FunLearn

SUBJECT CODE : 18CSC206J-Software Engineering and Project Management


FunLearn
Learning Gamified

Problem Statement

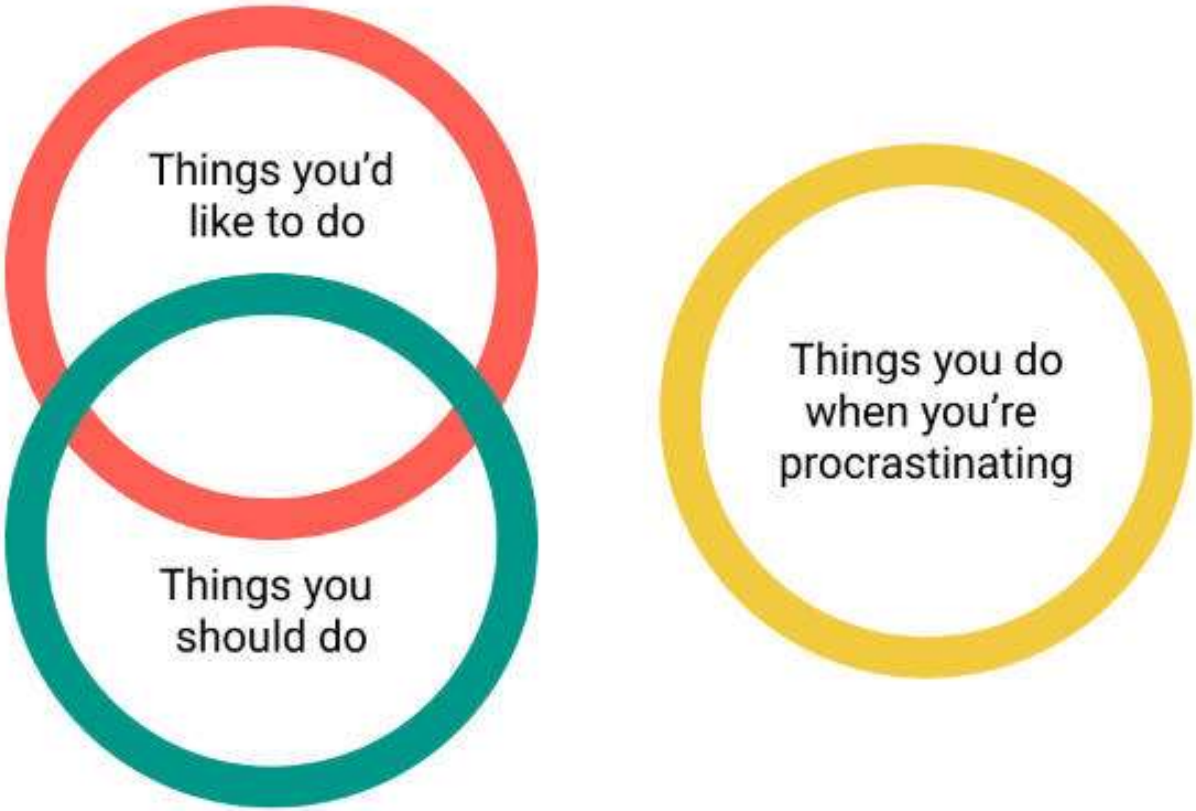
- To build a Cross Platform Application which makes studying fun using credit points to get discounts on goodies and courses.

- The platform will help students in acquiring new skills and use them in a practical way. All these features will encourage student to do assignments fast.

Current Situation

- Students are not willing to submit assignments until the teacher forces them to do so . It's not that they don’t want to study but they lack the motivation.

- Students want to buy some vocational Courses which are not available in college but they don’t have enough money .This stops them from learning the skill they like.


Things you'd like to do
Things you should do
Things you do when you're procrastinating

References

- Github
- Aggregator sites

Requirements

Tech Required :

React Native , JavaScript , AWS server, Nodejs , Python, Django

Marketing and Outreach:

Strong customer support to onboard new clients.

We broadly have 2 types of client :

1.Course Seller websites 2. Colleges / students

Benefits

- It will have access to a strong community of Students across the country
- Revenue can be generated from onboarding colleges and schools
- This platform can be used to conduct student oriented events

Limitations

The project have following limitations:

- It is capital intensive business , because discounts given by the credit points will be paid by the company and there will be no significant revenue until the app acquires majority of educational institutes
- Huge Databases are needed for storing assignment and data.So server Cost will be high
- Onboarding colleges and schools on the platform will take time
- Platform should be updated regularly to engage students

Future Scope

- To convert it into a platform where students of different interests are connect and discuss ideas.
- To convert it into a hiring platform for Companies looking for Talent across the globe.

Process Model

The Waterfall methodology—also known as the Waterfall model—is a sequential development process that flows like a waterfall through all phases of a project (analysis, design, development, and testing, for example), with each phase completely wrapping up before the next phase begins.

There are five stages in Waterfall model :

1. Communication
2. Planning
3. Modelling
4. Construction
5. Deployment

Stakeholders

Stakeholder Name	Activity/ Area /Phase	Interest	Influence	Priority (High/ Medium/ Low)
Founder/Owner	Building a strong team of passionate people and Innovating new ideas	High	High	High(1)
Investors	Promotion of Investment and Giving Helpful Opinions for Growth	High	High	High(2)
Team members	Developers : Updating the application on the basis of feedback provided . Customer Support: Onboarding new clients and resolving queries of other users	Medium	High	Medium(3)
Resource Manager	Making sure all the funds are used properly and other employees are working in productive and healthy environment	Medium	Medium	Low(4)
Course Creators/platform	Providing Good discounts on Courses and goodies for better engagement	Low	Low	Low(5)
End Users	Using The application and giving constructive feedback	Low	Medium	Low(6)

Functional Requirements

1. **Login Page** : An authentication component for users to ensure data security and privacy.

2. **Announcements** : This page shows the latest announcements by teacher or fellow students and allows students to comment .

3. **Feedback Page for Application** : This page allows the user to tell us what courses they want and any new changes for better application development.

4. **Home Page** : This page shows all the school courses created by the teacher(for student)and all batches(for teacher) in form of cards for better navigation

Non Functional Requirements

1. The login should be associated with the email id given by the organization to its students and employees
.

2.The application should be capable enough to handle 5 million users without affecting its performance.

3. The software should be portable. So moving from one OS to other OS does not create any problem.

4. The server should have multiple instances so that in case of failure, there is no data loss.

5. Privacy of information, the export of restricted technologies should be audited.

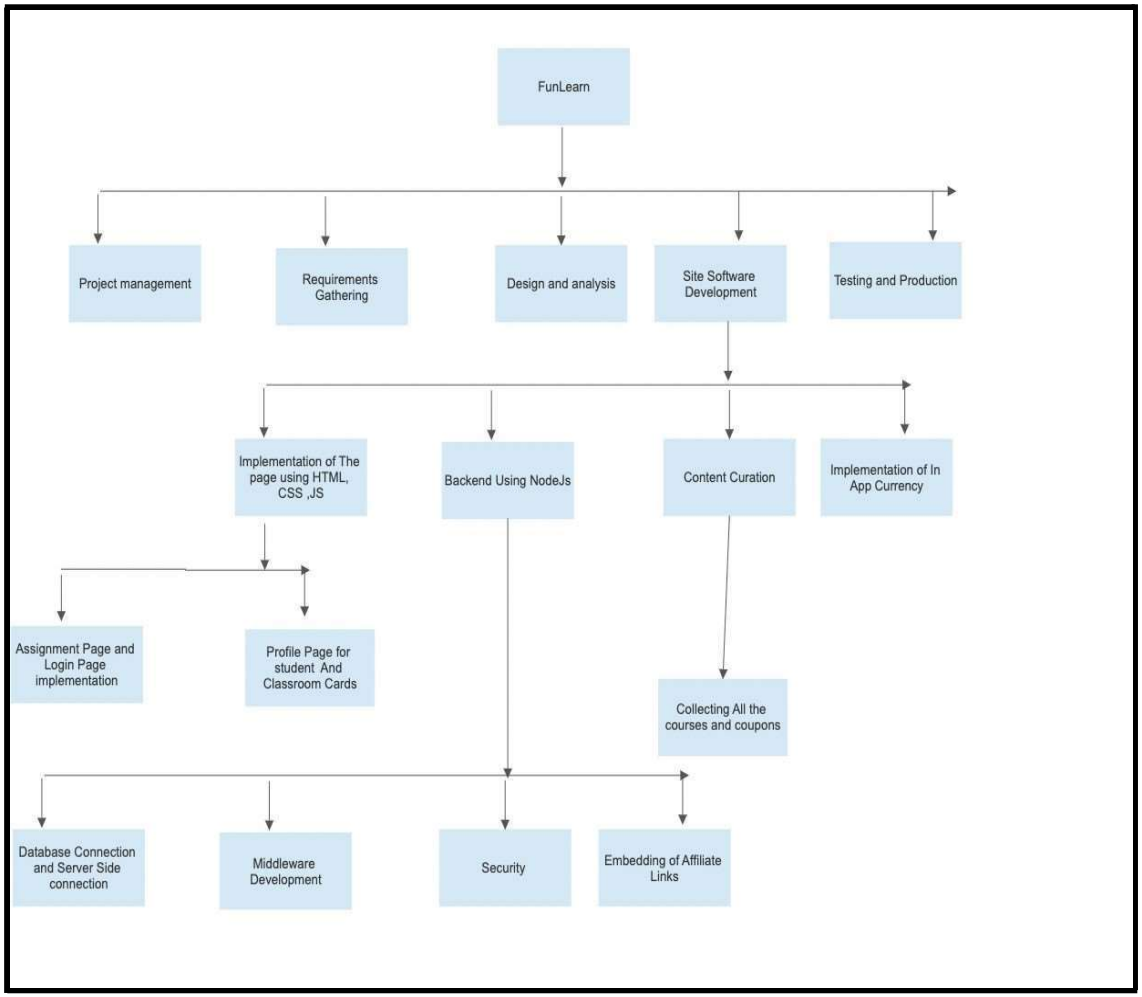
6. The site should load in <5 seconds when users are greater than 100000

Effort and Cost Estimation

Activity Description	Sub-Task	Sub-Task Description	Effort (in hours)	Cost in INR
Design the user screen	E1R1A1T1 (EffortRequire ment-Activity-Task)	Confirm the user requirements (acceptance criteria)	2	600
	E1R1A1T2	UX design	3	900
	E1R1A1T3	Coding	5	1500
Assignment Submission Module		Backend Integration for storing Assignments	5	1500
Courses curation Module		Embedding Affiliate links	2	600
Points Collection feature		Designing an in app currency which can be used for getting discounts	5	1500
Onboarding New Schools a Students nd		Connecting with different representative of schools	5	1500

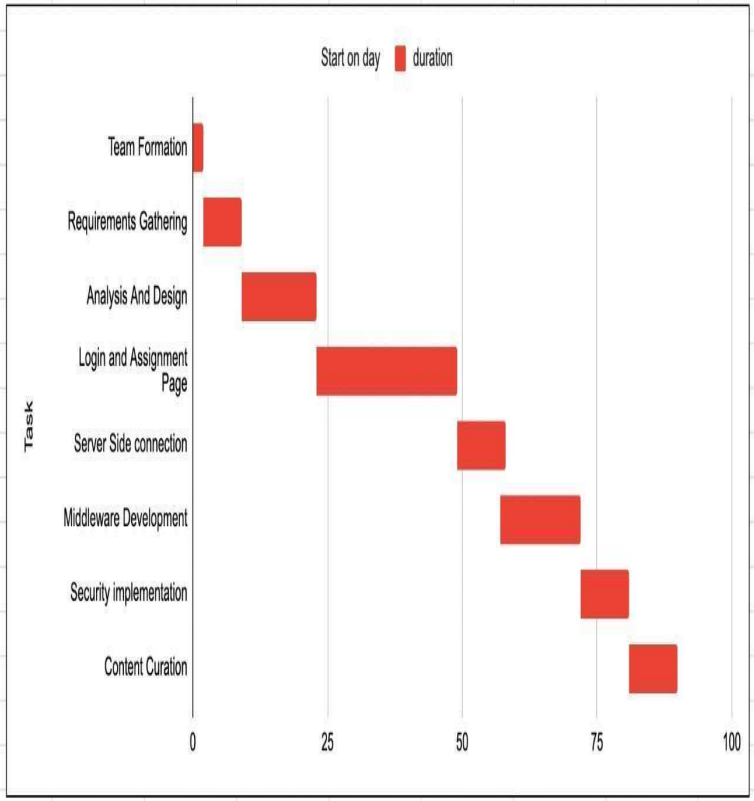
Effort (hr)	Cost (INR)
1	300

Work Breakdown Structure

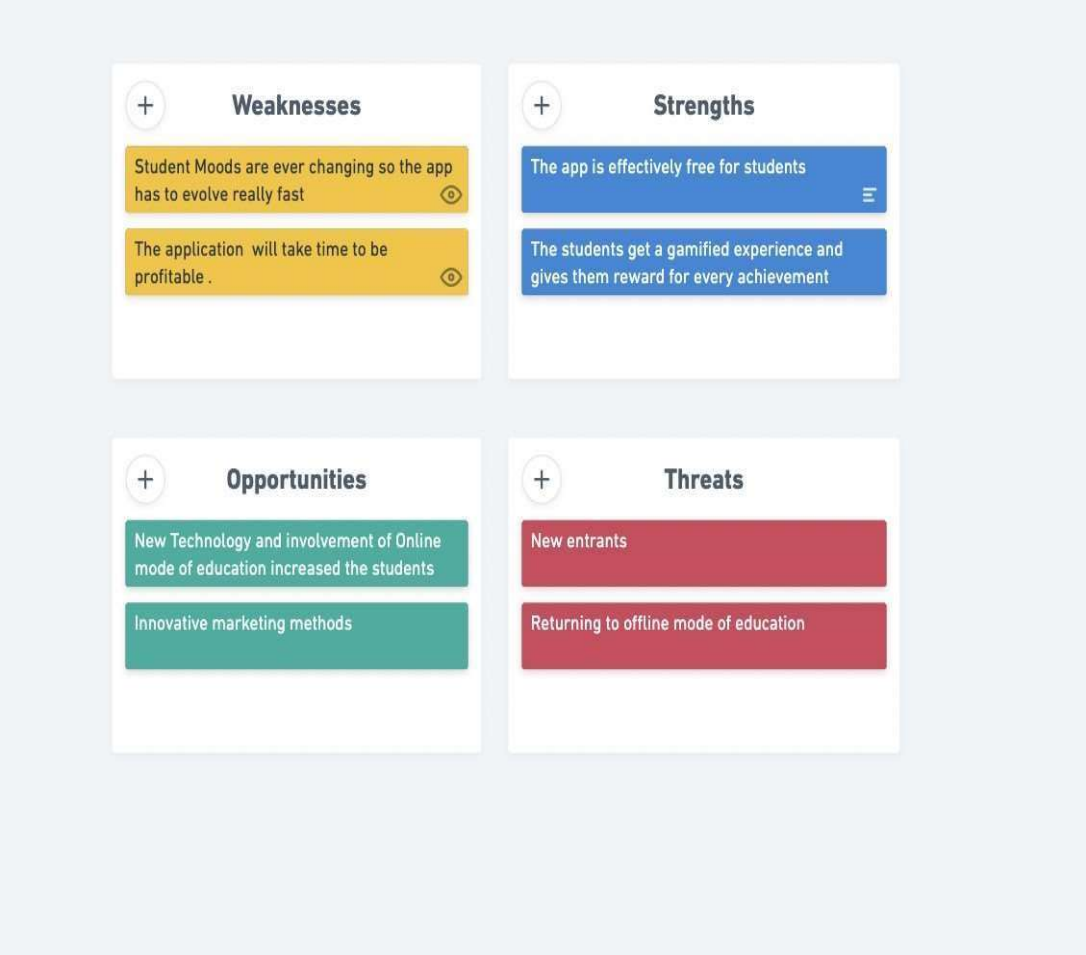


Gantt Chart

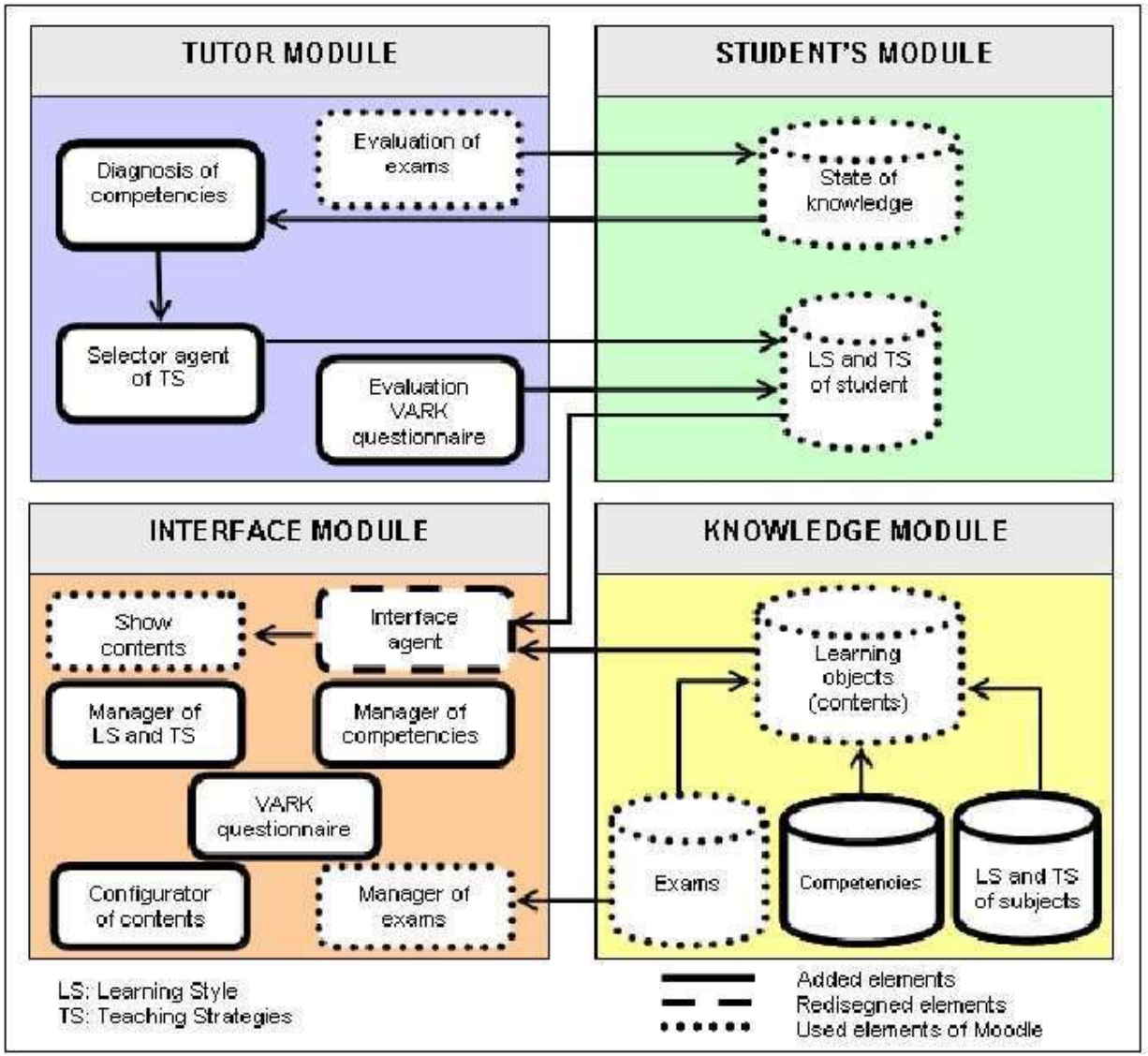
Task	Start Date	End Date
Team Formation	21-03-2022	22-03-2022
Requirements Gathering	23-03-2022	29-03-2022
Analysis And Design	30-03-2022	13-04-2022
Login and Assignment Page	14-04-2022	10-05-2022
Server Side connection	11-05-2022	20-05-2022
Middleware Development	21-05-2022	05-06-2022
Security implementation	06-06-2022	15-06-2022
Content Curation	16-06-2022	23-06-2022



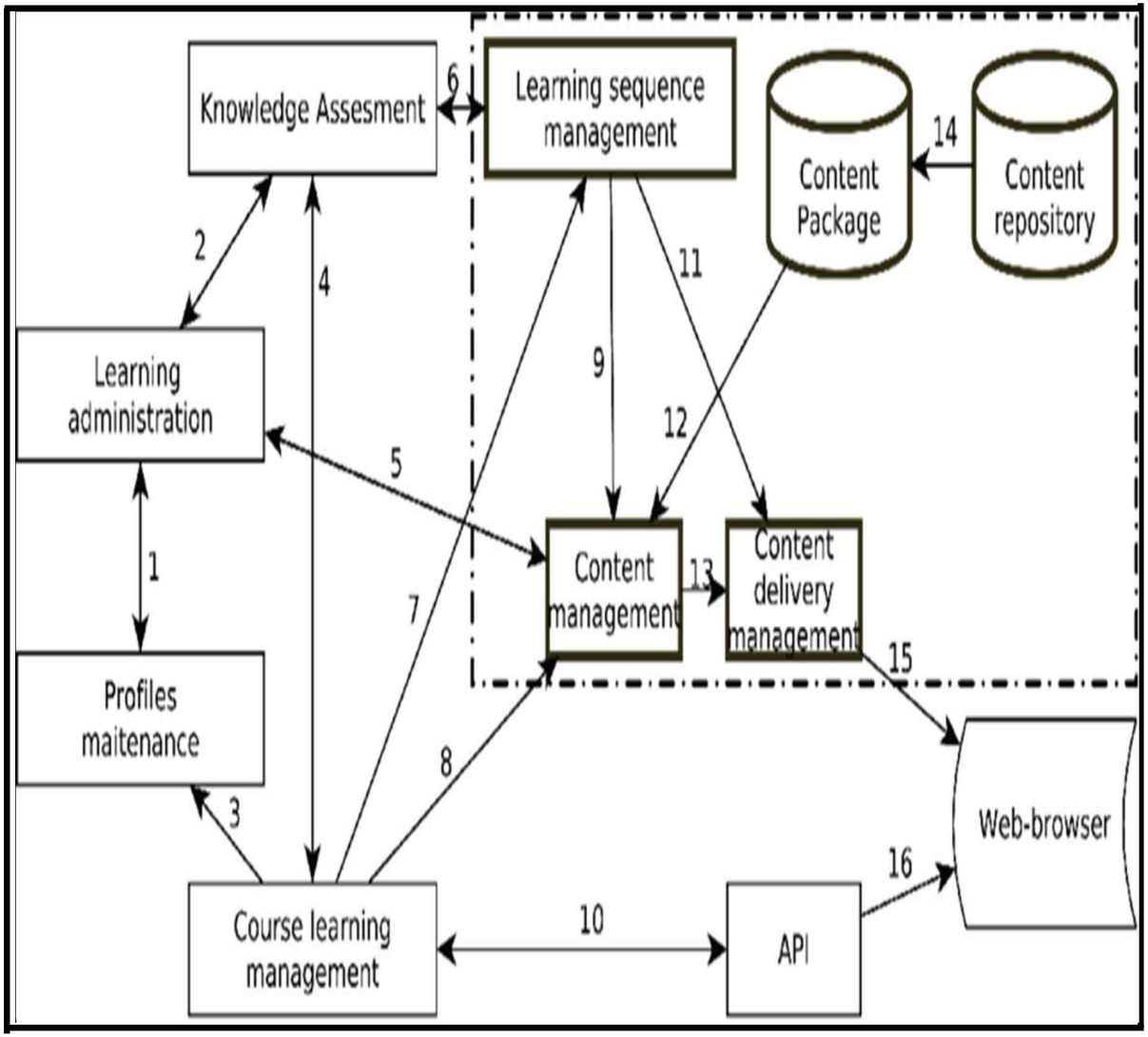
SWOT analysis



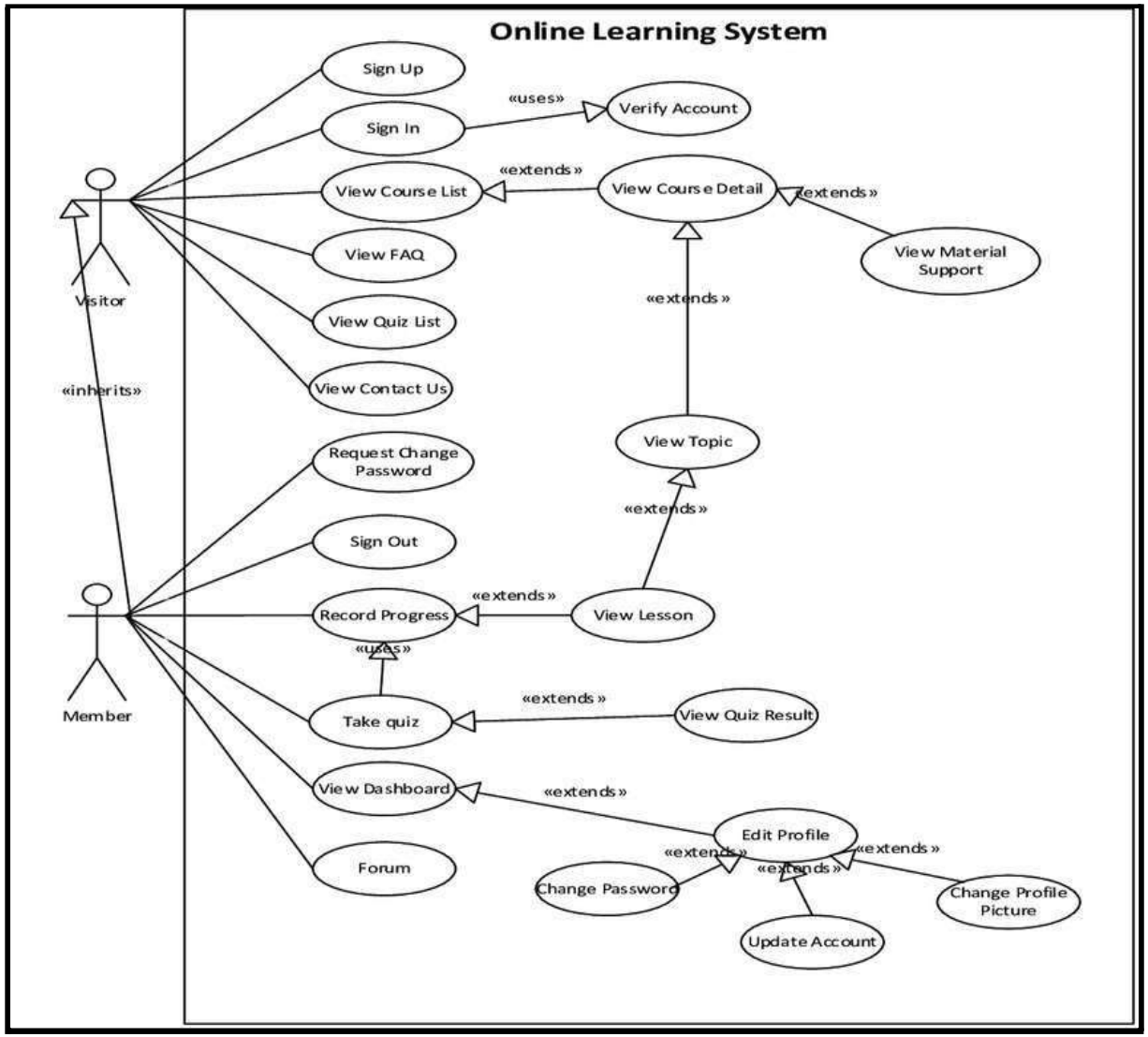
System Architecture



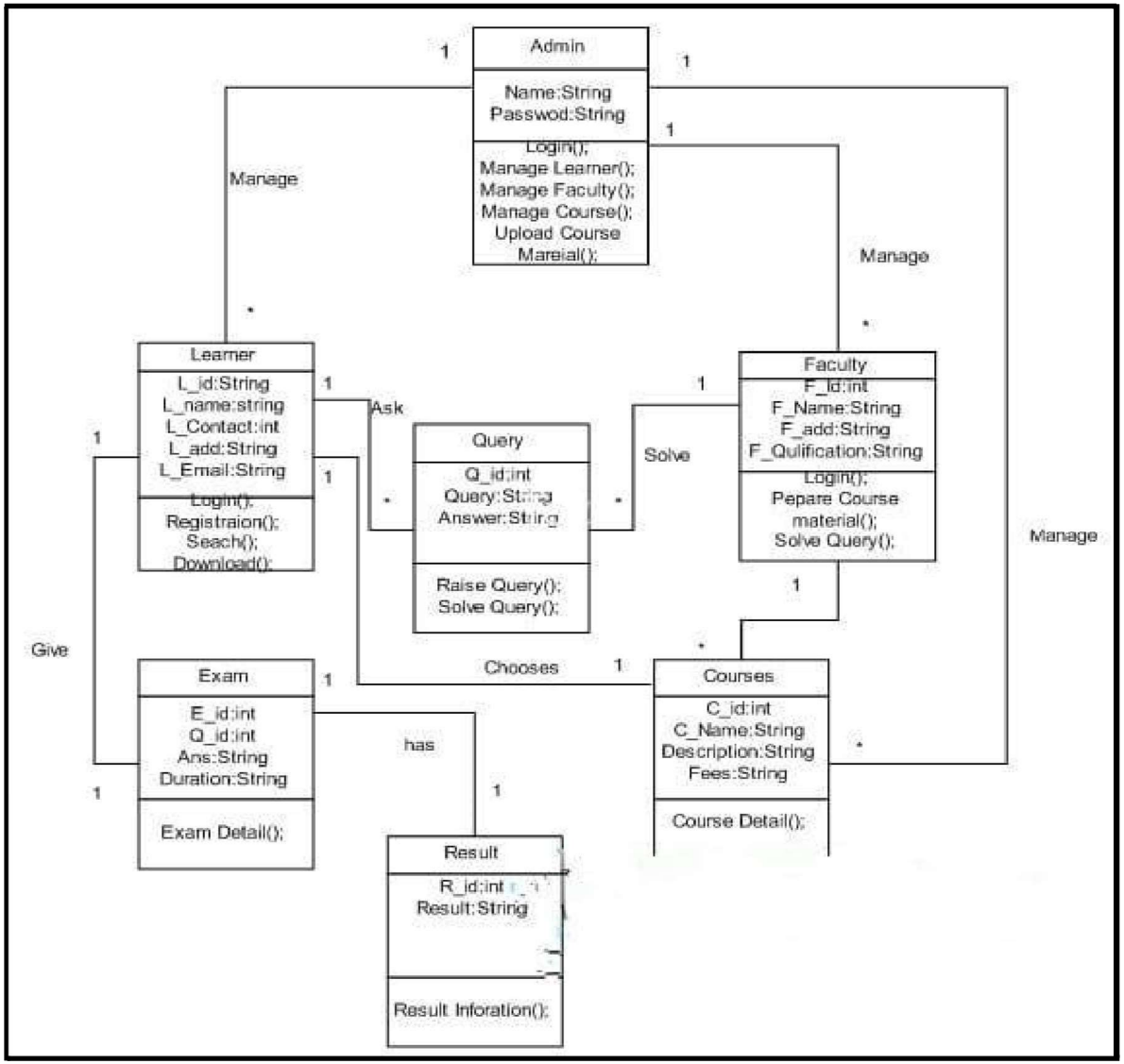
System Architecture



Use Case Diagram

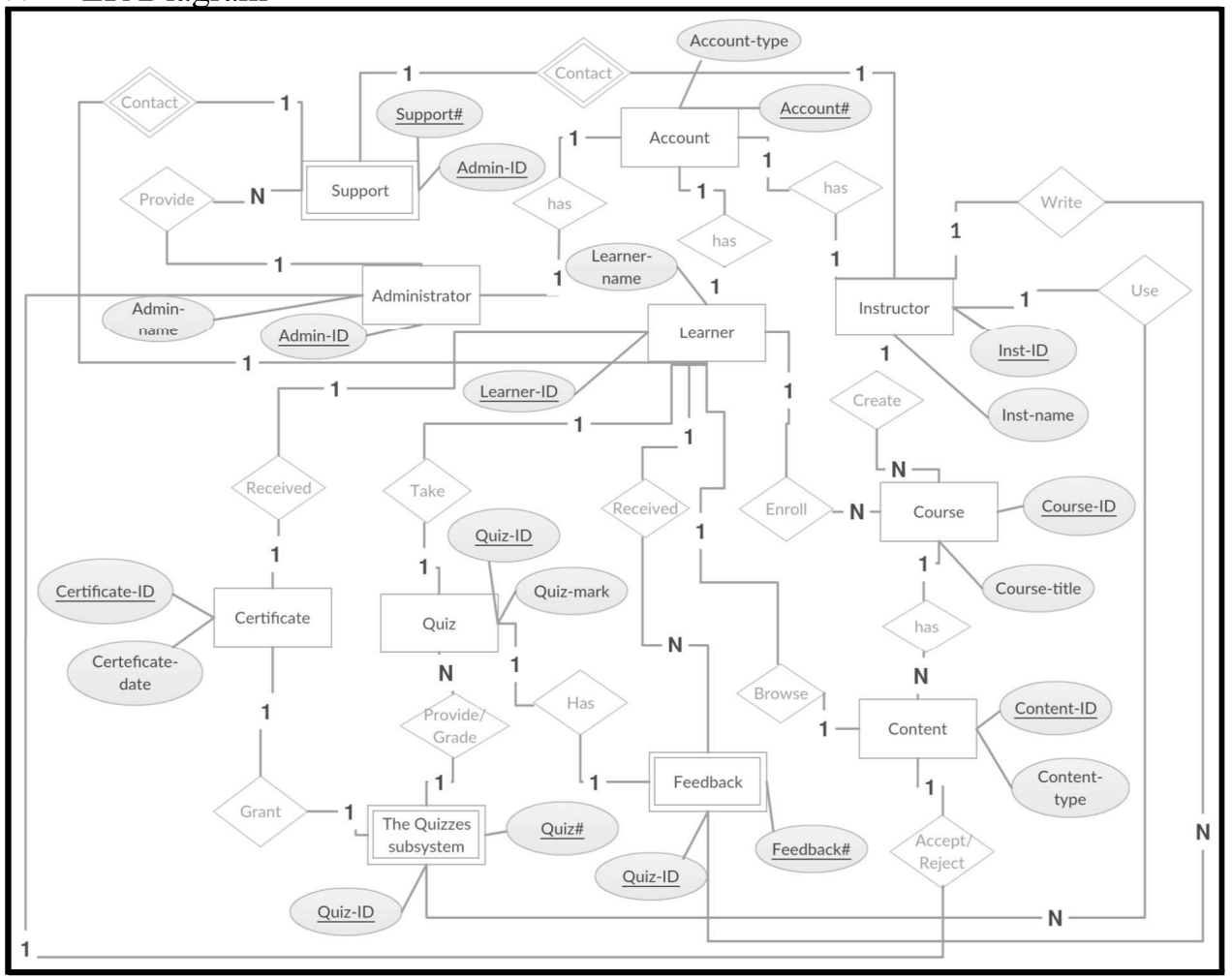


Class Diagram

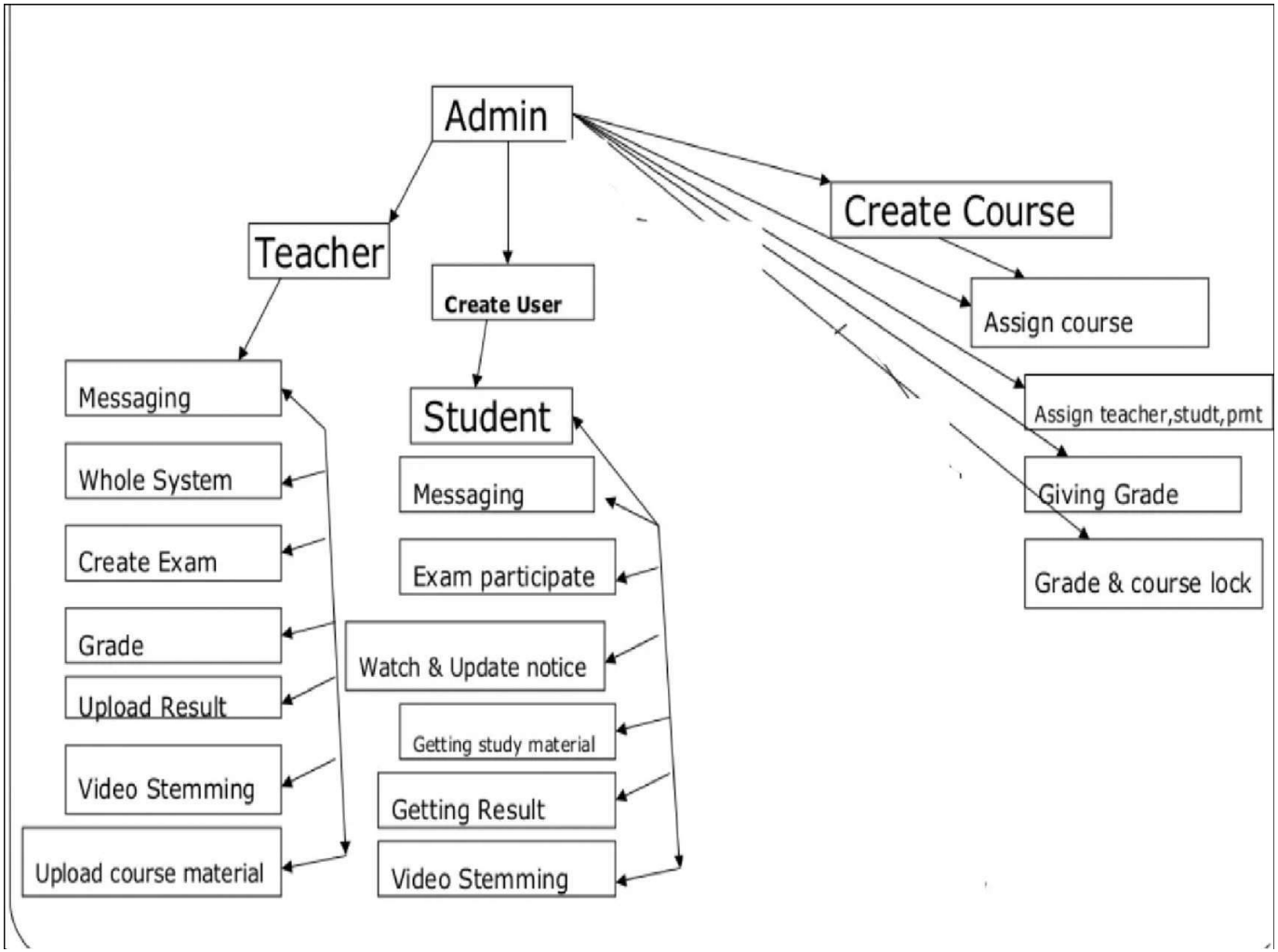


ER Diagram

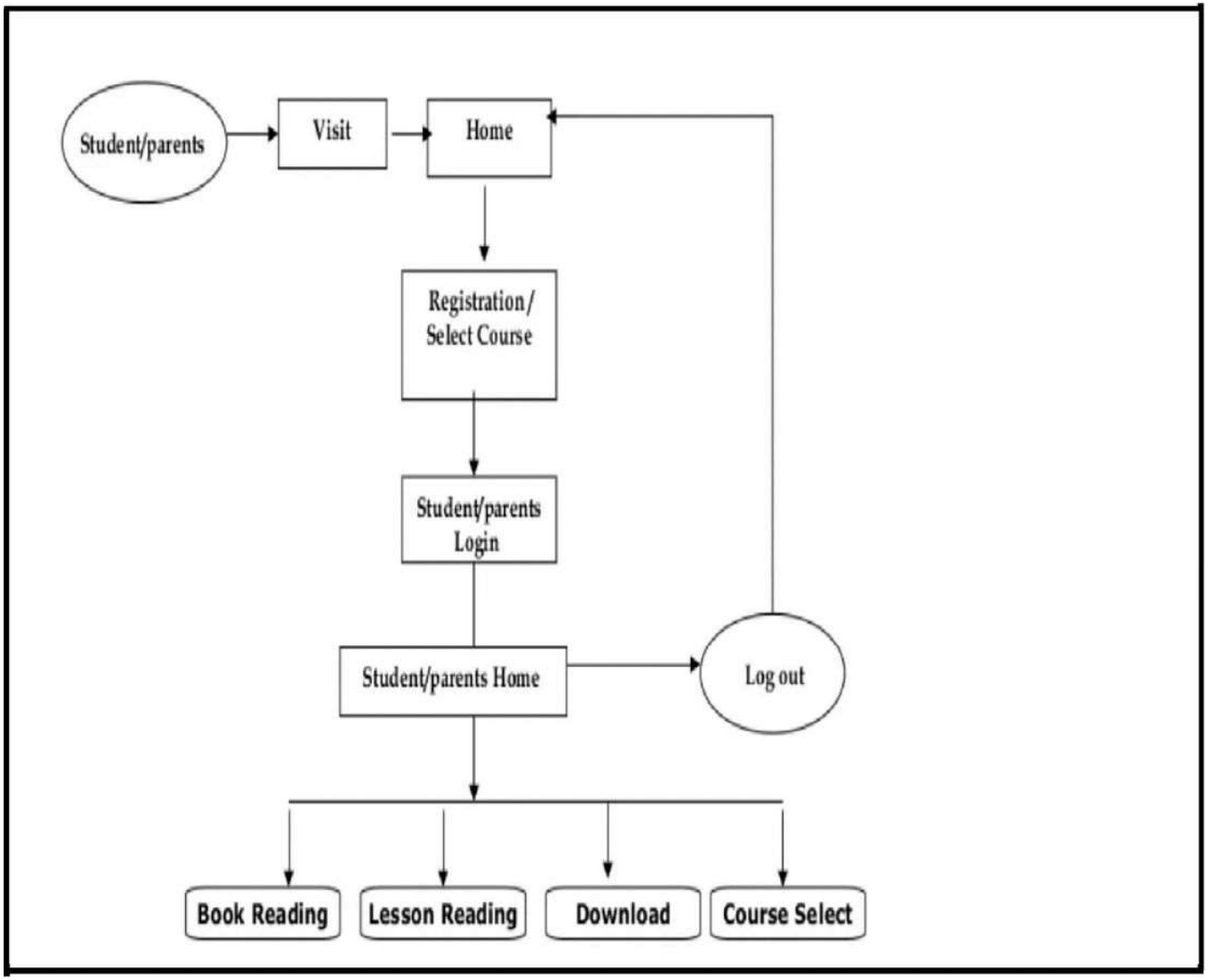
7.1-<ER Diagram >



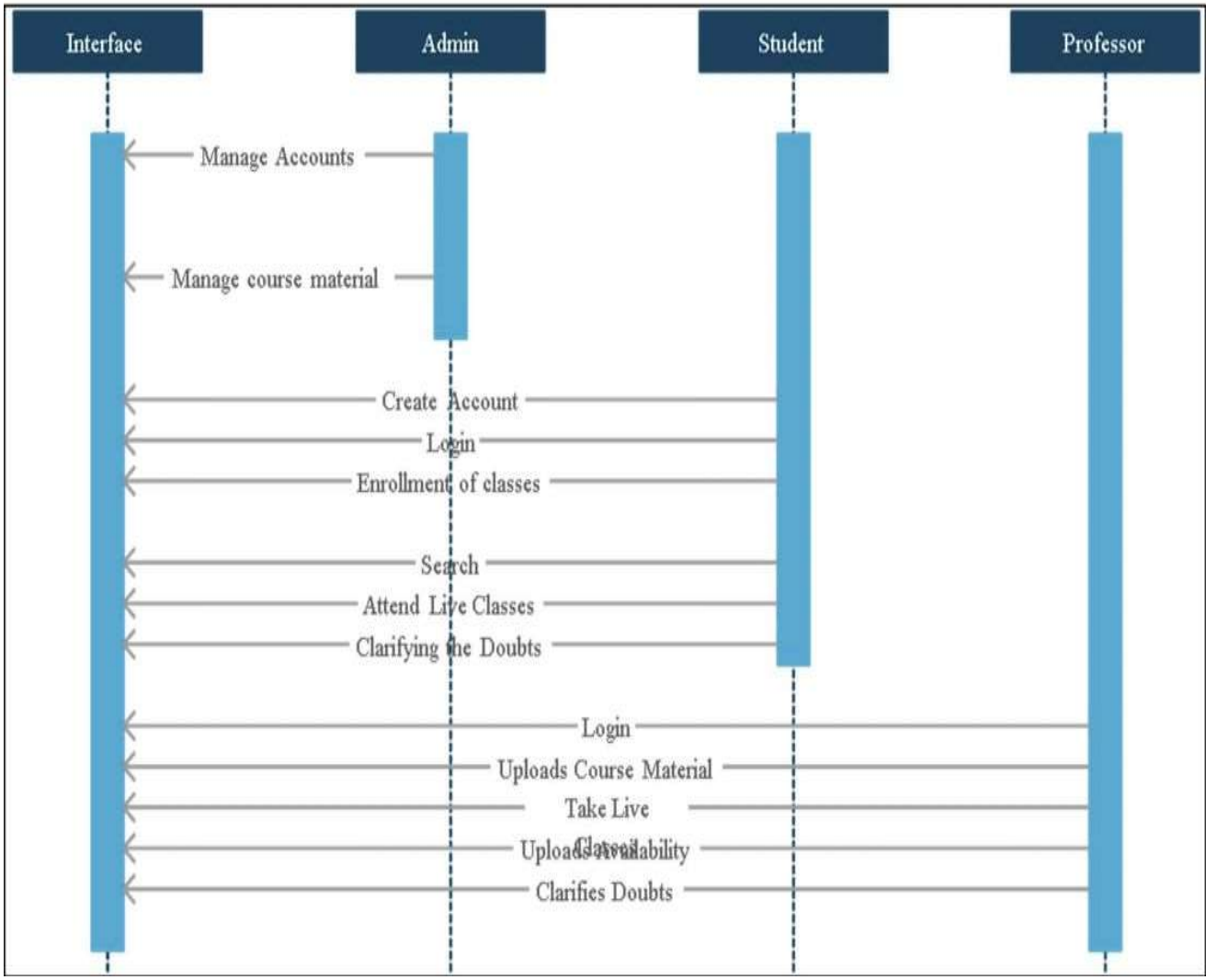
DFD(0-level)


Admin
Teacher
Create User
Create Course
Assign course
Assign teacher,studt,pmt
Giving Grade
Grade & course lock
Messaging
Whole System
Create Exam
Grade
Upload Result
Video Stemming
Upload course material
Student
Messaging
Exam participate
Watch & Update notice
Getting study material
Getting Result
Video Stemming

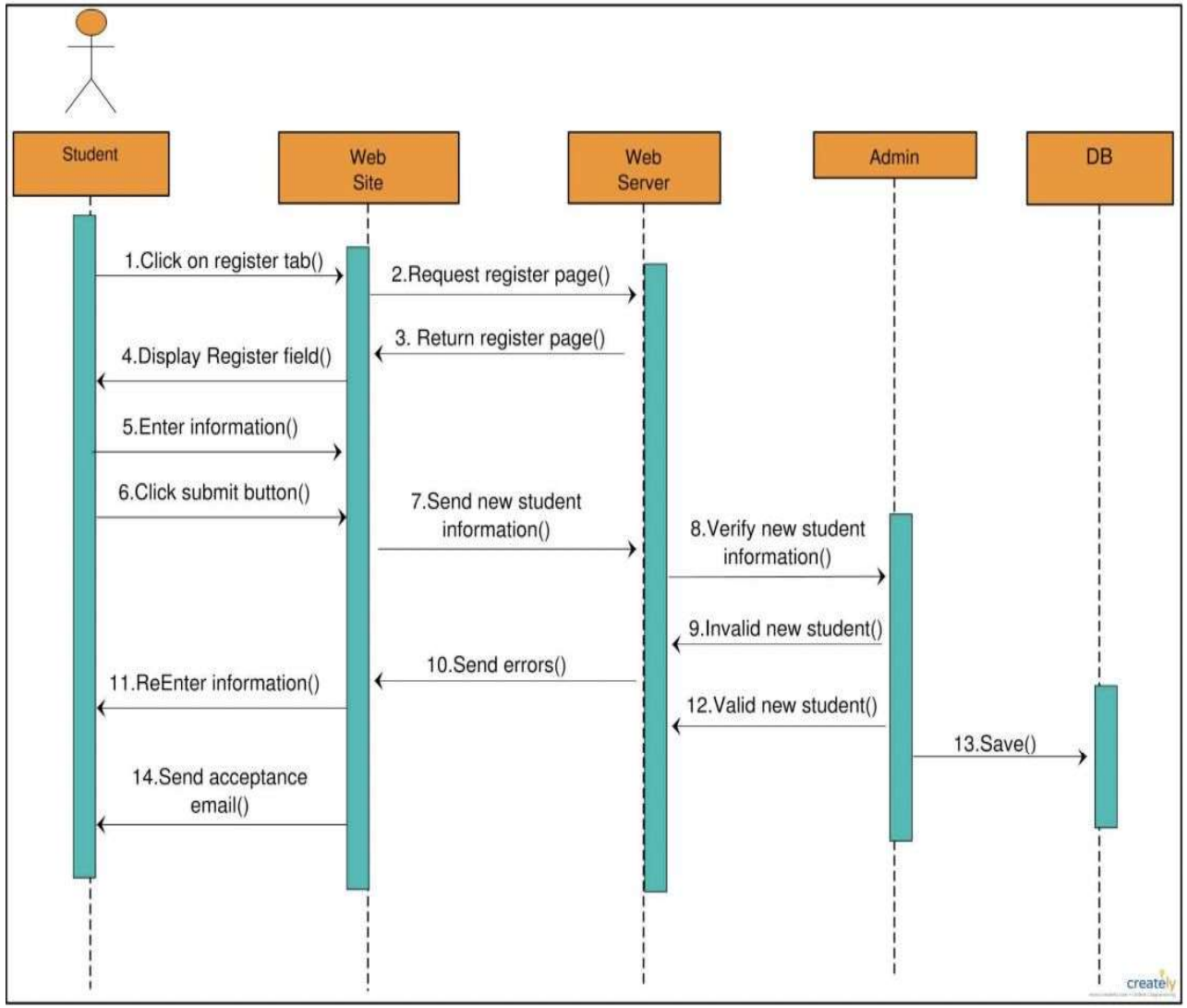
DFD(1-level)


Student/parents
Visit
Home
Registration/
Select Course
Student/parents
Login
Student/parents Home
Log out
Book Reading
Lesson Reading
Download
Course Select

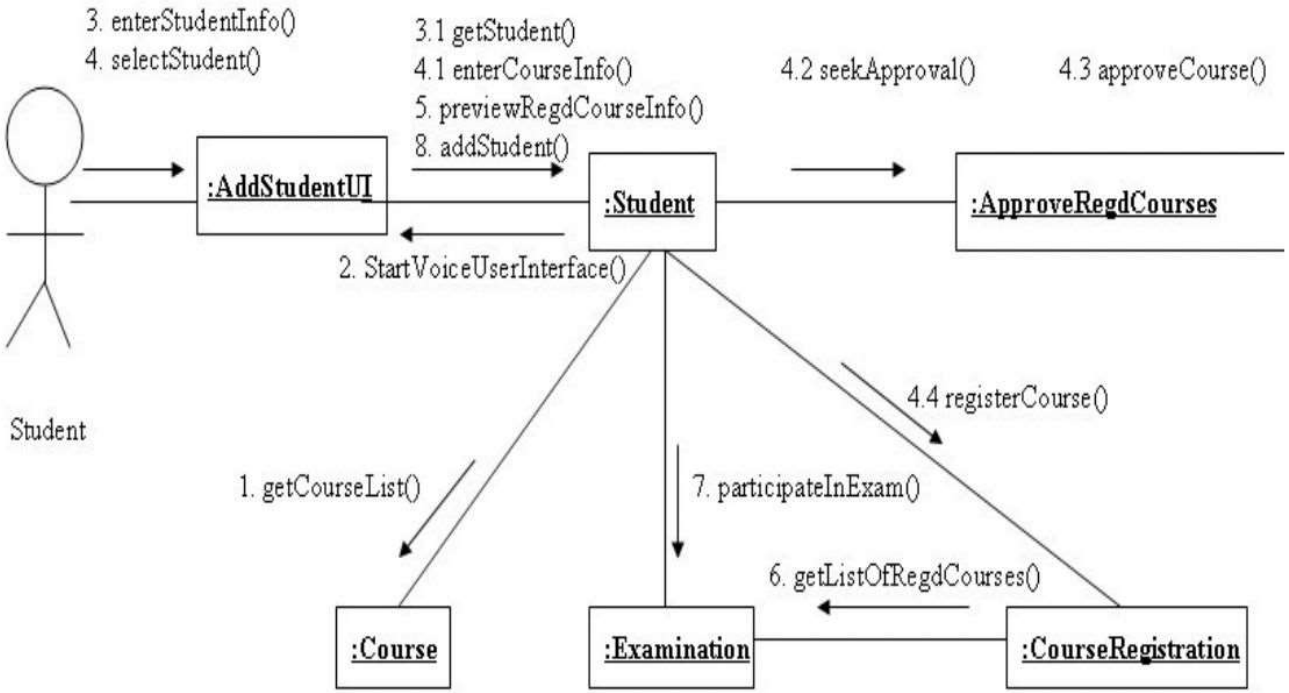
Sequence Diagram



Sequence Diagram



Collaboration Diagram



Testing

Jest is the testing framework used at Facebook to test React components and is adopted by Uber, Airbnb and other teams. The React community, therefore, recommends Jest as the React testing framework of choice. Jest itself works with many JavaScript projects out of the box.We will test the functionality of app such as course request and assignment submission .
Major testing is for security of Web Server.

1. White Box Testing
2. Black Box Testing
3. Gray Box Testing

Functional Testing

Functional Testing makes sure that all the applications that drive all the goodies that we use work exactly as they are supposed to. It is usually a form of Black Box Testing because generally, the testers do not really get into the internal program structure, or how the applications work.

Teacher Module :

1. Courses are being updated regularly
2. Announcement tab does not lag or delay announcements
3. Assignment submission are shown instantly
4. Grading is done successfully

Student Module:

1. All classes are shown to the student
2. Deadlines should be mailed to student mail ids.

Non Functional Testing

While Functional Testing takes care of the way the programs are executed in an application, non functional Testing looks at how the application performs in a live environment. This type of testing takes into consideration aspects such as Speed, Reliability, Scalability, Performance, and Usability.

Load Testing:

It validates that the application responds as required even when a huge number of concurrent users access it simultaneously,

Stress Testing:

Stress Testing evaluates the performance of applications in crunch situations, e.g., under low memory/hard disk space conditions.

Security Testing:
This simply checks whether an application has no flaws or vulnerabilities that can be exploited to compromise the system and lead to loss of data or theft.

Baseline Testing:
Baseline or Benchmark Testing refers to setting a standard for any new application under test. For instance, an application may be able to handle a load of 100,000 users in its first round of
testing, which then becomes a benchmark for future testing

Functional Test cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Verify User Registration	Email Login	1. User clicks on User Registration link 2. Enter the Email on the text box 3. Click Register button	User should be taken to the next page for entering more user details	Registration successful	Pass / Failure	success
2	Verify User Login Details	Correct Password should be entered	1. User enters email 2. User enters password	User should be redirected to their dashboard	Authentication successful	Pass / Failure	success
3	Add Assignment	Assignment should be created	1. Teacher Logs in 2. Go to respective class 3. create a assignme nt	Assignment should be reflected on student and educator end	Students are able to see the assignment and turn it in .	Created/ Not created	success
4	Add Grades	Grades should be given	1. Teacher 2. logs in See the particular assignme nt and provide grades	Assignment should be returned and grades should be visible to students	Assignment graded email is sent to student	Graded/ Not graded	Success

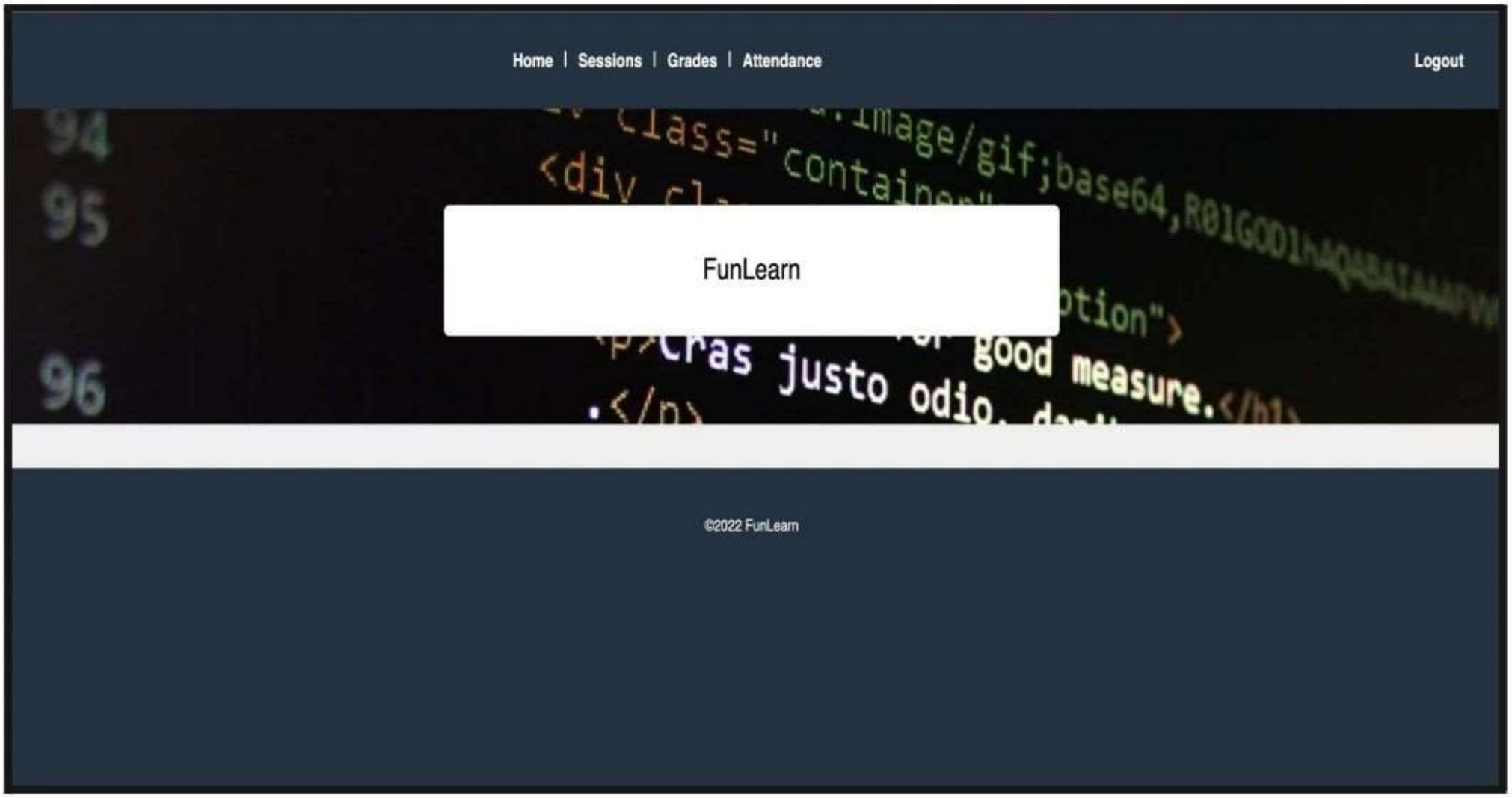
Functional Test cases

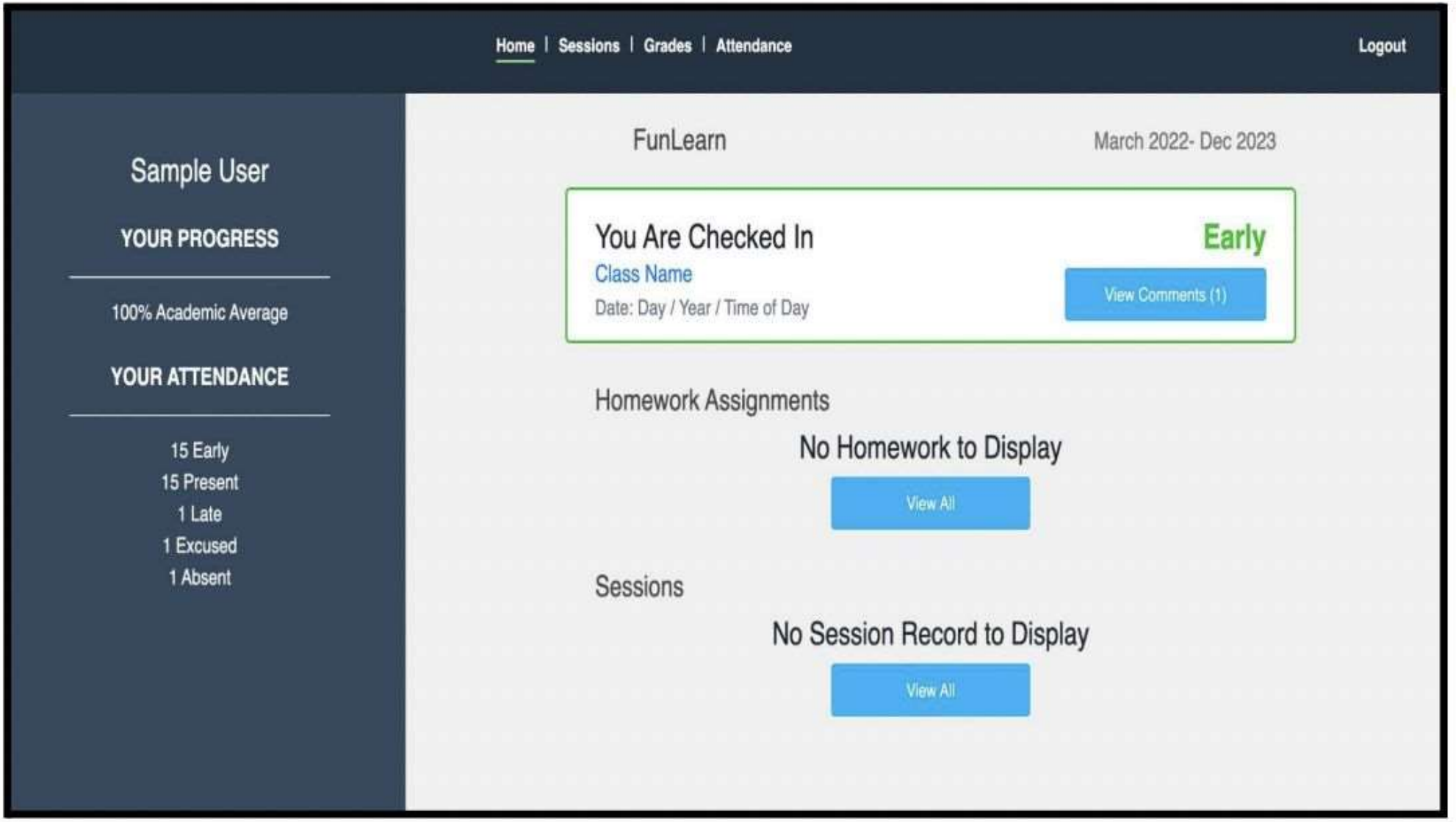
5	Assignment Submission	Student user should submit the assignment	1. Student Logs in 2. Go to particular class 3. Upload the assignment and click submit	Teachers should be notified about student submission along with date and time	Assignment submission notification is sent to teacher	Turned In/Not turned In	Success

Non Functional Test cases

Test ID (#)	Test Scenario	Test Case	Expected Outcome	Actual Outcome	Remarks
1	10000+ users accessing application simultaneou sly	Trying to submit assignment	Load time < 5 seconds	The performance is maintained	Success
2	Different platform users trying to use	MacOS , windows, android ,ios users trying to use the app	The app is compatible with all platforms	The webApp is independent of platform	Success
3	The servers are given unexpected and harmful SQL queries	A SQL to gain root access to the server is executed using img alt text	Using headers of the request , the query should be rejected	The App successfully rejects the request	Success

User Interface Screenshots


Home | Sessions | Grades | Attendance
Logout
FunLearn
©2022 FunLearn


Home | Sessions | Grades | Attendance
Logout
Sample User
YOUR PROGRESS
100% Academic Average
YOUR ATTENDANCE
15 Early
15 Present
1 Late
1 Excused
1 Absent
FunLearn
March 2022- Dec 2023
You Are Checked In
Early
Class Name
Date: Day / Year / Time of Day
View Comments (1)
Homework Assignments
No Homework to Display
View All
Sessions
No Session Record to Display
View All

Content Restrictions

Creating content material is the task of a team comprising: teachers, who provide the knowledge for the course to be developed; designers, who create an individual look for the course without abandoning the institutional format; programmers, who convert the material into the format required by the site, search out tools for the creation of specific content such as lean video, image converters, etc.; and editors, who adapt the texts to the course‟s target
audience, correct grammar and spelling, etc.Uploaded files can include text, images, videos, SCORM and IMS content packages and sound files. All these are limited to a maximum size for uploading.

Conclusion

The Learning Management System or LMS is a software application that offers a complete educational framework for several learning resources like online contents and videos, documents, and several courses.
We successfully used Software Engineering Principles along with the tech stack to create Funlearn starting from scratch. We Used OOPs concept and best practices to implement the project. While building this project, we started from brainstorming ideas and team formation and then worked together the to take the project to completion. We learnt important skills of team work and coordination. Our faculty helped and trained us in technical and managerial skills required to achieve this.