LEARNING MANAGEMENT SYSTEM (LMS)

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Project overview

The Learning Management System (LMS) mobile application is designed to provide a comprehensive platform for educational institutions, instructors, and students to manage and engage with online courses. Built with a modern tech stack, the application leverages Expo Router and React Native for the frontend, ensuring a seamless cross-platform mobile experience, and Node.js with Express and MongoDB for a robust and scalable backend. The system facilitates course creation, lesson management, user authentication, and real-time interactions, making it a versatile solution for e-learning.

I. Objectives

- Develop a user-friendly mobile application for managing online courses.
- Ensure secure authentication and data management.
- Provide real-time notifications and media integration for an enhanced learning experience.
- Create a scalable and maintainable codebase for future enhancements.

II. Target Audience

- Educational Institutions: To manage courses and track student progress.
- Instructors: To create and deliver educational content.
- Students: To access courses, lessons, and notifications on mobile devices.

Features

The LMS application offers a comprehensive set of features to support online education:

I. User Authentication

- Secure login and registration using JSON Web Tokens (JWT).
- Password encryption with bcrypt for enhanced security.
- Role-based access control (admin, instructor, student).

II. Course Management

- Create, update, and delete courses with detailed metadata (title, description, category).
- Enroll students and manage course rosters.
- Categorize courses for easy navigation.

III. Lesson Creation

- Add and organize lessons within courses, including text, video, and quizzes.
- Support for rich media content with Cloudinary integration.
- Lesson progress tracking for students.

IV. User Profiles

- Personalized profiles with customizable settings (e.g., profile picture, bio).
- View enrolled courses and progress.
- Role-specific dashboards for admins, instructors, and students.

V. Notifications

- Real-time push notifications for course updates, new lessons, and deadlines.
- Configurable notification preferences for users

VI. Responsive UI

- Modern, intuitive interface built with React Native Paper components.
- Cross-platform compatibility for iOS and Android.
- Adaptive layouts for various screen sizes.

VII. Cloud Storage

- Integration with Cloudinary for secure media storage and delivery.
- Support for images, videos, and documents in courses and lessons

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Technical Architecture

The LMS is built using a modern, scalable tech stack to ensure performance and maintainability

I. Frontend

- **React Native**: Cross-platform framework for iOS and Android.
- **Expo Router**: File-based navigation for seamless routing.
- **React Native Paper**: UI component library for consistent design.
- **Axios**: HTTP client for API communication.

II. Backend

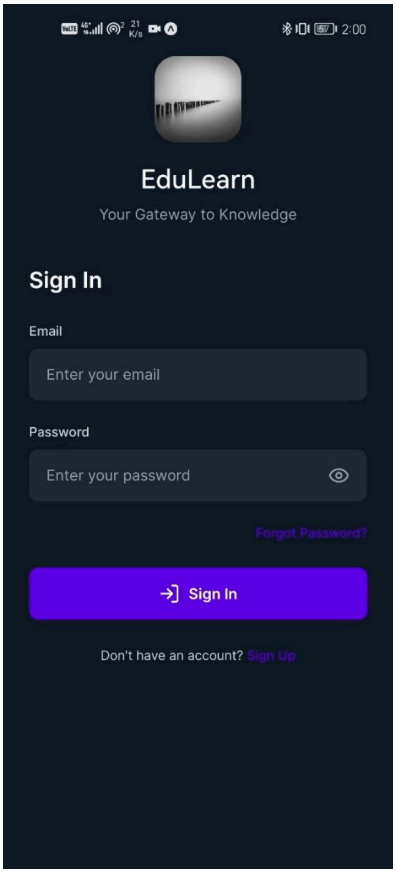
- **Node.js with Express**: RESTful API for handling requests.
- **MongoDB**: NoSQL database for flexible data storage.
- **Mongoose**: ODM for structured MongoDB interactions.
- **JWT**: Secure authentication and authorization.
- **Multer & Cloudinary**: File upload and cloud storage management.

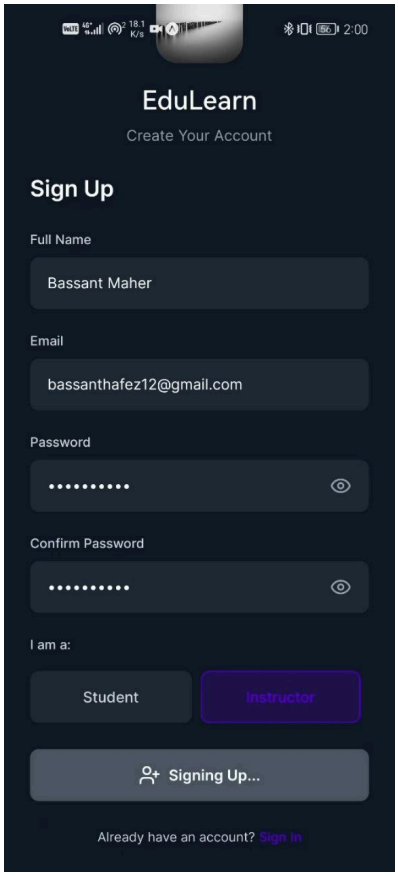
III. System Architecture

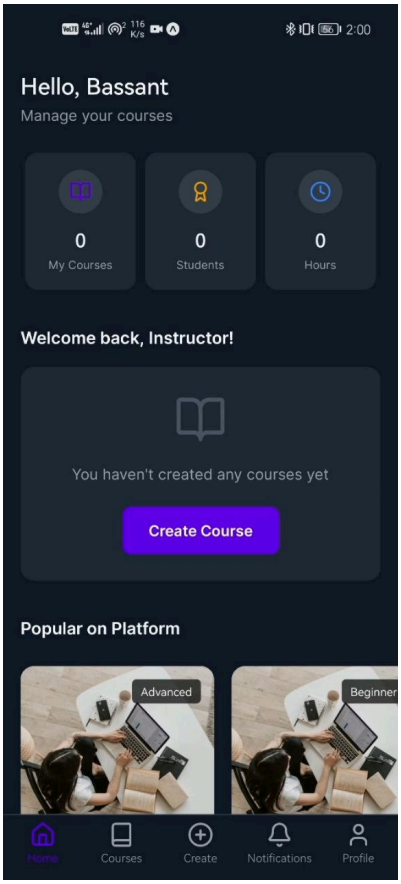
The application follows a client-server architecture:

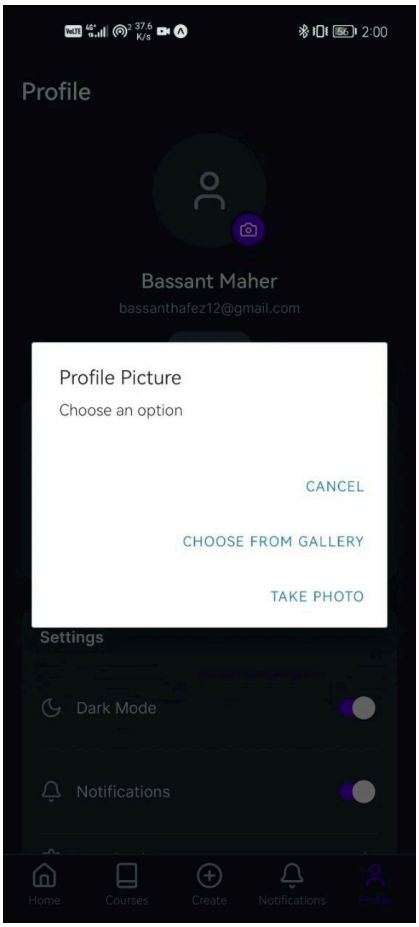
- **Client**: React Native mobile app communicates with the backend via RESTful API.
- **Server**: Node.js server handles business logic and data operations.
- **Database**: MongoDB stores user data, courses, and lessons.
- **Cloud Storage**: Cloudinary manages media content

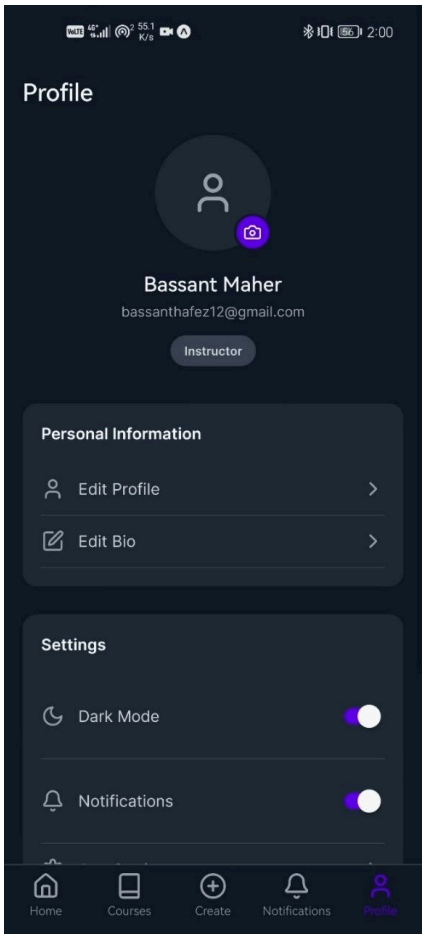
Sample Screens

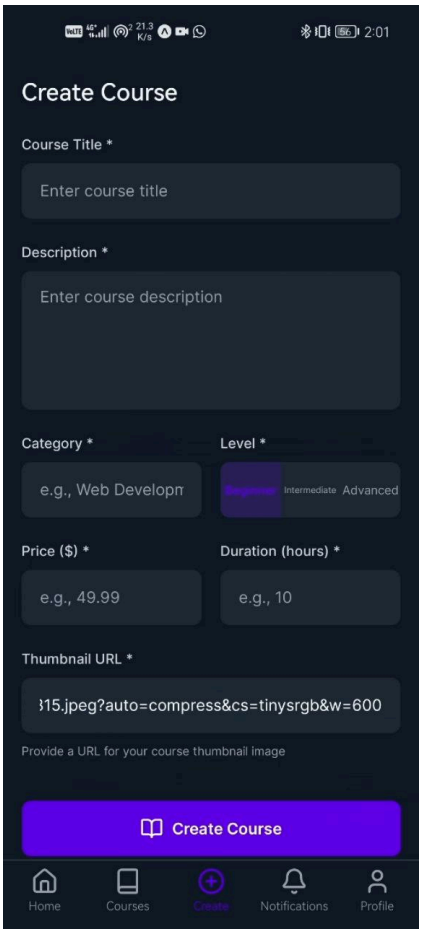


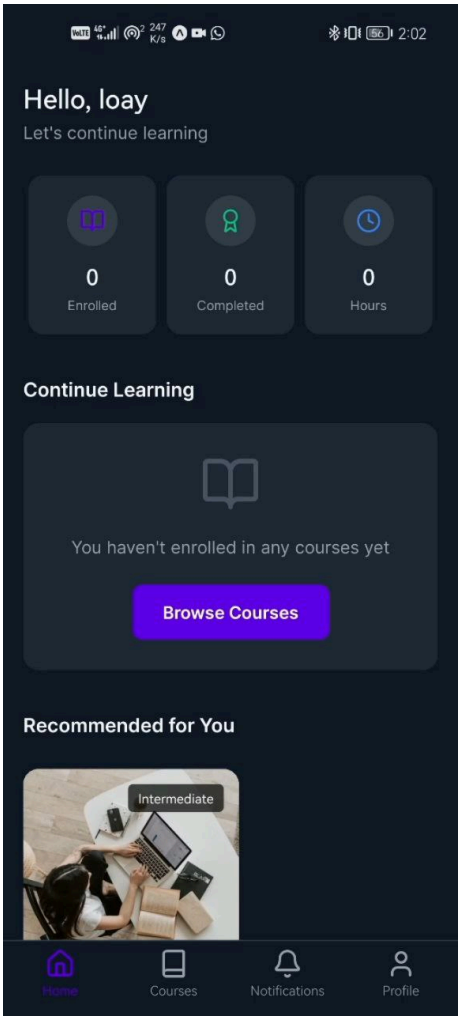


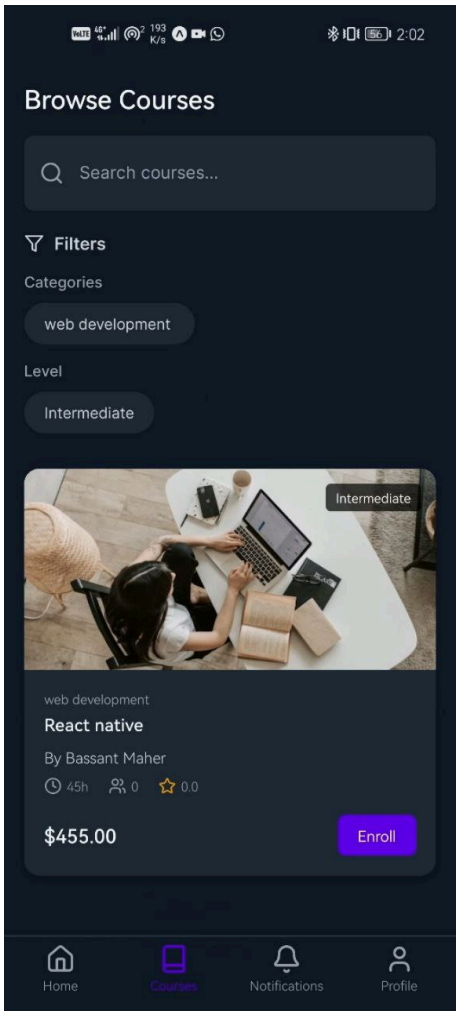



Profile
Bassant Maher
bassanthafez12@gmail.com
Profile Picture
Choose an option
CANCEL
CHOOSE FROM GALLERY
TAKE PHOTO
Settings
Dark Mode
Notifications
Home
Courses
Create
Notifications
Profile


Profile
Bassant Maher
bassanthafez12@gmail.com
Instructor
Personal Information
Edit Profile
Edit Bio
Settings
Dark Mode
Notifications
Home
Courses
Create
Notifications
Profile


Create Course
Course Title *
Enter course title
Description *
Enter course description
Category *
e.g., Web Developm
Level *
Intermediate
Advanced
Price ($) *
e.g., 49.99
Duration (hours) *
e.g., 10
Thumbnail URL *
15.jpeg?auto=compress&cs=tinysrgb&w=600
Provide a URL for your course thumbnail image
Create Course
Home
Courses
Create
Notifications
Profile


Hello, loay
Let's continue learning
0
Enrolled
0
Completed
0
Hours
Continue Learning
You haven't enrolled in any courses yet
Browse Courses
Recommended for You
Intermediate
Home
Courses
Notifications
Profile


Browse Courses
Search courses...
Filters
Categories
web development
Level
Intermediate
Intermediate
web development
React native
By Bassant Maher
45h
0
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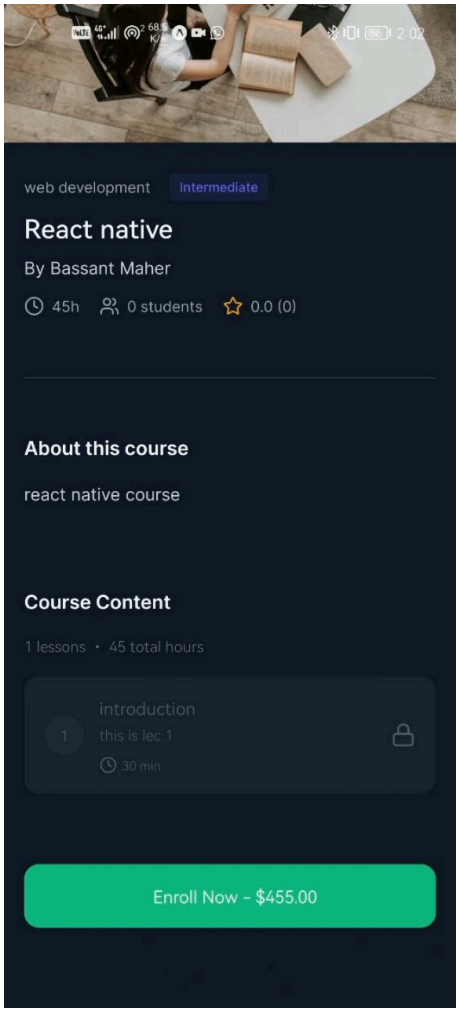
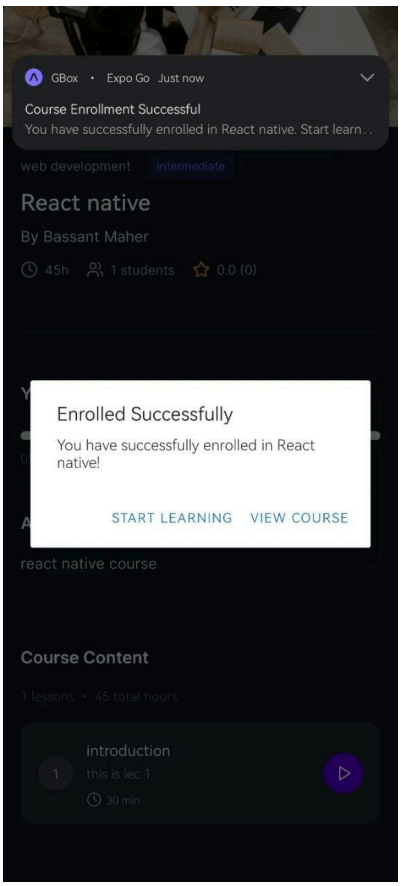
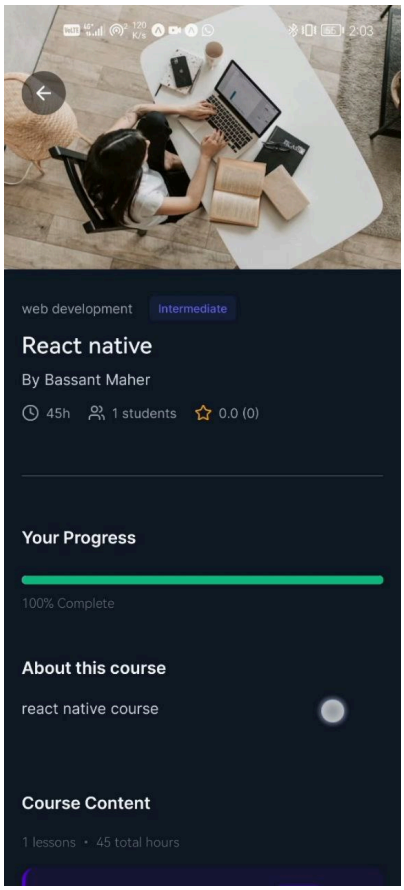
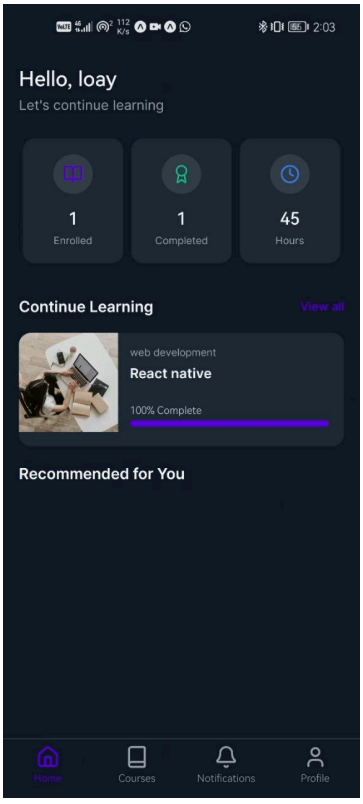
$455.00
Enroll
Home
Courses
Notifications
Profile


web development
Intermediate
React native
By Bassant Maher
45h
0 students
0.0 (0)
About this course
react native course
Course Content
1 lessons • 45 total hours
introduction
this is lec 1
30 min
Enroll Now - $455.00


GBox • Expo Go Just now
Course Enrollment Successful
You have successfully enrolled in React native. Start learn...
web development
Intermediate
React native
By Bassant Maher
45h
1 students
0.0 (0)
Enrolled Successfully
You have successfully enrolled in React native!
START LEARNING
VIEW COURSE
react native course
Course Content
1 lessons • 45 total hours
introduction
this is lec 1
30 min

2:03
React native
Lesson 1 of 1
introduction
30 minutes
introduction_ CSS & JavaScript Full Course
Codesistency
5 PROJECTS
Watch on YouTube
About this lesson
this is lec 1
Previous Lesson
Complete Course
Mark as Complete


2:03
web development
Intermediate
React native
By Bassant Maher
45h
1 students
0.0 (0)
Your Progress
100% Complete
About this course
react native course
Course Content
1 lessons • 45 total hours


2:03
Hello, loay
Let's continue learning
1
Enrolled
1
Completed
45
Hours
Continue Learning
View all
web development
React native
100% Complete
Recommended for You
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Courses
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Conclusion

The Learning Management System (LMS) provides a modern, scalable, and user friendly platform for online education. By leveraging React Native, Expo Router, Node.js, Express, and MongoDB, the application delivers a robust set of features, including secure authentication, course management, and real-time notifications. The project's modular structure, agile development approach, and comprehensive testing ensure maintainability and reliability. Future enhancements will further enhance the platform's capabilities, making it a versatile solution for educational institutions worldwide