

# **Classroom Learning Management System**

*Major Project Submitted in Partial Fulfillment of the Requirements for the degree of*

**Master of Computer Application (2020-2022)**

**By**

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**Certificate of Recommendation**

This is to certify that Akanksha Singh, Pritam Chakraborty, Priyesh Ghosh, Rimi Mondal, Rivu Pal and Tathagata Das have completed their Major project (MCAN-482) work titled **Classroom Learning Management System**, under the direct supervision and guidance of **Dr. Shiladitya Chowdhury**. We are satisfied with his work, which is being presented for the partial fulfillment of the degree of Master of Computer Application (MCA), Maulana Abul Kalam Azad University of Technology, Kolkata– 700064.

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Date:

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Date:

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**Certificate of Approval \***

The foregoing Major project is hereby approved as a creditable study of the Master of Computer Application (MCA) and presented in a manner satisfactory to warrant its acceptance as a prerequisite to the degree for which it has been submitted. It is understood that by this approval the undersigned does not necessarily endorse any statement made, opinion expressed or conclusion therein but approves this Major project only for the purpose for which it is submitted.

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Signature of the examiners

Final Examination for

Evaluation of the Project

\* Only in case, the Major project is approved

## Acknowledgment

We have put our full efforts into this project. However, it would not have been possible without the kind support and help of many individuals and the college department. We would like to extend our sincere thanks to all of them. We would like to express our deepest appreciation to all those who provided us with the opportunity to work on this project. We are highly indebted to our mentor **Dr. Shiladitya Choudhury** for his guidance and for providing necessary information regarding the project and for his support and the constant guidance in this project. Also, for being available at any time for any discussion regarding ideas and solutions for the issues faced. A special thanks to all our faculty members of Techno Main Salt Lake and our Head of the Department **Prof. (Dr.) Monalisa Banerjee** for teaching us and inculcating the knowledge within us and for giving us a chance to give that knowledge a new practical dimension. Last but not the least; we are beholden to our family members and friends for their support and cooperation throughout this time.

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Rimi Mondal

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Akanksha

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Rivu Pal

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Pritam Chakraborty

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Tathagata Das

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Priyesh Ghosh

## **PREFACE**

The "**Classroom Learning Management System**" has been developed to provide a synchronized assembled classroom environment from the college end.

This project is aimed at developing a web application to provide an online classroom environment to each student of a college. The system is a web application that can be accessed by college employees and students with proper login provided. This system can be used as a web application for the classroom of the college to manage the classes of the whole college in a single platform. Students logging in should be able to access their ongoing classes, upload assignments, download notes, and visit previous class materials. The key feature of this project is that any user (eg. student, teacher) needs only one-time registration in this web application throughout their college journey. Moreover, the whole college is assembled together from the college end and all semester is assembled together from the student and the teacher end and authenticated registration of each user with their only email id given to the college. Our project provides the facility of maintaining teacher-wise customized classes for each subject in the semester in each class along with the details of the students. The Owner of the college has the full authority to control the classroom, teacher, and students and the owner creates a controlling person named DBA for each stream in the college to control the permissible activities going under that stream. It also provides a user type wise favorable view of this application. It will help us to feel like a classroom in an online environment.

## **Goal of the Major project**

To build a virtual classroom environment where we will be able to integrate college administration, teachers and students together. All the users can access the web application with a single registration with their registered mail id throughout their college journey. Students will have access to all the semesters of a particular stream wise class in which they are assigned by the administration. Teachers will have access to all the classrooms which are assigned by the administration. We will look to provide all the facilities of a classroom through this platform. The motive will be to incorporate usual facilities like notes upload, assignment upload, announcement publish along with few unusual features like previous semester materials access, edit the uploaded things, one time assignment upload etc.

Our hope is that this project will create a space for us to strengthen our background, expertise our knowledge, ability to identify problems and find relevant solutions as well.

## **About Present System**

Most of the Institutes use platforms like Google Classroom to provide students with an online classroom environment. But here individual teachers create classes of their own and the college administration has no access to control over the classes. Moreover, the classes are not organized according to the semester. Secured login credentials of each user into the class is not maintained always and also there, inside each class, document share and assignment submission is available but these are not arranged in an organized manner. Users require more functionalities from these platforms so that there can be a user preferable interface with an integrated online college environment. Teachers and students find difficulties to deal with the systems available for now. We are moving forward to come across these cases with the help of Classroom Learning Management System.

## **Objective of the Project**

- Create a Virtual classroom environment
- Integrate all the administrations, teachers and students under a single umbrella
- A proper authenticated secured one-time registration system
- Organized user-friendly interface for all the users
- Access all of the documents and notes of all semesters throughout the course for a student
- Teachers will visualize all of their classrooms on their dashboard
- Administrators will create classrooms, assign teachers and students to a classroom and update classroom-related details and semester details.
- Administrators will have full access to restrict users and platform components
- Avail features like subject creation, class announcements, user profile updating, ongoing semester badges, assignments grading method, downloadable notes publish etc.



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# **Major Project on Classroom Learning Management System**

## **1. Scope of the Project:**

This project gives 3-layer facilities to the user. Basic aim of this web application is to provide a virtual environment of classroom with all kind of accessibilities required. A good connection of college entities is embedded here in this platform along with one-time verified signup by their registered email-id. And any user can edit few profiles information. The three layers of facilities can be viewed as:

### **Administration Accessibility:**

Admin has scope to create virtual college LMS, manage classroom, assign teacher and students which gives the administrators a flavor like offline situations. Owner can add or remove teachers at college level and also has all the functionalities like DBA. A DBA can create classroom and later on can add or remove teachers and students to a classroom and update semester information.

### **Teacher Accessibility:**

Teachers can only be joined to the particular class he is assigned as well as a teacher is able to see his classrooms in the dashboard, can create his subjects in the classroom and upload notes, announcements and assignments there and grade the assignments uploaded by students. Teacher is able to edit assignment and view late submission and grade students accordingly.

### **Student Accessibility:**

Students are assigned to the class by the administrations and able to see all the semesters of their course, to view announcements, to download notes, to upload assignments one-time each. Students are able to view their assignments results in their dashboard. They can edit their profile information even after their login/registration. The total structure of this application is developed in a way to give the best possible category wise user experience.

## **2. Concepts and Problem Analysis**

### **2.1 Cost Analysis**

#### **COCOMO MODEL:**

The COCOMO model is a good measure for estimating the number of person-months required to develop software

Total lines of code = 9000 (9 KLOC)

Team Member = 6

This Project is of ORGANIC TYPE.

Calculations –

We are using Intermediate COCOMO Model for calculations.

**EAF calculation:**

Table 1: Cost Drivers and their attributes

<b>Cost Drivers</b>	<b>Attributes</b>
<b>Product Attributes</b>	
Required Software Reliability	1.00
Size of Application Database	1.00
Complexity of The Product	1.10
<b>Hardware Attributes</b>	
Memory Constraints	1.00
Volatility of the virtual machine environment	0.87
Required turnabout time	0.94
<b>Personnel attributes</b>	
Analyst capability	0.71
Applications experience	0.82
Software engineer capability	0.70
Virtual machine experience	0.90
Programming language experience	0.95
<b>Project Attributes</b>	
Application of software engineering methods	0.82
Use of software tools	0.83
Required development schedule	1.00

$$\text{EAF} = 1.00 * 1.00 * 1.10 * 1.00 * 0.87 * 0.94 * 0.71 * 0.82 * 0.70 * 0.90 * 0.95 * 0.82 * 0.83 * 1.00$$

$$\approx 0.2$$

**Estimated Final Effort = a (KLOC)<sup>b</sup>EAF**

**E<sub>f</sub>** = (3.2\*(9) <sup>1.05</sup>) \*0.2 = 6.42 person-month [ where a=3.2, b=1.05 ]

**≈ 6 person-month**

**Development Time = c\*(Effort)<sup>d</sup>**

**T<sub>dev</sub>** = 2.5\*(6)<sup>0.38</sup> = **4.9 months**(147 days) [ where c=2.5, d=0.38 ]

The above given are slight calculations of Effort and Development Time.

## 2.2 Time Analysis

Table 2: Time Analysis

<b>Phase</b>	<b>Percentage</b>	<b>Effort Distribution</b>	<b>Time Calculation</b>
Analysis	20%	1.2	29.4
Design	15%	0.9	22.05
Coding	40%	2.4	58.8
Implementation	20%	1.2	29.4
Testing	5%	0.3	7.35

## 2.3 Team Structure

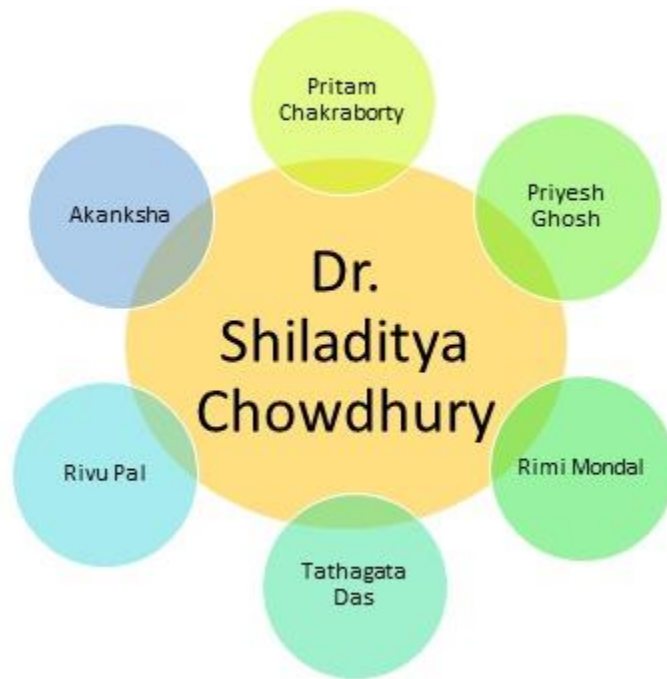


Fig. 1: Team Structure.



## 2.4. Software Configuration Management

Configuration management is the art of identifying, organizing, and controlling modifications to the software being built by a programming team. Software configuration Management (SCM) is a set of activities designed to control change by identifying the work products that are likely to change, establishing relationships among them, defining mechanisms for managing different versions of these work products, controlling the changes imposed, and auditing and reporting on the changes made.

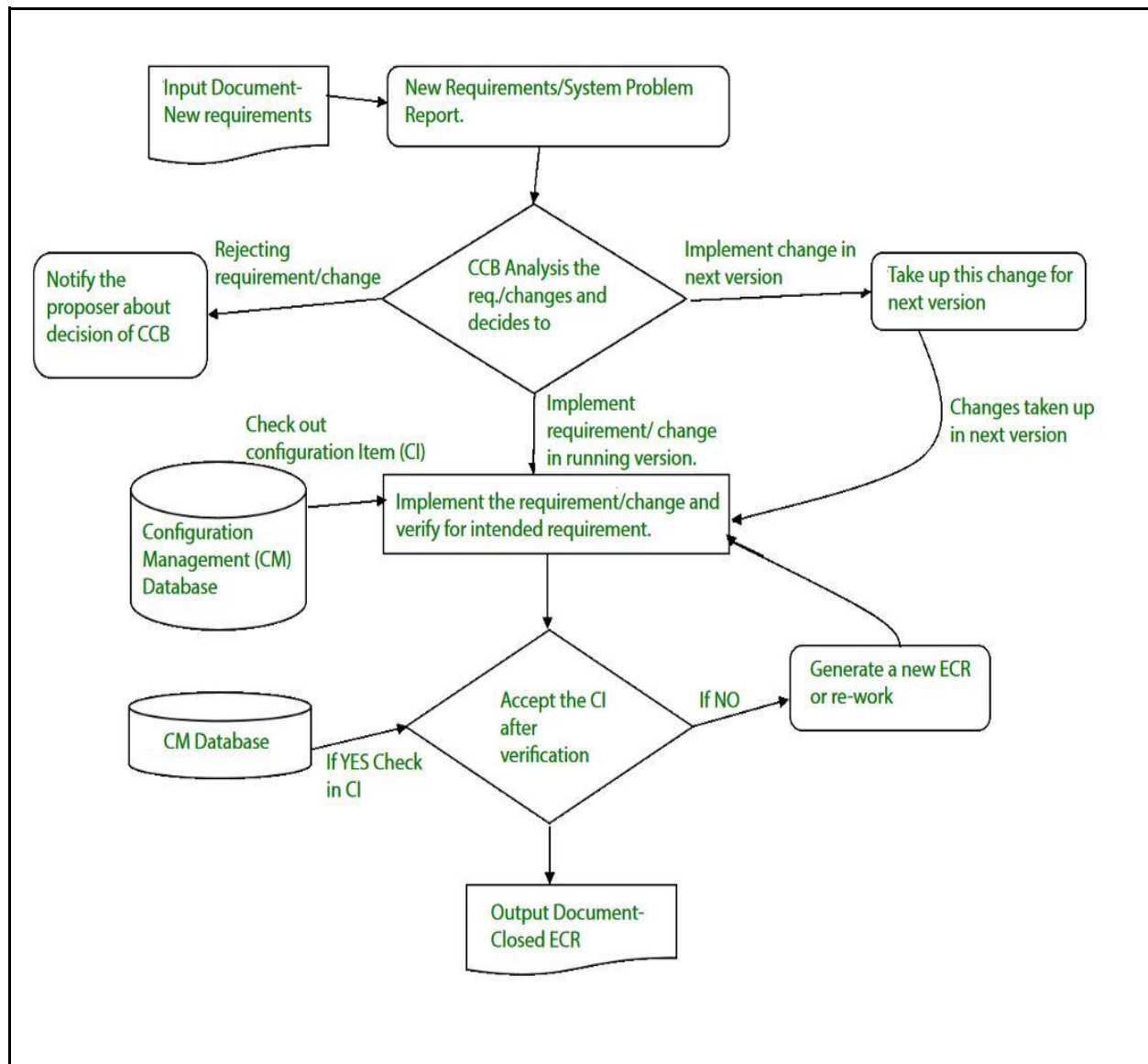


Fig 2: Software Configuration Management

## 2.5. Quality Assurance Plan

Quality Assurance, or QA for short, is the systematic monitoring and evaluation of the various aspects of a project, service or facility to maximize the probability that minimum standards of quality are being attained by the production process. QA cannot absolutely guarantee the production of quality products. Two principles included in QA are: "Fit for purpose", the product should be suitable for the intended purpose; and "Right first time", mistakes should be eliminated. QA includes regulation of the quality of raw materials, assemblies, products and components, services related to production, and management, production and inspection processes. · Quality is determined by the product users, clients or customers, not by society in general. It is not the same as 'expensive' or 'high quality'. Low priced products can be considered as having high quality if the product users determine them as such. · The QA Project Plan documents the results of a project's technical planning process, providing in one place a clear, concise, and complete plan for the environmental data operation and its quality objectives and identifying key project personnel.

To ensure quality, the following documents will be produced during development:

- System design document
- Procedural design document
- Code Unit test report

It is felt that since the system is small, a detailed incremental testing is not required. Unit testing is employed. Our code is being continuously reviewed by our project guide at each level of coding. This continuous process of review has made our project to be assured and we have given our utmost to achieve its quality.

## 2.6. Risk Management

To maximize the awareness of opportunities by minimizing, monitoring and controlling the probability of unfortunate events is known as **Risk Management**. It's the procedure to identify, assess and prioritize the risk followed by synchronized and inexpensive application of resources. The fear from project failures (at any phase such as during designing, development, production, or life-cycles), natural causes and disasters, purposeful attack from an opponent, or events of uncertain or unpredictable root-cause are the main sources of risk.

The two types of events considered during the risk management process are:

- (a). Negative events
- (b). Positive events.

These can be classified as the events that are negative and fall into the category of Risk whereas the positive events are classified as opportunities. The majority risks that are encountered during the development of a project are:

- Schedule risk
- Performance risk
- Governance risk
- Strategic risks
- Operational risk
- Risks associated with external hazards

There are various internal risks associated with each stage of the project, whereas some risks are beyond the scope of the project team. Such risks are external risks that could be arising from outside the organization.

### **3. Web Application Survey**

#### **Google Classroom:**

Google Classroom is a free blended learning platform developed by Google for educational institutions that aims to simplify creating, distributing, and grading assignments. The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students. Students can be invited to join a class through a private "class code" or be imported automatically from a school domain. Teachers can create, distribute and mark assignments all within the Google domain. Each class creates a separate folder in the respective user's Google Drive, where the student can submit work to be graded by a teacher. Assignments and due dates are added to Google Calendar, where each assignment can belong to a category or topic. Assignments are stored and graded on Google's suite of productivity applications that allow collaboration between the teacher and the student or between students. Instead of sharing documents that reside on the student's Google Drive with the teacher, files are hosted on the student's Drive and then submitted for grading. Teachers on Google Classroom have the option of creating Assignments in various templates and formats with different accessibility options: "student can view file," "student can edit file," or "make a copy for each student".

#### **Khan Academy:**

Khan Academy offers practice exercises, instructional videos, and a personalized learning dashboard that empower learners to study at their own pace in and outside of the classroom. We tackle math, science, computing, history, art history, economics, and more, including K-14 and test preparation (SAT, Praxis, LSAT) content. We focus on skill mastery to help learners establish strong foundations. The Khan Academy is a non-profit educational organization that provides free video tutorials and interactive exercises. The Academy's declared mission is “changing education for the better by providing a free world-class education to anyone anywhere.”

Students can enter the class code at <https://www.khanacademy.org/join> to join your class. Link to your Google Classroom account and import the class. You will need your username and password for Google.

**Mintbook:**

This cloud-based LMS solution is developed by a Bangalore-based edtech startup – Mintbook. In addition to supporting self-paced learning and instructor-led learning, it comes with built-in features to facilitate active student engagement. The easy-to-customize and scale LMS system allow students to access a wide variety of digital content on computers and mobile devices. At the same time, it comes with a complimentary digital library that includes educational content in over ten Indian regional languages. The educational content is mapped to various syllabi and curricula. The complimentary cloud-based digital library and virtual classroom platform make Mintbook one of the best LMS platforms in India.

**Paradiso LMS:**

Paradiso Solutions make it easier for users to deliver online learning by providing a slew of eLearning solutions, including a learning management system. In addition to being customizable, Paradiso LMS transforms eLearning using artificial intelligence (AI) algorithms. At the same time, the LMS software boosts learner experience and engagement by supporting blending learning, gamified learning, social learning, and learning path personalization. The users can leverage the content authoring tools included in the eLearning solution to create mobile-ready and interactive courses without putting in extra time and effort. Likewise, they can accelerate eLearning delivery by availing of a large number of off-the-shelf courses.

## **4. Theoretical Background**

### **HTML5:**

The HyperText Markup Language, or HTML is the standard markup language for documents designed to be displayed in a web browser. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document. HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as `<p>` and `<a>` directly introduce content into the page. Other tags such as `<div>` surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

### **CSS3:**

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript. CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility; provide more flexibility and control in the specification of presentation characteristics; enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file, which reduces complexity and repetition in the structural content; and enable the .css file to be cached to improve the page load speed between the pages that share the file and its formatting. Separation of formatting and content also makes it possible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (via speech-based browser or screen reader), and on Braille-based tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device.

**JavaScript:**

JavaScript, often abbreviated JS, is a programming language that is one of the core technologies of the World Wide Web, alongside HTML and CSS. Over 97% of websites use JavaScript on the client side for web page behavior, often incorporating third-party libraries. All major web browsers have a dedicated JavaScript engine to execute the code on users' devices. JavaScript is a high-level, often just-in-time compiled language that conforms to the ECMAScript standard. It has dynamic typing, prototype-based object-orientation, and first-class functions. It is multi-paradigm, supporting event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model .

**Vue 3:**

Vue.js is an open-source model–view–view model front end JavaScript framework for building user interfaces and single-page applications. It was created by Evan You, and is maintained by him and the rest of the active core team members. It builds on top of standard HTML, CSS and JavaScript, and provides a declarative and component-based programming model that helps you efficiently develop user interfaces, be it simple or complex. Vue.js features an incrementally adaptable architecture that focuses on declarative rendering and component composition.

The core library is focused on the view layer only. Advanced features required for complex applications such as routing, state management and build tooling are offered via officially maintained supporting libraries and packages.

**Python:**

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built-in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse.

The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.

### **Pandas:**

Pandas is a Python library used for working with data sets. It has functions for analyzing, cleaning, exploring, and manipulating data. Pandas allows us to analyze big data and make conclusions based on statistical theories. Pandas can clean messy data sets, and make them readable and relevant. Relevant data is very important in data science.

### **Django:**

Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. Built by experienced developers, it takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. It's free and open source

### **MySQL:**

MySQL is an open-source relational database management system (RDBMS). Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query Language. A relational database organizes data into one or more data tables in which data types may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.



## 5. Software Requirement Specifications

### 5.1. System Requirement

**Client Side:**

Minimum Hardware Requirements	Minimum Software Requirements
<b>Processor</b> : 0.5 GHz <b>RAM</b> : 512 MB <b>Hard Disk</b> : 100GB	<b>Operating System</b> : Windows 10 or higher <b>Web Browser</b> : Any supported Browser like Chrome

**Developer's Side:**

Minimum Hardware Requirements	Minimum Software Requirements
<b>Processor</b> : 2 GHz <b>RAM</b> : 4 GB <b>Hard Disk</b> : 100GB	<b>Operating System</b> : Windows 10 or higher <b>Web Browser</b> : Chrome

### 5.2 Project Requirement

**Software:**

**Editor:** VS CODE:- 1.67

**Front End:**

**Language:** HTML5, JS ES2015

**Style:** Tailwind, daisyUI, Heroicons 1.0.6

**Framework & Others:** Vue.js 3, Axios, Vuex, Axios 0.27.2, Vue-router 4.0.14

**Back End:**

**Language:** Python 3.10.4

**Framework:** Django4, Django rest framework 3.13.1.

**Database:** MySQL 8

**Smtip Server :** smtp4dev

**Library:** Pandas

**Celery, Redis 7.0,Docker**

## 6. Design

### 6.1 Entity Relationship Diagram

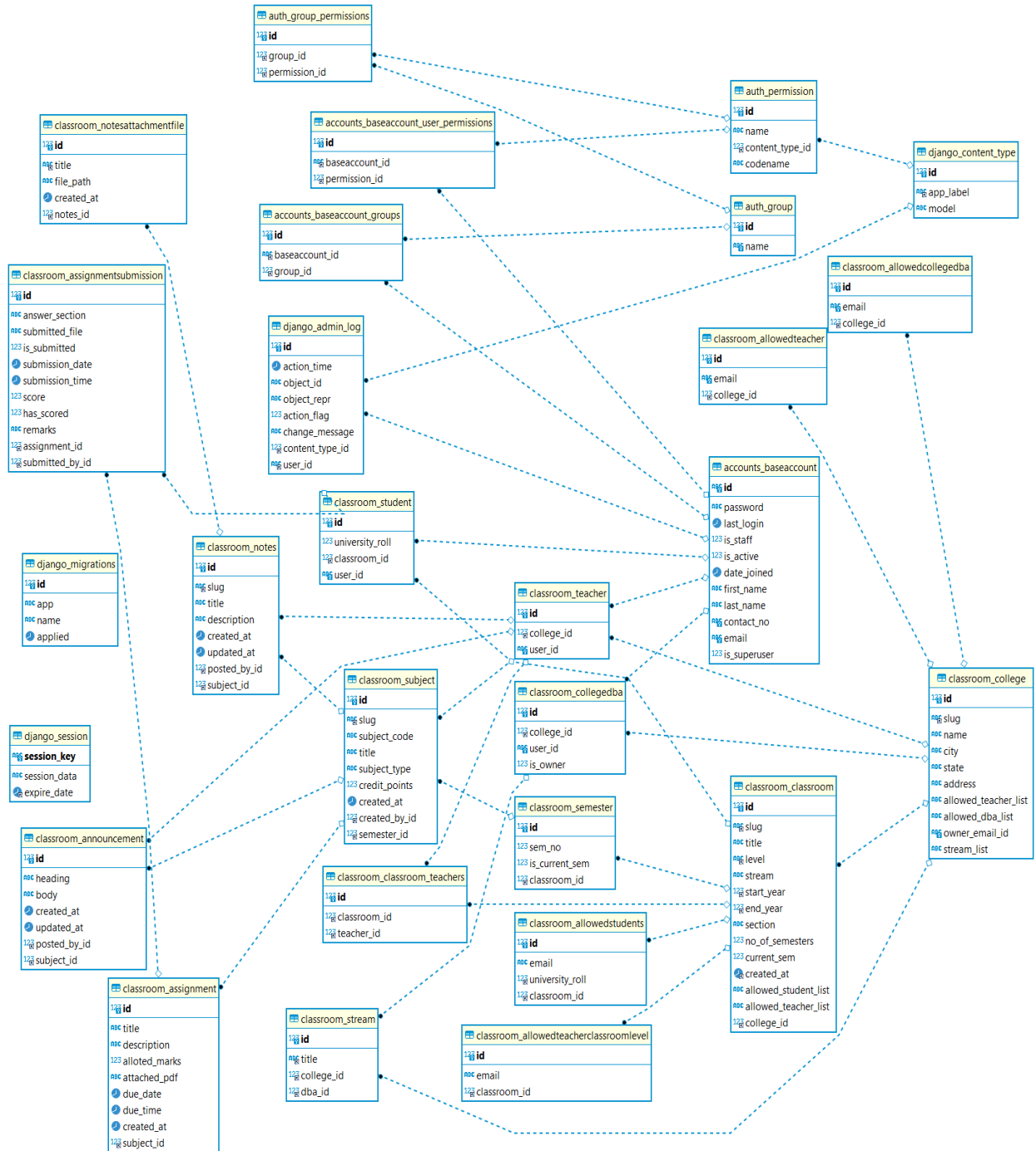


Fig. 3: Entity Relationship Diagram of Classroom LMS

## 6.2. Table Structure

desc accounts_baseaccount   Enter a SQL expression to filter results (use Ctrl+Space)							
Grid	Field	Type	Null	Key	Default	Extra	
1	id	char(32)	NO	PRI	[NULL]		
2	password	varchar(128)	NO		[NULL]		
3	last_login	datetime(6)	YES		[NULL]		
4	is_staff	tinyint(1)	NO		[NULL]		
5	is_active	tinyint(1)	NO		[NULL]		
6	date_joined	datetime(6)	NO		[NULL]		
7	first_name	varchar(200)	NO		[NULL]		
8	last_name	varchar(200)	NO		[NULL]		
9	contact_no	varchar(15)	YES	UNI	[NULL]		
10	email	varchar(250)	NO	UNI	[NULL]		
11	is_superuser	tinyint(1)	NO		[NULL]		
desc classroom_collegedba   Enter a SQL expression to filter results (use Ctrl+Space)							
Grid	Field	Type	Null	Key	Default	Extra	
1	id	bigint	NO	PRI	[NULL]	auto_increment	
2	college_id	bigint	NO	MUL	[NULL]		
3	user_id	char(32)	NO	UNI	[NULL]		
4	is_owner	tinyint(1)	NO		[NULL]		
desc classroom_teacher   Enter a SQL expression to filter results (use Ctrl+Space)							
Grid	Field	Type	Null	Key	Default	Extra	
1	id	bigint	NO	PRI	[NULL]	auto_increment	
2	college_id	bigint	NO	MUL	[NULL]		
3	user_id	char(32)	NO	UNI	[NULL]		
desc classroom_student   Enter a SQL expression to filter results (use Ctrl+Space)							
Grid	Field	Type	Null	Key	Default	Extra	
1	id	bigint	NO	PRI	[NULL]	auto_increment	
2	university_rol	bigint unsigned	YES		[NULL]		
3	classroom_id	bigint	YES	MUL	[NULL]		
4	user_id	char(32)	YES	UNI	[NULL]		
desc classroom_college   Enter a SQL expression to filter results (use Ctrl+Space)							
Grid	Field	Type	Null	Key	Default	Extra	
1	id	bigint	NO	PRI	[NULL]	auto_increment	
2	slug	varchar(50)	NO	MUL	[NULL]		
3	name	varchar(255)	NO		[NULL]		
4	city	varchar(255)	NO		[NULL]		
5	state	varchar(255)	NO		[NULL]		
6	address	longtext	YES		[NULL]		
7	allowed_teach	varchar(500)	YES		[NULL]		
8	allowed_dba	varchar(500)	YES		[NULL]		
9	owner_email	varchar(254)	NO	UNI	[NULL]		
10	stream_list	varchar(500)	YES		[NULL]		
desc classroom_allowedteacher   Enter a SQL expression to filter results (use Ctrl+Space)							
Grid	Field	Type	Null	Key	Default	Extra	
1	id	bigint	NO	PRI	[NULL]	auto_increment	
2	email	varchar(255)	NO	UNI	[NULL]		
3	college_id	bigint	NO	MUL	[NULL]		
desc classroom_allowedcollegedba   Enter a SQL expression to filter results (use Ctrl+Space)							
Grid	Field	Type	Null	Key	Default	Extra	
1	id	bigint	NO	PRI	[NULL]	auto_increment	
2	email	varchar(255)	NO	UNI	[NULL]		
3	college_id	bigint	NO	MUL	[NULL]		
desc classroom_stream   Enter a SQL expression to filter results (use Ctrl+Space)							
Grid	Field	Type	Null	Key	Default	Extra	
1	id	bigint	NO	PRI	[NULL]	auto_increment	
2	title	varchar(255)	NO	MUL	[NULL]		
3	college_id	bigint	NO	MUL	[NULL]		
4	dba_id	bigint	YES	MUL	[NULL]		

desc classroom\_classroom

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	slug	varchar(50)	NO	MUL	[NULL]	
3	title	varchar(255)	YES		[NULL]	
4	level	varchar(40)	NO	MUL	[NULL]	
5	stream	varchar(255)	NO		[NULL]	
6	start_year	smallint unsigned	NO	MUL	[NULL]	
7	end_year	smallint unsigned	NO	MUL	[NULL]	
8	section	varchar(5)	YES		[NULL]	
9	no_of_semesters	smallint unsigned	NO		[NULL]	
10	current_sem	smallint unsigned	NO		[NULL]	
11	created_at	datetime(6)	NO	MUL	[NULL]	
12	allowed_student_list	varchar(100)	YES		[NULL]	
13	allowed_teacher_list	varchar(100)	YES		[NULL]	
14	college_id	bigint	NO	MUL	[NULL]	

desc classroom\_allowedteacherclassroomlevel

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	email	varchar(255)	NO		[NULL]	
3	classroom_id	bigint	NO	MUL	[NULL]	

desc classroom\_allowedstudents

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	email	varchar(255)	NO	UNI	[NULL]	
3	university_roll	bigint unsigned	NO		[NULL]	
4	classroom_id	bigint	NO	MUL	[NULL]	

desc classroom\_semester

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	sem_no	smallint unsigned	NO		[NULL]	
3	is_current_sem	tinyint(1)	NO		[NULL]	
4	classroom_id	bigint	NO	MUL	[NULL]	

desc classroom\_subject

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	slug	varchar(50)	NO	MUL	[NULL]	
3	subject_code	varchar(20)	NO		[NULL]	
4	title	varchar(200)	NO		[NULL]	
5	subject_type	varchar(5)	NO		[NULL]	
6	credit_points	smallint unsigned	NO		[NULL]	
7	created_at	date	NO		[NULL]	
8	created_by_id	bigint	NO	MUL	[NULL]	
9	semester_id	bigint	NO	MUL	[NULL]	

desc classroom\_announcement

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	heading	longtext	NO		[NULL]	
3	body	longtext	YES		[NULL]	
4	created_at	datetime(6)	NO		[NULL]	
5	updated_at	datetime(6)	NO		[NULL]	
6	posted_by_id	bigint	NO	MUL	[NULL]	
7	subject_id	bigint	NO	MUL	[NULL]	

desc classroom\_notes

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	slug	varchar(50)	NO	MUL	[NULL]	
3	title	varchar(255)	NO		[NULL]	
4	description	longtext	YES		[NULL]	
5	created_at	datetime(6)	NO		[NULL]	
6	updated_at	datetime(6)	NO		[NULL]	
7	posted_by_id	bigint	YES	MUL	[NULL]	
8	subject_id	bigint	NO	MUL	[NULL]	

desc classroom\_notesattachmentfile

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	title	varchar(50)	NO	MUL	[NULL]	
3	file_path	varchar(400)	YES		[NULL]	
4	created_at	datetime(6)	NO		[NULL]	
5	notes_id	bigint	NO	MUL	[NULL]	

desc classroom\_assignment

Enter a SQL expression to filter results (use Ctrl+Space)

Grid	Field	Type	Null	Key	Default	Extra
1	id	bigint	NO	PRI	[NULL]	auto_increment
2	title	varchar(300)	NO		[NULL]	
3	description	longtext	YES		[NULL]	
4	alloted_marks	smallint unsigned	NO		[NULL]	
5	attached_pdf	varchar(500)	YES		[NULL]	
6	due_date	date	NO		[NULL]	
7	due_time	time(6)	NO		[NULL]	
8	created_at	datetime(6)	NO		[NULL]	
9	subject_id	bigint	NO	MUL	[NULL]	



### Class Diagram:

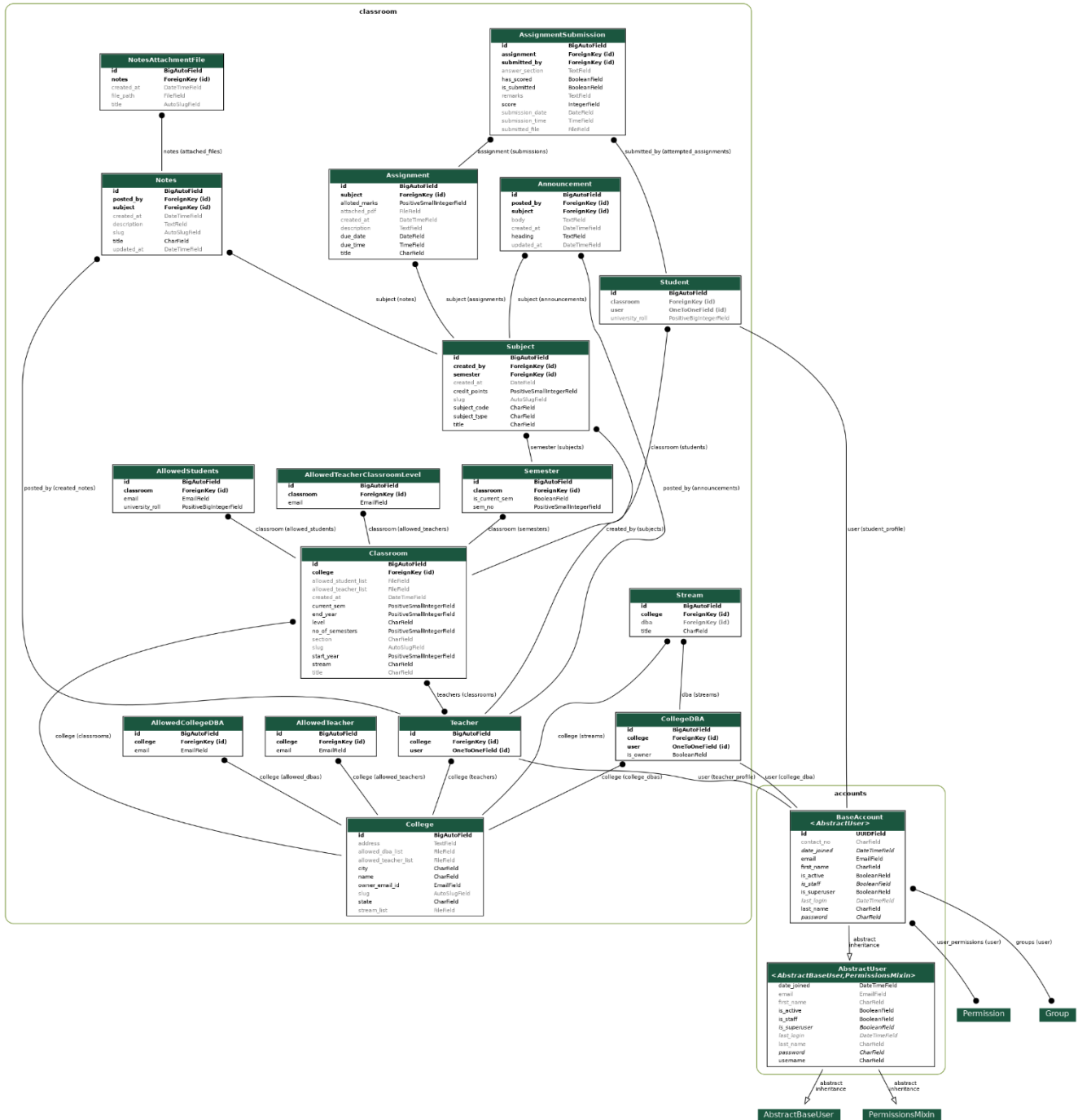


Fig 4: Class Diagram of Classroom LMS

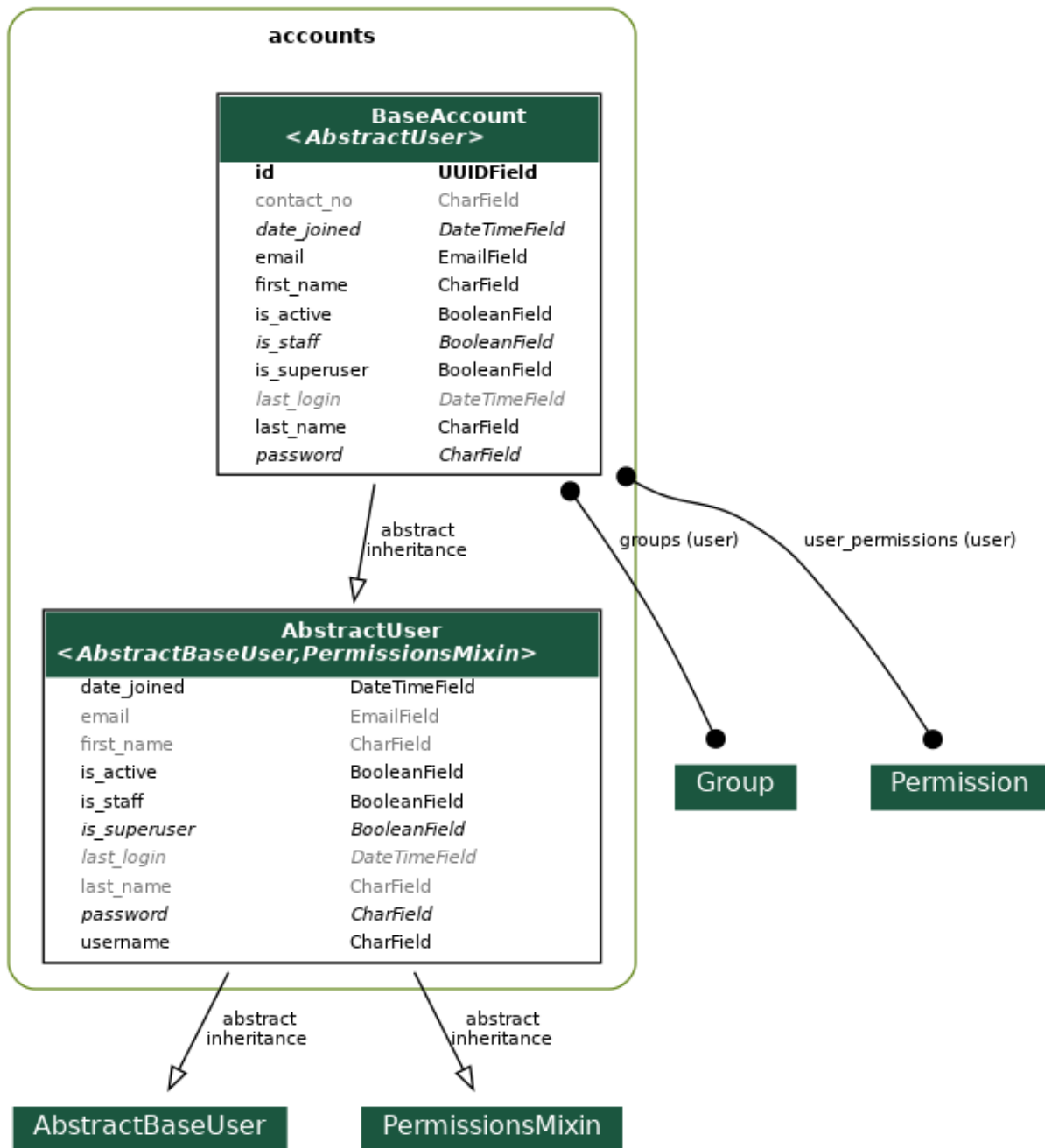


Fig 4.1: Class Diagram of Users



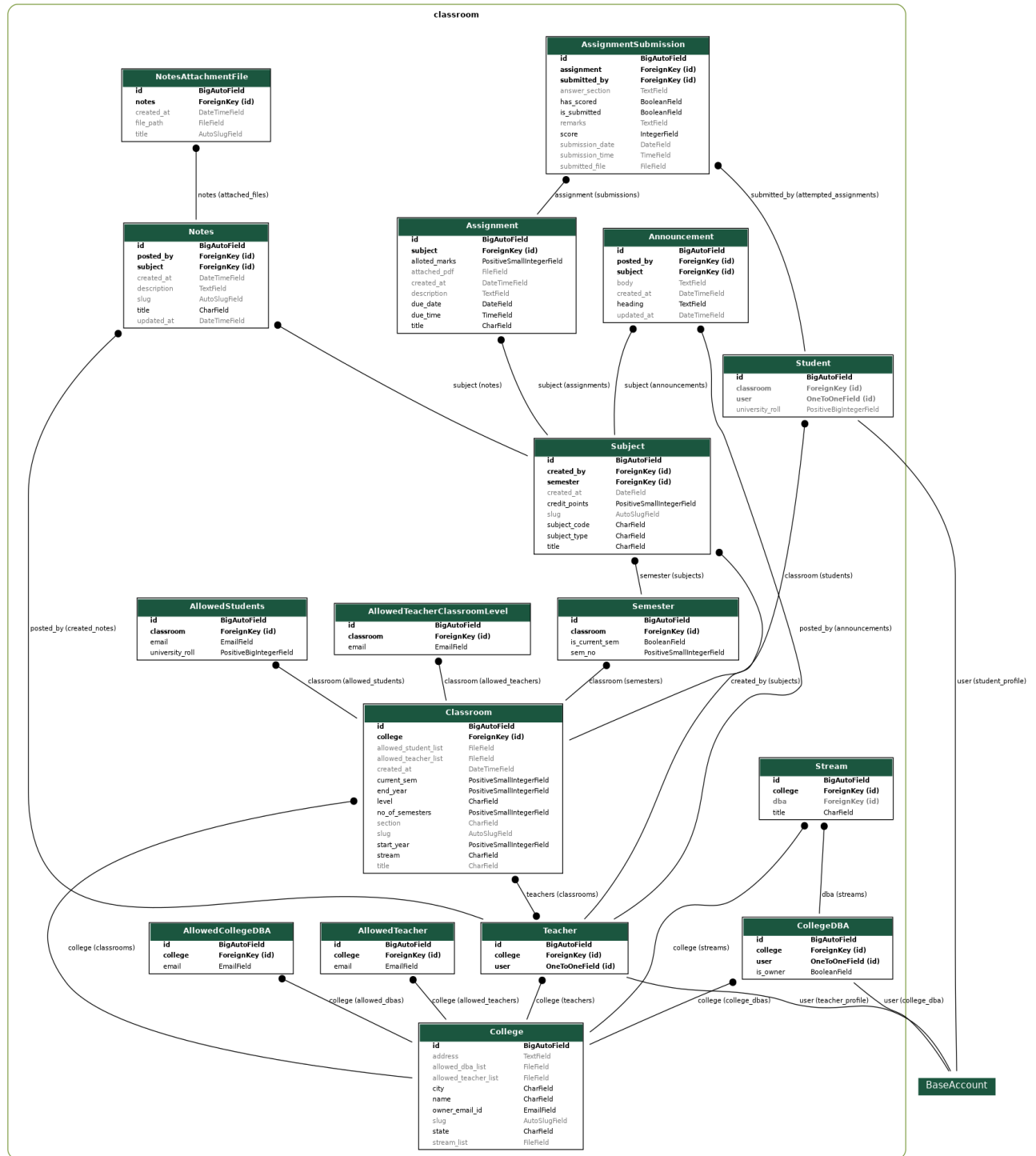


Fig 4.2: Class Diagram of Classroom App

## **6.4. Module Design**

### **6.4.1. Owner Module:**

- Owner will create virtual college.
- Manage the college, classroom and other privileges.
- Assign DBA for the college.
- Add Stream and Map DBA to particular stream.

### **6.4.2. DBA Module:**

- DBA can create Classroom and manage it.
- Assign Teacher and Students their respective Class.
- Add or Delete Teacher and Students.

### **6.4.3. Teacher Module:**

- Teachers can have access to the classes he is assigned to.
- Teacher can create his subjects in the classroom.
- Teachers can upload notes, quick announcements and weekly assignments and provide grades respectively.

### **6.4.4. Student Module:**

- Student can change their contact numbers.
- Can view all the semesters of the class he/she has been part of.
- Can view the Announcement and download the Notes.
- Can view the Assignment and submit the solution.

## 6.5. Procedural Design:- Use Case Diagram:

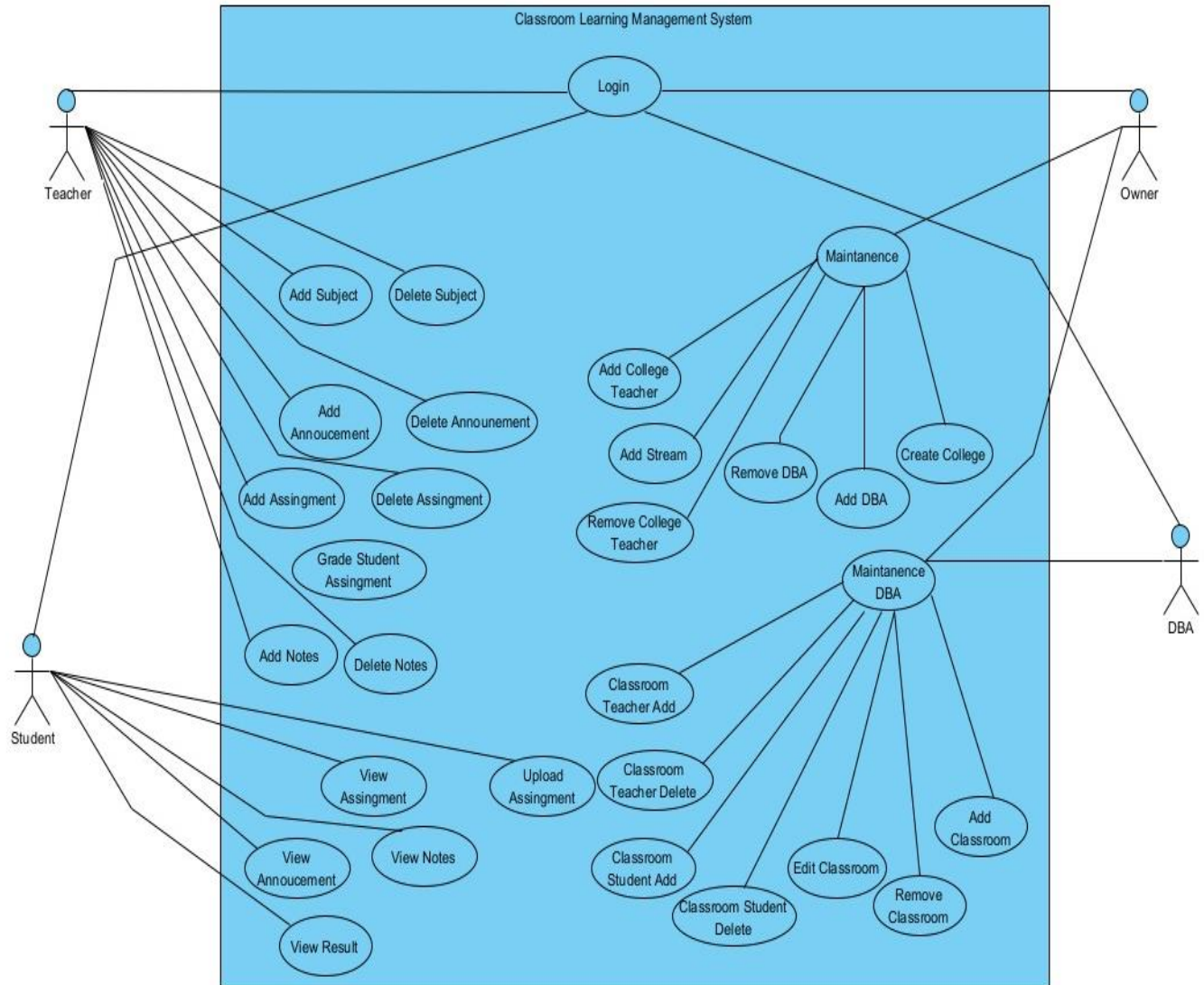


Fig. 5: Use case diagram of Classroom LMS

## 7. Coding Standards followed and Assumptions

Good software development organizations want their programmers to maintain some well-defined and standard style of coding called coding standards. It is very important for the programmers to maintain the coding standards otherwise the code will be rejected during code review. Purpose of Having Coding Standards:

A coding standard gives a uniform appearance to the codes written by different coders. It improves the readability, and maintainability of the code and it reduces complexity also. It helps in code reuse and helps to detect errors easily.

Some of the coding standards are given below:

Standard headers for different modules:

For better understanding and maintenance of the code, the header of different modules should follow some standard format and information.

The header format must contain below things:

- Name of the module
- Date of module creation
- Author of the module
- Modification history
- Synopsis of the module about what the module does

Naming conventions for local variables, global variables, constants and functions:

Some of the naming conventions are given below:

- Meaningful and understandable variable names help anyone to understand the reason for using it.
- Local variables should be named using camel case lettering starting with small letters (e.g. local data) whereas Global variables' names should start with a capital letter (e.g. GlobalData). Constant names should be formed using capital letters only (e.g. CONSADATA).

- It is better to avoid the use of digits in variable names.
- The names of the function should be written in camel case starting with small letters.
- The name of the function must describe the reason for using the function clearly and briefly.

#### Indentation:

- Proper indentation is very important to increase the readability of the code. For making the code readable, programmers should use White spaces properly.

Some of the spacing conventions are given below:


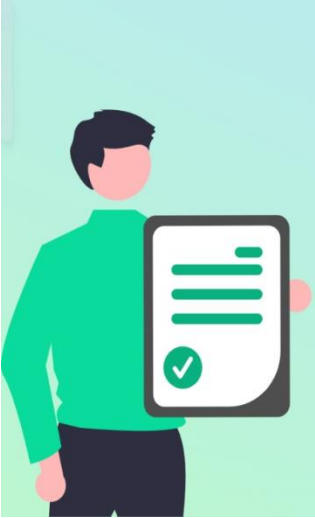

- There must be a space after giving a comma between two function arguments.
- Each nested block should be properly indented and spaced.
- Proper Indentation should be there at the beginning and at the end of each block in the program.
- All braces should start from a new line and the code following the end of braces also starts from a new line.

#### Error return values and exception handling conventions:


- All functions that encounter an error condition should either return a 0 or 1 for simplifying the debugging.

## 8. Result Set Analysis


### 8.1 Owner Module




**Name**

 Techno Main Salt Lake


**City**

 Kolkata


**State**

 West Bengal


**Address**

 Salt Lake


**Owner Email**

 tmsl@owner.com


**Stream List**


 streams\_ok.xlsx

**Teachers List**


 teacher\_College\_ok.xlsx

**DBA List**


 dba\_ok.xlsx




**First Name**

 Owner


**Last Name**

 Tmsl


**Email**


 tmsl@owner.com

**Password**

 .....

**Confirm Password**

 .....



Logout

College Level Management [Owner Only]

Stream :

+ Stream

Map Admin

Manage Admin

Admin

Admin

Teacher Management:

Add Teacher

Remove Teacher

Classroom Management Area

Classroom :

+ Classroom

Classroom Level

Teacher Management

Add Teacher

Remove Teacher

Student Management

Add Student

Delete Student

Welcome Owner Tmsl

Email :

tmsl@owner.com

Contact

3516871635

College : Techno Main Salt lake

City :

Kolkata

State :

West Bengal

Address :

Salt Lake

Stream

Computer Application

Managed By Admin

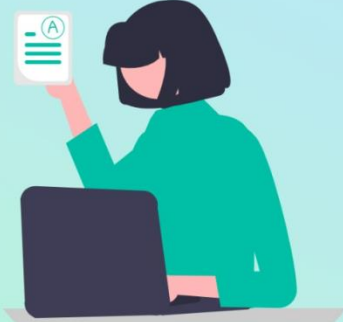
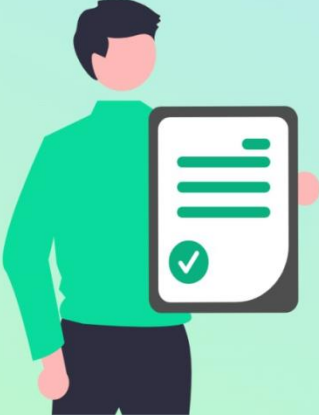
DbA One

DbA Two

Add

Cancel

## 8.2 DBA Module



**First Name**

**Last Name**

**Email**

**Password**

**Confirm Password**

**Title**

**Level**

**Stream**

**Start Year**

**Course Duration**

**Current Sem**

**Section**

**Teachers List**

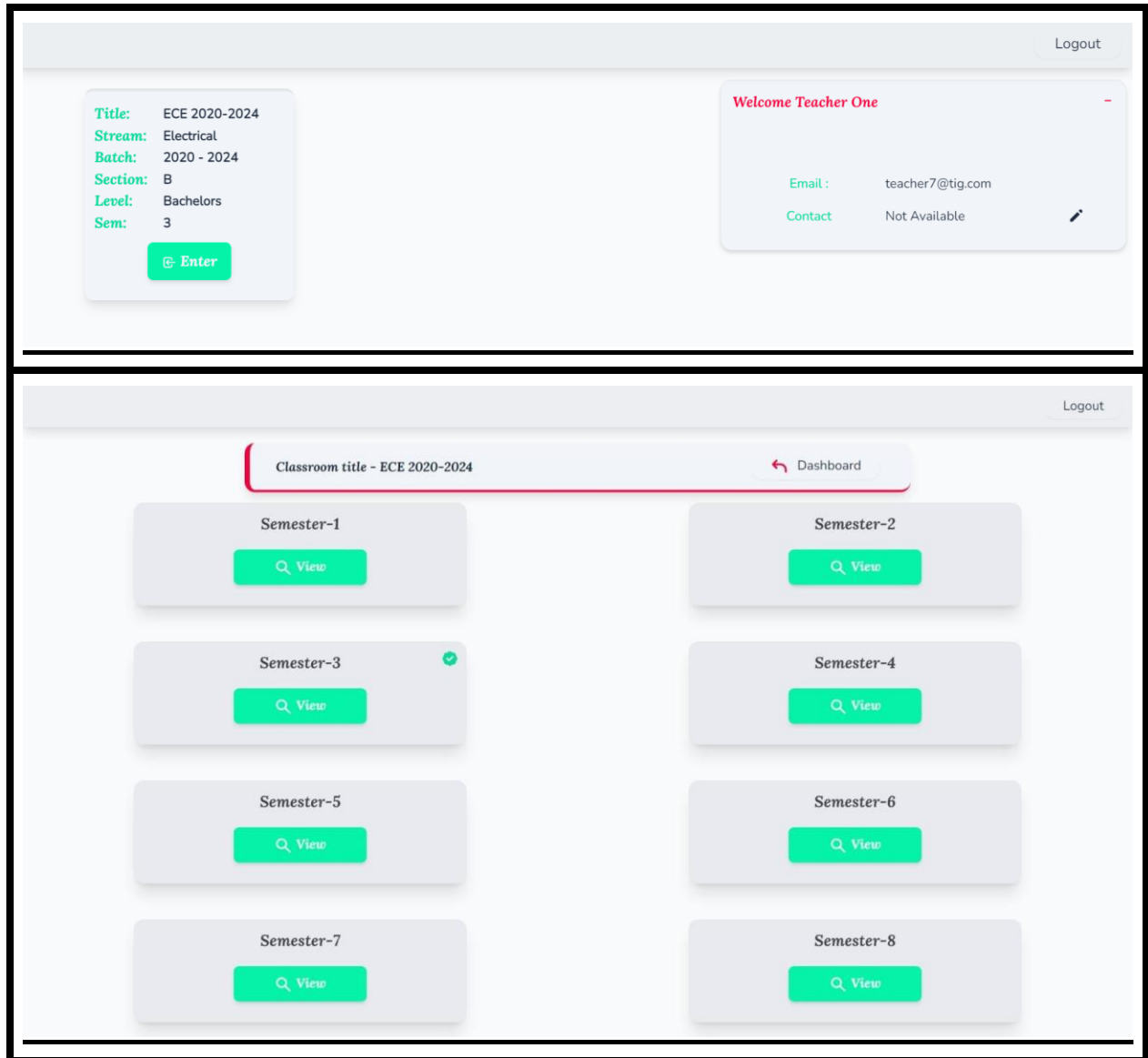
teacher\_class\_2.xlsx

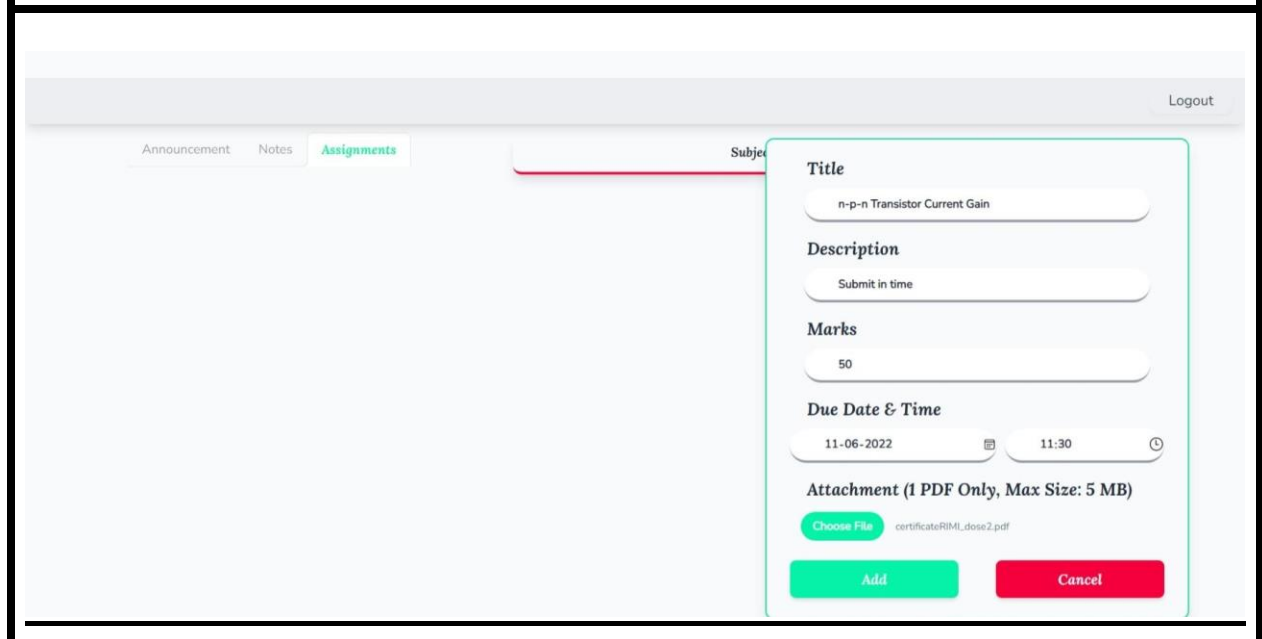
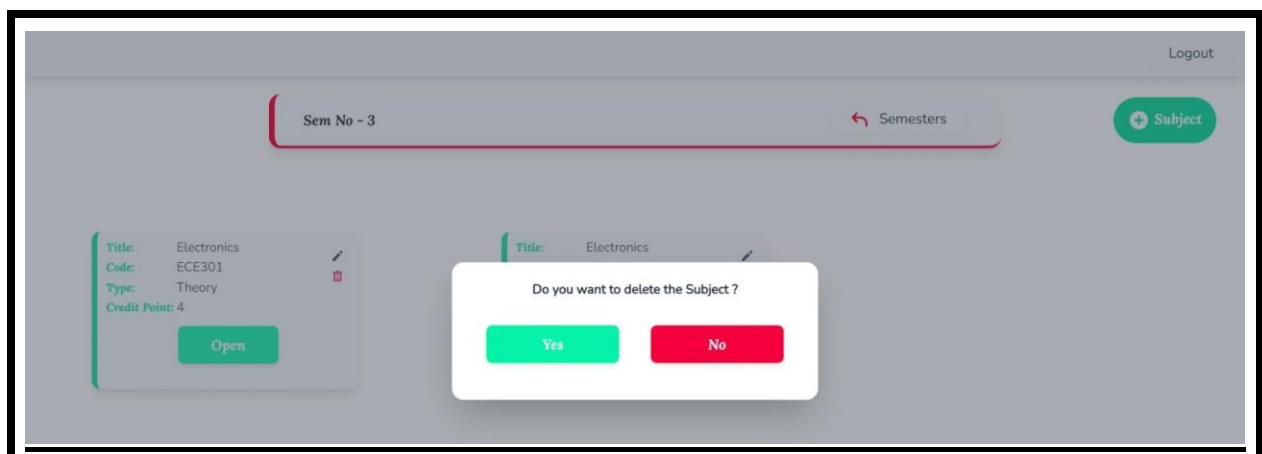
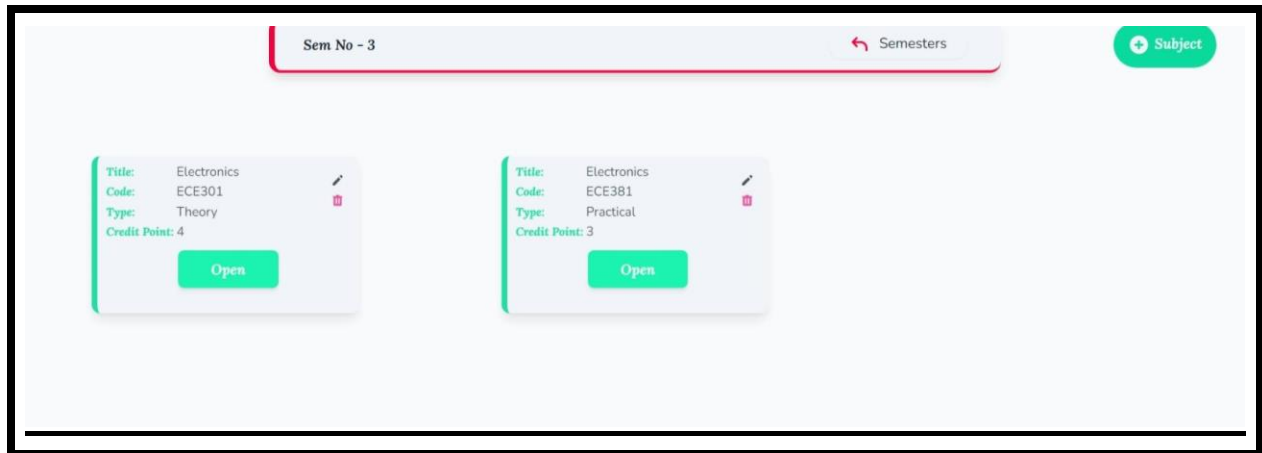
**Student List**

student\_class\_2\_ok.xlsx



## 8.3 Teacher Module





Logout

Announcement

Notes

Assignments

Subject -

Subject Page

GENERAL INSTRUCTION FOR ECE MINOR PROJECT:

SCHEDULE

The project schedule is given in the excel file.

file-1

file-2

Logout

Announcement

Notes

Assignments

Subject

Title

n-p-n Transistor Current Gain

Description

Submit in time

Marks

50

Due Date & Time

11-06-2022

11:30

Attachment (1 PDF Only, Max Size: 5 MB)

Choose File

certificateRIM1\_dose2.pdf

Add

Cancel

Logout

Announcement

Notes

Assignments

Subject -

Subject Page

N-P-N TRANSISTOR CURRENT GAIN

Description :

Submit in time

Marks 50

Due Date 11-06-2022

Due Time 11:30

Assignment

attached file

Show Submitted Assignments

Name	Roll	File	Score	Remarks
Student Two	71020001		45	Good
Student Three	71020003		35	Could Be Better
Student One	71020005		49	Excellent

Assignment

## 8.4 Student Modules

Logout

Semester-1  
Open

Semester-2  
Open

Semester-3  
Open

Semester-4  
Open

Semester-5  
Open

Semester-6  
Open

Semester-7  
Open

Semester-8  
Open

Welcome Student One

University Roll: 71020005  
Email : stud5@tig.com  
Contact Not Available

College : Techno Main Salt lake

Classroom : ECE 2020-2024

Logout

Semester - 3 Semester Page

Subject : Electronics  
Code : ECE301  
Credit Points : 4  
Teacher : Teacher One  
View

Subject : Electronics  
Code : ECE381  
Credit Points : 3  
Teacher : Teacher One  
View

Logout

Announcement Notes Assignments Semester - 3 Subject - electronics-3-th-4-teacher-one subject page

1. RULES OF EXAM

1) All group members must be ready with their PowerPoint presentation, check their laptop/ mobile & internet connection before the exam, and must be active in what's the app for regular updates. 2) You must be able to share your screen properly for the presentation and your presentation must be complete within 25 minutes of the scheduled start time, the last 15 minutes will be for execution & Q/A session. 3) An attendance format (Google Form) will be sent to each student's email id. All students must submit that form within 15min from completion of their exams.

2. EXAM WISH

Logout

Announcement
Notes
Assignments

Semester - 3

Subject - electronics-3-th-4-teacher-one


subject page

### 1. GENERAL INSTRUCTION FOR ECE MINOR PROJECT:

Student needs to pursue a research/application based project in his / her institution under the direct supervision/mentorship of the assigned teacher (s) and on completion of the same an evaluation will be made based on 1. Project Report 2. Project Presentation and 3. Viva-voce Total credit: 5 Total contact hour: 80 Contact : 8 hrs / week

Created By  
**Teacher One**

created at :- 2022-06-01  
[Download Attached files:](#)

 file-1

### 2. Schedule

Logout

Announcement
Notes
Assignments

Semester - 3

Subject - electronics-3-th-4-teacher-one

subject page

### 1. n-p-n Transistor Current Gain


Description :Submit in time

Marks : 50

Due Date : 2022-06-11

Due Time : 11:30:00

created at :- 2022-06-01  
[Download Attached files:](#)

 file-1

Submit Your Assignment

Choose File
certificateRIMI\_dose2.pdf

upload

## 9. Testing

### Owner Module

Table 3: Owner module testing

SL No.	Action	Input	Expected Output	Actual Output
1.	Create Classroom using correct details and values	Enter Name: Techno Main City: Kolkata State :WestBengal Address: Salt-Lake Owner Email : <a href="mailto:tmsl@owner.com">tmsl@owner.com</a> Add Stream List : Stream_ok xl file Add Teacher List: Teacher_ok xl file DBA List : Dba_ok xl file	'College Successfully Created ' message	'College Successfully Created ' And Redirect Owner to Sign In .
2.	Create Classroom using Incorrect details and values	Enter Name: Techno Main City: Kolkata State :WestBengal Address: Salt-Lake Owner Email : <a href="mailto:tmsl@owner.com">tmsl@owner.com</a> Add Stream List : Stream_ok xl file Add Teacher List: Teacher list added without using proper naming convention DBA List : Dba_ok xl file	'College Successfully Created ' message	Failed to load resource: the server responded with a status of 400 (Bad Request)

3.	Show 'Sign In ' Page	Enter First Name: Owner Last Name: TMSL Email: owner@tmsl.com Owner Email : <a href="mailto:tmsl@owner.com">tmsl@owner.com</a> Password:Abcd@1234	Open Email Button Should be shown	Open Email Button Should be shown
4.	Show 'Sign In ' Page And inserting incorrect Password	Enter First Name: Owner Last Name: TMSL Email: owner@tmsl.com Address: Salt-Lake Owner Email : <a href="mailto:tmsl@owner.com">tmsl@owner.com</a> Password:Abcd@1234 Confirm:Abcd@1234	Open Email Button Should be shown	<b>Error:</b> Confirm Password should be matched
5.	Login with your Credentials	Enter : <a href="mailto:tmsl@owner.com">tmsl@owner.com</a> Password: Abcd@1234	Open 'Owner Dashboard ' be shown	Open 'Owner Dashboard ' shown
6.	Edit your Contact Details	Enter Contact : It Should be unique. If its get Matched with any user it throws exception	Contact Number Should be Update	Your Number Got Saved  <b>Error:</b> User with the same number exist.

## DBA Module:

Table 4: DBA module testing

SL No.	Action	Input	Expected Output	Actual Output
1.	Sign Up for DBA	Enter First Name: DBA Last Name: One Email: dba1@tig.com Password: Abcd@1234 Confirm: Abcd@1234	Open Email Button Should be shown	Open Email Button Should be shown
2.	Enter correct username and password	Enter Username: dba1@tig.com Password: Abcd@1234	Login Success and go to DBA Dashboard	DBA Dashboard opened
3.	Create Classroom using correct details and values	Enter Title: Btech Level : Bachelors Stream: Computer Science Starting Year : 2018 Course Duration: 4 Yrs Current Sem: 8 Section: A Add Teacher List: teacher_class_1 Add Student List: student_class_1	'Successfully Created' And College Card will be shown	'Successfully Created' And College Card will be shown



## **Teacher Module:**

Table 5: Teacher module testing

<b>SL No.</b>	<b>Action</b>	<b>Input</b>	<b>Expected Output</b>	<b>Actual Output</b>
1	Login to the dashboard using correct credentials	Enter Email:teacher1@tig.com Password: Abcd_1234	Successful login and teacher will be redirected to the dashboard	Successful login and teacher is redirected to the dashboard.
2	Show 'Semester ' Page	View Semesters By clicking the on the button	Successful entered in a Semester dashboard	Successful entered in a Semester dashboard
3	Add Subject Using 'Add Sub'	Enter Title: Os Subject Code : 408 Subject Type:Theory Credit Points: 4 "Click on Add Button"	A Subject of Your choice will created Successfully	A Subject of Your choice will created Successfully
4	Open Subject Using 'Open Button'	You Will See a Dashboard of Creating "Announcement , Notes , Assignments"	Dashboard to Create "Announcement , Notes , Assignments"	Dashboard of Create "Announcement , Notes , Assignments"

5	Add Notes By click on “Notes” Button	Enter  Title: Os Notes Description : Philosopher problem Attachments : “Choose the Note File” “Click On Add”	A Notes of Your choice will Added Successfully	A Notes of Your choice will Added Successfully and Students can See that
6	Add Assignments By click on “Assignments” Button	Enter  Title: Os Exam Description : Philosopher problem Questions Marks : 50 Due Date &Time : “Provide a Due Date” Attachments : “Choose the Assignments .pdf file”  “Click On Add”	A Assignments will Added Successfully	A Assignments will Added Successfully And Students can see your Assignments  “After a Student Submit a Assignment Respective Teacher can Evaluate the Assignment And also check the time of Submission”

## **Student Module:**

Table 6: Student module testing

<b>SL No.</b>	<b>Action</b>	<b>Input</b>	<b>Expected Output</b>	<b>Actual Output</b>
1	Login to the Student dashboard using correct credentials	Enter Email:student4@tig.com Password: Abcd_1234	Successful login and Student can view all the Semesters	Successful login and Student can view all the semesters
2	Show 'Semester ' Page	View Semesters By clicking the on the button	Successful entered in a Semester dashboard	Successful entered in a Semester dashboard
3	Open Subject Using 'Open Button'	Student Will See a Dashboard of Creating "Announcement , Notes , Assignments"	Dashboard to Check "Announcement , Notes , Assignments"	Dashboard to Check "Announcement , Notes , Assignments"
4	Submit a Assignments	Expand The Subject  Enter Attachments : "Choose the Assignments .pdf file only" "Click On Upload "	Successful Upload students "Assignments"	Successful Upload students "Assignments"

## 10. Future Scope of the Project

Through this project we have reached a satisfactory level but there are some scope which are till now not attended or determined. We have planned to impose those criteria's in future.

These are given as follows:

- Quiz and examination system will be added along with assignments in the LMS in future.
- Comment option will be added on an announcement posted by teachers so that students can post their queries there.
- Class routine format will be added for both teachers and students.
- Calendar feature will be added so that teacher and students can follow the up coming events by the system.
- A scope for video recording upload will be imposed in notes section for future use.
- Not only on college system but also the school system can use the Classroom LMS in future. More depth work is needed for that.
- Try to cover more areas to make more user reliable web application on Learning Management System.
- Incorporate back-up procedure to make sure database integrity.
- Modify the user interface and incorporate tiny features to give better user experience.

## 11. Conclusion

Our project is only a humble venture to satisfy the needs of a Virtual Learning Management System. This project shall prove to be powerful in satisfying all the requirements of the education institution.

- A description of the background and context of the project and its relation to work already done in the area.
- Made a statement of the aims and objectives of the project.
- The description of Purpose, Scope, and applicability.
- We define the problem on which we are working in the project.
- We describe the requirement Specifications of the system and the actions that can be done on these things.
- We are able to reach the goal of our project and overcome the complications we have gone through with a continuous mentoring of our guide..
- We are able to identify exception cases and test cases as we as we are also determined with a future scope of this project.

## 12. References:

Vue 3Tutorial:-	<a href="https://youtube.com/playlist?list=PLC3y8-rFHvwgeQIfSDtEGVvvSEPDkL_1f">https://youtube.com/playlist?list=PLC3y8-rFHvwgeQIfSDtEGVvvSEPDkL_1f</a>
Vuex:-	<a href="https://youtube.com/playlist?list=PL4cUxeGkcC9i371QO_Rtkl26MwtiJ30P2">https://youtube.com/playlist?list=PL4cUxeGkcC9i371QO_Rtkl26MwtiJ30P2</a>
Vue Documentat ion	<a href="https://vuejs.org/guide/introduction.html">https://vuejs.org/guide/introduction.html</a>
Vue Router	<a href="https://youtu.be/juocv4AtrHo">https://youtu.be/juocv4AtrHo</a>
Django Documentat ion	<a href="https://www.djangoproject.com/start/">https://www.djangoproject.com/start/</a>
Django Rest Framework	<a href="https://www.django-rest-framework.org/">https://www.django-rest-framework.org/</a>