

Topic: Online Learning

+ Introduction

This project is concerned with the analysis, design, development, implementation, and evaluation of an online learning management system to provide a user-friendly environment for prospective users to acquire knowledge at any educational level and to bridge the gap between administrators and users.

+ Functional Requirements (Backend Design)

The main actors in the use of the proposed application will be the administrator, teacher, and student. In this online learning system, you will be able to add a student to a class and download a file, a course, a subject, and a video. This project will contain a lot of advanced modules which makes the backend system very powerful. The list of requirements for this project was also influenced by the work done in the background research section above.

PROPOSED MODULES:

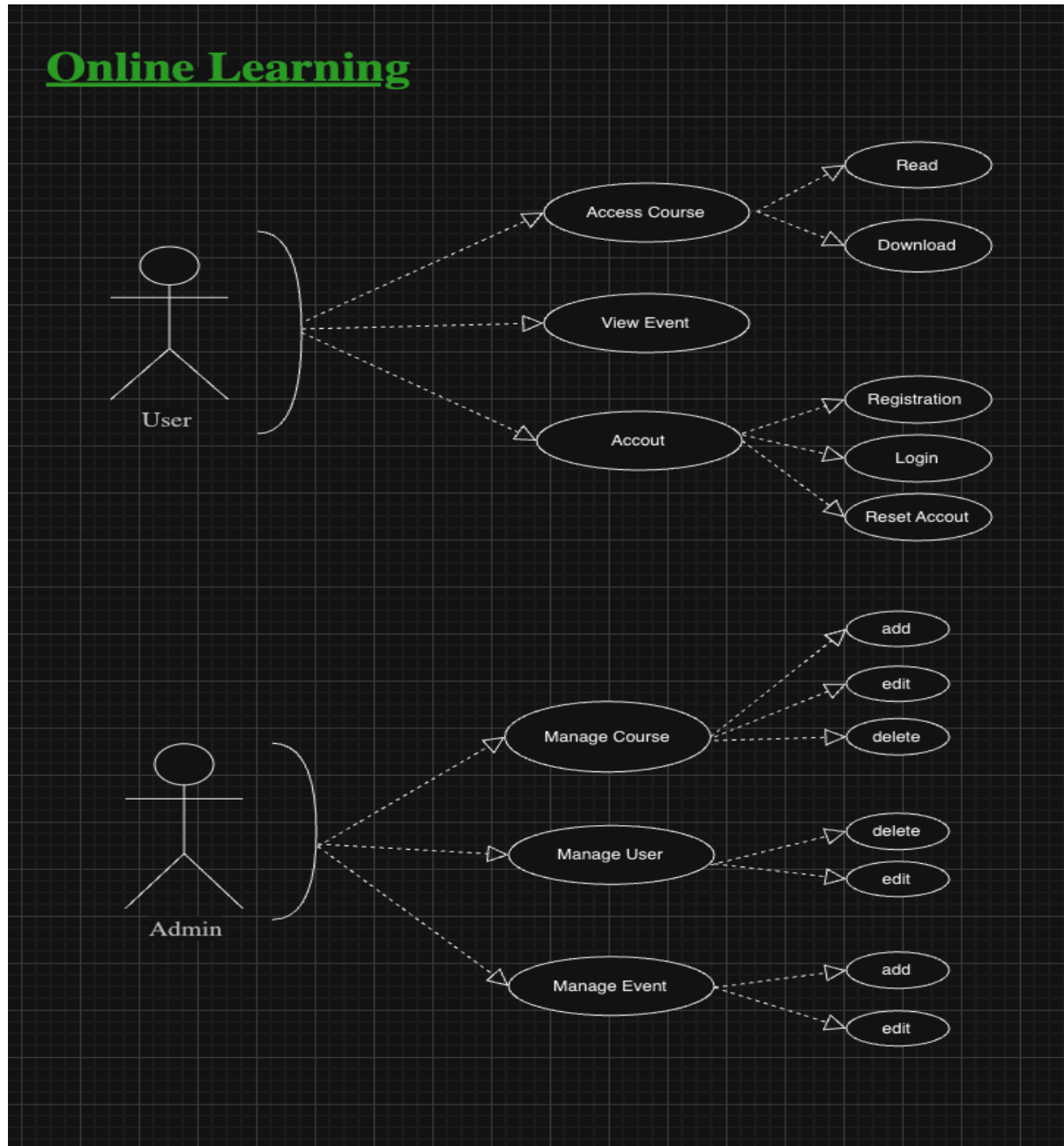
below is a description of the modules proposed for the online learning system.

Module	Objective	Features
Activity logs	Manage activity logs	<ul style="list-style-type: none"><input type="checkbox"/> Admin can manage the activity logs.<input type="checkbox"/> Admin can edit/delete the activity logs.<input type="checkbox"/> Admin can see the list of all activity logs.<input type="checkbox"/> Admin can see his activity logs
Class	Tracks all the information and details of classes.	<ul style="list-style-type: none"><input type="checkbox"/> Admin can add new classes.<input type="checkbox"/> Admin can see the list of classes details.<input type="checkbox"/> Only admin can edit and update the record of the classes.<input type="checkbox"/> Admin will be able to delete the records of the classes.<input type="checkbox"/> All classes forms are validated on client side using JavaScript
Subjects	Administrator can add subjects and a teacher can see subjects	<ul style="list-style-type: none"><input type="checkbox"/> Admin can manage the subjects.<input type="checkbox"/> Admin can edit/delete the subjects.<input type="checkbox"/> Admin can see the list of all subjects
Users	Tracks all the information and details of the users.	<ul style="list-style-type: none"><input type="checkbox"/> Admin can see the list of student's details.<input type="checkbox"/> Only admin can edit and update the records of the users.<input type="checkbox"/> Admin will be able to delete the records of the users.<input type="checkbox"/> All Users publication forms will be validated on the client side using JavaScript.

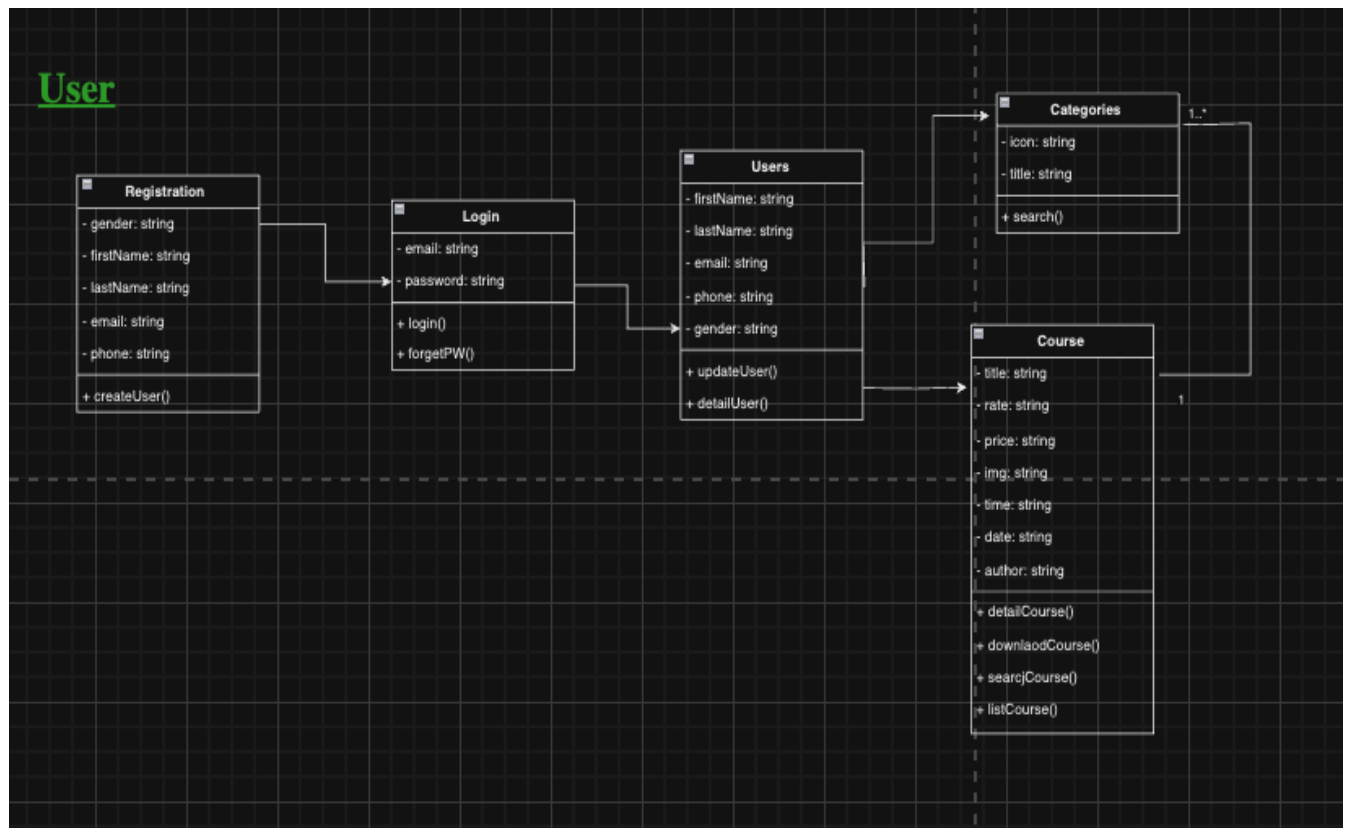
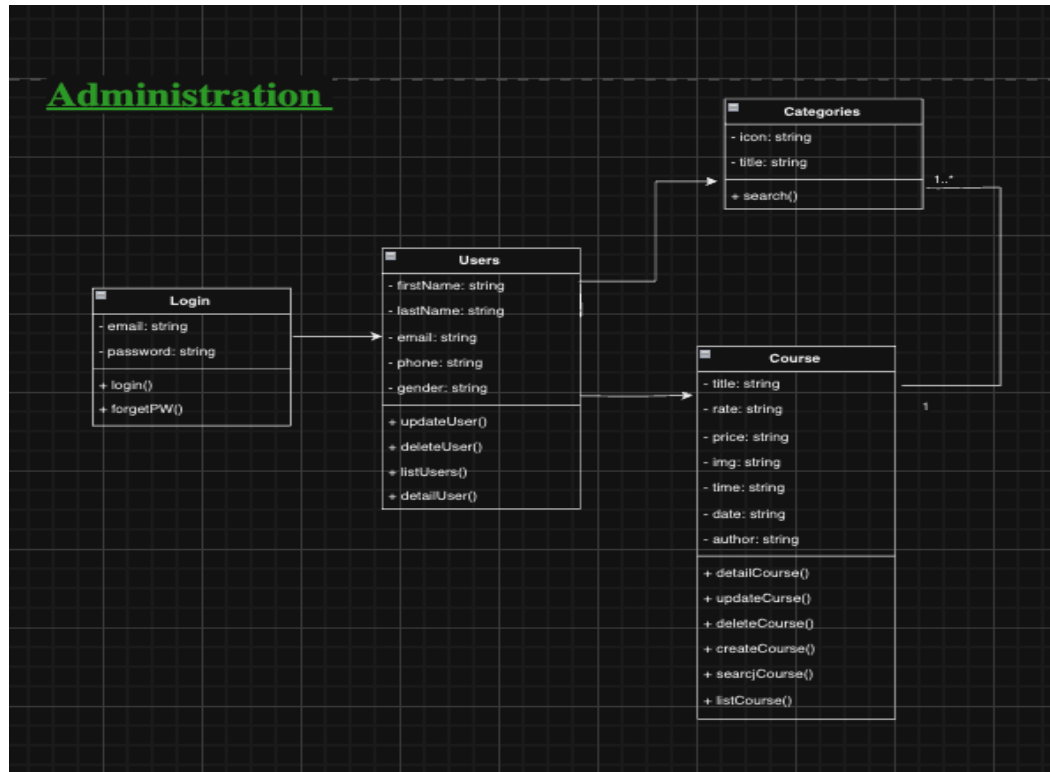
below gives a description of the functional requirements for each user:

User	Functional Requirements
Admin	<ul style="list-style-type: none"><input type="checkbox"/> Login for Admin<input type="checkbox"/> Forgot password for Admin.<input type="checkbox"/> Edit Profile for Admin<input type="checkbox"/> Change password for Admin.<input type="checkbox"/> Logout functionality<input type="checkbox"/> Dashboard for Admin User<input type="checkbox"/> MANAGE Course: Add new, edit existing, view details of a course and see a listing of all courses.<input type="checkbox"/> MANAGE FILES: Add new files, edit existing files, view details and a listing of all files.<input type="checkbox"/> MANAGE User: Edit the existing student, view details of the user and see a listing of all users.<input type="checkbox"/> MANAGE SUBJECT: Add a new subject, edit the existing subject, view details of a subject and see a listing of all subjects.
User	<ul style="list-style-type: none"><input type="checkbox"/> User Registration: Any users can register on the website using the registration module.<input type="checkbox"/> User Login: This is the login form from where users can login to the system.<input type="checkbox"/> User Change password: A user can change his account password from this module.<input type="checkbox"/> User View Announcement: Users can view announcements.<input type="checkbox"/> User View Course: Users can view document and download.

Shows the use case diagram:

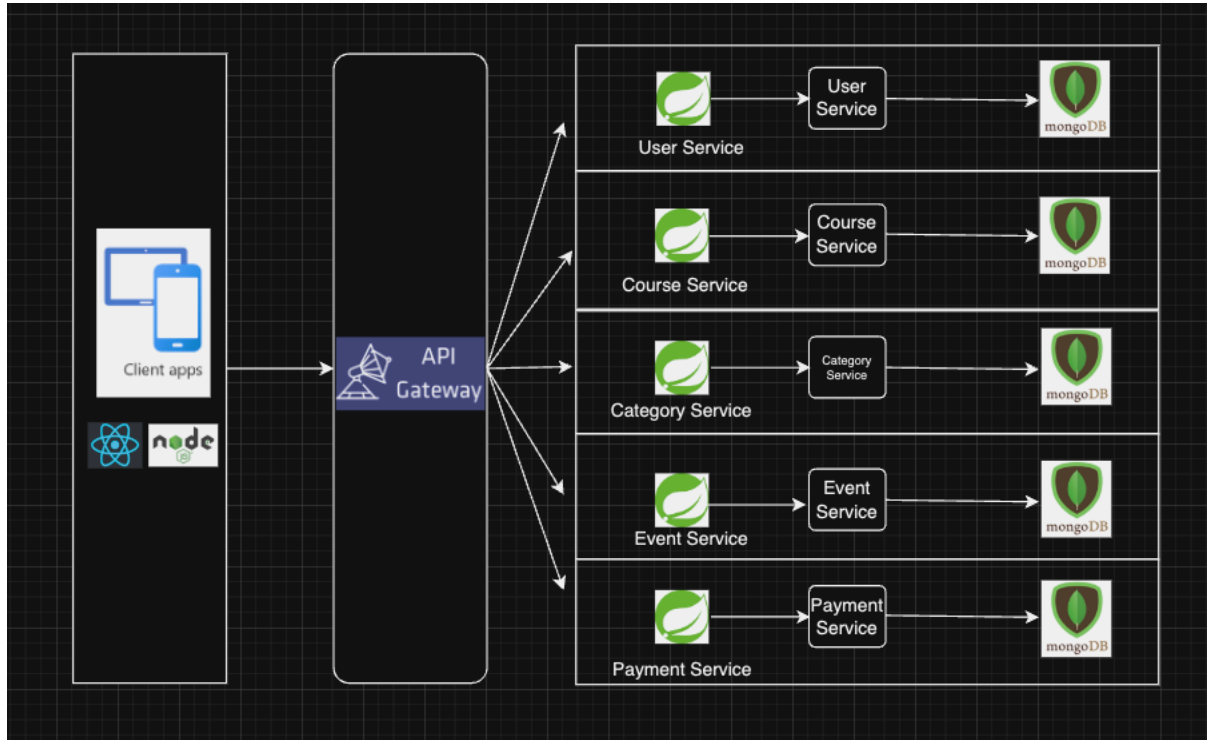


Shows the Domain Model UML:



Shows the ERD (Entity Relational Diagram):

+ Microservice Architecture:



+ Technologies for Development:

- ☐ Languages: React (ReactJS and ReactNative) and NodeJS (ExpressJS)
- ☐ Database: MongoDB
- ☐ Database UI: MongoDB compass
- ☐ Authentication: JWT
- ☐ Testing: Jest
- ☐ Deployment: Docker, AWS
- ☐ Testing tool: Postman
- ☐ GitHub: Coding Management
- ☐ CI/CD: Project Pipeline and auto-deployment