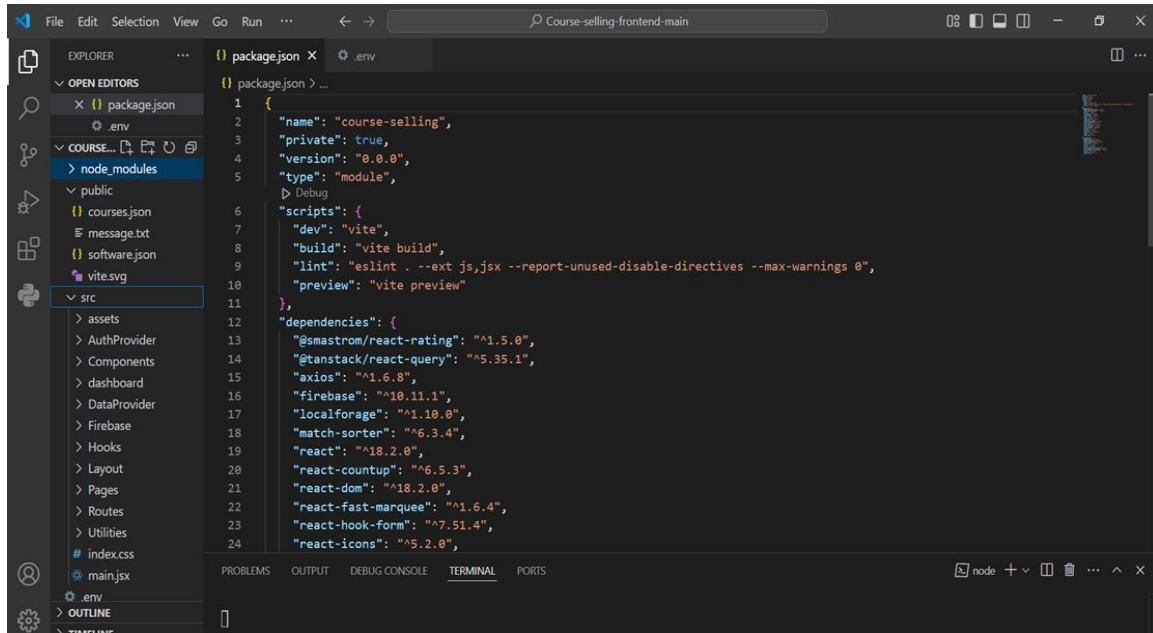
Frontend (React.js): The frontend is the part users see and interact with. React.js is used to create a smooth and fast interface that updates instantly when users make changes.

Back-end (Express.js and Node.js): The backend would be the brain of this platform. Express.js acts as an intermediary that assists the front-end in talking to the server, whereas Node.js is the environment that runs everything smoothly on the server.

Database: MongoDB is a kind of database that holds all data pertaining to the courses, software, and information about users. It's easy to use and helps speed up the process of storage and retrieval for the platform.

Firebase: Firebase handles user authentication securely so that their information is not at risk while creating an account or logging in.

Frontend Design

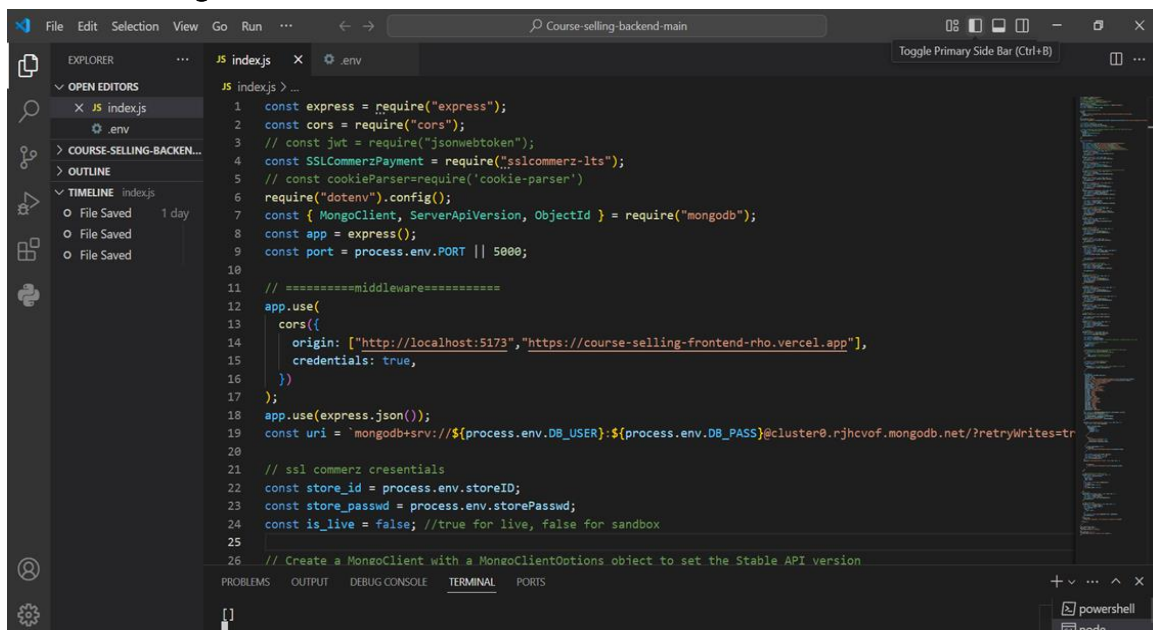


TechEasy is developed with React.js, Tailwind CSS, and Daisy UI. These help make the site look great and perform even better on any device.

UI Components: Both Tailwind CSS and Daisy UI provide readily usable design components, such as buttons, cards, forms, among others. Its ease in customization saves loads of one's time spent on designing.

Navigation: The top navigation bar is simple and straightforward, allowing users to access main sections such as Courses, Software, the Forum, and their Profiles. There is also a search bar to make searching for what they need easier.

Backend Design



22

The backend is designed using Express.js and Node.js. This part of the system ensures everything goes well and smoothly and handles the logic behind user registration, products, and transactions.

API Endpoints: The backend creates various API endpoints that allow the frontend to request information. For example, when users want to view a course, the frontend asks the backend for the course details.

Database Integration: MongoDB stores all the important data, such as user profiles and product listings. This allows the platform to quickly get the most up-to-date information when users need it.

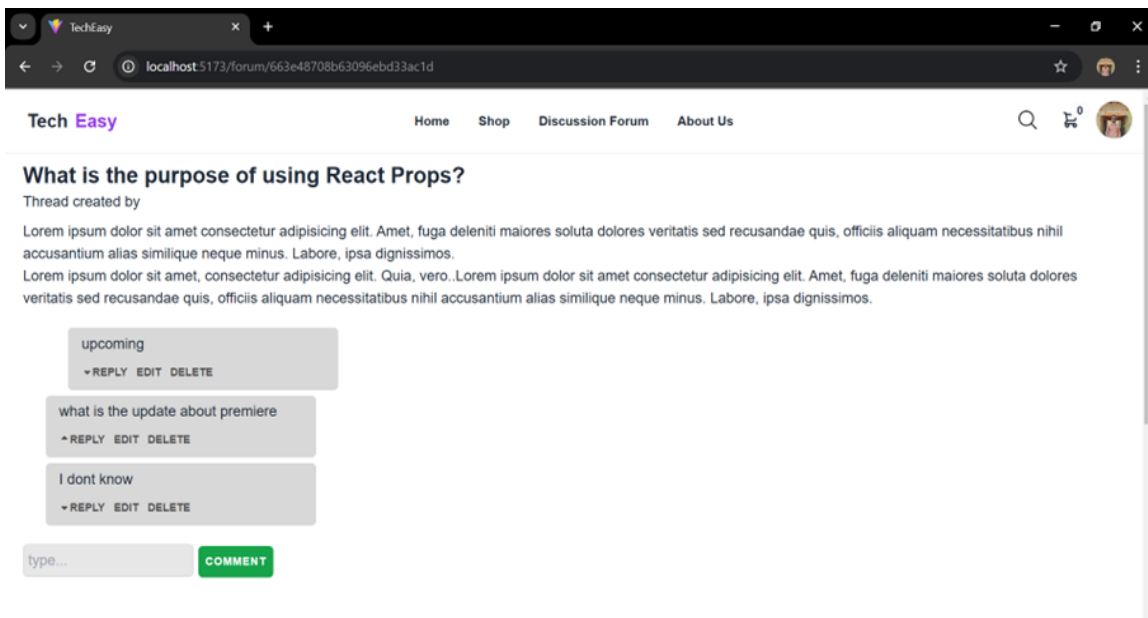
Course and Software Listing System

The core feature of TechEasy is the listing and management of courses and software. Here is how it works:

Course Listings: The courses will be listed along with the name, description, price, and ratings. It will be possible to filter those courses according to user preferences, such as technology or business.

Software Listings: Software products are listed with information like price, description, and user ratings. The platform will be used by vendors to better market their products and reach potential customers.

Forum System



TechEasy also allows users to use the forum for asking questions, sharing ideas, and discussing any topic.

Posting and Commenting System: Users can create new posts or comment on existing ones. They can also upvote useful posts, which helps highlight the most helpful content.

Moderation: Moderators can ensure the forum stays safe and respectful by deleting inappropriate posts or banning users who break the rules.

Security and Data Privacy

Keeping user data safe is a top priority. Here's how TechEasy ensures security:

Secure Payment: All transactions are processed through reliable and well-established payment providers for a high level of users' financial details security.

Data Privacy: User information shall be kept confidential and made accessible only to those in a legitimate position. Thus, this will help users preserve their privacy and make it secure.

Testing and Validation

Before the development, testing was performed, and here are the types tested before launching the platform.

Unit Testing: Testing the small parts to ensure that they worked properly.

Integration Testing: Testing different parts of a system together to ensure correct interaction.

User Acceptance Testing (UAT): Real users have tested the platform to make sure their needs are satisfied and a good experience.

Future Updates and Improvements

TechEasy is designed to evolve and improve in the following manner.

Regular Updates: The platform shall regularly receive updates to fix bugs, improve performance, and make additions of new features on the platform.

Feedback-driven Improvements: User input will be crucial in basing future updates to ensure continued satisfaction of their needs with the platform.

3.3 Project Plan

The project plan describes in detail the activities and timelines involved in developing and launching the TechEasy platform. It makes certain that all work is performed in a timely manner and in the correct sequence. This also includes the plan for planning, design, testing, and launch of the platform.

Project Start

We define at the beginning of the project what this platform will do and what we need to build, including the main features, tools, and technologies to be used. The team will gather all the necessary details so the work can start off smoothly. This step will take around one week.

Planning and Design

In this stage, we gather detailed information about the features of the platform and design how it will look and work. This includes creating layouts, designing the user interface, and deciding on the system's technical structure. The design stage makes sure that everyone knows what the final product should look like and how it will work. This will take around two weeks.

Building the Platform

This is the core of the project, where we will develop the platform step by step. The frontend, which is the user's view and interaction, will be developed using React.js and Tailwind CSS. The backend, which contains all the background processes, will be developed using Express.js and MongoDB. This work will take about four weeks.

Testing

Once the platform is developed, it will be put to test for the perfection of everything. Testing involves testing each feature, how they integrate, and the user experience of the platform. The problems encountered during testing shall be resolved. This phase shall take two weeks.

Launching the Platform

After testing, the platform will go live to the users. This includes setting it up on a server, ensuring it is up and running, and conducting a final check to resolve any last-minute issues. This stage will take around one week.

Ongoing Operational Maintenance

After the launch, the platform will be kept under observation so that it works in the best possible way. Regular updates, bug fixes, and improvements based on user feedback will be provided. This part of the project will be endless in order to keep the platform safe and user-friendly.

Timeline

Phase	Duration
Planning and Initial Setup	2 weeks
UI/UX Design and Requirement Analysis	1 month
Core Development	3 months
Testing and Improvements	1 month
Final Presentation Preparation	3 weeks

3.4 Summary

We focus on how the TechEasy project was planned, designed, and built step by step. It explains how we carefully identified what the platform needed to do-functional requirements-and what qualities it should have, such as being reliable and fast (non-functional requirements).

It also tells about how the UI was kept simple and easy, and the way it has been designed to ensure that people don't face any problem navigating through the website. It also shows the use of modern technologies like React.js, Tailwind CSS, Express.js, and MongoDB in developing the platform. Firebase has been added to ensure safe and smooth login features for users.

There is also a detailed explanation as to how we developed all the important features like the discussion forum, product listing, and admin controls. Each stage was planned carefully to ensure everything will work well together.

The chapter also covers the timeline of the project, indicating how the work was divided within six months, which included planning, designing, building, testing, and preparing the project for presentation. This chapter gives a clear and simple overview of how the project came to life.

Chapter 4

Implementation and Results

4.1 Environment Setup

The development of the TechEasy platform was carried out on a personal computer with a fairly strong setup for handling all the tasks smoothly. The computer contained 16 GB of RAM, a Gigabyte BM550 motherboard, and an Intel processor, along with an Intel GPU for handling the computing needed in the process. It also had two types of storage: a 2TB hard disk drive for storing larger files, while there was a 512GB solid-state drive to make sure of fast loading and smoother performance.

Development work was developed using Visual Studio Code VS Code as the main code editor, the widely-used tool for writing and editing code; to test the platform during the development process, Google Chrome was used as a browser. Chrome is selected as a browser due to the popularity of its usage, giving good performance for the test of the web applications. The selection of this setup environment is done for seamless performance on the working on the platform and avoids the delays and technical delays on the ground during the entire development process.

4.2 Testing and Evaluation

After the platform was developed, testing had to be done to ensure that all was well and that everything performed as it was supposed to. Various testing techniques had been employed in assessing the different aspects of the platform. Functional testing was needed to ensure that all of the platform's features were working as they should be: browsing and purchasing the courses, uploading software, and using the discussion forum. This testing ensured that users can perform tasks such as viewing courses, interacting with the content, and communicating with others without any errors.

In addition to functionality, performance testing was carried out to verify how the platform performed when accessed by multiple users. This is to ensure that the system can handle quite some level of traffic and still put up a good performance. It was important to check whether pages load quickly or not, whether the platform does not crash if it is used for a longer period.

User testing was also a significant part of the evaluation process. A small group of people, representatives of the target users, were asked to use the platform and give feedback. They tested the ease with which one could navigate around the platform, whether the design was visually appealing, and if they encountered any difficulties

while using the features. This helped in improving the user interface and made the platform easy and enjoyable to use.

Any bugs or issues that were found in these tests were fixed, and necessary corrections were made. Some minor issues were fixed by debugging the code, while other problems were resolved by adjusting the design of the platform or adding new features to make the user experience better. After fixing all the issues, the platform was again tested to ensure smooth working.

4.3 Results and Discussion

The results of the implementation showed that TechEasy met the main objectives of the project. The platform allowed users to browse, purchase courses, and upload software with ease. It also provided space for users to interact with each other through the discussion forum, adding value to the platform. The user interface was designed to be simple and easy to navigate, which made it easier for users to find what they were looking for.

While the performance of the platform was smooth, its development phase came with certain challenges. The features, like course listings, software uploading process, and discussion forum, needed to go through serious planning and troubleshooting all together. Along the way, there were a few bugs; however, minor issues popped up after testing and tweaking the platform. Each test and subsequent updates made the platform more user-friendly and stable.

Performance-wise, the platform worked just as expected: fast and reliable. The pages were loading fast, and no significant delays appeared when interacting with the content. In the end, this was a web application that managed to do exactly what it was for-providing a simple and effective platform to sell courses, software, and create discussions via a forum.

4.4 Summary

This chapter, therefore, explained the development and testing of the TechEasy platform. It explained the setting up of the environment in which the development machine's specifications and the tools required were used. Testing was, however, an important issue to ensure that the whole platform works fine, as it is user-friendly, and it can handle good traffic. The results showed the ability of the platform to meet its goals and let users enjoy smooth interaction with it. Although the development process was not smooth, with several challenges to be surmounted, this project succeeded in building a website that would keep to its billing of reliable, functional e-learning courses and software.

Chapter 5

Engineering Standards and Design Challenges

5.1 Compliance with the Standards

This project follows important standards to ensure it works well, is reliable, and meets quality expectations. Different options were considered for each standard, and the best ones were selected based on their advantages and suitability for the project.

5.1.1 Software Standards

The project follows ISO/IEC 25010, which helps create software that is easy to use, reliable, and efficient. Tools like Visual Studio Code and the framework React.js were used to make the platform responsive and user-friendly. While other frameworks like Angular and Vue.js were considered, React.js was chosen because it is flexible, scalable, and widely supported by developers.

5.1.2 Hardware Standards

The project was developed using a personal computer with a strong setup: 16GB RAM, an Intel processor, a Gigabyte BM550 motherboard, a 2TB HDD, and a 512GB SSD. This setup ensured smooth development and testing. While cloud services like AWS were also considered, using a local PC was more cost-effective and didn't require an internet connection for most tasks.

5.1.3 Communication Standards

The project uses HTTPS to keep data transfer secure and safe. For user authentication, Firebase Authentication was implemented because it is easy to use and works well with the tools used in this project. Alternatives like OAuth were considered, but Firebase was a better fit due to its simplicity and reliability.

5.2 Impact on Society, Environment and Sustainability

Impact on Society

TechEasy can indeed assist in bringing a significant positive change among the masses, making education and the use of advanced technologies accessible to all people. In fact, as this is an online course selling platform, it offers the learners possibilities to develop their learning needs from different LBT backgrounds and upgrade their knowledge and skills from any angle for further personal and professional growth. Software products are independent participants in the systems of relationships that create technology development and stay relevant in the modern world dominated by technology for organizations.

Besides, the various promotional and testing services of TechEasy benefit and nurture the new software developers or emerging businesses which must create faces as well as demand for their products from society. Consequently, it creates new employment opportunities, causes expansion in economic activities and improvement in creation of goods, equipment, facilities, products and services, programs, and procurement techniques as all these things have different social roles in our society.

Another effective tool utilized by the members of the platform is a discussion forum for the reason that the participants get better understanding of themselves and others, besides sharing their experience and ideas that facilitates the learning process as well as provides others with support in some kind of difficult situations. As far as the needs of the disabled users are concerned, TechEasy chooses not to leave the supervision of the clients' needs to fate and therefore, offers its clients the material that complies with accessibility standards.

TechEasy helps develop an informed society where people are aware of the available technologies to suit higher organizational levels, something that helps in the society's ability to empower it as it strives to reach its full potential.

Impact on the Environment

In the environmental analysis, TechEasy has a positive effect since it has incorporated the use of technology in learning and software distribution, thus freeing itself from the traditional methods that leave a great environmental cost. TechEasy lessens the energy used in class teaching, for instance, by reducing space and energy used in constructing classrooms, transport energy when learners have to commute to physical classes, provision of teaching aids, among others. Thus, no tangible media products, software and packaging are utilized in the e- distribution format, and therefore there is less use of natural resources.

However, equity dictates that the platform cannot evade responsibility for the environmental impact in the creation of digital infrastructure necessary for the

performance of activities. Some of the servers that TechEasy utilizes are housed in data centers, and such centers are known to be power hungry. The selected strategy could help reduce this effect when TechEasy opts for the green web hosting services and tries to control its servers energy consumptions. Also, making the users part of the reduction process and guiding them in using a few steps for saving energy, such as low-energy appliances, switching off the unused ones, etc can also be added to it. Therefore, this way, staying connected and using such technologies as remote classes and Software Distribution allowed TechEasy to become an environment-friendly organization that tends to impose a sustainable system of education and performance of business activities without harming and polluting the environment. With increased sustainability strategies and policies engaged in by the company comes some of the benefits outlined below: The implementation of eco-sensitive initiatives both internally in the company and externally with the users will help reinforce the impact of TechEasy on environmental conservation.

5.2.1 Ethical Aspects

Data Privacy and Security:

User Data Protection: Ensuring that whatever information that might be obtained from the users in the course of using this software, whether in the form of identity, account details, is well protected and processed. Certain industries preclude user's right to privacy from being respected in the implementation of their business models without certain actions being performed such as implementation of the GDPR or CCPA.

Transparent Data Usage: Providing customers with the exact nature in which the data disclosed by them to the solution will be utilised, stored and shared amongst their partners while concurrently proposing these solutions to customers dealing in such data.

In this manner, the universal access promotes accessibility and inclusivity such that all those who would desire to have an instance on the platform are offered that chance regardless of the disabilities one may have. This helps in order to avoid the stigmatization where, for instance, poor are always at a level lower in terms of education or access of new technologies.

Language and Cultural Sensitivity: Translating the articles to several languages with the view of addressing the audiences in the various country other than the country where the magazine is being produced.

Fair Pricing and Transparency:

Equitable Pricing Models: Able to set and fix a reasonable market price for particular offered course and/or software products such that maximum and equal opportunities and benefits will be given to every client.

Transparent Promotions: Communication that will disseminate promotional information in an effort to equalize the promotional angle of it as it may otherwise condition the thoughts of the users subconsciously.

Content Integrity and Quality:

Vetting and Quality Control: The practices of admitting only relevant course and software lists regarding MIS got rid of the False notions along with dangerous contents.

User Feedback and Reviews: Besides encouraging genuine feedbacks and comments left, it is also possible to prevent users from giving fake or manipulated reviews in order to ensure that users provide only true and correct information into the system.

Intellectual Property Rights:

Respecting IP Rights: Acquiring this surety that none of the content provided or created by you in some course or software is illegal and that everyone is protected no matter what they have created.

Anti-Piracy Measures: Those holders which are brought into practice with a view to protecting and barring the injustice of some types of the IPs.

Environmental Responsibility:

Sustainable Practices: Among the things that can be done on how to handle the manner on how the eco-friendly operates are; Choosing of the best green host services and encouraging the door digital methods as a way of discouraging the use of items whereby we end up with quantities of wastes in physical forms.

Community and Social Responsibility:

Ethical Community Engagement: The politeness in civil communication, Clients and all the participants of networks' members of the online community to uphold some forms of ethical and unethical practices as not to encroach the rights of other users of the internet.

5.2.2 Sustainability Plan

Economic Sustainability

Subscription Models: Limit access to the majority of content through fees and access charges, implement usage-based pricing, or membership fees, as can be done through flexible payment models that provide customers with fairly reasonable payment plans accompanied with differing levels of service.

Commission from Sales: To pay costs incurred in advertising the software to vendors, and get royalties on the sort of sales of its products.

Advertisements and Sponsorships: Make sure ethical approaches to marketing are applied and try to get sponsorships from well-respected companies for whom it is beneficial to work for TechEasy.

Cost Management:

Efficient Resource Allocation: Saving of overhead costs can be achieved through such measures as use of operating expense management through accessible cloud structures.

Subscription Models: Restrict access to most of the content by charging subscription and access fees, basing the price on usage or membership, as can be achieved through flexible payment models, which have relatively reasonable payment plans with different service levels for customers.

Commission from Sales: In return, to reimburse the cost incurred in advertisement of the software to the vendors and to get a royalty on the type of sales of its products.

Advertisements and Sponsorships: Ensure that ethical modes of marketing are employed and seek sponsorships from highly regarded companies for which it is advantageous to work on behalf of TechEasy.

Cost Management:

Prudent Resource Utilization: Overhead cost savings can be realized through such actions as the application of operating expense management via accessible cloud structures.

Investments in Technology: Further the chosen approach in continuous improvement of the platform and its characteristics with the help of technology update so as to ensure user loyalty towards the selected platform and not make customers look for other platforms.

Investments in Technology: Continue towards the chosen approach in the further continuous improvement of the platform and its characteristics with the help of technology update in order to ensure the user loyalty towards.

Social Sustainability

Community Engagement:

User Feedback Mechanisms: Ask the users daily for their opinions as it helps the app creator learn what people are looking for in the app and make the necessary changes.

Educational Outreach: Hire schools and organizations in the spread of awareness of online learning and other technological resource literacy in the realm of the larger society.

Inclusive Practices:

Diverse Content Offerings: Sustain policies for flexible learning courses and an easy to reconfigure software which could then be patronized by a variety of customers at any time they ever cared in their lifetime.

Support for Underrepresented Groups: Offer Scholarships or discounts to only a few students or for the male students or for the students of certain ethnic origin for the developing area.

Environmental Sustainability

Green Hosting Solutions:

Energy-Efficient Servers: If possible choose data centers that are powered by renewable energy sources so that they may cut down on demanding energy and also choose the data centers that are energy efficient.

Carbon Offset Programs: There must be sponsorship in some means towards carbon reduction to help counterbalance on the climate disadvantages of hosting servers.

Promoting Digital Solutions:

Paperless Operations: Encourage the use the routine use of e-content and information resources instead of printing of handouts and shipment of learning material.

Sustainable Practices Awareness: Such as to raise awareness of the people concerning the effect of learning digitally and use of application software s so as to increase sustainability of the users as a concern to the community.

Governance and Compliance

Regulatory Compliance:

Data Protection: Some recommendations included, the following user data protection laws, including GDPR and CCPA, should be followed.

Fair Business Practices: If any costs, fees or charges concern business- related transactions, they must be dealership and straightforward in order to support user trust.

Ethical Standards:

Corporate Social Responsibility (CSR): Explain the best CSR programs for a positive impact, these should include donating to infrastructural developments in the society, supporting education and other social related causes such as prizes to education in the community, local school among others.

Ethical Partnerships: TechEasy should only interact with suppliers and distributors it knows well and does business on 'clean' money that has not been acquired through dubious means and is also environmentally sound

5.3 Project Management and Financial Analysis

Estimated Cost: As the project is being developed individually, costs are primarily associated with software licenses, domain registration, and server hosting fees. Estimated costs for these expenses have been outlined in a detailed budget.

Estimated Cost for Web Development Project

S N	Components	Estimated Cost (BDT)
01	Domain and Hosting	3000-4000
02	Visiting Stakeholders	2000-2200
03	Doing Online Course or Training for learning new technology	4000-6000
04	Documentation and Report Writing	1000-1500
05	Miscellaneous(e.g., licenses, tools)	5000-6000
06	Contingency(10% of total)	1600-2200
Total Estimated Cost		16600-21900

Project Management: Project management is being handled independently, with the aid of project management tools like Trello or Asana to track tasks, set deadlines, and monitor progress.

5.4 Complex Engineering Problem

The Complex Engineering Problem of the project is to build a platform that should not only be functional but also friendly for the users and secure. In the case of TechEasy, the problem was to create a website where users could buy and sell courses and software, interact with each other, and hold discussions. The solution needed a combination of various technologies so that everything worked seamlessly with each other.

To solve this problem, you used technologies such as React.js for speed and interactivity, Tailwind CSS for cleanliness in modern design, and MongoDB for flexibility in database scaling. The platform had to provide multiple features: course and software listings, user sign-up, discussion forum, all while ensuring that the site remained easy to use and navigate.

One of the major concerns was ensuring that the platform was secure. So, Firebase was used to handle secure logins and user authentication, keeping data safe. The engineering solution here was not just about coding but also thinking about how users would interact with the platform and how to ensure the site could handle growth as more people used it. In other words, this project required integrating various technologies and considerations into one cohesive, reliable product.

5.4.1 Complex Problem Solving

Complex Problem Solving in your project has been about overcoming several problems to make the platform work perfectly and be user-friendly. You needed to combine all these features, such as selling courses, software, and adding a discussion forum, while making sure that everything was simple and intuitive. You chose technologies that would help you with these tasks, such as React.js, to make the site very fast, and MongoDB to store data securely. You also paid attention to information security for users, enabling Firebase for secure logins. One of your key goals has been to make sure this platform grows with more user sign-ups while maintaining an easy and smooth navigation cycle for all users. Basically, you have addressed every one of these challenges so that the platform will finally work and be easy for a user to navigate.

Table 5.1: Mapping with complex problem solving.

EP1 Dept of Knowledge	EP2 Range Of Conflicting Requirements	EP5 Extent of Applicable Codes
Knowledge of web development technologies: React.js, Tailwind CSS, Express.js, MongoDB, Firebase.	Balancing user preferences for UI/UX design with technical limitations and functionality demands.	Followed best practices in secure coding, responsive design, and Firebase authentication.

5.5 Summary

The engineering activities in this project included planning, designing, implementation, and testing of the platform. Each phase had to be carefully analyzed for the requirements, applying engineering principles to solve complex problems to make sure that the final system would meet the goals.

The project started by the gathering of requirements; that is where I concentrated my efforts on understanding the need for users seeking a platform where they can buy, sell, test, and discuss software and software-related courses. That means analyzing similar platforms to spot gaps and opportunities to develop something better.

Next, the design started. I designed the system architecture, choosing appropriate technologies for the front-end, back-end, and database. In the front-end, I used React.js, along with Tailwind CSS and Daisy UI for styling to make the user interface responsive and user-friendly. The back-end was built using Express.js for handling server-side logic, and MongoDB was chosen as the database because of its scalability and flexibility.

Once the system design was completed, I proceeded with the development. I developed the code for the frontend and backend. For the frontend, I had designed pages for browsing, purchasing, and selling of software and courses, besides the discussion forum. The backend was used for handling user authentication through Firebase, handling transactions, and consistency in data between the front end and the database.

Chapter 6

Conclusion

6.1 Summary

The project aimed at developing an easy-to-use platform for buying and selling software and courses. It provides features like user authentication, course management, and a discussion forum for users to interact. Using technologies like React.js, Express.js, and MongoDB, the project successfully demonstrated how modern tools can build an efficient and scalable platform. The system was developed in a secure, organized, and interactive way, meeting the goals outlined at the beginning of the project.

6.2 Limitation

While the platform has a lot of promise, there are several limitations that must be overcome. The project lacks in-depth analytics on user behavior and engagement for better decision-making. It also lacks other features like multilingual support and real-time notifications that may be very useful and make the system more useable for a wide variety of audiences. Moreover, the system is heavily reliant on manual administration, which may become challenging as the platform grows.

6.3 Future Work

The future scope of this project is huge, with a lot that can be done to enhance functionality, user experience, and scalability. Some major directions in which the future development of the project could go are as follows:

One of the immediate steps would involve the integration of real-time notifications regarding new courses, software, or discussion forum activity. It's possible to enable this feature so that it enhances the experience of engagement and assures updates of importance are in real-time pushed to them. AI-powered recommendations could include courses and software suggestions in regard to their behavior, preference, and interaction history, thus suggesting what fits better in this view. The level of satisfaction will enhance not only with users, but their level of participation on the platform also grows.

Other major features to be integrated into the platform are the inclusion of multilingual support to make it more inclusive. This means that having more languages integrated will widen its reach and serve an international audience while breaking barriers between people who speak different languages. Besides, mobile responsiveness and the use of apps will provide easy access on smartphones and tablets, thereby meeting the needs of people in these modern times for easy access.

This can also be further improved through automating certain administrative jobs, such as by the use of artificial intelligence. Activities like discussion forum moderation, sales trend analysis, and user query management would become more efficient and save a lot of time while minimizing the probability of errors. Another important upgrade is in hosting, that allows for scalability and high performance. The site shall now be able to hold a greater volume of users without significant delays and hold even more data with the ability to manage.

Adding secure payment gateways with more options, such as cryptocurrency or region-specific payment methods, would widen the user base by catering to varied financial preferences. Detailed analytics and dashboards for both users and administrators could also be given. These would allow the user to keep track of his learning progress and buying history, while the administrator may have insights into user behavior, usages of the platform, and revenue trends.

It is also possible to extend the discussion forum with features like polls, topic grouping, and gamification aspects like badges and rewards for active participation. This would ensure that the community becomes a bit stronger and the user can spend more time on it. The final development would be the integration of the platform with external services or APIs, such as LinkedIn for professional sharing and Google Calendar for scheduling, making it even more part of the users' lives. This will, in turn, potentially enable the platform to evolve into a full-fledged market-ready product: robust, user-oriented, and accessible to all over the world.

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