CLASSROOM BOOKING SYSTEM

BY

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

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MAY 2018

APPROVAL

This Project titled **"Classroom Booking System"**, submitted by Dewan Mohammad Shadman Sakib ID No: 142-15-3633, and Akash Mandol ID No: 142-15-3603 to the Department of Computer Science & Engineering, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science & Engineering and approved as to its style and contents. The presentation has been held on 7 May, 2018.

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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Ms. Samia Nawshin, 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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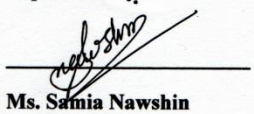

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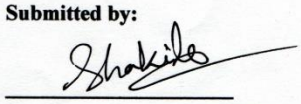

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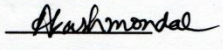

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ACKNOWLEDGEMENT

First we express our heartiest thanks and gratefulness to almighty allah for His divine blessing makes us possible to complete this project successfully. We feel grateful and wish our profound indebtedness to **Ms. Samia Nawshin**, Lecturer, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in this field influenced us to carry out this project.

We would like to express our heartiest gratitude to **Syed Akhter Hossain, Head, Department of CSE**, for his kind help to finish our project and also to other faculty members and the staffs of CSE department of DaffodilInternational University. We would like to thank our entire course mate in Daffodil International University, who took part in this discuss while completing the course work.

ABSTRACT

This project is on "**Classroom Booking System**". This is a kind of System, which helps teachers to get information about class schedule, free classroom and many other things. It consists of the milestones in development of Classroom booking information system.

The project is aimed to build a fully functional system in order to achieve the efficiency in the Classroom Booking. The overall mission of the system is to provide service to assist user to see which classroom is available and allows them to easily book that room in advance to match their own schedule. We have used HTML,CSS, JavaScript, jQuery for front end andPHP, MySQL, AJAX for backend coding. After completing all function, the application tested in different stages and was found working successfully.

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CHAPTER 1

INTRODUCTION

1.1 Introduction:

Classroom booking (CB) system provides user to manage which classroom is available at which particular time and allows them to easily book classrooms in advance to match their own schedule. This system interface makes all information available at a glance. The main objective of our project is to develop a web based system to support classroom booking management and also to provide services to the user.

1.2 Motivation of the project:

- To enhance consciousness about schedule of classroom
- To provide a platform for the teachers to see which rooms are available
- To provide web based information about classroom booking system
- To make the system less time consuming

1.3 Objectives:

The key objectives of the project are as follows:

- To provide support to all user so that they can be informed about other users'
- time booking schedule
- To provide basic information about classroom schedule
- To provide a platform for the teachers to find which classroom are available
- To provide better services.
- To develop a user friendly platform for the users.
- To provide a platform to the classroom booking management administration
- so that they can update the website from anywhere with internet access.

1.4 Expected Outcome:

Room booking is in the midst of dramatic change. New technologies and new approaches have been changed for the teachers to search classrooms which are available. They can make a change in their classroom schedule based on their requirement. So the expected outcome of this project is to develop a system that will provide service to the user for finding classroom and provide a platform to classroom booking management administration for controlling the room booking schedule.

1.5 Report layout:

The layout of my report is assorted by:

Chapter 1: Introduction

In this chapter we have discussed about the classroom booking, motivation of our project, its objectives and expected outcome.

Chapter 2: Background

Second chapter describes about background and comparative studies of our project. After comparative study we have analyzed our findings and discovered the scope of our projects followed by its challenges.

Chapter 3: Requirement Specification

This chapter illustrates the business process models of our project. It also contains the requirement analysis and use case modeling. At the end of this chapter, logical data model and design requirements are pointed out.

Chapter 4: Design Specification

This chapter emphasizes on Front-end and Back-end Design. At the same time it also discusses about interaction design and user experience. Consequently, it ends with implementation requirements.

Chapter 5: Implementation and Testing

Chapter five focuses on implementation of database, front end design and interactions. Later it talks about testing implementation followed by test results and reports.

Chapter 6: Conclusion and Future Scope

This concludes the report by mentioning its limitations and scopes for further developments.

CHAPTER 2

BACKGROUND

Generally, by “project Background” we mean the formal documentation of the project. In this part, we expect to study about the related works done by others and also analyses their work to find new scopes.

2.1 Introduction:

Often our teachers need to take extra classes and that time there is a lot of difficulties in finding an empty classroom. As a result, the teacher wasted a lot of time. Also at that time the management administration usually faces a lot of problems to solve the issues.

At that time, the Classroom booking system can manage a dynamic platform for the management administration and teachers to solve their classroom finding issues and it is the easiest way to find the empty classrooms for teachers and easy to control the room booking schedule for administration.

2.2 Related Works:

Though “classroom booking system” is a crying need for our University and also in many other schools, colleges etc. there is no website that serves the purpose. there are some different room booking sections but their intention is not the same as ours. In our study, we have found some websites.

1. https://www.roombookingsystem.co.uk/ [1].

2. https://www.skedda.com/home/classroom-scheduling-software/ [2].

3.http://www.bcluk.com/ [3]

4.https://robinpowered.com/[4]

2.3 Comparative Studies:

As there is no dynamic website to manage Classroom booking, we have no option to compare the functionalities of existing system. However, we discovered it as a great opportunity for ourselves to be the pioneer by creating a dynamic website for classroom booking.

1. https://www.capita-sims.co.uk [1].

2. https://www.melearning.co.uk [2].

3. https://www.roombookingsystem.co.uk [3].

Room Booking System is a comprehensive, web-based room and resource booking solution which helps to manage bookings for all types of rooms and resources. It saves staff time, maximizes resources and improves efficiency throughout our schools. Set up classroom-based sessions in moments; for learners within or beyond your organization. Send invitations by email, set pre-evaluation conditions and see sign-ups in real-time. The Classroom Booking System handles all the details automatically like cut-off dates and capacity management/waitlists. It'll even take care of authorizations from line managers, so there'll be no more endless phoning around.

2.4 Scope of the Problem:

As we mentioned previously that at present there is no automated system to booking free Classroom, therefore there is a huge scope to implement this system in many educational organizations.

2.5 Challenges:

One of the most challenging parts of this project is to transform all the analog class-schedules into a digital one.Whether we have classrooms, laboratories, computer rooms, in-demand research equipment or something similar, managing the use of these "spaces" can be very challenging in real time situation.This system is created to solve these problems and allow us to better manage spaces.The ability to quickly see real-time room availability in an appealing visual layout is invaluable as well asdesigning, implementing and booking repeating reservations or multiple rooms are real challenges.

CHAPTER 3

REQUIREMENTS SPECIFICATION

3.1 Business Process Modeling:

Business process modeling is a technique for representing the workflow of a system. Diagram base as “flow diagram”, are the main characteristic of the methodology. Here we define our business model using Data Flow Diagram. Data Flow Diagram describes how data is processed through a system. In the figure we try to draw a level-

1 Data Flow Diagram for our system.

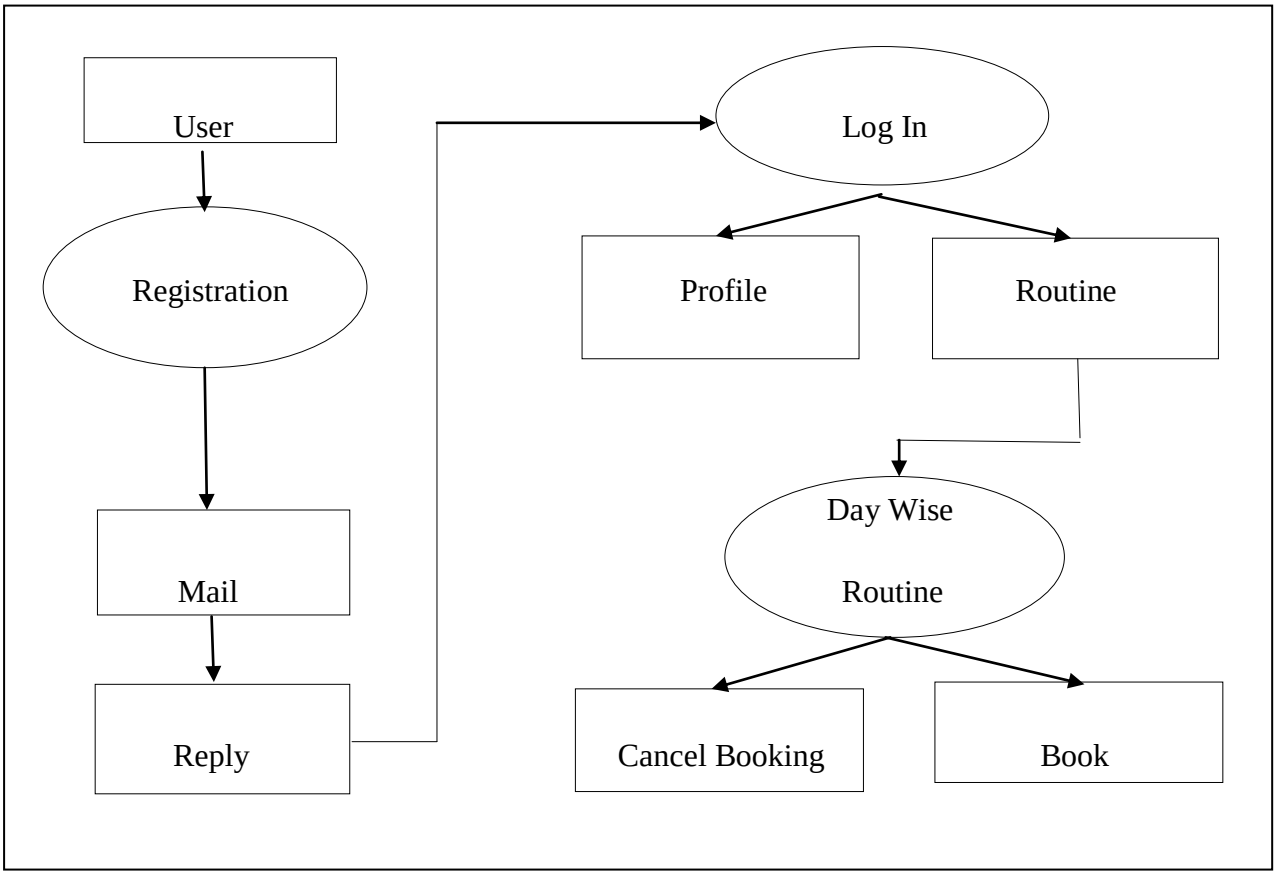

Fig 3.1: Data Flow Diagram of the propose system.

3.2 Requirement Collection and Analysis:

Requirement collection and analysis is one of the primary conditions of application development. For development, there are two types of requirements, one is the functional requirement and the other is nonfunctional requirement. Functional requirements is those activities that's the application software can perform. On the other hand, Nonfunctional requirements define the personality of an application, as like the application is how much efficient, performance issue of the application and many more [4].

3.2.1 Functional Requirement

From the point of view of our system, it should have many functional requirements like, a registration section, a login section where only authenticate person can access, a dashboard for maintaining user profile. Dashboard also contains more other portion like set routine, update routine and manage user.

3.2.2 Non-functional Requirement

Non-functional requirements are help to being more efficient; optimize performance, memory consuming, smoother operation, and load on quickly as possible to our application. Application UI should be user friendly and gorgeous for excellent user experience.

3.3 Use Case Modeling and Description:

A Use Case Diagram sometimes called unified modeling language (UML) is a graphical representation of a system action and user's roles. It is a simple representation of a system's user interaction with the system. A use case shows the list of actions or events and role of users with these actions. In software and system engineering an actor can be a human other external system. There are several actions or events on the system and actors are related with these actions. In use case diagram an actor can play role with different actions and different users can play role with same actions. Actions are generally known as use case [5].

So, to create use case diagram, the analyst must have to first identify the different types of user who will use the system. Actions represent the procedures which people

must follow to operate the system. In our system, there are two types of user one is public users who will be insured person and another user is admin.

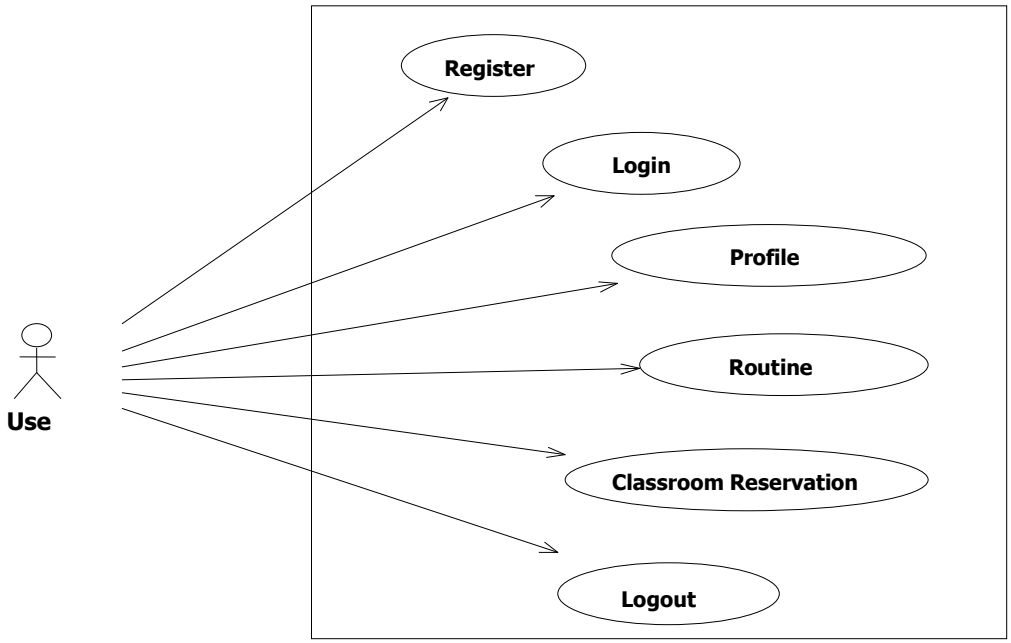

Fig 3.2: Use case diagram for user

Figure 3.2 is the describe user can register and they can login in this system, they also can check their profile, manage routine and finally logout this system.

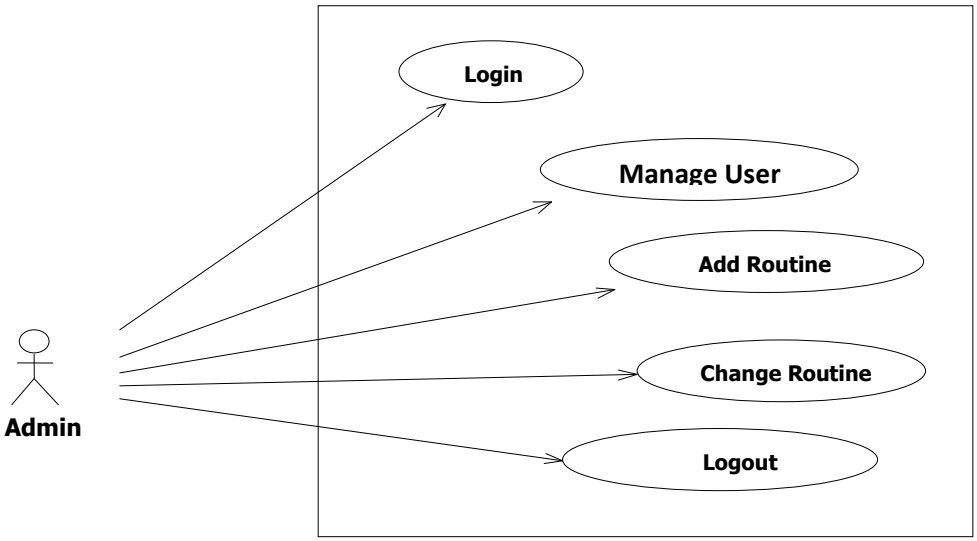

Fig 3.3: Use case Diagram for Admin

Figure 3.3is describing how admin control our system like manage users and class Routines.

3.4 Logical Data Model:

An entity-relationship diagram (ERD) is a graphical representation of an information system that show the relationship between people, objective, places, concepts or events within that system. An ERD is a data modelling technique that can help define business processes and can be used as the foundation for a relational database. A complete diagram of the entities and relationship currently considered in the system given below [6].

An E-R diagram can express the overall logical structure of a database graphically. It also the express detail relationship between every user and admin panel of this system. Given below is the E-R diagram used in our project.

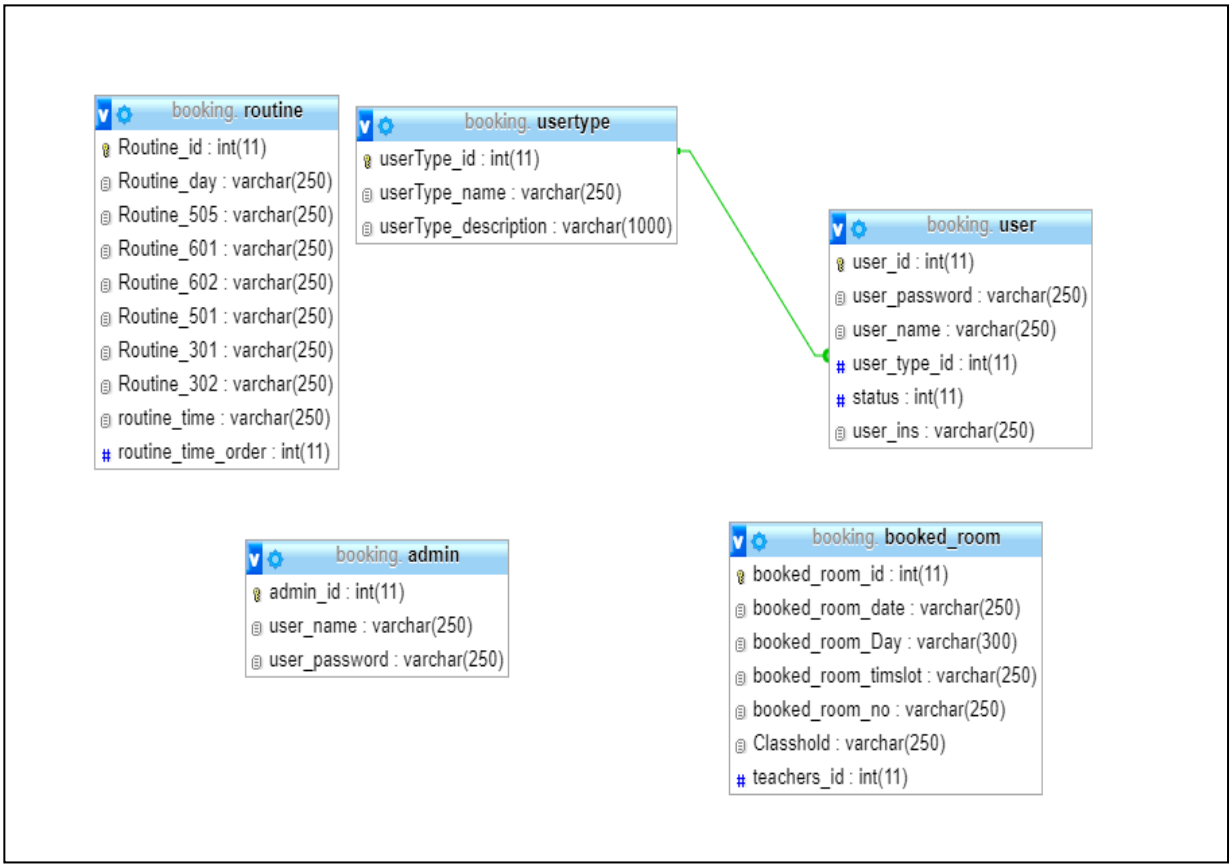

Fig 3.4: E-R Diagram of the Classroom booking system project

3.5 Design Requirements:

Finding out requirements for designing the whole project is one of the most important task for completing the project. Other task of development is fully dependent on designing the system. It is a process which graphically represents how the system will be working. We have collected basic requirements from field level. Some are following:

- The system will use by two types of users, those are System Admin and User.
- System admin will setup basic settings of the system.
- Classroom Booking admin will create reservation manage system
- Classroom Booking admin will manage routine and other important subject information.
- Users can update information.

CHAPTER 4

DESIGN SPECIFICATION

4.1 Front-end DesignSpecification:

From the point of view of designing, Front-end is a most important section for the application development. It is worked on presentation layer and user can directly interact with this. It is very important to develop a simple and easily understanding front-end or GUI for the user of the application. So we tried to keep our design as simple as possible and easily accessible for the user, but the development task wasn't so easy.

- They will be two types of users, those are System Admin and User.
- Every user will login using simple login form. Login field are email address and password.
- Will include forgot password option for recovery or generate new password.

4.2 Back-end DesignSpecification:

Back-end means a section that is working behind the projects, but the user is unaware of or can't see this. Back-end technology usually consists of language like PHP, Ruby and Python etc. Actually frond-end design is only way to interact with the user but user can't watch and never visualized how to the system is working. Back-end does everything that happens on the server or behind the application. For web application, it is more difficult to handle back-end portion than a android application, because web application components are very big. That's why, we are don't develop anything that could be cause of pressurized on the device in the back-end portion.

- System admin will manage the software using default settings of the software.
- Classroom Booking admin will manage the class routines.
- Classroom Booking will manage the schedule.
- Users will see his/her profile information.
- Users will get the warning message before reserving classes.
- Admin will see his/her profile information.
- Admin also will see the previous users' history.

4.3 Interaction Design and UX:

User experience (UX) design is a process of creating products that provide meaningful and personally relevant experiences. This involves the careful design of the usability and pleasure derived from using a product. It is also concerned with the entire process of acquiring and integrating the product, including aspects of branding, design, usability and function. Products that provide great user experience, like the iPhone, are thus not only designed with the consumption or use of the product in mind, but also the entire process of acquiring, owning, and even troubleshooting it.

An important concept in UX design is the process by which users form experiences. When a user first encounters a product, a momentary impression is formed. This momentary impression evolves over time, typically as the product is used throughout a period. In this process, the user's perception, action, motivation, and cognition integrate to form a memorable and coherent story: this is what we call the user experience. This process elicits emotional responses, which largely determine whether the experience will be considered positive or negative [7].

4.4 Implementation Requirements:

- The design needed to implement in web programming language PHP (Preferred framework).
- Preferred Database is MySQL-MariaDB (Engine: InnoDB).
- Hosting platform should be Linux based server.
- Schedule wise backup from server (Both source code and Database).
- Needed to show log in each user sensitive action.
- Failed log in needed to store in database.
- SQL injection needed to protect with string escaping.
- CROS-SITE-SCRIPTING needed to verify.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database:

A database collects and stores data in such organized way that data requirements are satisfied by the database. The general objective is to make information access easy, quick, inexpensive and flexible for the user.

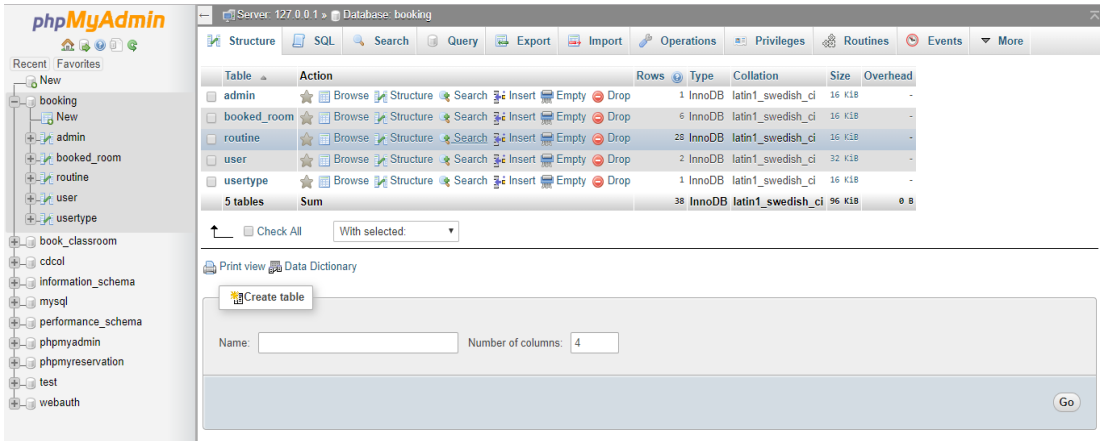

Fig 5.1: Show database all table of the project.

Figure 5.1 shows all the tables of our project. There are six table in this project. If any admin visits the database, he can see a user file which is shown in Figure 5.2.

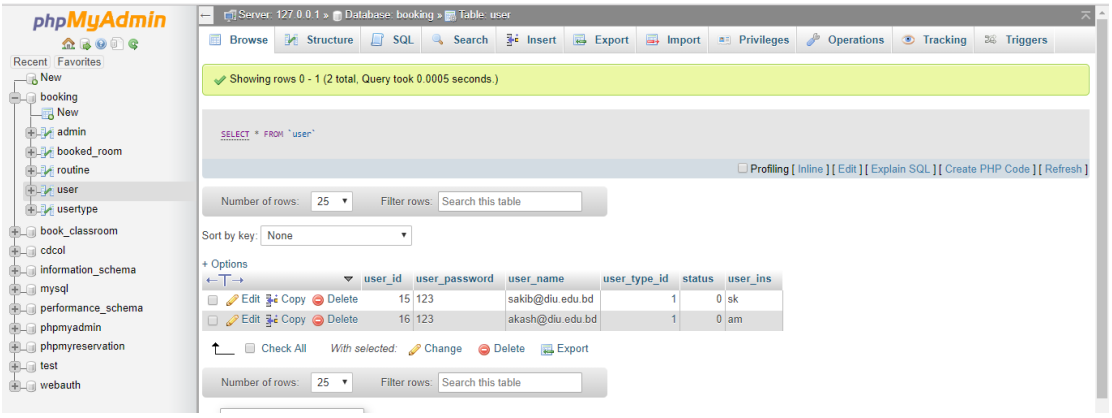

Fig 5.2: user information table.

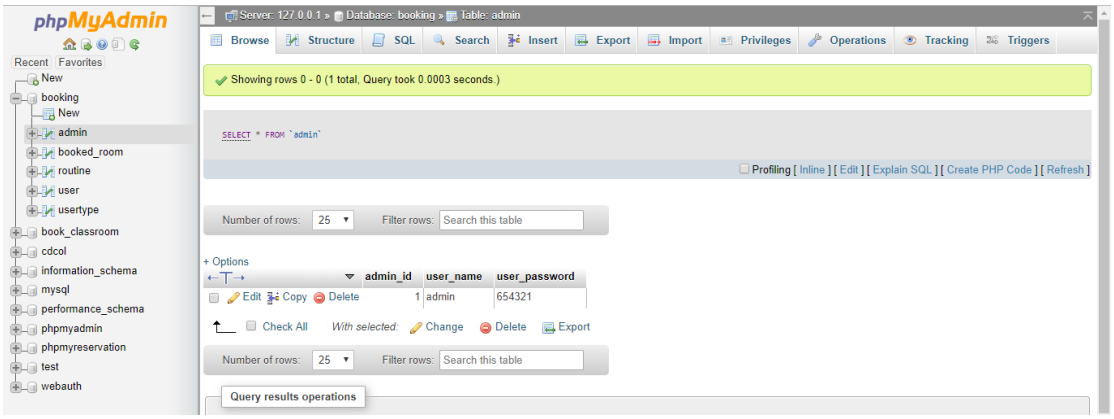

Fig 5.3: Show admin panel table

Figure 5.3 is the system “admin panel table”. Admin visit the site and can see all admin information.

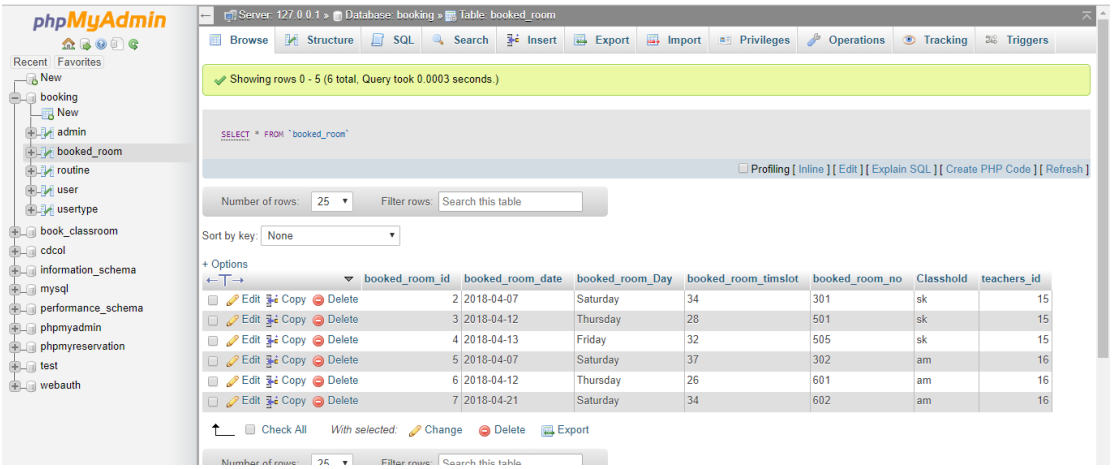

Fig 5.4: Show booked_room table

Figure 5.4 is the “booked_room table”. Admin visit the site and can see all contact information.

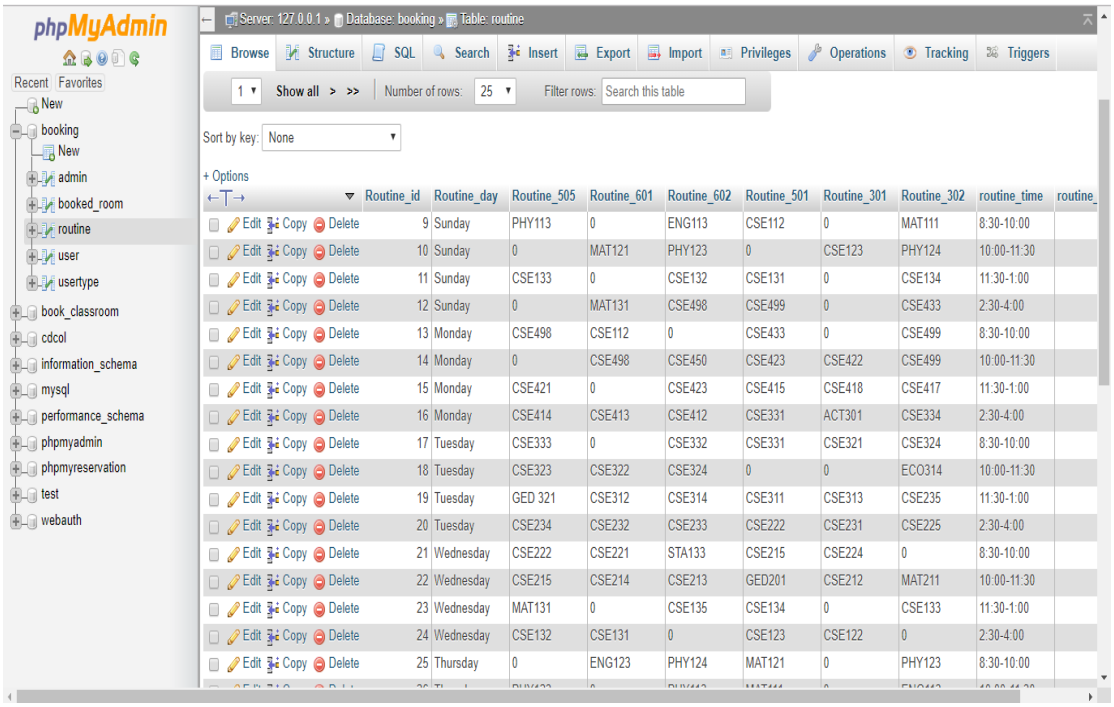

Fig 5.5: Routine table

Figure 5.5 is the “Routine table page”. Admin visit the site and can set all the Routine.

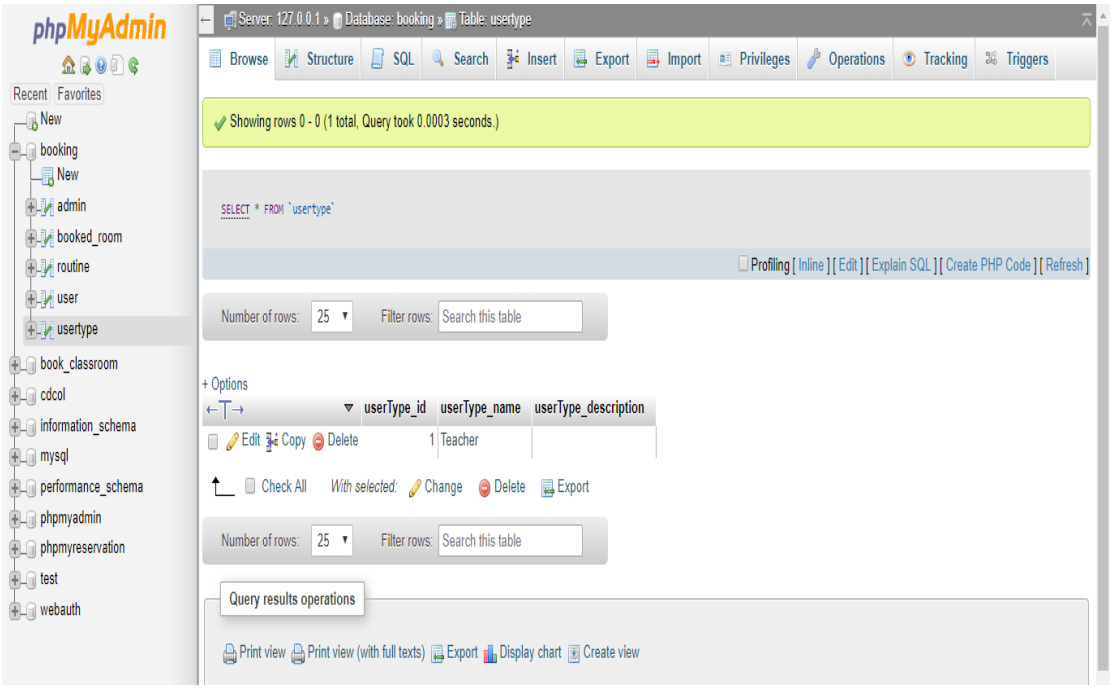

Fig 5.6: User type table

Figure 5.6 is the “User type table page”. User must be a teacher.

5.2 Implementation of Front-end Design:

From the point of view of designing, Front-end is a most important section for the application development. It is worked on presentation layer and user can directly interact with this. It is very important to develop a simple and easily understanding front-end or GUI for the user of the application. So we tried to keep our design as simple as possible and easily accessible for the user, but the development task wasn't so easy. We attach our application front-end design in bellow.

Fig 5.7: Show the home page of the project.

Figure 5.7 is the system "Home Page". Users visit the site and can see allinformation about our site.

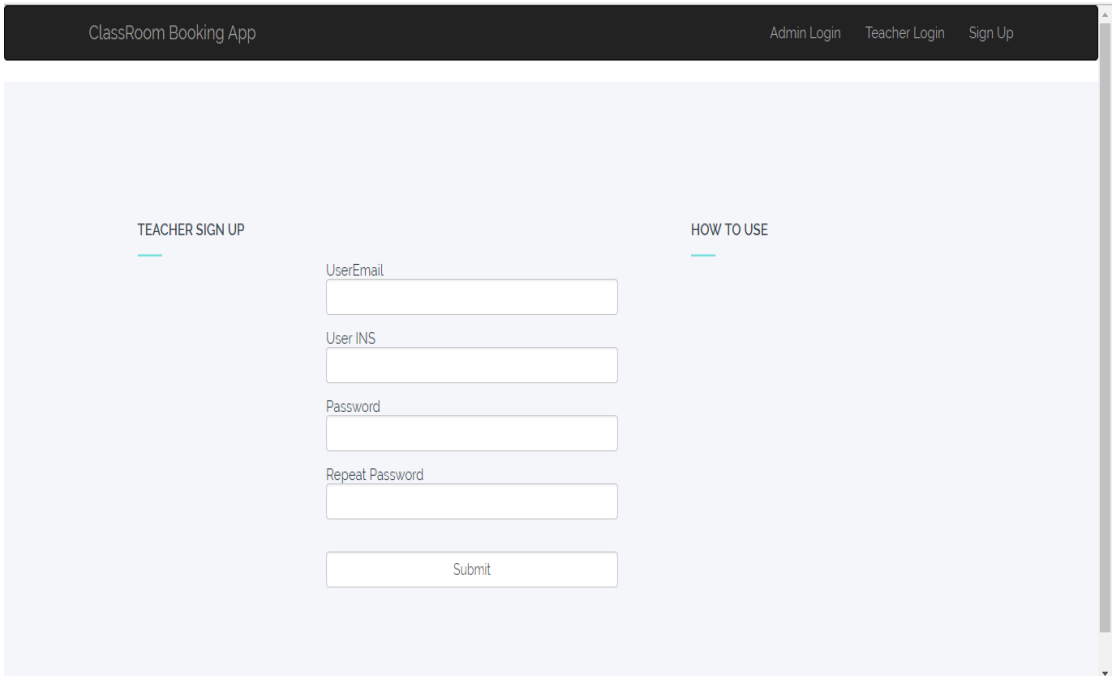

Fig 5.8: Show Registration Page of the project.

Figure 5.8 is the system "Registration Page". Users visit the site and registration easily.

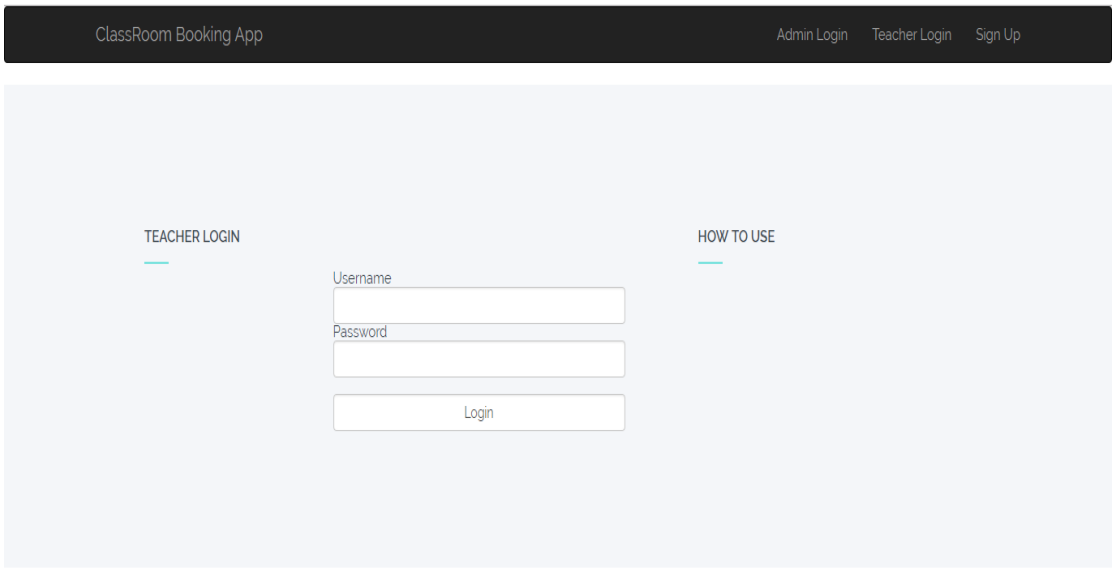

Fig 5.9: Show user login page of the project.

Figure 5.9is the system "user login page". Users sign in & sign out for this page.

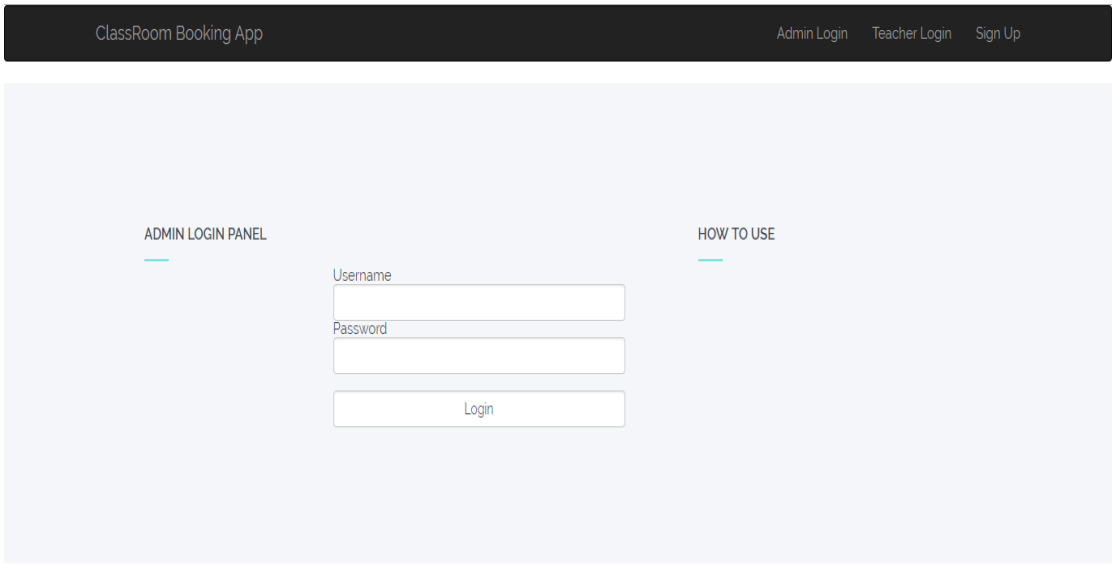

Fig 5.10: Show admin login page of the project

Figure 5.10 is the system “admin login page”. Admin sign in & sign out for this page.

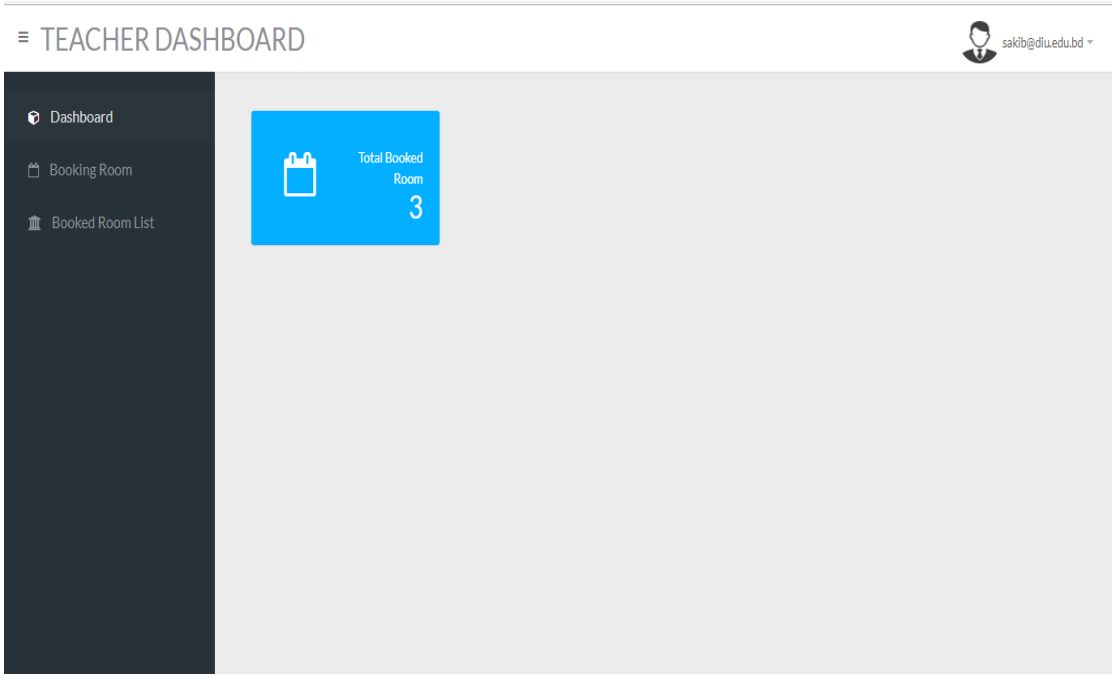

Fig 5.11: Show Teacher Dashboard page of the project

Fig 5.11 is the system “Teacher Dashboard page”. Teacher can see how many class he/she booked.

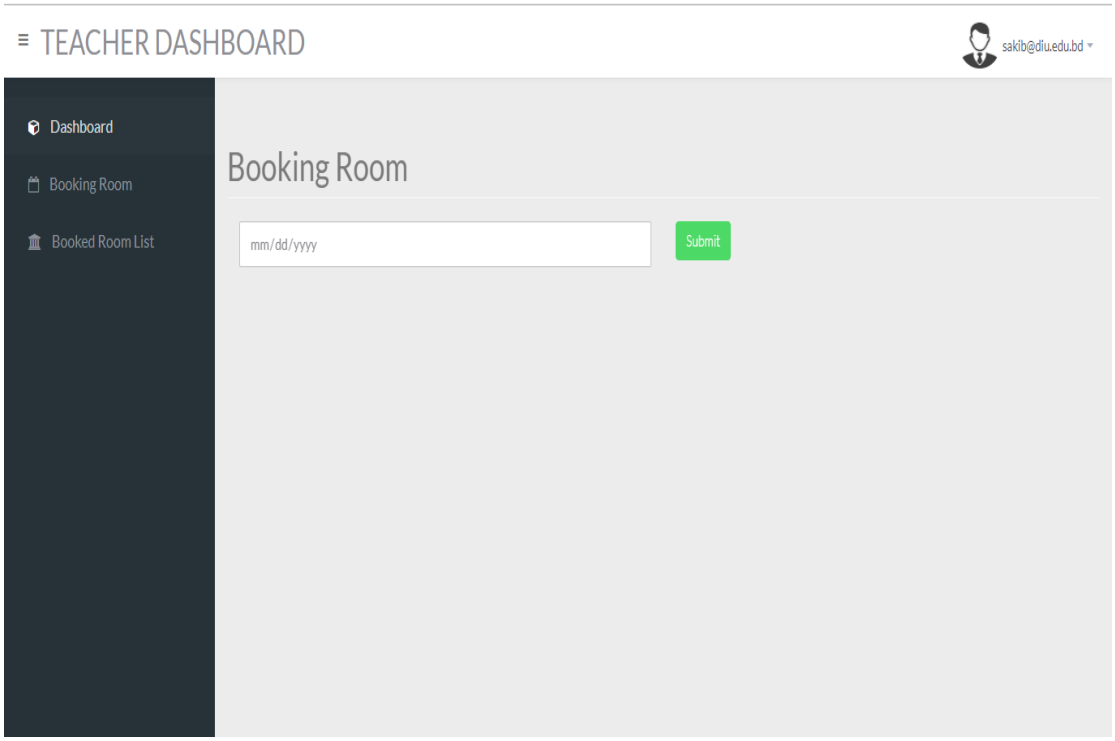

Fig 5.12: Show Teacher Booking Room page of the project

Fig 5.12 is the system “Teacher Booking Room page”. Here teacher can see the routine and booking any free room.

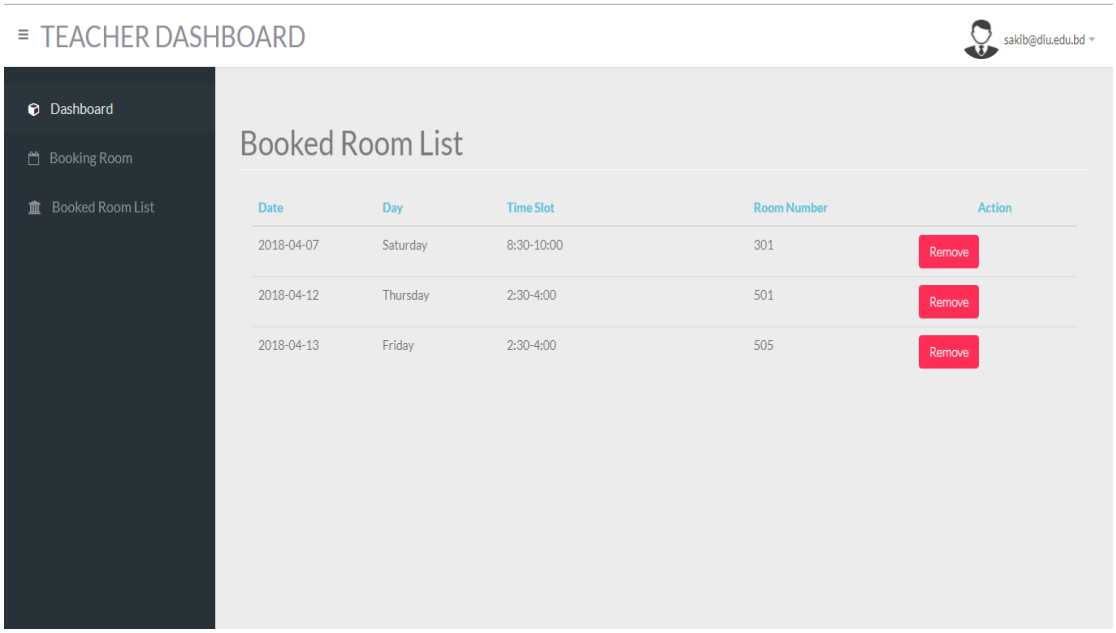

Fig 5.13: Show Teacher Booked Room list page of the project

Fig 5.13 is the system “Teacher Booked Room list page”. Here teacher can see their booked room list

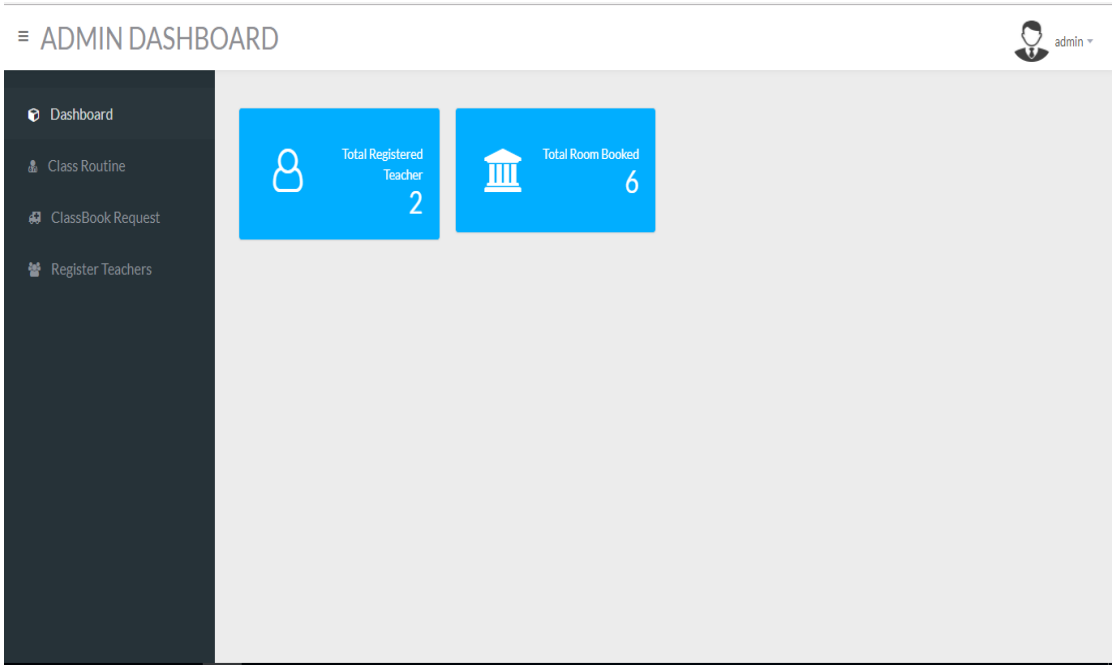

Fig 5.14: Show Admin Dashboard page of the project

Figure 5.14 is the system “Admin Dashboard page”. Admin can see total Registered Teacher and how many rooms are booked.

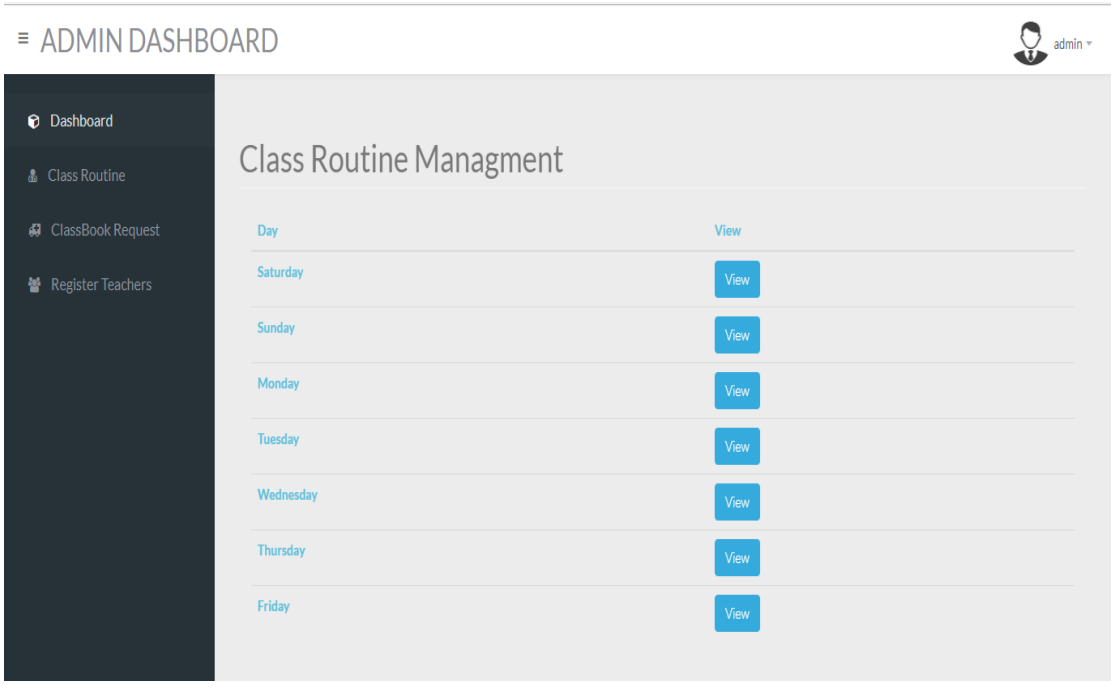

Fig 5.15: Show Admin Class Routine page of the project

Figure 5.15 is the system “Class Routine page”. Admin can set the routine.

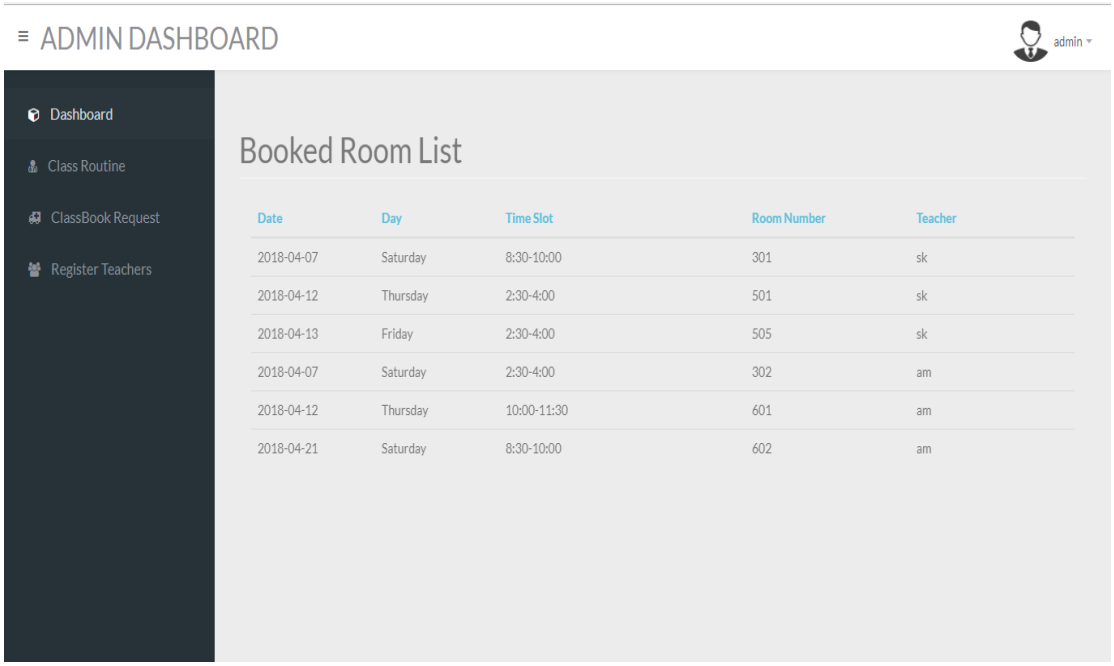

Fig 5.16: Show Admin Class book request page of the project

Figure 5.16 is the system “Class book request page”. Admin can see all booked room and booked room by which teacher.

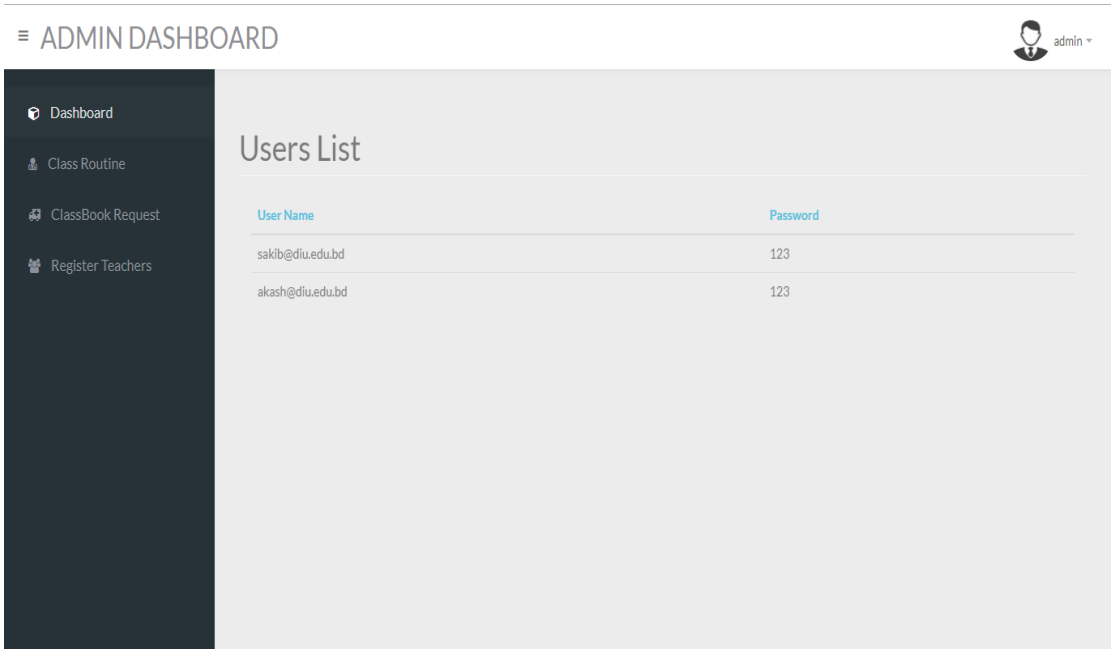

Fig 5.17: Show Admin Register Teachers page of the project

Figure 5.17 is the system “Register Teachers page”. Here admin can see all registered teachers.

5.3 Implementation of Interactions:

The architecture of a software system defines that system in terms of components and interactions among those components.

In real world, interaction can be found almost everywhere. Interaction is the key to make a system dynamic and attractive to user. It's very necessary to make a system interactive and we also try to.

To make our system (Classroom Booking) we have implemented interactive UI for better user experience. In many cases we have used interactive icon rather than text link or button. The system has been designed with sequence of consecutive steps to help users.

5.4 Testing Implementation:

Software Testing:

Software testing is a method of assessing the functionality of a software program. There are many different types of software testing but the two main categories are dynamic testing and static testing.Dynamic testing is an assessment that is conducted while the program is executed; static testing, on the other hand, is an examination of the program's code and associated documentation. Dynamic and static methods are often used together. [9]

Software Testing Types:

Black box testing

Internal system design is not considered in this type of testing. Tests are based on requirements and functionality.

White box testing

This testing is based on knowledge of the internal logic of an application's code. Also known as Glass box Testing. Internal software and code working should be known for

this type of testing. Tests are based on coverage of code statements, branches, paths, conditions.

Unit testing

Testing of individual software components or modules. Typically done by the programmer and not by testers, as it requires detailed knowledge of the internal program design and code. May require developing test driver modules or test harnesses.

Functional testing

This type of testing ignores the internal parts and focus on the output is as per requirement or not. Black-box type testing geared to functional requirements of an application.

System testing

Entire system is tested as per the requirements. Black-box type testing that is based on overall requirements specifications, covers all combined parts of a system.

Install/uninstall testing

Tested for full, partial, or upgrade install/uninstall processes on different operating systems under different hardware, software environment.

Recovery testing

Testing how well a system recovers from crashes, hardware failures, or other catastrophic problems.

Beta testing

Testing typically done by end-users or others. Final testing before releasing application for commercial purpose [9].

Table 5.1: Test case for Classroom Booking System.

Test Case	Test Input	Expected Output	Actual Output	Result	Tested On
1.Registration	Without Registration.	To Registration all the requirement full fill up.	Imposed the Restriction.	Passed	20.03.18
2. Username	Requirement full fill up	To warn that correct username must Be entered.	Showed the user profile information.	Passed	22.03.18
3. Password	Correct password	To warn that correct password must Be entered.	Showed the Expected result.	Passed	25.03.18
4. Profile	Click on the Profile button.	To show user's profile. Information.	Showed user information Successfully.	Passed	27.03.18
5. Profile Update	Input full name, full address, email, gender, And blood group	To update User profile Information.	Updated user profile information Successfully.	Passed	31.03.18

6. Admin profile	Click on the selected admin or Classroom Bookingdash board of the system list.	To show the admin profile Information.	Showed the admin profile information Successfully.	Passed	02.04.18
7. Classroom reservation	Click on the Classroom reservation button.	To show the user Classroom reservation dashboard.	Showed the User Classroom reservation dashboard successfully.	Passed	05.04.18
9. Select date	Input date.	To show them class routine on those date.	To show them class routine on those date successfully.	passed	07.04.18
10. Logout	Click on the Logout button.	To logout from That account.	Logged out Successfully.	passed	07.04.18

5.5 Test Results and Reports:

Test report is needed to reflect testing results in a formal way, which gives an opportunity to estimate testing result quickly. It is a document that records data obtained from an evaluation experiment in an organization manner, describe the environmental or operating conditions, and shows the comparison of test results with objectives [10].

We show the test case, test input, expected output, actual output and finally we find our results and the test result was quite successful. Our application is satisfied by the user. Usability testing examines the following feature of the application.

- How easy it is to use the application?
- How easy it is to learn the application?
- How convenient is the application to end-user?

So at the end we can carry out the results as the benefits of usability testing to the end of the user or learner.

- Better quality application.
- Application is easier to use.
- Application is more readily accepted by users.
- Shortens the information for the new users.
- Better UI for interaction.
- Can be expected that, it will be improving Classroom booking system.

CHAPTER 6

DISCUSSION, CONCLUSION&SCOPE

6.1 Discussion and Conclusion:

The proposed classroom booking System in PHP creates an online platform for teachers to look, inquire, reserve a classroom at a particular time. Further, the project makes the classroom vacancy information works much easier and comfortable. It reduces the number of human resource in an organization but makes the work faster and more efficient.

- Maximum work within minimum time.
- There is a training programmer for CC staff and a specified allocation of equipment.
- Hassle-Free Management of Bookings
- The Classroom booking system works all the time. This gives freedom to potential visitors to book a room anytime they want.
- The Classroom Booking systems reduce workloads for your staff and optimize customer service. These platforms can make sure that bookings are synced and the availability is updated with each booking processing.
- The Classroom booking systems are designed to provide all the features of self-service portals.

6.2 Scope for further developments.

- To make the system less time consuming.
- To make the system more user friendly.
- To involve students directly to get the latest updates.
- Currently have no facility to compare with other company.
- There was also time constraint and the proximity of the case study.

REFERENCES

[1].“Student”.Available:http://studentnet.cs.manchester.ac.uk/resources/library/3rd-year-projects/2016/jiebin.su.pdf [last accessed: March 29, 2018 at 18:10pm].

[2]. “Science” Available: https://www.sciencedirect.com/science/article/abs/pii/0272696395000291/[last accessed: March 30, 2018 at 18:45pm].

[3]. “Cnki” Availablehttp://en.cnki.com.cn/Article_en/CJFDTotal-SJSJ200905070.htm/[last accessed: March 30, 2018 at 19:00pm].

[4]. “librarysystem”Available: https://www.pmi.org/learning/library/critical-success-factors-project-life-cycle-2131/ [last accessed: March 30, 2018 at 4:15pm].

[5]. Learn about Use Case Diagram, available at,https://en.wikipedia.org/wiki/Use_case_diagram, [last accessed: February 2., 2018 at 11:20am].

[6].Learn about to draw Use Case diagram & E-R diagram, availableat,https://www.draw.io/#G0BylkNSikLg5GZ1E3Ukc3cktkTXM, [last accessed: February 12, 2018 at 1:15am].

[7]. “What is the difference between Interaction Design and UX Design?” Interaction Design Foundation. [Online]. Available: https://www.interaction-design.org/literature/article/what-is-the-difference-betweeninteraction-design-and-ux-design [last accessed: April 1, 2018 at 15.00pm].

[8]. “Database Design” Internet: https://en.wikipedia.org/wiki/Database_design, Apr. 5, 2015[last accessed: March 30, 2018 at 9am].

[9]. Learn about Software testing types, available at, http://www.softwarete stinghelp.com/types-of-software-testing, [last accessed: March 25, 2018 at 20:20pm].

[10]. “Test Report.” Internet: https://strongqa.com/qa-portal/testing-docs-templates/test-report [last accessed: April 3, 2018 at 10am].