মেট্রোপলিটন ইউনিভার্সিটি
Metropolitan University

Course Code & Title

CSE436 : Final Year Project

EduNest

A Full-Stack Learning Management System

Presented By

Al-Jamil
ID: 222-112-016
Batch: CSE EVE 31

Ahmad Bakhtiar Nayeem
ID: 222-112-017
Batch: CSE EVE 31

Supervised By

Abu Jafar Md. Jakaria
Senior Lecturer, Dept. of CSE
Metropolitan University, Sylhet

Contents of the Presentation

01 Introduction & Motivation

02 Market Analysis & Opportunity

03 Project Overview

04 Key Features & User Roles

05 Tech Stack & Architecture

06 The User Experience

07 Growing the Nest: Next Steps

08 Impact & Conclusion

09 Question & Answer

Why an LMS Project?

Real-World Complexity

Full-Stack Skill Demonstration

Integration of Key Services

High Market Relevance

Identifying the Gap: Market Insights

Global Opportunity

- $490+ Billion
- Global E-Learning Market Size by 2029
- researchandmarkets.com

Local Market

- $2.5+ Billion
- Projected Bangladesh Online Education Market by 2033
- IMARC Group

Growth Trajectory

- 24.4% CAGR
- Annual Growth Rate in Bangladesh
- IMARC Group

What is EduNest?

EduNest

Why EduNest?

Empower Instructors

Seamless Learning

Actionable Analytics

Secure Payments

Tech Stack & Architecture

React
CSS3
Vite
Tailwind
ShadCN
Node.js

Express.js
MongoDB
Stripe
Cloudinary
JWT
Nodemailer

User Roles & Features

Student

- Browse & Purchase Courses
- Track Learning Progress
- Take Quizzes & Get Certificates
- Ask Questions

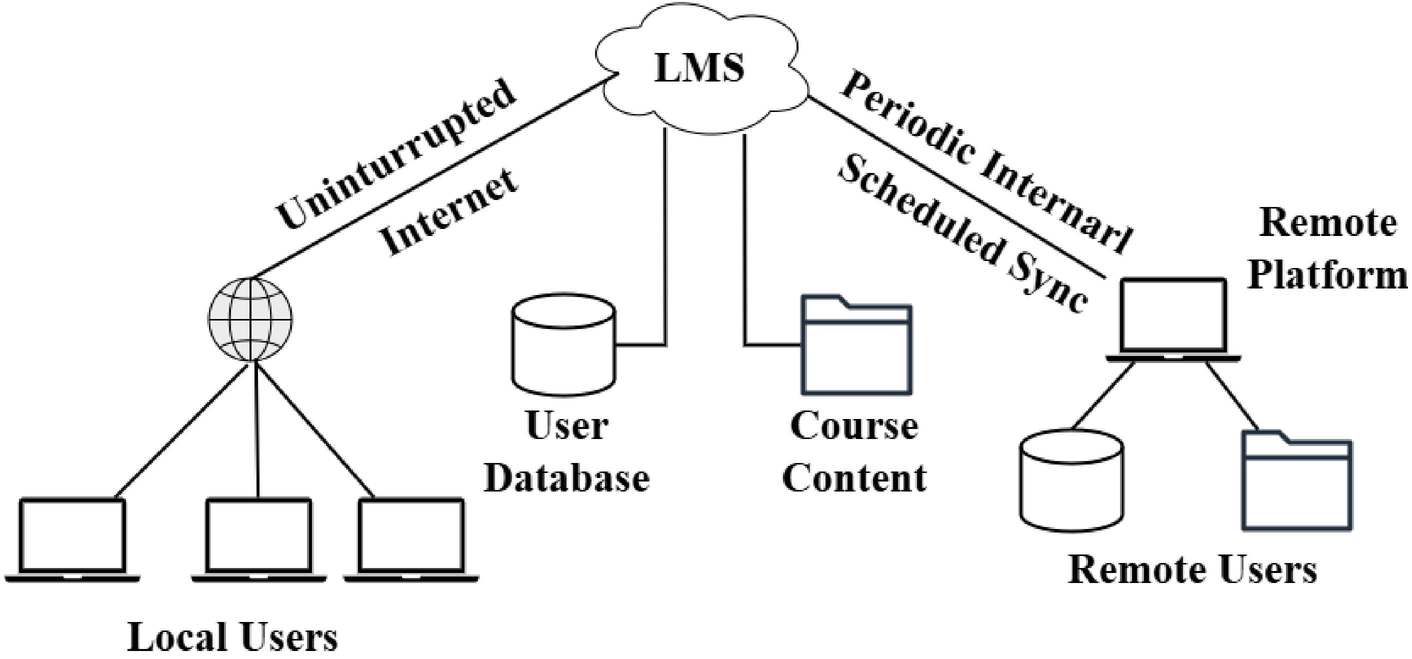
Instructor

- Create & Manage Courses
- Upload Lectures & Videos
- View Sales Analytics
- Manage Payouts

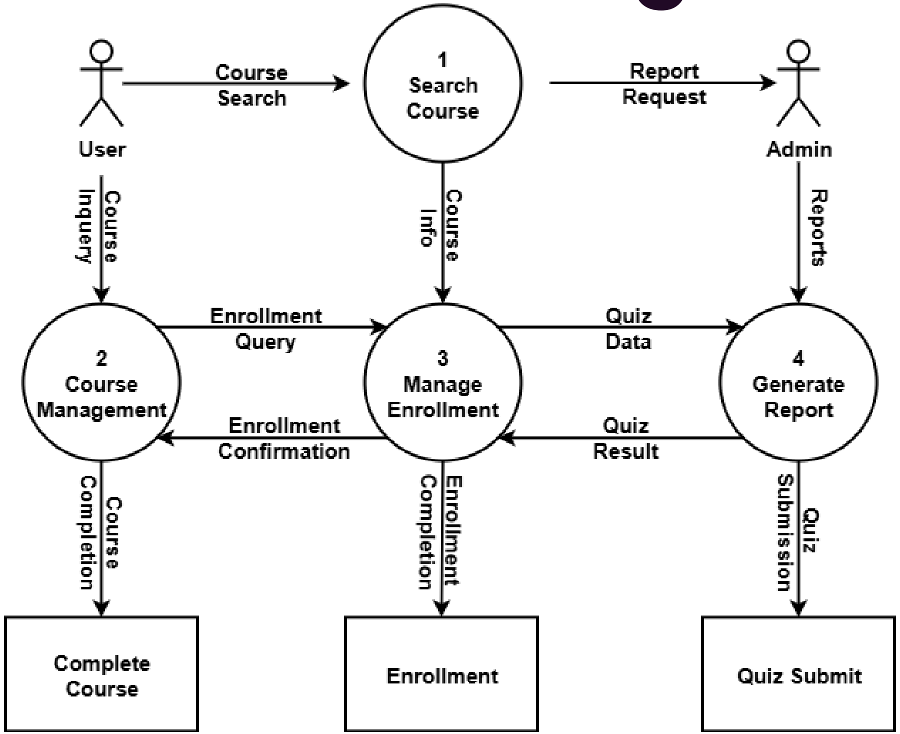
Admin

- Manage All Users & Courses
- Approve Instructor Applications
- Oversee Platform Financials
- Manage Site Categories

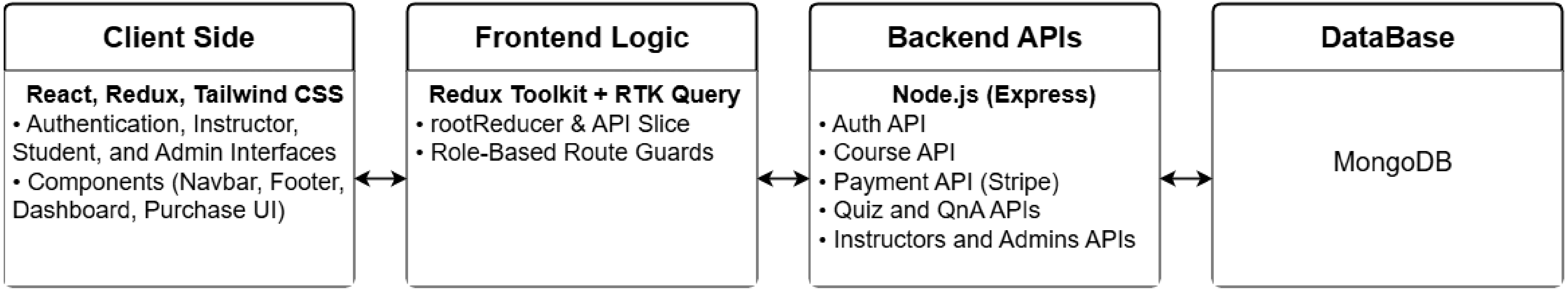
How it Works in Real Event


LMS
Uninturrupted
Internet
Periodic Internarl
Scheduled Sync
Remote
Platform
User
Database
Course
Content
Remote Users
Local Users

Data Flow Diagram


User
Course Search
1 Search Course
Report Request
Admin
Course Inquery
Course Info
Reports
2 Course Management
Enrollment Query
3 Manage Enrollment
Quiz Data
4 Generate Report
Enrollment Confirmation
Quiz Result
Course Completion
Enrollment Completion
Quiz Submission
Complete Course
Enrollment
Quiz Submit

System Architecture Diagram



Client Side

React, Redux, Tailwind CSS
- Authentication, Instructor, Student, and Admin Interfaces
- Components (Navbar, Footer, Dashboard, Purchase UI)

Frontend Logic

Redux Toolkit + RTK Query
- rootReducer & API Slice
- Role-Based Route Guards

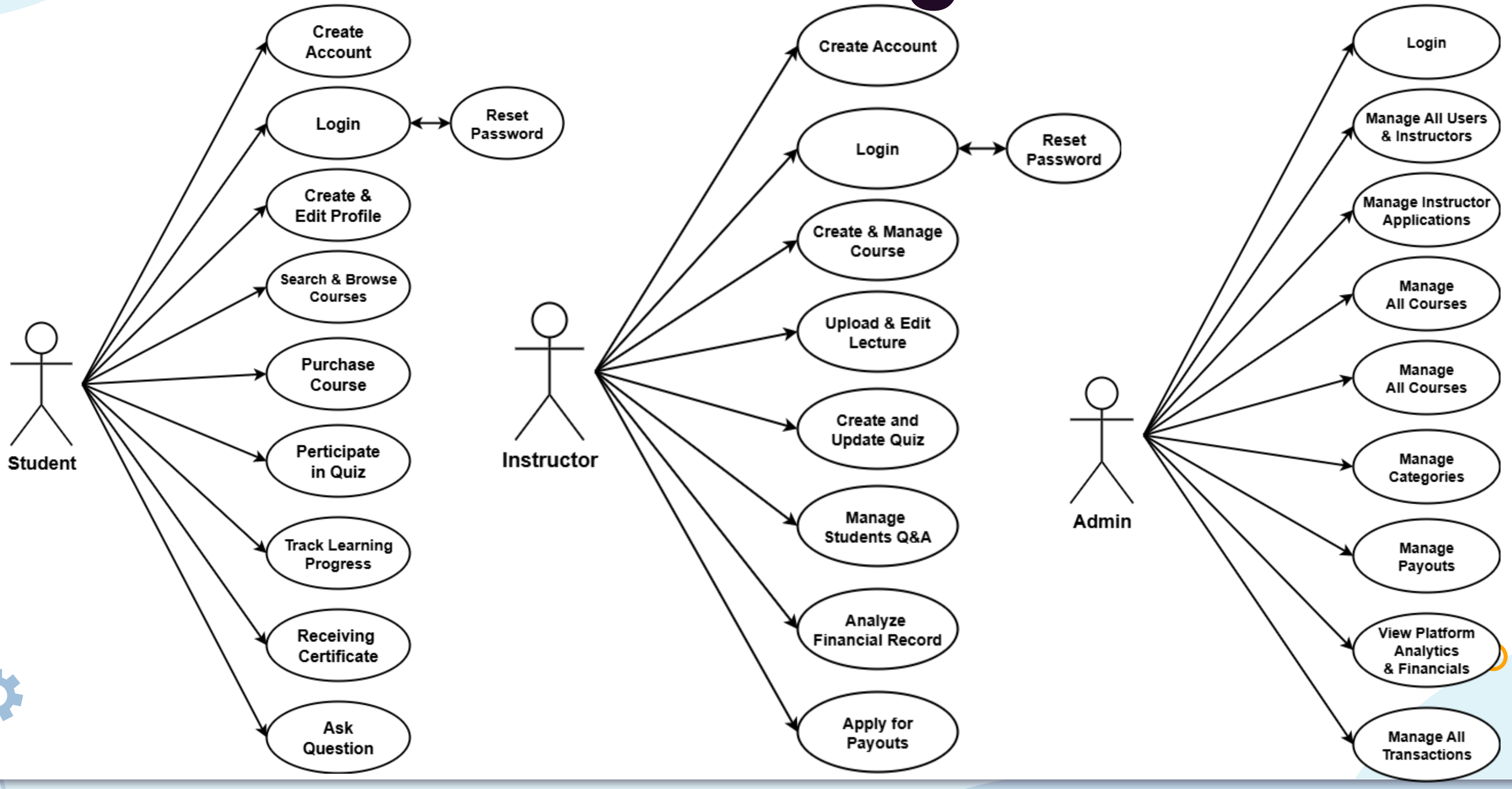
Backend APIs

Node.js (Express)
- Auth API
- Course API
- Payment API (Stripe)
- Quiz and QnA APIs
- Instructors and Admins APIs

DataBase

MongoDB

Use Case Diagrams



Student

Create Account

Login

Reset Password

Create & Edit Profile

Search & Browse Courses

Purchase Course

Perticipate in Quiz

Track Learning Progress

Receiving Certificate

Ask Question

Instructor

Create Account

Login

Reset Password

Create & Manage Course

Upload & Edit Lecture

Create and Update Quiz

Manage Students Q&A

Analyze Financial Record

Apply for Payouts

Admin

Login

Manage All Users & Instructors

Manage Instructor Applications

Manage All Courses

Manage All Courses

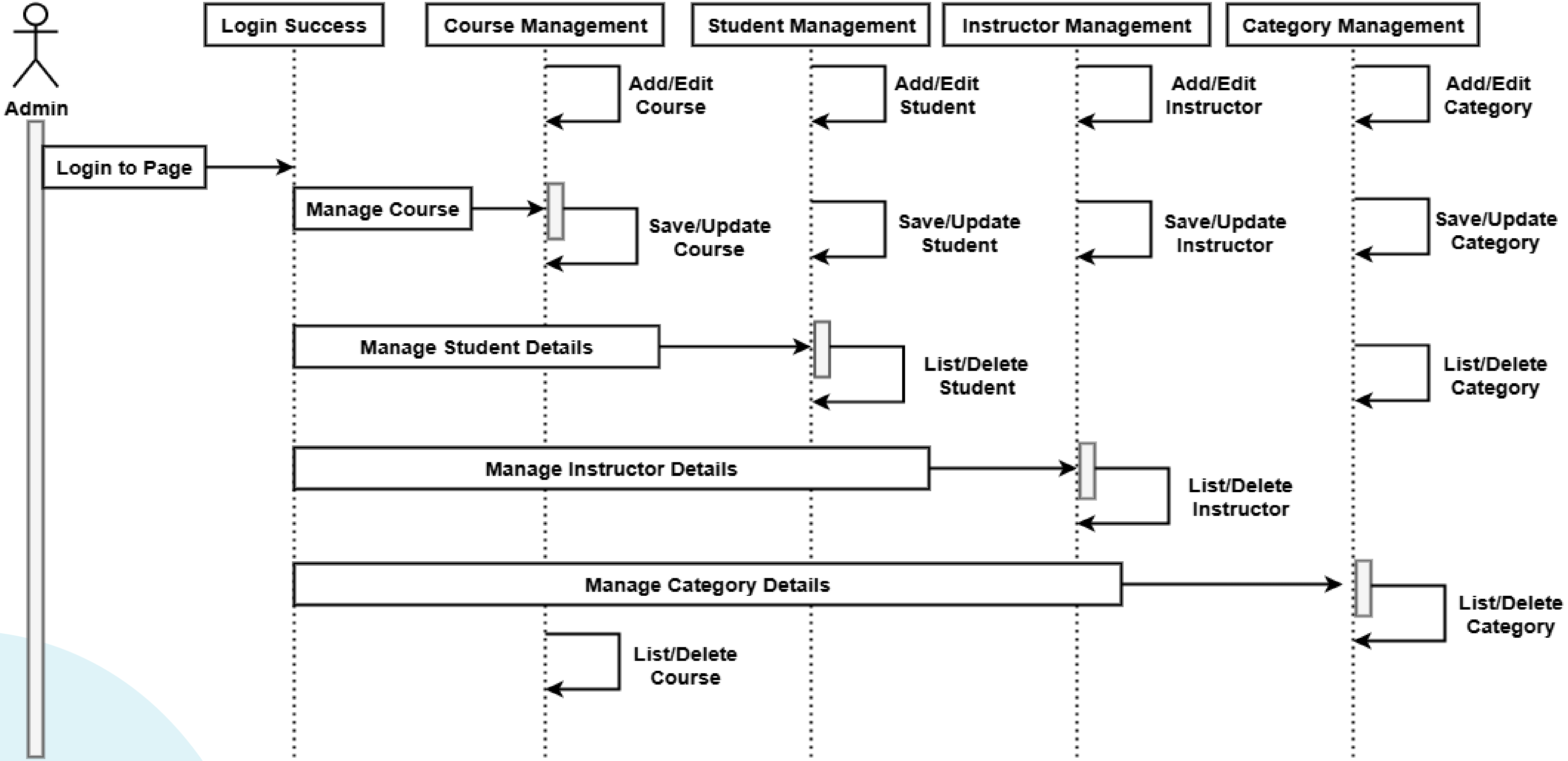
Manage Categories

Manage Payouts

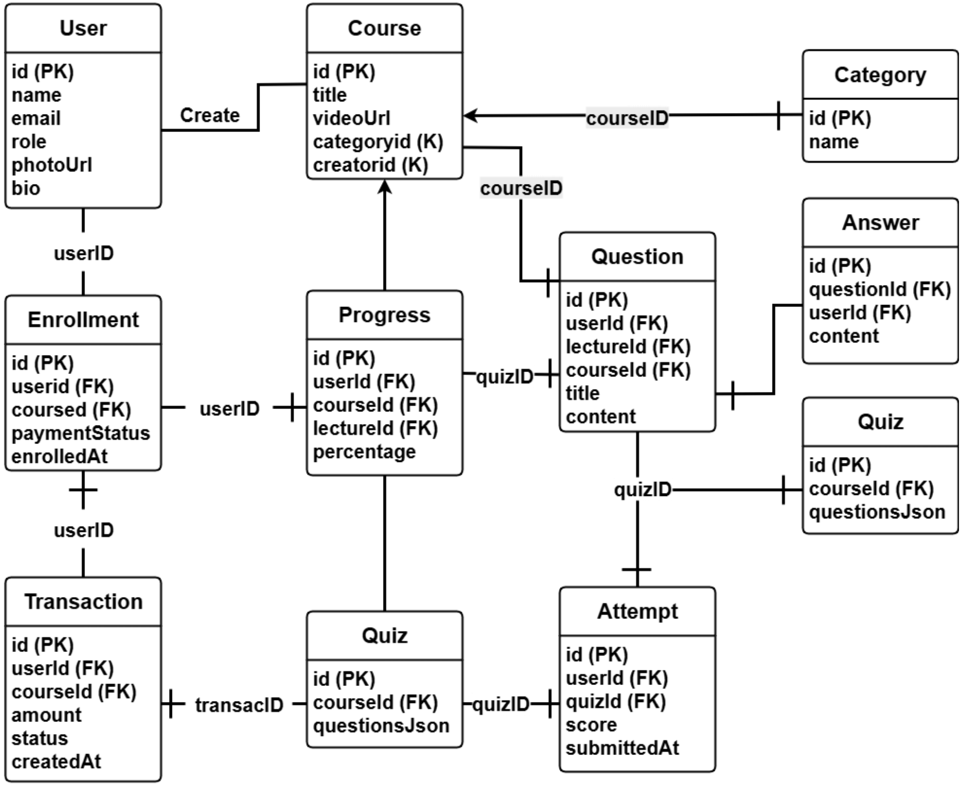
View Platform Analytics & Financials

Manage All Transactions

Sequence Diagram


Admin
Login Success
Course Management
Student Management
Instructor Management
Category Management
Add/Edit Course
Add/Edit Student
Add/Edit Instructor
Add/Edit Category
Login to Page
Manage Course
Save/Update Course
Save/Update Student
Save/Update Instructor
Save/Update Category
Manage Student Details
List/Delete Student
List/Delete Category
Manage Instructor Details
List/Delete Instructor
Manage Category Details
List/Delete Category
List/Delete Course

Entity Relationship Diagram



User
id (PK)
name
email
role
photoUrl
bio

Course
id (PK)
title
videoUrl
categoryid (K)
creatorid (K)

Category
id (PK)
name

Enrollment
id (PK)
userid (FK)
coursed (FK)
paymentStatus
enrolledAt

Progress
id (PK)
userId (FK)
courseId (FK)
lectureId (FK)
percentage

Question
id (PK)
userId (FK)
lectureId (FK)
courseId (FK)
title
content

Answer
id (PK)
questionId (FK)
userId (FK)
content

Quiz
id (PK)
courseId (FK)
questionsJson

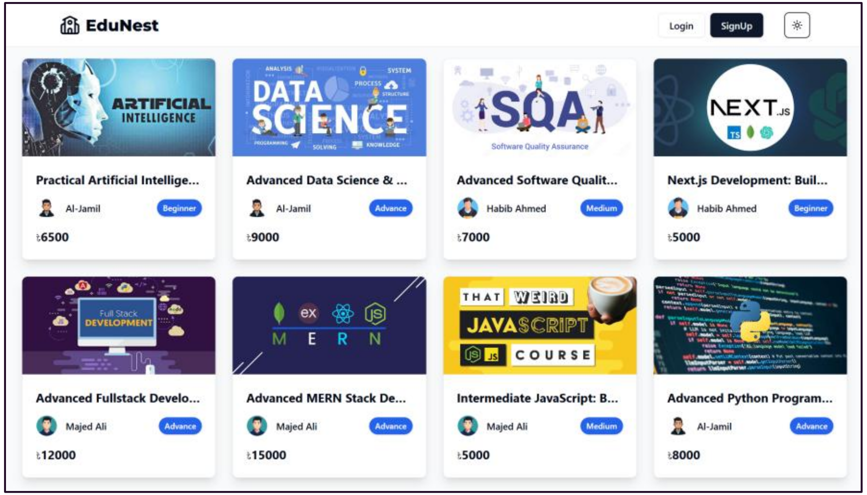
Transaction
id (PK)
userId (FK)
courseId (FK)
amount
status
createdAt

Quiz
id (PK)
courseId (FK)
questionsJson

Attempt
id (PK)
userId (FK)
quizId (FK)
score
submittedAt

Create
courseID
courseID
userID
userID
quizID
quizID
userID
transacID
quizID

Home Page



Practical Artificial Intellige...
Al-Jamil
Beginner
৳6500

Advanced Data Science & ...
Al-Jamil
Advance
৳9000

Advanced Software Qualit...
Habib Ahmed
Medium
৳7000

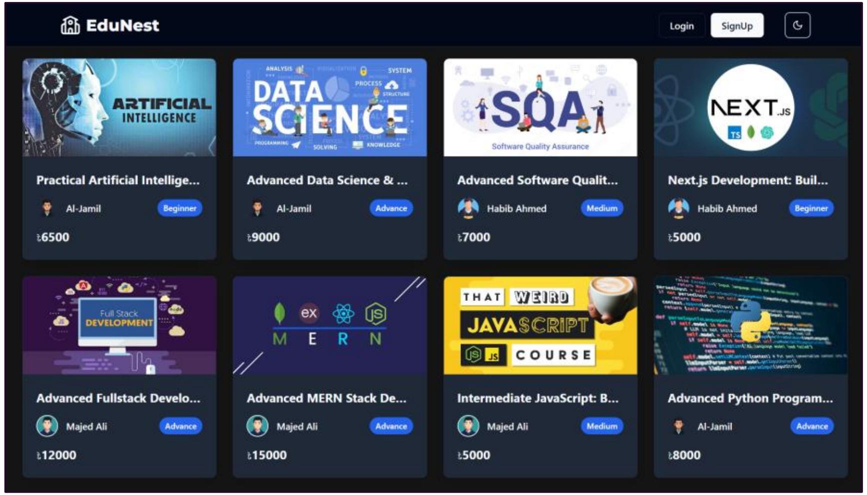
Next.js Development: Buil...
Habib Ahmed
Beginner
৳5000

Advanced Fullstack Develo...
Majed Ali
Advance
৳12000

Advanced MERN Stack De...
Majed Ali
Advance
৳15000

Intermediate JavaScript: B...
Majed Ali
Medium
৳5000

Advanced Python Program...
Al-Jamil
Advance
৳8000



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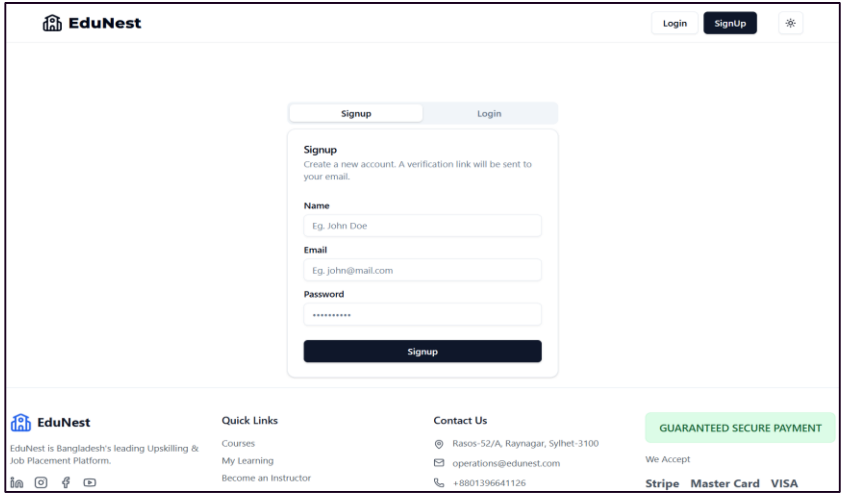
Majed Ali
Advance
৳15000

Intermediate JavaScript: B...
Majed Ali
Medium
৳5000

Advanced Python Program...
Al-Jamil
Advance
৳8000

Signup & Login Page


EduNest
Login
SignUp
Signup
Login
Signup

Signup

Create a new account. A verification link will be sent to your email.

Name: Eg. John Doe

Email: Eg. john@mail.com

Password: ••••••••••

EduNest

EduNest is Bangladesh's leading Upskilling & Job Placement Platform.

Quick Links

- Courses
- My Learning
- Become an Instructor

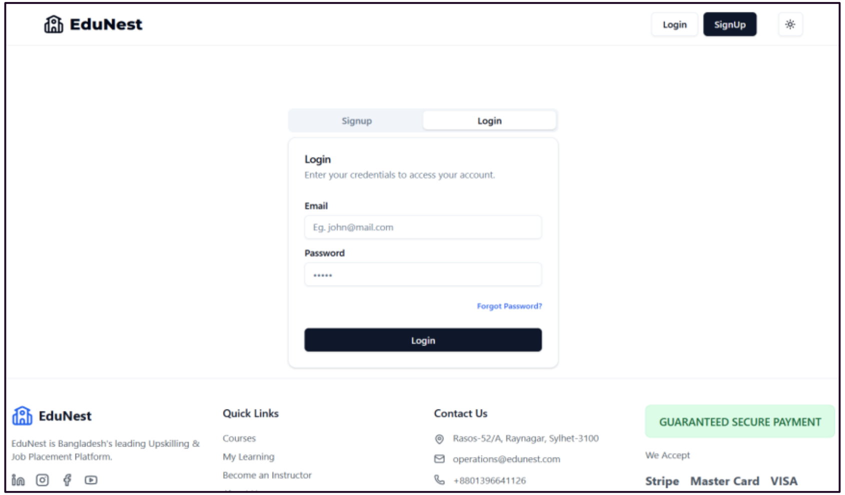
Contact Us

Rasos-52/A, Raynagar, Sylhet-3100
operations@edunest.com
+8801396641126

GUARANTEED SECURE PAYMENT

We Accept

Stripe Master Card VISA


EduNest
Login
SignUp
Signup
Login
Forgot Password?
Login

Login

Enter your credentials to access your account.

Email: Eg. john@mail.com

Password: •••••

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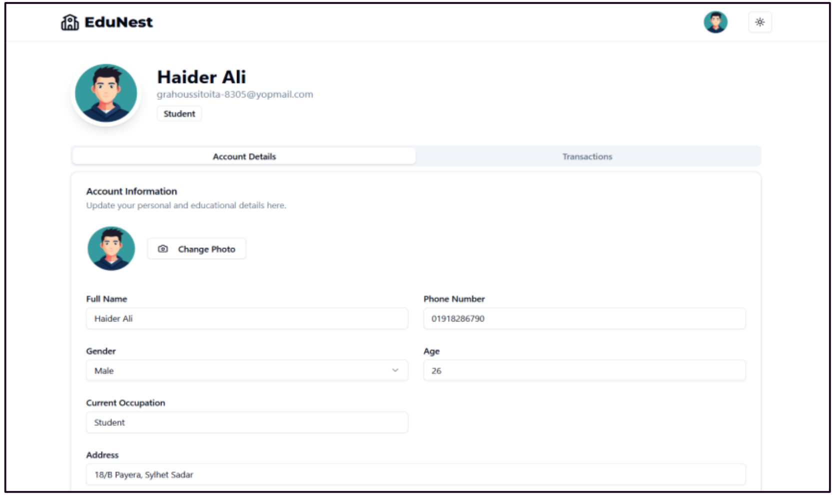
GUARANTEED SECURE PAYMENT

We Accept

Stripe Master Card VISA

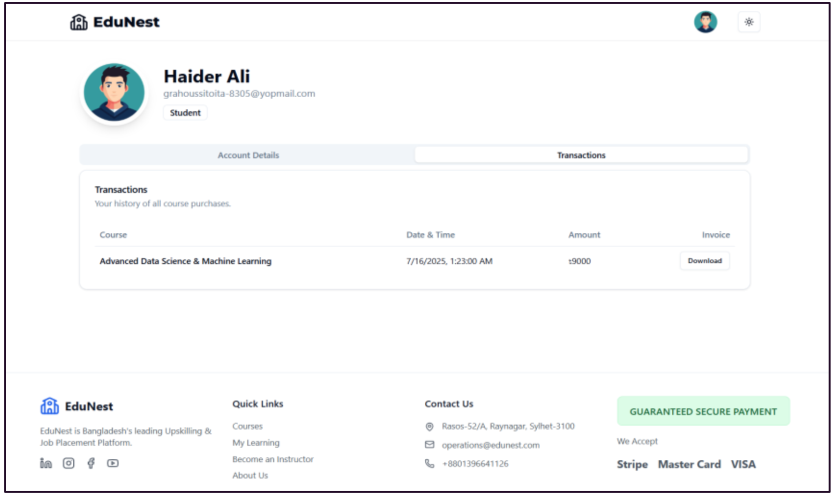
Student Profile Section


EduNest
Account Details
Transactions
Change Photo

Haider Ali
grahoussitoita-8305@yopmail.com
Student

Account Information
Update your personal and educational details here.

Full Name	Haider Ali
Phone Number	01918286790
Gender	Male
Age	26
Current Occupation	Student
Address	18/B Payera, Sylhet Sadar


EduNest
Account Details
Transactions
Download
Courses
My Learning
Become an Instructor
About Us
GUARANTEED SECURE PAYMENT

Haider Ali
grahoussitoita-8305@yopmail.com
Student

Transactions
Your history of all course purchases.

Course	Date & Time	Amount	Invoice
Advanced Data Science & Machine Learning	7/16/2025, 1:23:00 AM	৳9000	Download

EduNest
EduNest is Bangladesh's leading Upskilling & Job Placement Platform.

Quick Links

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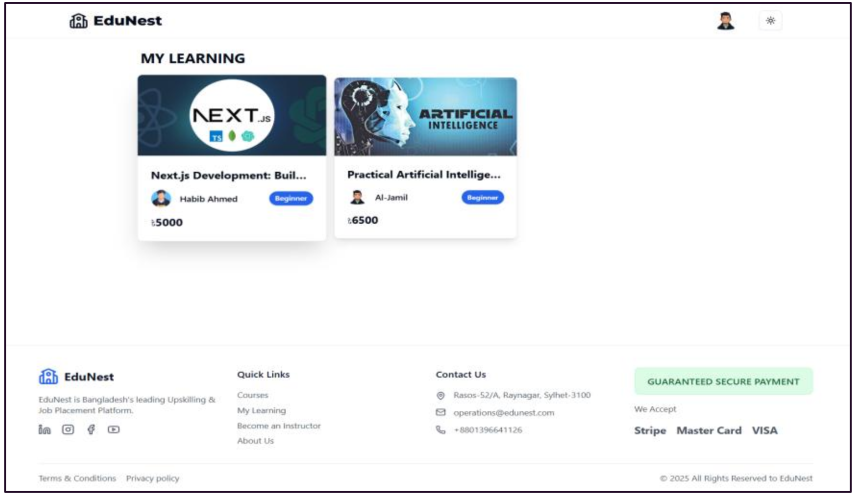
operations@edunest.com
+8801396641126

We Accept
Stripe Master Card VISA

Learning Section



EduNest

MY LEARNING

Next.js Development: Buil...
Habib Ahmed
Beginner
৳5000

Practical Artificial Intellige...
Al-Jamil
Beginner
৳6500

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EduNest is Bangladesh's leading Upskilling & Job Placement Platform.

Quick Links
- Courses
- My Learning
- Become an Instructor
- About Us

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operations@edunest.com
+8801396641126

GUARANTEED SECURE PAYMENT

We Accept
Stripe Master Card VISA

Terms & Conditions Privacy policy

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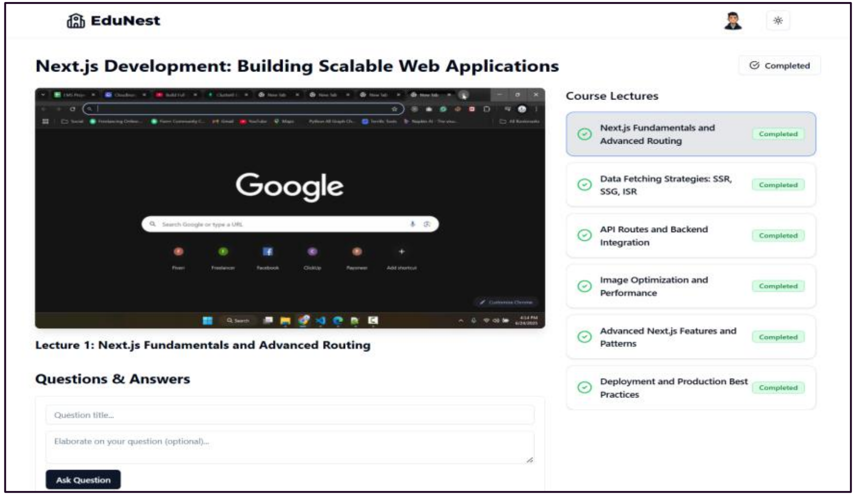


EduNest

Next.js Development: Building Scalable Web Applications

Completed

Lecture 1: Next.js Fundamentals and Advanced Routing

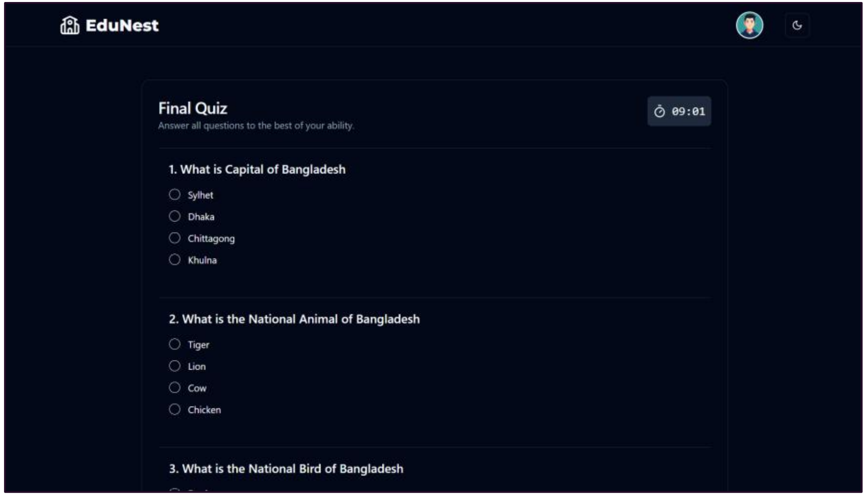
Questions & Answers

Question title...
Elaborate on your question (optional)...
Ask Question

Course Lectures

Next.js Fundamentals and Advanced Routing	Completed
Data Fetching Strategies: SSR, SSG, ISR	Completed
API Routes and Backend Integration	Completed
Image Optimization and Performance	Completed
Advanced Next.js Features and Patterns	Completed
Deployment and Production Best Practices	Completed

Quiz Section



EduNest

Final Quiz

Answer all questions to the best of your ability.

09:01

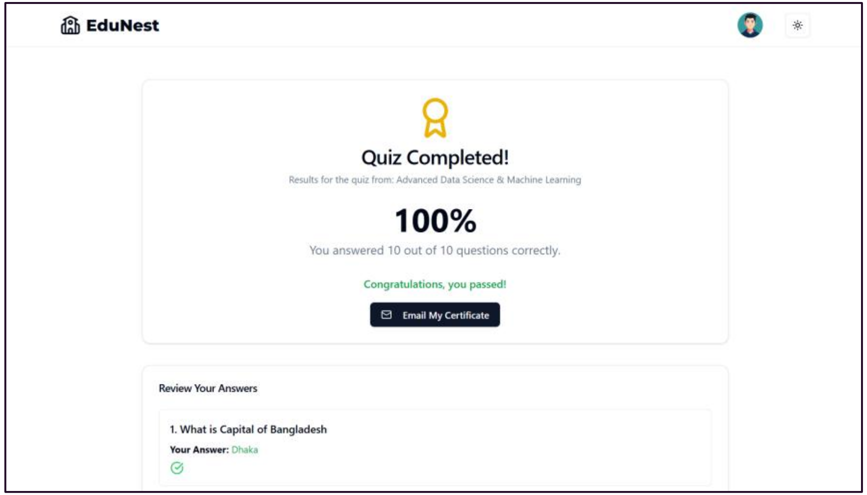
1. What is Capital of Bangladesh

○ Sylhet
○ Dhaka
○ Chittagong
○ Khulna

2. What is the National Animal of Bangladesh

○ Tiger
○ Lion
○ Cow
○ Chicken

3. What is the National Bird of Bangladesh



EduNest

Quiz Completed!

Results for the quiz from: Advanced Data Science & Machine Learning

100%

You answered 10 out of 10 questions correctly.

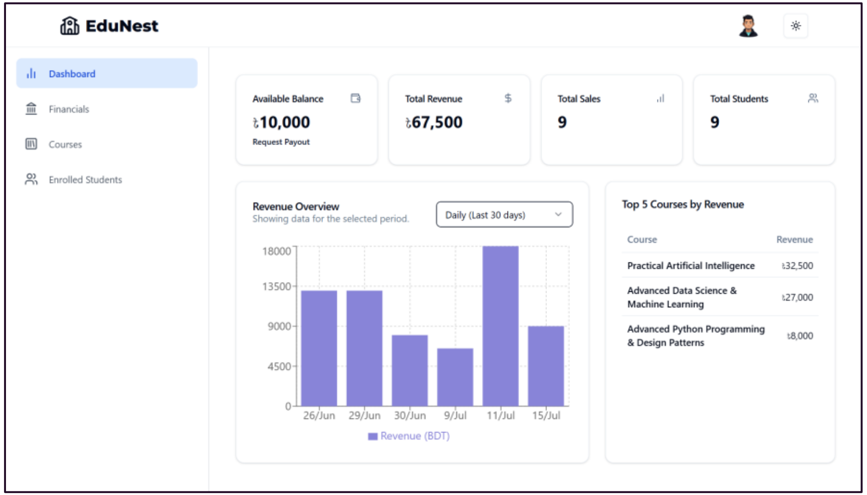
Congratulations, you passed!

Review Your Answers

1. What is Capital of Bangladesh

Your Answer: Dhaka ✓

Instructor Section


EduNest
Dashboard
Financials
Courses
Enrolled Students
Request Payout
Daily (Last 30 days)
18000
13500
9000
4500
0
26/Jun
29/Jun
30/Jun
9/Jul
11/Jul
15/Jul
Revenue (BDT)

Available Balance: ৳10,000

Total Revenue: ৳67,500

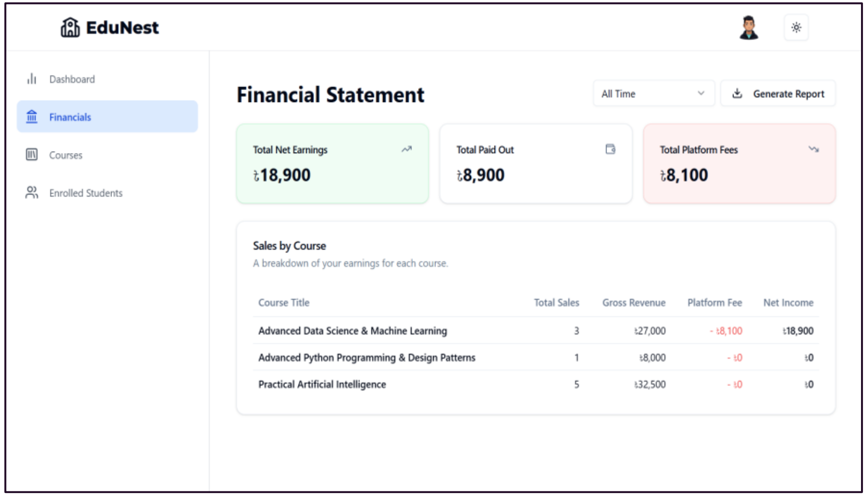
Total Sales: 9

Total Students: 9

Revenue Overview
Showing data for the selected period.

Top 5 Courses by Revenue

Course	Revenue
Practical Artificial Intelligence	৳32,500
Advanced Data Science & Machine Learning	৳27,000
Advanced Python Programming & Design Patterns	৳8,000


EduNest
Dashboard
Financials
Courses
Enrolled Students
All Time
Generate Report

Financial Statement

Total Net Earnings: ৳18,900

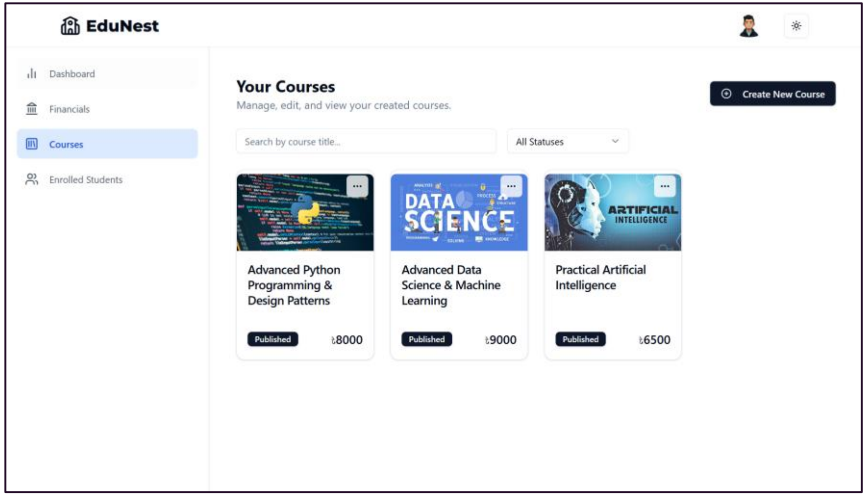
Total Paid Out: ৳8,900

Total Platform Fees: ৳8,100

Sales by Course
A breakdown of your earnings for each course.

Course Title	Total Sales	Gross Revenue	Platform Fee	Net Income
Advanced Data Science & Machine Learning	3	৳27,000	- ৳8,100	৳18,900
Advanced Python Programming & Design Patterns	1	৳8,000	- ৳0	৳0
Practical Artificial Intelligence	5	৳32,500	- ৳0	৳0

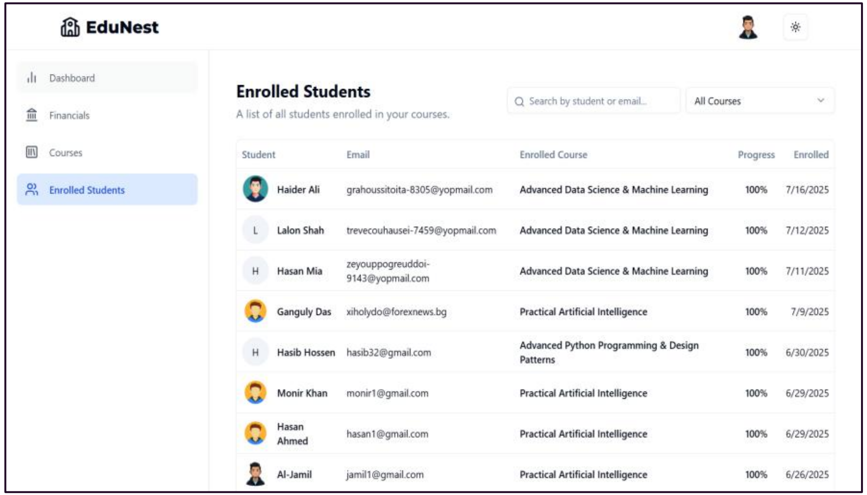
Course Management


EduNest
Dashboard
Financials
Courses
Enrolled Students
Create New Course
Search by course title...
All Statuses
Published
Published
Published

Your Courses

Manage, edit, and view your created courses.

Course	Status	Price
Advanced Python Programming & Design Patterns	Published	৳8000
Advanced Data Science & Machine Learning	Published	৳9000
Practical Artificial Intelligence	Published	৳6500

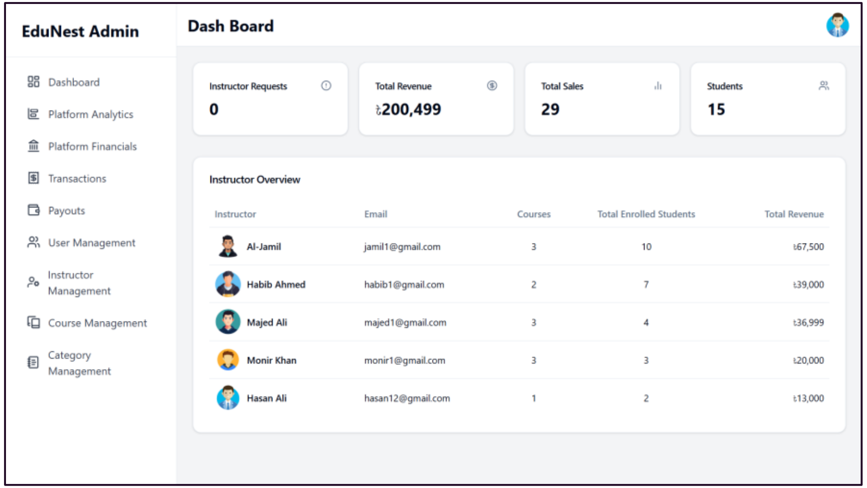

EduNest
Dashboard
Financials
Courses
Enrolled Students
Search by student or email...
All Courses

Enrolled Students

A list of all students enrolled in your courses.

Student	Email	Enrolled Course	Progress	Enrolled
Haider Ali	grahoussitoita-8305@yopmail.com	Advanced Data Science & Machine Learning	100%	7/16/2025
Lalon Shah	trevecouhausei-7459@yopmail.com	Advanced Data Science & Machine Learning	100%	7/12/2025
Hasan Mia	zeyouppogreuddoi-9143@yopmail.com	Advanced Data Science & Machine Learning	100%	7/11/2025
Ganguly Das	xiholydo@forexnews.bg	Practical Artificial Intelligence	100%	7/9/2025
Hasib Hossen	hasib32@gmail.com	Advanced Python Programming & Design Patterns	100%	6/30/2025
Monir Khan	monir1@gmail.com	Practical Artificial Intelligence	100%	6/29/2025
Hasan Ahmed	hasan1@gmail.com	Practical Artificial Intelligence	100%	6/29/2025
Al-Jamil	jamil1@gmail.com	Practical Artificial Intelligence	100%	6/26/2025

Admin Section


EduNest Admin
Dashboard
Platform Analytics
Platform Financials
Transactions
Payouts
User Management
Instructor Management
Course Management
Category Management
Dash Board

Instructor Requests: 0

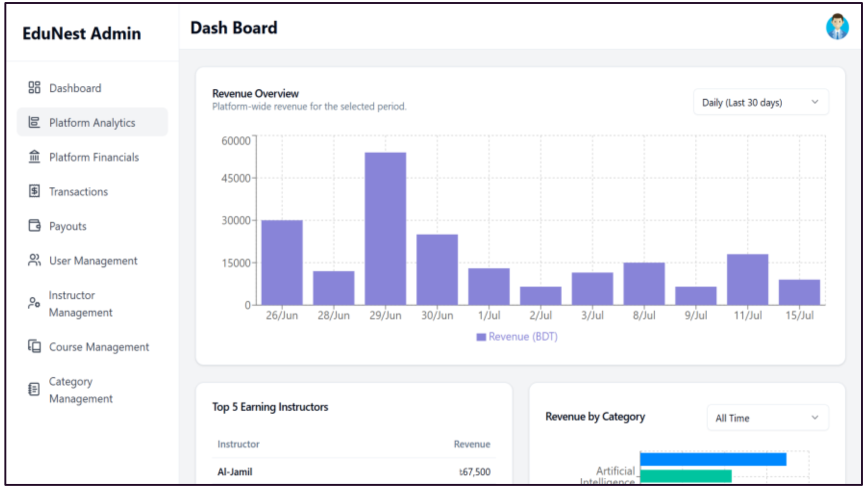
Total Revenue: ৳200,499

Total Sales: 29

Students: 15

Instructor Overview

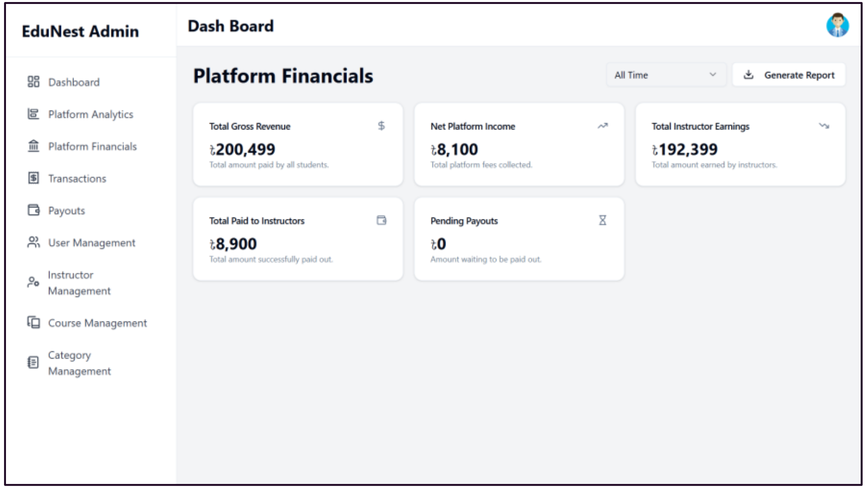
Instructor	Email	Courses	Total Enrolled Students	Total Revenue
Al-Jamil	jamil1@gmail.com	3	10	৳67,500
Habib Ahmed	habib1@gmail.com	2	7	৳39,000
Majed Ali	majed1@gmail.com	3	4	৳36,999
Monir Khan	monir1@gmail.com	3	3	৳20,000
Hasan Ali	hasan12@gmail.com	1	2	৳13,000


EduNest Admin
Dashboard
Platform Analytics
Platform Financials
Transactions
Payouts
User Management
Instructor Management
Course Management
Category Management
Dash Board
Revenue Overview
Platform-wide revenue for the selected period.
Daily (Last 30 days)
60000
45000
30000
15000
0
26/Jun
28/Jun
29/Jun
30/Jun
1/Jul
2/Jul
3/Jul
8/Jul
9/Jul
11/Jul
15/Jul
Revenue (BDT)
Revenue by Category
All Time
Artificial Intelligence

Top 5 Earning Instructors

Instructor	Revenue
Al-Jamil	৳67,500

Transection Management


EduNest Admin
Dash Board
Dashboard
Platform Analytics
Platform Financials
Transactions
Payouts
User Management
Instructor Management
Course Management
Category Management
All Time
Generate Report

Platform Financials

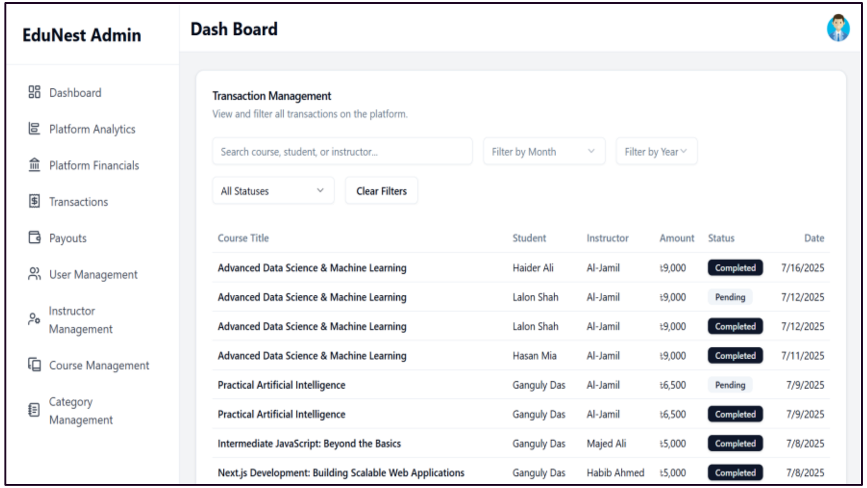
Total Gross Revenue
৳200,499
Total amount paid by all students.

Net Platform Income
৳8,100
Total platform fees collected.

Total Instructor Earnings
৳192,399
Total amount earned by instructors.

Total Paid to Instructors
৳8,900
Total amount successfully paid out.

Pending Payouts
৳0
Amount waiting to be paid out.

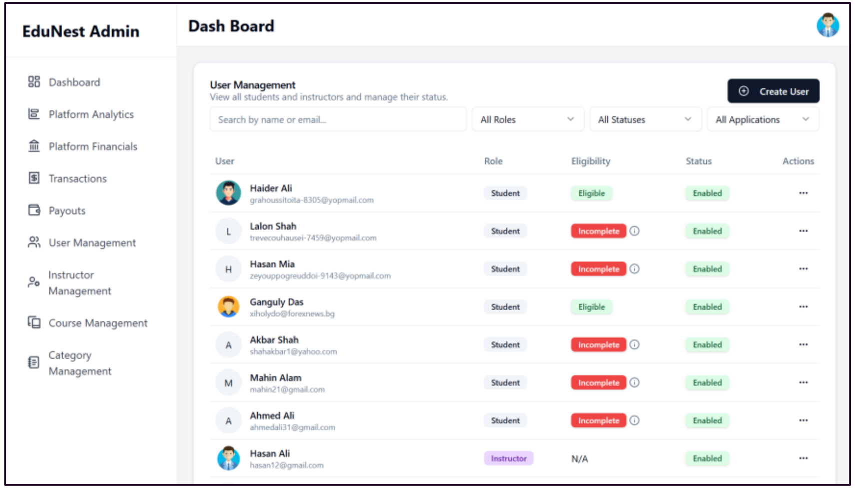

EduNest Admin
Dash Board
Dashboard
Platform Analytics
Platform Financials
Transactions
Payouts
User Management
Instructor Management
Course Management
Category Management
Search course, student, or instructor...
Filter by Month
Filter by Year
All Statuses
Clear Filters

Transaction Management

View and filter all transactions on the platform.

Course Title	Student	Instructor	Amount	Status	Date
Advanced Data Science & Machine Learning	Haider Ali	Al-Jamil	৳9,000	Completed	7/16/2025
Advanced Data Science & Machine Learning	Lalon Shah	Al-Jamil	৳9,000	Pending	7/12/2025
Advanced Data Science & Machine Learning	Lalon Shah	Al-Jamil	৳9,000	Completed	7/12/2025
Advanced Data Science & Machine Learning	Hasan Mia	Al-Jamil	৳9,000	Completed	7/11/2025
Practical Artificial Intelligence	Ganguly Das	Al-Jamil	৳6,500	Pending	7/9/2025
Practical Artificial Intelligence	Ganguly Das	Al-Jamil	৳6,500	Completed	7/9/2025
Intermediate JavaScript: Beyond the Basics	Ganguly Das	Majed Ali	৳5,000	Completed	7/8/2025
Next.js Development: Building Scalable Web Applications	Ganguly Das	Habib Ahmed	৳5,000	Completed	7/8/2025

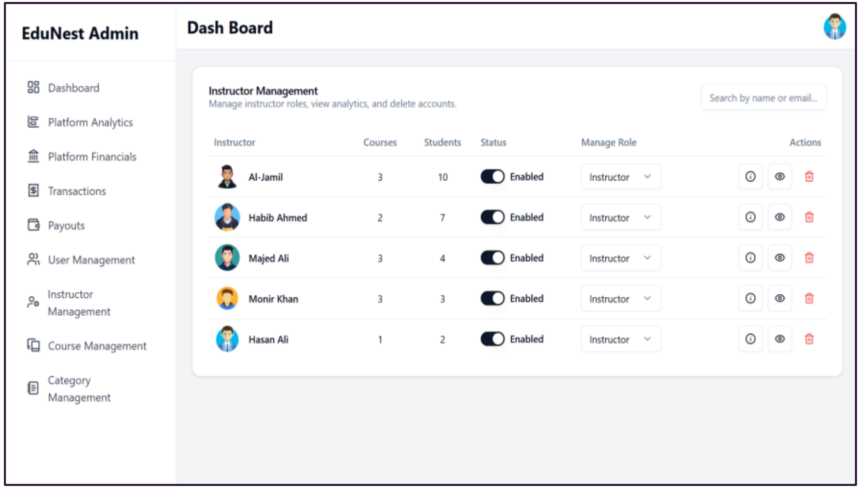
User Management


EduNest Admin
Dash Board
Dashboard
Platform Analytics
Platform Financials
Transactions
Payouts
User Management
Instructor Management
Course Management
Category Management
Create User
Search by name or email...
All Roles
All Statuses
All Applications

User Management

View all students and instructors and manage their status.

User	Role	Eligibility	Status	Actions
Haider Ali grahoussitoita-8305@yopmail.com	Student	Eligible	Enabled	···
L **Lalon Shah** trevecouhausei-7459@yopmail.com	Student	Incomplete ⓘ	Enabled	···
H **Hasan Mia** zeyouppogreuddoi-9143@yopmail.com	Student	Incomplete ⓘ	Enabled	···
Ganguly Das xiholydo@forexnews.bg	Student	Eligible	Enabled	···
A **Akbar Shah** shahakbar1@yahoo.com	Student	Incomplete ⓘ	Enabled	···
M **Mahin Alam** mahin21@gmail.com	Student	Incomplete ⓘ	Enabled	···
A **Ahmed Ali** ahmedali31@gmail.com	Student	Incomplete ⓘ	Enabled	···
Hasan Ali hasan12@gmail.com	Instructor	N/A	Enabled	···

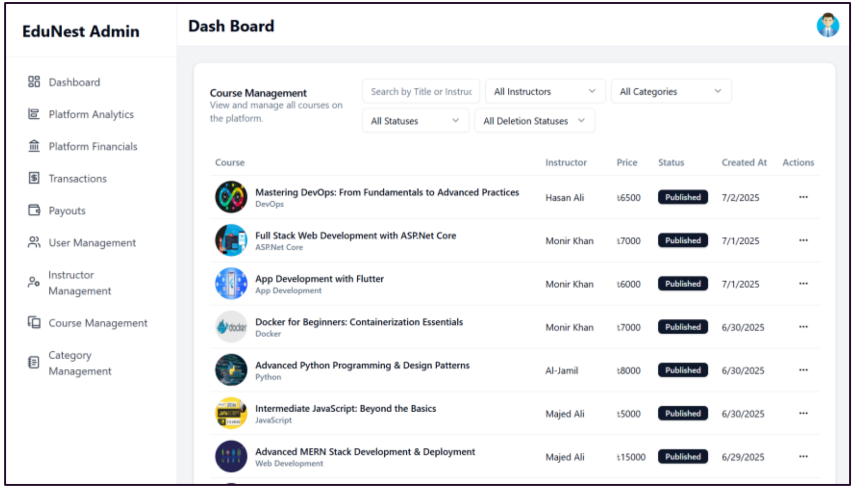

EduNest Admin
Dash Board
Dashboard
Platform Analytics
Platform Financials
Transactions
Payouts
User Management
Instructor Management
Course Management
Category Management
Search by name or email...

Instructor Management

Manage instructor roles, view analytics, and delete accounts.

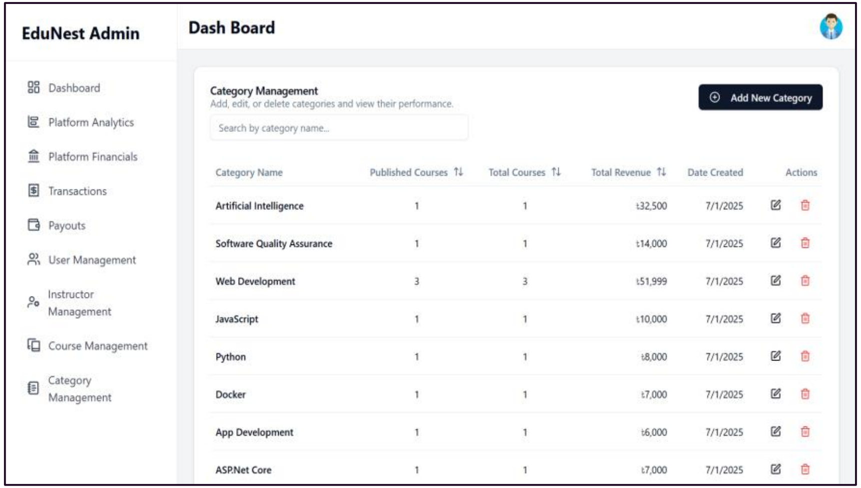
Instructor	Courses	Students	Status	Manage Role	Actions
Al-Jamil	3	10	Enabled	Instructor	ⓘ 👁 🗑
Habib Ahmed	2	7	Enabled	Instructor	ⓘ 👁 🗑
Majed Ali	3	4	Enabled	Instructor	ⓘ 👁 🗑
Monir Khan	3	3	Enabled	Instructor	ⓘ 👁 🗑
Hasan Ali	1	2	Enabled	Instructor	ⓘ 👁 🗑

Course Management (Admin Side)


EduNest Admin
Dash Board
Dashboard
Platform Analytics
Platform Financials
Transactions
Payouts
User Management
Instructor Management
Course Management
Category Management
Search by Title or Instruc
All Instructors
All Categories
All Statuses
All Deletion Statuses

Course Management
View and manage all courses on the platform.

Course	Instructor	Price	Status	Created At	Actions
Mastering DevOps: From Fundamentals to Advanced Practices DevOps	Hasan Ali	৳6500	Published	7/2/2025	⋯
Full Stack Web Development with ASP.Net Core ASP.Net Core	Monir Khan	৳7000	Published	7/1/2025	⋯
App Development with Flutter App Development	Monir Khan	৳6000	Published	7/1/2025	⋯
Docker for Beginners: Containerization Essentials Docker	Monir Khan	৳7000	Published	6/30/2025	⋯
Advanced Python Programming & Design Patterns Python	Al-Jamil	৳8000	Published	6/30/2025	⋯
Intermediate JavaScript: Beyond the Basics JavaScript	Majed Ali	৳5000	Published	6/30/2025	⋯
Advanced MERN Stack Development & Deployment Web Development	Majed Ali	৳15000	Published	6/29/2025	⋯


EduNest Admin
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User Management
Instructor Management
Course Management
Category Management
Add New Category
Search by category name...

Category Management
Add, edit, or delete categories and view their performance.

Category Name	Published Courses ⇅	Total Courses ⇅	Total Revenue ⇅	Date Created	Actions
Artificial Intelligence	1	1	৳32,500	7/1/2025	✎ 🗑
Software Quality Assurance	1	1	৳14,000	7/1/2025	✎ 🗑
Web Development	3	3	৳51,999	7/1/2025	✎ 🗑
JavaScript	1	1	৳10,000	7/1/2025	✎ 🗑
Python	1	1	৳8,000	7/1/2025	✎ 🗑
Docker	1	1	৳7,000	7/1/2025	✎ 🗑
App Development	1	1	৳6,000	7/1/2025	✎ 🗑
ASP.Net Core	1	1	৳7,000	7/1/2025	✎ 🗑

Future Implementation Scope

- Live classes
- Community Forums
- Leaderboards Feature
- Dedicated Mobile Apps

Impact & Significance

Addresses National Needs

Empowers Local Talent

Demonstrates Technical Excellence

Provides a Foundation for Growth

Thank You

Do you have any questions?

Scan to view a full video demonstration of the project

Scan to access the complete source code on GitHub