



JEPPIAAR
ENGINEERING COLLEGE

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ONLINE LEARNING PLATFORM

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CONTENT

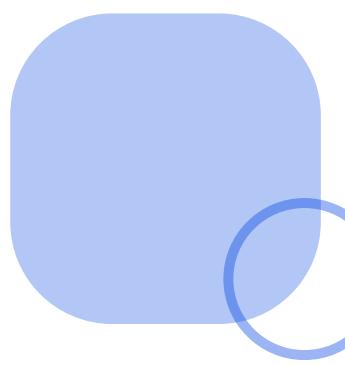
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- 02** PROPOSED SOLUTION
- 03** SYSTEM ARCHITECTURE
- 04** SET UP INSTRUCTION
- 05** KEY FEATURES
- 06** TESTING
- 07** FUTURE ENHANCEMENT

INTRODUCTION



OBJECTIVE

- Seamless Learning
- User Connection
- Flexible Access
- Streamlined Management
- Secure Platform
- Scalability



01 Purpose:

- **Seamless Education:** Ensures smooth online learning.
- **Connection:** Bridges students, teachers, and administrators.
- **Centralized Platform:** Facilitates efficient interaction and management.

02 User Roles:

- **Students:** Enroll in courses, track progress, earn certificates.
- **Teachers:** Create and manage courses.
- **Administrators:** Oversee platform operations and users.

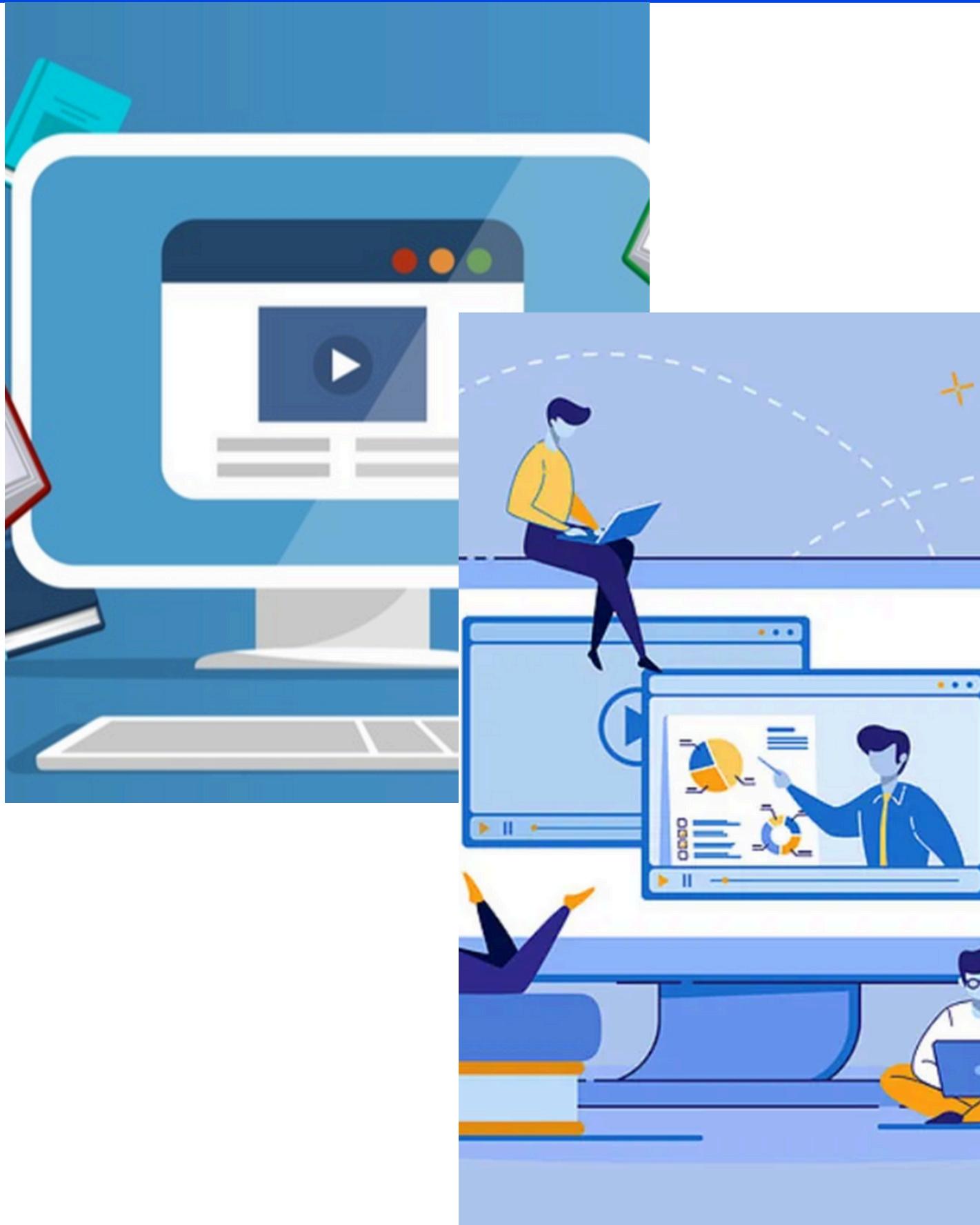
03 Core Features:

- **Course Management:** Creation, updates, and tracking.
- **Secure Access:** User authentication and role-based permissions.
- **Payment Processing:** For enrollment transactions.

PROPOSED SOLUTION

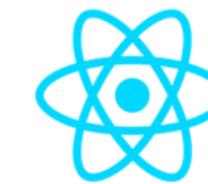
The proposed solution is an online learning platform that allows administrators to manage courses and enables students to explore, learn, and track their progress. Key features include:

- Secure user authentication and role management.
- Course creation, updating, and deletion by administrators.
- Course browsing and progress tracking for students.



SYSTEM ARCHITECTURE

FRONTEND



React Js

- Built with React for a dynamic user interface

BACKEND



- Node.js for server-side logic and API endpoints.

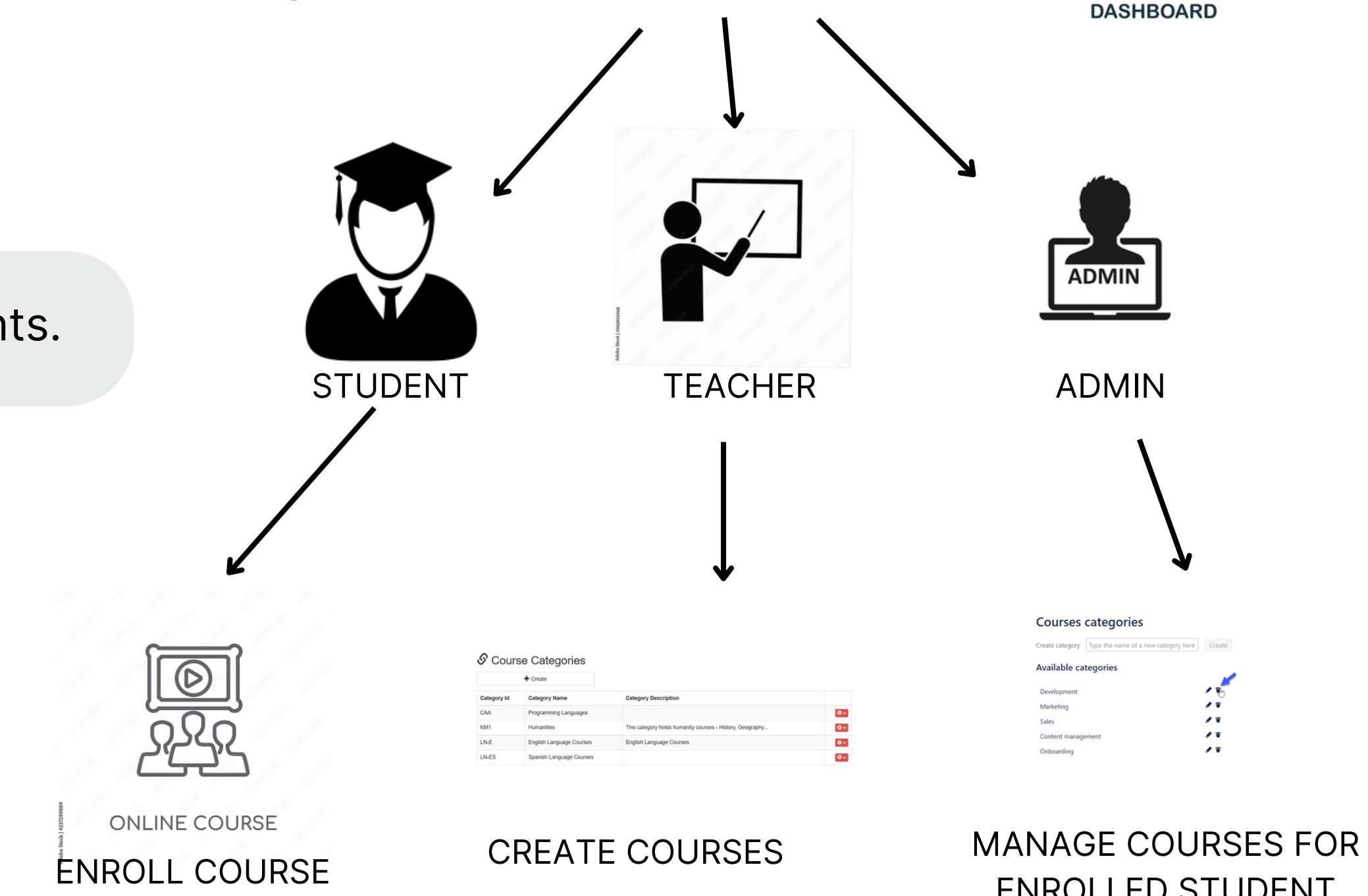
DATABASE



- MongoDB for robust data management.

AUTHENTICATION

- JWT (JSON Web Tokens) for secure user authentication.



SYSTEM ARCHITECTURE OVERVIEW



FRONTEND

1. User Interaction:

- Students, teachers, admins

2. Core Pages:

- Registration/Login, Dashboards, Course Catalog, Course Details, Certificates.

3. Key Functionality:

- Data Display, Data Collection, Backend Processing.



BACKEND

Core Functions:

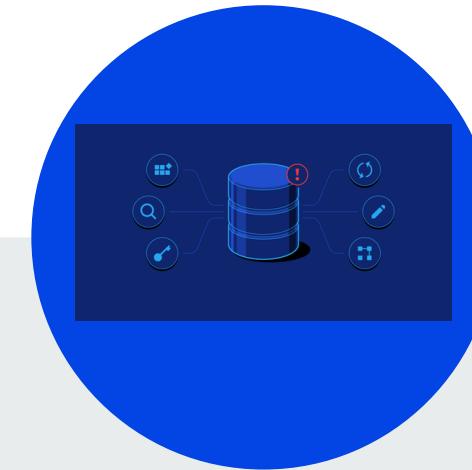
- User Authentication, Course Management, Enrollment Tracking, Payment Processing, Certificate Generation.

Business Logic:

- Data Processing, Validation, Frontend-Backend Communication.

Backend Interaction:

- Frontend Requests, Data Processing, System Operations Management.



DATABASE

Data Storage:

- Stores User Data, Course Data, Enrollment Data, Payment Data, and Certificate Data.

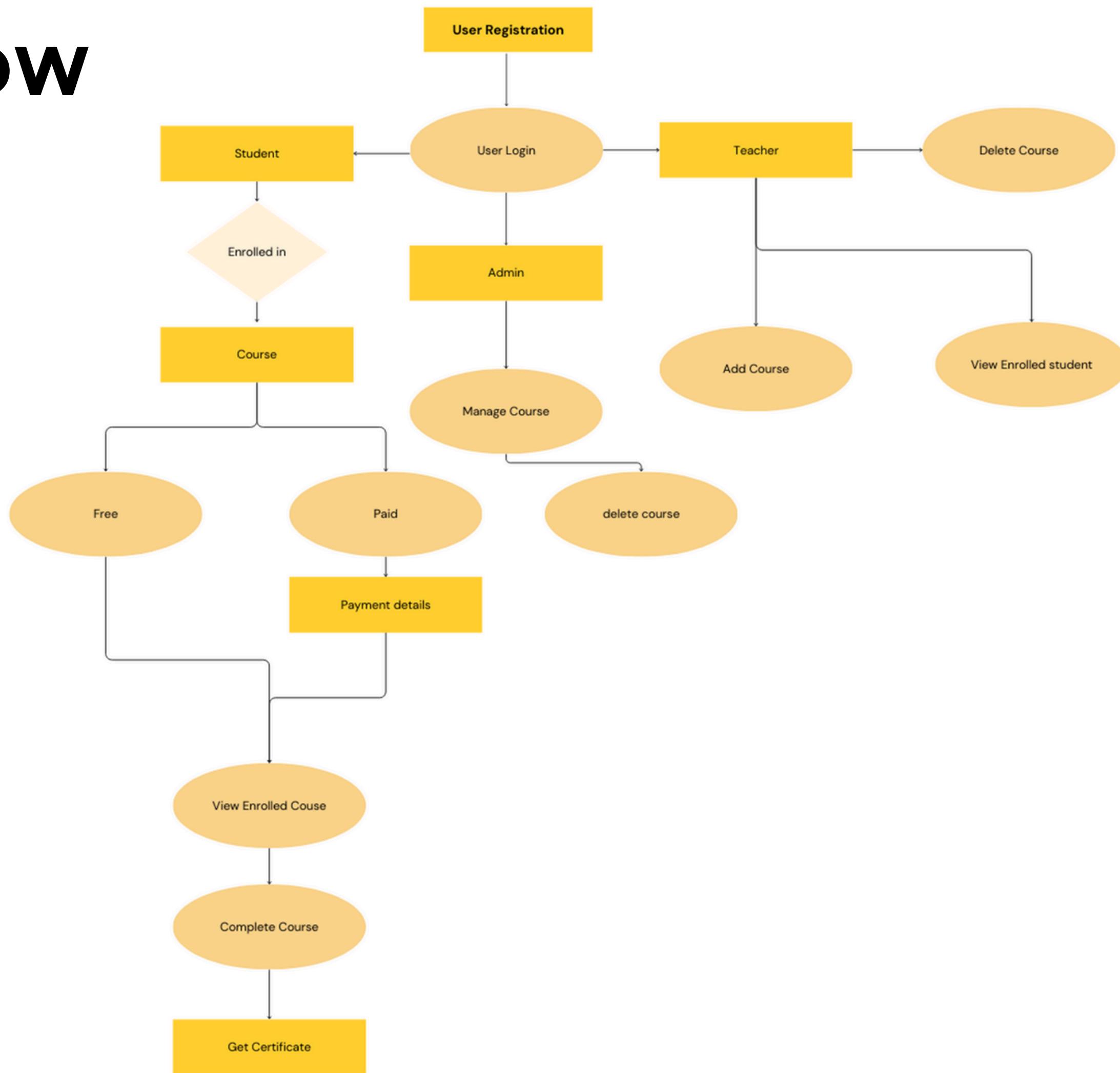
Data Integrity:

- Ensures reliable and secure storage and retrieval of data.

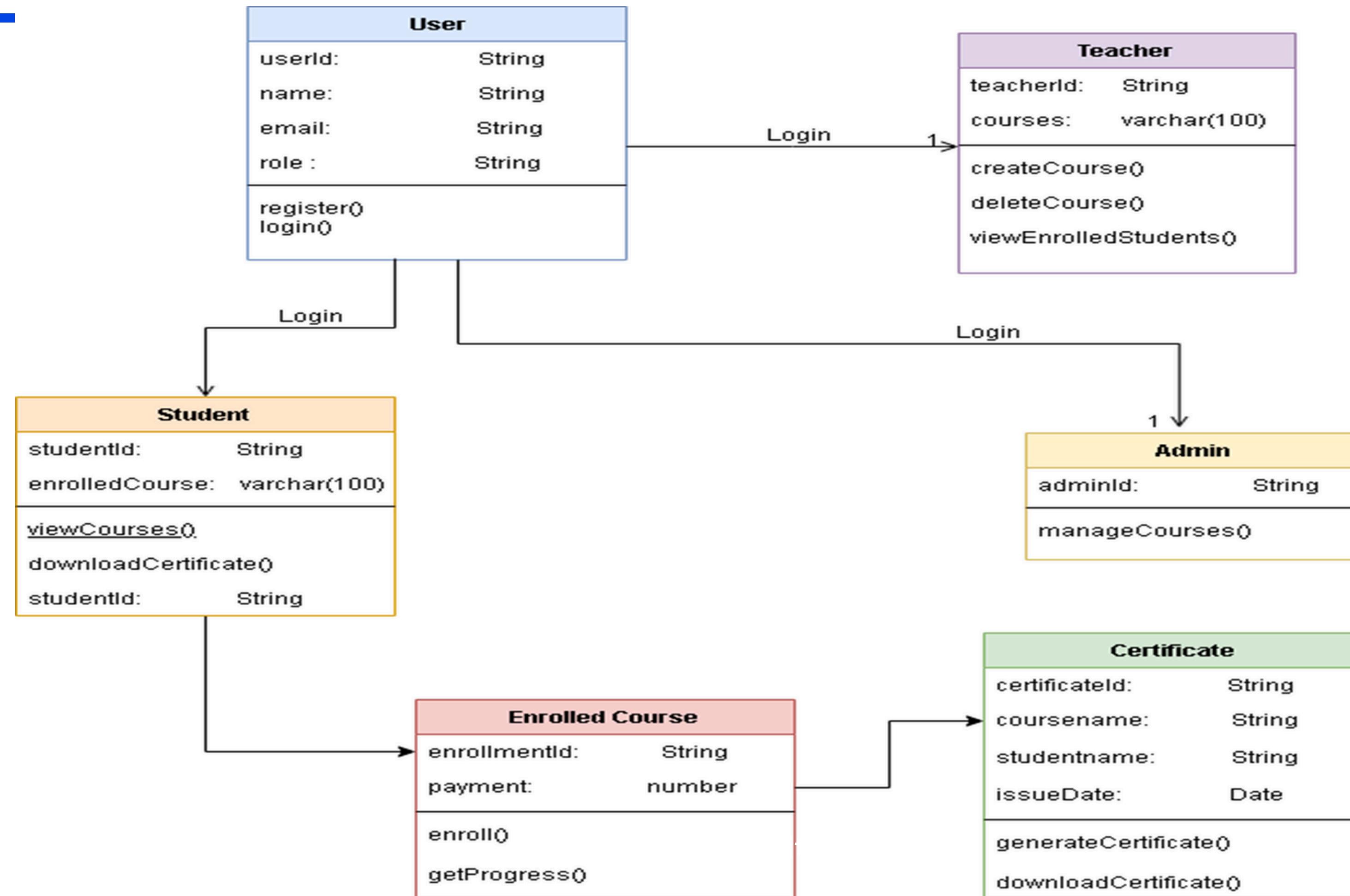
Scalability:

- Manages growing user and course data efficiently as the platform scales.

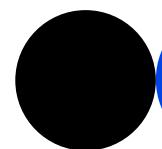
WORKFLOW



CLASS DIAGRAM



SETUP INSTRUCTION



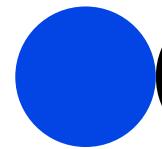
Prerequisites:

- Node.js
- MongoDB Git.



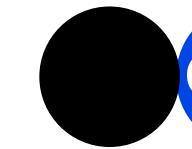
Install Dependencies:

- npm install
- API, Client, Socket



Environment Setup:

- .env, database URL, ports, keys.



Commands to Run:

- Frontend: Run npm start in the client directory.
- Backend (API): Run npm start in the api directory.
- WebSocket (Socket): Run npm start in the socket directory

BACKEND

Express Middleware

Middleware functions in Express.js are executed during the request-response cycle

Uses:

- **Logging:** Tracks and logs requests and responses.
- **Authentication:** Verifies user credentials and access permissions.
- **Error Handling:** Catches errors in the middleware chain and passes them to the error-handling middleware.
- **Request Parsing:** Parses incoming requests (e.g., JSON or URL-encoded data)

ROUTING

Express uses a robust routing mechanism to manage and define endpoints and their respective HTTP methods.

Endpoints: Specify URLs and the corresponding controller functions.

Methods: Handles GET (fetch data), POST (create data), PUT (update data), and DELETE (remove data).

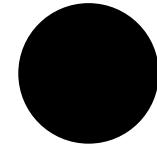
ERROR HANDLING

Express allows centralized error handling to capture issues across the application.

Errors are passed down the middleware chain using the `next()` function.

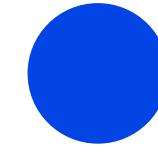
Custom error-handling middleware processes the errors and sends appropriate responses.

KEY FEATURES



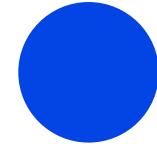
Seamless User Experience

- Easy navigation for students, teachers, and admins.
- Mobile and desktop compatibility for flexible learning.



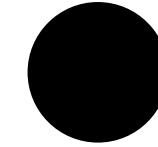
Course Management

- Teachers can create, update, and manage courses.
- Students can easily browse and enroll in courses.



Personalized Dashboards

- custom views for each user type (students, teachers, admins).
- Displays relevant data (enrolled courses, progress, upcoming lessons)



Progress Tracking and Certification

- Tracks student progress and awards certificates upon course completion.

TESTING



Postman:

- API Testing, Test Endpoints.

Jest:

- Unit Testing, Testing Framework.

Manual Testing:

- Evaluate UI, Backend Integration.

Issues and Resolutions:

- Identify Issues, Fix Bugs, Improve Functionality.

FUTURE ENHANCEMENT

Mobile App Development:

- Create a mobile app for better accessibility, performance, and offline functionality.

AI Tutors and Assistants:

- Use AI to provide real-time assistance, explanations, and guidance to students.

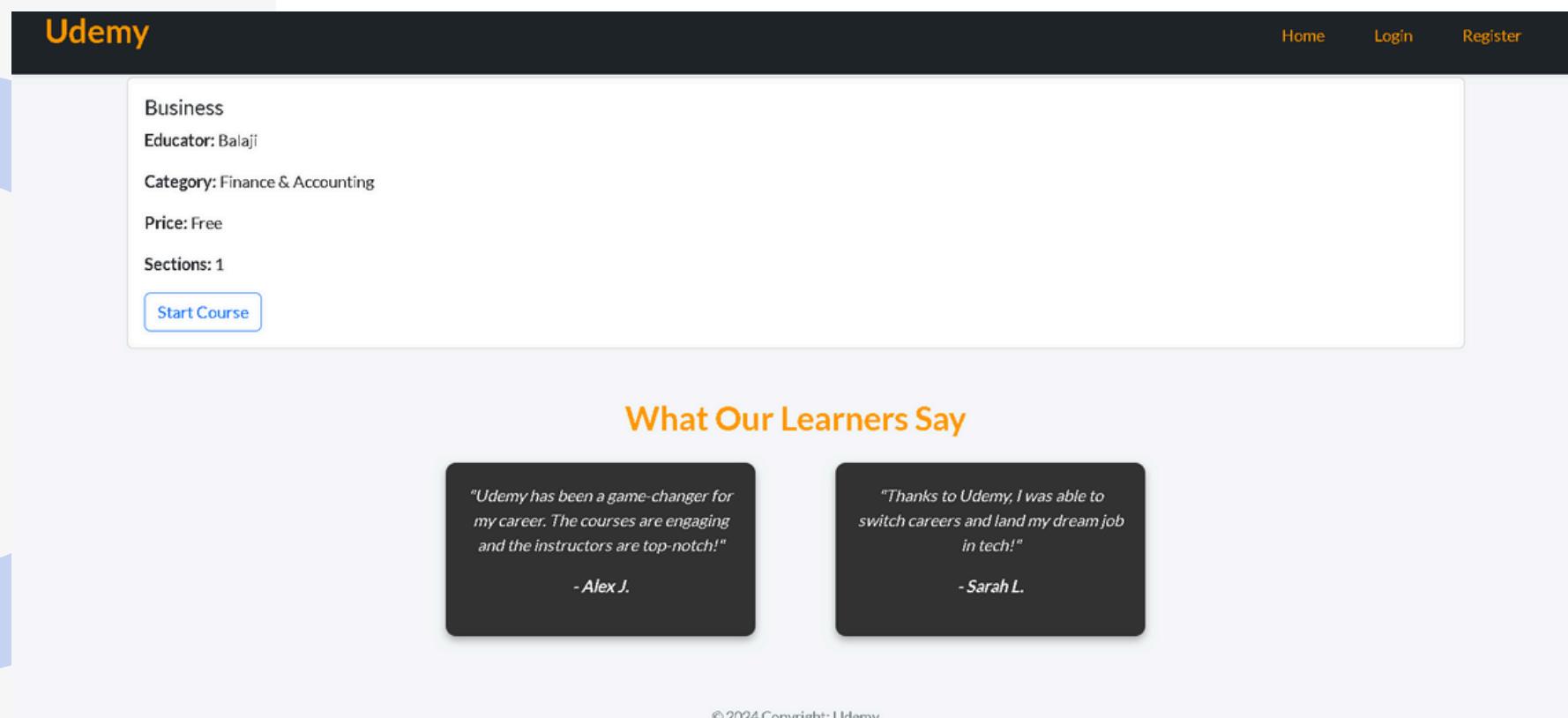
Additional Payment Methods:

- Integrate digital wallets and bank transfers for diverse payment options.

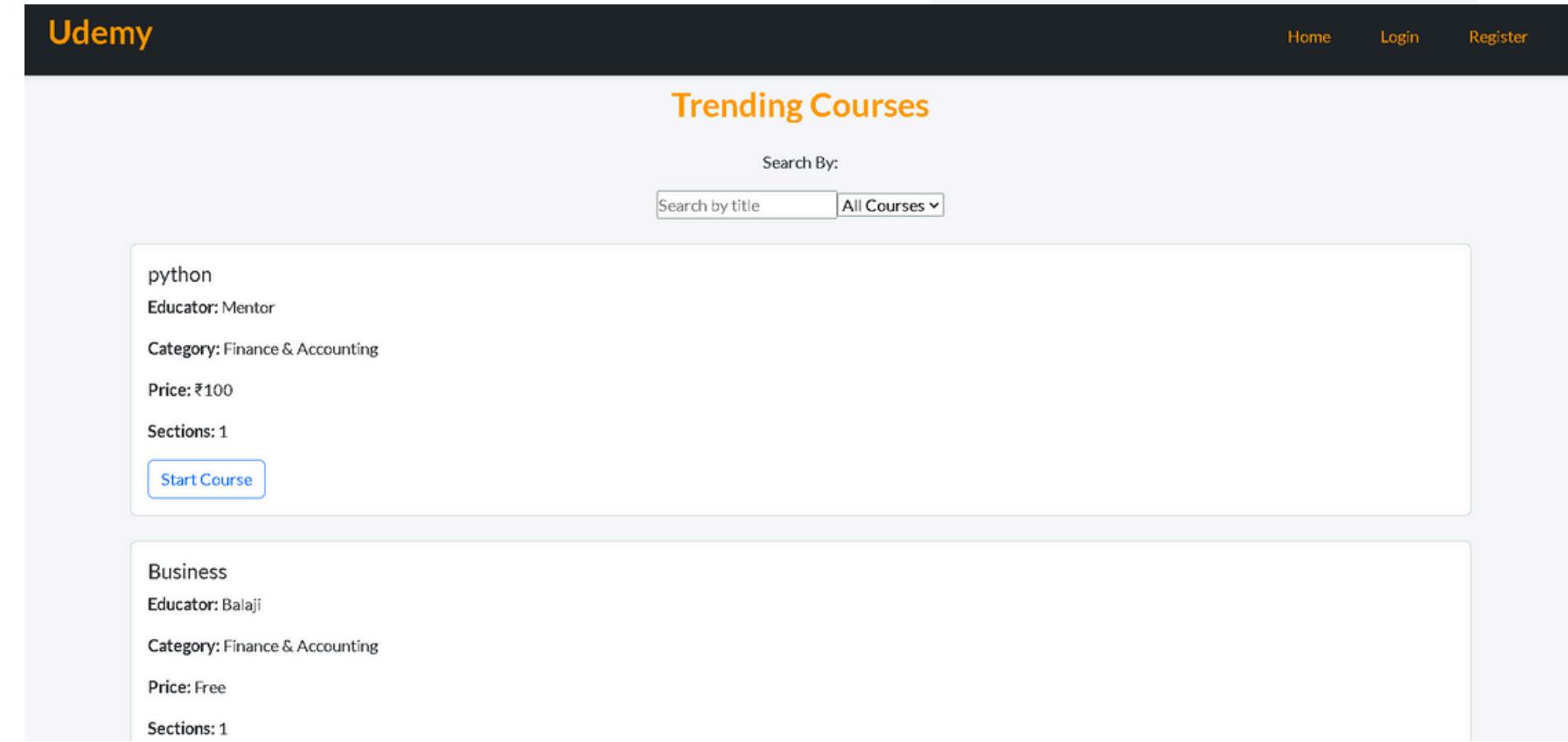
DASHBOARD



The image shows the Udemy home page. At the top, there is a navigation bar with the Udemy logo, Home, Login, and Register buttons. The main area features a large, colorful illustration of three people: a man in a red shirt working on a laptop, a woman in a green shirt presenting on a screen, and a person in a blue hoodie sitting with a laptop. The text "Transform Your Career with Udemy. Upskill at Your Own Pace." is displayed, along with a "Explore Courses" button. A "LIVE" indicator is shown on the presentation screen, which also displays a "72" user count.



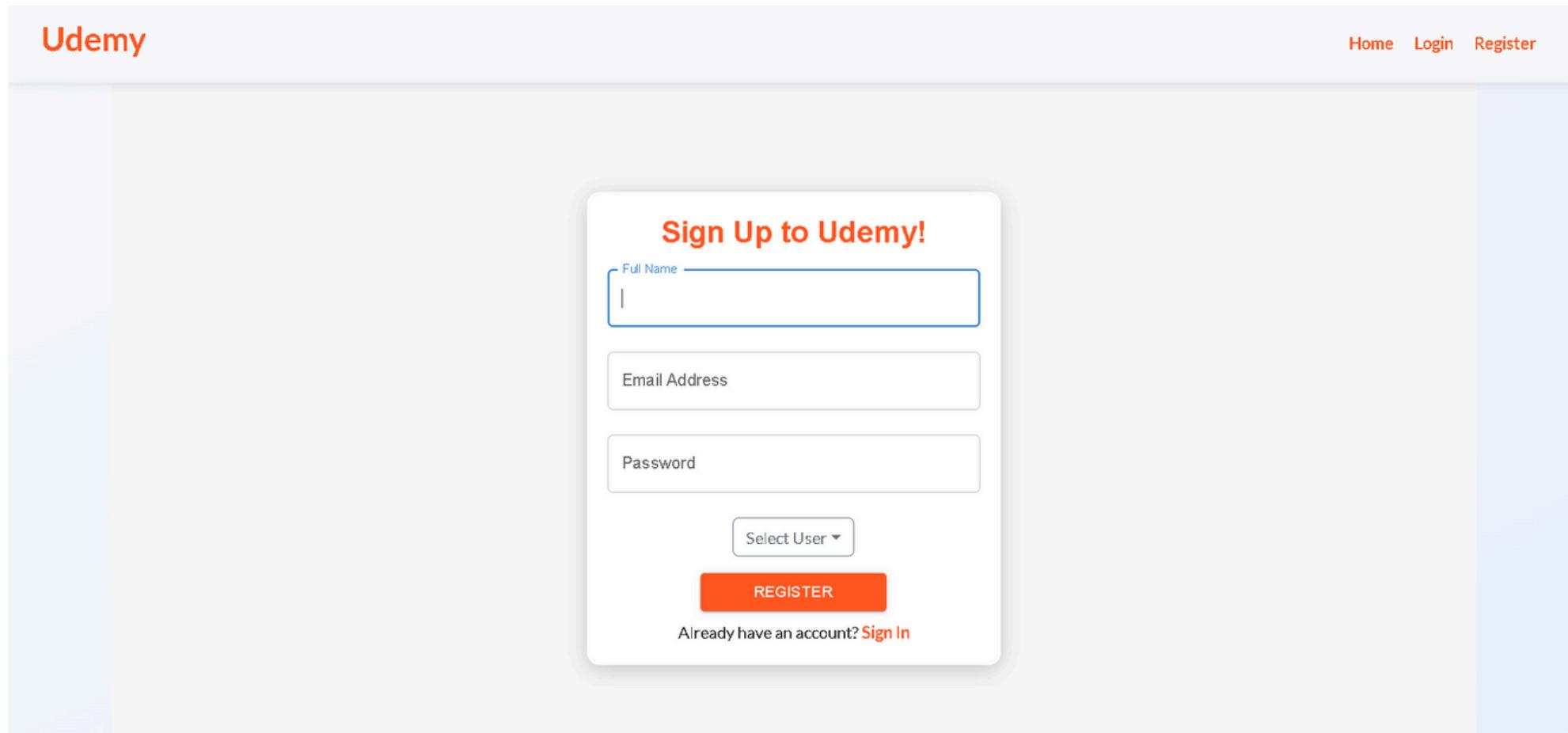
The image shows a detailed view of a course on the Udemy platform. The course is titled "Business" and is taught by "Balaji". It falls under the "Finance & Accounting" category, is free, and has one section. The "Start Course" button is visible. Below this, there is a section titled "What Our Learners Say" with two testimonial cards. The first card, from "Alex J.", says: "Udemy has been a game-changer for my career. The courses are engaging and the instructors are top-notch!" The second card, from "Sarah L.", says: "Thanks to Udemy, I was able to switch careers and land my dream job in tech!"



The image shows the "Trending Courses" section of the Udemy website. At the top, there is a search bar with "Search by title" and "All Courses" dropdown. Below the search bar, there are two course cards. The first card is for a "python" course, taught by "Mentor", in the "Finance & Accounting" category, priced at ₹100, with one section. The second card is for a "Business" course, taught by "Balaji", in the "Finance & Accounting" category, which is free and has one section.

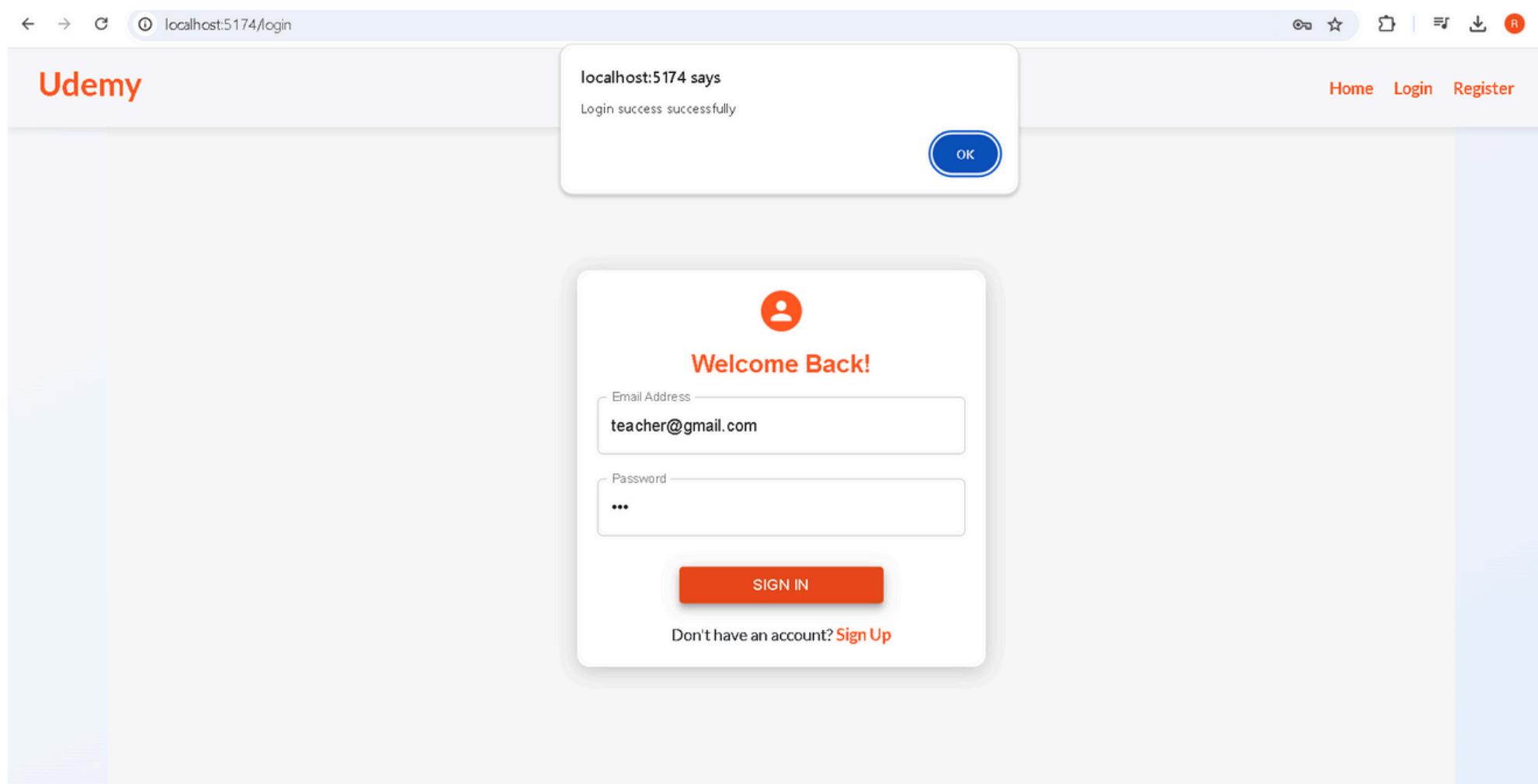
REGISTER

T



LOGIN

T



TEACHER DASHBOARD

Udemy Home Add Course

Welcome Teacher! Log Out

Course Type: IT & Software

Course Title: Industrial development

Course Educator: Balaji

Course Price (Rs.): 100

Course Description: Developing industries

Section Title: Introduction

Section Content (Video or Image): Choose file 852388-hd_1920_1080_24fps.mp4

Section Description: Enter Section description



0:00 / 0:07

Udemy Home Add Course

Welcome Teacher! Log Out

python
Description: python for Read More
Category: Finance & Accounting

Sections: 1

Enrolled students: 1

Delete

Industrial development
Description: Developing Read More
Category: IT & Software

Sections: 1

Enrolled students: 0

Delete

STUDENT DASHBOARD



Udemy

Home Login Register

Welcome Back!

Email Address: student@gmail.com

Password: ***

SIGN IN

Don't have an account? [Sign Up](#)

Udemy Home Enrolled Courses

Welcome Student! Log Out

Welcome to the course: python

beginners

useful [PLAY VIDEO](#)

[DOWNLOAD CERTIFICATE](#)

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Udemy Home Enrolled Courses

Welcome Student! Log Out

Payment for python Course

Price: 100

Card Holder Name:

Card Number:

Expiration Date: CVV:

Close **Pay Now**

python
Educator: Mentor
Category: Finance & Accounting
Price: ₹100
Sections: 1
[Start Course](#)

Business
Educator: Balaji
Category: Finance & Accounting
Price: Free
Sections: 1

Udemy Home Enrolled Courses

Welcome Student! Log Out

beginners

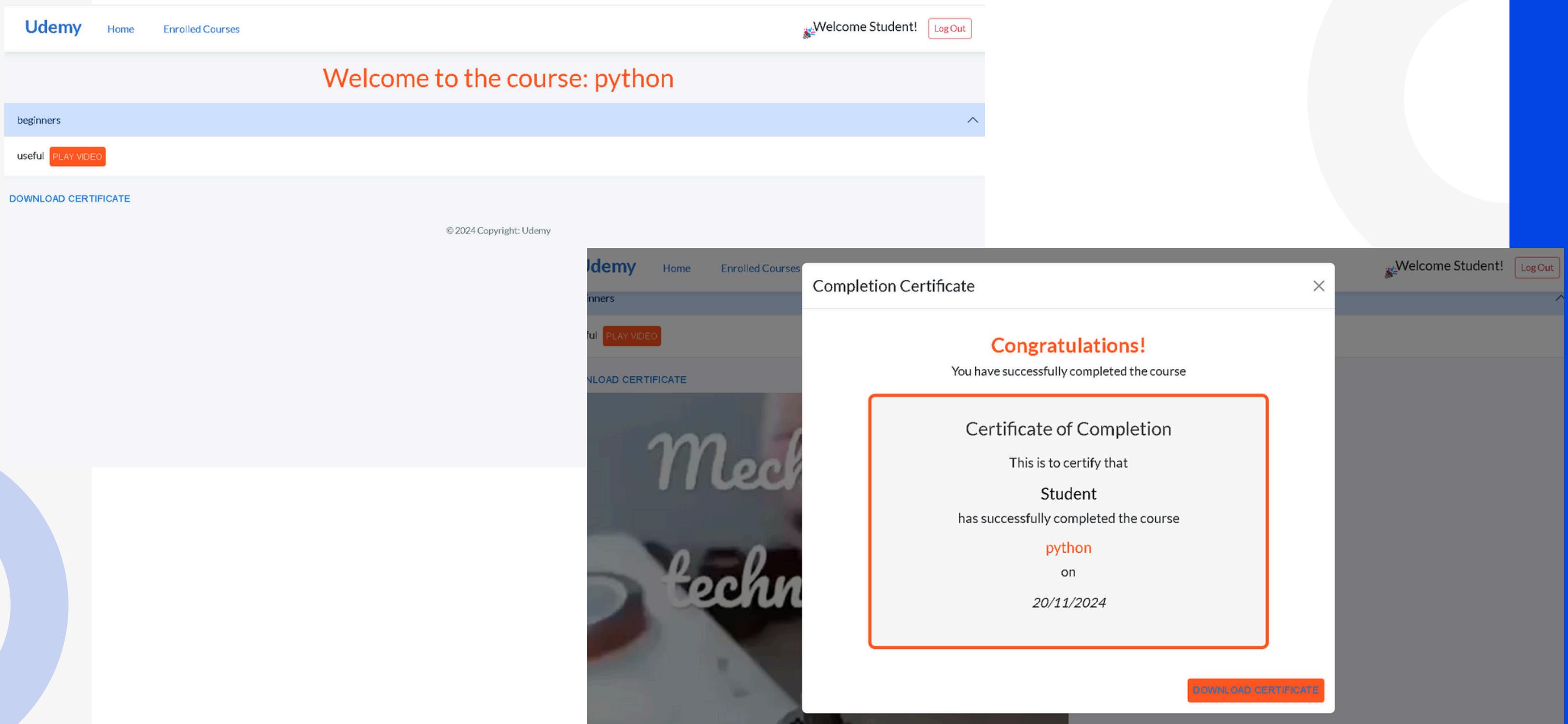
useful [PLAY VIDEO](#)

[DOWNLOAD CERTIFICATE](#)



STUDENT COMPLETED COURSE

T



The image shows a screenshot of a Udemy course completion certificate. At the top, it says "Welcome Student!" and "Log Out". The main message is "Congratulations! You have successfully completed the course". It then details the certificate: "Certificate of Completion", "This is to certify that", "Student", "has successfully completed the course", "python", "on", "20/11/2024". At the bottom, there is a "DOWNLOAD CERTIFICATE" button.

Udemy Home Enrolled Courses

Welcome Student! Log Out

Welcome to the course: python

beginners

useful PLAY VIDEO

DOWNLOAD CERTIFICATE

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Completion Certificate

Congratulations!

You have successfully completed the course

Certificate of Completion

This is to certify that

Student

has successfully completed the course

python

on

20/11/2024

DOWNLOAD CERTIFICATE

ADMIN DASHBOARD



localhost:5173/dashboard

Udemy Home Welcome Admin! Log Out

Course ID	Course Name	Course Educator	Course Category	Course Price	Course Sections	Enrolled Students	Action
673d99bc6596ea9fcf70ab42	Business	Balaji	Finance & Accounting	\$free	1	2	DELETE
673da2826596ea9fcf70abbd	Industrial development	Balaji	IT & Software	\$100	1	2	DELETE
673de1f9a7a228fa8a9af55f	It development	Raghul	IT & Software	\$100	1	0	DELETE
673de2eca7a228fa8a9af585	Industrial development	Aakash	IT & Software	\$20	1	0	DELETE

THANK YOU

