



**Chittagong University of Engineering & Technology**

**Department of Computer Science & Engineering**

**Course code:** CSE-300

**Course Title:** Software Development Project (Sessional)

**Project on**

Virtual classroom for CUET

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## **1. Introduction**

Virtual classrooms provide an alternative method for delivering education. Virtual classrooms offer the ability to conduct live and interactive online classes, allowing for flexible and remote learning. This allows students and teachers to participate from anywhere with an internet connection, reducing the need for physical attendance in a traditional classroom setting. Additionally, virtual classrooms can also provide opportunities for increased collaboration, access to a wider range of resources, and cost savings. There are many universities who have their own online platform where they conduct their academic works. For this reason we develop a dedicated virtual classroom fro CUET where we can conduct any kind of online academic activities as well as we can come out from traditional slow processing method.

## **2. Motivation**

Our motivation behind taking this initiative are because

- There is no specific official platform where our students and teachers can engage. Thus they may communicate through different social media sites, which can lead to hassle and communication gaps.
- There is no user-friendly way of communication between student and teacher. Though they can communicate with Email, but it's a very formal way of communication.
- It's a lot of hassle to roll call and access class tests and other performance marks manually.

To solve all those problems in a single application, and to make all of this convenient we imagined a website, called virtual classroom for CUET.

## **3. Objective**

In this project our objective is to build a collaborating environment between teachers and students of CUET, from scratch using Firebase & REACT JS with the following functionality.

- All the faculties and students will have their own account.
- There will be a Student view and a Teacher view

- Teachers will be able to create a course, conduct academic activities like announcing notices, roll calling, publishing results online etc.
- Students will be able to get a clear view of their academic progress and never miss any updates by staying connected with the system.

## 4. Required Technology

### **4.1 Front End:**

For Front-end development we use React JS, React router dom, Material UI, Syncfusion data grid , bootstrap etc.

**React JS:** React is a JavaScript library created by Facebook. It is a User Interface (UI) library used for front end development. React is a tool for building UI components

**React router dom:** React Router DOM is an npm package that enables you to implement dynamic routing in a web app.

**Material UI:** Material UI is an open-source React component library that implements Google's Material Design.

**Syncfusion Datagrid:** Syncfusion React (Essential JS 2) library is a modern UI components library that has been built from the ground up to be lightweight, responsive, modular and touch friendly.

### **4.2 Backend:**

For development purpose in back-end we use Firebase.

**Firebase:** Firebase is an app development platform that helps you build and grow apps and games users love. Backed by Google and trusted by millions of businesses around the world.

### **4.3 IDE:**

Visual Studio Code

## 5. Features of our work

### 5.1 Sign In:

A teacher and a student will know their email and password from the administration. And to join the class he/she need to sign-in first.

There we can see, there is an option which indicates if user is a teacher or student. If user is a teacher he/she will sign in in teacher view and if user is a student he/she will sign in in student view.

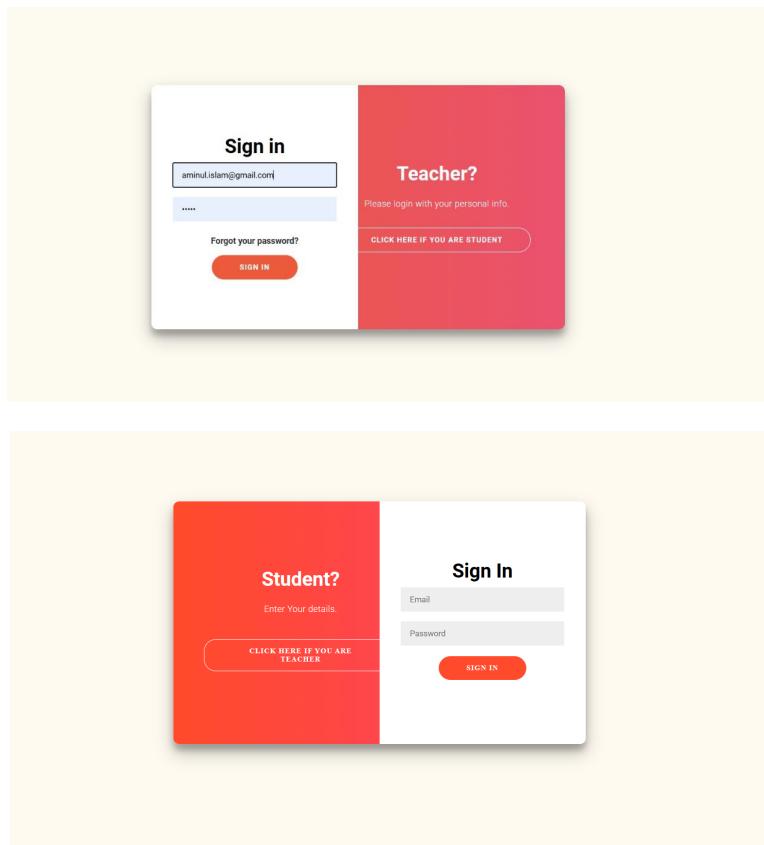


Figure 1: Sign-in page

### 5.2 Dashboard:

After sign-in, a user will land in dashboard page. Dashboard contains a side-bar, a navigation bar, notification, course list.

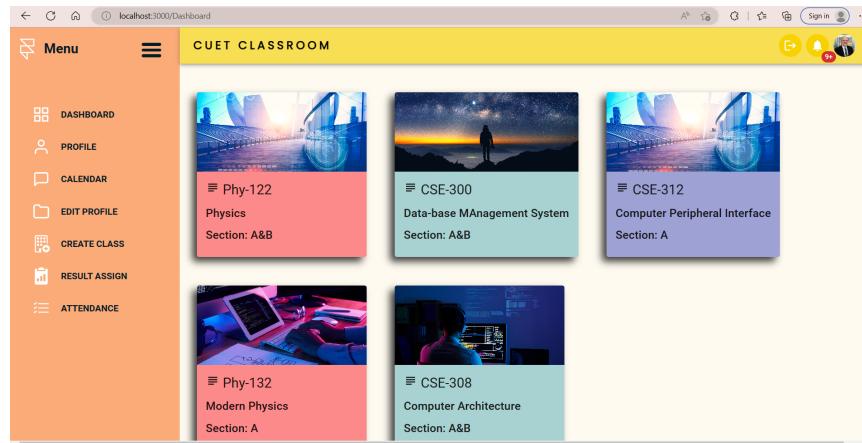


Figure 2: Dashboard page

### **5.3 Navigation bar:**

In the navigation bar there are 3 options log-out, notification and a profile symbol.



Figure 3: Navigation bar

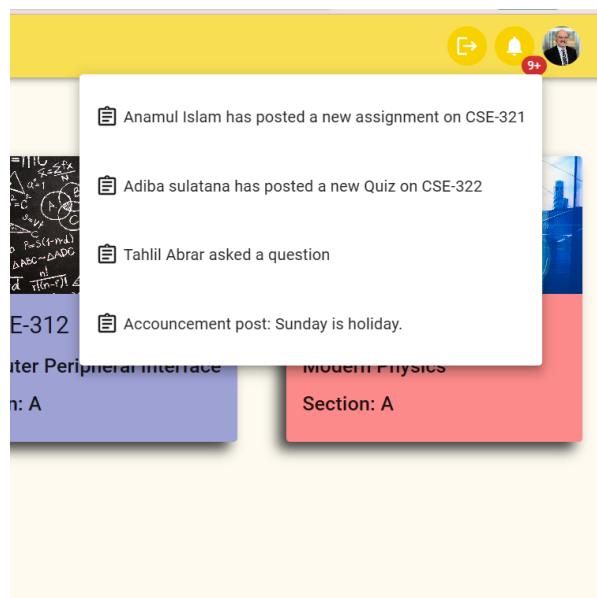


Figure 4: After Pressing Notification Icon

## **5.4 Sidebar:**

There is a side bar which has dashboard, profile, edit profile, calender, Results,. There has a extra feature of create course in Teacher's view and join class in Student view..

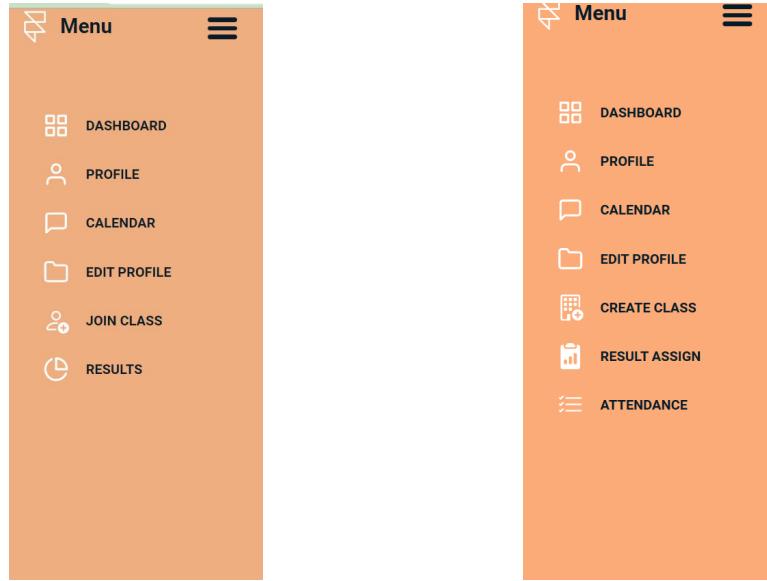


Figure 5: Side bar for Student view and teacher view.

## **5.5 Calendar:**

We also add a calender which denotes diffrent working dates and class routine.

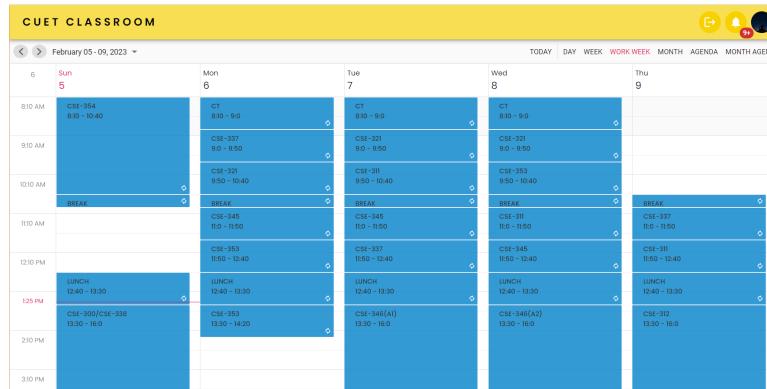


Figure 6: Claender page

## **5.6 Profile:**

After sign-in a profile will create for the teacher/student according to the information given by administration. Below is shown the Profile page of a student. We can see that all her academic information is visible here.

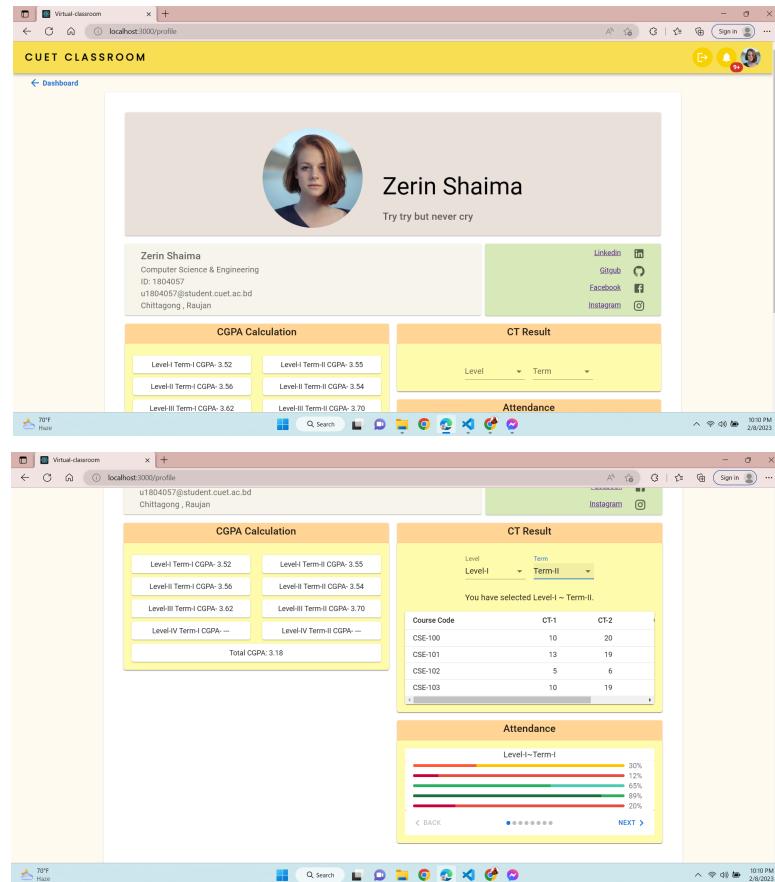


Figure 7: Profile page

## 5.7 Edit profile:

A teacher/student can update their profile in edit profile section.

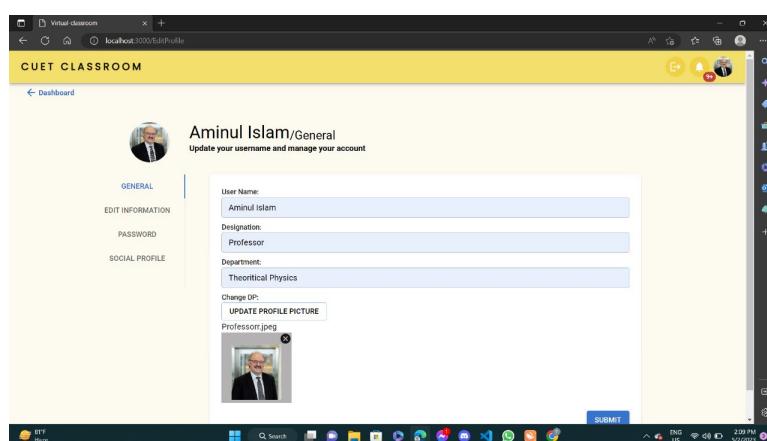


Figure 8: Edit profile page

## **5.8 Teacher's view:**

After sign-in as teacher there are lot of functionalities for teachers. These feature are described below.

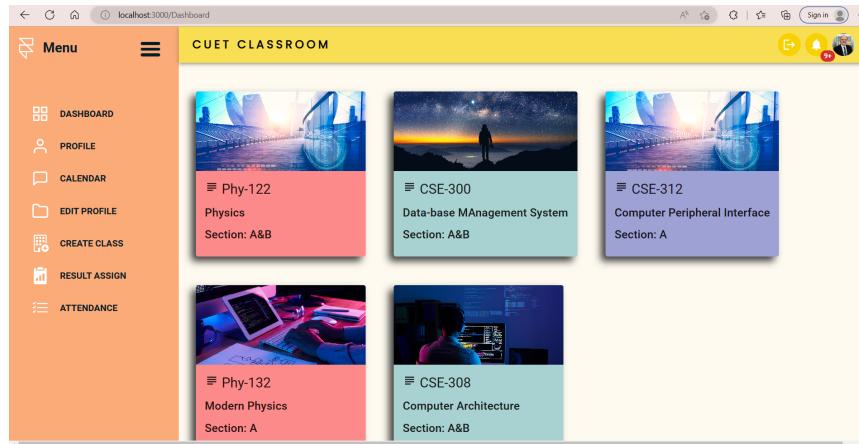


Figure 9: Sign-in as Teacher

### **5.8.1 Create course:**

There is a function called create a course . After clicking the bottom icon which denotes create a course, Teacher can create a new course.

A screenshot of a 'Create A New Class' form. The title 'Create A New Class' is at the top. Below it are several input fields: 'Subject (required)' with a dropdown arrow, 'Course Code', 'Course Credit' with a value of '0', 'Section' with a dropdown arrow, and 'Upload Cover Photo:' with a 'CHOOSE COVER' button. At the bottom right is a blue 'SUBMIT' button.

Figure 10: Create a new course

### **5.8.2 Assign Result:**

A teacher can publish result in publish section. And the result will be update automatically in the result publish section.

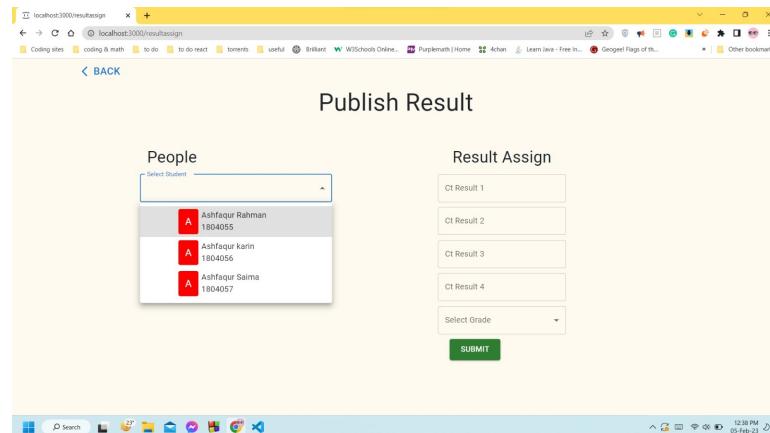


Figure 11: Publish Result page

### **5.8.3 Attendance:**

A teacher can take attendance by selecting date, class, section and clicking in a check list.

CUET CLASSROOM		
<a href="#">← Dashboard</a>		
02/08/2023		
Section A ▾		
ID	Name	Attendance
1804056	Tahill Abrar	<input checked="" type="checkbox"/>
1804067	John Doe	<input type="checkbox"/>
1804069	Bob Smith	<input type="checkbox"/>
1804071	Charlie Brown	<input checked="" type="checkbox"/>
1804073	James Wilson	<input checked="" type="checkbox"/>

Figure 12: Attendance Taking Page

### **5.9 Student view:**

After logging in student will immediately rendered to this dashboard. Here they can see all the classes they have joined.

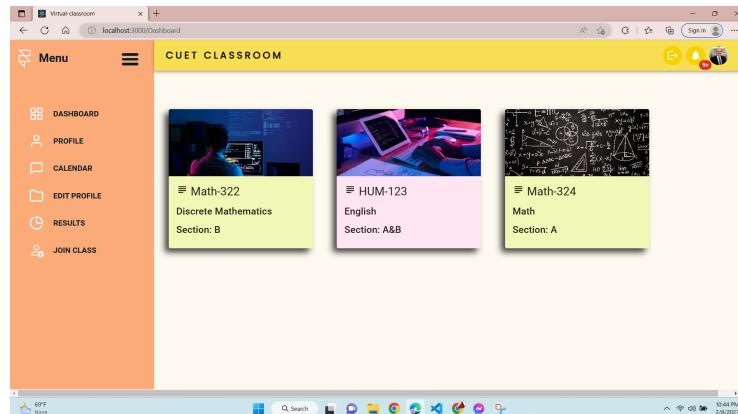


Figure 13: Dashboard view of student

### **5.9.1 Published Result:**

A student can see his result in published result section.

Course Code	Course Credit	Level - Term	Sessional	Result	Regular
CSE-100	0.75	Level I-Term I	Yes	B+	Yes
CSE-141	3	Level I-Term I	No	B+	Yes

 The status bar at the bottom shows the date as 05-Feb-23 and the time as 12:40 PM."/>

Figure 14: Publish Result page in student view

### **5.9.2 Join Class:**

There is an option in student view is called join class. For joining a class a student should require a class code which will be given by the teacher.

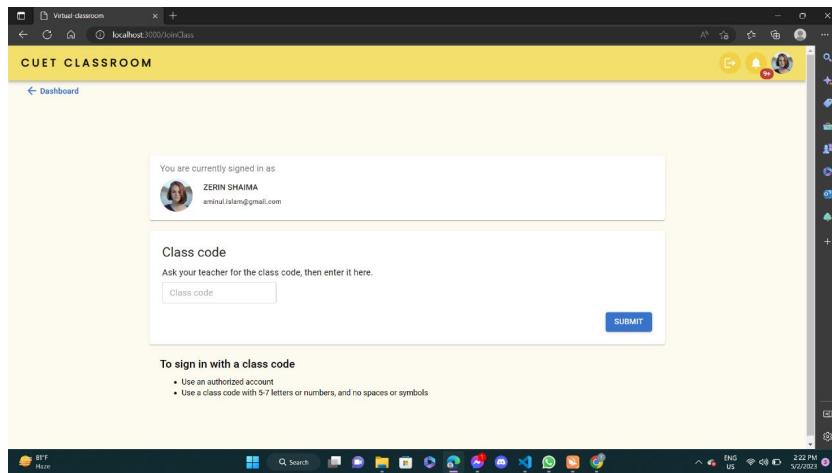


Figure 15: Joining a class

### **5.10 Insight of a class:**

There are multiple options in a class section. Like create post, upload file, comment in a post etc features are added in a class.

After clicking a class card they can see all the class posts.

#### **5.10.1 View of a class Timeline:**

In that class teacher and student can upload. All the posts will be visible serially according to uploading date. Here the teacher can delete any post and students can only delete his own posts.

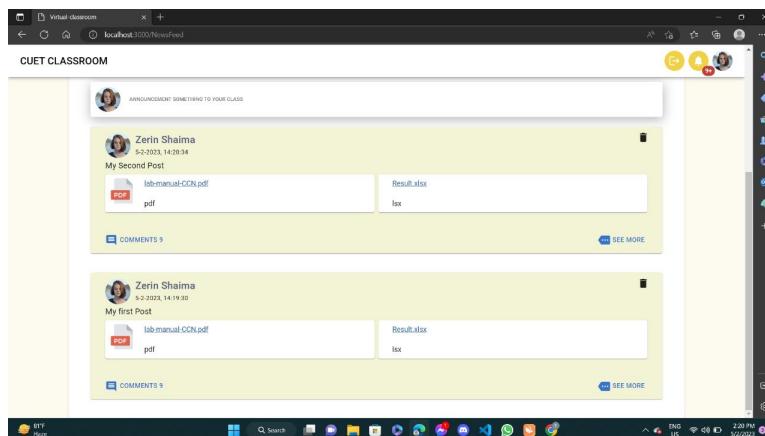


Figure 16: Timeline View of a class

#### **5.10.2 Upload a Post:**

Any user can upload a post including multiple files.

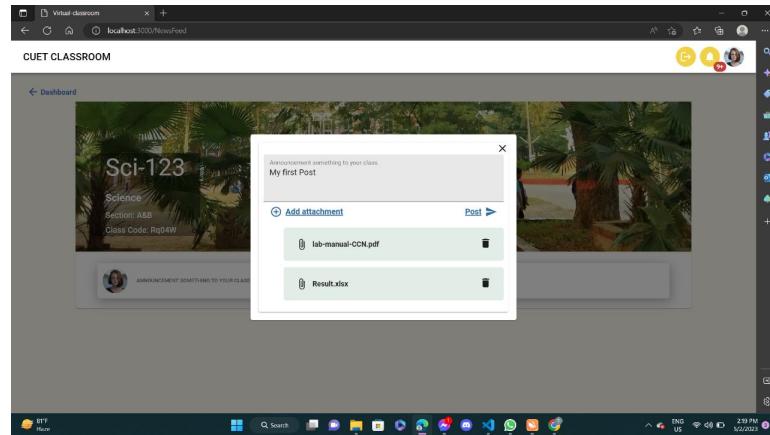


Figure 17: Upload of a post with multiple files.

### **5.10.3 Full post view:**

Clicking see more button, users will come to the full post page. Here they can find the full view of the post and all the comments. Also they can post their comments in the comment form.

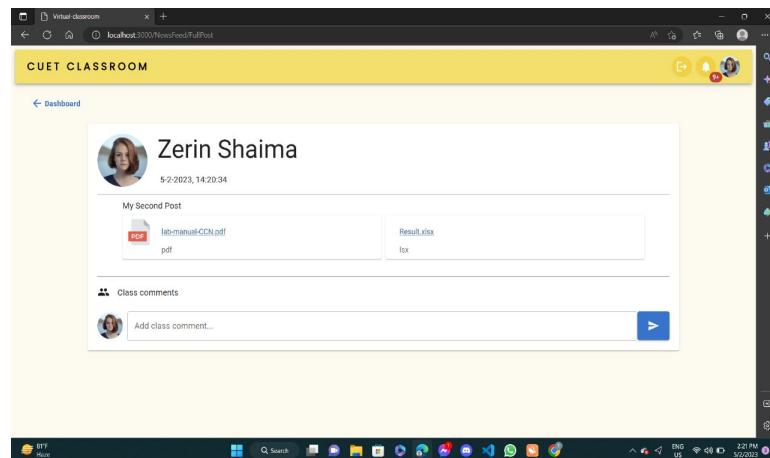


Figure 18: Full Post section

## **6. Conclusion**

In conclusion, the purpose of this website is to make the classroom process more convenient. The plan we've made is very interesting and we need to learn a lot to complete this project. If we can project our idea into reality, then it would be a very big achievement for us as developers and very useful for all the teachers and students of CUET.