A smart class handler

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering.

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APPROVAL

Project titled **"A smart class handler"** submitted by
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as satisfactory for the partial fruition of the requirements for the degree of B.Sc. in
Computer Science and Engineering (B.Sc.) and sanctioned as to its style and contents.
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DECLARATION

We hereby declare that, the project **"A smart class handler"** has been done by us under the supervision of **Subroto nag pinku, lecturer, Department of CSE** Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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Abstract

To increase the efficiency of class and proper use of time along with the advance class system we provide a web base platform called "Smart Class Handler "by incorporating group-based collaborative learning with authentic tasks. In our regular class system our teacher handles a hassle of picking the attendance system. Also the students have an issue to remind their classes and time of each week. There is another issue of taking the quiz where we are familiar with the manual quiz giving system. It needs a paper work to participate and examine the test to upload the result in the live result section. Also we can only discuss about our problem related to the course only during the class time. Our system is giving the solution all the problems in class in one platform. It is an advanced class management system where the student and teachers can reach a land mark of proper education system and by proper use of time. By their collaboration they can solve the issue related to the course and gather knowledge from each other. Also the file sharing system will give the opportunity to enlarge the knowledge among the students.

The term smart class refer to use digital equipment in classroom.At past when teaching and learning were restricted to classroom sessions prominent with white chalk, dusters and blackboards. Now is the era of smart classrooms which make learning fun through the use of digital equipment.

(https://www.edsys.in/smart-classes/)

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Chapter 1

INTRODUCTION

Introduction 1.1:

There is a quota that "Time is what we want most, but what we use worst." Proper use of time can make us most beneficial and bring much more success. In our daily work we waste time doing necessary paper work or others related documentation. Though it is a little time but we at the end of the day if we calculate we can define that we west a major time of our daily life. Technology is giving us the opportunity to utilize the time. So we need to utilize the technology to increase the efficiency.Nowadays education and research area is enormous and the sectors of study getting grandiose day by day. So we also need to cope with the education system to achieve a great outcome.

Our system smart class handler help teacher to get student attendance without wasting class time. Student will get notification for their classes. Student does not need to remember or note their class routine. Our system will able to know their class routine. Teacher and student both can be able to post on class wall or they can discuss on a matter through comment. Teacher can share educational material like pdf book, presentation slides, video tutorial, audio clip and etc. on class wall. There is a fantastic feature that is online class test system, with this feature teacher will be able to produce set question. In our system student can rating every classes that is done by a teacher. It's an illustrious opportunity for students to create a good career.

Motivation 1.2

Over the years, portals have become popular in the information system community. A portal aggregates information from multiple sources and makes that information available to various users. University portals integrate campus-specific information and activities which is stored in the campus electronic vaults such as databases and file systems with unstructured data from on and off campus. (Ademola, Adewale, & Ike, 2013) [1].

Every semester in our university we have different courses along with different activities like quiz, presentation, assignment, attendance of every day of the related courses. We need to remember the class schedule. Also all the course content is not stored in one database where all the resource can be sheared when student want them. Such as video tutorial, pdf books, audio content, slides, web links, tools for the course etc. Though we use Google class room or other educational portal to have them but there are some limitations. The resource shared through class room is not for all or upcoming students. In our educational system teacher need to get students attendance in every classes. It is an essential task for a teacher to evaluate a student activity in a class. For doing this task teacher need to call students name or id number to confirm their attendance. So we waste our time in every classes.

There is an existing issue about our class routine. Every student need to follow a class routine. As student I have to note or memories my class routine every time. Sometime I lost my note or forgot my class routine.

We face another problem to communicate with teacher and other class member. Sometime teachers need to share some educational resource like pdf book, video tutorial, audio clip, presentation slide and etc. to all student in one time.

In our digital world we to done our task digitally, so why we give our class test through existing system. Every time teacher need to print and distribute exam question one by one. It is waste of money and waste of time to print and distribute exam question.

Teacher perform in a class some existing topic. But some of time teacher can't understood how much student is satisfied or is he need some improvement or need to change his/her policy.

Objective 1.3:

The main objective of the system is automate recruitment activities to automatic, reduce the time requirement, manage the recruitment process as much as easy, most reliable and reduces the human resource requirements and grate resource sharable platform.

1. Increase Efficiency:
2. Digital Class management: In our system every task what will happen in a classroom as a traditional way that will be done in a digital way through internet.
3. Communication: communication between teacher –student, and student –student are get a new platform and a easy way.
4. Resource sharing: In our system both user and teacher will get a platform to share resources with everyone.
5. Online quiz system: Online quiz system to help student to mark their quiz in online. It also has grate benefit for teacher.
6. Class evolution: evaluating each class help teacher thinking level about how much student will satisfied in class
7. Class Database: sharing resources and sharing student problem in class wall, so user will get a class database.

Expected Outcome 1.4:

The outcome from our project A Smart Class Handler is for teachers, students and university.

I. Attendance from students.
II. Automatic generated class routine.
III. Communication with teachers - students and student -student
IV. Sharing educational resources.
V. Online class test system.
VI. Reduce waste of class time.
VII. Evaluating every classes

1.5 Report Layout

Chapter 1: Introduction

In this chapter we have observed about the motivation, objectives and the expected outcome of the project.

Chapter 2: Background

We observe about the background bounds of our project. We also observed about the related work, comparison to other candidate systems, the scope of the problem and challenges of the project.

Chapter 3: Requirement Specification

This chapter is all about the requirements like business process modeling, the requirement collection and analysis, the use case model of the project and their description, the logical relational database model and the design requirements.

Chapter 4: Design Specification

Details of all the design of the projects are discussed in this chapter. They are Front-end design, back-end design, interaction design, UX and the implementation requirements.

Chapter 5: Implementation and Testing

This chapter contains the implementation of database, front-end designs, interactions and the test results of the project.

Chapter 6: Conclusion and Future Scope

We observed about the conclusion and the scope for further developments which pretty much derive about the project.

Chapter 2

BACKGROUND

2.1 Introduction:

Web technology refers to the means by which computers communicate with each other using markup languages and multimedia packages. It gives us a way to interact with hosted information, like websites. Web technology involves the use of hypertext markup language (HTML) and cascading style sheets (CSS).[2]

We design a interactive we b application that can be operated by all type of device. Both type of user student and teacher will get benefit from our system. Teacher will get relief from attendance hassle. Student will notify about their class so it give relief from remember their routine. It can be a platform for student and teacher to communicate and resource sharing. Here online quiz system has a great benefit for both student and teacher

2.2 related work

Google Classroom developed by Google is a free web service that intention to simplify manufacturing, distributing and settle upon assignments in a digital way. The fundamental goal of Google Classroom is to streamline the method of sharing files among teachers and students.
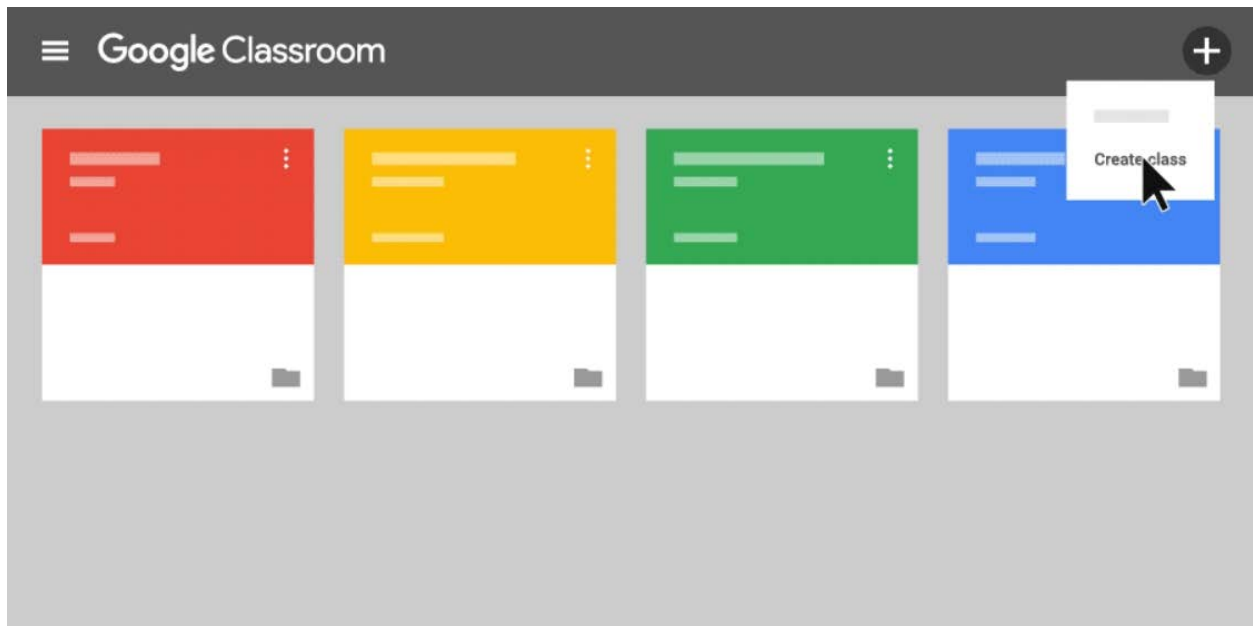
Figure 2.1: google classroom

Google classroom provide a simple way to share educational resources between teacher and students. In this system user can share resources like pdf, text, audio, video clip ,ppt slide and act. Google provide a database for every class room. Here teacher create a class with a specific code. And student will able to search the classroom with that code.

2.3 Comparative Studies

Our system A smart class handler is so much different and much more updated from the existing system. In our system student can able to give their own attendance .student will be added in class by teacher, no need to search the classroom. Student will notify about their upcoming classes. Which is a new feature. And the online quiz system which one make a class system more effective. Student will get result of a quiz automatically. It help teacher to get out from checking out exam script.

2.4 Scoop of the problem:

- It is an open platform where all the DIU students and teachers can interact easily.
- There is a platform for problem sharing and communication among the teacher and student.
- Class routine reminder that will help students to get out from existing system.
- Resources like pdf, presentation slide, audio, video content are ready to upload and download
- Class test are performing in online.
- Teacher can give solution of any problem any from a remote place.
- Students are able to perform to give their attendance without wasting valuable class time.

2.5 Challenges

- Email verification.
- Creating class routine with particular day and time.
- Generating attendance OTP with secure technique
- Database designing.
- Creating all type resources available for downloading and uploading.
- Design attendance system for students.
- Automatically generating class evaluation option for student.

Chapter 3

REQUIREMENT SPECIFICATION

3.1Business Process Modeling

Business process modeling (BPM) in systems engineering is the activity of representing processes of an enterprise, so that the current process may be analyzed or improved. BPM is typically performed by business analysts, who provide expertise in the modeling discipline; by subject matter experts, who have specialized knowledge of the processes being modeled or more commonly by a team comprising both. Alternatively, the process model can be derived directly from events' logs using process mining tools [3]. Redesigning a process and implementing it is not aimpetuous enterprise. It can take months and infrequently years, based on the latitude of the process and sub-processes, how many people and systems are united and how much of it needs to be redesigned. We used a UML Use Case Model as a business process model.

3.2 Requirement Collection & Analysis

- There are some basic requirements collected during implementation of the web and also in the data collection. Here are some given below.
- Student have to sing up themselves.
- Admin add teacher.

- Needed to create class.
- Class routine reminder.
- Generate OTP for giving attendance.
- Attendance request.
- Approve Attendance.
- Create the post.
- Upload audio, video, PPT or pdf file.
- View the uploaded file.
- Class evolution.
- Online quiz.

3.3 Use Case Modeling and Description

A use-case diagram is the simplified and graphical representation of how system works. It has been said before that "Use case diagrams are the blueprints for your system" [6].

Figure 3.1 shows the use case modeling diagram of **A SMART CLASS HANDLER**
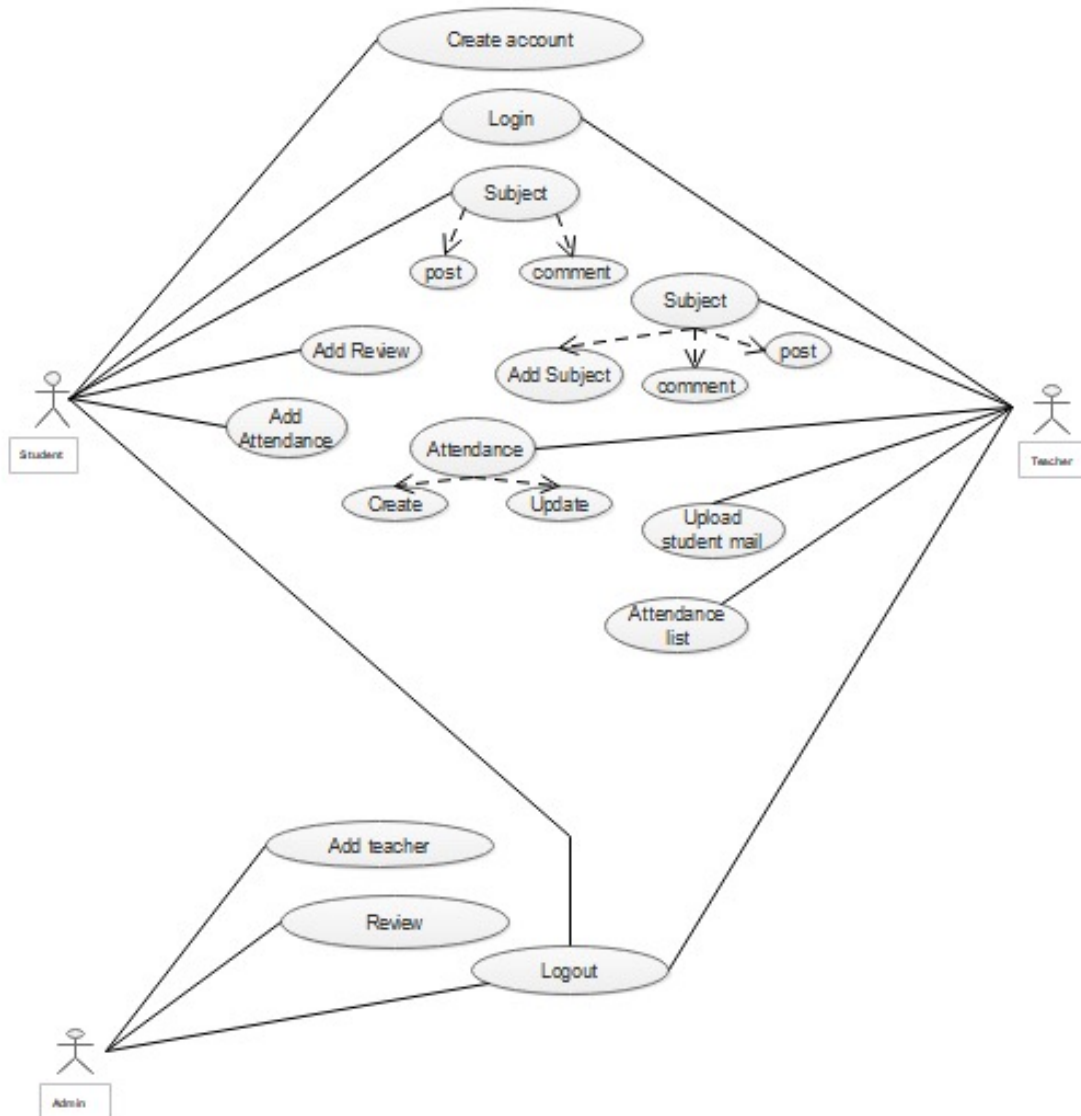

Figure 3.1: use case model

3.3.1 Use Case Description

Table 3.1 use case description for register

Use Case	register
Primary Actor	Teacher, Student
Secondary Actor	Null
Pre-condition	Single time signup

Scenario	• Full Name
	• Enter valid e-mail address
	  1. @diu.edu.bd
	
	  2. @daffodilvarsity.edu.bd
	• Enter password minimum of 6 character
	• Confirm password
	• User Role
	• Register

Post-condition	• Registration successfully or failed • Confirmation Mail and active account.

Table 3.2 use case description for login

Use Case	Login
Primary Actor	Teacher, Student
Secondary Actor	Null
Pre-condition	Registration, Activated Account
Scenario	- Enter valid email address - Enter password - Remember Password for browser - Forget Password
Post-condition	Login successfully or failed

Table 3.3 use case description for forgot password

Use Case	Forget password
Primary Actor	Teacher, Student
Secondary Actor	Null
Pre-condition	Null
Scenario	• Enter valid email address
Post-condition	• Link send to email successfully.

Table 3.4 use case description for home

Use Case	Home
Primary Actor	Teacher
Secondary Actor	Null
Pre-condition	Login
Scenario	• subject • attendance • teacher • quiz
Post-condition	• Login successfully or failed

Table 3.5use case description for create subject

Use Case	Create Subject
Primary Actor	Teacher
Secondary Actor	Null
Pre-condition	Login
Scenario	- Subject name - Description - Weekly day of class - Class time.
Post-condition	Subject created successfully or failed

Table 3.6 use case description for subject

Use Case	Subject
Primary Actor	Teacher, student
Secondary Actor	Null
Pre-condition	Login
Scenario	View Subject list
Post-condition	- Subject view successfully - Teacher add student in particular subject

Table 3.7 use case description for class wall

Use Case	Class wall
Primary Actor	Teacher, student
Secondary Actor	Null
Pre-condition	Login
Scenario	- Create post - Add resource - Download resource - Add comment - Add rating
Post-condition	- Class create successfully or failed - Add document successfully failed - Download document or failed - Comment added successfully or failed - Rating added or failed

Table 3.8 use case description for attendance

Use Case	Attendance
Primary Actor	Teacher, student
Secondary Actor	Null
Pre-condition	Login Create class
Scenario	• Create attendance • Student attendance list • Add attendance.
Post-condition	• Attendance OTP created successfully or failed • Attendance list create successfully or failed. • Added attendance successfully.

Table 3.9 use case description for create attendance

Use Case	Create attendance
Primary Actor	Teacher
Secondary Actor	Null
Pre-condition	Login Create class
Scenario	- Select Subject - Attendance Password - Expiry(min)
Post-condition	- Attendance OTP created successfully or failed - Attendance list create successfully or failed. - Request for attendance on class wall.

Table 3.10 use case description for teacher

Use Case	Teacher
Primary Actor	Teacher
Secondary Actor	Null
Pre-condition	Login
Scenario	• Logout
Post-condition	• logout successfully or failed

Table 3.11 use case description for home

Use Case	Home
Primary Actor	student
Secondary Actor	Null
Pre-condition	Login
Scenario	• subject • attendance • student • quiz
Post-condition	• Login successfully or failed

Table 3.12 use case description for add attendance

| Use Case	Add attendance
Primary Actor	Student
Secondary Actor	Null
Pre-condition	Login Create class Create attendance OTP
Scenario	• Select subject • Password • Add attendance.
Post-condition	• Login Attendance OTP successfully or failed • Attendance added successfully or failed.

Table 3.13 use case description for student

Use Case	Student
Primary Actor	Student
Secondary Actor	Null
Pre-condition	Login
Scenario	• Logout
Post-condition	• logout successfully or failed

3.4 Entity Relationship Diagram

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define its properties.

By defining the entities, their attributes, and showing the relationships between them, an ER diagram illustrates the logical structure of databases.

ER diagrams are used to sketch out the design of a database.[9]
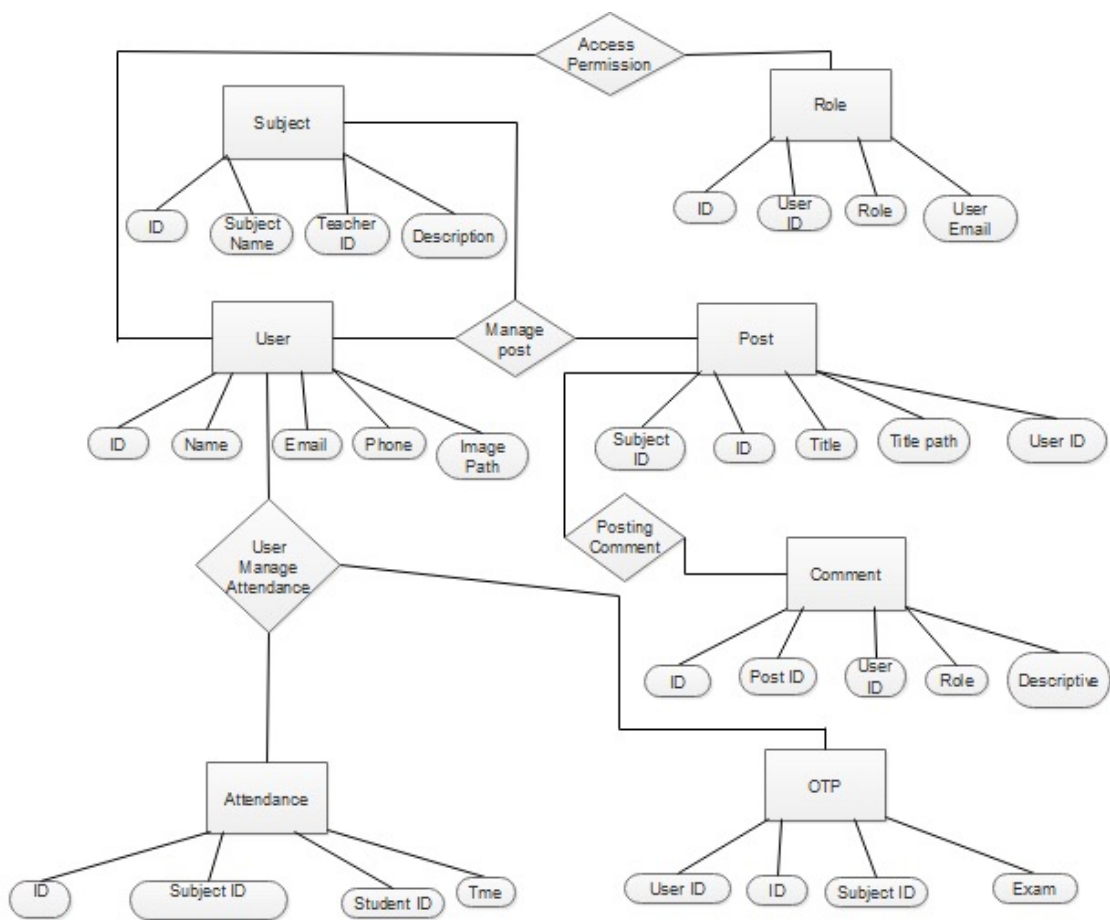
3.5 Design Requirements

- This system will contain three types of users like Admin, Teacher and Student.
- Student will sing up themselves and create their profile.
- Admin will add teacher.
- Teacher create class.

- Teacher add student in class.

- Teacher create OTP for attendance.

- Student &Teacher can create post.

- Teacher and student both can upload and download resources.

- Only registered members can access the class.

- Student will request for attendance.

- Teacher will approve the attendance.

- Teacher will provide class routine during creating classes.

- Student will get the class schedule by notification.

- Teacher will set the questions for quiz.

- Student will answer the quiz questions and submit the exam.

- There will be time limited for the quiz and class attendance.

- Automatic generate class evaluation option after class time.

- Class evaluation have access by admin.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end Design

The front-end can be predicted a device or serviceIn this chapter we will describe some front- end design of our application.

4.1.1 Home Page

In the home page of our application contain some Manu. It is different for different type of student .if the user is student it will contain home page like

If the user is teacher is look like

Then view for admin is this

Figure 4.1: home

4.1.2 Registration

The register page which is available for two type of user. That are student and teacher here teacher will register by admin. The register page contain some informative mandatory data which must be fill up for every user of this system.

Figure 4.1.2: register

4.1.3 Login

The login page of our system which is a contain a basic format of a login page

Figure 4.1.3: login

4.1.4 Forgot password

Figure

4.1.4 Forgot password

4.1.5 Profile

The profile page contain all the personal information of a user

Figure: 4.1.5 Profile

4.1.6 Admin Login

Figure: 4.1.6 Admin Login

4.1.7 Create subject

The create subject page which is contain the information about a class. The page contain some informative mandatory data to create a subject.

Figure: 4.1.7 Create subject

4.1.8 Subject list

The page has two format for two type of user .the teacher will show the subject list which subject he created.
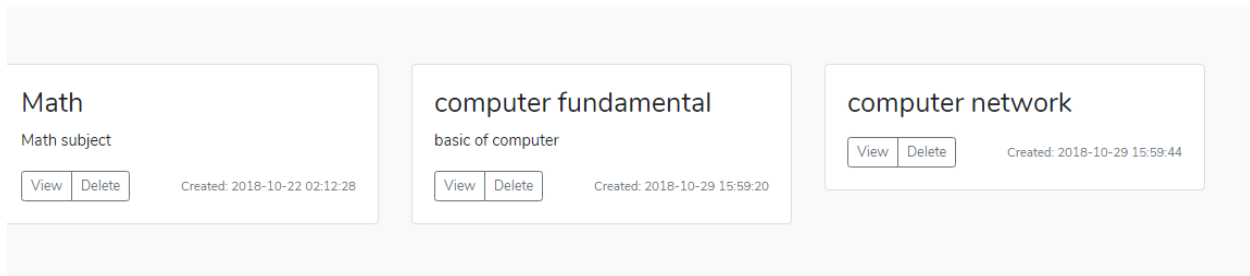

Figure: 4.1.8 Subject list

4.1.9 Create attendance

This page is available for teacher .Here teacher can create attendanceopt for particular subject.

Figure: 4.1.9 Create attendance

4.1.10Classs wall
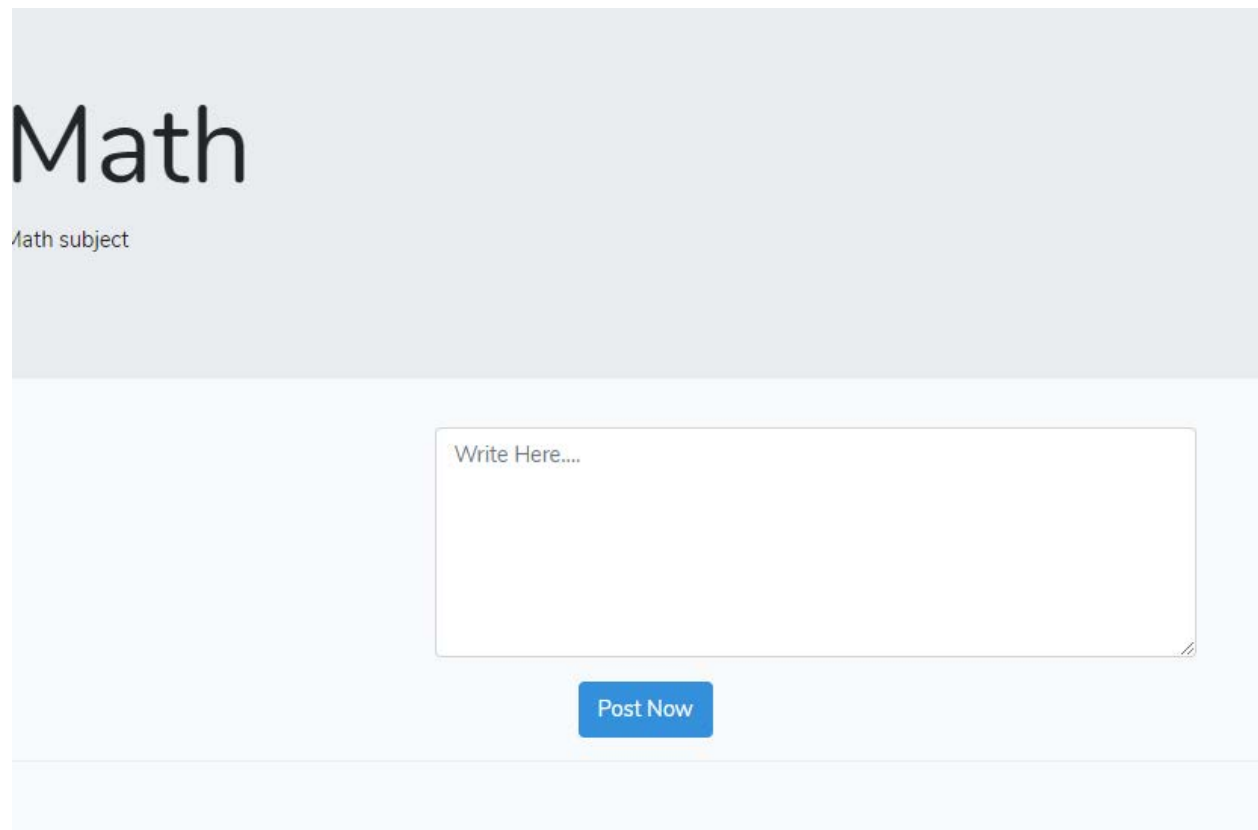
Figure: 4.1.10Classs wall

4.1.11 Student attendance list

In this page teacher will be able the see attendance list and percentage of that day.

Figure: 4.1.11 Student attendance list

4.1.12 Add attendance

The add attendance page which is only for student .in thih page student will be able to0 give their attendance.

Figure: 4.1.12 Add attendance

4.1.13 Quiz

This quiz page will be like

Figure: 4.1.13 Quiz

4.1.14 Student
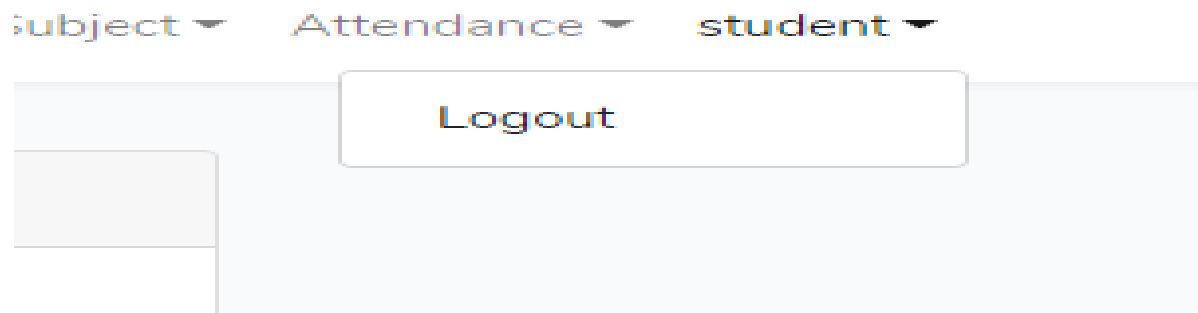
Figure: 4.1.14 Student

4.1.15 Teacher
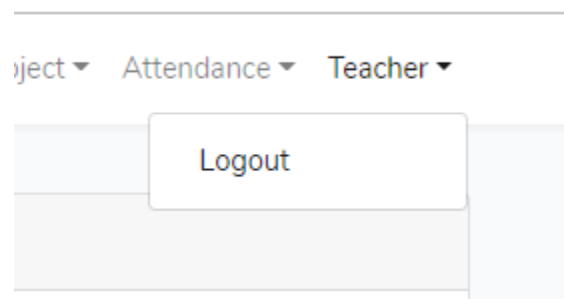
Figure: 4.1.15 Teacher

4.2 Back-end Design

In software architecture, there may be many layers between the hardware and end user. Each can be spoken of as having a front end and a back end. The front is an abstraction, simplifying the underlying component by providing a user-friendly interface, while the back usually handles business logic and data storage. [4]
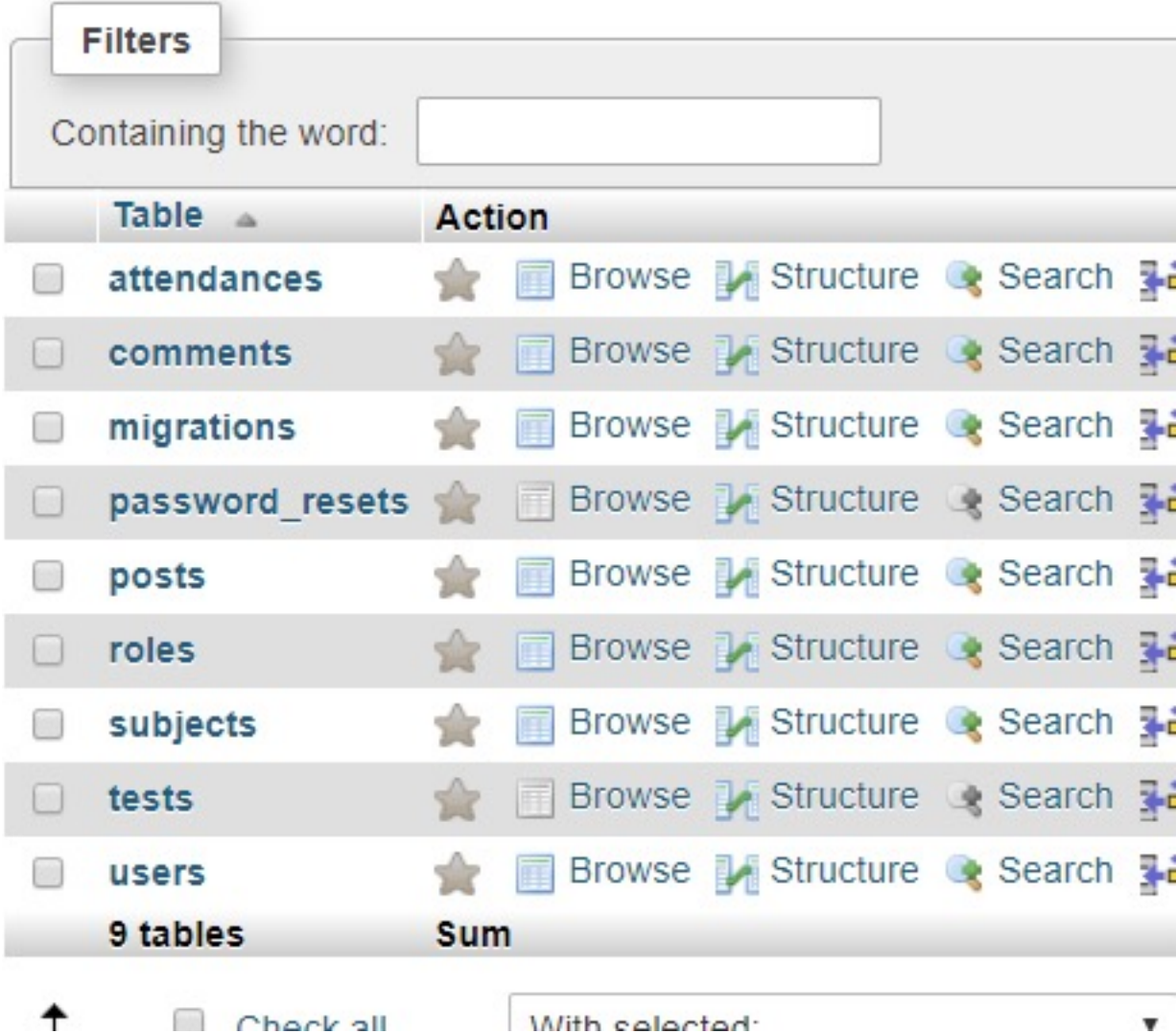
Figure 4.2: data base

To developing our system "a smart class handler "we use PHP framework LARAVEL 5.7 a sever side framework.in this framework logical and hosting site bargain us the MYSQl database for defensing the data information and pursuit the software.

4.3 Interaction Design and UX

We designed this web portal using bootstrap framework and font awesome. Those two helps us to design a better visual for the users and it is also responsive in many formats. "The process of enhancing user satisfaction with a product by improving the usability, accessibility, and pleasure provided in the interaction with the product" [5]. "Designers focus on creating engaging web interfaces with logical and thought out behaviors and actions." "Successful interactive design uses technology and principles of good communication to create desired user experiences" [6].

4.4 Implementation of requirement

- The design of our web application is embodiment by php programing language with MVC framework Larvae.
- Database is design by MYSQL.
- Linux based server perform for hosting platform.
- Sing up data will need to store in database.
- verifying CROS_SITE _SCRIPTING
- Unsuccessfully login data will save in database.

Chapter 5:

Implementation and testing

5.1 implementation of database

Because of using PHP latest framework Laravel we made migration table which describes about the table of contents' attribute and the data types. Since Laravel use MVC, the model controller the database. So there is no direct SQL query needed to perform actions. In the model the data can be checked whether user has the permission to input the data directly in the database. We used Laravel conventional Database Migration system and Eloquent ORM for DBMS. There are few tables in our DBMS. We discussed about some important tables below.

In our system we use PHP lasted framework LAravel ,in this framework migration table which is table of content attribute and data types. Although larvae use MVC the model controller database. for so in this platform does not need any SQL query. Here data can be checked in case the user has willingness to input the data directly in the database.. We discussed about some important tables from our database management system below.

Migration Table: All the records of the tables that had been migrated to the database saved in migration table using command.

Attendance table

This attendance table store information about student attendance.

User table

The information like name,id, emailaddress, phone number and etc. which is prove when sing up in store in this table.

Comment table

The comment table contain the data which is come from the reply of a post.

Post table

User like teacher, student both are able to post on class wall .information which is called post is store in post table.

Subject table

All the data about subject is store in subject table.

5.2 Implementation of Front-end Design

To developing our project we always concern about creating a simple attractive user interface for user. Now a days our modern technology are growing so fast .as a result we got different type of device like smart mobile, tablets, desktop, 4k desktop etc. In future we got more device like this. We are trying to create our web application with the concern of growing modern technology. We make our application available and responsive so that user can visit us form different type of device. We create our application standard and user friendly with the help of java script, HTML, CSS technology.

Here mention some of factor of implementing the front-end design given blew:

- In our system there are three type of user like admin, student, and teacher.
- User need to sign up with filling up as a registration form.
- User can login in system with a valid email address and password by which they sing up.
- To recover password user need to fill up forgot password form.
- Teacher can create class by using create class interface.
- To crating class teacher need to fill up class routine information.
- Teacher are able to create attendance OTP.
- Student need a password to login attendance OTP.
- To create an online quiz teacher need to set up question and time.

5.3 implementation of interaction:

In our project "A smart class handler" we are always concern about user experience. We system is so user friendly because most of the part of our system is done by automatically. To make easy to use our application we just create text link .button, and icon. User like student need to create a profile for access. Teacher will added by admin.

5.4 Testing Implementation

Implementation is the process of putting an action for the formulated plan. Before we implement, the plan should have been completed and our objectives should be clear.[7]

Testing each one of those actions formulated in the plan is said to be implementation testing.

Table 5.1: Test case evaluation

Test Case	Test Input	Expected outcome	Obtained outcome	Pass / fail	Tested on
1.Login	Login via various devices such as tablet, pc ,cell phones	Successfully login	Successfully login	Pass	27-10-2019
2.Registration	name, email address, user roll, password , confirm password	Show restriction to Fill all the fields	Fields must be filled by data	Pass	27-10-2019
3.Password	less than six digit or incorrect password or empty field	Warning for less than six digit ,incorrect password or field is empty	Show warning massage	Pass	27-10-2019
4.Email	Incorrect email address or empty field	Warning for incorrect email address or field is empty	Show warning massage	Pass	27-10-2019
One time sing up	Enter an existing email	Massage for existing email	The email has already been taken.	pass	27-10-2019
Create subject	Class name empty	Show restriction to Fill all the fields	Show warning massage	pass	27-10-2019
Create attendance	Select Subject, Attendance Password, Expiry(min)	Show restriction to Fill all the fields	Show warning massage	pass	27-10-2019
Add attendance	Select subject	Show restriction to Fill all the fields	Show warning massage	pass	27-10-2019
Give attendance	password	Show restriction to Fill all the fields	Show warning massage	pass	27-10-2019
Create post					

5. Upload	Input file	Added file into class wall	File added successfully	Pass	27-10-2019
8. Edit Profile	Fill form	show fields	Viewed profile	Pass	27-10-2019
10. Logout	Click logout button	Logout from the account	Logged out successfully	Pass	27-10-2019

5.5 Test Results and Reports

Test Report is required to reflect testing results in a disciplined genre, which gives an scope to estimate testing results quickly. It is a document that records data obtained from an evaluation experiment in an organized manner, describes the environmental or operating conditions, and shows the comparison of test results with test objectives [8].

Test report is too much important to justify that our product is meet user requirement or not. Generating result repot is essential even when your product has failed in test. There are different type appearances that the user would be devoted to relational about product like it Test Report is required to reflect testing results in a disciplined genre, which gives an scope to estimate testing results quickly. It is a document that records data obtained from an evaluation experiment in an organized manner, describes the environmental or operating conditions, and shows the comparison of test results with test objectives.

There are many types of testing:

- Functionality

- Regression

- Security

- Performance

- Scalability

- Usability

- System interoperability

- Localization

- Disaster recovery

- Installation/ upgrade.

If the system passes through all these types of testing it is finally ready to launch

So at the end we can carry out the results as the benefits of usability testing.

- The quality of application is good.

- System is too much easier to use for all.

- It is suitable for every type of device.

- Our application is more deliberately accepted by users.

- It is easy to use for the new users.

- Better UI for interaction.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Discussion and Conclusion

The system A smart class handler which build up a easy communication process with teacher and student. It help student to get any problem solution from teacher and his/her classmate both student and teacher will get a platform to sharing resources. The feature attendance from student will very effective because it reduce wasting of class time .The class evaluating system help teacher to improve his/her teaching style. And our most valuable part is online quiz system which can be most attractive for student and teacher. It help teacher and student to make class time more effective.

6.2 Scope for Further Developments

- To developing a mobile application
- Online written exam and evolution the exam script automatically.
- Creating a chat sever for user of the system.
- Assignment submission system.

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APPENDIX

Project Reflection:

From Summer-2017 semester we had started our journey to make a system, where we can get all the information about project, thesis and research. We faced a major problem to find out and fixed the project area. We were in a deep sea where we have limited idea of choosing ideas. We were also thinking to build up a platform where teachers and students can communicate easily from anywhere and it will save valuable times as well. We followed the model to implement and monitor our system, with the all hard work and spending a lot of time finally we were able to reach our goal at last.

The project "**A Smart Class Handler**" will be very helpful for both teachers and students for using class time in proper way. Teacher and student both will get facility like communicate and sharing.Teacher will get relief from existing way of getting student attendance and quiz. The students will be more operative about their class and going to enhance their critical level of thinking. Students will be able to use their class time in proper way. They will be able to perform task in a small group with good understanding and corporation.

So we believe that our "**A Smart Class Handler**" will be a positive and effective thing for both the teachers and the students. And we will be continuously upgrading our system.