

Table of Contents

1.	Introduction	1
1.1.	Project Title	2
1.2.	Vision Statement.....	2
1.3.	Project Overview Statement.....	2
1.4.	Project Goals and Objectives	4
1.5.	Tools and Technologies used with Reasoning.....	6
2.	Problem Definition	7
2.1.	Problem Statement	8
2.2.	Problem Solution.....	9
2.3.	Objectives of the Proposed System.....	9
2.4.	Scope	9
2.5.	Modules/ System components	10
2.6.	Conclusion	11
2.7.	UseCases.....	12
2.7.1.	User Registration.....	12
2.7.2.	User Login.....	13
2.7.3.	Create Course.....	14
2.7.4.	Edit Course.....	15
2.7.5.	Delete Course.....	16
2.7.6.	Publish Course.....	17
2.7.7.	View Course.....	18
2.7.8.	Search for Courses.....	19
2.7.9.	Comment on Courses.....	20
2.7.10.	Rate Course.....	21
2.7.11.	Profile Management.....	22
2.7.12.	Real-time Comment and Notification.....	23
2.7.13.	Admin Manage Instructors and Payments.....	24
2.7.14.	Admin Approve/Delete Courses.....	25
3.	Requirement Analysis	26
3.1.	Project Costing	27
3.2.	Critical Path Analysis	28
3.3.	Critical Path Analysis Diagram	29
4.	Design and Architecture	30
4.1.	Class Diagram	31
4.2.	Data Modeling (ERD).....	32
4.4.	Admin Use Case Diagram.....	33
4.5.	Registered Instructor Use Case Diagram	34
4.6.	Registered Student Use Case Diagram	35
5.	Testing and Evaluation	36
5.1.	Instructor Use Case Implementation(screen shots).....	37
5.2.	Student Use Case Implementation(screen shots).....	45
5.3.	Guest User Screen(screen shots)	50
5.4.	Admin Use Case Implementation(screen shots)	55
6.	Conclusion and Future Work	57
6.1.	Conclusion	58
6.2.	Future Work and Enhancements	59

List of Figures

<u>Figure 3.3: Critical Path Analysis Diagram</u>	29
<u>Figure 4.1 Class Diagram</u>	31
<u>Figure 4.2 Data Modeling (ERD)</u>	32
<u>Figure 4.3 Admin Use Case Diagram</u>	33
<u>Figure 4.3 Registered Instructor Use Case Diagram</u>	34
<u>Figure 4.3 Registered Student Use Case Diagram</u>	35
Figures 5.1. Instructor Use Case Implementation(screen shots).....	37
Figures 5.2. Student Use Case Implementation(screen shots).....	45
Figures5.3.Guest User Screen(screen shots)	50
Figures 5.4 Admin Use Case Implementation(screen shots).....	55

List of Tables

<u>Table 3.1 Project Costing.....</u>	27
<u>Tabl 3.2 Critical Path Analysis</u>	28

Chapter 1

Introduction

1.1 Project Title

EDUSCULPT

1.2 Vision Statement

For instructors and students who seek a comprehensive, interactive, and user-friendly online learning environment, the LMS (**EDUSCULPT**) is an innovative education platform that enables course creation, detailed content organization, real-time communication, and secure transactions. Unlike traditional LMS platforms that often lack real-time interaction and integrated payment systems, our product offers real-time notifications, robust analytics, seamless payment processing, and convenient account management through email and social media integration, enhancing both teaching and learning experiences while fostering engagement and accessibility.

1.3 Project Overview Statement

Course Management for Instructors

Create, Update, and Delete Courses:

Instructors have full control over their course offerings. They can easily create new courses, update existing content, and delete courses that are no longer relevant.

Detailed Course Structure:

Courses can be organized into folders, each containing videos and additional related content. This hierarchical structure ensures that courses are comprehensive and well-organized.

Analytics and Reporting

Order and Enrollment Analytics:

Instructors can view detailed analytics related to their courses, including the number of orders and the number of students enrolled. This data helps instructors understand their audience and the popularity of their courses.

Real-Time Notifications:

Both instructors and students receive real-time notifications for various activities, ensuring they stay informed and engaged.

Student Enrollment and Interaction

Course Enrollment: Students can browse and enroll in courses of their choice. The enrollment process is straightforward and user-friendly, encouraging more students to join.

Commenting and Interaction:

Students can post comments on individual videos, facilitating a discussion environment. Instructors can reply to these comments, promoting an interactive learning experience.

Real-Time Notifications:

Notifications for new comments and replies ensure that both students and instructors are kept in the loop regarding ongoing discussions.

Payment and Account Management

Stripe Payment Integration:

Secure and efficient payment processing is handled through Stripe, allowing students to pay for courses seamlessly.

Email Confirmation and Notifications:

Upon successful payment, students receive an email confirmation. Additionally, email notifications are sent for various account activities, ensuring that users are always informed.

Account Activation with Email Verification:

To ensure the authenticity of users, account activation requires email verification. This adds an extra layer of security and helps in maintaining a legitimate user base.

Google Login/Signup:

To streamline the registration process, users can sign up or log in using their Google account. This reduces the friction associated with creating a new account and enhances user convenience.

Technical Details

User Interface and Experience:

The platform is designed to be intuitive and user-friendly, with a clean interface that facilitates easy navigation.

Security:

With features like email verification and secure payment processing through Stripe, EDUSCULPT ensures that user data is protected.

Scalability:

The system is built to handle a growing number of users and courses, making it suitable for both small educational institutions and large-scale e-learning platforms.

Real-Time Capabilities:

Real-time notifications and updates ensure that users receive information instantly, fostering an engaging and interactive learning environment.

EDUSCULPT LMS aims to bridge the gap between instructors and students by providing a robust platform that supports the creation, management, and delivery of educational content. Its comprehensive features and user-centric design make it an ideal choice for modern educational needs, ensuring that both instructors and students can maximize their learning and teaching experiences.

1.4 Project Goals and Objectives

i. Goals

Enhance Educational Accessibility and Engagement

Provide a platform that makes educational content easily accessible to a wide audience, fostering a collaborative and interactive learning environment.

Empower Instructors

Equip instructors with comprehensive tools to create, manage, and analyze their courses, helping them deliver high-quality educational content and improve their teaching methods based on data-driven insights.

Streamline User Experience

Ensure a seamless and user-friendly experience for both instructors and students through intuitive design, real-time features, and reliable services.

Secure and Efficient Transactions

Integrate secure payment methods and robust authentication processes to protect user data and ensure smooth transactions.

Scalability and Flexibility

Build a scalable and flexible system capable of accommodating increasing numbers of users and diverse educational content, supporting the growth and expansion of the platform.

ii. Objectives

Course Management

Objective: Enable instructors to create, update, and delete courses with ease.

Features:

- 1) User-friendly interface for course creation and management.
- 2) Hierarchical structure allowing courses to be organized into folders with videos and related content.

Analytics and Reporting

Objective: Provide instructors with detailed analytics to help them understand the performance and reach of their courses.

Features:

- 1) Dashboards displaying the number of orders and student enrollments.
- 2) Tools for analyzing course engagement and student interaction.

1.

Real-Time Notifications

Objective: Keep users informed and engaged through instant notifications.

Features:

- 1) Real-time updates for comments, replies, enrollments, and other activities.
- 2) Notification system integrated with the platform's core functionalities.

Student Enrollment

Objective: Facilitate easy and efficient enrollment for students.

Features:

- 1) Simple and intuitive enrollment process.
- 2) User accounts management with options for email verification and Google login/signup.

Secure Payment Processing

Objective: Ensure secure and seamless payment transactions.

Features:

- 1) Integration with Stripe for payment processing.
- 2) Email notifications sent after successful payments.

Account Security and Authentication

Objective: Protect user data and maintain platform integrity.

Features:

- 1) Account activation via email code verification.
- 2) Options for Google and GitHub authentication for enhanced security and convenience.

Detailed Course Content

Objective: Allow instructors to create rich and organized course content.

Features:

- 1) Capability to add videos and related content in a structured manner.
- 2) Detailed course folders for comprehensive content delivery.

Interactive Learning Environment

Objective: Promote interaction and discussion between students and instructors.

Features:

- 1) Commenting system on videos with real-time notifications for interactions.
- 2) Instructor responses to student comments to facilitate engagement.

1.5 Tools and Technologies used with Reasoning

Tools:

VS Code

Visual Studio Code is a free coding editor that helps you start coding quickly. Use it to code in any programming language, without switching editors. Visual Studio Code has support for many languages, including Python, Java, C++, JavaScript, and more.

MS Project

MS project can clearly identify time, resources and cost. And then, MS project have a lot of features such as project guide, help, templates, task drivers and multilevel undo compare with MS Excel.

Technology:

React

React is a declarative, efficient, and flexible JavaScript library for building user interfaces. It lets you compose complex UIs from small and isolated pieces of code called “components”.

MongoDb

MongoDB is a popular NoSQL database that stores data in flexible, JSON-like documents. It allows for dynamic schema design, making it easy to scale and adapt to changing requirements. Known for its high performance and scalability, MongoDB is widely used in modern applications that handle large volumes of unstructured data.

NodeJS

Node.js is an open-source runtime that executes JavaScript on the server side. It's built on the V8 engine and uses an event-driven, non-blocking I/O model, making it ideal for scalable, real-time applications.

Stripe

Stripe serves as our trusted payment processing platform, offering secure and reliable transaction handling. With its robust security measures, global reach, and extensive feature set, Stripe ensures a seamless payment experience for both instructors and students.

WebSockets

WebSockets enable real-time communication channels over a single TCP connection, essential for features like real-time notifications and comments. By leveraging WebSockets, we create an engaging and interactive learning environment for our users.

Google Emails

We utilize Google's email services (Gmail API) for email communication within the application. With Google Emails, we ensure high deliverability, reliability, and security, facilitating effective communication with users through email notifications and confirmations.

Chapter 2

Problem Definition

2. Problem Definition

2.1 Problem Statement

The current landscape of online learning is fraught with inefficiencies and limitations that hinder both instructors and students. Traditional Learning Management Systems (LMS) often lack real-time interaction capabilities and integrated payment systems, resulting in a disjointed and cumbersome user experience. Instructors face challenges in organizing comprehensive course content, managing student enrollments, and analyzing course performance due to inadequate tools and analytic. Students struggle with navigating complex enrollment processes, lack of interactive learning environments, and insecure payment methods. Furthermore, the absence of real-time notifications leads to missed opportunities for engagement and timely communication. The need for a seamless, interactive, and secure LMS that bridges these gaps is evident, as existing platforms fail to address these critical issues effectively.

2.2. Problem Solution

EDUSCULPT is designed to address the deficiencies of traditional LMS platforms by providing a comprehensive, interactive, and user-friendly online learning environment. The platform enables instructors to create, update, and delete courses effortlessly, organize content hierarchically, and access detailed analytic on course performance and student engagement. Real-time notifications keep both instructors and students informed about course activities, fostering timely communication and interaction. The user-friendly enrollment process, combined with options for email verification and Google login/signup, simplifies access for students. Secure payment processing through Stripe ensures smooth transactions, while email notifications confirm payments and other account activities. By integrating these features, EDUSCULPT aims to enhance the teaching and learning experience, making educational content more accessible, interactive, and engaging for a diverse audience.

2.1. Objectives of the Proposed System

BO-1: Enable instructors to create, update, and delete courses with a 95% success rate on their first attempt.

BO-2: Organize 100% of courses into a hierarchical structure with videos and related content within the first month of use.

BO-3: Provide detailed analytics on course performance and student engagement, reducing the time spent on manual data collection and analysis by 50%.

BO-4: Ensure that 100% of comments, replies, enrollments, and other activities generate real-time notifications within 5 seconds.

BO-5: Facilitate a simple and intuitive enrollment process that reduces student registration time by 40%.

BO-6: Integrate secure payment processing through Stripe, achieving a transaction success rate of 99%.

BO-7: Confirm 100% of payments and account activities via email notifications within 1 minute of transaction completion.

BO-8: Achieve a 100% account activation rate through email verification to ensure user authenticity.

BO-9: Offer Google login/signup options, reducing the time to create an account by 50% and achieving a 90% user adoption rate for this feature.

BO-10: Support interactive learning through a commenting system on videos, increasing student engagement by 60%.

BO-11: Allow instructors to respond to 90% of student comments within 24 hours to promote engagement.

BO-12: Maintain a user-friendly and intuitive interface that achieves a user satisfaction rating of at least 85%.

BO-13: Protect user data through robust security measures, aiming for zero security breaches annually.

BO-14: Ensure the system is scalable to accommodate a 100% increase in users and courses within 12 months without performance degradation.

2.2. Scope

The scope of EDUSCULPT encompasses a wide range of functionalities aimed at enhancing the educational experience for both instructors and students. The platform allows instructors to manage courses efficiently, providing tools to create, update, and organize content into comprehensive structures. Students benefit from a simplified enrollment process, secure payment options, and interactive learning features such as real-time commenting and notifications. EDUSCULPT also includes robust analytics and reporting tools, enabling instructors to track course performance and student engagement. The system ensures data security through email verification and Stripe integration, while also offering flexible authentication options via Google login/signup. Designed to be scalable, EDUSCULPT can support a growing number of users and courses, making it suitable for both small and large educational institutions. This comprehensive solution addresses the critical needs of the online learning community, fostering a more accessible, interactive, and engaging educational environment.

2.3. Modules/ System components

M_1: Course Management

FE-1: Create, update, and delete courses.

FE-2: Organize courses into folders with videos and related content.

M_2: Analytics and Reporting

FE-1: View detailed analytics on orders and student enrollments.

FE-2: Analyze course engagement and student interaction.

M_3: Real-Time Notifications

FE-1: Receive real-time updates for comments, replies, enrollments, and other activities.

FE-2: Integrated notification system with core functionalities.

M_4: Student Enrollment

FE-1: Simplified and intuitive enrollment process.

FE-2: User accounts with email verification and Google login/signup options.

M_5: Secure Payment Processing

FE-1: Integration with Stripe for secure payment transactions.

FE-2: Email notifications for successful payments.

M_6: Account Security and Authentication

FE-1: Account activation via email code verification.

FE-2: Options for Google and GitHub authentication.

M_7: Detailed Course Content

FE-1: Add videos and related content in a structured manner.

FE-2: Organize content into detailed course folders.

M_8: Interactive Learning Environment

FE-1: Commenting system on videos.

FE-2: Real-time notifications for interactions.

FE-3: Instructors can respond to student comments.

2.4. Conclusion

In conclusion, EDUSCULPT aims to revolutionize the online learning experience by addressing the critical needs of both instructors and students. The platform provides comprehensive tools for course management, detailed analytics for performance tracking, and real-time notifications to keep users engaged. Secure payment processing and robust account security measures ensure user data protection, while the intuitive user interface and streamlined enrollment process enhance accessibility. By integrating these features, EDUSCULPT not only improves the efficiency and effectiveness of online education but also fosters a more interactive and engaging learning environment.

Use cases

2.7.1. User Registration

User Registration	
Use Case ID	UC-01
Use Case Title	User Registration
Primary Actor	User
Pre-Conditions	The visitor is not registered as a user on the LMS
Post-Conditions	The visitor successfully registers as a new user and gains access to user features

Success Scenario:

The visitor successfully registers as a new user.

Failure Scenario:

Any of the required field is empty.

The format of required field is incorrect (Gmail, phone number, password etc.)

Internet interruptions.

Main Flow:

1. The website visitor accesses the EduSculpt website.
2. The visitor selects the "Register" or "Sign Up" option.
3. The system presents a registration form.
4. The visitor fills in the required registration information (e.g., username, email, password).
5. After completing the form, the visitor selects the "Register" or "Sign Up" button.
6. The system validates the information and creates a new user account.
7. The user receives a confirmation email.
8. The user is now registered and can log in with their new credentials.

2.7.2. User Login.

User Login	
Use Case ID	UC-02
Use Case Title	User Login
Primary Actor	User
Pre-Conditions	The user is registered on the LMS
Post-Conditions	The user successfully logs in and gains access to their account

Success Scenario:

The visitor successfully Logins into the website.

Failure Scenario:

Invalid username
Invalid password
Internet Problems.

Main Flow:

1. The registered user accesses the courses.
2. The user selects the "Login" option.
3. The system presents a login form.
4. The user enters their registered username or email and password.
5. After entering the credentials, the user selects the "Login" button.
6. The system validates the credentials.
7. If the credentials are correct, the user is granted access to their account.
8. The user can now access user-specific features and content.

2.7.3. Create Course:

Create Course	
Use Case ID	UC-03
Use Case Title	Create Course
Primary Actor	Instructor
Pre-Conditions	The instructor is logged into their account.
Post-Conditions	The instructor successfully creates a new course

Success Scenario:

- The Course successfully uploaded on the website.

Failure Scenario:

Internet Problem.

Main Flow:

1. The registered user logs into their account.
2. On the dashboard , the user selects the option to "Upload Course."
3. The system displays a form for the user to input the Course content.
4. The user fills in the title, content, and other relevant details of the Course.
5. After completing the form, the user selects the "Submit" or "Create" button.
6. The system validates the Credentials and saves the new Course to the user's account.

2.7.4. Edit Course:

Edit Course	
Use Case ID	UC-04
Use Case Title	Edit Course
Primary Actor	Instructor
Pre-Conditions	The instructor is logged into their account and has created a course.
Post-Conditions	The instructor successfully edits the details of a course

Success Scenario:

The Course is updated and rePosted.

Failure Scenario:

Internet Problem.

Not saved successfully.

Main Flow:

1. The instructor logs into their account.
2. On the dashboard or course management page, the instructor selects the course they want to edit.
3. The system displays the selected course with an "Edit" option.
4. The instructor clicks on the "Edit" option.
5. The system allows the instructor to make changes to the course details.
6. After making the desired changes, the instructor selects the "Save" or "Update" button.
7. The system validates the changes and updates the course with the new information.
8. The system confirms the successful editing of the course and provides a confirmation message to the instructor.

2.7.5. Delete Course:

Delete Course	
Use Case ID	UC-05
Use Case Title	Delete Course
Primary Actor	Instructor
Pre-Conditions	The instructor is logged into their account and has created a course.
Post-Conditions	The instructor successfully deletes a course

Success Scenario:

The selected course is deleted successfully.

Failure Scenario:

Internet Problem.
No Confirmation

Main Flow:

1. The instructor logs into their account.
2. On the dashboard or course management page, the instructor selects the course they want to delete.
3. The system displays the selected course with a "Delete" option.
4. The instructor clicks on the "Delete" option.
5. The system prompts the instructor for confirmation.
6. The instructor confirms their intention to delete the course.
7. The system removes the selected course from the instructor's account.
8. The system confirms the successful deletion of the course and provides a confirmation message to the instructor.

2.7.6. Publish Course:

Publish Course	
Use Case ID	UC-06
Use Case Title	Publish Course
Primary Actor	Instructor
Pre-Conditions	The instructor is logged into their account and has created a course.
Post-Conditions	The course is published and made available to students

Success scenario:

The website visitor read the content of the selected blog post on website.

Failure scenario:

Desired content is not on the website.

Main Flow:

1. The instructor logs into their account.
2. On the dashboard or course management page, the instructor selects the course they want to publish.
3. The system displays the selected course with a "Publish" option.
4. The instructor clicks on the "Publish" option.
5. The system confirms the instructor's intention to publish the course.
6. The course is now accessible to students for enrollment and viewing.
7. The system confirms the successful publication of the course and provides a confirmation message to the instructor.

2.7.7. View Course:

View Course	
Use Case ID	UC-07
Use Case Title	View Courses
Primary Actor	User
Pre-Conditions	The user is logged into their account.
Post-Conditions	The user can view the available courses.

Success scenario:

The system will show the content related to visitor's search/demand.

Failure scenario:

Internet issues.

The searched content not found on the website.

Main Flow:

1. The student logs into their account.
2. On the dashboard or course catalog page, the student selects the course they want to view.
3. The system displays the selected course with an option to "View" or "Read."
4. The student clicks on the "View" or "Read" option.
5. The system presents the full content of the selected course for reading.
6. The student can scroll through and read the entire course content.

2.7.8. Search for Courses:

Search for Courses	
Use Case ID	UC-08
Use Case Title	Search for Courses
Primary Actor	User
Pre-Conditions	The user is logged into their account.
Post-Conditions	The user can search for specific courses based on criteria

Success scenario:

The student successfully finds and accesses the desired course on the website..

Failure scenario:

The desired course is not available on the website.

Main Flow:

1. The student logs into their account.
2. The student accesses the course search feature on the website.
3. The student provides search criteria such as keywords, subject, or instructor.
4. The system returns a list of matching courses based on the provided criteria.
5. The student selects the desired course from the list.
6. The system displays the full content of the selected course.
7. The student can access and navigate through the course content..

2.7.9. Comment on Courses:

Comment on Courses	
Use Case ID	UC-09
Use Case Title	Comment on Course Video
Primary Actor	User
Pre-Conditions	The user is enrolled in a course.
Post-Conditions	The user can leave comments on course videos.

Success scenario:

The student successfully adds a comment on the course.

Failure scenario:

Internet issues.

Main Flow:

1. The student logs into their account.
2. The student navigates to a course they want to comment on.
3. The system displays the full content of the course.
4. The student clicks on the "Comment" button.
5. The system provides a text input field for the student to write their comment.
6. The student writes the comment and clicks the "Post" or "Submit" button.
7. The system validates and posts the comment on the course.
8. The comment is now visible to other students who view the course.

2.7.10. Rate Course:

Student rates the Course	
Use Case ID	UC-10
Use Case Title	User rate the course
Primary Actor	User
Pre-Conditions	The user has completed or is enrolled in a course.
Post-Conditions	The user can rate and provide feedback for the course.

Success scenario:

The student successfully provides a rating for a course uploaded by the instructor.

Failure scenario:

Internet connectivity issues.

The system fails to record the rating

Main Flow:

1. The student is enrolled in a course.
2. The system displays the course content and details.
3. The student navigates to the course rating section.
4. The student selects a rating scale (e.g., 1 to 5 stars) to rate the course.
5. The student submits their rating.
6. The system records the rating and updates the course's overall rating.
7. The system confirms the successful rating submission to the student

2.7.11. Profile Management:

Profile management	
Use Case ID	UC-11
Use Case Title	Profile Management
Primary Actor	User,Instructor
Pre-Conditions	The user is logged into their account.
Post-Conditions	The user can manage their profile information.

Success scenario:

User has edited his/her profile successfully.

Failure scenario:

Internet issues.

Not saved successfully.

Main Flow:

User will click on profile button.

System will profile page.

User can edit his/her desired field.

User will click on update button.

System will popup that desired field has been successfully updated.

2.7.12. Real-time Comment and Notification:

Real time Comment and Notification	
Use Case ID	UC-12
Use Case Title	Real-time Comment and Notification
Primary Actor	User
Pre-Conditions	The user is logged into their account and is active on the platform.
Post-Conditions	The user receives real-time notifications for new comments and course updates.

Success scenario:

The administrator successfully manages real-time comments and notifications.

Failure scenario:

The administrator is unable to manage real-time comments or notifications effectively.

Main Flow:

1. The administrator accesses the admin panel of the LMS.
2. The system provides real-time notifications for new comments on courses
3. The administrator can perform actions on these notifications, including:
4. Reviewing and moderating comments for appropriateness.
5. Managing notifications for new course additions, ensuring they meet quality standards.
6. The administrator selects a specific notification to take action on.
7. The system updates the course comments and notifications based on the administrator's actions.
8. The administrator receives confirmation of the successful management of real-time comments and notifications.

2.7.13. Admin Manage Instructors and Payments

Admin Manage Instructors and Payments	
Use Case ID	UC-13
Use Case Title	Admin Manage Instructors and Payments
Primary Actor	Admin
Pre-Conditions	The admin is logged into the admin panel.
Post-Conditions	The admin can manage instructor accounts and payments.

Success scenario:

The administrator successfully manages instructor accounts, including adding or removing instructors.
Payment processing for instructor services is completed successfully.

Failure scenario:

The administrator is unable to manage instructor accounts or process payments effectively.

Main Flow:

1. The administrator accesses the admin panel of the LMS.
2. The system provides a list of instructors' accounts and their details.
3. The administrator can perform actions on instructor accounts.
4. Removing or suspending instructors' access in case of violations or other issues.
5. Managing payments for instructors based on their services and earnings.
6. The administrator selects a specific instructor account to take action on.
7. The administrator performs the desired action, such as adding or removing an instructor.

2.7.14. Admin Approve/Delete Courses:

Admin Approve/Delete Courses	
Use Case ID	UC-14
Use Case Title	Admin Approve/Delete Courses
Primary Actor	Admin
Pre-Conditions	The admin is logged into the admin panel.
Post-Conditions	The admin can approve or delete courses created by instructors.

Success scenario:

The administrator successfully approves or deletes courses based on the review process.

Failure scenario:

The administrator is unable to approve or delete courses effectively.

Main Flow:

1. The administrator selects an option to "Review" the course.
2. The system displays a form for reviewing the course details.
3. The administrator examines the course information and content, providing additional context if necessary.
4. After completing the review form, the administrator selects the "Approve" or "Delete" button.
5. The system records the review decision and takes appropriate action.
6. The course is either approved and made accessible to users or deleted from the platform based on the administrator's decision.

Chapter 3

Requirement Analysis

3.1 Project Costing

Project Costing

Functions	Optimistic	Most Likely	Pessimistic	Estimated LOC
Instructor Registration	100	150	200	150
Instructor Login	120	150	180	150
Instructor Profile	80	100	120	100
Course Creation	150	200	250	200
Instructor Course Dashboard	80	100	120	100
Courses Management	130	160	200	160
Course Recommendation	100	120	150	120
Course Payment Management	100	130	160	130
Course Completion	80	100	120	100
New Course Notifications	120	150	180	150
Display Analytics to Instructor	100	120	150	120
Student Registration	100	120	150	120
Student Login	120	150	180	150
Course Search	100	120	150	120
Show Student Dashboard	100	120	150	120
Show Student Profile	80	100	120	100
Show Student Courses	100	120	150	120
Student Buy Course	120	150	180	150
Student Give Rating	80	100	120	100
Student and Instructor Comments Service	120	150	180	150
Display All Unpublished Courses to Instructor	80	100	120	100
Course Approval By Admin	100	120	150	120
Logout	80	100	120	100

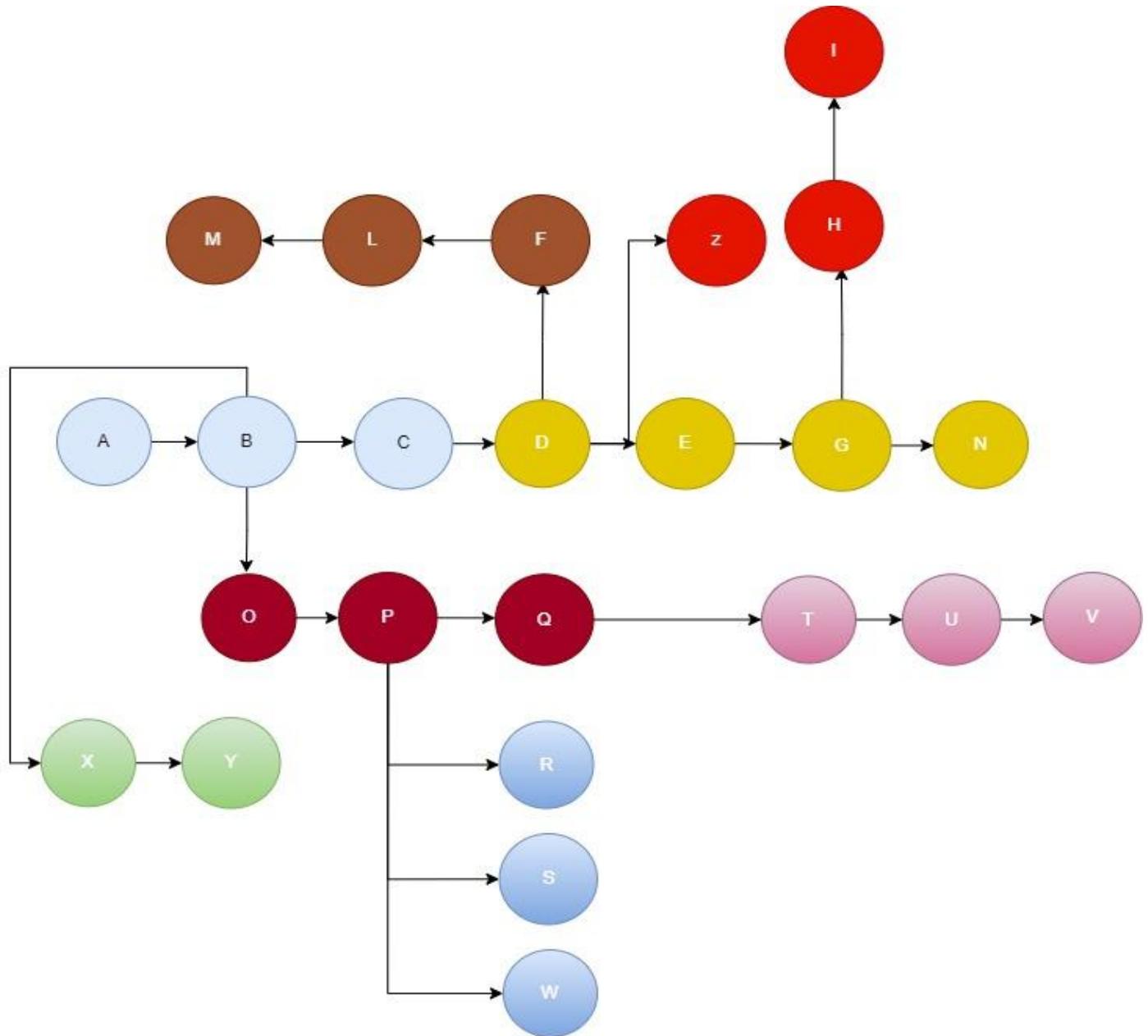
3.2 Critical Path Analysis

Critical Path Analysis

Activity	Alias	Predecessor
Requiremental Engineering	A	
UI Design Prototype	B	
Instructor Registration	C	B
Instructor Login	D	C
Instructor Profile	E	D
Course Creation	F	D
Instructor Course Dashboard	G	E
Courses Management	H	G
Course Recommendation	I	H
Course Payment Management	L	F
Course Completion	M	L
New Course Notifications	N	G
Display Analytics to Instructor	O	B
Student Registration	P	O
Student Login	Q	P
Course Search	R	P
Show Student Dashboard	S	P
Show Student Profile	T	Q
Show Student Courses	U	T
Student Buy Course	V	U
Student Give Rating	W	P
Student and Instructor Comments	X	B
Display All Unpublished Courses	Y	X
Course Approval By Admin	Z	D
Logout		

3.3 Critical Path Analysis Diagram

Critical Path Analysis Diagram

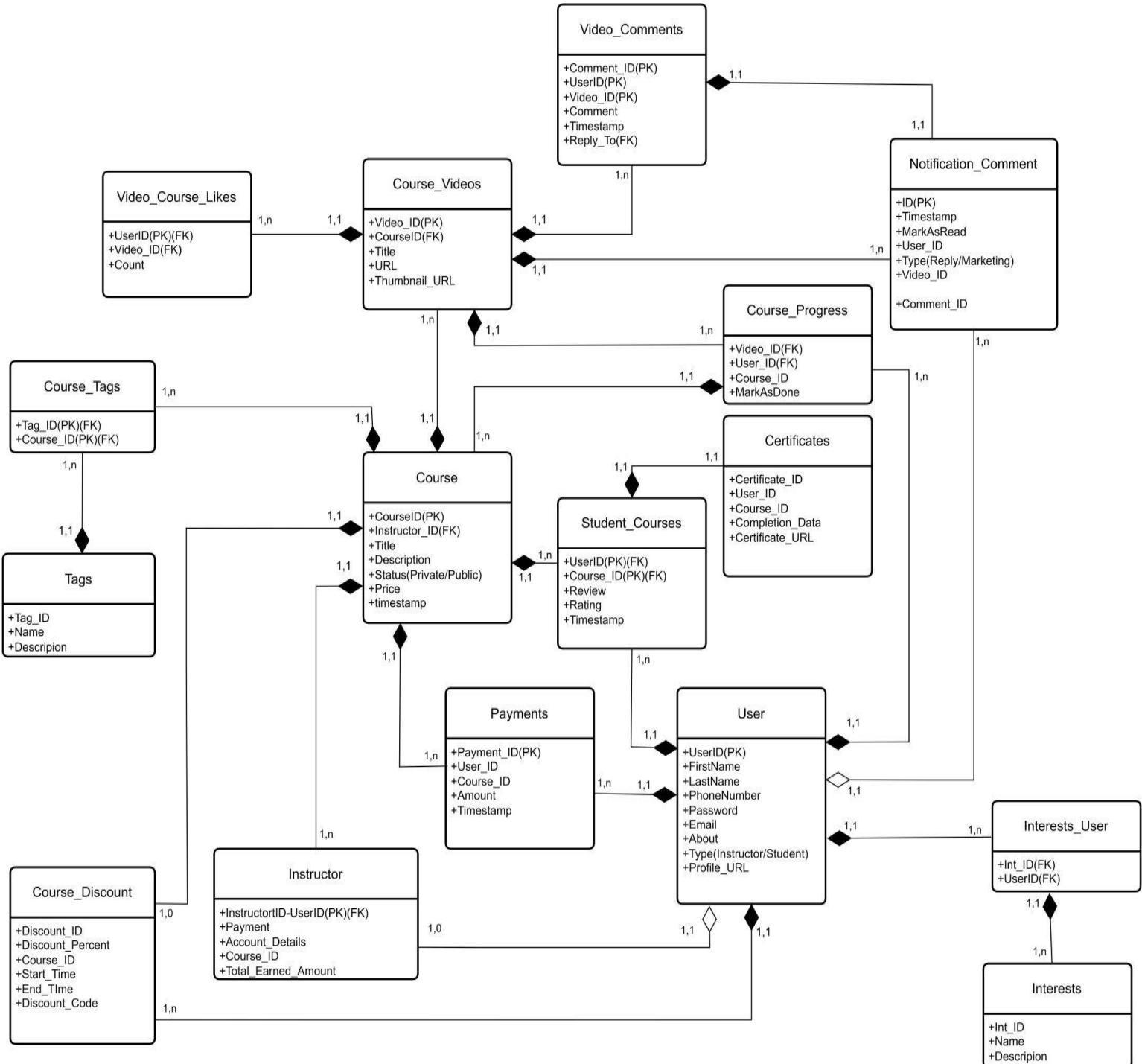


Chapter 4

Design and Architecture

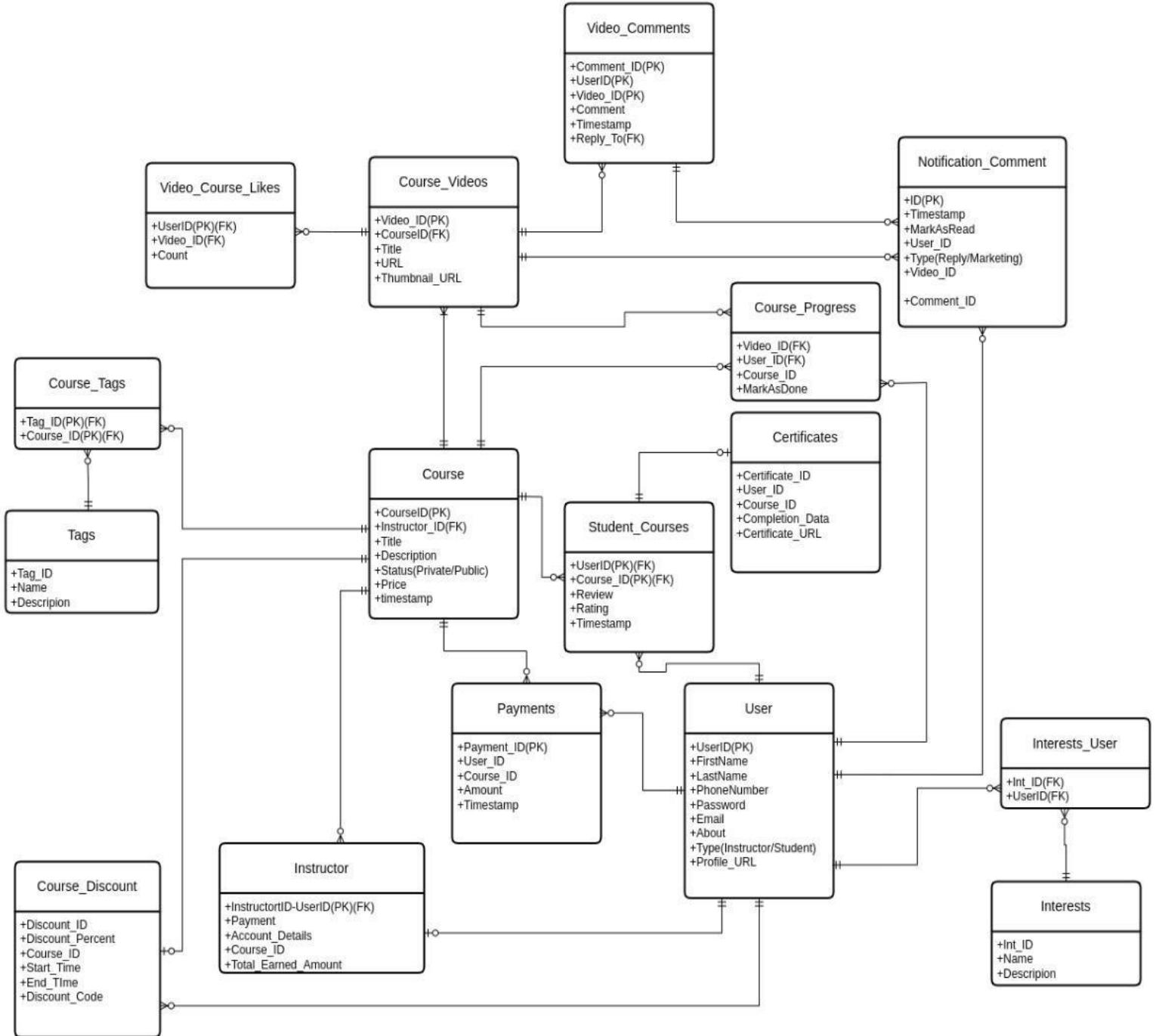
4.1 Class Diagram

CLASS DIAGRAM



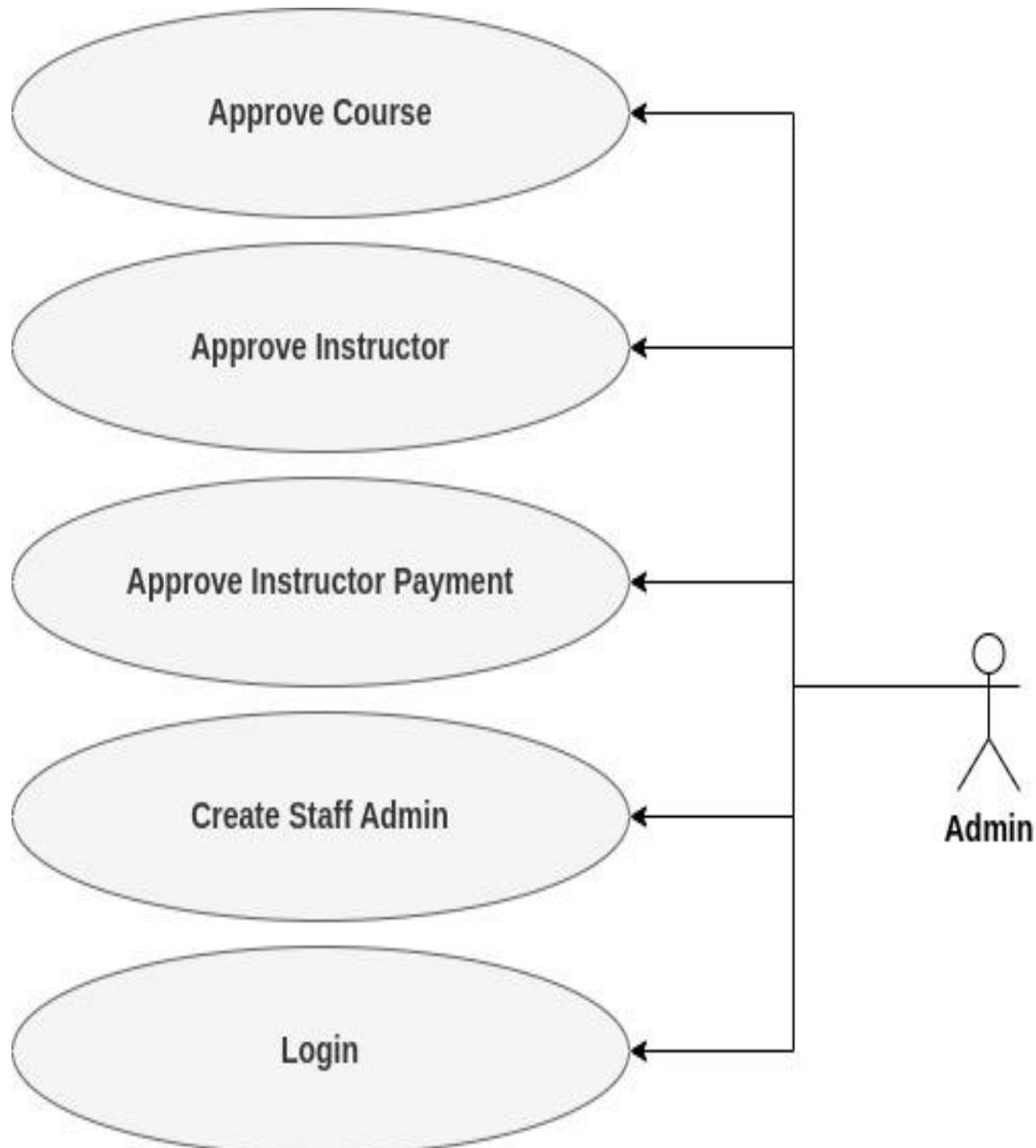
4.2 Data Modeling (ERD)

ERD



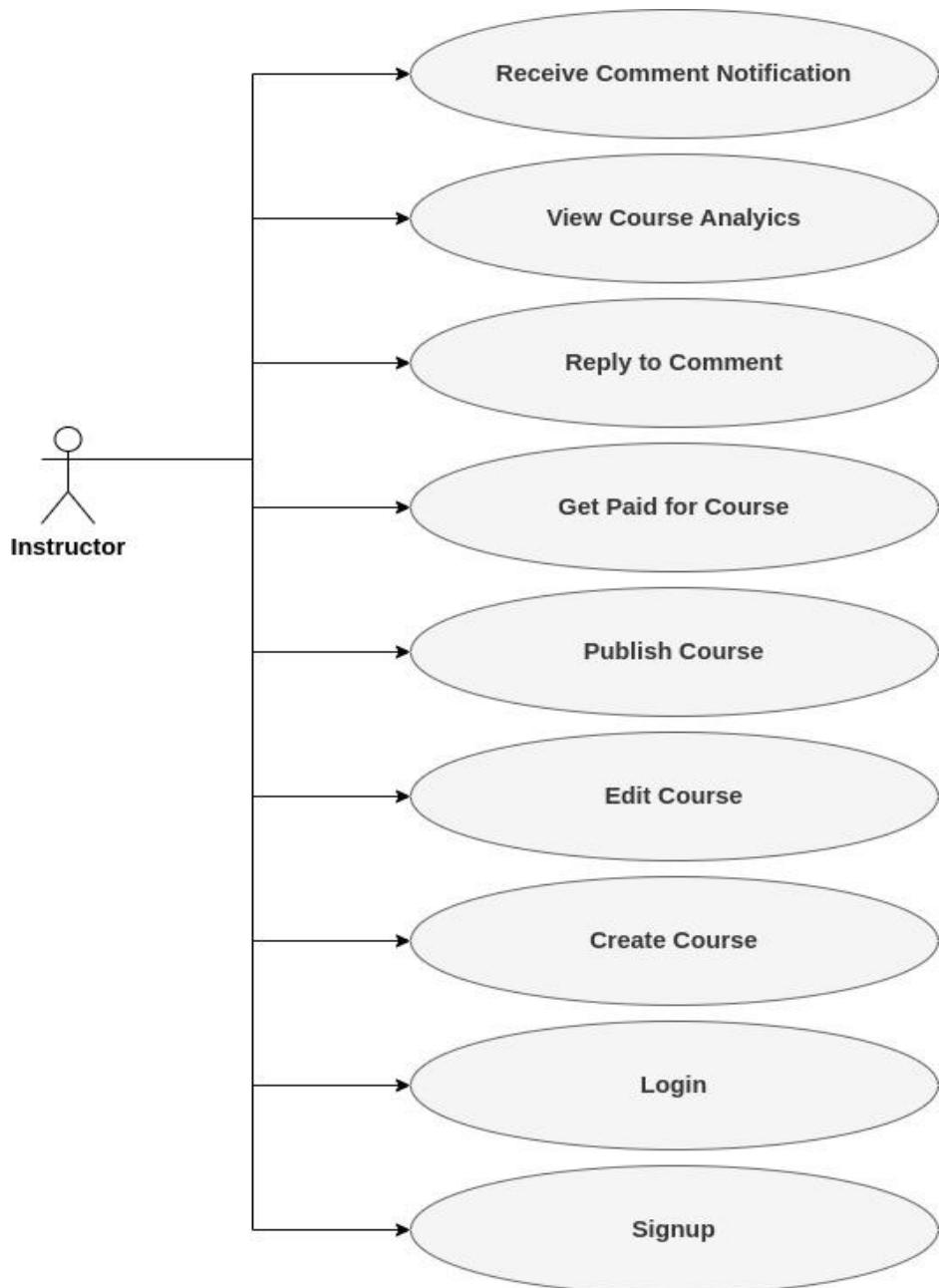
4.4 Admin Use Case Diagram

Admin Use Case



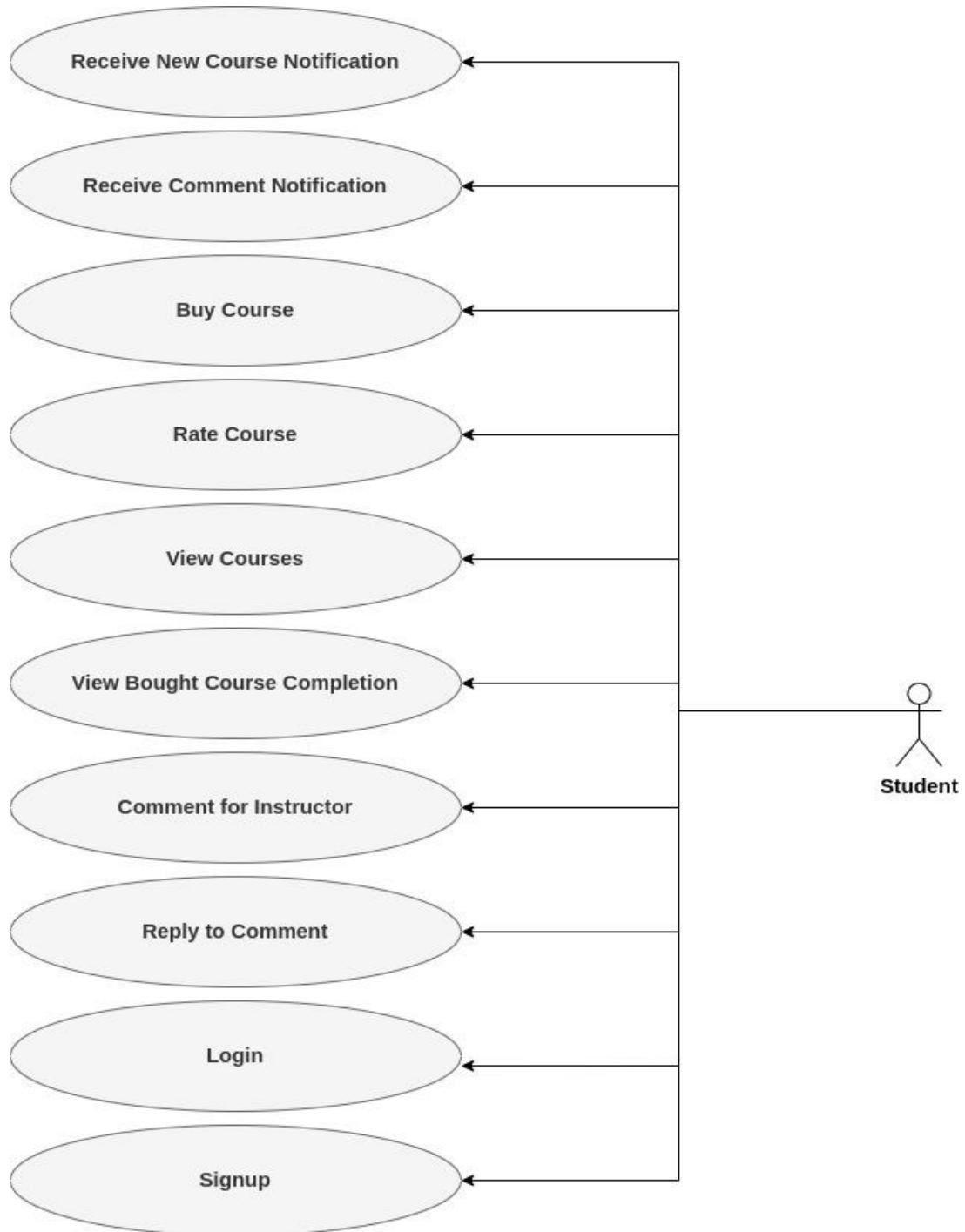
4.5 Registered Instructor Use Case Diagram

Registered Instructor Use Case



4.6 Registered Student Use Case Diagram

Registered Student Use Case



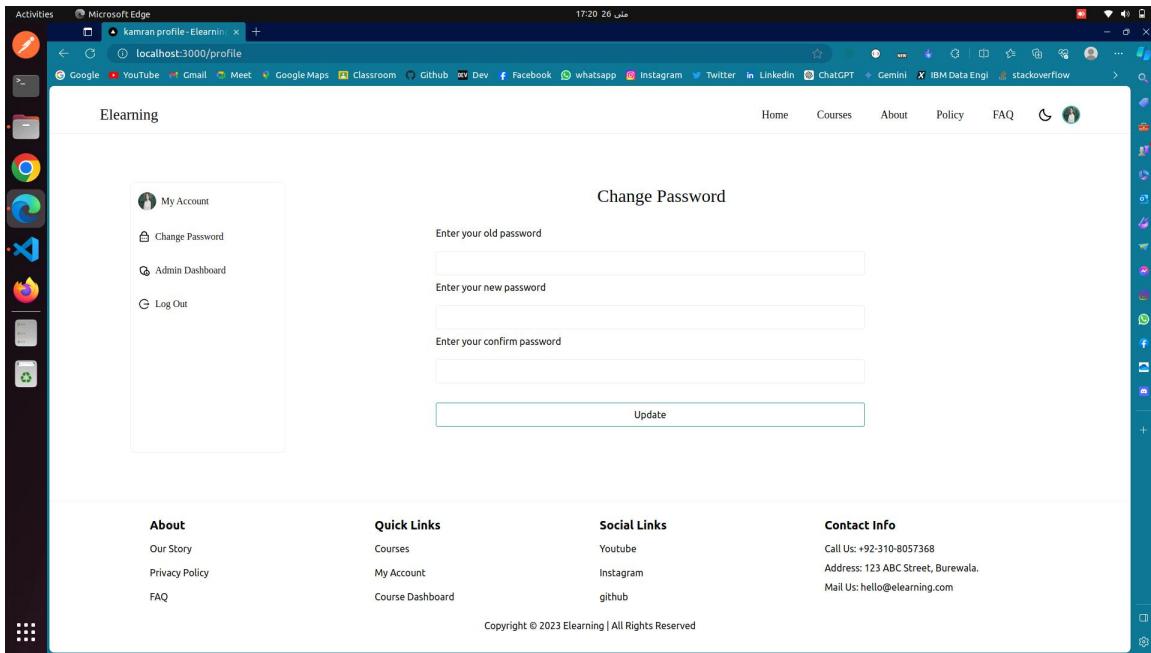
Chapter 5

Testing and Evaluation

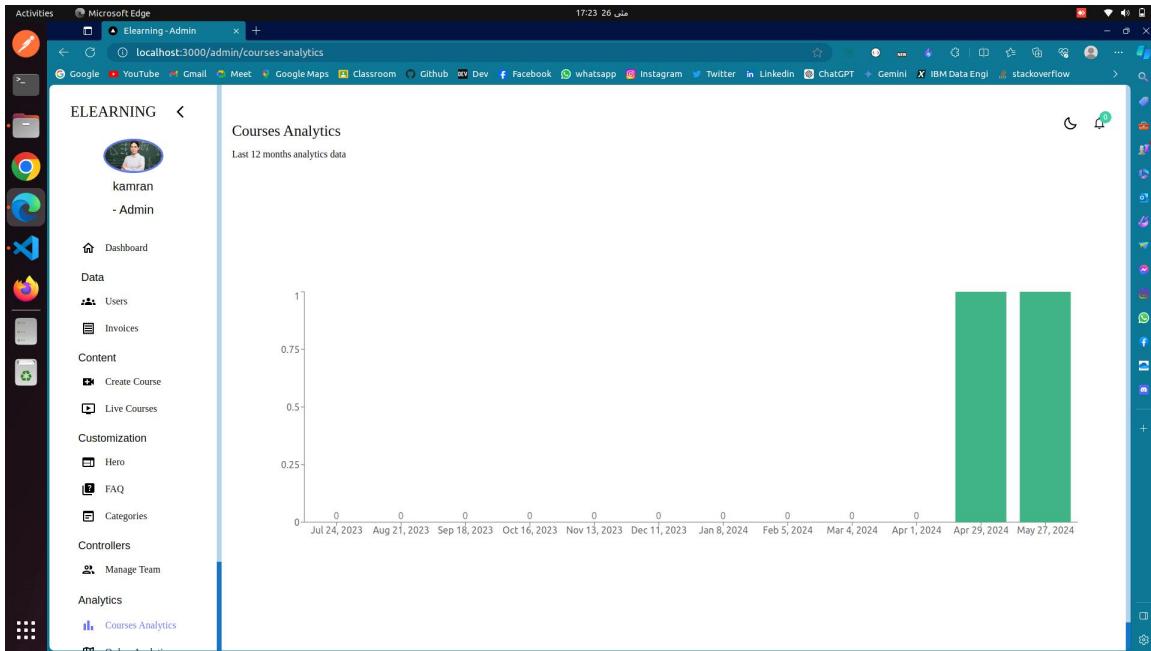
5.1. Instructor Use Case Implementation(screen shots)

INSTRUCTOR

This is page where the user can change his password. It required to enter the old password of the user and the new password and confirm password to ensure that the new password is correct and intentionally changed. After filling all the fields then allow the user to change his password. If the old password is not same as the password stored in the database then it will show error message.



In page the instructor can see the analytics of the his courses. This is show that which course is buy from the students most.



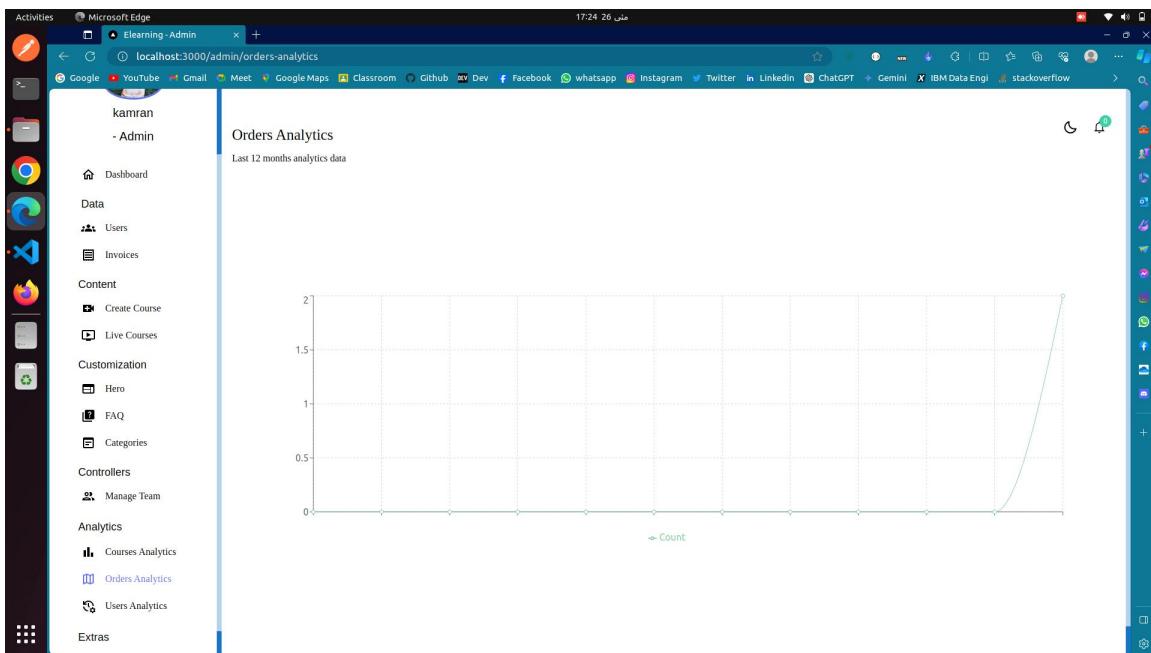
This is the page where the instructor can add the course details. It required to enter the course name, course desc., price, estimated price (optional), course tags, select course category, course label, demo Url (course preview), and the thumbnail of the course.

The screenshot shows the 'Create Course' form on the ELEARNING platform. The left sidebar has a similar structure to the previous screenshot. The main form fields include:

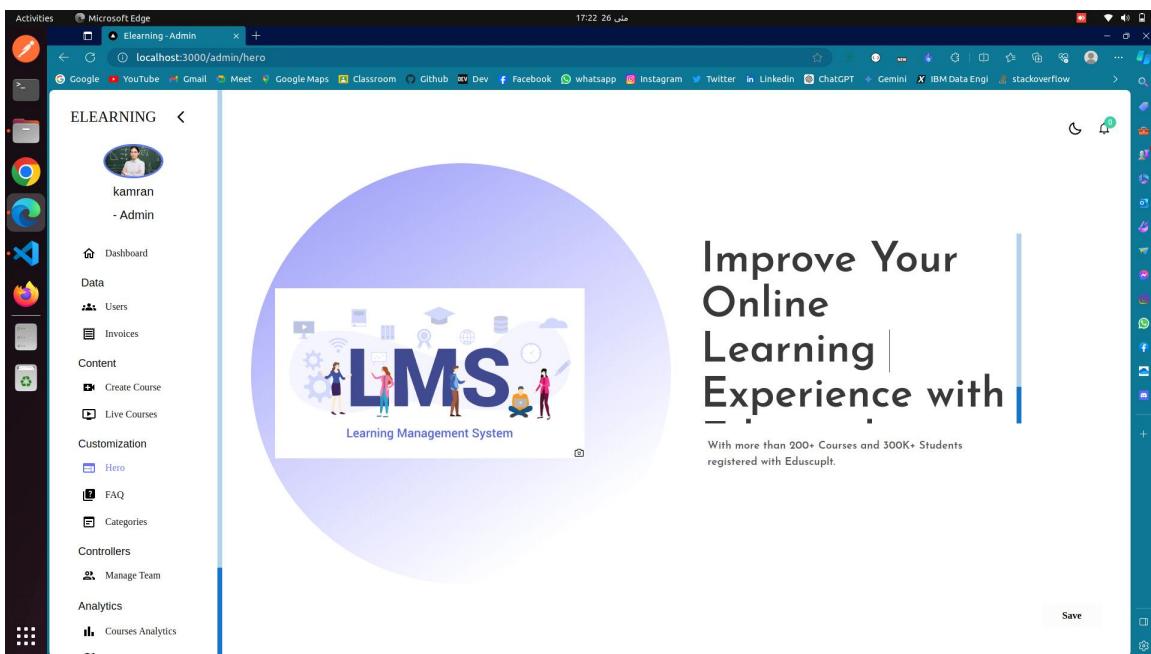
- Course Name:** MERN stack LMS platform with next 13
- Course Description:** Write something amazing...
- Course Price:** 29
- Estimated Price (optional):** 79
- Course Tags:** MERN,Next 13,Socket io,tailwind css,LMS
- Course Categories:** Select Category
- Course Level:** Beginner/Intermediate/Expert
- Demo Url:** eer74fd
- Thumbnail Upload:** Drag and drop your thumbnail here or click to browse

On the right side of the form, there is a vertical list of checked items: Course Information, Course Options, Course Content, and Course Preview.

This is the page where the instructor the order analytics. Which course is buy more.



This is landing page of the website. The instructor can edit the landing page. He can edit the title heading, FAQ, reviews etc.



This is page where the instructor can see the invoices. Which user buy the which course and its price.

The screenshot shows the Microsoft Edge browser window with the URL localhost:3000/admin/invoices. The page title is "ELEARNING Admin". On the left, there is a sidebar with the following navigation items:

- ELEARNING < (with a profile picture)
- kamran - Admin
- Dashboard
- Data
 - Users
 - Invoices
- Content
 - Create Course
 - Live Courses
- Customization
 - Hero
 - FAQ
 - Categories
- Controllers
 - Manage Team
- Analytics
 - Courses Analytics

The main content area displays a table of invoices:

ID	Name	Email	Course Title	Price	Email
6630de9172...	student	kamrannaseer70543@gmail.com	MERN Stack	\$30	Email
662fe12eb06...	student	kamrannaseer70543@gmail.com	Angular Course	\$50	Email

The instructor can see the his live courses that are approved by the admin. And see the when the course was approved.

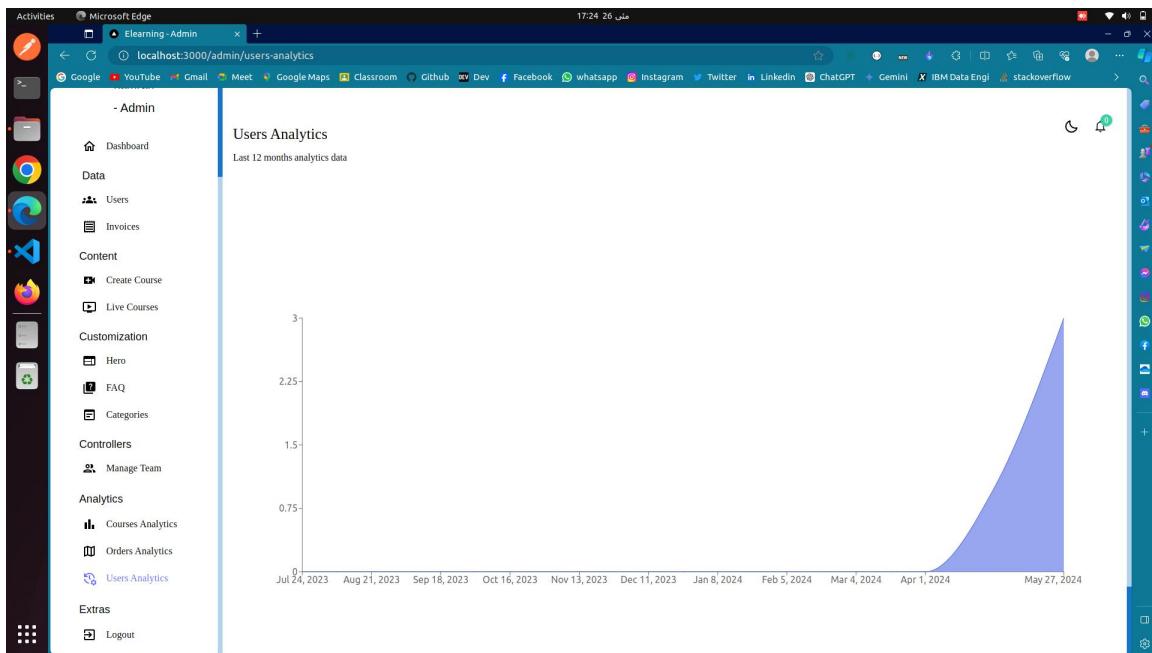
The screenshot shows the Microsoft Edge browser window with the URL localhost:3000/admin/courses. The page title is "ELEARNING Admin". The sidebar is identical to the previous screenshot. The main content area displays a table of courses:

ID	Course Title	Ratings	Purchased	Created At	Edit	Delete
662fb23c1dfab0664926cb5	Angular Course	5	1	3 weeks ago	Edit	Delete
662e2987fe33e28cb3aeffbd	MERN Stack	0	1	4 weeks ago	Edit	Delete

This is the page where the instructor can add/delete the team member.

ID	Name	Email	Role	Purchased Courses	Joined At	Delete	Email
6644ccdf352d4...	test-prof	cayal17969@renrcr.com	admin	0	1 week ago		
662df778fee23...	kamran	kamrannaseer765@gmail.com	admin	0	4 weeks ago		

The instructor can see the analytic of the users. What is the month in which the students buy more courses.



The instructor can see the notifications. It may be the course order, course review or the question or comments did by the students.

The screenshot shows the Microsoft Edge browser window titled "Elearning - Admin". The URL is "localhost:3000/admin/users". The left sidebar has a user profile for "kamran" and a "- Admin" role. The main content area displays a table of users:

ID	Name	Email	Role	Purchased Courses	Joined
6645e6e43564...	TempUser	xogala5308@bsomek.com	user	0	1 wee
6644ccdf352d4...	test-prof	cayal17969@renrc.com	admin	0	1 wee
662fd192713a4...	student	kamrannaseer7654@gmail....	user	2	3 wee
662df778fee23...	kamran	kamrannaseer765@gmail.com	admin	0	4 wee

A notifications sidebar on the right lists:

- New Review Received: student has given a review in MERN Stack just now. (Mark as read)
- New Question Received: You have a new question in Video 1 1 minute ago. (Mark as read)

At the bottom, there are buttons for "Rows per page: 100" and "1-4 of 4".

This is the page where the instructor can delete and add the course categories.

The screenshot shows the Microsoft Edge browser window titled "Elearning - Admin". The URL is "localhost:3000/admin/categories". The left sidebar has a user profile for "kamran" and a "- Admin" role. The main content area displays a list of categories:

All Categories
Frontend
Backend
FullStack
Dotnet

A green "+" button is at the bottom center, and a green "Save" button is at the bottom right.

This is the page where the instructor can add the FAQs or edit them.

This screenshot shows the ELEARNING platform's FAQ section. On the left, there is a sidebar with a user profile for 'kamran' (Admin) and links to Dashboard, Data (Users, Invoices), Content (Create Course, Live Courses), Customization (Hero, FAQ), Categories, Controllers (Manage Team), and Analytics (Courses Analytics). The main content area displays two frequently asked questions:

- Is this Lifetime Free Course?
- Will i get a certificate after completing the Course?

A 'Save' button is located at the bottom right of the main content area.

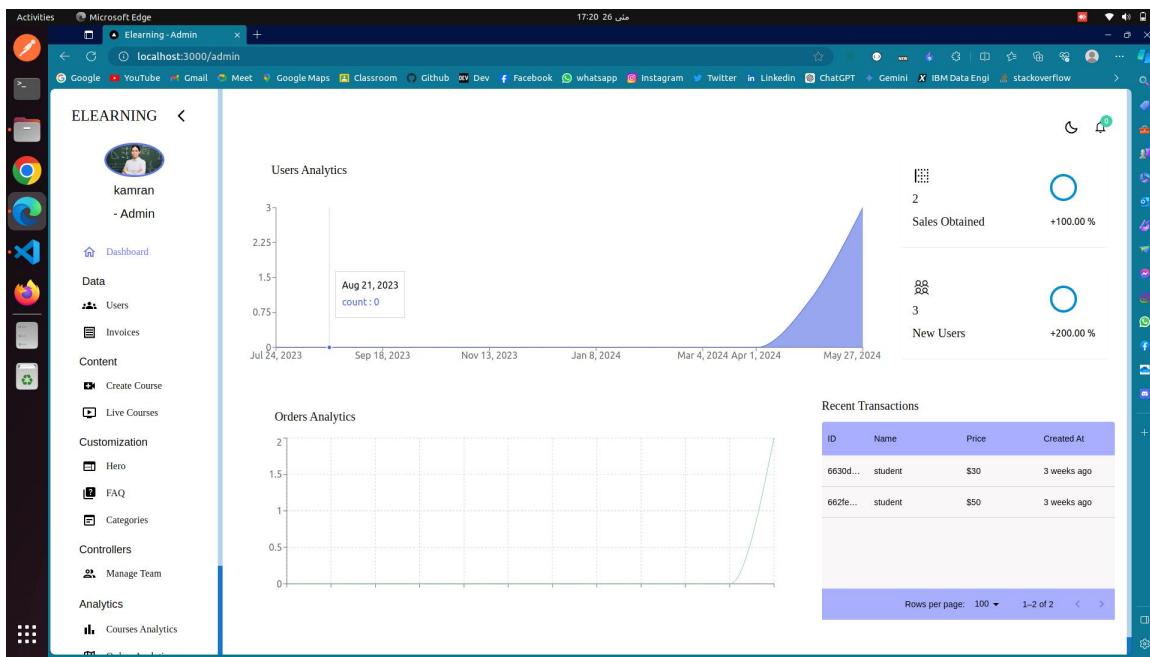
This is the page where the instructor can see the list of his students and delete them.

This screenshot shows the ELEARNING platform's user management section. The sidebar is identical to the previous screenshot. The main content area displays a table of users:

ID	Name	Email	Role	Purchased Courses	Joined At	Delete	Email
6645e6e43564...	TempUser	xogala5308@bsomek.com	user	0	1 week ago		
6644ccdf352d4...	test-prof	caya117909@renrcr.com	admin	0	1 week ago		
662fd192713a4...	student	kamrannaseer7654@gmail...	user	2	3 weeks ago		
662df778lee23...	kamran	kamrannaseer765@gmail.com	admin	0	4 weeks ago		

At the bottom of the table, there are buttons for 'Rows per page:' (set to 100), '1-4 of 4', and navigation arrows.

This is the dashboard of the instructor where he can see all analytics include the user, order. He can see the recent transcripts, new users count, sales obtain.



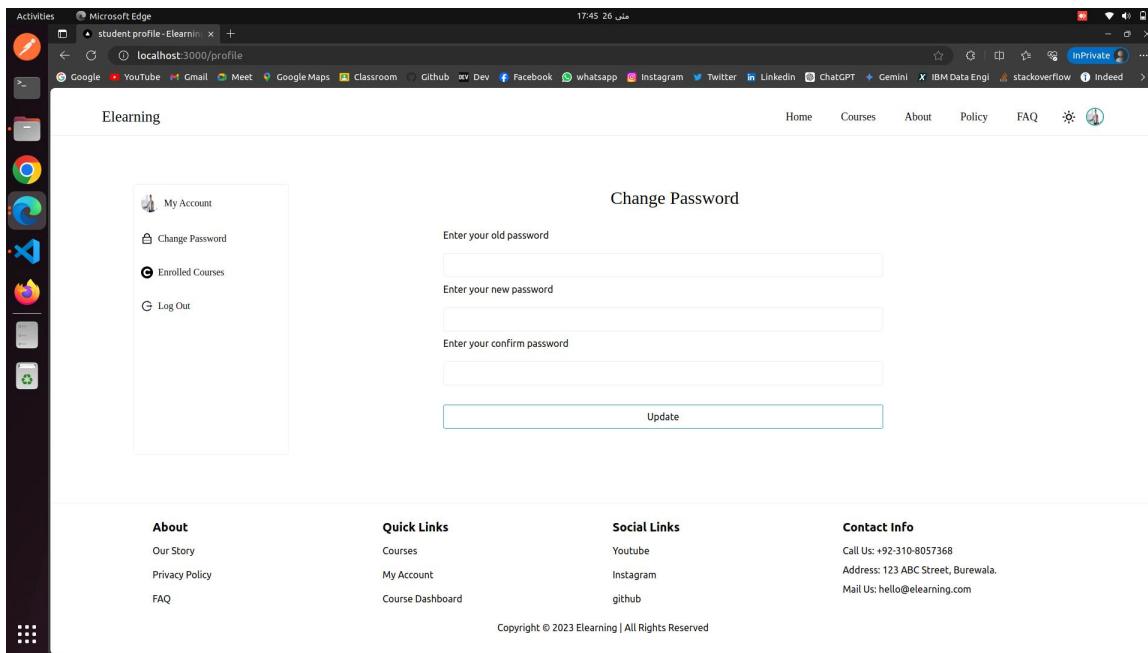
This is the profile page of the instructor where the instructor can edit his name, email and change the password.

The screenshot shows the Elearning profile page. On the left, a sidebar provides links to 'My Account', 'Change Password', 'Admin Dashboard', and 'Log Out'. The main area displays the user's profile picture and information: Full Name (kamran), Email Address (kamrannaseer765@gmail.com), and a large 'Update' button. Below this, there are four sections: 'About' (Our Story, Privacy Policy, FAQ), 'Quick Links' (Courses, My Account, Course Dashboard), 'Social Links' (Youtube, Instagram, github), and 'Contact Info' (Call Us: +92-310-8057368, Address: 123 ABC Street, Burewala, Mail Us: hello@elearning.com). At the bottom, a copyright notice reads 'Copyright © 2023 Elearning | All Rights Reserved'.

5.2. Student Use Case Implementation(screen shots)

STUDENT

This is the page where the student can edit his profile info. He can change his email, password, see the courses in which he is enrolled.



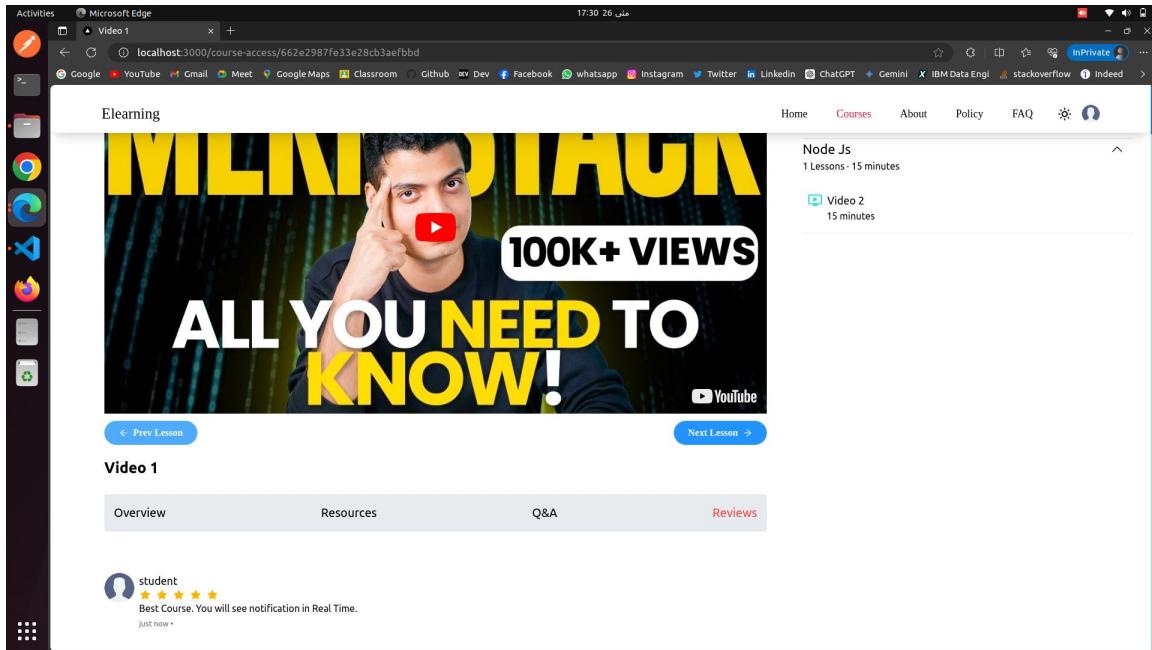
This is the page where the Student can see the courses in which he is enrolled.

The screenshot shows a Microsoft Edge browser window titled "student profile - Elearning". The URL is "localhost:3000/profile". The page displays a sidebar with "My Account" options: Change Password, Enrolled Courses, and Log Out. Below this, two course cards are shown: "Angular Course" (50\$ 806 students) and "MERN Stack" (30\$ 5 students). The main content area has sections for "About", "Quick Links", "Social Links", and "Contact Info". At the bottom, it says "Copyright © 2023 Elearning | All Rights Reserved".

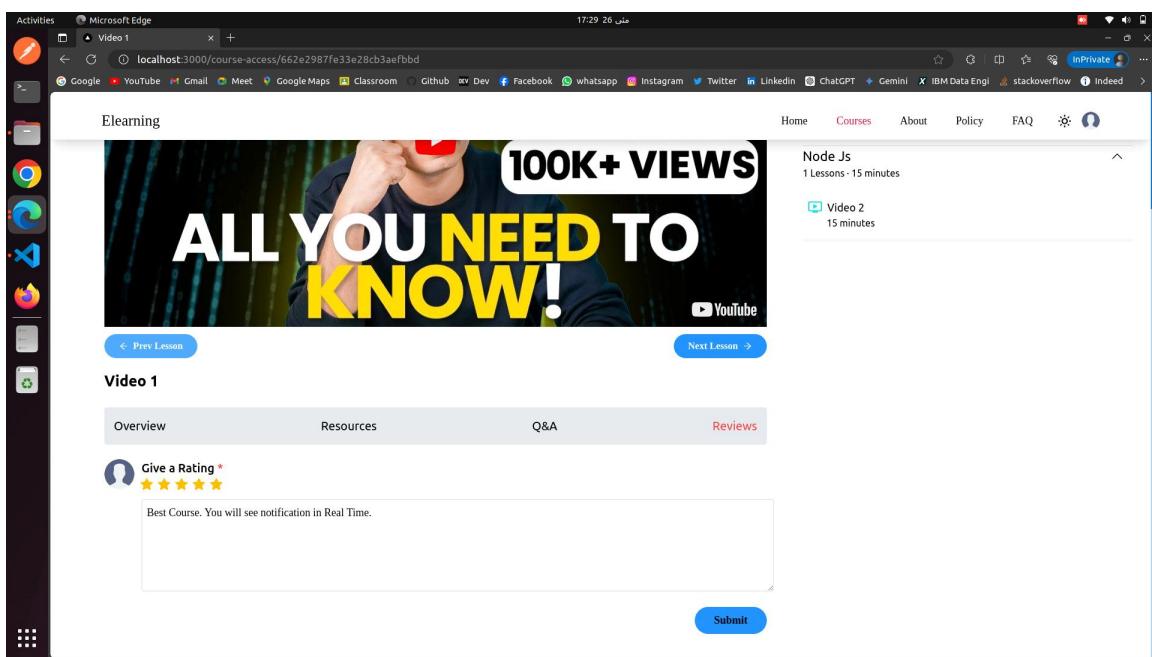
This is page where the student can see the course. And all the video section of the course and its videos.

The screenshot shows a Microsoft Edge browser window titled "Video 1" with the URL "localhost:3000/course-access/662e2987fe33e28cb3aefbbd". The main content is a large video thumbnail for "Mastering MERN as a BEGINNER | Tanay Pratap Hindi" by "ALL YOU NEED TO KNOW!". The thumbnail features a man pointing upwards and the text "100K+ VIEWS" and "YouTube". To the right, course sections are listed: "React Js" (1 Lessons - 12 minutes) and "Node Js" (1 Lessons - 15 minutes). Below the video, there are buttons for "Prev Lesson" and "Next Lesson". At the bottom, there are tabs for "Overview", "Resources", "Q&A", and "Reviews".

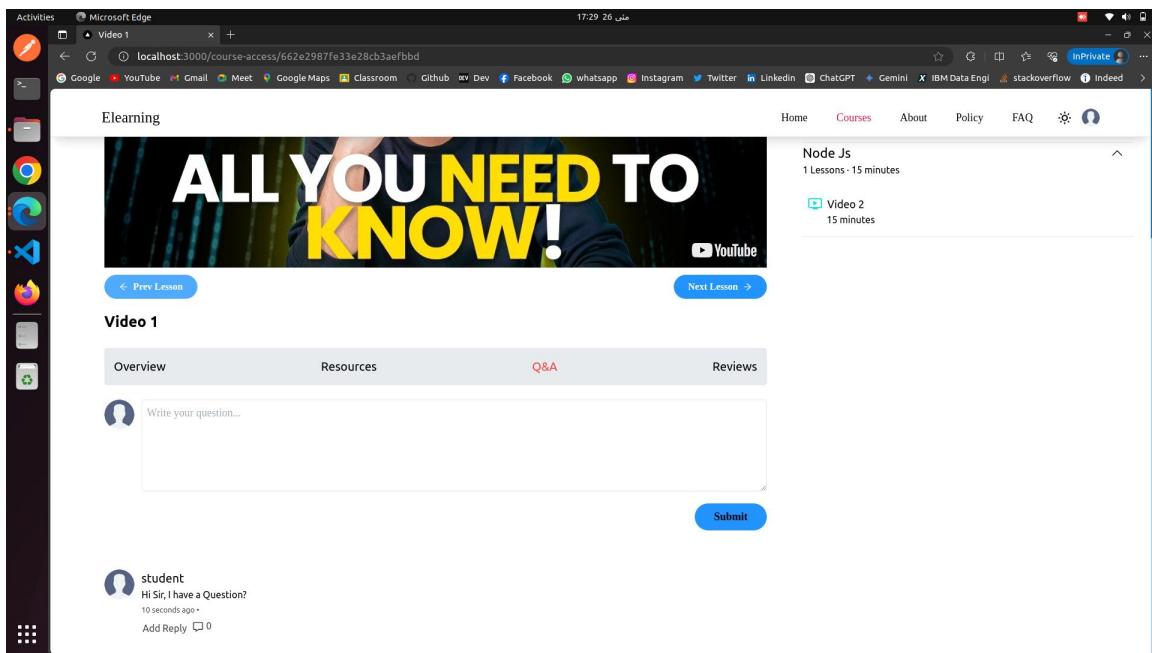
This is the page where the student can watch the course video, comment on the view, give review on the video.



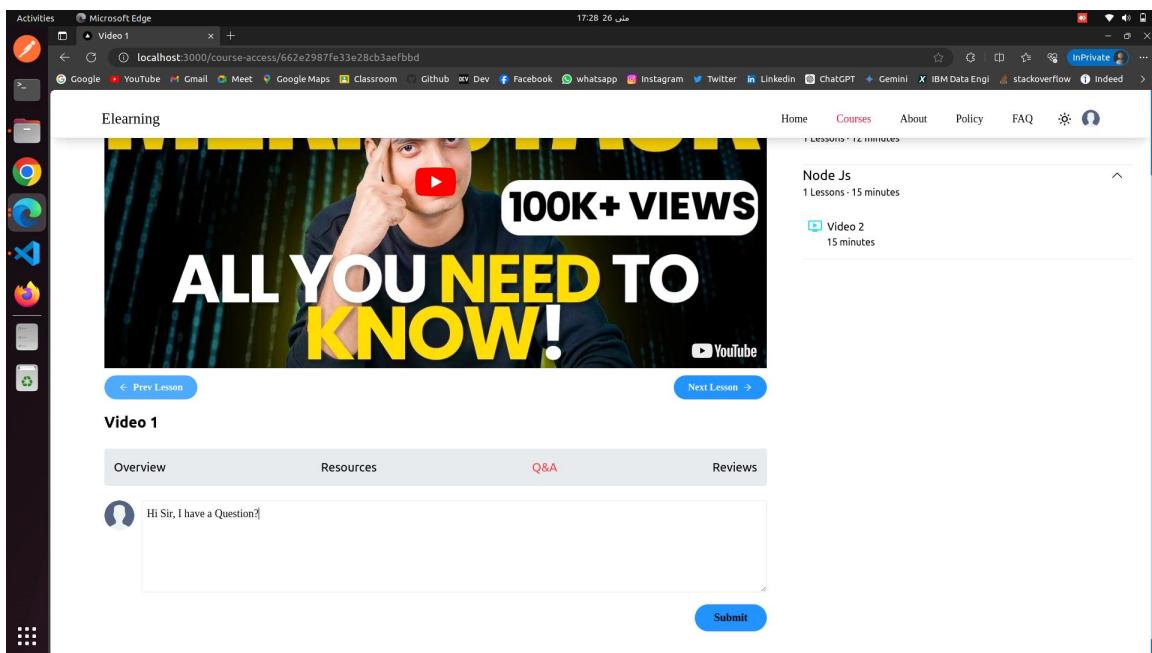
In this image the student gave rating to the course.



In the picture the student did the comment on the course video.



In this picture the student can ask the question from the instructor. And also the FAQs of the course video.



In this page the student can see the overview of the course video. Which he can teach from this course video.

The screenshot shows a Microsoft Edge browser window with the URL localhost:3000/course-access/662e2987fe33e28cb3aefbbd. The title bar says "Video 1" and the status bar shows "17:28 26 مارس". The main content area displays a video thumbnail for "Mastering MERN as a BEGINNER | Tanay Pratap Hindi". The thumbnail features a man pointing at his head with the text "100K+ VIEWS" and "ALL YOU NEED TO KNOW!". Below the thumbnail, there are navigation buttons for "Prev Lesson" and "Next Lesson". A progress bar indicates the video is at 0% completion. To the right of the video, there is a sidebar with course outlines:

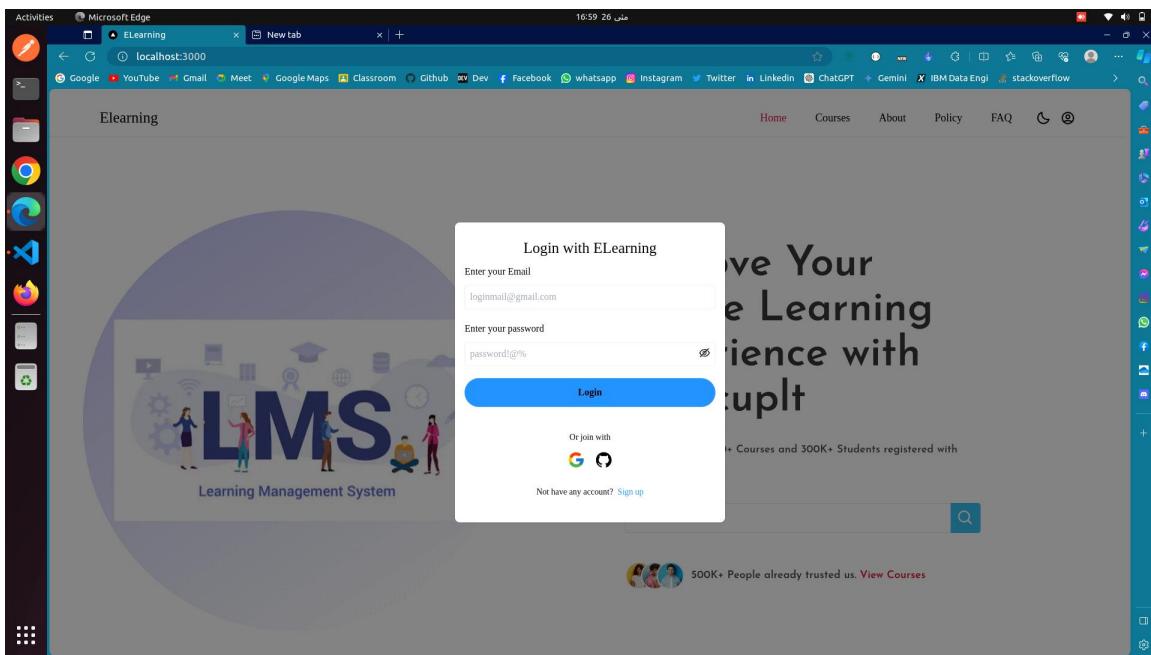
- React Js**
1 Lessons - 12 minutes
- Node Js**
1 Lessons - 15 minutes

Below the sidebar, there are two more video thumbnails labeled "Video 2" and "15 minutes". At the bottom of the page, there is a navigation bar with tabs: "Overview" (which is active), "Resources", "Q&A", and "Reviews". A note below the tabs says "This is video description."

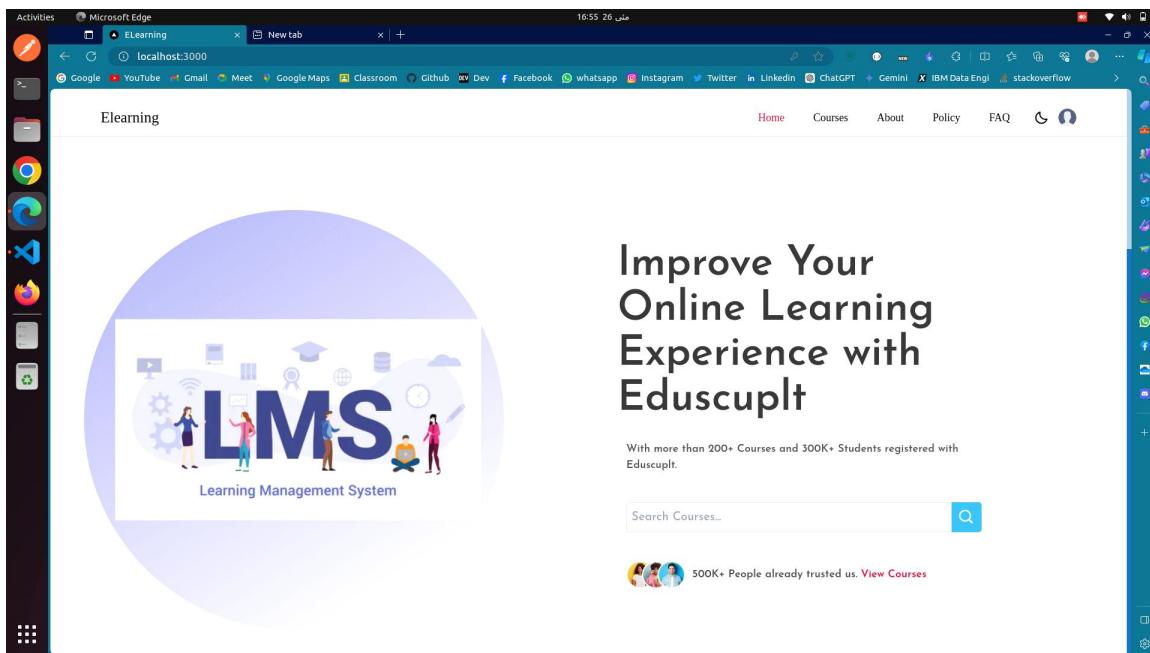
5.3. Guest User Screen(screen shots)

GUEST USER

This is page model from the student, instructor, admin can login in his account. They can also sign in from their gmail, github accounts.



This is the landing page of the website.



This is the section of the landing page where the user can see the FAQs asked by the users.

The screenshot shows the 'Elearning' website's homepage with the 'FAQ' tab selected in the navigation bar. The main content area features a section titled 'Frequently Asked Questions' with two expandable questions: 'Is this Lifetime Free Course?' and 'Will I get a certificate after completing the Course?'. Below the FAQ section, there is a footer with four columns: 'About', 'Quick Links', 'Social Links', and 'Contact Info'. The 'About' column includes links to 'Our Story', 'Privacy Policy', and 'FAQ'. The 'Quick Links' column includes 'Courses', 'My Account', and 'Course Dashboard'. The 'Social Links' column includes links to 'Youtube', 'Instagram', and 'github'. The 'Contact Info' column provides contact details: 'Call Us: +92-310-8057368', 'Address: 123 ABC Street, Burewala.', and 'Mail Us: hello@elearning.com'. At the very bottom of the page, there is a copyright notice: 'Copyright © 2023 Elearning. All Rights Reserved'.

This is the section of the landing page where the user can see reviews of the people about our website.

The screenshot shows the Elearning platform's homepage. At the top, there is a navigation bar with links for Home, Courses, About, Policy, and FAQ. Below the navigation bar is a large banner featuring a cartoon illustration of a person sitting cross-legged, interacting with a computer monitor displaying various icons like a map, a speech bubble, and a calendar. The text "Our Students Are Our Strength" and "See What They Say About Us" is displayed above a section of five user reviews.

- Gene Bates** (Student | Cambridge university) - 5 stars: "I had the pleasure of exploring EduSculpt, a website that provides an extensive range of courses on various tech-related topics. I was thoroughly impressed with my experience, as the website offers a comprehensive selection of courses that cater to different skill levels and interests. If you're looking to enhance your knowledge and skills in the tech industry, I highly recommend checking out EduSculpt!"
- Jay Gibbs** (computer systems engineering student | Zimbabwe) - 5 stars: "Thanks for your amazing programming tutorial channel! Your teaching style is outstanding, and the quality of your tutorials is top-notch. Your ability to break down complex topics into manageable parts, and cover diverse programming languages and topics is truly impressive. The practical applications and real-world examples you incorporate reinforce the theoretical knowledge and provide valuable insights. Your engagement with the audience fosters a supportive learning environment. Thank you for your dedication, expertise, and passion for teaching programming, and keep up the fantastic work!"
- Verna Santos** (Full stack developer | Quarter ltd.) - 5 stars: "Thanks for your amazing programming tutorial channel! Your teaching style is outstanding, and the quality of your tutorials is top-notch. Your ability to break down complex topics into manageable parts, and cover diverse programming languages and topics is truly impressive. The practical applications and real-world examples you incorporate reinforce the theoretical knowledge and provide valuable insights. Your engagement with the audience fosters a supportive learning environment. Thank you for your dedication, expertise, and passion for teaching programming, and keep up the fantastic work!"
- Mina Davidson** (Junior Web Developer | Indonesia) - 5 stars: "I had the pleasure of exploring EduSculpt, a website that provides an extensive range of courses on various tech-related topics. I was thoroughly impressed with my experience."

This is page where every user can see the available courses on our platform.

The screenshot shows the Elearning platform's course listing page. The top navigation bar is identical to the homepage. Below it, the main content area features a heading "Expand Your Career Opportunity" and "Opportunity With Our Courses". It displays two course cards:

- LMS** (Learning Management System)
- Angular**

Below these cards is another illustration of a person sitting cross-legged, interacting with a computer monitor displaying various icons. The text "Our Students Are Our Strength" and "See What They Say About Us" is displayed below the illustration, along with a link to a specific course page: <localhost:3000/course/662f823c1dfa0b064926db>.

This is website landing page in the dark mode.



This is the section of the landing page where the user can see the FAQs asked by the other users.

A screenshot of a Microsoft Edge browser window showing the FAQ section of the Elearning website. The title is "Frequently Asked Questions". It lists two questions: "Is this Lifetime Free Course?" and "Will I get a certificate after completing the Course?". Below the questions, there are four columns: "About" (Our Story, Privacy Policy, FAQ), "Quick Links" (Courses, My Account, Course Dashboard), "Social Links" (Youtube, Instagram, github), and "Contact Info" (Call Us: +92-310-8057368, Address: 123 ABC Street, Burewala, Mail Us: hello@elearning.com). The browser's address bar shows "localhost:3000/faq".

In this the courses are filtered by the tags.

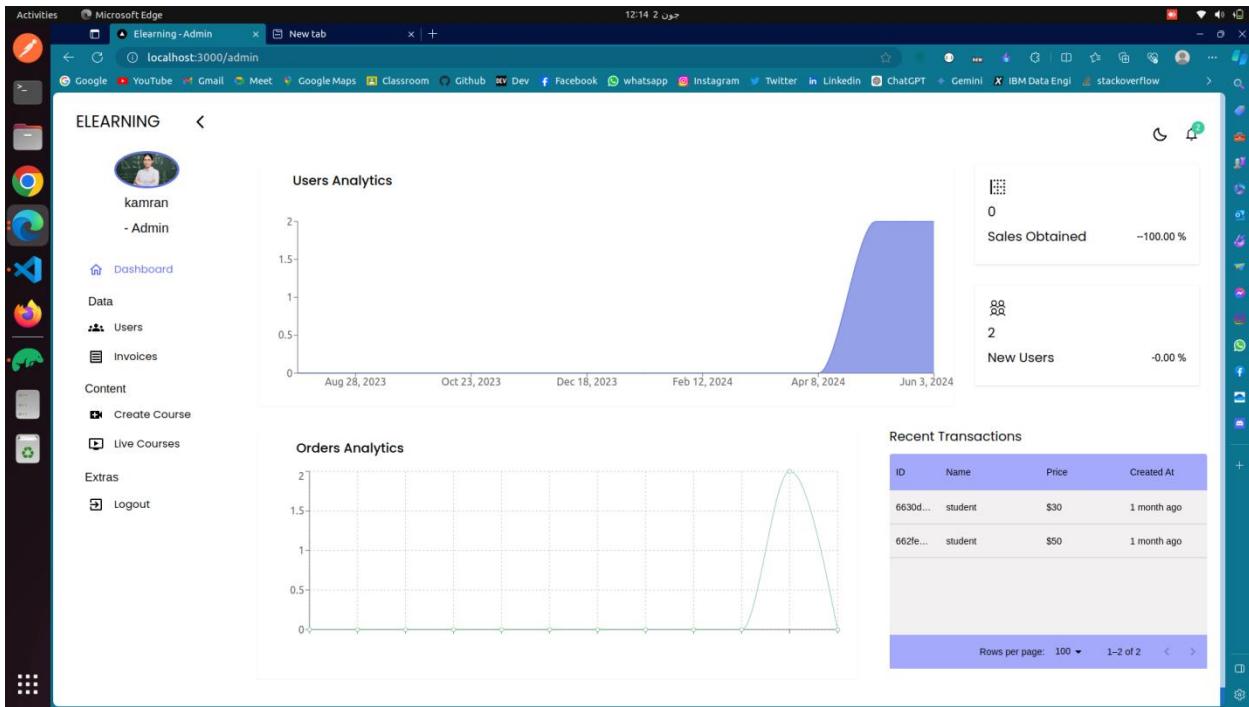
The screenshot shows a Microsoft Edge browser window with the URL localhost:3000/courses. The page title is "Elearning". At the top, there are navigation links: Home, Courses (which is red), About, Policy, FAQ, and a user icon. Below the navigation, there are five filter buttons: All, Frontend, Backend, FullStack (which is highlighted in red), and Dom. A course card for "Angular Course" is shown, featuring the Angular logo, a 5-star rating, 1 student, and 2 lectures. At the bottom, there are four columns: About (Our Story, Privacy Policy, FAQ), Quick Links (Courses, My Account, Course Dashboard), Social Links (Youtube, Instagram, github), and Contact Info (Call Us: +92-310-8057368, Address: 123 ABC Street, Burewala, Mail Us: hello@elearning.com).

This is the about page of the our website. Where the user can read about our motivation behind building this platform. He can also read what is the purpose of the platform.

The screenshot shows a Microsoft Edge browser window with the URL localhost:3000/about. The page title is "Elearning". At the top, there are navigation links: Home, Courses, About (which is red), Policy, FAQ, and a user icon. The main content is titled "What is EduSculpt?". It includes the following text:
Are you ready to take your programming skills to the next level? Look no further than EduSculpt, the premier programming community dedicated to helping new programmers achieve their goals and reach their full potential.
WE as the founder and CEO of EduSculpt, I know firsthand the challenges that come with learning and growing in the programming industry. That's why I created EduSculpt – to provide new programmers with the resources and support they need to succeed.
Our affordable courses are designed to give you the high-quality education you need to succeed in the industry, without breaking the bank.
At EduSculpt, we believe that price should never be a barrier to achieving your dreams. That's why our courses are priced low – so that anyone, regardless of their financial situation, can access the tools and knowledge they need to succeed.
But EduSculpt is more than just a community – we're a family. Our supportive community of like-minded individuals is here to help you every step of the way, whether you're just starting out or looking to take your skills to the next level.
With EduSculpt by your side, there's nothing standing between you and your dream job. Our courses and community will provide you with the guidance, support, and motivation you need to unleash your full potential and become a skilled programmer.
So what are you waiting for? Join the EduSculpt family today and let's conquer the programming industry together! With our affordable courses, informative videos, and supportive community, the sky's the limit.
US's
Founder and CEO of EduSculpt

5.4 Admin Use Case Implementation Screen Shots

- 1) Admin can see the analytic of Orders and Users and recent Transactions



- 2) Admin can see the numbers and details of users that are registered and see whether they have purchased course

The screenshot shows the Microsoft Edge browser window for the ELEARNING admin interface at localhost:3000/admin/users. The left sidebar includes links for Dashboard, Data (Users, Invoices), Content (Create Course, Live Courses), and Extras (Logout). The main area displays a table of registered users:

ID	Name	Email	Role	Purchased Courses	Joined At	Delete	Email
6645e6e43564...	TempUser	xogafa5308@bsomek.com	user	0	2 weeks ago		
662fd19271384...	student	kamrannaseer76543@gmail....	user	2	1 month ago		

- 3) Admin can see the invoices that are generated for Courses. Invoice contains course-Name, User Name , Price and User Email

ID	Name	Email	Course Title	Price	Email
6630de9172...	student	kamrannaseer76543@gmail.com	MERN Stack	\$30	Email
662fe12eb06...	student	kamrannaseer76543@gmail.com	Angular Course	\$50	Email

Admin can see the progress of live Courses by click button “Live Courses”. It also includes Ratings and also give option to edit them.

ID	Course Title	Ratings	Purchased	Created At	Edit	Delete
662f823c1dfa6b0664926cb5	Angular Course	5	1	1 month ago	Edit	Delete
662e2987fe33e28cb3aeafb6	MERN Stack	5	1	1 month ago	Edit	Delete

Chapter 6

Conclusion and Future Work

6.1. Conclusion

The EDUSCULPT Learning Management System (LMS) successfully fulfills its mission by leveraging advanced technologies to enhance educational accessibility and engagement. By providing a comprehensive platform, EDUSCULPT makes educational content easily accessible to a wide audience and fosters a collaborative, interactive learning environment. The system empowers instructors with tools for creating, managing, and analyzing courses, thereby facilitating the delivery of high-quality educational content and enabling data-driven improvements in teaching methods.

In ensuring a seamless user experience, EDUSCULPT integrates intuitive design and real-time features, which benefit both instructors and students. The system's robust and secure payment processing, powered by Stripe, and its comprehensive authentication methods, including Google and GitHub Auth, protect user data and ensure smooth transactions. Furthermore, the platform's scalability and flexibility allow it to accommodate a growing number of users and diverse educational content, supporting continuous growth and expansion.

The system's features align with its objectives: efficient course management, detailed analytics and reporting, real-time notifications, simplified student enrollment, secure payment processing, strong account security and authentication, detailed course content, and an interactive learning environment. These features collectively enhance the educational experience, promote user engagement, and uphold the integrity and security of the platform.

In conclusion, EDUSCULPT LMS adequately initial objectives, establishing itself as a significant contributor to the modern educational landscape. The platform's comprehensive, user-friendly, and secure features create an optimal environment for teaching and learning, ensuring both instructors and students can achieve their educational goals effectively.

6.2. Future Work and Enhancements

Building on the robust foundation of EDUSCULPT LMS, there are several areas for future work and potential enhancements to further improve the platform and expand its capabilities.

While the current analytics features provide valuable insights, future work could include more advanced analytics tools. These might involve predictive analytics to forecast trends in course enrollments and completion rates, or deeper insights into student performance and engagement patterns. Machine learning algorithms could be employed to provide personalized learning recommendations based on student behavior and progress.

To further foster a collaborative and interactive learning environment, additional real-time interaction features could be implemented. These might include live video conferencing for virtual classrooms, real-time group discussions, and collaborative whiteboards. Integrating AI-powered chatbots for real-time assistance and support could also enhance the user experience.

Developing native mobile applications for iOS and Android would make EDUSCULPT more accessible to users on the go. These apps could offer offline access to course materials, push notifications for real-time updates, and a streamlined mobile user experience.

To cater to a global audience, implementing multilingual support would be essential. This involves translating the platform's interface and course content into multiple languages, as well as providing tools for instructors to create courses in different languages.

learning paths, and provide personalized feedback based on individual learning styles and progress.

