

“Educa (E-Learning Website)”

A

minor project report submitted in

the partial fulfilment for the course

MCCM2106L: Programming Lab VI

(Minor Project)

Submitted by

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Dec 2024

CERTIFICATE

*This is to certify that the report titled “**Educa (E-Learning Website)**” submitted to **Punjabi University, Patiala**, in partial fulfilment of the requirements for the degree of **Master of Computer Applications**, has been carried out by **Ajay Singh and Jyoti Devi** under my guidance and supervision.*

To the best of my knowledge, no part of this work has been submitted for any other degree. The assistance and help received during the course of this work have been duly acknowledged in the report.



PROJECT GUIDE

Dr. Maninder Singh

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ACKNOWLEDGEMENT

"Success is a valued goal, reached through hard work and the constant help of others."

We would like to express our thanks to Almighty God for guiding and helping us all the way we were thought from the beginning of the course up to present.

Also, we would like to extend our sincerely thanks to everyone who has supported us to fulfill our vision for developing our "**Educa (E-Learning Website)**".

Special thanks to our lectures, **Supervisor "Dr. MANINDER SINGH"** for his convenience and responsive support, patience and knowledge. We would like also to thank members PUP especially MCA program instructors.

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"We sincerely acknowledge the valuable guidance, encouragement, and support of our mentors, teammates, and all contributors throughout this project. Their insights and efforts played a crucial role in the successful completion and enhancement of this work."

AJAY SINGH, JYOTI DEVI

Date: 18-11-2024

ABSTRACT

The “**Educa**” Project is an E-Learning platform designed to enhance learning for students from various disciplines. It provides easy access to study materials, interactive lessons, quizzes, and project-based activities tailored to diverse educational needs.

Educa helps students learn better by offering personalized study plans and tracking their progress. It supports collaboration among students and can be used on computers and mobile devices, ensuring learning is accessible anytime, anywhere.

The platform equips students with essential skills needed for their future careers while assisting teachers with course management and monitoring student performance.

Educa has been tested successfully, showing improved student engagement and learning outcomes. It is a modern, flexible solution to meet the growing demands of digital education.

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1.INTRODUCTION

1.1 Project Overview

Educa is an online learning platform designed to provide video-based lessons, quizzes, assignments, and certification for students and instructors. The frontend development aims to provide a user-friendly and interactive interface where users can easily navigate through courses, track progress, and engage with the learning materials. This report focuses on the frontend architecture, technologies used, key features implemented, and the design process followed to create the user interface for Educa.

1.2 Objectives

- Intuitive UI: Design a simple yet attractive interface that ensures a seamless user experience across all pages.
- Responsive Design: The platform should provide an optimized experience across desktops, tablets, and smartphones.
- User-Centric: Focus on making the platform easy to navigate for both instructors and students.

1.3 Purpose

The **Educa** is an E-Learning Website has been developed to override the problems prevailing in the practicing manual system. This website is supported to eliminate and, in some cases, reduce the hardships faced by this existing system. Moreover, this system is designed for the particular need of the administrator to carry out operations in a smooth and effective manner and the user to make selections smoothly.

1.4 Scope

The scope outlines what will be included and excluded from the project, defining the boundaries of the eLearning solution. Here's what could be included:

Inclusions:

1. Platform Development:

- Design and develop a responsive and user-friendly platform (e.g., website or mobile app).
- Integration with Learning Management Systems (LMS) for course management.
- User account management for individual learners, instructors, and administrators.

2. Content Creation:

- Develop high-quality educational content such as videos, quizzes, assignments, and simulations.
- Design interactive features like gamified learning, discussion forums.

- Provide multimedia support (images, audio, video, etc.).

3. Learning Tools:

- Provide resources such as downloadable documents, reading materials, and study aids.
- Enable peer interaction through forums or chat features.

4. Quality Assurance and Testing:

- Conduct thorough testing (usability, functionality, compatibility) to ensure the platform is bug-free and accessible.

Exclusions:

- Development of physical infrastructure (e.g., classrooms or hardware) is typically outside the scope of eLearning.
- Customization of content for specific learning institutions (unless explicitly stated).

2.Frontend Development Goals

2.1 UI Design

The goal was to create a modern, minimalist design that balances functionality and aesthetics. The platform's color scheme, typography, and layout are chosen to reflect a professional yet welcoming environment conducive to learning.



Figure 2. UI/UX

2.2 UX Design

The user experience focuses on minimizing the number of steps required to achieve any goal, such as enrolling in a course, completing an assignment, or watching a video lesson. Key UX considerations include:

- Simplified Navigation: Easy-to-use navigation bar with clear links to courses, dashboards, and support.
- Quick Access: Key features like course search, progress tracking, and notifications should be easily accessible.
- Engagement: Clear and concise interaction points to keep students engaged with content.

2.3 Responsiveness

The platform needs to adapt seamlessly to different screen sizes (mobile, tablet, and desktop). We adopted a mobile-first approach to ensure the best possible user experience on mobile devices, then expanded to larger screens using CSS media queries.

2.Techology and Languages

3.1 HTML5



Figure 3.1 HTML

The core structure of the pages was built using HTML5, which provides elements like <section>, <article>, <header>, <footer>, and <nav>, making the code semantically correct and accessible.

3.2 CSS3



Figure 3.2 CSS3

Styling was done using CSS3 for layout and design. We used CSS Grid for complex layouts and Flexbox for simpler alignment tasks. Custom animations and transitions were used to improve the user interaction experience. Tailwind CSS was used to rapidly create responsive, utility-first styles. This framework allowed us to maintain consistency across components and reduce the need for custom CSS.

3.3 JavaScript



Figure 3.3 JavaScript

The core interactivity was powered by JavaScript, allowing us to build dynamic features like quizzes, progress bars, video players, and form validation. ES6+ features like arrow functions, promises, and modules were used for a modern and modular codebase. React.js was used to create reusable components, handle routing, and manage state efficiently.

3.4Frontend Framework

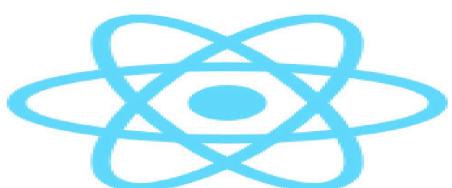


Figure 3.4 React.js

React.js was chosen due to its component-based architecture, which makes it easy to maintain, scale, and test. It also improves performance by efficiently updating the UI with the help of the Virtual DOM. React Router was used to handle in-app navigation, ensuring a single-page application (SPA) experience.

3.5 PHP



Figure 3.5 PHP

PHP is a server-side scripting language created primarily for web development but it is also used as a general-purpose programming language. Unlike client-side languages like JavaScript, which are executed on the user's browser, PHP scripts run on the server. The results are then sent to the client's web browser as plain HTML.

3.6 API Integration



Figure 3.6 API

Axios was used to interact with the backend APIs for course content, user authentication, grades, and quiz results. AJAX was used for asynchronous content loading, providing a smoother user experience without full page reloads.

4.Feasibility Study

After doing the project Educa, study and analyzing all the existing or required functionalities of the system, the next task is to do the feasibility study for the project. All projects are feasible - given unlimited resources and infinite time. Feasibility study includes consideration of all the possible ways to provide a solution to the given problem. The proposed solution should satisfy all the user requirements and should be flexible enough so that future changes can be easily done based on the future upcoming requirements.

4.1Economic Feasibility

When creating a project, it's really important to think about how much it will cost. We decided to choose the technology that costs the least. The organization will pay for all the computers, software, and other

things needed. We believe that the benefits of the new system will be worth the money we spend at the start and later to keep the system running.

4.2Technical Feasibility

This included the study of function, performance and constraints that may affected ability to achieve an acceptable system. For this feasibility study, we studied complete functionality to be provided in the system, as described in the System Requirement Specification (SRS), and checked if everything was possible using different type of frontend platforms.

(IN OUR CASE THIS IS A NEW LANGUAGE AND SOFTWARE TOOL FOR US.)

4.3Operational Feasibility

No doubt the proposed system is fully GUI based that is very user friendly and all inputs to be taken all self- explanatory even to a layman. Besides, a proper training has been conducted to let know the essence of the system to the users so that they feel comfortable with new system. As far our study is concerned the clients are comfortable and happy as the system has cut down their loads and doing.

5.SYSTEM DEVELOPMENT

➤ HARDWARE / SOFTWARE REQUIREMENTS

✓ Hardware Requirements

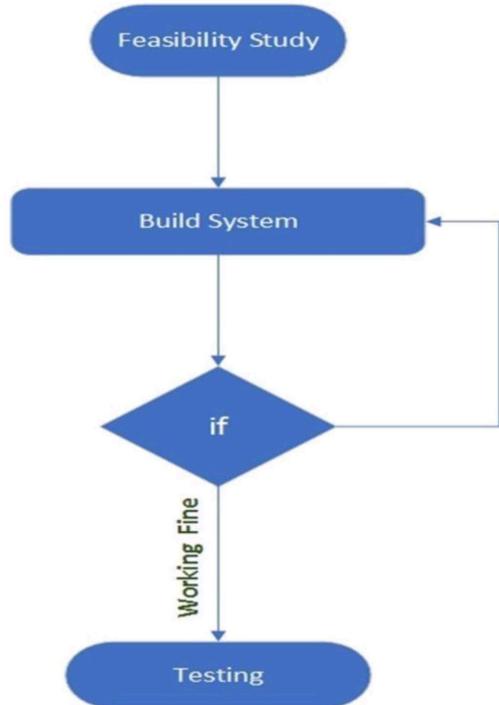
Processor	:	Intel(R) Pentium(R) CPU 4417U @ 2.30GHz 2.30
GHz RAM	:	4GB (smooth operation)
Hard disk	:	20GB
Monitor	:	15"color Monitor
Keyboard	:	122
Keys Mouse		
Network interface card		

✓ Software Requirements

Operating system	:	windows, Linux, and
macOS Data base	:	MySQL
Browser	:	Any of Mozilla, Opera, Chrome etc.
Web server	:	WAMP (Apache, Window, PHP) server should be installed to Run the website using localhost.
Scripting Language Enable:		PHP, HTML, CSS, JavaScript

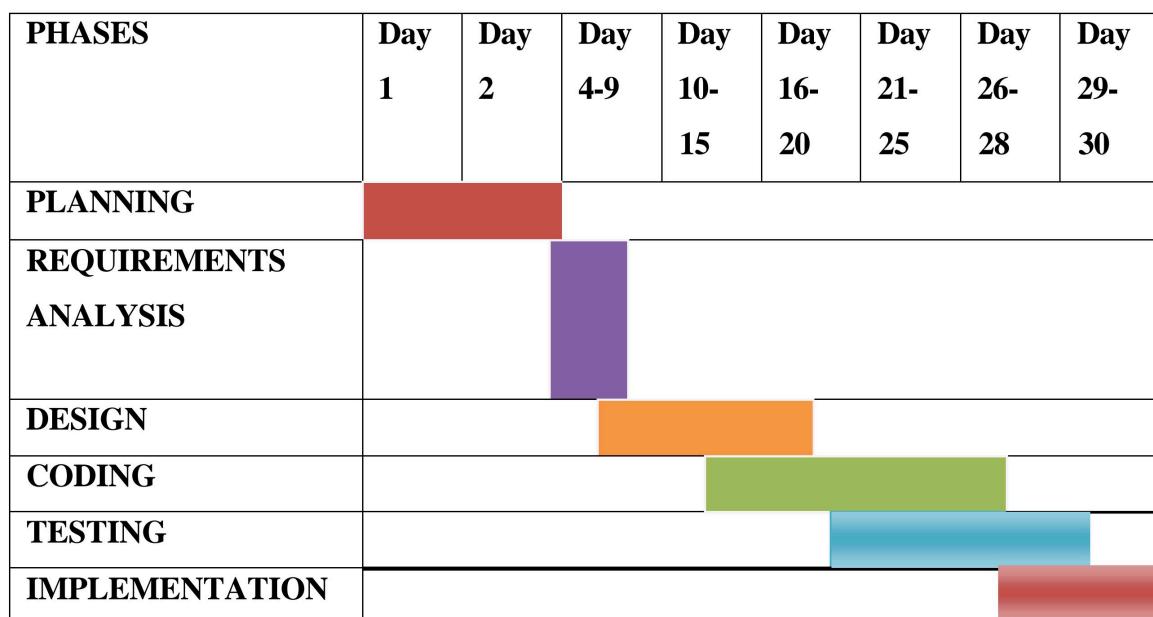
6.Project Management:

6.1 Build and Fix



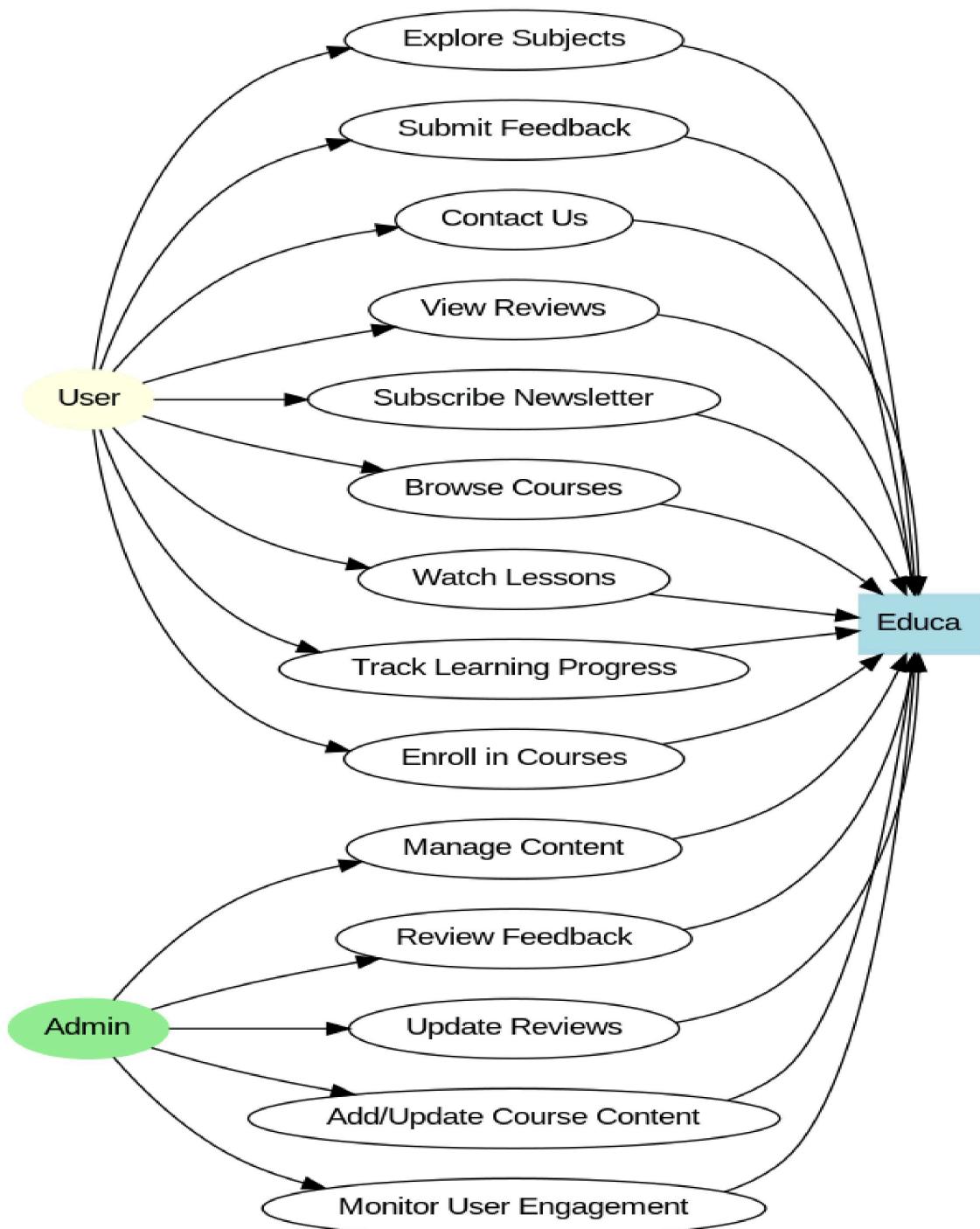
Build and fix: This is most simple model of software development, the product is constructed with minimum requirements, and generally no specifications. An initial produce is built, which is then repeatedly modified until it (software satisfies the user. We used this model because our project is small and need a basic design and idea to build it. We started coding our project and kept on modifying till we were satisfied. We took pictures and some animations from internet and use in our project.

6.2 Gantt Chart



7. DESIGN DOCUMENT

➤ USE CASE DIAGRAM



8.Features of the project:

Key Features

8.1 Services Offered:

- Sample Papers: Access to competitive exam question papers.
- Free Online Courses: Building foundational concepts for competitive exams.
- Video Lectures: Pre-recorded sessions for easy access.
- Daily Brain Teasers: To improve IQ and analytical thinking.
- 24x7 Support: Round-the-clock assistance from mentors and tutors.
- Performance Reports: Regular discussions on student performance and rankings.

8.2 Team Profiles:

- Jasvir Kaur: Specializes in Data Structures and Algorithms.
- Abhay Sharma: Expertise in Java programming.
- Harnek Singh: Focused on C programming.
- Vinay Kumar Gill: Python expert.

8.3 Student Reviews:

- Positive Feedback: Students highlighted Educa's contribution to their analytical and coding skills.
- Inspirational Teaching: Tutors compared to iconic mentors, like Shahrukh Khan in *Dear Zindagi*.

8.4 Technological Framework:

- HTML, CSS, JavaScript: Tools used to create a visually appealing and interactive interface.
- The website is designed to make learning simple, effective, and enjoyable.

8.5 Vision

Educa aims to redefine education by integrating storytelling, interactive games, and technology-based teaching aids. It leverages modern tools to enhance traditional classroom learning.

8.6 Contact Information

Students can reach out for queries and enrolments:

- Form Details: Name, Email, and Additional Information.
- 24x7 Support: For instant help with courses and doubts.

8.7 Notes:

- The platform focuses on core computer science and technical skills.
- Tutors are highly knowledgeable and provide personalized guidance.
- Reviews suggest the content is challenging yet engaging, ensuring holistic development.

Let me know if you'd like this formatted into a formal document or need further adjustments!

8.8. Frontend Technology Stack

- HTML5: Markup for creating a semantic structure.
- CSS3: Styling using frameworks like TailwindCSS or Bootstrap.
- JavaScript: For dynamic interactions.
- ReactJS: Component-based development for scalable UI.
- Axios: API integration for seamless communication with the backend.
- Redux: State management to handle data flow between components.

8.9. Testing and Optimization

- Cross-Browser Compatibility: Ensures functionality across all major browsers.
- Performance Optimization:
 - Lazy loading for images and videos.
 - Code splitting for faster page loads.
- Error Handling: User-friendly error messages and fallback mechanisms.

8.10. Future Enhancements

- AI-Powered Suggestions: Recommending courses based on user preferences.
- Gamification: Badges and leaderboards to enhance user engagement.
- Live Sessions: Real-time video integration for interactive classes.

9. RESULTS (Screenshots)

9.1 Login Page

This page comprises of login with Google button, email, and password field which is set by the user while registering him as a new user and an option to create a new account. On this page header will show only register button.

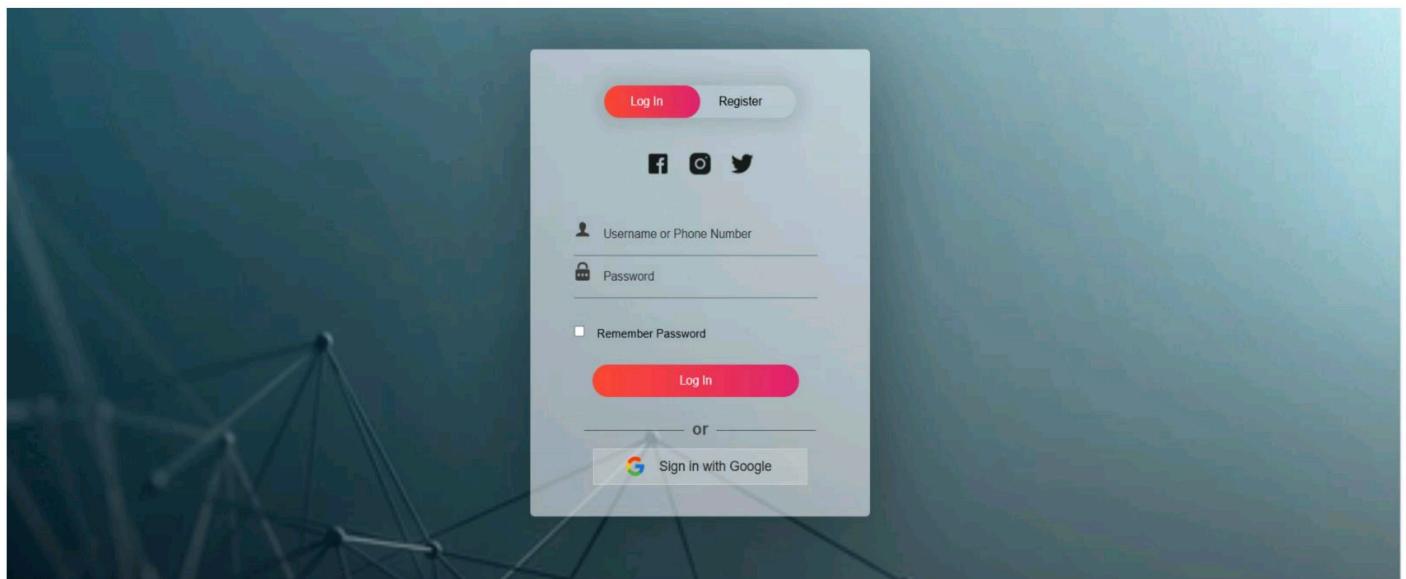


Figure 7.1 Login

9.2 Register Page

This page allows the user to register as a new user by filling the following details. After Successful registration user will be redirected to Login Page. On this page, the same header will dynamically change itself and will show only the Login button.

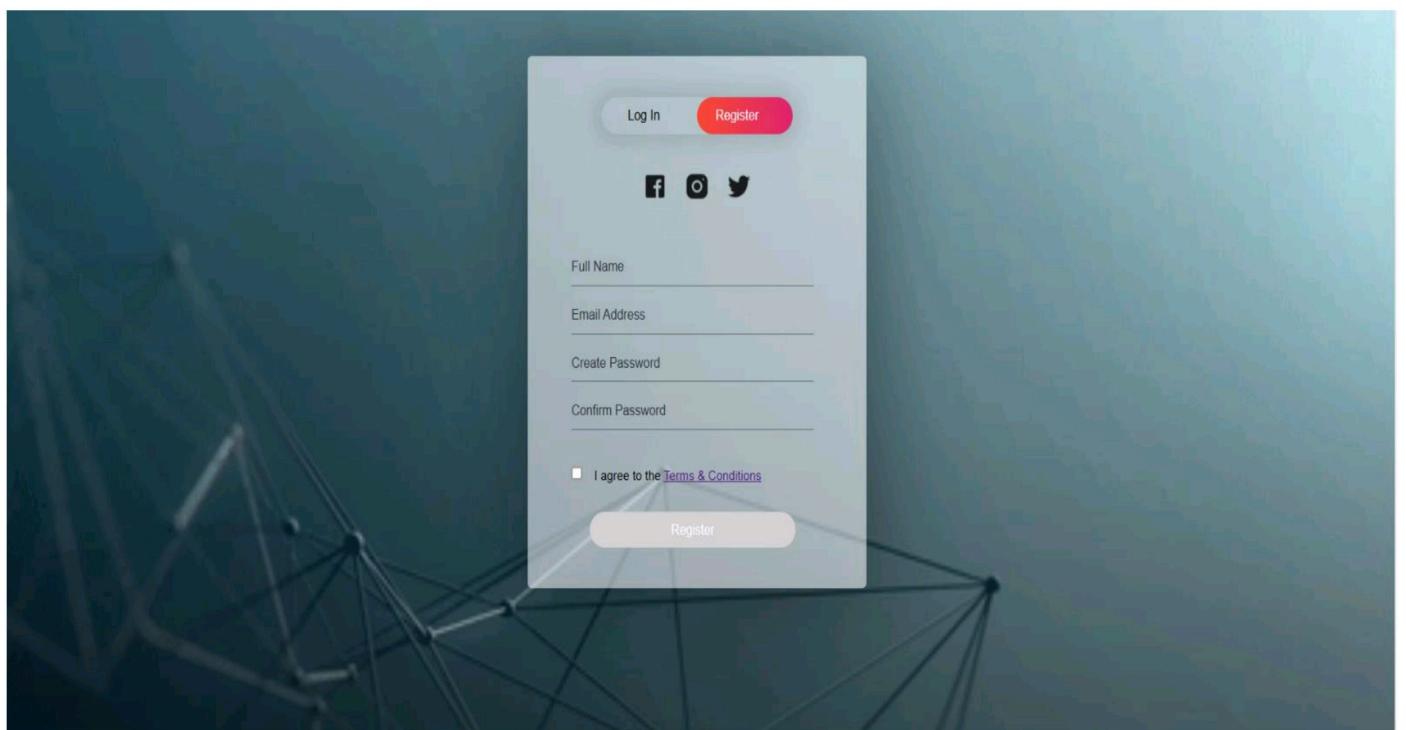
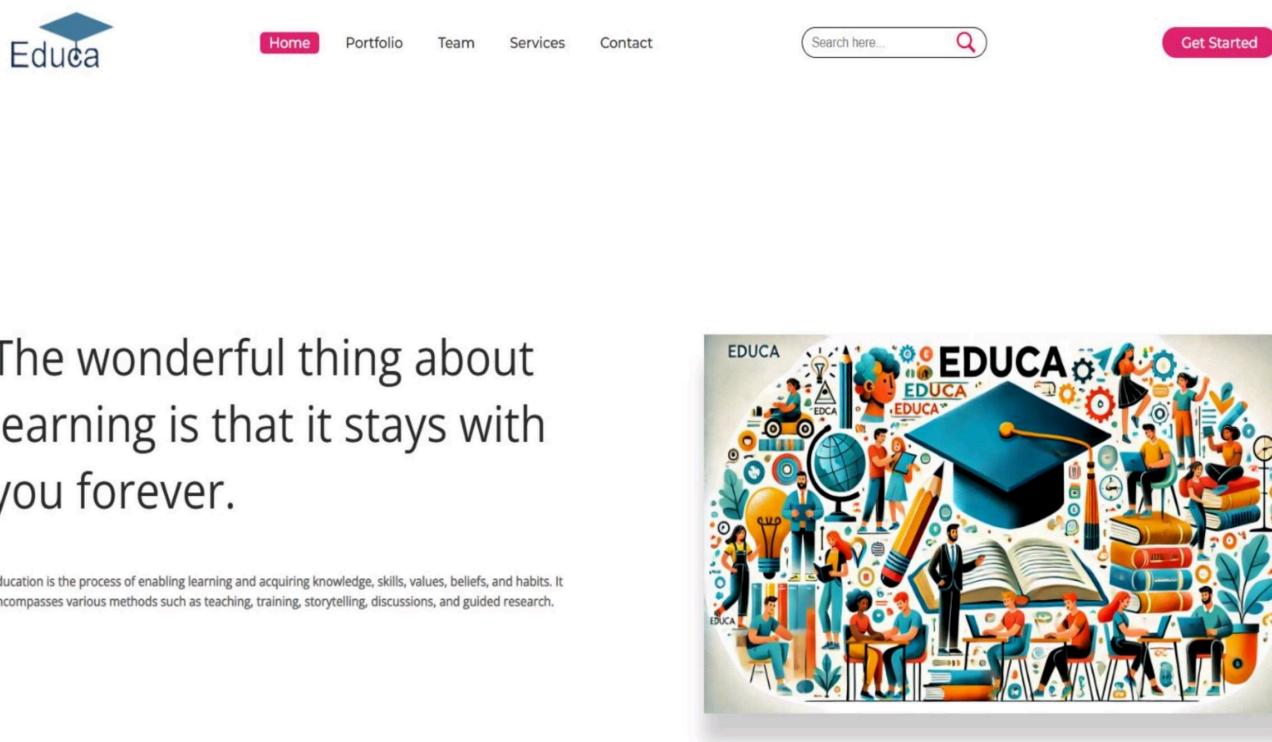


Figure 7.2 Register

9.3 Home Page

This page is designed to enhance students' analytical, coding, and problem-solving skills through a variety of interactive tools and resources. Key features include free online courses, video lectures, daily brain teasers, 24x7 support, and detailed performance reports. The platform offers a user-friendly interface developed with HTML, CSS, and JavaScript, ensuring an engaging learning experience. With a team of experienced tutors specializing in Data Structures, Java, Python, and C programming, Educa provides personalized mentorship and a strong foundation for competitive exams and technical growth.

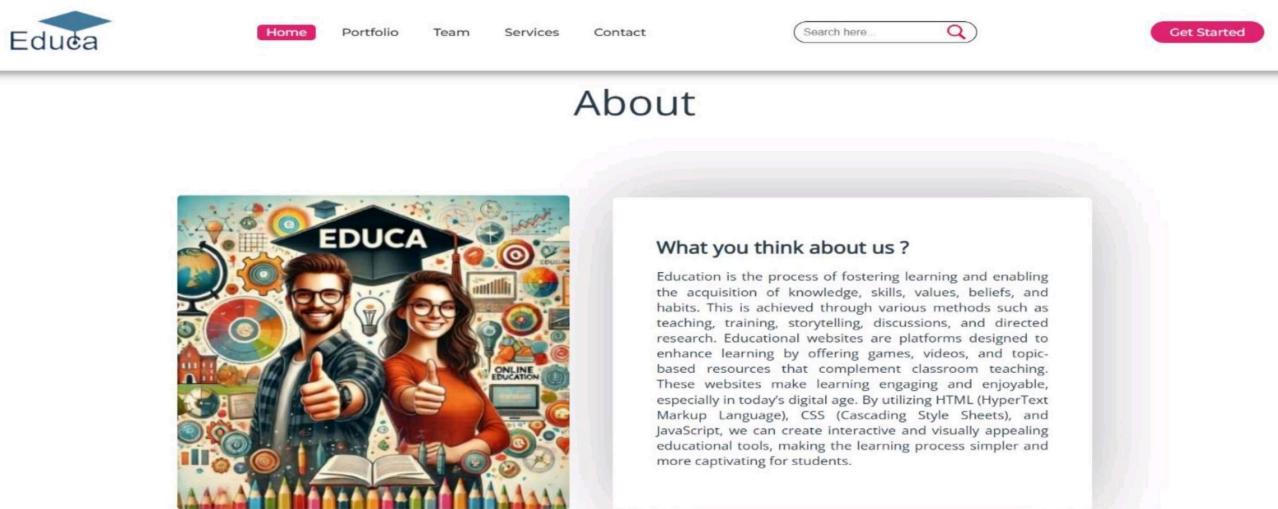


The wonderful thing about learning is that it stays with you forever.

Education is the process of enabling learning and acquiring knowledge, skills, values, beliefs, and habits. It encompasses various methods such as teaching, training, storytelling, discussions, and guided research.

Figure 7.3 Home

9.3.1 About Page

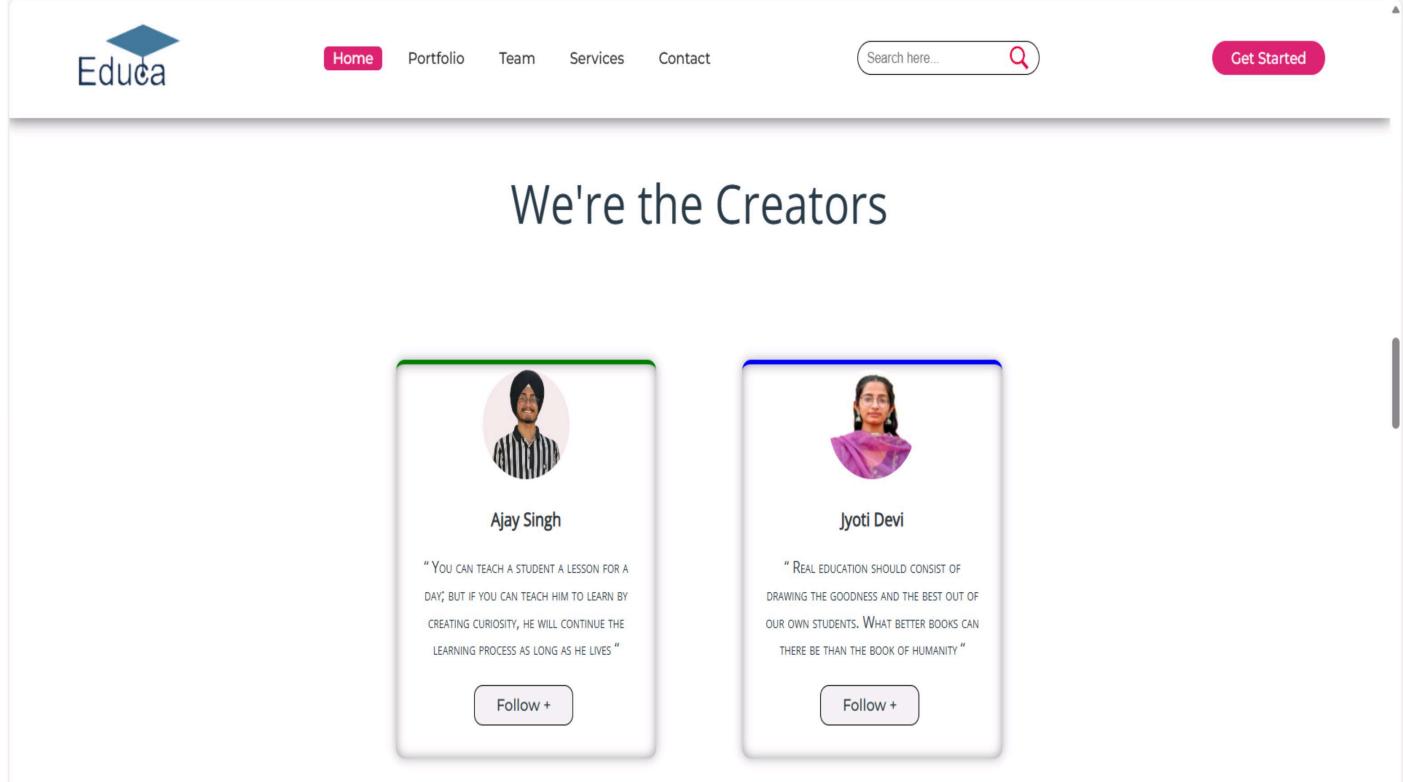


What you think about us ?

Education is the process of fostering learning and enabling the acquisition of knowledge, skills, values, beliefs, and habits. This is achieved through various methods such as teaching, training, storytelling, discussions, and directed research. Educational websites are platforms designed to enhance learning by offering games, videos, and topic-based resources that complement classroom teaching. These websites make learning engaging and enjoyable, especially in today's digital age. By utilizing HTML (HyperText Markup Language), CSS (Cascading Style Sheets), and JavaScript, we can create interactive and visually appealing educational tools, making the learning process simpler and more captivating for students.

Figure 7.3.1 About

9.3.2 Team Page



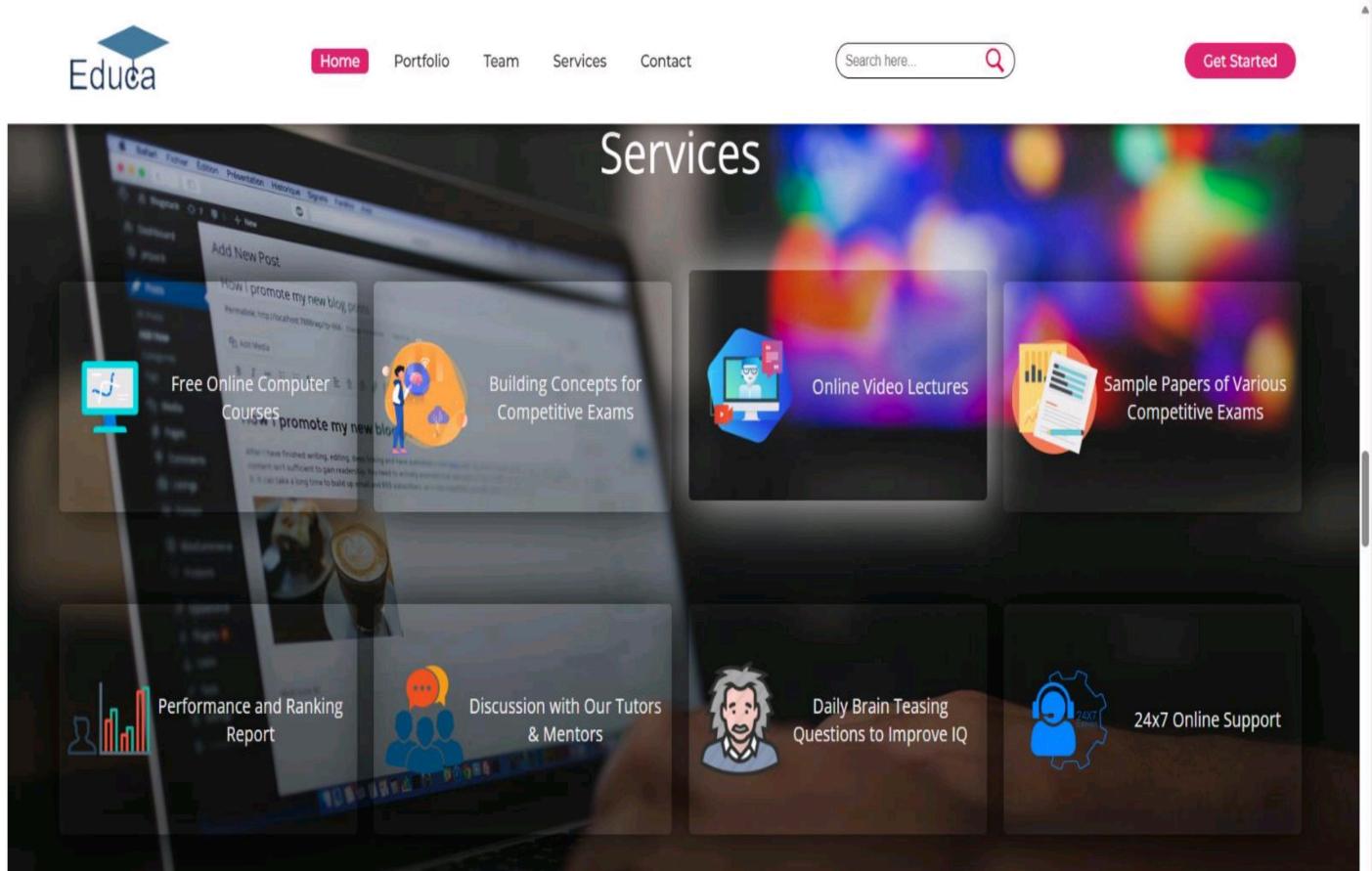
The screenshot shows the 'Team' section of the Educa platform. At the top, there's a navigation bar with links for Home, Portfolio, Team, Services, and Contact, along with a search bar and a 'Get Started' button. The main heading 'We're the Creators' is displayed prominently. Below this, two team members are featured in individual cards:

- Ajay Singh**: A man with a turban wearing a black and white striped shirt. His quote is: "YOU CAN TEACH A STUDENT A LESSON FOR A DAY; BUT IF YOU CAN TEACH HIM TO LEARN BY CREATING CURIOSITY, HE WILL CONTINUE THE LEARNING PROCESS AS LONG AS HE LIVES."
- Jyoti Devi**: A woman wearing a pink sari. Her quote is: "REAL EDUCATION SHOULD CONSIST OF DRAWING THE GOODNESS AND THE BEST OUT OF OUR OWN STUDENTS. WHAT BETTER BOOKS CAN THERE BE THAN THE BOOK OF HUMANITY."

Each card includes a 'Follow +' button.

Figure 7.3.2 Team

9.3.3 Services Page

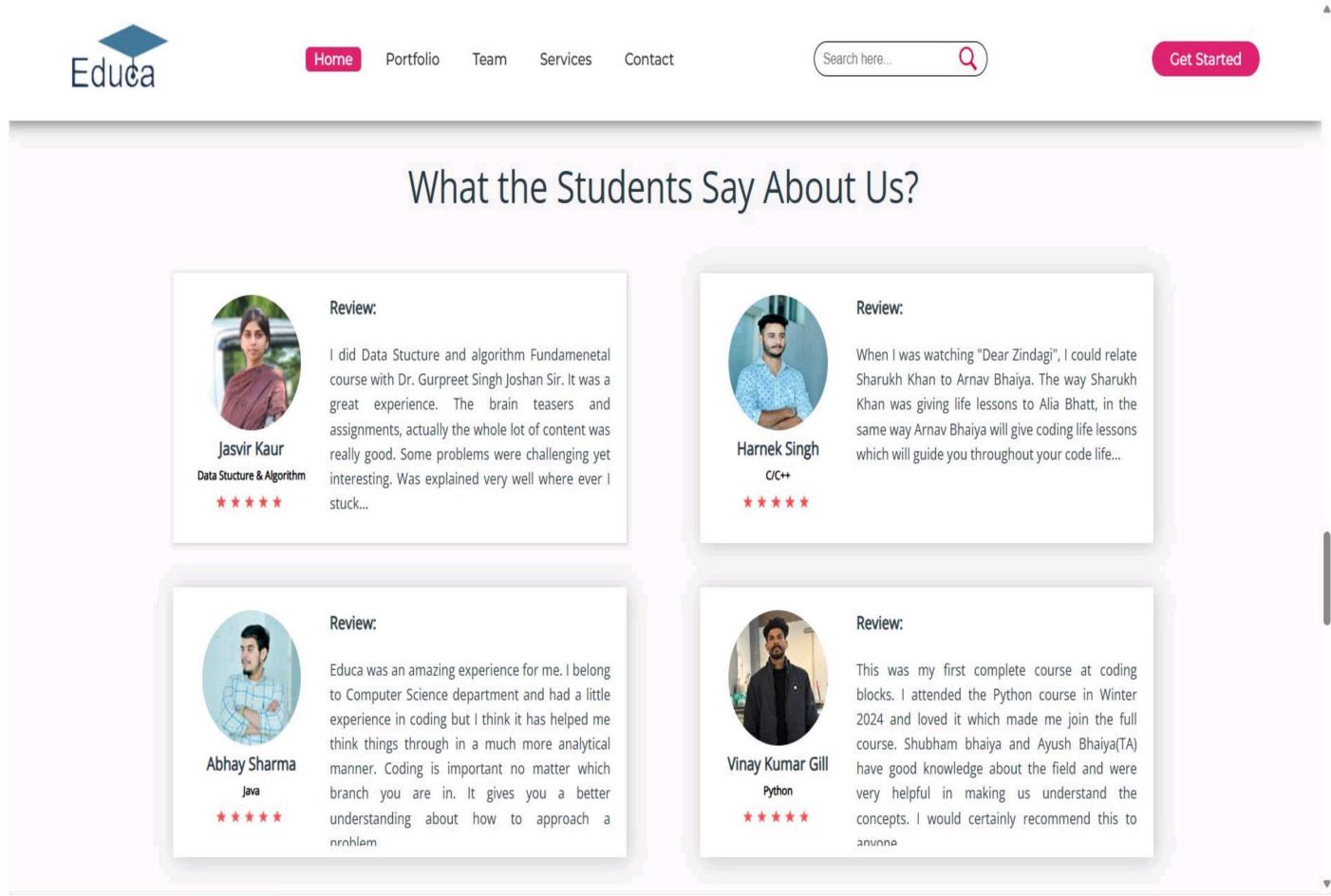


The screenshot shows the 'Services' section of the Educa platform. At the top, there's a navigation bar with links for Home, Portfolio, Team, Services, and Contact, along with a search bar and a 'Get Started' button. The main heading 'Services' is displayed prominently. Below this, six service offerings are listed in a grid:

- Free Online Computer Courses**: An icon of a computer monitor with a person on it. Description: "Building Concepts for Competitive Exams".
- Performance and Ranking Report**: An icon of a bar chart. Description: "Discussion with Our Tutors & Mentors".
- Online Video Lectures**: An icon of a computer monitor with a video camera. Description: "Sample Papers of Various Competitive Exams".
- 24x7 Online Support**: An icon of a person with a gear. Description: "Daily Brain Teasing Questions to Improve IQ".

Figure 7.3.3 Services

9.3.4 Review Page



What the Students Say About Us?

Jasvir Kaur
Data Structure & Algorithm


Review:
I did Data Structure and algorithm Fundamental course with Dr. Gurpreet Singh Joshan Sir. It was a great experience. The brain teasers and assignments, actually the whole lot of content was really good. Some problems were challenging yet interesting. Was explained very well where ever I stuck...

Harnek Singh
C/C++


Review:
When I was watching "Dear Zindagi", I could relate Sharukh Khan to Arnav Bhaiya. The way Sharukh Khan was giving life lessons to Alia Bhatt, in the same way Arnav Bhaiya will give coding life lessons which will guide you throughout your code life...

Abhay Sharma
Java

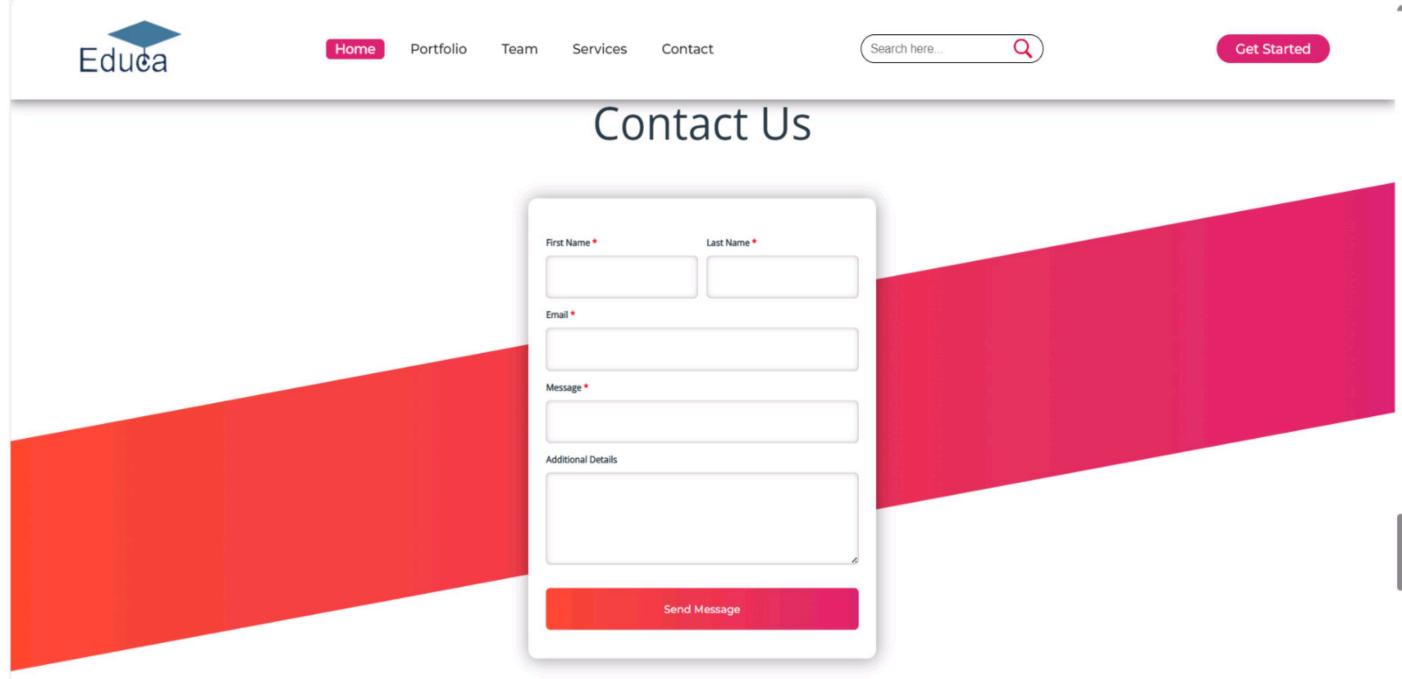

Review:
Educa was an amazing experience for me. I belong to Computer Science department and had a little experience in coding but I think it has helped me think things through in a much more analytical manner. Coding is important no matter which branch you are in. It gives you a better understanding about how to approach a problem

Vinay Kumar Gill
Python


Review:
This was my first complete course at coding blocks. I attended the Python course in Winter 2024 and loved it which made me join the full course. Shubham bhaiya and Ayush Bhaiya(TA) have good knowledge about the field and were very helpful in making us understand the concepts. I would certainly recommend this to anyone

Figure 7.3.4 Review

9.3.5 Contact Us Page



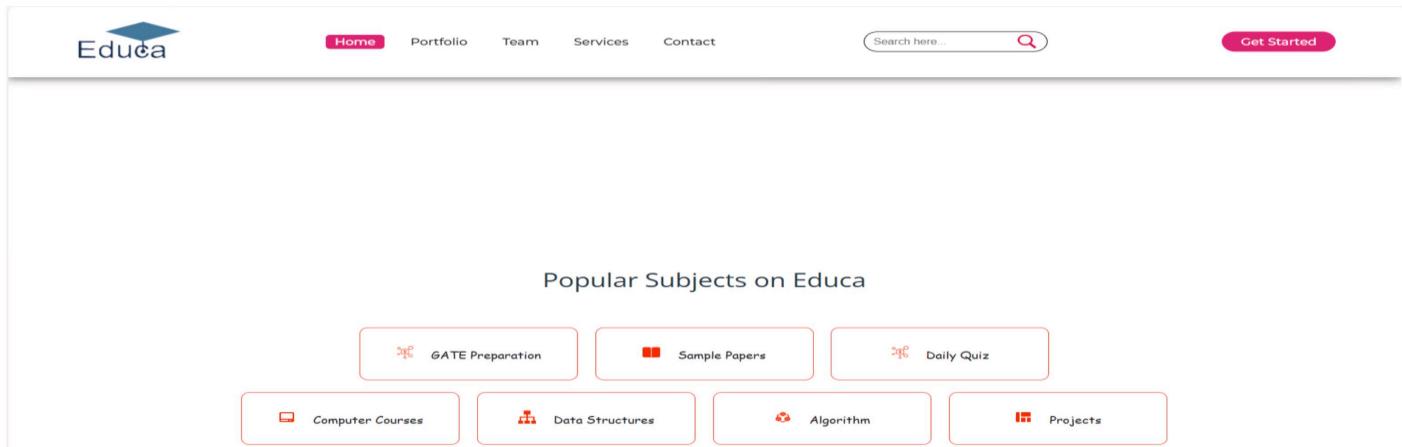
Contact Us

First Name *
Last Name *
Email *
Message *
Additional Details
Send Message

Figure 7.3.5 Contact Us

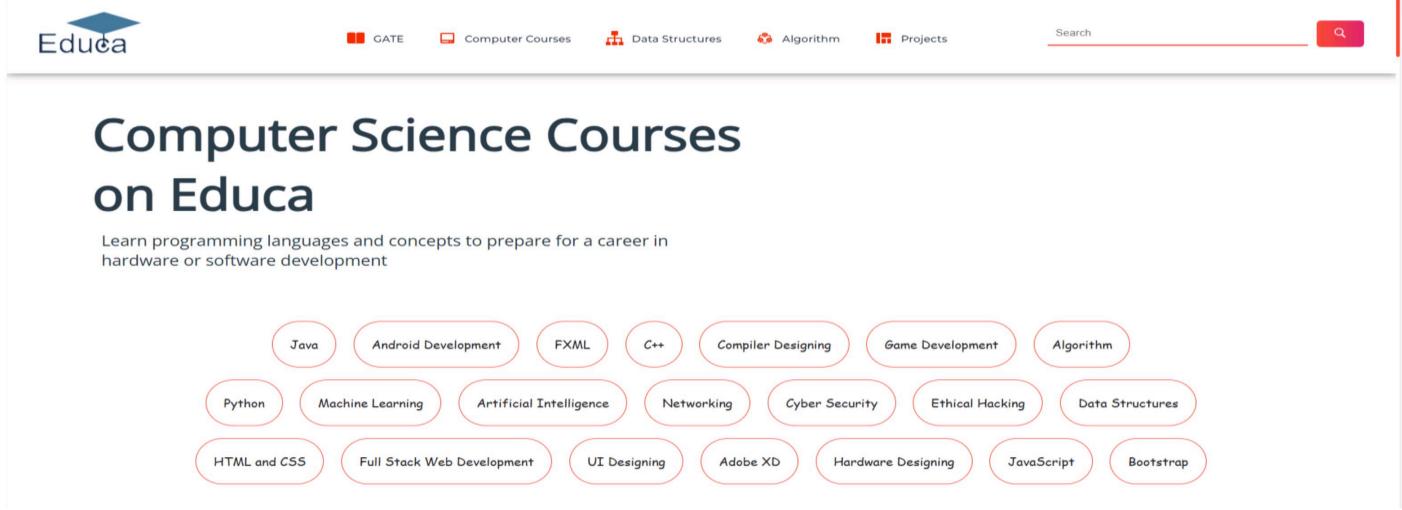
9.4 Popular Subject Page

Educa offers free online courses, video lectures, daily quizzes, performance reports, 24/7 support, and personalized mentorship in programming languages like Java, Python, and C. Learn, grow, and achieve your goals with ease!



The screenshot shows the 'Popular Subjects on Educa' section. It features several rounded rectangular boxes with icons and text: 'GATE Preparation', 'Sample Papers', 'Daily Quiz', 'Computer Courses', 'Data Structures', 'Algorithm', and 'Projects'. Each box has a small icon to its left.

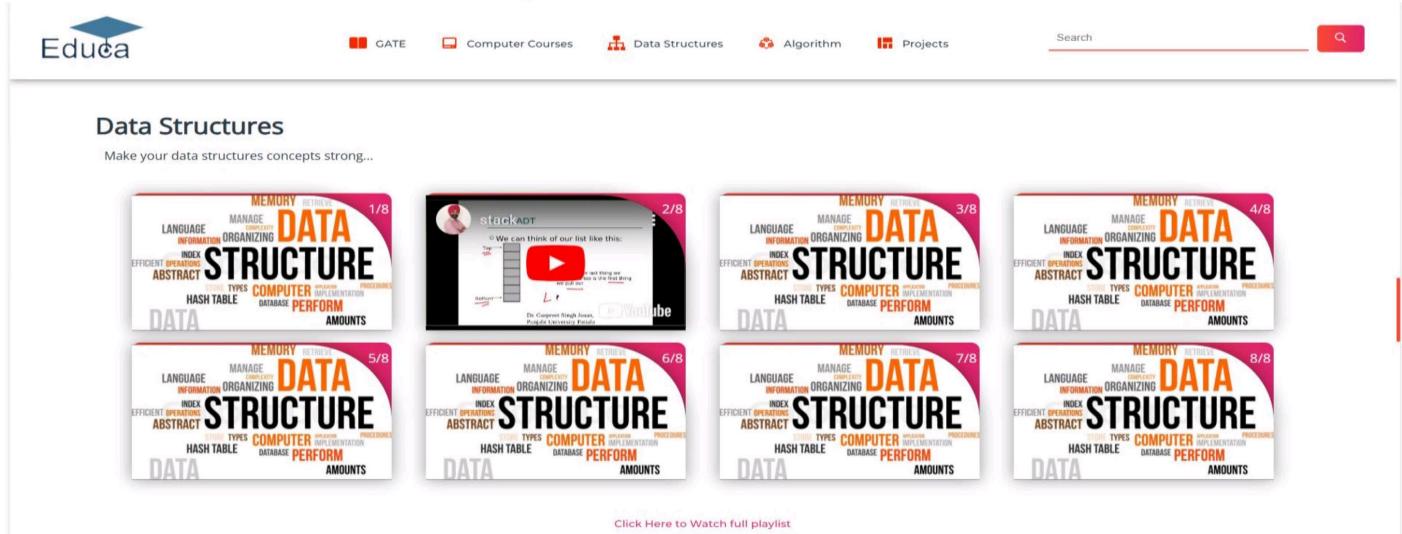
9.4.1 Computer Science Courses. Services Page



The screenshot shows the 'Computer Science Courses on Educa' section. It features a grid of circular icons representing different computer science topics: Java, Android Development, FXML, C++, Compiler Designing, Game Development, Algorithm, Python, Machine Learning, Artificial Intelligence, Networking, Cyber Security, Ethical Hacking, Data Structures, HTML and CSS, Full Stack Web Development, UI Designing, Adobe XD, Hardware Designing, JavaScript, and Bootstrap.

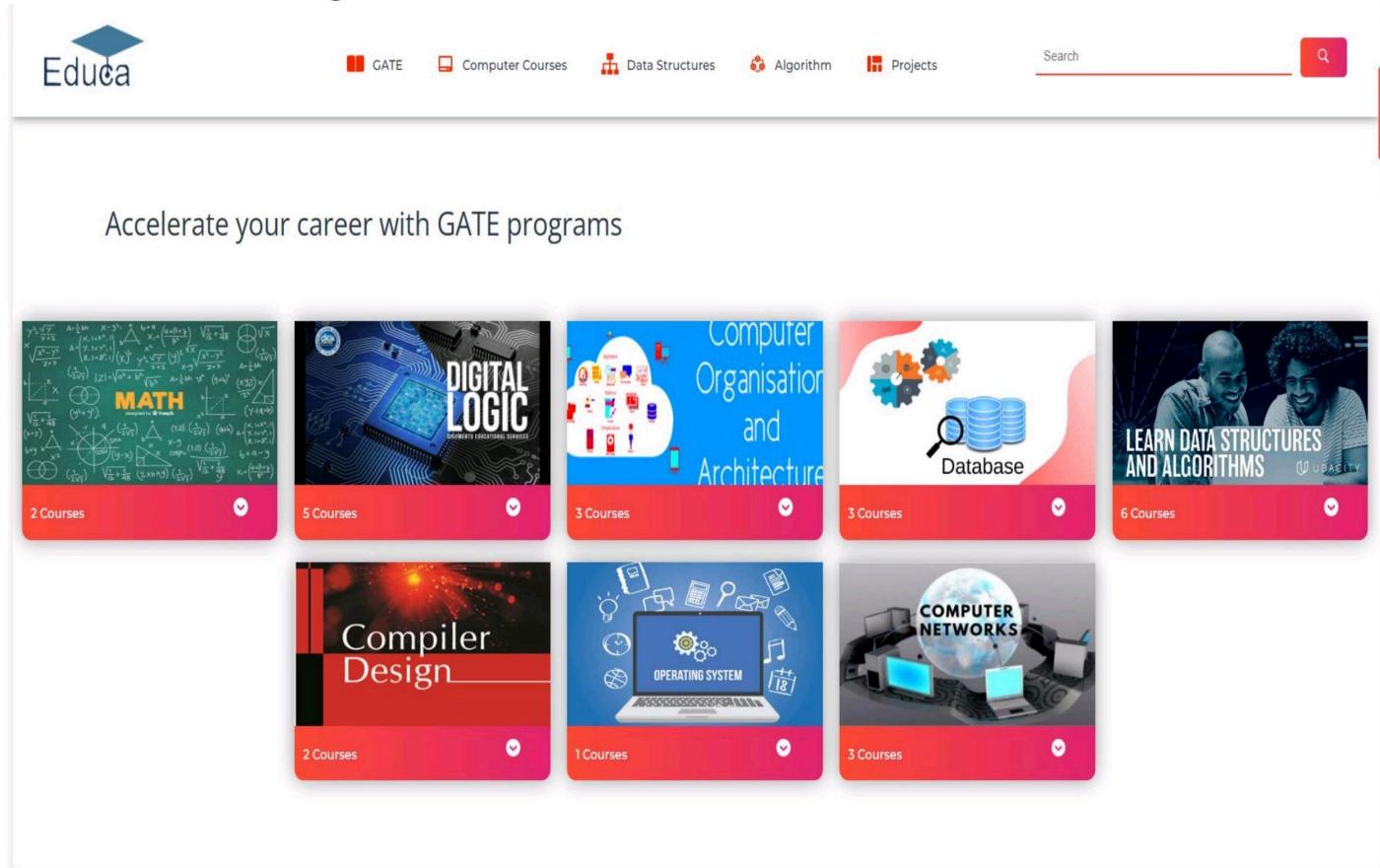
Figure 7.4 Computer Science courses

9.4.1.1 Data Structures. Services Page



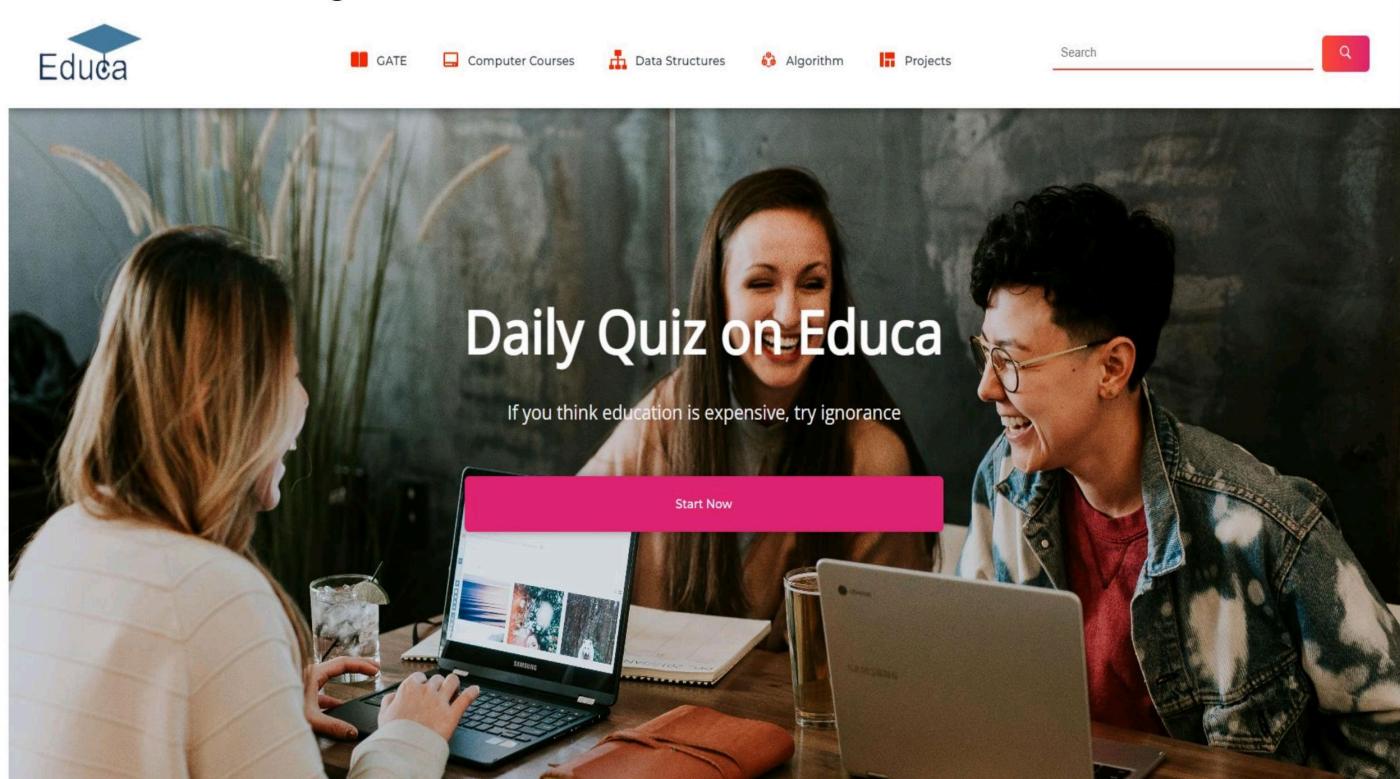
The screenshot shows the 'Data Structures' section. It features a grid of eight video thumbnails, each with a title 'DATA STRUCTURE' and a progress bar indicating completion (e.g., 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8). The thumbnails include various sub-topics like Hash Table, Database, and Perform. Below the grid is a link 'Click Here to Watch full playlist'.

Figure 7.4.1.1 Data Structures

9.4.2 Gate. Services Page


The screenshot shows the Educa E-Learning Platform's GATE services page. At the top, there is a navigation bar with links for GATE, Computer Courses, Data Structures, Algorithm, Projects, and a search bar. Below the navigation bar, a banner says "Accelerate your career with GATE programs". There are eight course cards displayed in two rows of four:

- MATH**: Described as "DIGITAL LOGIC" with a background image of a circuit board. It has 2 Courses.
- DIGITAL LOGIC**: Described as "Computer Organisation and Architecture" with a background image of a cloud and various icons. It has 5 Courses.
- Computer Organisation and Architecture**: Described as "Database" with a background image of gears and a magnifying glass over a database icon. It has 3 Courses.
- Database**: Described as "LEARN DATA STRUCTURES AND ALGORITHMS" with a background image of two people smiling. It has 6 Courses.
- Compiler Design**: Described as "OPERATING SYSTEM" with a background image of a laptop displaying operating system icons. It has 2 Courses.
- OPERATING SYSTEM**: Described as "COMPUTER NETWORKS" with a background image of three computer monitors. It has 1 Courses.
- Compiler Design**: Described as "COMPUTER NETWORKS" with a background image of three computer monitors. It has 3 Courses.

*Figure 7.4.2 Quiz***9.4.3 Quiz. Services Page**


The screenshot shows the Educa E-Learning Platform's Quiz services page. At the top, there is a navigation bar with links for GATE, Computer Courses, Data Structures, Algorithm, Projects, and a search bar. The main area features a large image of three students (two boys and one girl) sitting at a table, looking at a laptop screen together. Overlaid on the image is the text "Daily Quiz on Educa" and a quote: "If you think education is expensive, try ignorance". A pink button labeled "Start Now" is visible on the laptop screen. Below the image, there is some descriptive text about the quiz service.

Figure 7.4.3 Gate

10. Database

Table User

The project is frontend-focused and created only the user table.

User Table: This table stores user data with fields for ID, name, email, and password. It's designed to manage user information for the project, while the frontend handles most operations. The backend database is kept minimal for simplicity.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/>	1 id 	int(20)			No	None		AUTO_INCREMENT	 Change  Drop More
<input type="checkbox"/>	2 name	varchar(50)	utf8mb4_general_ci		No	None			 Change  Drop More
<input type="checkbox"/>	3 email	varchar(50)	utf8mb4_general_ci		No	None			 Change  Drop More
<input type="checkbox"/>	4 password	varchar(50)	utf8mb4_general_ci		No	None			 Change  Drop More

				id	name	email	password
<input type="checkbox"/>	 Edit	 Copy	 Delete	1	Ajay Singh	ajay13042004@gmail.com	aSingh@123
<input type="checkbox"/>	 Edit	 Copy	 Delete	2	Gurjeet Kaur	gurjeet09122002@gmail.com	gurjeet@123
<input type="checkbox"/>	 Edit	 Copy	 Delete	3	Gurjeet Kaur	gurjeet12@gmail.com	kaur@4321

Figure 10 User table

11. PROJECT LEGACY

11.1 CURRENT STATUS

Project is completed as per requirements specifications. All functions specified are well prepared and is in working state at present.

11.2 PROBLEMS FACED

At first, it's hard to install the software's that are important for creating database but when we try a little bit its easy the real difficulty arise at the moment when we link database with the php/html.

11.3 LIMITATION

- Lacks the Visual Elements which can be added to the front-end.
- Lacks the control over the data.

11.4 Conclusions

- The *Educa* eLearning project has been a significant step forward in transforming the way students and learners engage with educational content. By leveraging innovative digital tools and strategies, *Educa* has successfully addressed the evolving demands of modern education. This initiative has empowered learners of all ages by providing personalized learning experiences that cater to individual needs, allowing them to progress at their own pace and in their own style.
- The development of interactive courses, multimedia resources, and real-time feedback mechanisms has made learning not only more effective but also more engaging. Additionally, the integration of data-driven insights has enabled *Educa* to continuously improve the learning experience, providing students with the ability to track their progress and identify areas for improvement.
- From a digital marketing perspective, *Educa* has implemented a targeted marketing strategy to increase its reach and visibility. By utilizing SEO, content marketing, social media engagement, and influencer collaborations, *Educa* has successfully expanded its user base. These efforts have ensured that learners are not only aware of the platform but also feel compelled to explore its offerings further. The use of email campaigns, webinars, and tailored advertising has also strengthened customer retention, fostering a loyal user community that continues to benefit from the platform's resources.

- Looking forward, the future of *Educa* is promising. Continued investment in technology will allow the platform to integrate advanced features such as artificial intelligence for even more personalized learning experiences, as well as augmented and virtual reality for immersive learning. The expansion of course catalogues and the inclusion of more diverse learning formats, including live sessions and community-driven content, will also enhance the platform's appeal.
- Moreover, a strategic focus on partnerships with educational institutions, companies, and influencers will ensure that *Educa* remains a leading force in the eLearning space. By strengthening these collaborations and maintaining a commitment to high-quality education, *Educa* is well-positioned to drive the future of online learning.
- In summary, the *Educa* project is poised for long-term success, with its combination of cutting-edge technology, personalized learning paths, and robust digital marketing strategies. The vision of making education accessible and engaging for everyone is well on its way to being fully realized, providing valuable learning experiences to students across the globe.
- This version provides a comprehensive overview of both educational and marketing aspects while also outlining future goals and strategies. If you have any specific areas you'd like to expand or focus on further, feel free to let me know

10.4 Future Scope

- As per now the user must be logged in to view the product dashboard but there should be an option of login as a guest or skip sign which will allow users to add items to cart without signing in, as seen in other eLearning applications.
- Currently, the admin panel is under construction which is very important to manage the site.
- The layout can be improved by integrating MDC which will help in building device-friendly sites compatible with devices of different screen sizes such as phones, laptops, etc.
- There must be a feature that keeps track of no of users who are logged in as guests and at a particular time how many users are accessing this site.
- Application's performance can be increased by using more route guards which will lead to better and smooth user experience.
- Different deals can be added on the website that will attract more no of customers, increasing the scalability of our site.

REFE RENCES

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OTHER RESOURCES FROM INTERNET, TEACHERS & FRIENDS