VIRTUAL LEARNING SCHOOL

A PROJECT REPORT

Submitted by

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In partial fulfillment for the award of the degree

Of

BACHELOR OF ENGINEERING

In

COMPUTER SCIENCE AND ENGINEERING

Supervised By

MD ATAULLAH BHUIYAN

Senior lecturer and co-ordinator

Department of Computer Science and Engineering (CSE)

City University, Dhaka, Bangladesh

CITY UNIVERSITY

Department of Computer Science and Engineering

City University Dhaka, Bangladesh

December 2020

<u>CERTIFICATE</u>

This is to certify that the project titled **"VIRTUAL LEARNING SCHOOL"** submitted to City University in partial fulfillment of the requirements for the award of the degree of Computer Science and Engineering is the bona-fide qualification record of the project work done by **MD. MEHEDI HASAN, ID: 163432581 & MD. TARIKUL ISLAM, ID: 163432568**. The project report has been carried out under by guidance and is a record of work carried out successfully during July-2020 to December-2020. To the best of my knowledge this project has not performed anywhere for a degree.

Approved by

…………………………………

MD ATAULLAH BHUIYAN

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<u>DECLARATION</u>

We hereby declare that this project report titled **"VIRTUAL LEARNING SCHOOL"** is the result of our own work except as cited in the references. This project is the partial fulfillment of requirement for the award of the degree of Bachelor of Computer Science and Engineering during the period of **2020-2021 in City University, Dhaka** and also we state that this project has not been submitted anywhere in the partial fulfillment for any degree of this or any other University.

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MD. TARIKUL ISLAM

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ACKNOWLEDGEMENT

First we express our heartiest thanks and gratefulness to almighty Allah for His divine blessing makes us possible to complete this project successfully.

We fell grateful to and wish our profound our indebtedness to **MD ATAULLAH BHUIYAN**, **Senior lecturer and coordinator**, Department of CSE City University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of wireless network influenced us to carry out this project .His endless patience ,scholarly guidance ,continual encouragement , constant and energetic supervision, constructive criticism , valuable advice ,reading many inferior draft and correcting them at all stage have made it possible to complete this project.

We would like to express our heartiest gratitude to **MD SAFAET HOSSAIN**, **Associate professor and Head,** Department of CSE, for his kind help to finish our project and also to other faculty member and the staff of CSE department of City University.

We would like to thank our entire course mate in City University, who took part in this discuss while completing the course work.

Finally, we must acknowledge with due respect the constant support and patients of our parents.

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ABSTRACT

The world is rapidly changing day by day. The technology is evolving at a very fast pace in every area. While the current pandemic dominating us extremely in every sector and we are still fighting with our fast evolving technology. Considering the education sector, now a day, Teachers and students uses various platforms to interact with one another due to this current pandemic. Moreover, the pandemic also showed us the need of fully one packaged learning environment. We face various problems while attending class, exams and assignments, etc. If there is one platform where teachers and student are able to video calling, chatting, save their assignments, notice for class time, and follow up their syllabus that will be very helpful for both students and teachers. So we are planning to that thing where students and teacher's communication will be strong and teaching will be very easy. We will make web based platform, where several teachers, student and also guardian can register. Teachers will be able to offer any courses and student can apply for their needed courses. For parent/guardian they can watch their children and analysis their activity.

Table of Contents

LIST OF FIGURES

LIST OF TABLE

Chapter 1

■Introduction

This chapter gives an overview about the project introduction, overview, features aims and objectives, problem definition, background and motivation, used tool of the system.

1.1 Introduction

Web-based multimedia virtual learning environments added new dimensions in the world of designing course contents. But, even with these fascinating ideas, a question still remains; how can learning systems properly utilize such capabilities for more effective learning outcomes? Or, what are the best teaching methods to use for a specific student or group of students knowing that everyone has his/her own learning objectives, motivations, knowledge, and skills? And moreover why don't we use a platform through which we can able to attend classes, take exams as well as submit assignments and other required papers?

Regarding such types of question, we came up with an idea of **Virtual Learning School** which consists of some fascinating features. Our idea is to embed education methods and learning and cognitive theories into V-learning school to provide a more intelligent and, hence, more adaptive and effective learning environments. To sustain this V-learning platform, we aim to set up a business model to support the community build-up in a sustainable way.

1.2 Project objective

The main objective of this project is to build a platform where student and teacher can communicate with each other and various other users can do their regular activity without being physically attended.

1.2.1 Expected Outcome

The expected outcome of this project is very simple but important. Some points are mentioned below: -

- Using this app, teachers can manage their lesions and tuition and student can easily find their expected teacher/tutors. It will notify them of their works to be done. Students can choose their teacher using the app.

- Develop systematic methods for learning from problem sets, including; how to apply and transfer conceptual knowledge; identify common obstacles and errors; and contextualize individual problems within the themes and concepts of the course.

- Creating groups teachers will be able to contact with a group of students. Using notification students will be able to know about their upcoming lesions, exams, assignments, etc.

1.3 Project Scope

Studying from online with working has become quite a common trend among the young generation these days. Unlike the past education system, where people is required to visit their respective colleges and universities and attend the classes, the modern generation depends on online education. We are grateful to the technological advancements that we are able to reap a long list of benefits in this epoch.

1.4 Project Feature

1.4.1 Teacher's Account Features
- Create Course
- Manage Batch in a Course
- Manage Class Scheduling
- Manage Students Application
- Make online test form
- Assigning a Class Representative
- Record online class video
- Manage All files within a Course
- Create online video meeting
- Creating blog/forum in community section

1.4.2 Student's Account Features

- Apply for a Course
- View class schedule
- View and Download all public files within a course
- View previous classes history
- Option to Give rate teacher's profile
- Creating blog/forum in community section

1.4.3 Guardian Account Features

- Create tutor seeking posts
- Hiring teacher as tutor
- Add student as guardian
- View student activity as guardian
- Create online video meeting

1.4.4 Outsider/Non-registered Features

- Joining any public meeting
- View public blog/forum
- View teachers profile if profile is public

1.5 Problem Statement

In current situation teacher take online classes via many online platform, like Zoom, Google Meet they create individual video meeting for every day class. Other-hand sharing for the class resources they use other platform like Google Class Room, Google Drive, Google Form.

1.6 Existing System

- Need to Manage various platform for one Course
- No Batch wise class system
- Teacher's student communication is difficult
- No class history/activity history

1.7 Proposed System

- In one platform for all online class facilities
- Teacher's student well communication system
- All class resources can be handle from one platform
- Student activity tracking
- No need to install various software

1.8 Team Member Work Distribution

Table 1: Team work distribution.

Team Member :	Mehedi Hasan	Tarikul Islam
Requirement Gathering	60%	40%
Design	30%	70%
Backend	40%	60%
Data collection	50%	50%
Data Analysis	60%	40%
Implementation	40%	60%
Testing/Deployment	50%	50%

Table – 1: Team Member work distribution

1.9 Gannt Chart
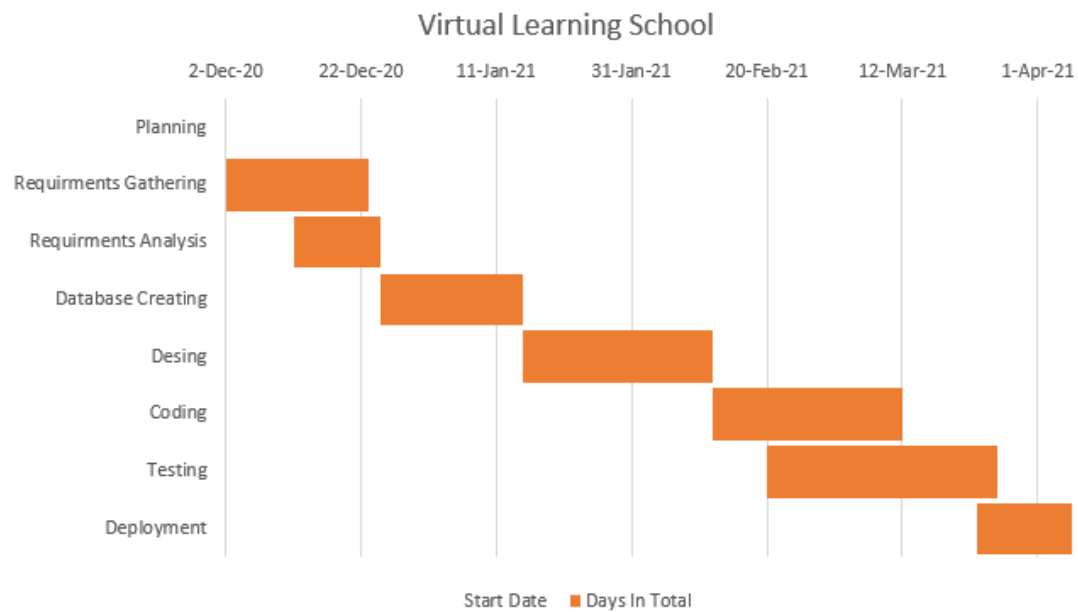
1.10 Budget

Table 2: Estimated Cost.

Virtual Learning School	Cost
Task 1 - Planning	30000
Task 2 - Requirement Analysis	20000
Task 3 - Design and Modeling	40000
Task 4 - Data collection	50000
Task 5 - Implementation	65000
Task 6 - Testing and Debugging	30000
Task 7 - Deployment	20000
Total =	255000 Taka

1.11 Benefits

This web application will help all type of teachers and students who are using various platform for study. Reduce the time of finding class meeting link where to put assignments and participating online exam rather than easy. Teachers can handle students online meeting activity and monitoring them as much needs.

1.12 Performance and Capacity

- 2,000+ users can use the application at once.
- 100+ students can participate in one meeting
- Unlimited meeting time.
- It is completely free of costly web application.

Chapter 2

Existing work and their Comparison

In this chapter we will discuss about related existing system and there features. Main about Zoom meeting, Google Meet, Google Class Room.

2.1 Zoom

When it comes to video calling, now a day's zoom has become the most popular option out there. It is a cloud based video conferencing software. Zoom has historically being focused on business conferencing for education and businesses competing with other vendors like Cisco WebEx and BlueJeans. Fast forward to just a few months ago and it seems like zoom took over the world in a matter of days when Corona virus pandemic hit. This year the number of Zoom users has grown rapidly surrounding concerns for corona virus (COVID-19). It's estimated that the company has added 2.22 million monthly active users so far in 2020, while in all of 2019 it added 1.99 million users.

2.1.1 Key Features

HD video and audio, Audio only conferencing, Cross-platform messaging, Password protection entry, End-to-end encryption, Zoom scheduling, Waiting room facility, Meeting recording, File Sharing, Screen sharing, etc.

2.1.2 Weakness

There are also some issues which call it zoom booming. Where people who typically were not originally invited to the meeting would get access to the code come into the meeting and would stream inappropriate videos on famous people zoom calls. Zoom has since added some security features to prevent this. Zoom calls are that easy to use and free they don't last forever and if you have use a free zoom account you have likely already running to that 40 minute time limit for zoom meeting. Also if you want to dial a zoom meeting through a telephone line, that can have an additional cost

2.2 Google Meet

Google has actually being doing video calling for as long as zoom has. Both had their initial product launch in 2013. Goggles first video call product was **Hangout** and that was mainly focused on consumer market to compete with Skype. Over the years Google has debut additional communication products like **Google duo** and then finally **Google meet** in 2017. This targeted Google G suite enterprise clients. Google meet has a time limit of 60 min for up to 100 participants .However now through September that time limit has been lifted up to 24 hours per meeting.

2.2.1 Key Features

HD video and audio calling, unlimited number of meetings, Live captioning during meetings, Compatible across devices, Screen sharing, Messaging with participants, File sharing, etc.

2.2.2 Weakness

Google meet can only be accessible via Google Chrome web browser. This can be annoying if you use another browser. It might create delays for participants who are unfamiliar with Meet.

2.3 Cisco WebEx

The Cisco WebEx is a cloud based suite of productivity tools that keeps teams connected. WebEx was first created by Subrah Iyar and Min Zhu in 1995. The Zoom president Dave Berman also served as president of worldwide sales and services at WebEx, even helping it to go public. Zoom founder Eric Yuan was an engineer at WebEx before going to launch his multibillion dollar company.

2.3.1 Key Feature

Video and audio sharing, File sharing, team messaging, webinars, cloud calling, etc.

2.4 Existing work and their Comparison

Feature / Existing	Audio & Video Conferencing	Recording Activity	Text Messaging	Assignment Submission	Exam Management	Paid Course learning
Zoom	Yes	Yes	Yes	No	No	No
Google-Meet	Yes	Yes	Yes	No	No	No
Webex	Yes	Yes	Yes	No	No	No
Google Class Room	No	No	No	Yes	Yes	No

Table – 2: Existing work and their Comparison

Chapter 3

▮Proposed System

This chapter gives an overview about the project system architecture used tool of the system. How the system made with.

3.1 System Architecture and Methodology

This is a web platform where no need to install extra mobile or desktop application. From the latest version of any browser can be accessible. Our system is built with Laravel RESTFULL API and React based UI modern technology. In modern days React user interface is very popular and handling is very easy. User will feel smooth and faster experience.
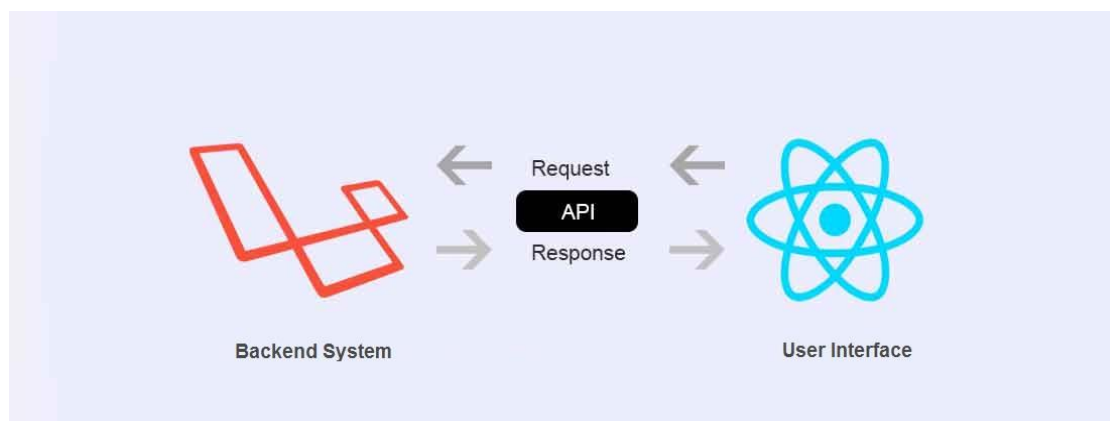

Figure 1: User interface and Backend System API connection

3.2 Selected Process Model

After reviewing all the available process models or methodologies, we saw the agile model matches exactly for my project requirements. We choose the agile model because changing requirements, making it easy to adjust new facilities, often used in software development. In which progress is seen short development cycles called "sprints," each by which we can develop our web application priority based functionality first.
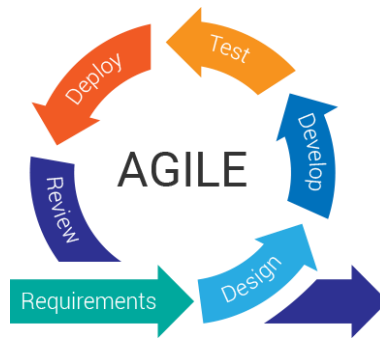
Figure 2: Agile Methodology Cycle

3.3 Tools and Technologies

3.3.1 Tools that needs to make the web application

- MySQL Database
- VS Code Editor/Atom Code Editor
- Draw.io
- XAMPP Server (Contain Apache and MySQL Server)
- Postman (For Checking API responses)

3.3.2 Technologies that will be used to make the web application

For front-end design:

- HTML5
- CSS3
- ReactJS

For back-end functionality:

- Laravel 8 PHP framework
- MySQL
- NodeJS Module
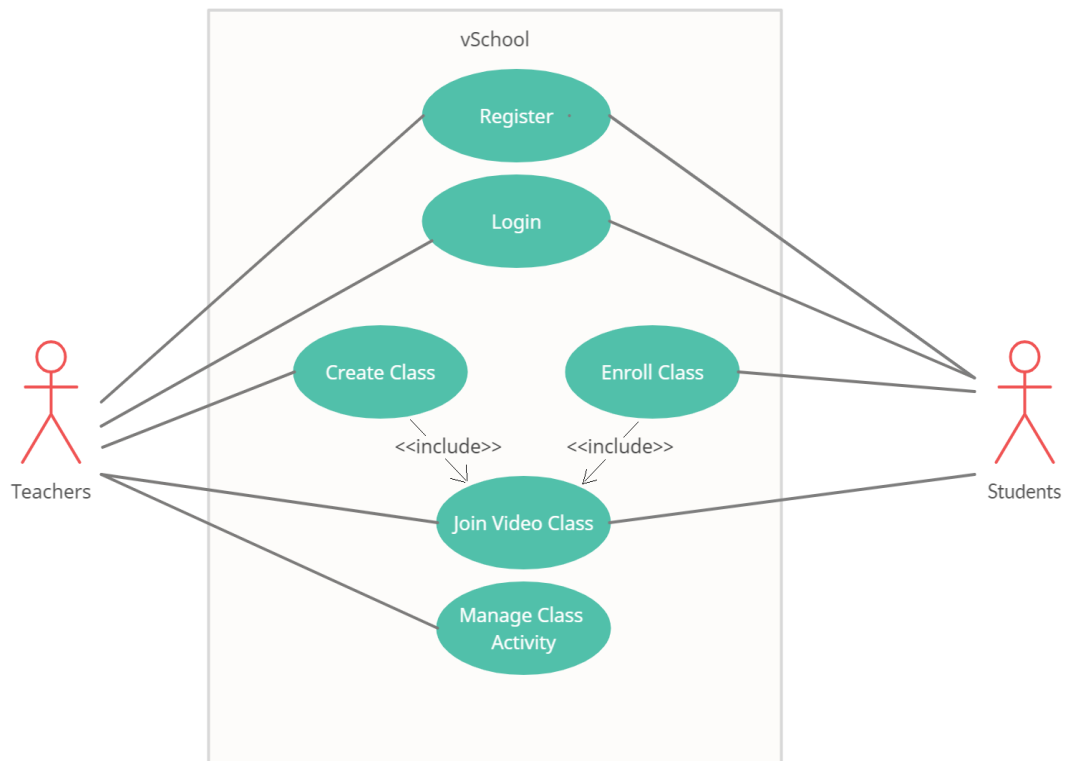- Web Socket
- Jitsi Meet API

3.4 Use Case Diagram
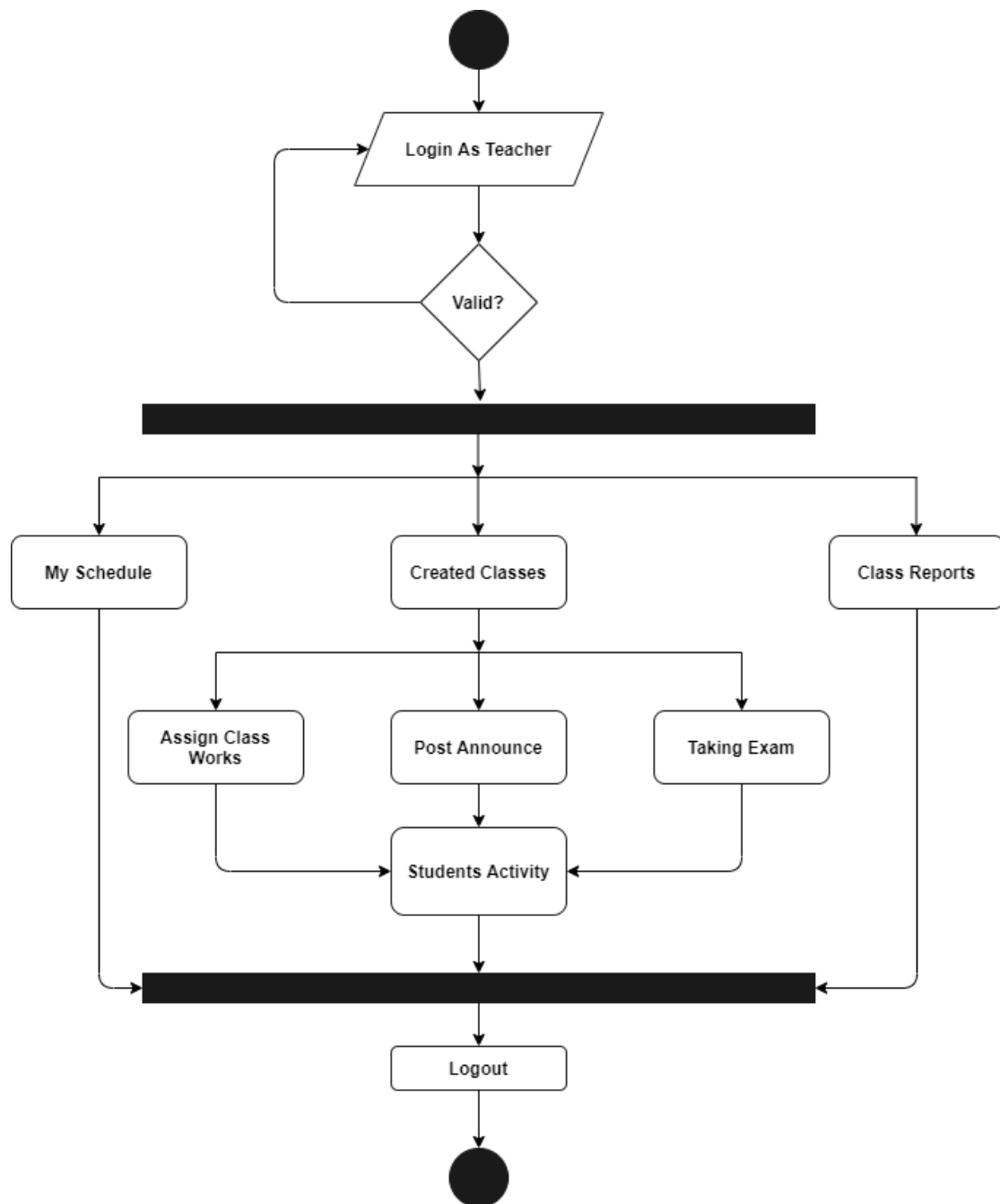
Figure 3: Use Case Diagram

3.5 Activity Diagram
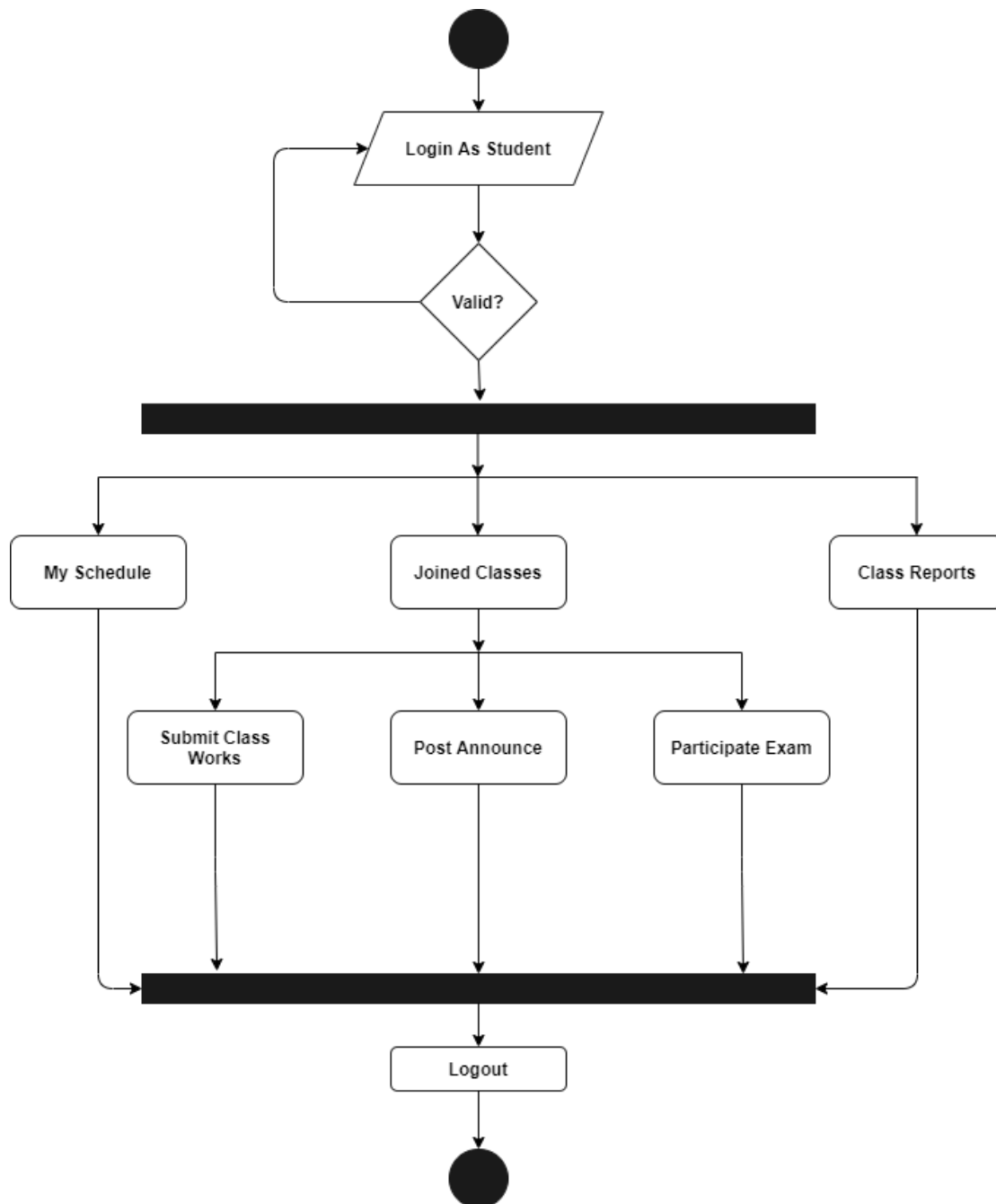
Figure 4: Teacher Account Use Case Diagram

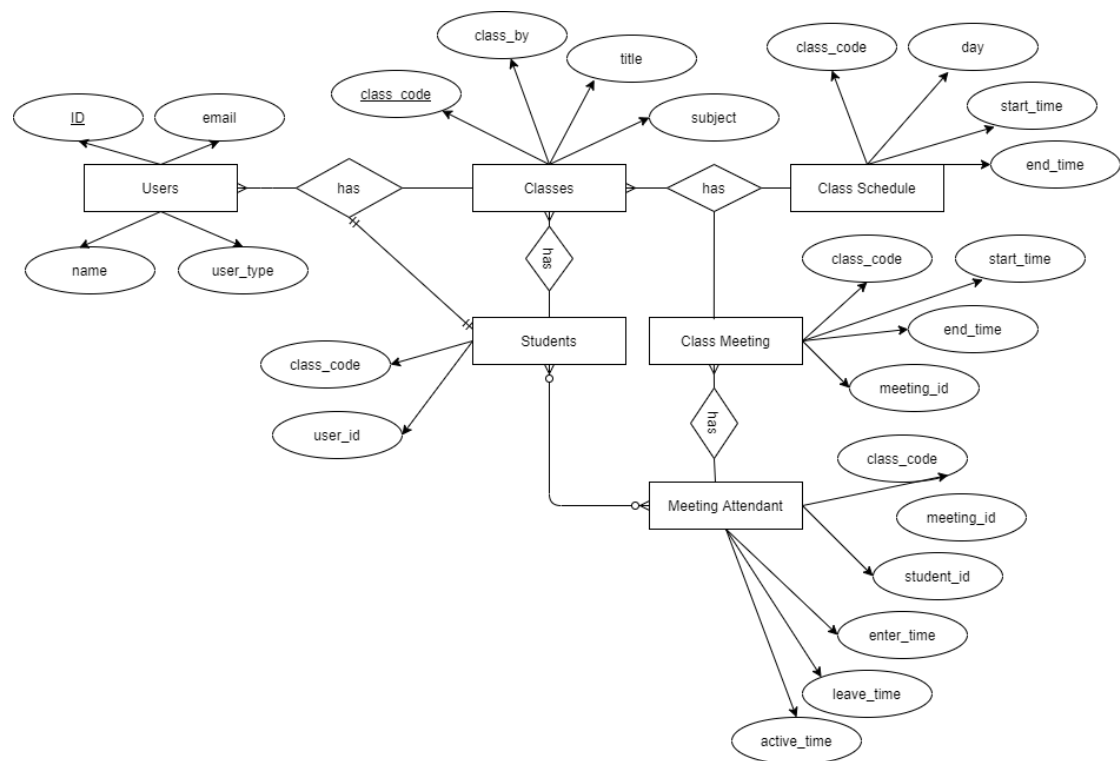Figure 5: Student Account Use Case Diagram

3.6 E-R Diagram

Figure 6: E-R Diagram

3.7 Relational Database

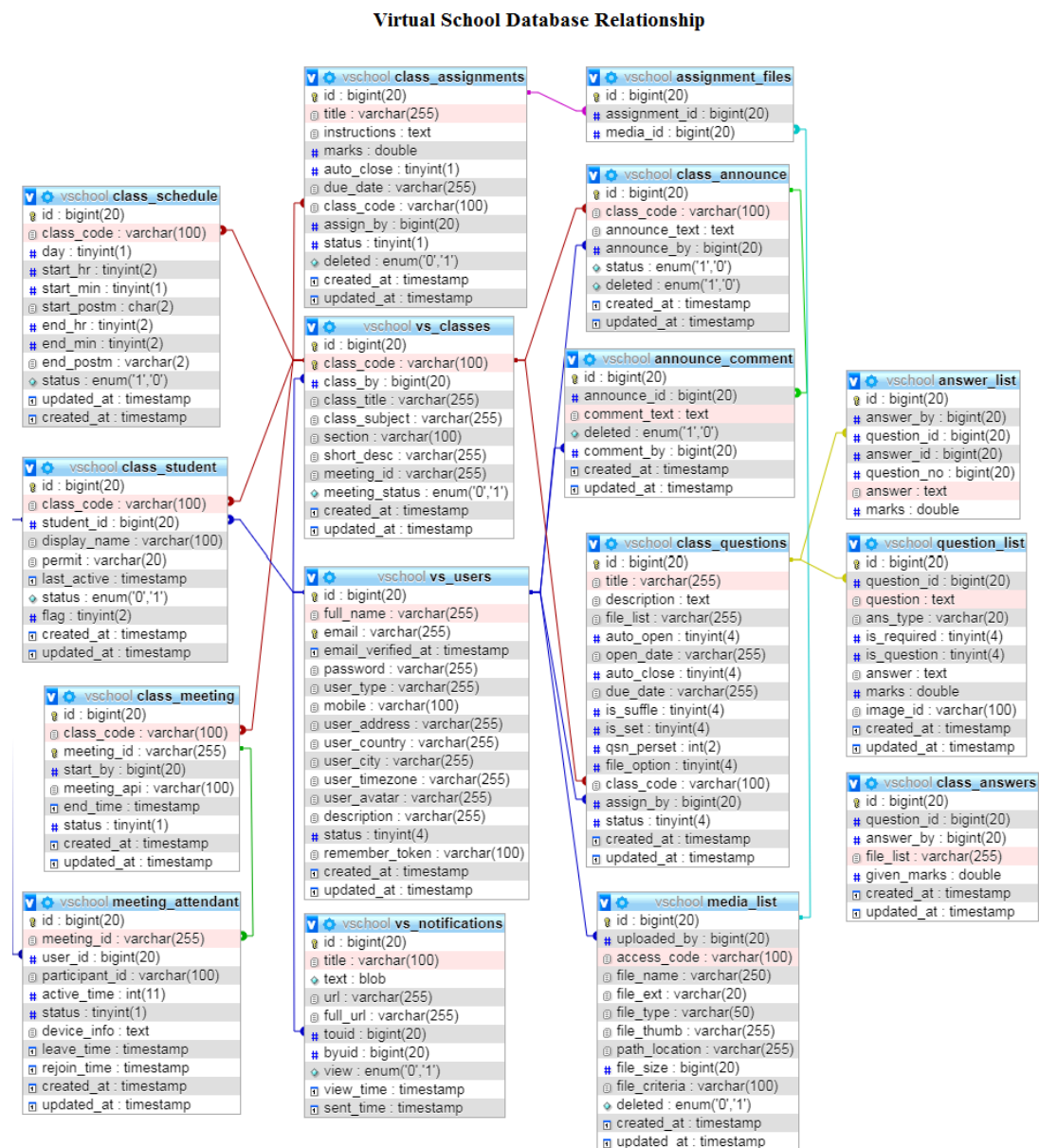**Virtual School Database Relationship**

Figure 7: Relational Database

Chapter 4

■ System Design and Coding Structure

This chapter we will discuss how we built the system, system features, system functionality and integrating Laravel API with React JS.

4.1 Introduction

The design phase is concerned with the physical construction of the system. Included are the design or configuration of the network (hardware, operating system, programming, etc.), design of user interfaces (forms, reports, etc.), design of system interfaces (for communication with other systems), and security issues. It is important that the proposed design be tested for performance, and to ensure that it meets the requirements outlined during the analysis phase. In other words, the main objective of this phase is to transform the previously defined requirements into a complete and detailed set of specifications which will be used during the next phase. Some of the activities that need to take place during the design phase are:

- Design the application
- Design and integrate the network
- Design and integrate the database
- Create a contingency plan
- Start a Maintenance, Training and Operations plan
- Review the design
- Articulate the business processes and procedures
- Establish a transition strategy
- Deliver the System Design Document
- Review final design

A database system is essentially nothing more than a computerized record keeping system the database itself can be regarded as kind of electronic filing cabinet. A database consists of same collection of some collection of persistent data that is used by the applications system of given some instituted. The term "instituted" here is simply

a convenient generic term for any reasonable self- contained science, technical or other institution.

4.2 Database Design

A database management system (DBMS) is a collection of programs that enables you to store, modify, and extract information from a database. There are many different types of database management systems, ranging from small systems that run on personal computers to huge systems that run on mainframes.

DBMS is a software that handles the storage, retrieval, and updating of data in a computer system.

Ex- SQL Server (Microsoft), MySQL (Freeware), Oracle (Oracle), NoSQL (Oracle), NonStop SQL (Hewlett Packard)

In Virtual Learning School project, we used MySQL database.

4.3 System Architecture Design

A system architecture or systems architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system.

System architecture can comprise system components, the externally visible properties of those components, the relationships (e.g. the behavior) between them. It can provide a plan from which products can be procured, and systems developed, that will work together to implement the overall system. There have been efforts to formalize languages to describe system architecture, collectively these are called architecture description languages.

4.4 Back End Architecture

All functionality of our project handle with Laravel API a PHP framework. Laravel use MVC pattern to handle all functionality. For user authentication we choose laravel Passport authentication. Very useful to handle API request with header token method.

When user send request with header authentication token laravel Passport check token is valid or not and give the user details with permission.

4.4.1 User Login Code Sample

Here inside the user Controller method called login handle the user login functionality

```
public function login(Request $request){
 try {
  if(Auth::attempt($request->only('email','password'))){
   $user = Auth::user();
   $user_info = User::where('id', $user->id)->first();
   $token = $user->createToken('app')->accessToken;
   return response( [
    'message' => 'success',
    'token' => $token,
    'user' => $user_info
   ],200);
  }
 } catch (\Exception $e) {
  return response( [
   'message' => $e->getMessage()
  ],400);
 }
 return response( [
  'message' => 'Invalid email/passowrd!'
 ],401);

}//END login
```

4.4.2 Create Class Code Sample

In our system only teachers account can create a class and only students can join a class.

```php
public function create_class(CreateClassRequest $request)
{
    $class_code = uniqid();
    $user = Auth::user();
    if ($user) {
     if ($user->user_type=='teacher') {
       try {
        $class_info = VsClassM::create([
          'class_code'   => $class_code,
          'class_by'     => $user->id,
          'class_title'  => $request->input('class_title'),
          'class_subject' => $request->input('class_subject'),
          'section'      => $request->input('section'),
          'short_desc'   => $request->input('short_desc'),
          'meeting_id'   => 'vsMt_'.$class_code.'jt'
        ]);
        return response([
          'message' => 'success',
          'class_info' => $class_info
        ]);
       } catch (\Exception $e) {
        return response( [
          'message' => $e->getMessage()
        ],400);
       }
     }else{
      return response( [
        'message' => 'Your are not permited to create class.'
      ],400);
     }
    }
}//END create_class
```

4.5   User Interface Design

User interface design (UI) or user interface engineering is the design of user interfaces for machines and software, such as computers, home appliances, mobile devices, and other electronic devices, with the focus on maximizing the user experience. The goal of user interface design is to make the user's interaction as simple and efficient as possible, in terms of accomplishing user goals (user-centered design).

Good user interface design facilitates finishing the task at hand without drawing unnecessary attention to it. Graphic design and typography are utilized to support its usability, influencing how the user performs certain interactions and improving the aesthetic appeal of the design; design aesthetics may enhance or detract from the ability of users to use the functions of the interface.

In Virtual Learning School Project we used React JS to build user interface.

4.5.1   About React JS

React (also known as React.js or ReactJS) is an open-source, front end, JavaScript library for building user interfaces or UI components. It is maintained by Facebook and a community of individual developers and companies. React can be used as a base in the development of single-page or mobile applications. However, React is only concerned with state management and rendering that state to the DOM, so creating React applications usually requires the use of additional libraries for routing, as well as certain client-side functionality.

Some useful hooks that make easier to build the system

- **material-ui/core:** Used to make design.
- **react-redux:** For handle global state.
- **redux-thunk:** To verify the global variable.
- **react-hook-form:** Form Validation.
- **react-jutsu:** Connect with Jitsi Meet API

4.5.2   About Jitsi Meet

Jitsi Meet is an open source JavaScript WebRTC application used primarily for video conferencing. In addition to audio and video, screen sharing is available, and new members can be invited via a generated link. The interface is accessible via web browser or with a mobile app.

We used Jitsi Meet API to create meeting online throw web browser. There is no react library for jitsi meet. They only provide Javascript iframe module. So, we need to use Jutsu react hook that made with some people that connect with Jitsi Meet API easily.

To connect with Jitsi Meet API need to use external javascript source code and then you can handle all functionality of a meeting that created throw your system.

Here is code example of Jitsi Meet connection

```
const CreateMeeting = ({ classInfo, meetingInfo }) => {
 const jitsiConfig = {
   roomName: meetingInfo.meeting_id,
   password: meetingInfo.meeting_id,
   subject: classInfo.class_title,
   parentNode: 'jitsi-container',
   userInfo: meetingUser,
   configOverwrite: configOverwrite,
   interfaceConfigOverwrite: interfaceConfig,
   onload: () => onloadSettings()
 };
 return  (
   <div className="meeting-wrapper">
    <div style={{ width: '100vw', height: '100vh' }} id={jitsiConfig.parentNode}>
      {!loadingMetting && endButton}
    </div>
   </div>
 )
};
export default CreateMeeting;
```

Chapter 5

■System Implementation

This chapter we will discuss about how we make teacher, students functionality and implement user features.

5.1 Introduction

Implementation refers to the final process of moving the solution from development status to production status. Depending on your project, this process is often called deployment, go-live, rollout or installation. For the purposes of Life Cycle Step, all of these terms are synonymous with "implementation."

There is no single way to implement an application. It depends on the characteristics of your project and the solution. Some implementations are as easy as saying "we are now live." This type of implementation can work when the solution is brand new and you are developing and testing in what will become the production environment. In these cases, implementation is just a state of mind. One day the solution is in development, and the next day it is in production.

Our System divided to two types of account one is teachers account and other students accounts have different features.

5.2 Teacher Class Creating

After login in teacher account, user will be able to create classes with their class information and maintain class schedule in every week by day class start time and end time. From putting class schedule teachers can manage their schedule from schedule section.

5.3 Teacher Class Meeting

Only teacher can start class meeting after creating class. Class meeting will be start throw Jitsi Meet API and all history be captured in database to analyze later. From class

meeting history teacher can sort out present students and absent students. Also students active time will be calculated.

5.4 Class Reports

From every class meeting history class reports will be auto generate both for teacher and students. Teacher have the permission to view all students info that present in class or not. From students account only student can view the theirs own activity in class meeting.

5.5 Class Exam System

From class assignments teacher can assign class work or publish question for joined students. In question section have different type of fields choosing the info field and question field teacher can get student information and question answer. Also have the match question option to match correct answer. In our system teacher can make question set for students that will show random question to different students.

5.6 Class Announcements

Both teacher and joined students can post on announcements section. Here everyone can discuss about their class and share class resources, like:- class syllabus, class sheets, video, attachments etc.

5.7 Notification System

From notification section teacher/students will be notify for theirs class meeting, new assignments/question publish. Also for upcoming class meeting notice.

Chapter 6

Testing and Results

This chapter we will discuss about is our system working properly and fulfill all requirements.

6.1 Software Testing

Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or service under test. Software testing can also provide an objective, independent view of the software to allow the business to appreciate and understand the risks of software implementation. Test techniques include the process of executing a program or application with the intent of finding software bugs (errors or other defects).

It involves the execution of a software component or system component to evaluate one or more properties of interest. In general, these properties indicate the extent to which the component or system under test:

- Meets the requirements that guided its design and development,
- Responds correctly to all kinds of inputs,
- Performs its functions within an acceptable time,
- Is sufficiently usable,
- Can be installed and run in its intended environments, and
- Achieves the general result its stakeholder's desire.

6.2 Principles of software testing

Principle 1: Testing shows that there are defects present in the software A self-explanatory point, it states that when a project is tested, it is checked for possible defects or bugs by creating different software testing strategies.

Principle 2: Testing software exhaustively is impossible. This means that testing software is not possible exhaustively and instead, testers need optimum time to test an application, which is based on the risk assessment of the same.

Principle 3: Testing software early. It is imperative to start testing software as early as possible. This ensures that the defects can be captured and fixed within the stipulated time-frame, thereby allowing developers to deliver the software to the clients on time.

Principle 4: Clustering the defects. Defect clustering simply state that a small number of modules in an application contains maximum defects detected.

Principle 5: The Pesticide Paradox. When the same tests are repeated over time and again, then the test cases do not find any new bugs. This situation gives rise to a new principle known as the Pesticide Paradox. However, this can be overcome by reviewing and revising the test cases and adding new and different test cases.

Principle 6: Testing is dependent on context. This means that when you test a mobile application, it will be on different grounds than while testing a web application. Similarly, testing a Mac application will be different than testing an Android application and the likes.

Principle 7: Absence of errors – fallacy. This principle merely points out to the fact that finding and fixing defects in a software system is of no use if the system build in itself is unusable and is unable to meet the users' needs and requirements.

6.3 Unit Testing

Unit testing, a testing technique using which individual modules are tested to determine if there are any issues by the developer himself. It is concerned with functional correctness of the standalone modules. The main aim is to isolate each unit of the system to identify, analyze and fix the defects.

6.3.1 Unit Testing 1: User Registration

Testing Objective: To ensure user can sign up into system correctly with valid email.

No.	Event	Attribute and Value	Expected Result	Result
01	Verify that Email and password that enter by user, this email is correct or not is checked and password is fulfill the condition is checked? when user click "Register" button on the Register Page.	Valid Email Valid Password, User Type Teacher	Sign up success	Pass
02	Verify that Email and password that enter by user, this email is correct or not is checked and password is fulfill the condition is checked? when user click "Register" button on the Register Page.	Invalid Email Ivalid Password	Registration failed and show the error message to user.	Pass
03	Verify the situation that user does not enter any value	Email: null Password: null	Registration failed and shows the error	Pass

Table – 3: User Registration

6.3.2 Unit Testing 2: Login Teacher/Student

Testing Objective: To ensure user can login into system correctly with valid ID and password.

No.	Event	Attribute and Value	Expected Result	Result
01	Verify that ID and password that enter by user and match the data in the database when user click "Access" button on the login page.	valid Email: valid Password	Login successfully.	Pass
02	Verify that ID and password that enter by user and match the data in the database when user click "Access" button on the login page.	Login ID: validID Password: invalidPassword OR Login ID: invalidID Password: validPassword	Login failed and prompt out the error message to user.	Pass
03	Verify the situation that user does not enter any value	Login ID: null Password: null	Login failed and prompt out the error	Pass

Table – 4: Login as teacher/student

6.3.2   Unit Testing 2: Login Teacher/Student

6.3.3   Unit Testing 3: Create Class

Testing Objective: To ensure only teacher account can create class

No.	Event	Attribute and Value	Expected Result	Result
01	After login to teacher account enter create class page	Valid Class Info	Class Create Success	Pass
02	After login to student account trying to enter create class page	Enter valid create class page link	Redirect to dashboard with un-authentication error	Pass

Table – 5: Create Class Testing

6.3.4   Unit Testing 4: Start Class Meeting
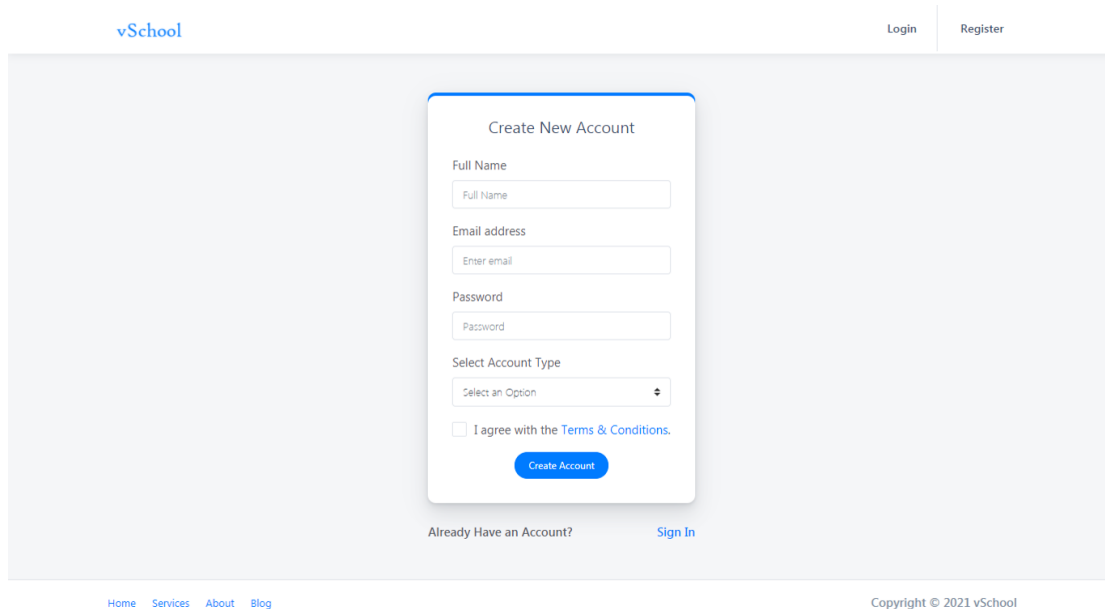
Testing Objective: To ensure only teacher account can create class

No.	Event	Attribute and Value	Expected Result	Result
01	After login to teacher account start any joined class meeting	Valid Class Info	Class Meeting Started	Pass
02	After login to student account trying to start class meeting	Valid Class Info	Showing un-authentication request error	Pass

Table – 6: Start Class Meeting

6.4 Results

6.4.1 Registration Page
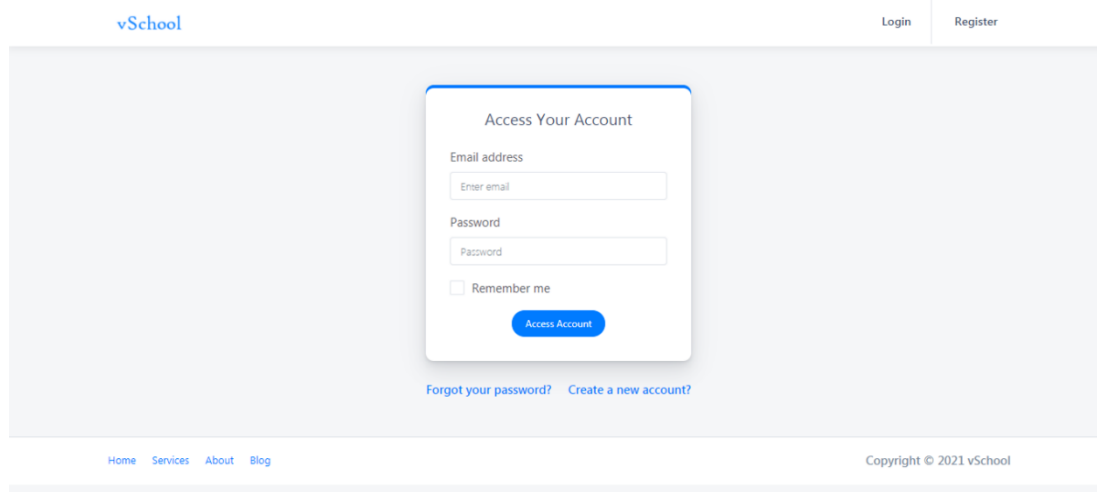
Figure 7: Relational I   Figure 8: Registration Page

6.4.2 Login Page

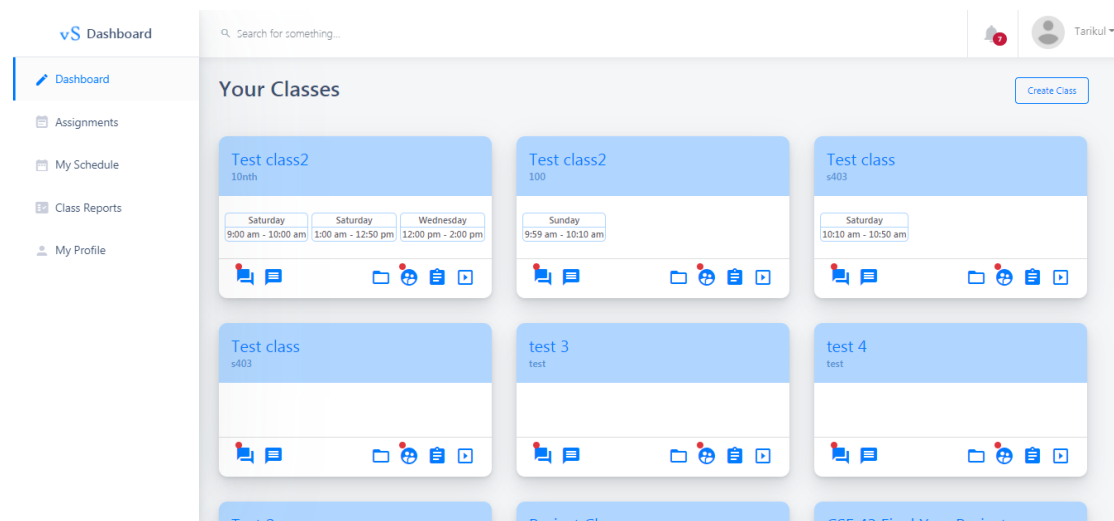Figure 8: Login Page

6.4.3 Teacher Dashboard

Figure 9: Teacher Dashboard Page

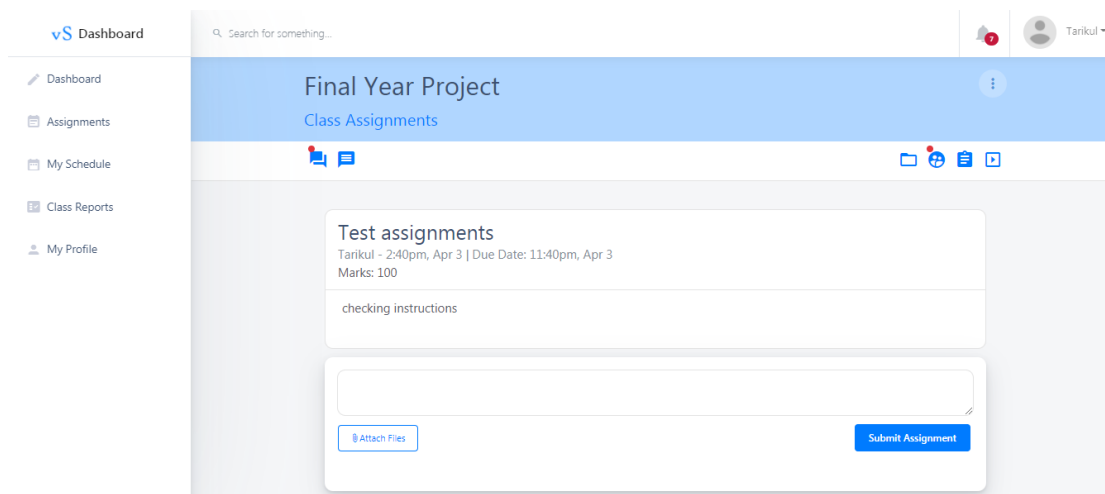### 6.4.4 Class Room Interface
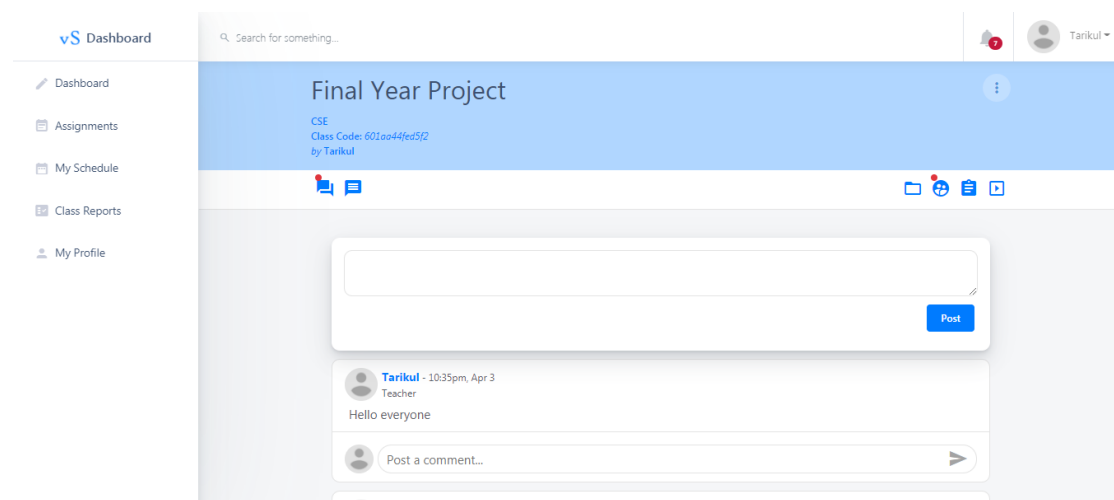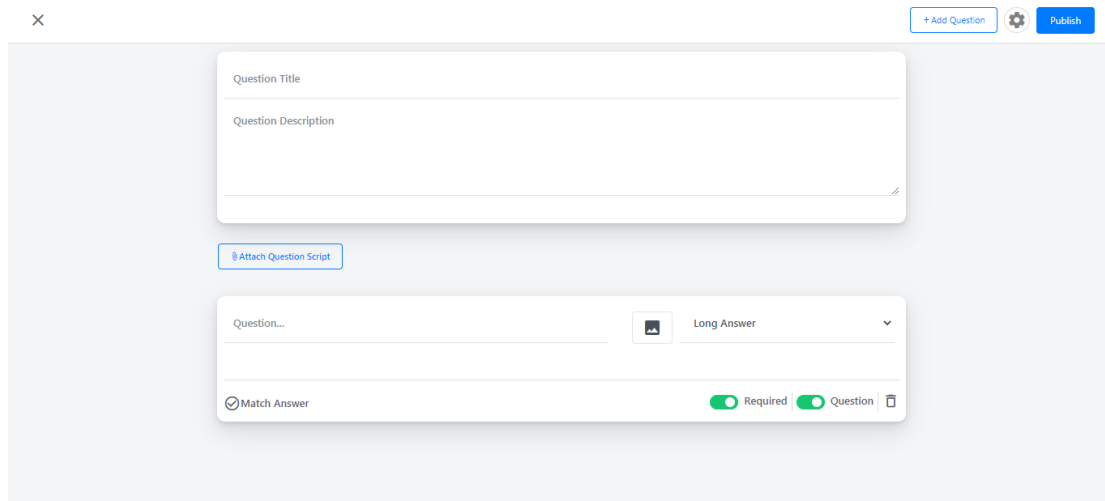
Figure 10: Class Room Interface

6.4.5 Create Question Form

Figure 11: Create Question From

6.4.6 Class Assignment Details Page

Figure 12: Class Assignment Details Page

Chapter 7

Conclusion and Future Work

7.1 Conclusion

The sole purpose of this project is to develop a web based software through which we will able to do video and audio calling, creating assignments, creating exams and many more thing. After using this web application, you don't have to go to several applications to perform different task like video conferencing, attending exams, submission of assignments, etc.

Virtual learning school is an exciting and as well as a challenging project. We faced some challenging task while completing it. Besides, we spoke with a lot of students and teachers as well to gather proper requirements.

It's an innovative idea. The opportunities that provided through this application are huge. We interact with too many students, list their problems, try to understand the communication gap and come up with this application. Hope it will help them a lot.

7.2 Future Goal

Today what's look good tomorrow becomes old. So, we have to update this system from time to time. The proposed system is not only for universities but also for all the educational institutes from all over the world. To fulfill that goal, we have several ideas to do.

- We want to develop it for all the educational system.
- We further more want convert it into an android, IOS and desktop application version.
- We want to make this application more suitable, flexible, user friendly, keep update the users time to time.
- Use of AI for different types of test paper.

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