Final Year Project Report

UOK Semester Automation
Web Application

BACHELOR OF SCIENCE

In Computer Science

Submitted By

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ABSTRACT

As of 2019, University of Karachi does not have an automated system for managing each semester's performance, which led us to creating one. UOK Semester Automation is an online portal which serves the purpose of performing all necessary semester related tasks over a single platform. This Portal has been built to be integrated with the main University of Karachi website. It serves multiple functionality for students, teachers, chairperson and semester cell administration of the University. Hence, we have divided this project into four main modules: Student, Teacher, Chairperson and Administration.

Student module provides various functionality to each enrolled student of University of Karachi. The student is able to view the current semester's class schedule, his overall attendance in the semester and his results of current semester as well as previous semesters.

Similarly, in the Teacher module, the teachers are able to mark student attendance each day, insert/update student results, forward results to students and chairperson, and, view all the classes he is conducting in the current semester.

The Chairperson module provides the chairperson of each department functionality such as inserting current semester's timetable of each class, viewing student results, approving student results, viewing student proforma.

The Semester cell administration is provided with the functionality of entering student and teacher records and updating them, creating student, teacher and chairperson accounts, viewing all department timetable and student results, generating student proforma and approving them.

Despite the various functionality each module has to offer, all modules contain basic functionality such as login, account settings, profile and logout. All data relating to each module is stored and maintained on a local database.

This report provides the above-mentioned functionality in complete detail as well as the performance and flow of the system. This report also contains the interface images of the web application.

CERTIFICATE OF COMPLETION

This is to certify that the following students

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have successfully completed their final year project named

UOK Semester Automation
Web Application

In the partial fulfilment of the Degree of Bachelor of Science in Computer Science

Signature & Seal of Supervisor

Name: _____

Department _____

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Mobile No. _____

Date _____

ACKNOWLEDGEMENT

We first extremely thank ALL MIGHTY ALLAH for giving us the strength and ability to be able to create this project successfully. He provided us with the knowledge, the energy and healthy state of mind to be able to think, solve problems and overcome whatever obstacles came in our way. He brought our project development team together so that we can work alongside each other with great zeal and zest. He looked over our shoulders during all the hardships that came along the way and made our university and our teachers a source of reassurance during the hard times.

We are extremely appreciative of our team members who took on the responsibility of creating this project with great eagerness. Each member gave their complete time, energy and all the knowledge that they had in constructing a project that will prove to be beneficial in the future. We are also appreciative of our parents for helping us in providing the facilities we needed to complete our final year project.

We are thankful of them for believing in us at every step of the way. Finally, we are very thankful to our teachers for sharing their knowledge and wisdom with us which became a fuel for creating our project. We are thankful for all the guidance they gave us throughout our graduation. We are also thankful to all the staff of UBIT who made sure that we were able to gain knowledge comfortably throughout the premises. Finally, we are utterly thankful to our chairman who helped us, guided us and managed the difficult tasks for us that we had no control over.

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LIST OF KEYWORDS

UOK - University of Karachi

Extreme Programming

ASP - Active Server Pages

SQL - Standardized Query Language

ER - Entity Relationship

COCOMO - Constructive Cost Model

LOC - Line of Code

KLOC - Kilo of Line of Code

KDSI - Thousands of Delivered

NFR - Non-Functional Requirements

1. INTRODUCTION

This chapter briefly defines the overview of our application. In this chapter, we will discuss the motivation for creating this project, the main objective, scope, aim and outline of the project.

1.1 Scope

UOK Semester Automation is an online portal that automates the currently manually done tasks of each semester. The users registered on this portal can perform various tasks such as managing semester timetable, student results, student attendance, semester proforma and user accounts. The functionality varies upon the type of user. All data related to each functionality is stored on a local database. The portal is accessed by four types of users: Students, Teachers, Chairperson of the department and Semester Cell administration.

1.2 Motivation

All semester related tasks of University of Karachi are done manually to date which can most likely cause human errors and is somewhat time consuming. We ought to provide University of Karachi with an application that can automate this manually managed system. The idea of creating such a Portal and fulfilling the requirement of our own University became our motivation for creation of this project.

1.3 Aim and Objective

Our main objective is to create an online portal for University of Karachi to automate the semester system. Our aim is to develop a fully well-functioning web application that provides the required functionality. We hope to achieve our aim through this project.

1.4 Outline of the Project

To construct this project, we have used agile methodology, particularly the Extreme Programming model. Extreme Programming helps our team produce higher quality software and respond well to frequently changing customer requirements. Our team is composed of 4 individuals which have been divided into website development and android development areas which is why we have used the approach of pair programming according to the XP model.

Every single module is defined as a single iteration of our product. Iteration planning is done as an initial step, and then follows the design of this module. A stand-up meeting is held discussing the plan for the iteration which is followed by the implementation. For programming and testing, two people work on the iteration, frequently interchanging the important tasks and then releasing the completely tested and developed module.

2. SYSTEM ANALYSIS

In this section, we will discuss the limitations of the system and the requirements upon which the system is built.

2.1 Software Requirements

Operating System	Windows
Browsers	All modern browsers
Website	Visual Studio / ASP.NET / C# / jQuery / JavaScript / SQL Server

Table 2.1: Software Requirements

2.2 Hardware Requirements

- Laptop or PC Screen

2.3 System Limitations

1. The portal access is only given to the following users:
    - Currently enrolled student accounts provided by administration
    - Currently hired teachers of all departments
    - Current chairperson of each department
    - Semester Cell administration
2. External users cannot access this portal
3. Website is compatible with windows only.

2.4 Project Risks

- **Load balancing**

  The web application might not perform as required if multiple users simultaneously try to access it.

- **Data Security**

  The application contains all information regarding students, teachers and chairperson. Hackers could come up with ways to hack into our system and retrieve that information.

2.5 Use Case Diagram

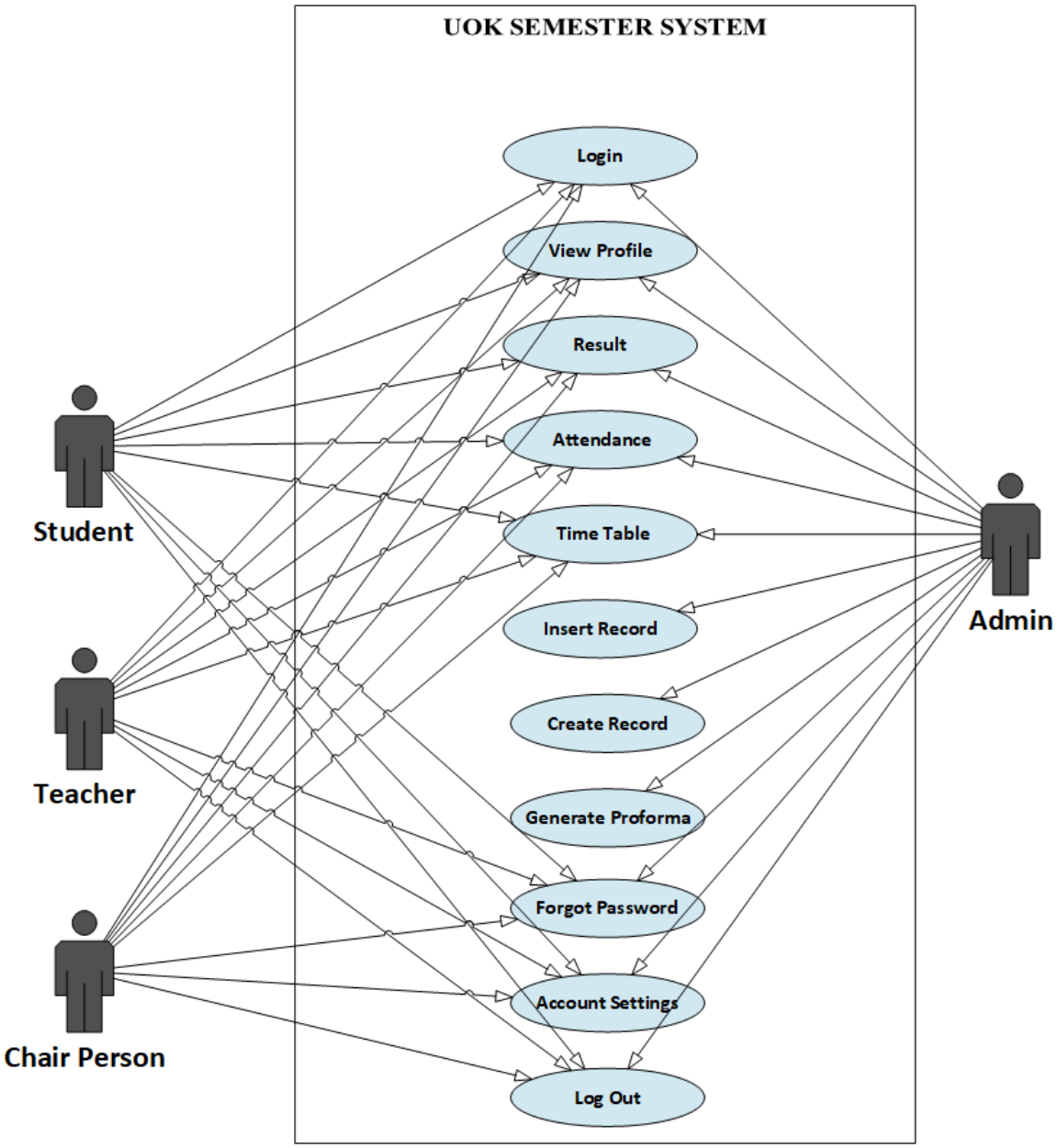


Figure 2.5.1: UOK Semester System Use Case Diagram

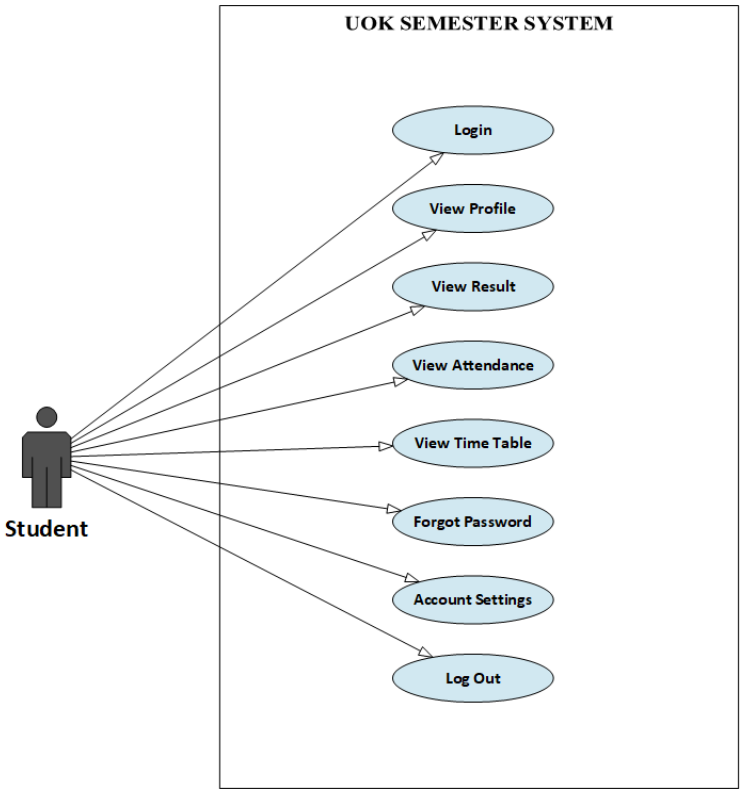


Figure 2.5.2: Student Module – Use Case Diagram

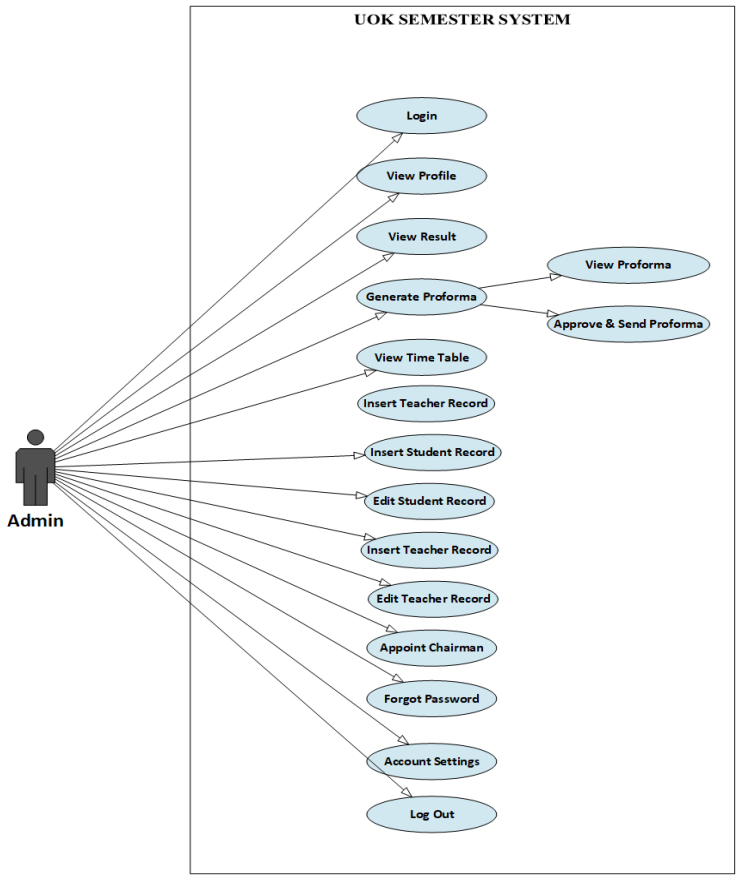


Figure 2.5.3: Administrator Module – Use Case Diagram

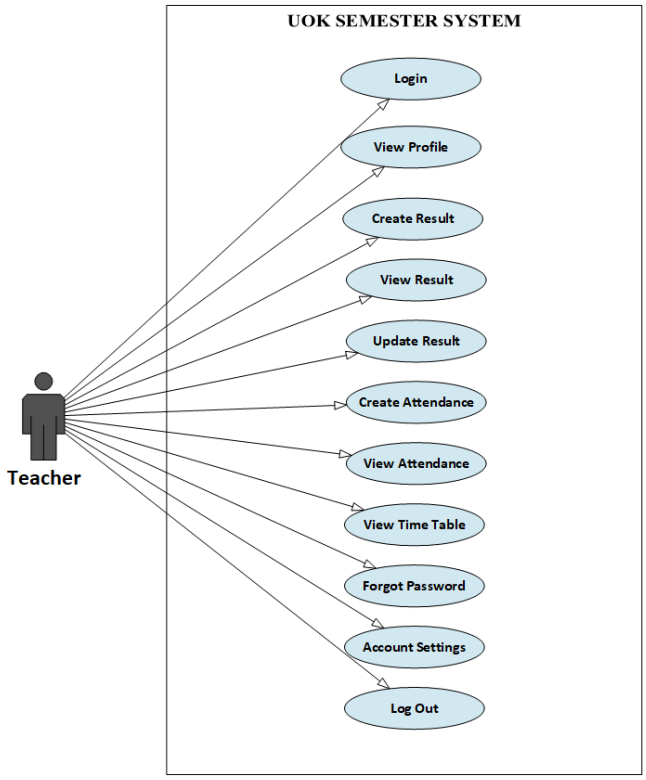


Figure 2.5.4: Teacher Module – Use Case Diagram

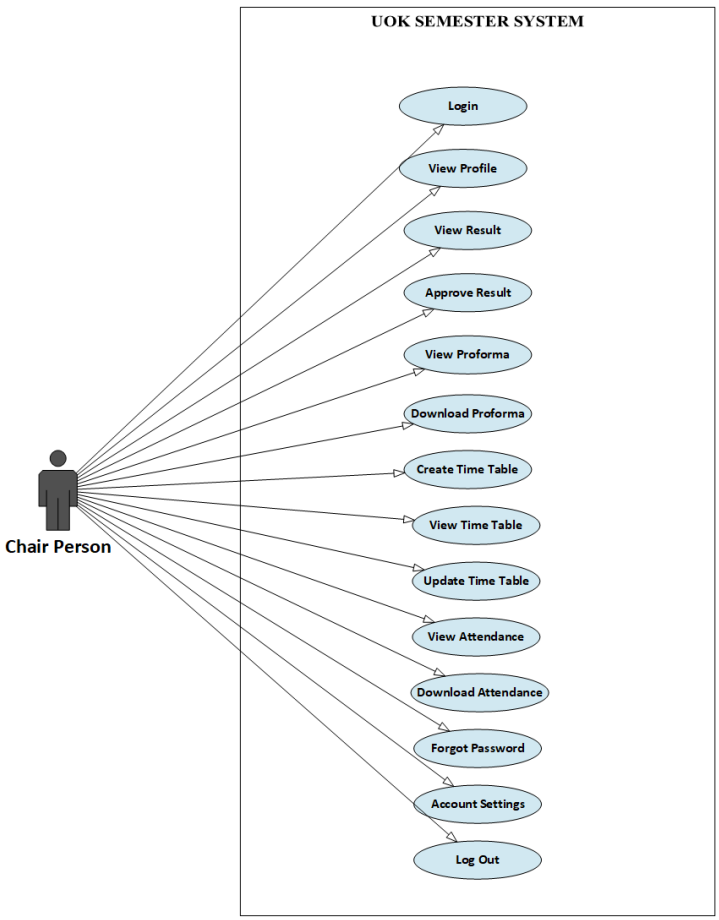


Figure 2.5.5: Chairperson – Use Case Diagram

3. PROJECT DESCRIPTION

In this section, we will discuss the development of this project considering software engineering techniques. We will discuss the methodologies, process model details and will describe the project with respect to certain diagrams.

3.1 Project Overview

Every single software project, in this decade, must be constructed based on the software development life cycle. UOK Semester Automation is a similar project. For the development of this project, we have followed certain software development methodologies and a suitable process model that we will discuss in this chapter. Using these techniques helped us build an efficient team and working environment which led to the creation of a well-functioning product.

3.2 Agile Methodology

Agile software development is an approach to software development under which requirements and solutions evolve through the collaborative effort of self - organizing and cross-functional teams and their customer/end user. UOK Semester System uses agile methodology because of frequently changing customer requirements and decentralized team.

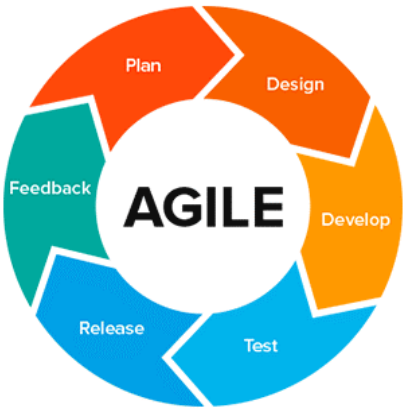


Figure 3.2: Agile Cycle

Agile methodology goes through several phases, but the product is divided into iterations. Each iteration is planned and designed. Then follows the development and testing of that iteration. After the iteration is released, customer feedback is valued and if any changes are required, the agile cycle goes on again until the desired product is developed.

3.3 Process Model

Following the agile approach, the most suitable process model for this product seemed to be Extreme Programming.

EXTREME PROGRAMMING

Extreme Programming (XP) is an agile software development framework that aims to produce higher quality software, and higher quality of life for the development team. XP is the most specific of the agile frameworks regarding appropriate engineering practices for software development.

For our decentralized team, XP proved to be the most suitable and beneficial as our team is composed of 4 team members. We divided our team into groups of 2 (each containing 2 members). Each group handled the main two parts of the product: website development and android application development. We applied the approach of pair programming, exchanging important tasks and handling software testing in pairs.

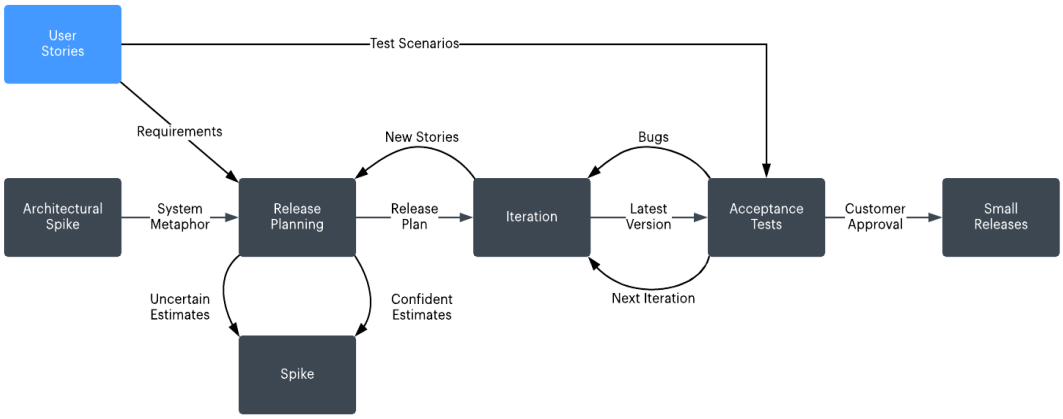


Figure 3.3: Extreme Programming Methodology

Extreme programming intakes user stories which are basically the main functionality of the system divided based on priority. The functionality is constructed into iterations. Iterations are planned and designed and then forwarded to the development team. The team works in pairs to implement the functionality and then tests each unit separately. Acceptance testing is performed and if the customer approves the production of the iteration, the iteration is released.

3.4 Why use Agile Methodology over traditional Waterfall Model?

The main benefit is the ability to change dynamically to the customer's wants and needs. Agile focuses on the features that are of the highest value to the customer. It provides a short-fixed timeline that allows for immediate feedback from the customer and the ability to move deliverables into production. The waterfall model does not offer much of the customer interaction at every phase of the software development process.

3.5 State Diagram

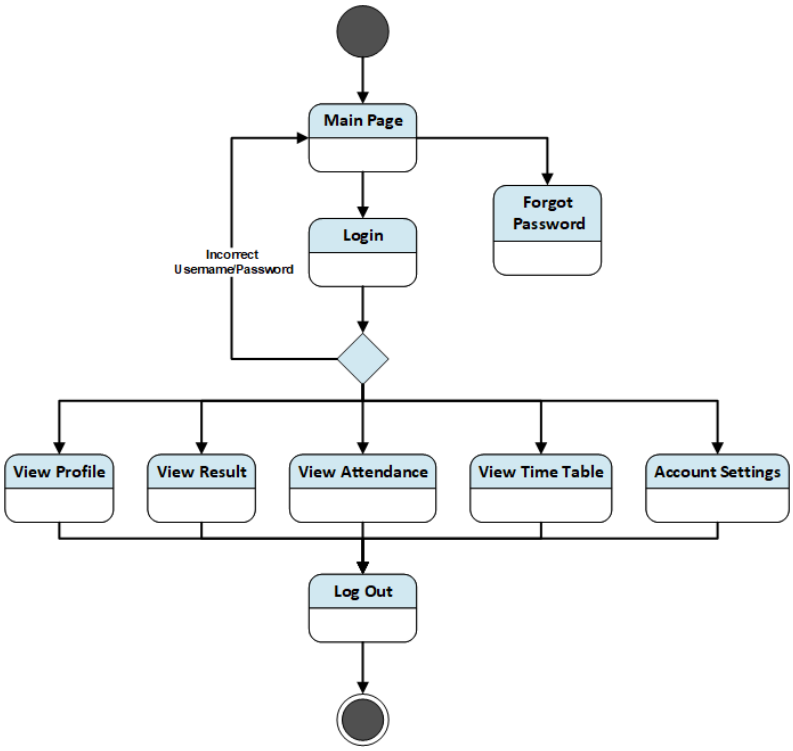


Figure 3.5.1: Student Module - State Diagram

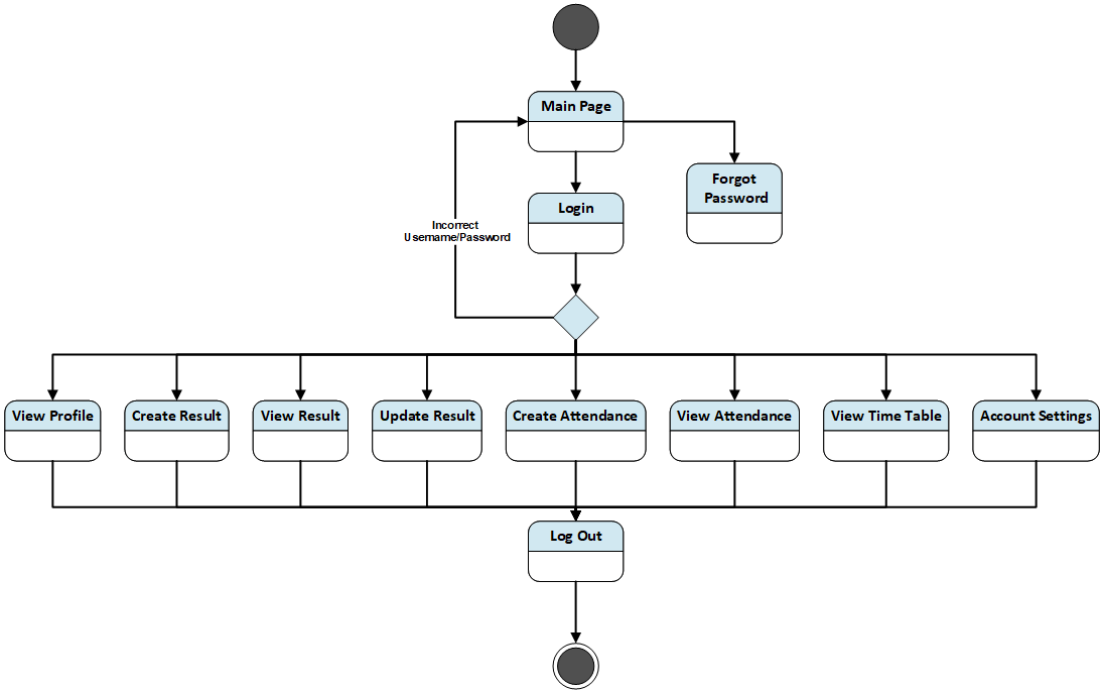


Figure 3.5.2: Teacher Module - State Diagram

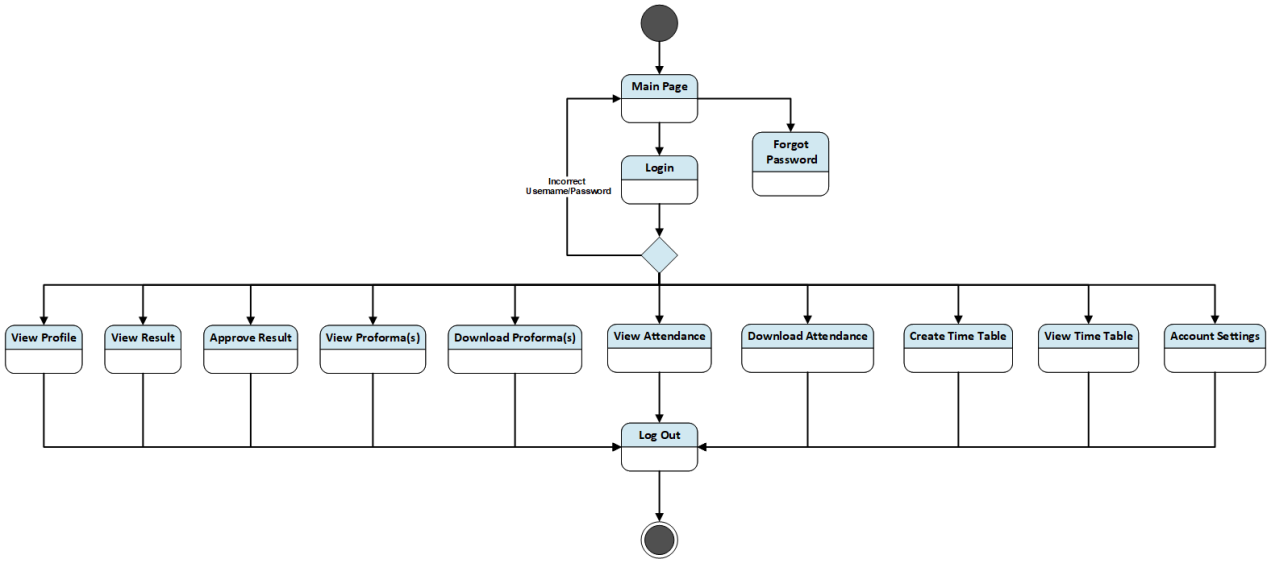


Figure 3.5.3: Chairperson Module - State Diagram

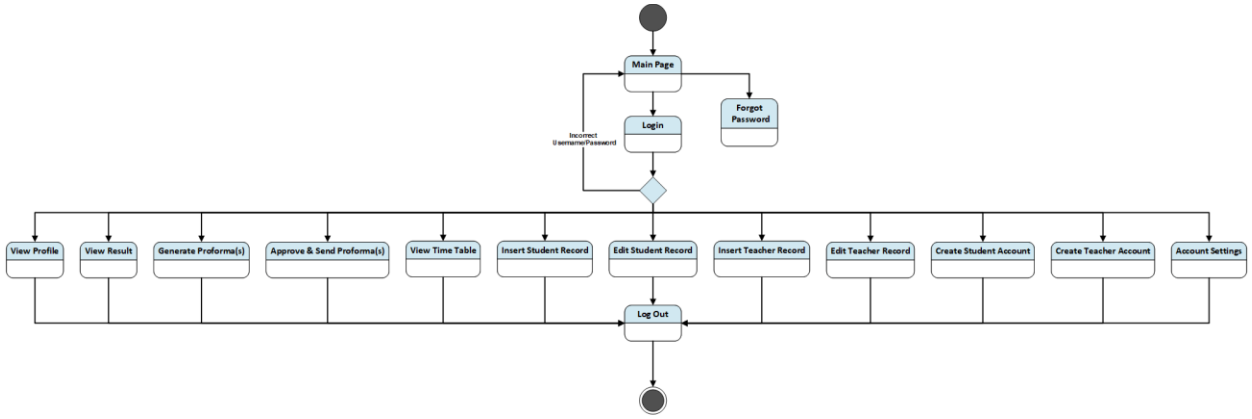


Figure 3.5.4: Administrator Module - State Diagram

3.6 Sequence Diagram

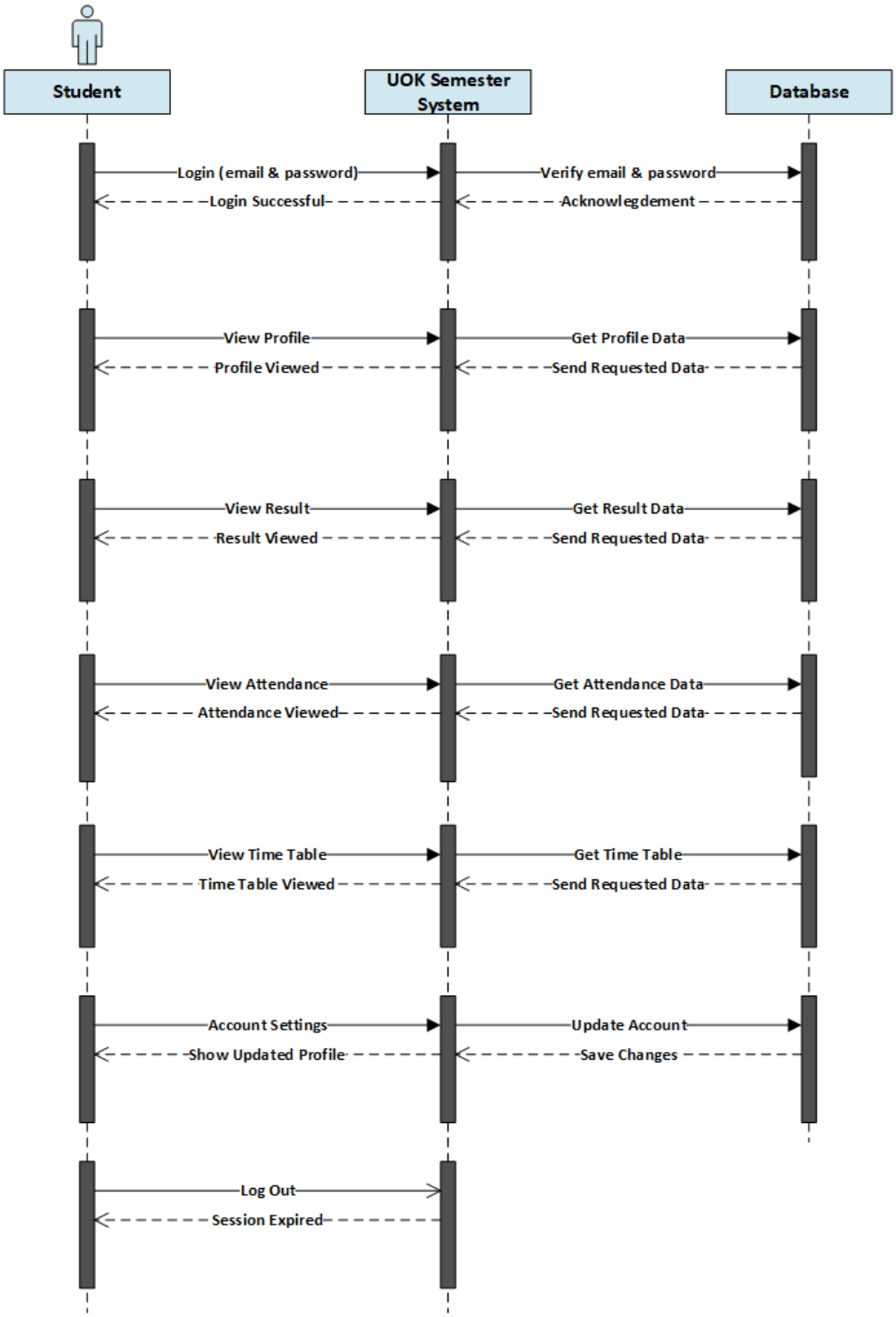


Figure 3.6.1: Student Module – Sequence Diagram

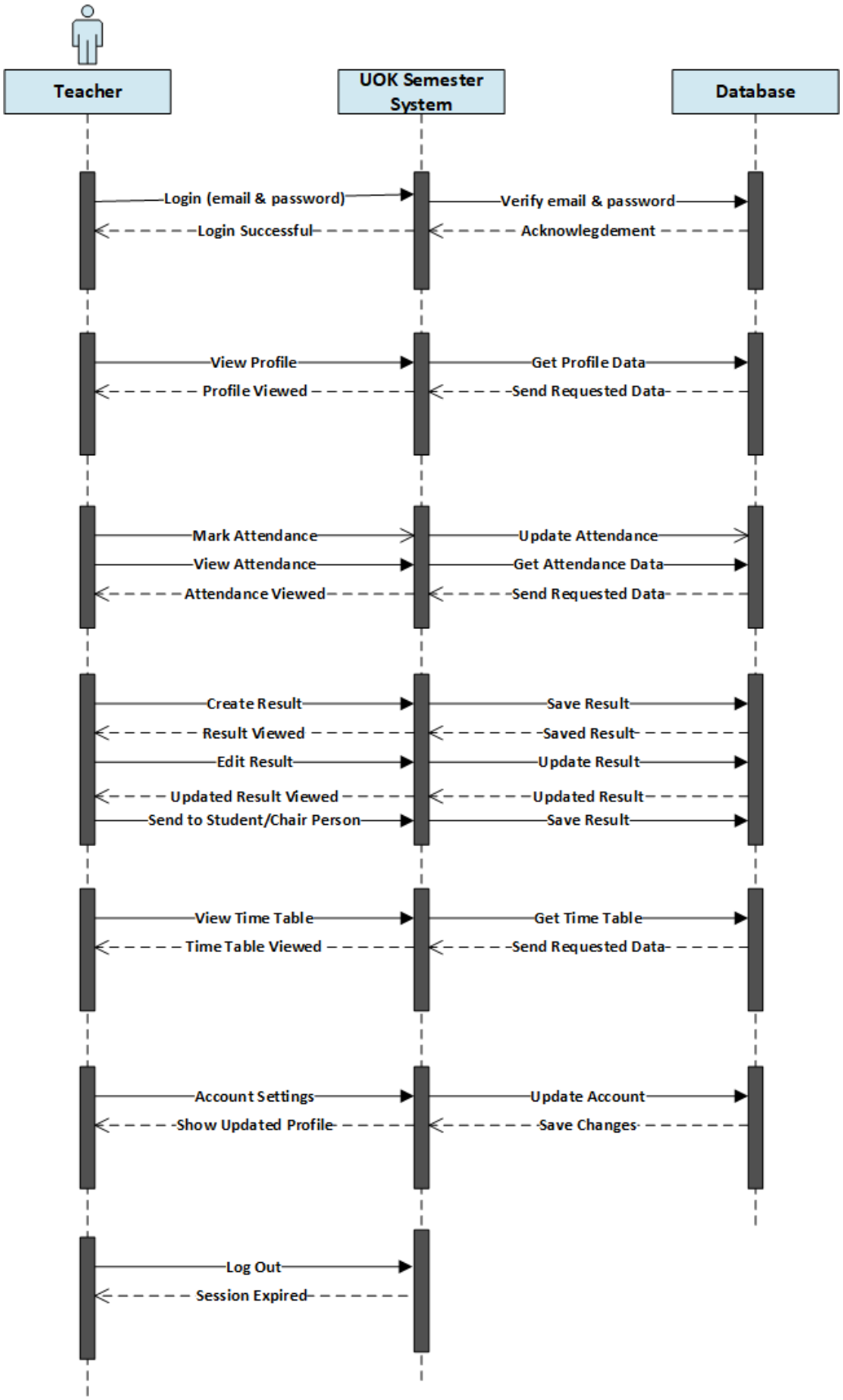


Figure 3.6.2: Teacher Module – Sequence Diagram

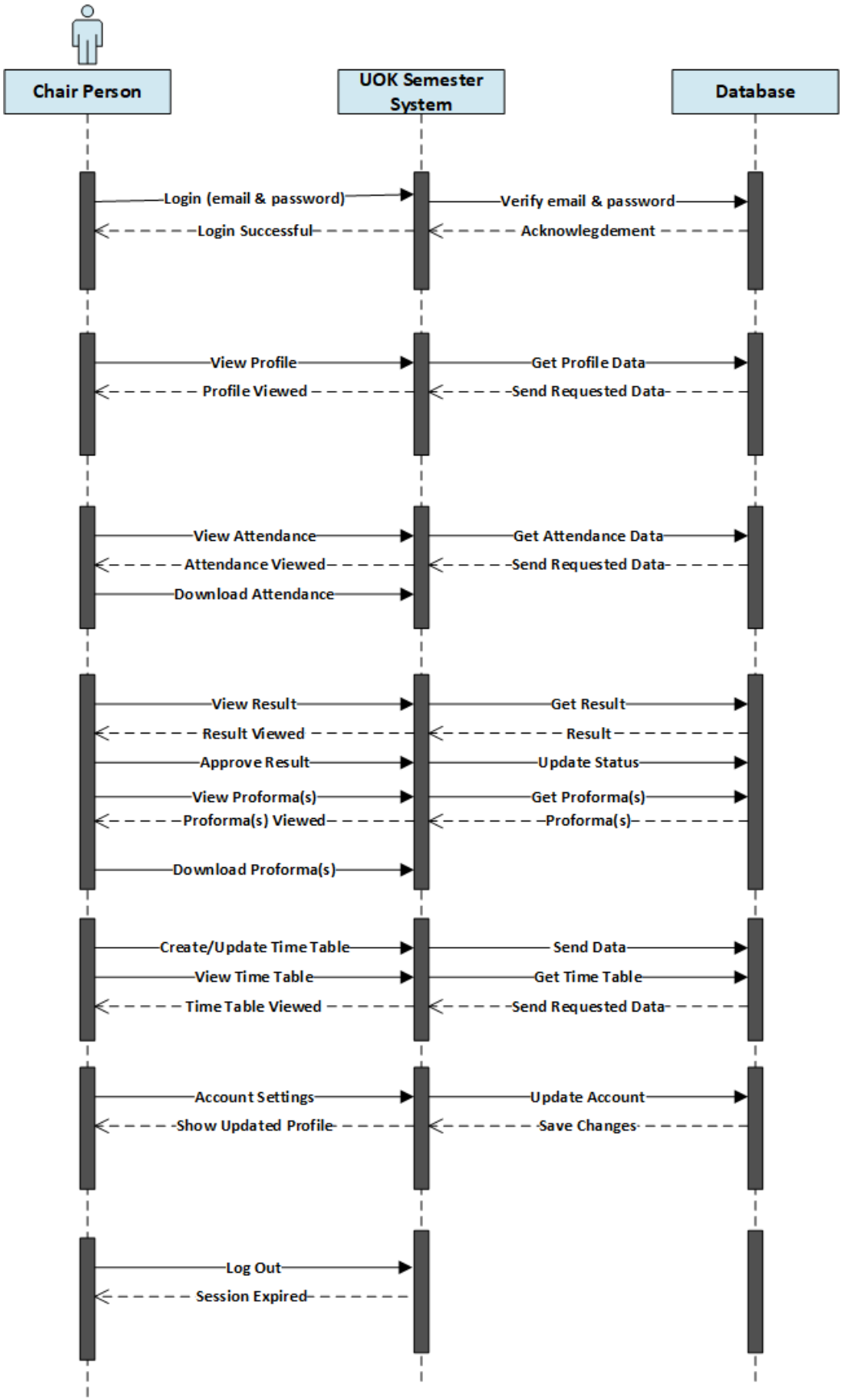


Figure 3.6.3: Chairperson Module – Sequence Diagram

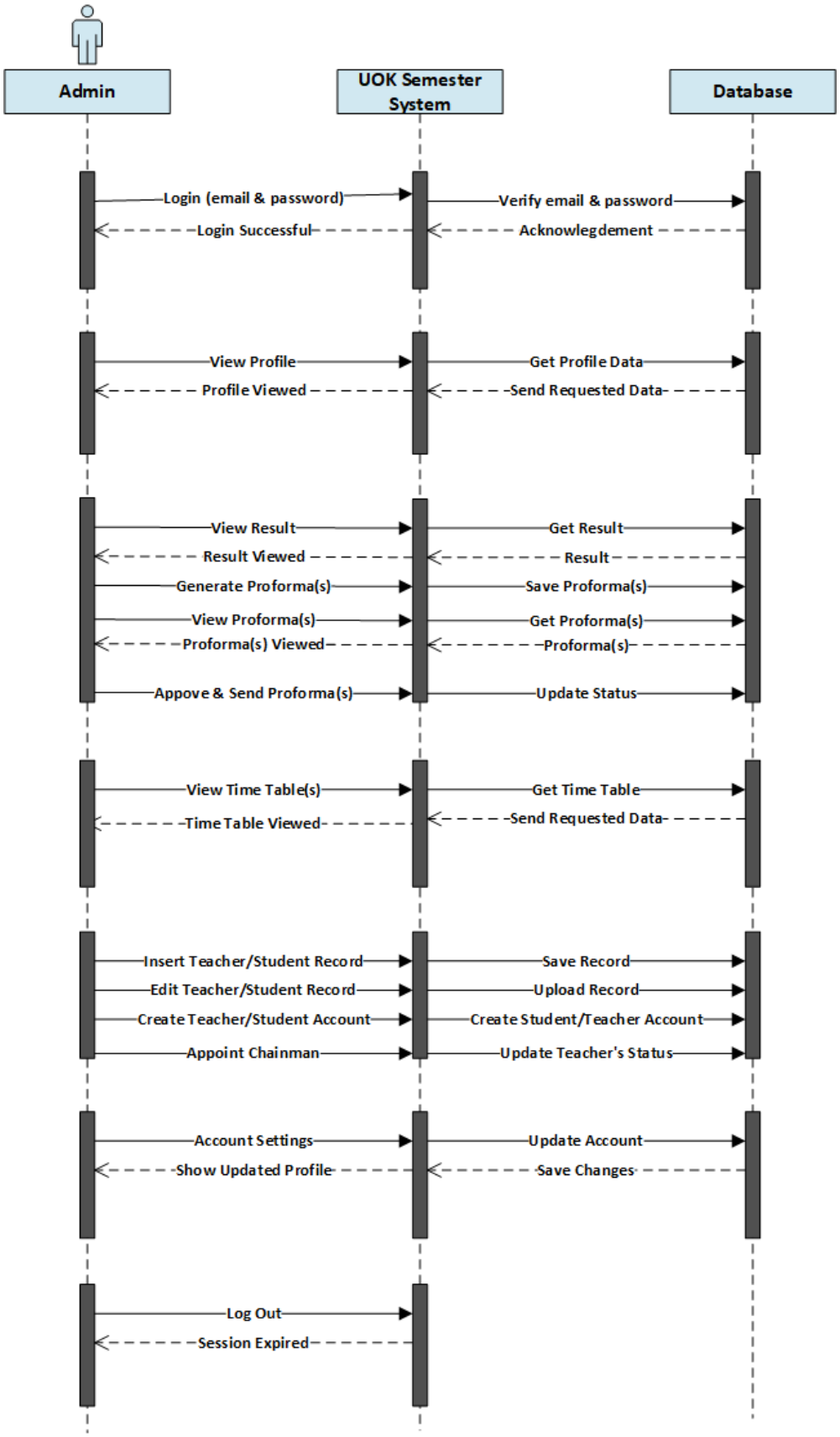


Figure 3.6.4: Administrator Module – Sequence Diagram

3.7 Component Diagram

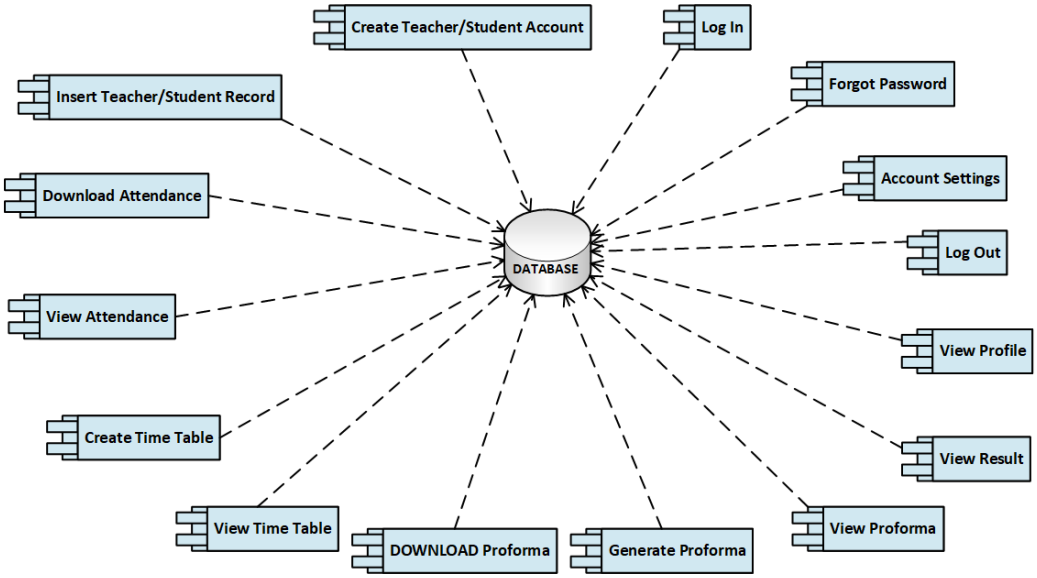


Figure 3.7: UOK Semester System Component Diagram

3.8 ER Diagram

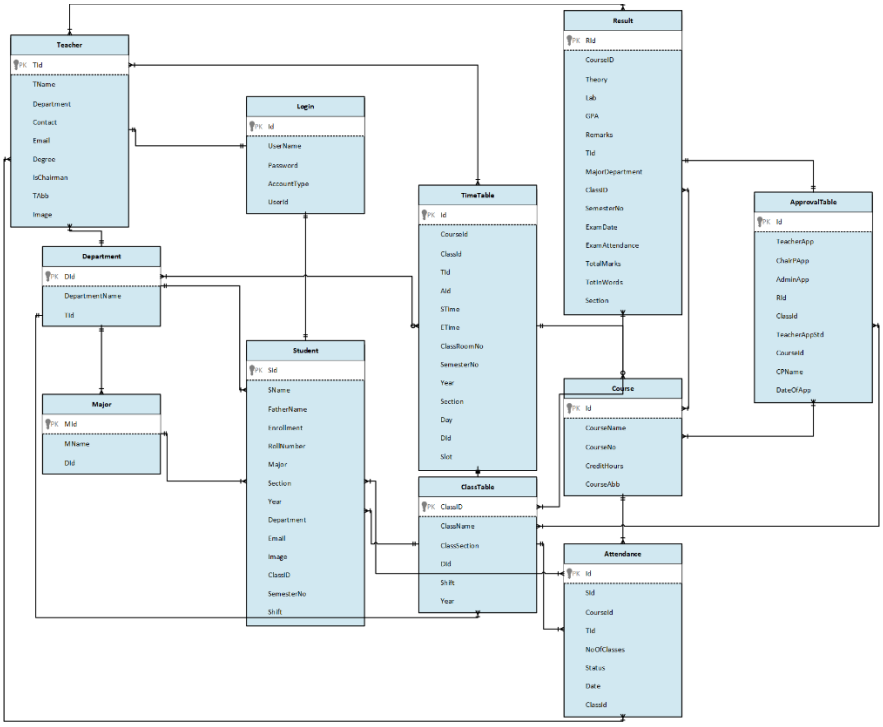


Figure 3.8: UOK Semester System ER Diagram

3.9 System Diagram

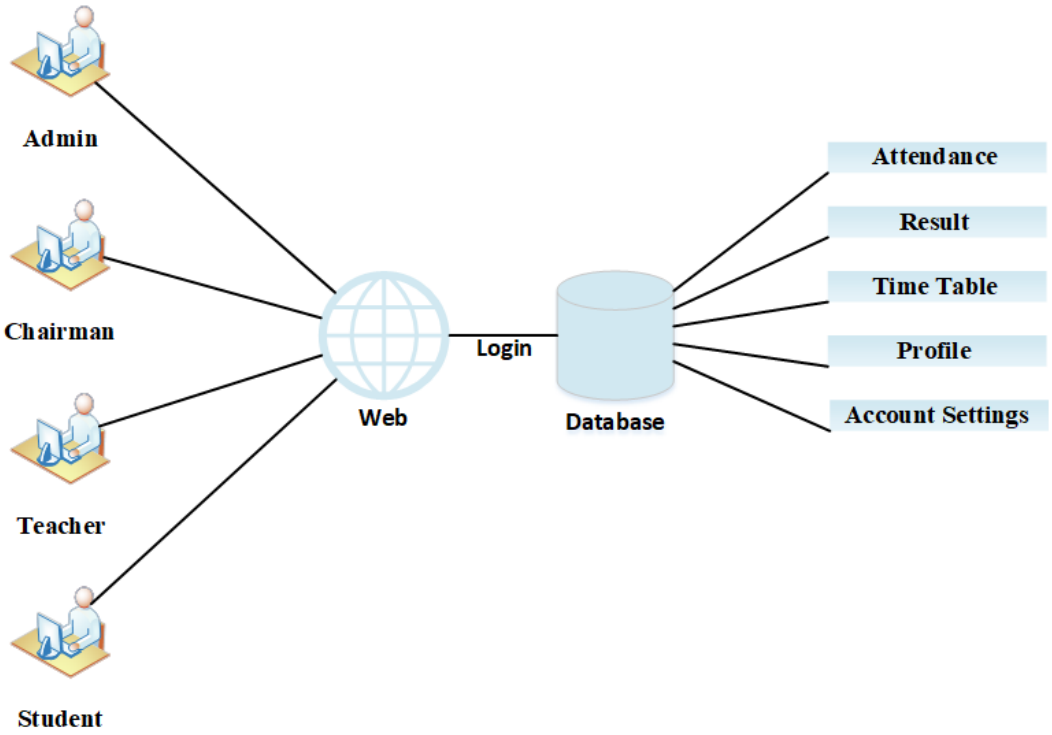


Figure 3.9: UOK Semester System – System Diagram

4. PROJECT FEATURES

In this section, we will discuss the main functionality and features of the system. We will describe in detail what actions the system performs to certain inputs and what outputs it generates. We will discuss the functional and non-functional requirements and complete working of every single module of the system.

4.1 Features

UOK Semester system has been divided into four main modules: Student, Teacher, Chairperson and Administration. We will describe the main functionality of each module separately.

STUDENT MODULE

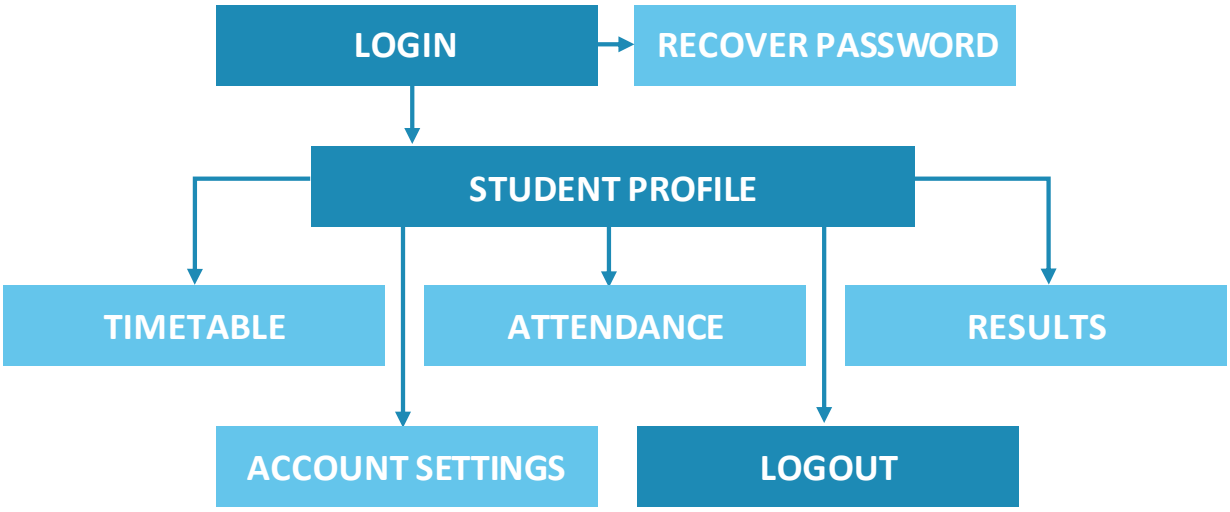


Figure 4.1.1: Student Module Overview

The student module consists of a total of 8 different functionalities; each one performing a specific task. This functionality is discussed in detail below:

1. Student Login

The student enters his username and password (which is allocated by the University of Karachi upon enrolment) and gains access to the portal.

2. Recover Password

If, by mistake, the student has forgotten his password, he can recover it by using the forgot password module on the login page. He must simply enter his email, input the

code which is sent to his email and enter a new password. The student can login with the new password after going through the 3 basic steps of the forgot password module.

3. Student Profile

After the student logs in, he is re-directed to the Profile Page. The profile contains two tabs: Profile Overview and Student Information.

Profile Overview *contains the following information:*

Student Profile Picture	Loaded from Student's enrolled record
Student Username	Allocated by University of Karachi
Student Email	Loaded from Student's enrolled record

Table 4.1.1: Student Profile Overview

Student Information *contains the following details:*

Student's Basic Information	Student's Name – Father's Name – Enrolment Number – Year Enrolled – Department – Seat Number
Student's Class Information	Class – Current Semester – Class Section – Shift

Table 4.1.2: Student Information

4. Semester Timetable

The semester timetable contains all information related to all classes the student is enrolled in. It displays a list of the class timings, course names, course teachers, room numbers and days each class will be conducted. This timetable is followed by the students and teachers throughout the semester and is generated / updated by the chairperson of the department.

5. Student Attendance

This sub-module contains a list of all courses the student is enrolled in as well as the total percentage of the attendance of the student in each course. The list is updated every time a teacher marks the student attendance.

6. Student Results

This sub-module contains a list of all semesters along with the list of all courses in each semester. Marks are displayed with respect to each course. If no results have been forwarded by the teacher, the marks will not be displayed.

7. Account Settings

The student is given access to change his profile picture and password in this module. Once changed, his password and picture is updated in the database.

8. Logout

The student can end the session with the portal once he hits the logout button. The page is then re-directed to the login page.

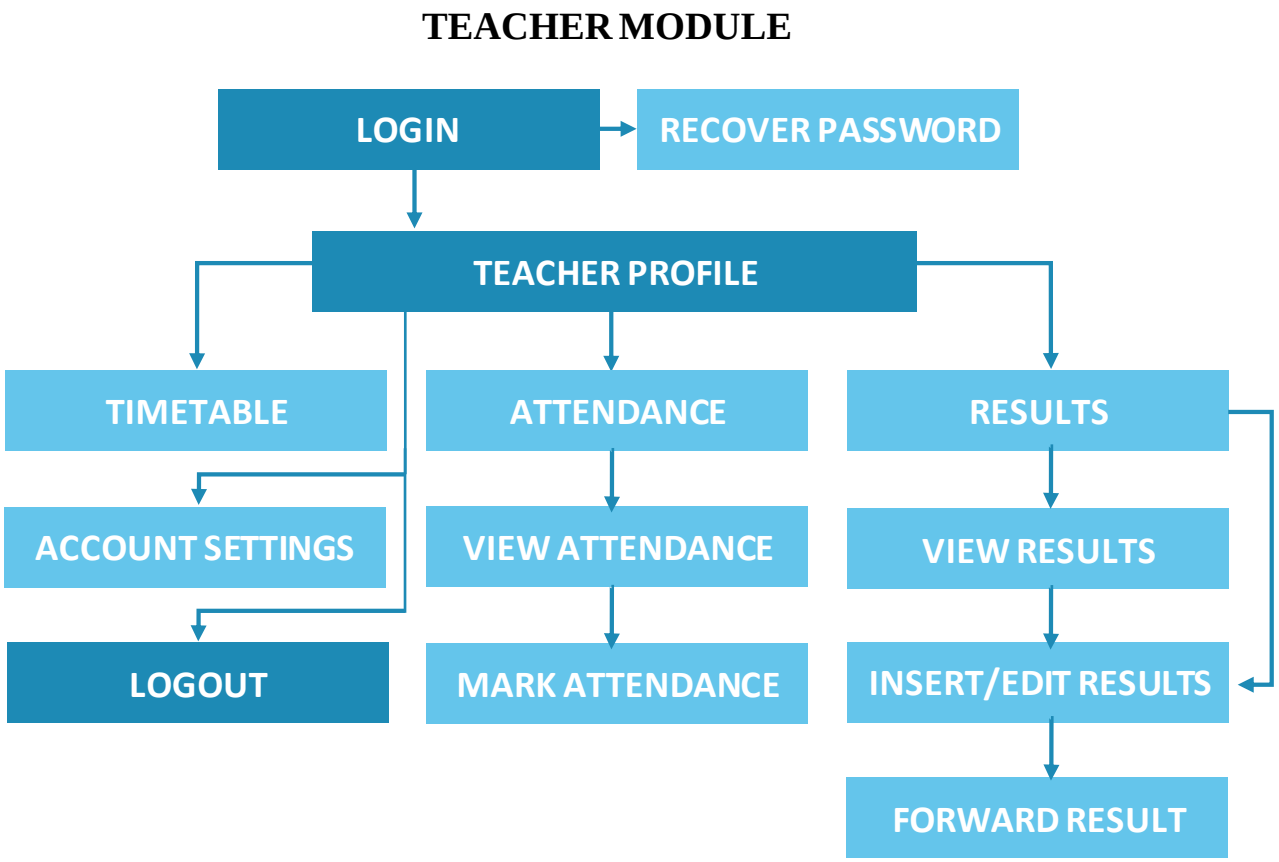


Figure 4.1.2: Teacher Module Overview

The teacher module consists of a total of 13 different functionalities; each one performing a specific task. This functionality is discussed in detail below:

1. Teacher Login

The teacher enters his username and password (which is allocated by the University of Karachi upon hiring) and gains access to the portal.

2. Recover Password

If, by mistake, the teacher has forgotten his password, he can recover it by using the forgot password module on the login page. He must simply enter his email, input the code which is sent to his email and enter a new password. The teacher can login with the new password after going through the 3 basic steps of the forgot password module.

3. Teacher Profile

After the teacher logs in, he is re-directed to the Profile Page. The profile contains two tabs: Profile Overview and Teacher Information.

Profile Overview *contains the following information:*

Profile Picture	Loaded from Teacher's record in database
Teacher Username	Allocated by University of Karachi
Teacher Email	Loaded from Teacher's record in database

Table 4.1.3: Teacher Profile Overview

Teacher Information *contains the following details:*

Teacher Name	All data is loaded from Teacher's record from the database. Any information changed at any time is reviewed by the admin
Department	
Contact Number	
Email	
Degree	

Table 4.1.4: Teacher Information

4. Semester Timetable

The semester timetable contains all classes schedule provided by the department to the teacher. It contains a list of all the classes the teacher is conducting along with the following related information:

- Day – on which the class is to be conducted
- Class name and year
- Class section
- Course number
- Title of the course
- Timing – when the class is to be conducted
- Room Number – where the class is to be conducted

5. Student Attendance

Teachers are given access to view and mark student attendance each day. Every day, a new list is generated for the teacher to mark his students' attendance. All previous data of previous day's attendance is stored in the database which can later be viewed in the "***View Attendance***" section. The "***Mark Attendance***" section contains a list of all student names and roll numbers. The teacher can mark the attendance as Present / Absent / Leave and save the attendance.

6. Student Results

A list of all courses is displayed to the teacher in this module with options: Insert results, View results and Forward results to chairperson.

Insert Results – if the teacher has not uploaded any student results, he can do so in this section.

View Results – if the teacher has uploaded results, he can view it. If he finds any amendments are to be made in the result, he can also edit that results sheet and save it.

Forward Results – if the teacher has finalized the result, he can forward it to the chairperson of the department, which will be approved by the chairperson. Once the result sheet is sent, the teacher cannot make changes to that sheet. The teacher may also forward result to students before forwarding it to chairperson.

7. Account Settings

The teacher is given access to change his profile picture and password in this module. Once changed, his password and picture are updated in the database.

8. Logout

The teacher can end the session with the portal once he hits the logout button. The page is then re-directed to the login page.

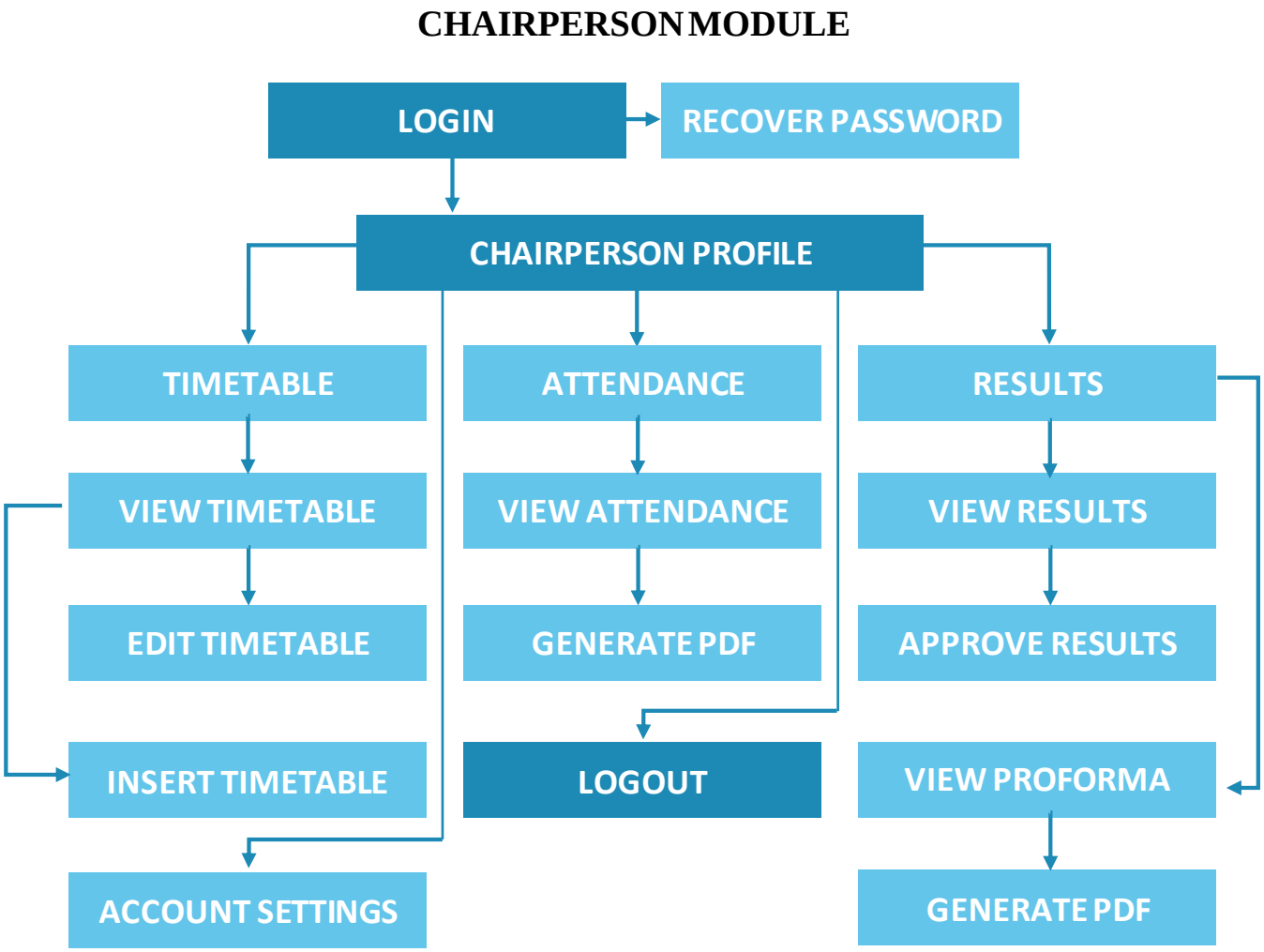


Figure 4.1.3: Chairperson Module Overview

The chairperson can perform several major and minor functionalities which are discussed below:

1. Chairperson Login

The chairperson enters his username and password (which is allocated by the University of Karachi upon hiring) and gains access to the portal.

2. Recover Password

If, by mistake, the chairperson has forgotten his password, he can recover it by using the forgot password module on the login page. He must simply enter his email, input the code which is sent to his email and enter a new password. The chairperson can login with the new password after going through the 3 basic steps of the forgot password module.

3. Chairperson Profile

After the chairperson logs in, he is re-directed to the Profile Page. The profile contains two tabs: Profile Overview and Chairman Information.

Profile Overview *contains the following information:*

Profile Picture	Loaded from Chairperson's record in database
Chairperson Username	Allocated by University of Karachi
Chairperson Email	Loaded from Chairperson's record in database

Table 4.1.5: Chairperson Profile Overview

Chairman Information *contains the following details:*

Chairperson Name	All data is loaded from Chairperson's record from the database. Any information changed at any time is reviewed by the admin
Department	
Contact Number	
Email	
Degree	

Table 4.1.6: Chairman Information

4. Semester Timetable

This module contains timetable of all classes of the department for the current semester. It displays a list of schedules containing the following information:

- Day – on which the class is to be conducted
- Teacher – Who will be conducting the class
- Class name and year
- Class section
- Course number
- Title of the course
- Timing – when the class is to be conducted
- Room Number – where the class is to be conducted

Despite showing a list of all the classes to be held, there are two more functionality that the chairperson can perform:

Edit Timetable – Every single class schedule can be updated individually just by clicking the edit link in the class row. A form is displayed where the chairperson can perform necessary amendments and save the schedule

Add Timetable – The chairperson can also insert a new timetable for any class using the same form as edit form. The form contains all the necessary input fields required to create a class schedule.

5. Student Attendance

The chairperson is given access to view the attendance of all students of the department. Every class attendance is displayed to the chairperson in a table format which can be downloaded as a PDF document.

6. Student Results

For the results module, the chairperson can perform two major functionalities – View Result and View Proforma.

View Result – In this section, all those classes are displayed whose results have been forwarded by the teacher to the chairperson. The chairperson can view these classes results and approve them accordingly.

View Proforma – In this section, the chairperson can view the final proforma of the student. All those results which have been approved by the semester cell administration are displayed in this section. The chairperson can view individual as well as multiple proforma of the whole class and generate a PDF for it.

7. Account Settings

The chairperson is given access to change his profile picture and password in this module. Once changed, his password and picture are updated in the database.

8. Logout

The chairperson can end the session with the portal once he hits the logout button. The page is then re-directed to the login page.

The chairperson must be enrolled in the system as a teacher first in order to become a chairperson. The chairperson is created by the administration of semester cell.

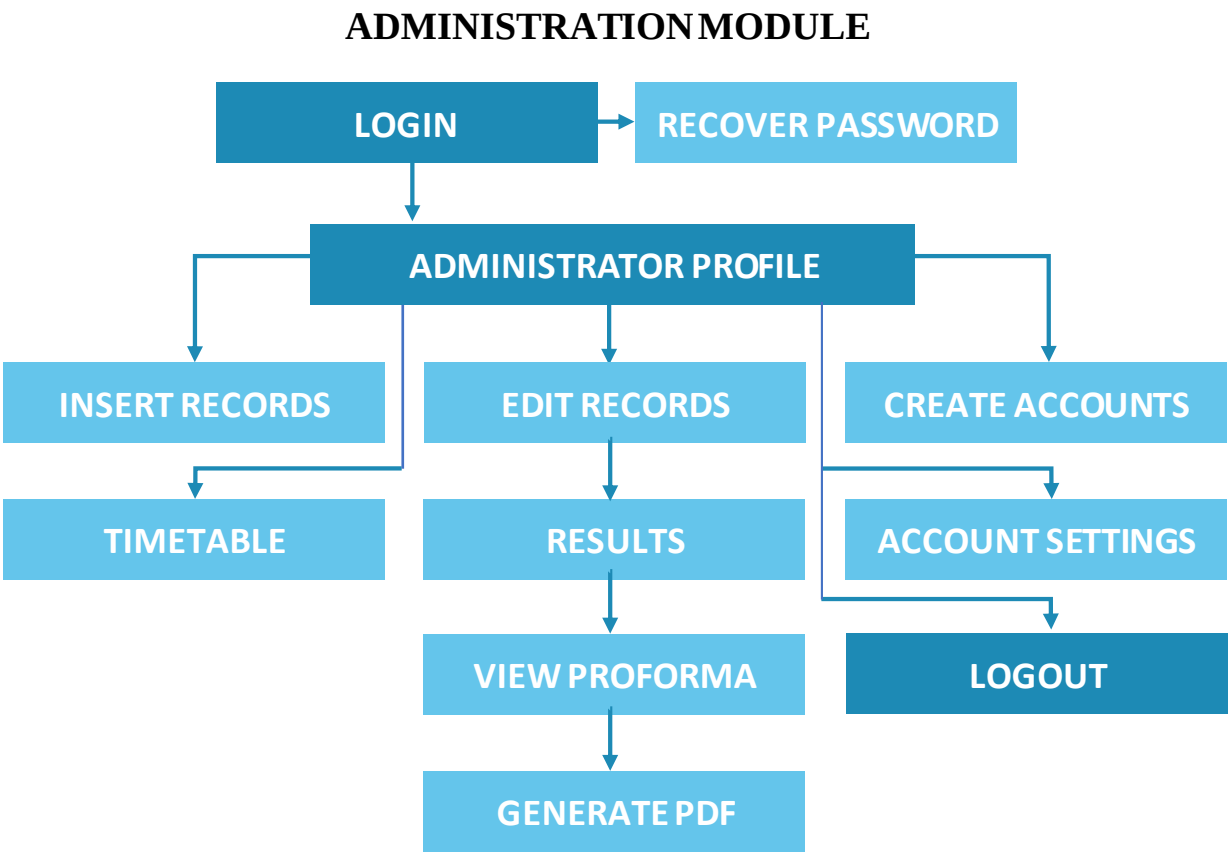


Figure 4.1.4: Administration Module Overview

1. Administrator Login

The administrator enters his username and password (which is allocated by the University of Karachi) and gains access to the portal. The admin is then re-direct to his profile page.

2. Recover Password

If, by mistake, the administrator has forgotten his password, he can recover it by using the forgot password module on the login page. He must simply enter his email, input the code which is sent to his email and enter a new password. The administrator can login with the new password after going through the 3 basic steps of the forgot password module.

3. Administrator Profile

The administrator Profile contains a static image for the profile (which cannot be updated), as well as the link of the University of Karachi website.

4. Insert Records

The administrator can insert two types of records: Student Records and Teacher Records.

Student Records – Any new student being enrolled to the University of Karachi can be inserted through this form. The form requires the following information to be entered:

Student's Name	Students Full Name on his Admission Form
Father's Name	Student's Father's Name on his Admission Form
Enrolment Number:	Allocated by University of Karachi
Seat Number:	Allocated by the Department / University of Karachi
Department	Name of the department where he'll be studying
Class	Name and Year of the class he is enrolled in
Section	Section of the class
Major	Major focus of study
Year	Year he is enrolled in the University
Shift	Morning or Evening

Email ID	Taken from Admission Form
Student Picture	Taken from Admission Form

Table 4.1.7: Insert Student Record

Teacher Records – Any new teacher hired by the University of Karachi can be inserted into the records through this Form. The form requires the following fields to be input:

Teacher Name	Teacher's Full Name
Department	Department where the teacher will be allocated
Contact	The teacher's mobile / phone number
Degree	The highest-level of education of the teacher
Email	The teacher's email ID
Teacher Picture	The teacher's picture

Table 4.1.8: Insert Teacher Record

Once the register button in clicked in either of the forms, the record is entered into the database.

5. Edit Records

Any record previously inserted by the administrator can be edited or modified in case of any mistake or data change. The administrator must simply click the edit records button, choose to edit student or teacher record, make required changes and save it.

6. Create Accounts

For the portal to be accessed by the teacher, student or the chairperson, he must have an account. These accounts are created by the administration of semester cell. The administrator can create three types of accounts which are discussed as follows:

Student Accounts – A list of all students of the University of Karachi is displayed which an option to create their accounts. Once the administrator clicks create account, a form is displayed which contains all the information entered by the Administrator in the Insert Record (Table 4.1.7). It also contains an auto-generated username and password

allocated to that student's account. Once the administration hit "confirm" button, the student is sent an email to his email address containing his username and password for the portal.

Teacher Accounts – A list of all students of the University of Karachi is displayed which an option to create their accounts. The create account procedure followed is similar to the student account creation with the exception of teacher detail.

Chairperson Accounts – A list of all teachers of University of Karachi is displayed from which the administrator can choose a specific teacher to assign the role of chairperson. Once he does that, the chairperson account is created, and an email is sent to the chairperson with his new username and password.

7. Semester Timetable

A list of all departments of University of Karachi is displayed to the administrator in this module. From that list, he can select to view timetable of a certain department. All necessary timetable details are displayed to the administrator.

8. Results

The administrator can view result of any class in any department of University of Karachi. First, a list of all departments is displayed with an option to view classes of each department. Secondly, if any class result has been forwarded, the administrator can generate proforma of that class. The proforma can be generated as individual or class proforma. This proforma can be download in the PDF format.

9. Account Settings

The administrator is given access to change his account password.

10. Logout

The administrator can end the session with the portal once he hits the logout button. The page is then re-directed to the login page.

Reports List

UOK Semester System generates three types of reports:

1. **Students – Class Attendance**

   This report contains a list of all students of a class along with a list of all courses being taken by the students. The table contains overall percentage of student attendance in the month. The report can be viewed and downloaded by the chairperson of the department.

2. **Individual Student Proforma**

   This report is the student's official proforma. It contains a list of all courses the student has taken in the semester and the marks that student has obtained in the respective course. Its format is maintained along with necessary information about the student. The proforma can be downloaded and viewed by the chairperson and administration of semester cell.

3. **Students – Class Proforma**

   This report contains all proforma of all students of the class. Every student's individual proforma is merged in a PDF report which can be viewed and downloaded by the administration of semester cell.

4.2 Functional Requirements

Functional Requirements in our system refers to the main functionality that each module has to offer. These requirements are mainly our customer requirements which, after implementation, have formed a part of the module features.

ID	Requirement Statement	Priority
FR001	The user can login into the system by entering their username and password.	High
FR002	The user can recover his password in the forgot password module by entering their email.	Low
FR003	The student, teacher and chairperson can view his profile and details about him in the profile view	Medium
FR004	All users can view timetable details of the semester	High
FR005	The chairperson can edit or add timetable if necessary	Low
FR006	The student, teacher and chairperson can view student attendance of the semester	Medium
FR007	The chairperson can download pdf of student attendance	Medium
FR008	The teacher can mark student attendance of the day.	High
FR009	All users can view students results of all courses	High
FR010	The teacher can upload student results, edit them and forward to chairperson and students	High
FR011	The chairperson can approve student results	High
FR012	The administrator and chairperson can view student proforma	High
FR013	The administrator can generate student proforma	High
FR014	The administrator can insert student and teacher records	Medium
FR015	The administrator can edit student and teacher records	Low
FR016	The administrator can create student, teacher and chairperson accounts	High
FR017	All users can change their password and profile picture; Administrator can only change his password	Medium
FR018	All users can logout of the system	Low

Table 4.2: UOK Semester System Functional Requirements

4.3 Non-Functional Requirements

Non-functional requirements (NFRs) are the requirements that specify criteria that can be used to judge the operation of a system rather than specific behaviours. Non-functional requirements are often called "quality attributes" of a system. Our project has the following non-functional requirements:

- **Security**

Only authorized users can access the system using their email and password. After login, the user can access only his/her profile.

- **Performance**

The system should response to the user within 5 seconds.

- **User-friendly**

The system should be easily interactive and easy to use for the user/administrator.

- **Maintainability**

The database can be easily maintained, and backup is provided for all records.

- **Availability**

The system should be available 24/7.

- **Correctness**

The database should retrieve and store the correct data regarding each user. The system should provide correct information to correct users.

5. PROJECT COSTING

In this section, we calculate our project's estimated cost using COCOMO costing method. We will explain all the steps involved in carrying out this process.

5.1 COCOMO

COCOMO is one of the most widely used software estimation models in the world. It was developed by Barry Boehm in 1981. COCOMO predicts the effort and schedule for a software product development based on inputs relating to the size of the software and a number of cost drivers that affect productivity.

5.2 Basic COCOMO

Basic COCOMO is goof for quick, early, rough order of magnitude estimates of software costs. It does not account for differences in hardware, constraints, personnel quality and experience, use of modern tools and techniques, and other project attributes known to have a significant influence on software costs, which limits its accuracy.

5.3 The Development Modes

Organic Mode

- Relatively small, simple software projects
- Small teams with good application experience work to a set of less than rigid requirements.
- Similar to the previously developed projects.
- Relatively small and requires little innovation.

Semidetached Mode

Intermediate (in size and complexity) software projects in which teams with mixed experience levels must meet a mix of rigid and less than rigid requirements

Embedded Mode

Software projects that must be developed within a set of tight hardware, software and operational constraints

5.4 Basic COCOMO Model: Formula

$E = a_b (KLOC \text{ or } KDSI)^{b_b}$

$D = c_b (E)^{d_b}$

$P = E / D$

where E is the effort applied in person-months, D is the development time in chronological months, KLOC / KDSI is the estimated number of delivered lines of code for the project (expressed in thousands), and P is the number of people required.

The coefficients a_b, b_b, c_b and d_b:

Software Project	a_b	b_b	c_b	d_b
Organic	2.4	1.05	2.5	0.38
Semi-detached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

Table 5.4: COCOMO Coefficient values

5.5 UOK Semester System: Project Costing

Website: LOC = 30.5 KLOC

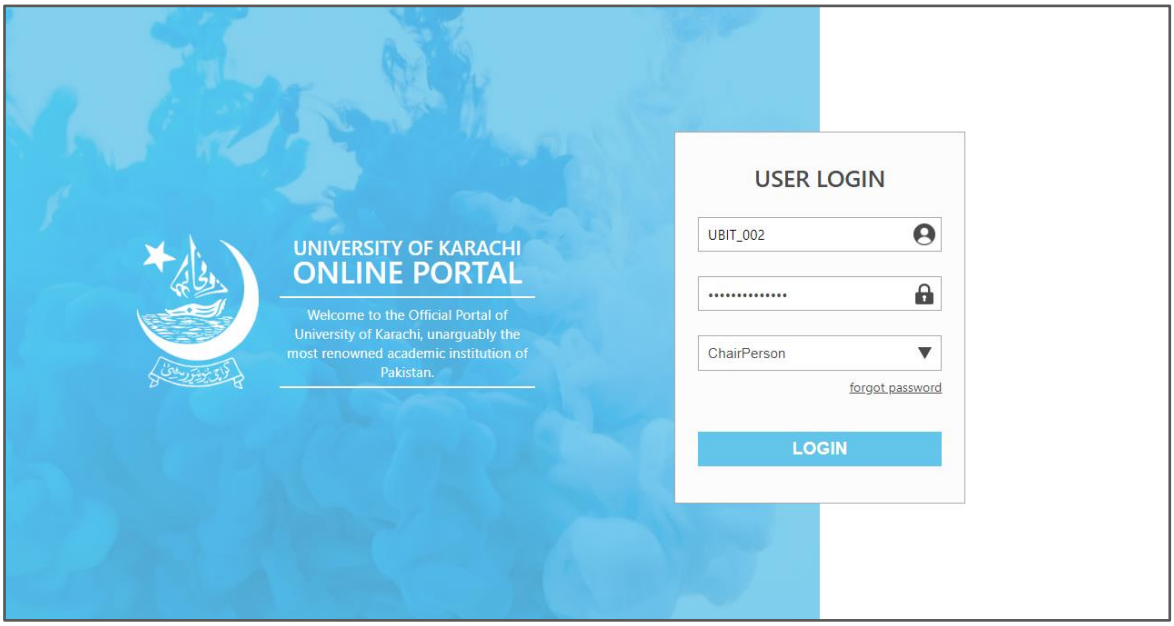
Mode	Effort	Schedule	Person
Organic	8.943 PM	5.747 Months	2
Semi-detached	12.2033 PM	6.0007 Months	2
Embedded	16.1876 PM	6.0937 Months	3

Table 5.5: Project Costing – Web Application

6. USER INTERFACE SCREENS

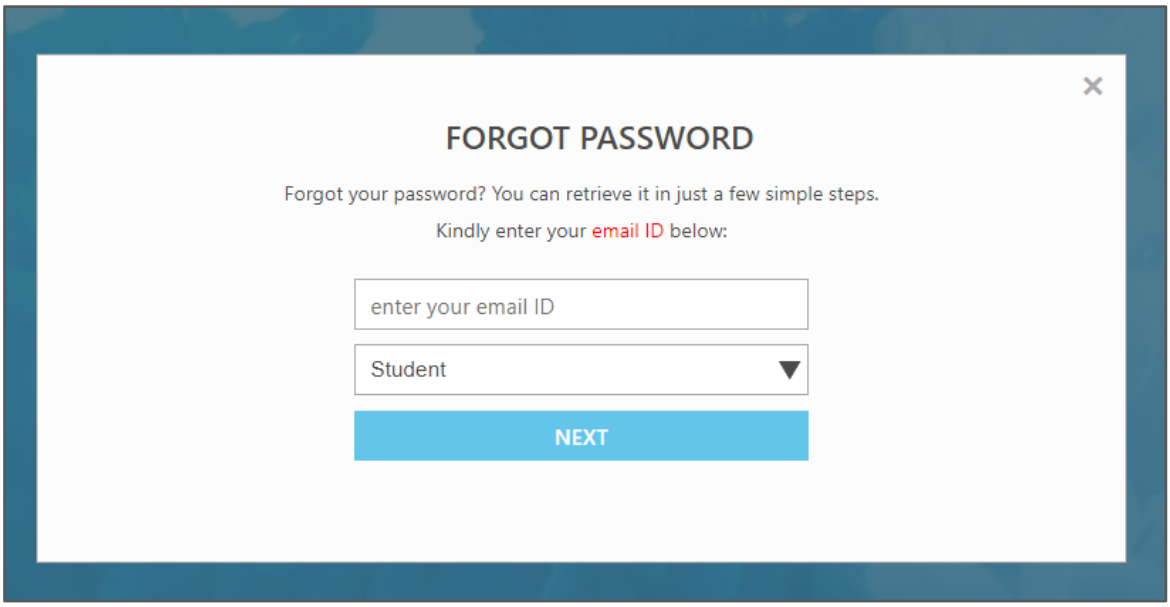
In this section, we have attached the project's interface screens for visualization of project features and modules.

6.1 User Login

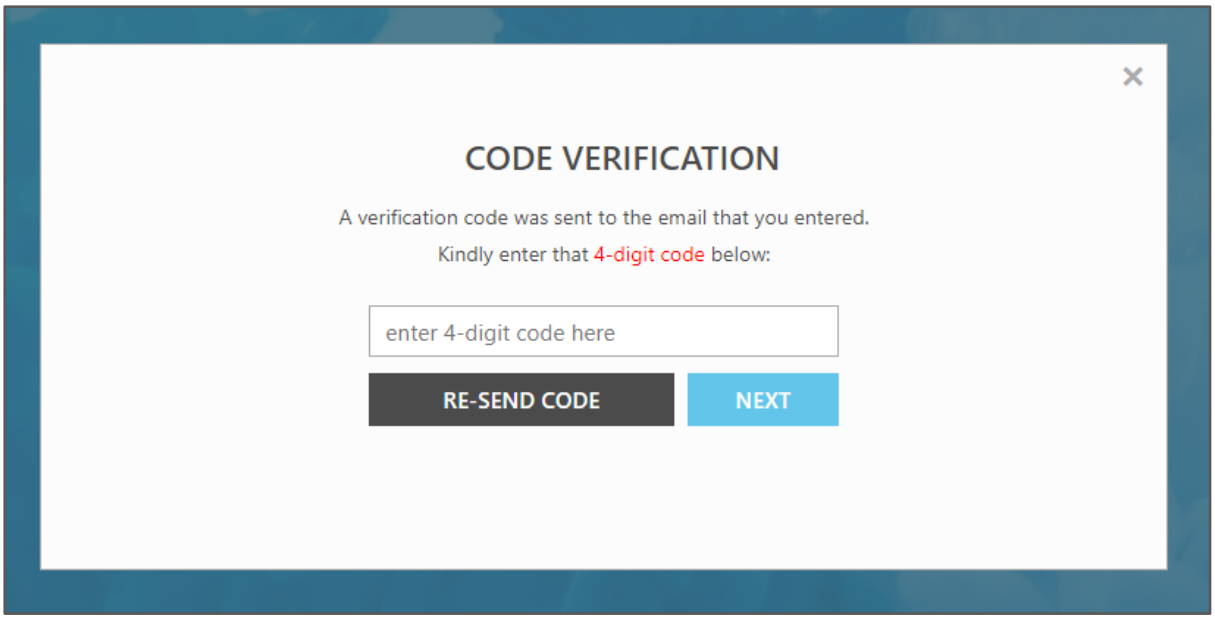


Screen 6.1 – User Login

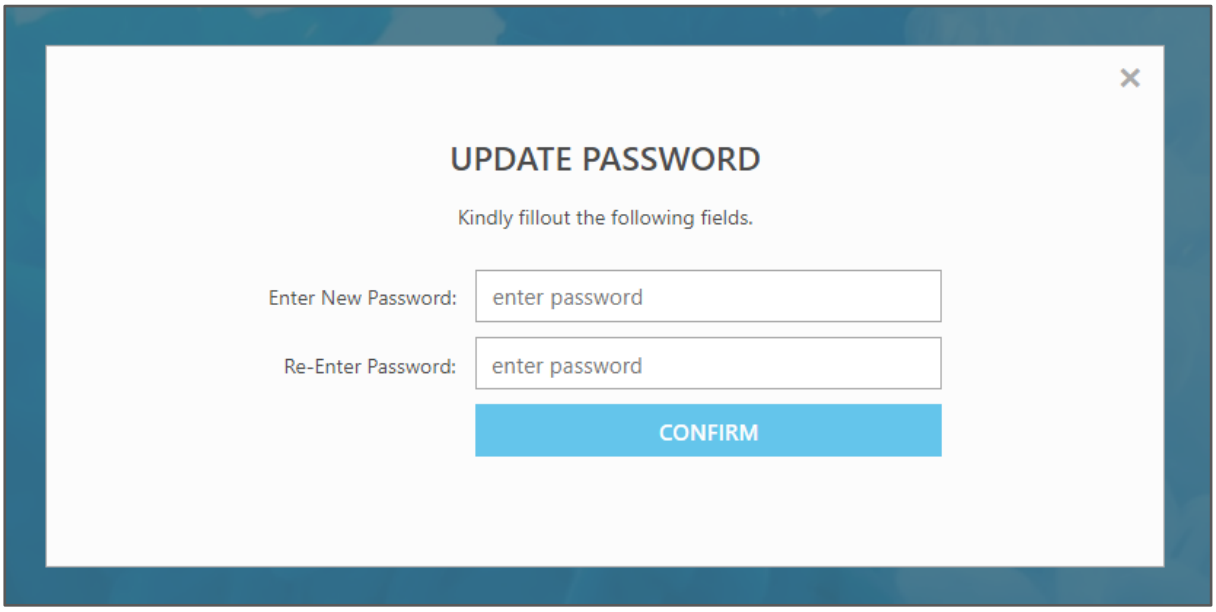
6.2 Forgot Password



Screen 6.2.1 – Forgot Password: Email Input

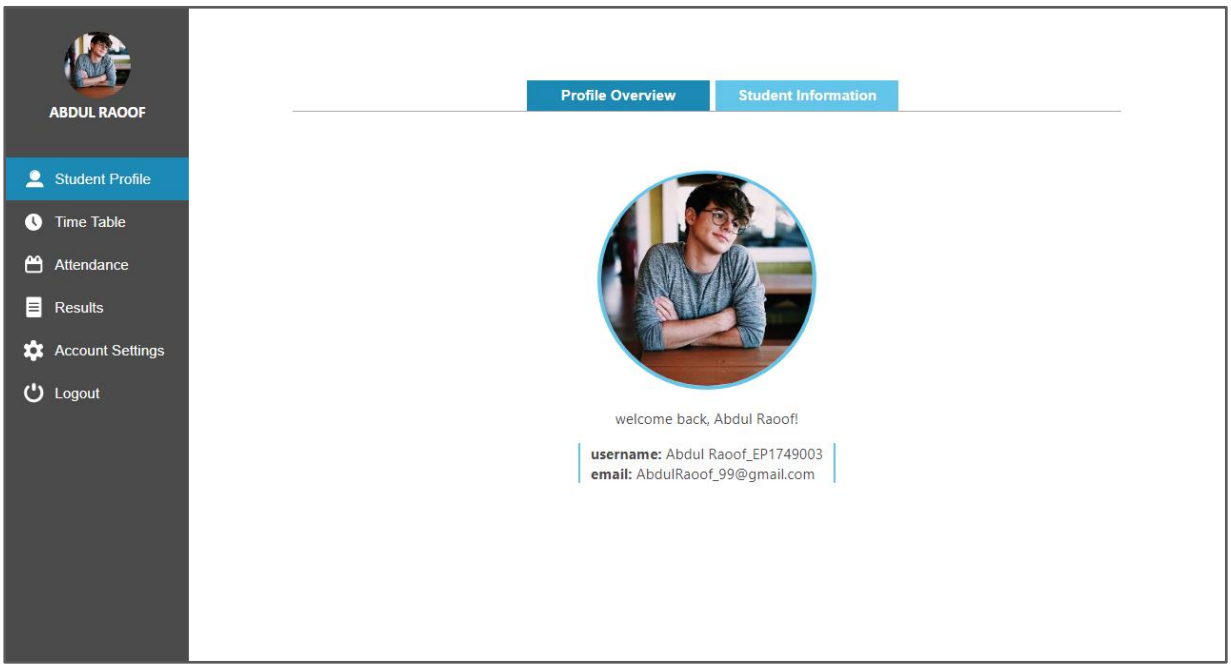


Screen 6.2.2 – Forgot Password: Code Verification

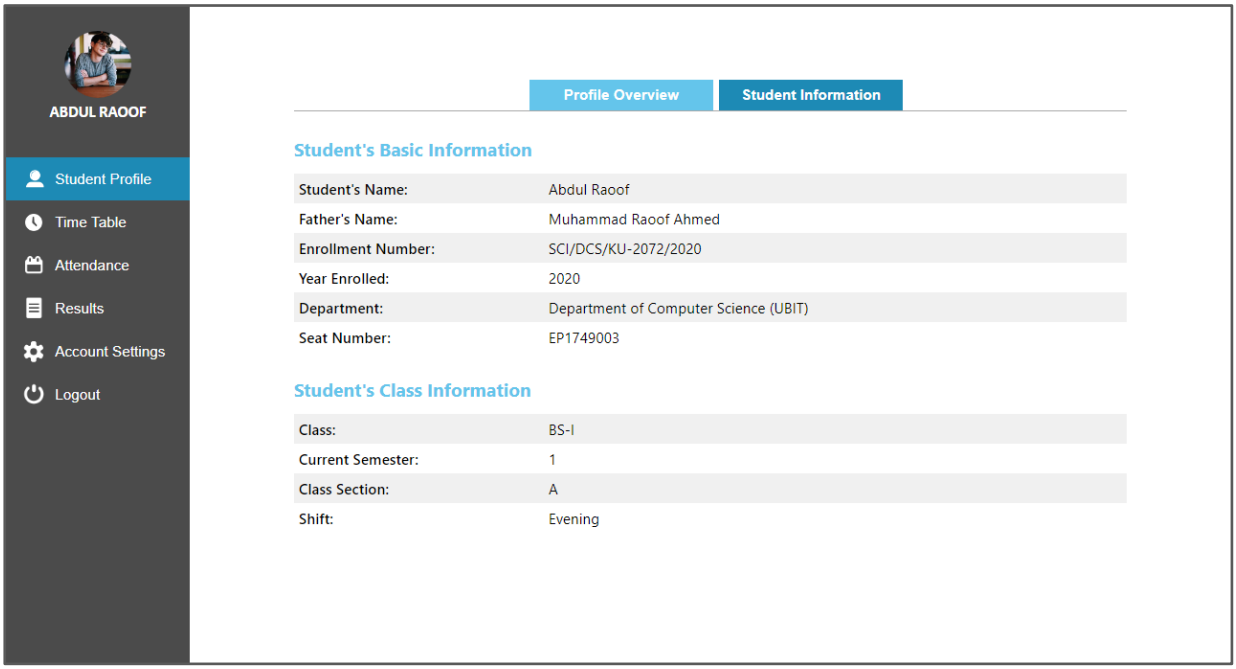


Screen 6.2.3 – Forgot Password: Update Password

6.3 User Profile

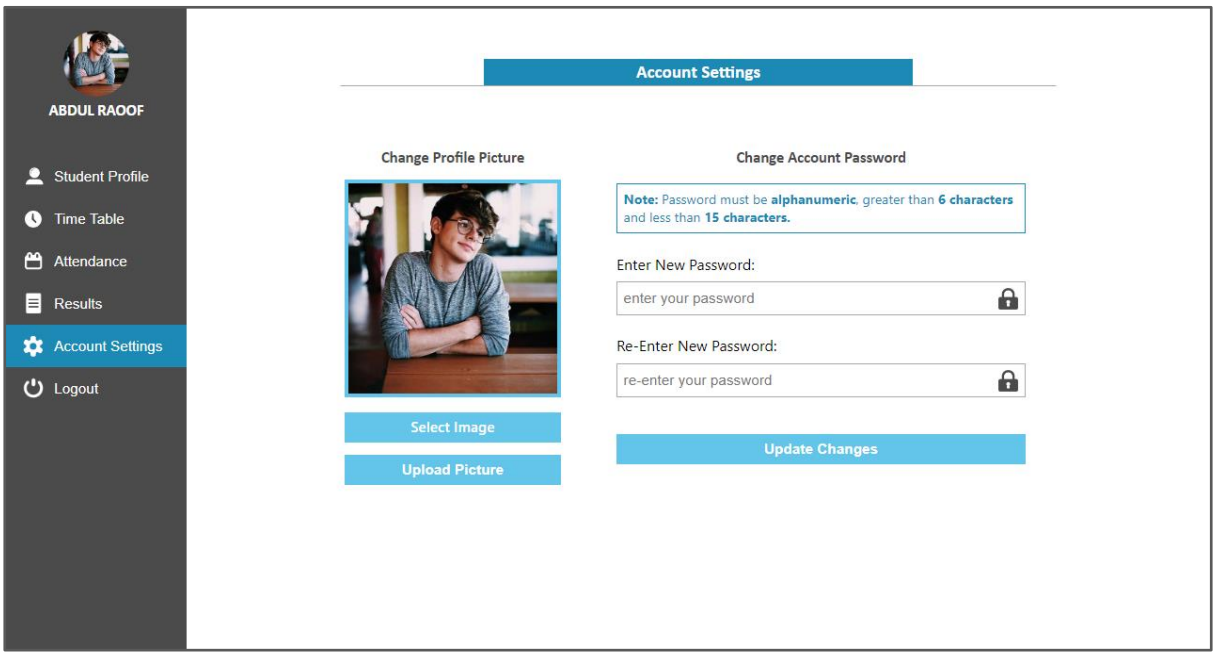


Screen 6.3.1 – User Profile: Profile Overview



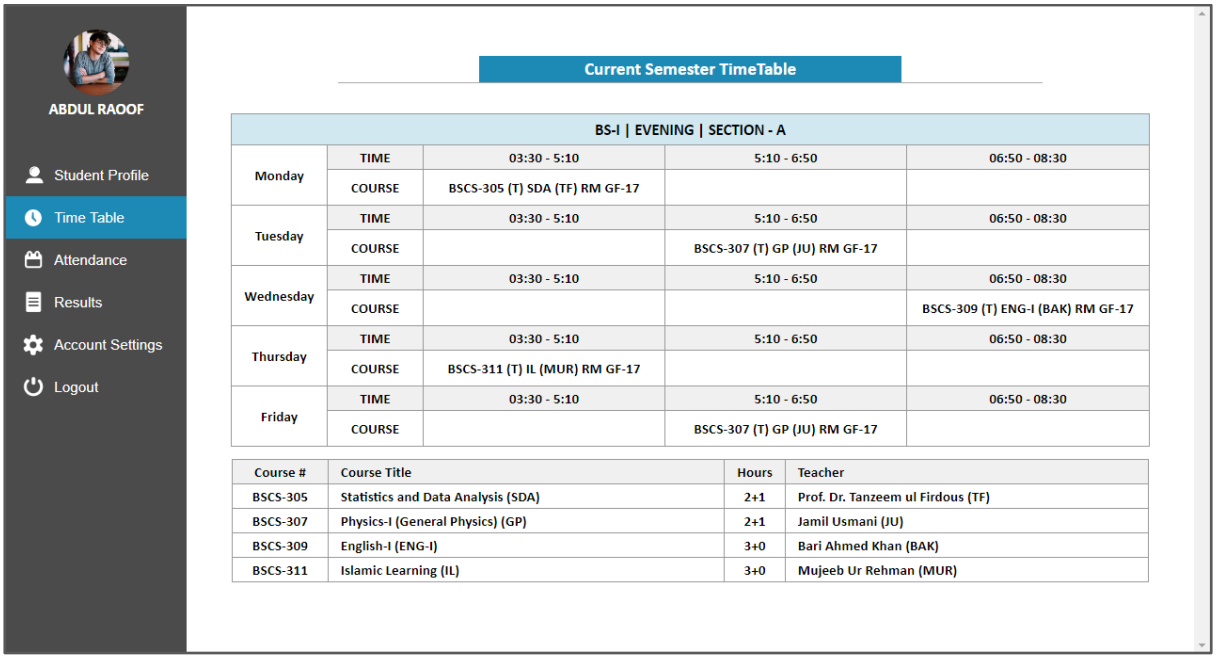
Screen 6.3.2 – User Profile: User Information

6.4 User Account Settings



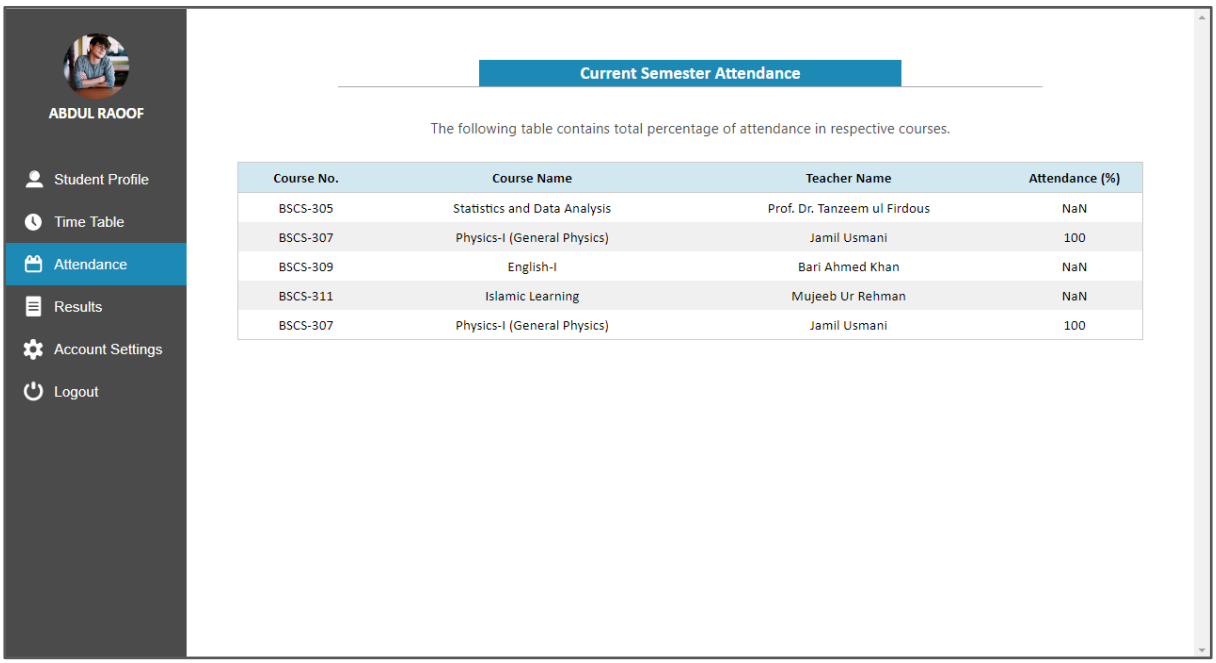
Screen 6.4 – User Account Settings

6.5 Student Module: Timetable



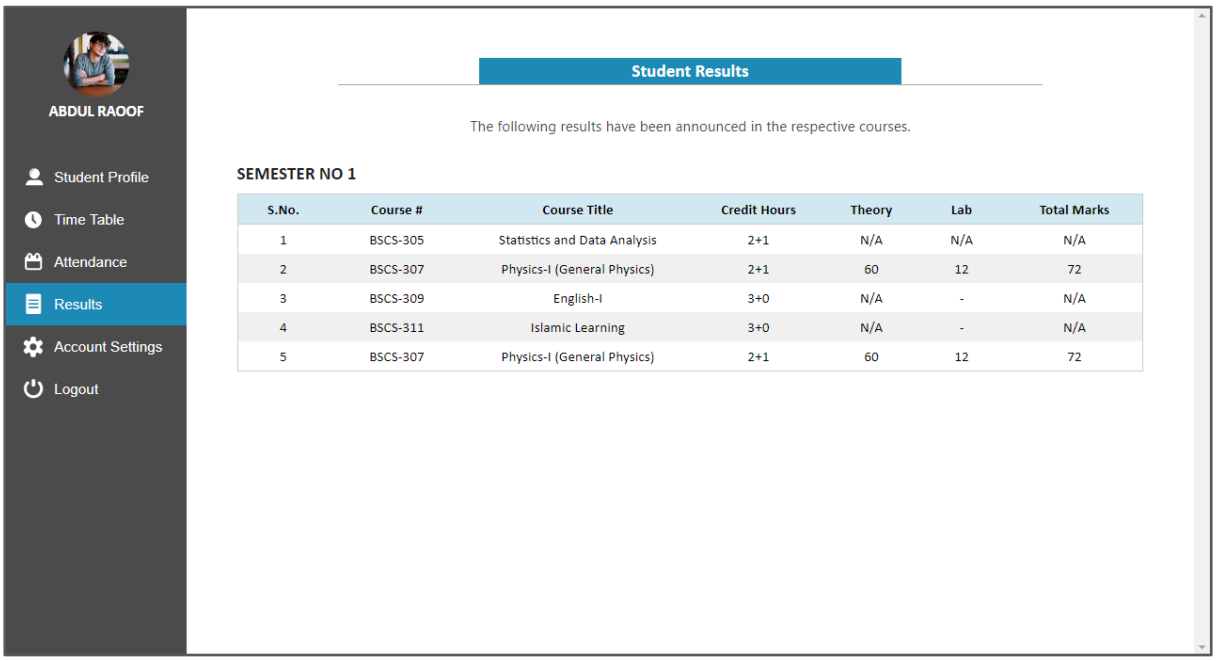
Screen 6.5 – Student Module: Timetable

6.6 Student Module: Attendance



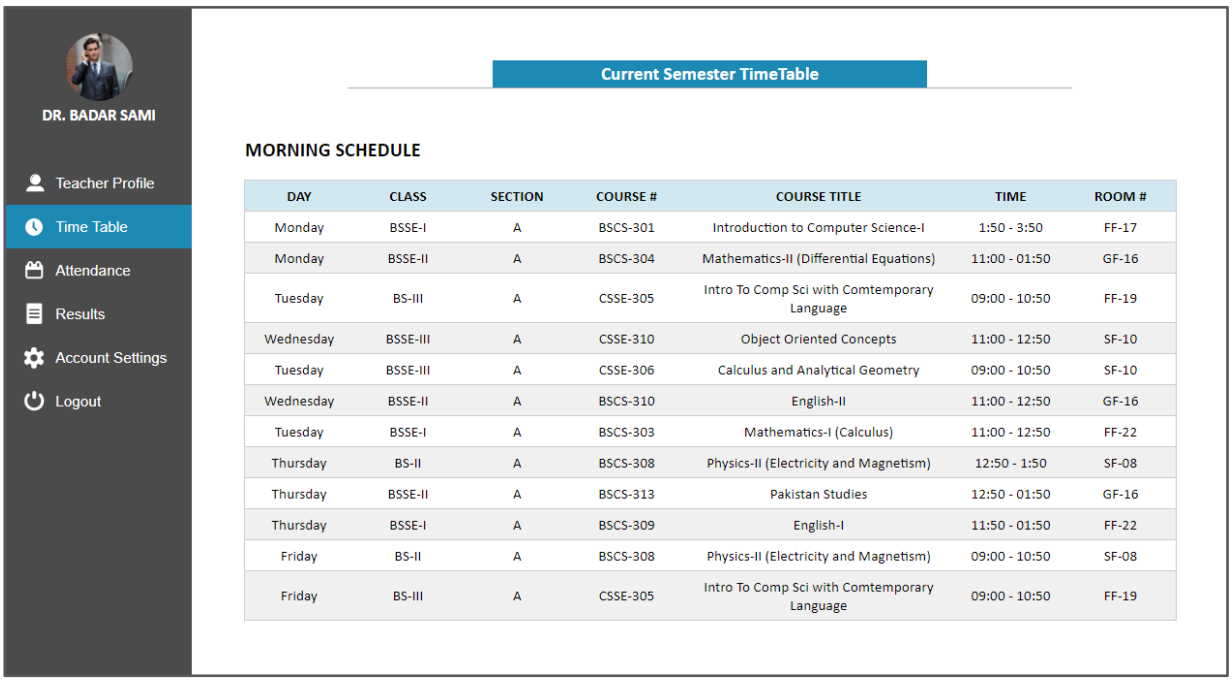
Screen 6.6 – Student Module: Attendance

6.7 Student Module: Results



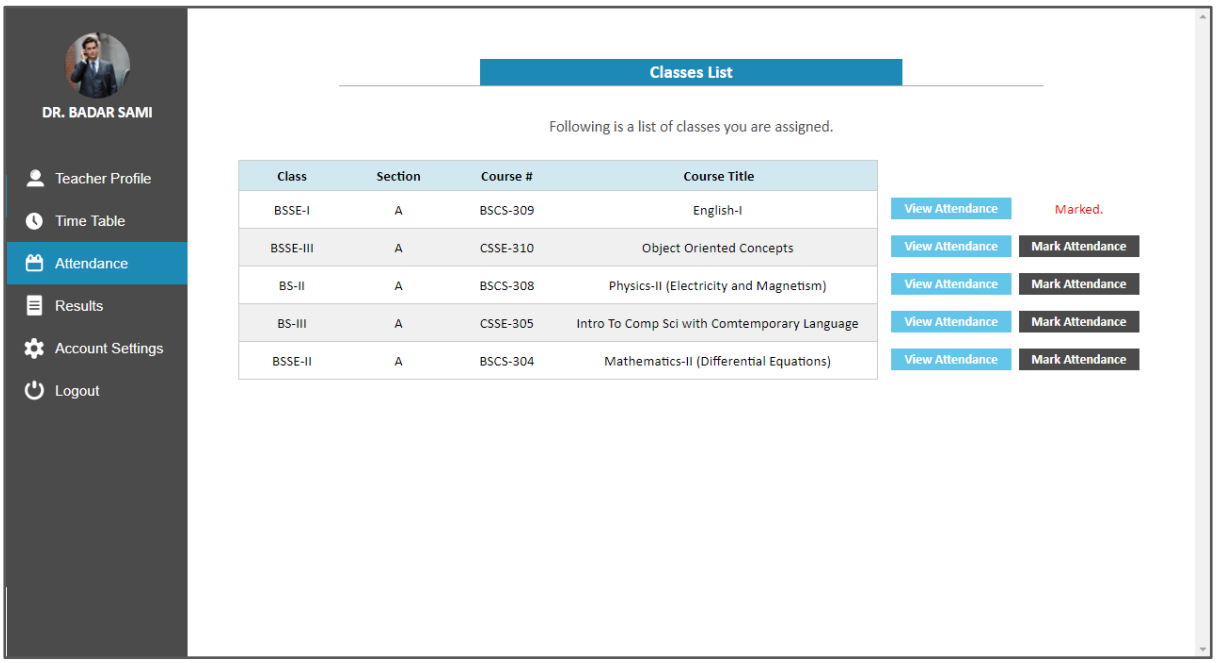
Screen 6.7 – Student Module: Results

6.8 Teacher Module: Classes Schedule

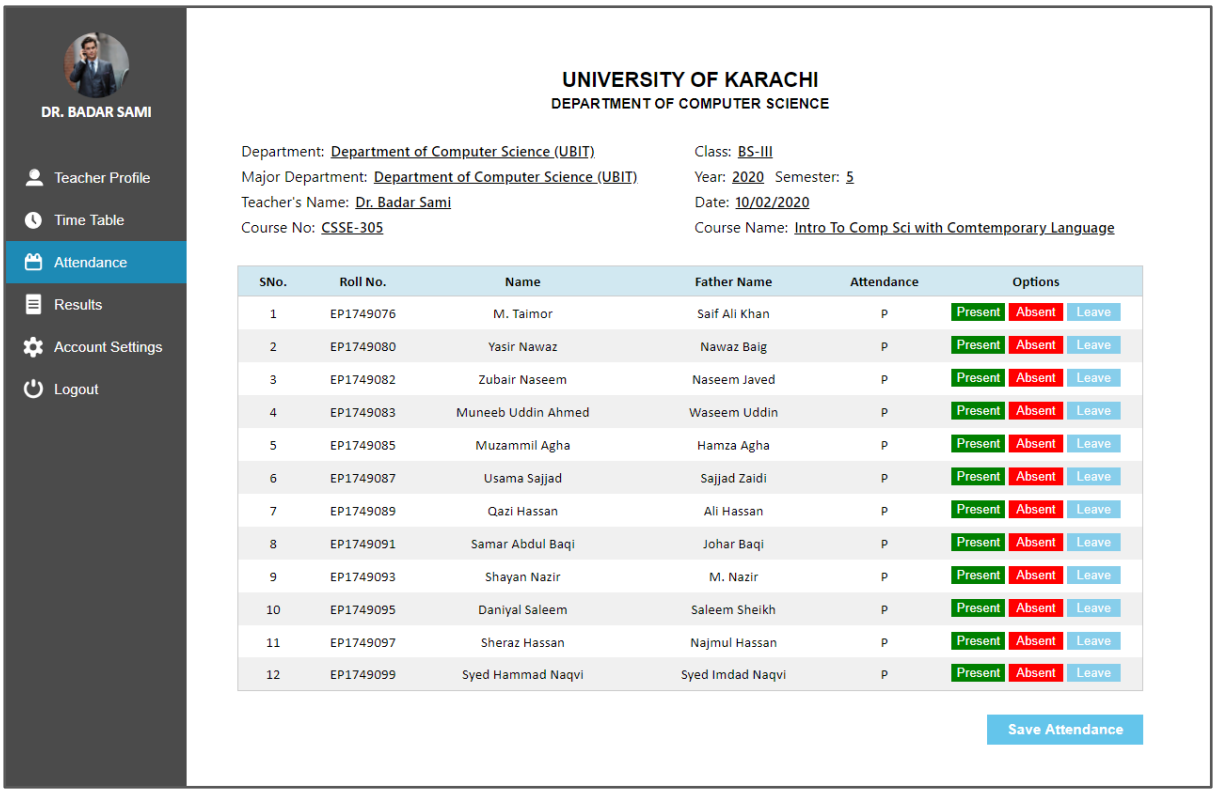


Screen 6.8 – Teacher Module: Classes Schedule

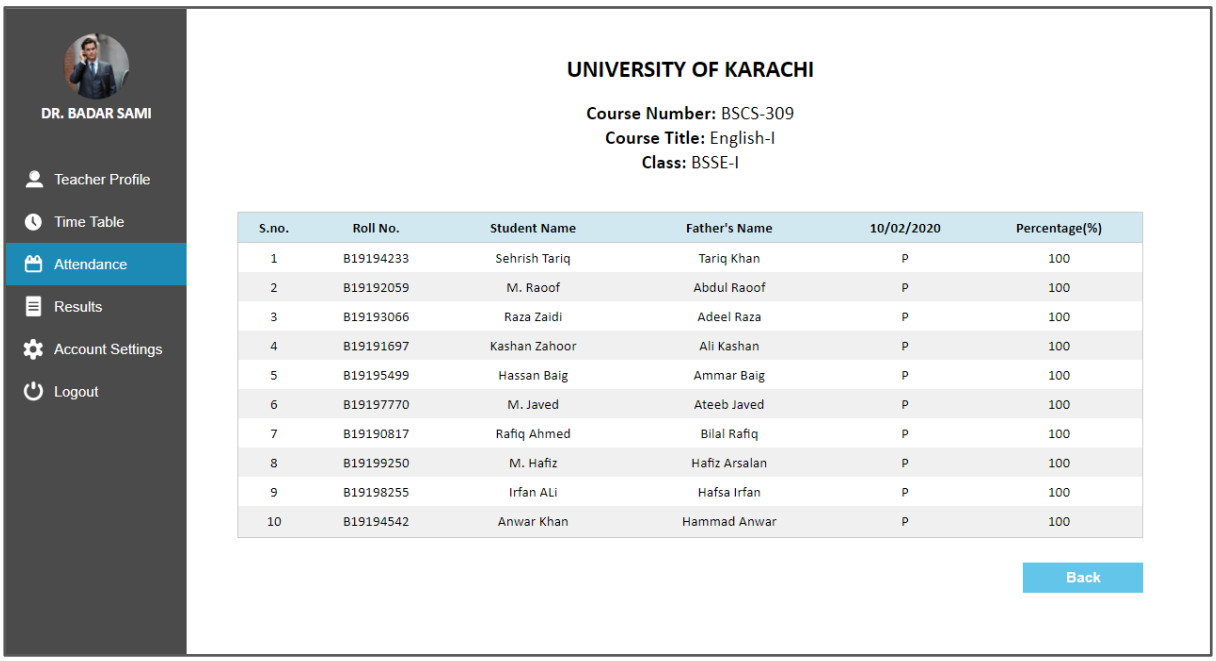
6.9 Teacher Module: Student Attendance



Screen 6.9.1 – Teacher Module: Classes List

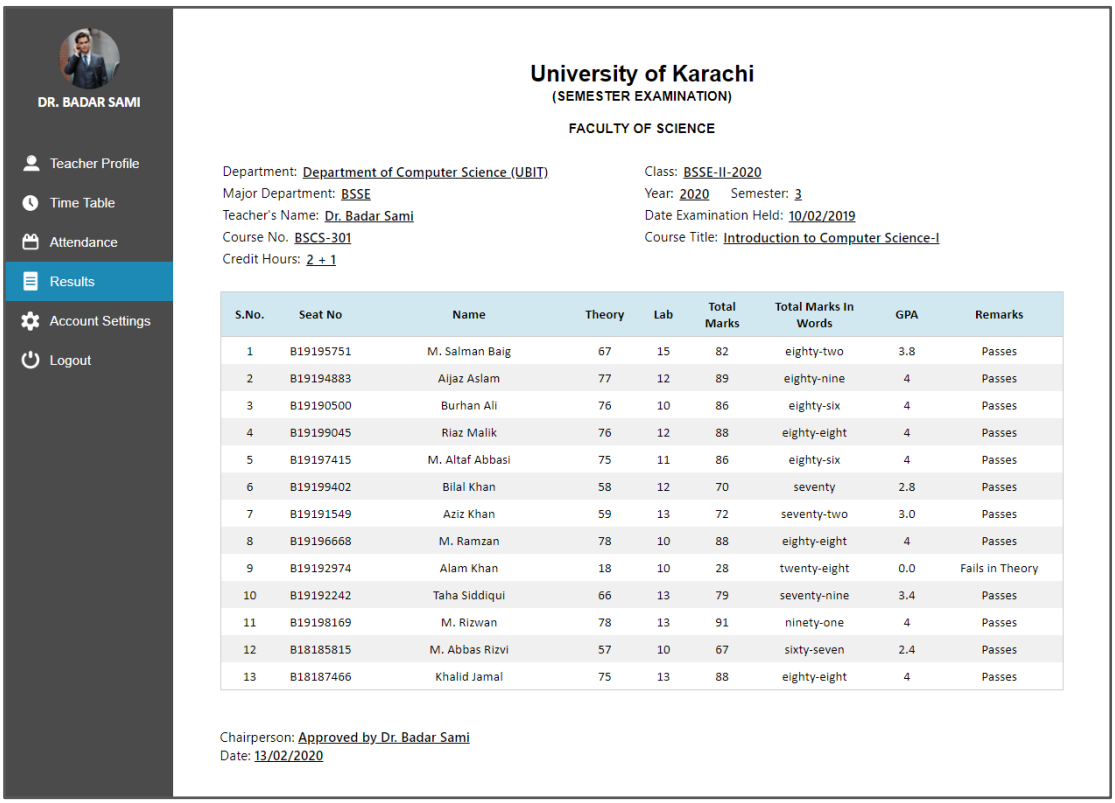


Screen 6.9.2 – Teacher Module: Mark Attendance

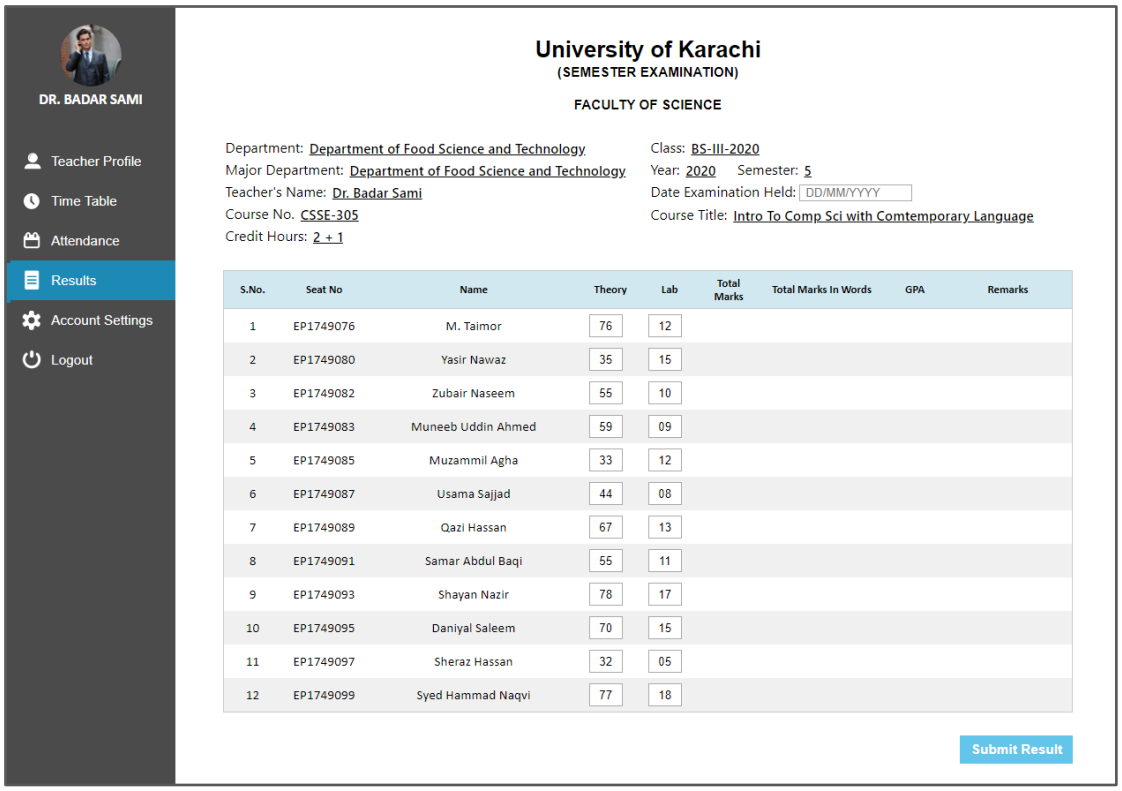


Screen 6.9.3 – Teacher Module: Attendance List

6.10 Teacher Module: Student Results

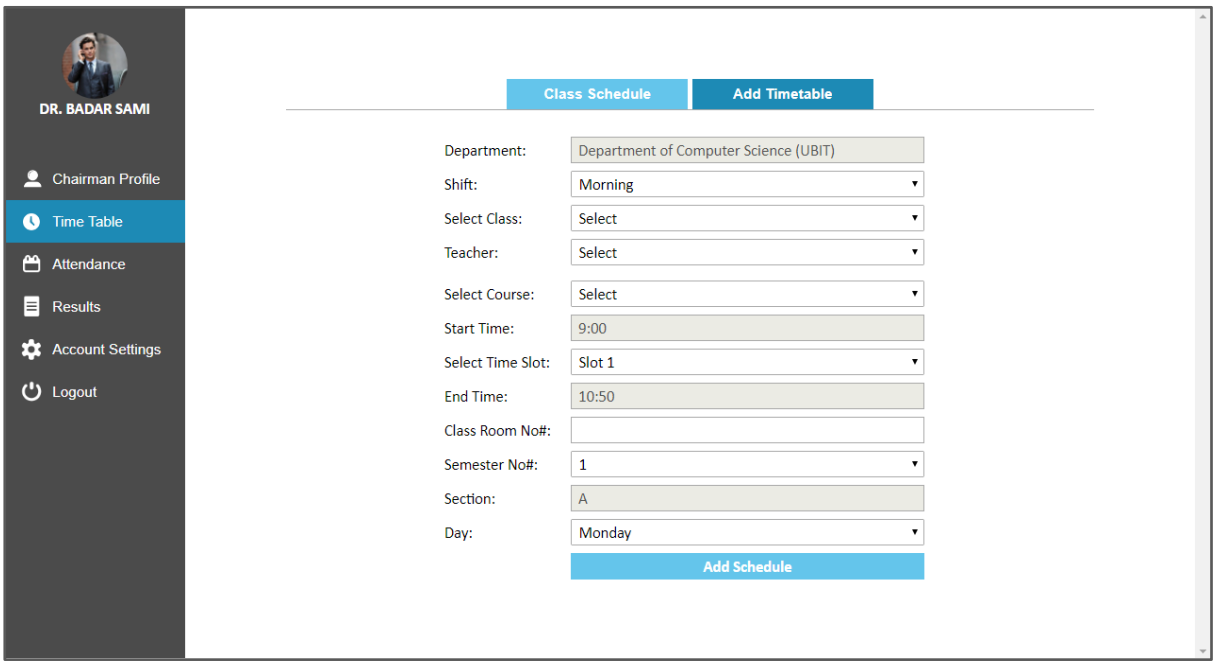


Screen 6.10.1 – Teacher Module: View Result



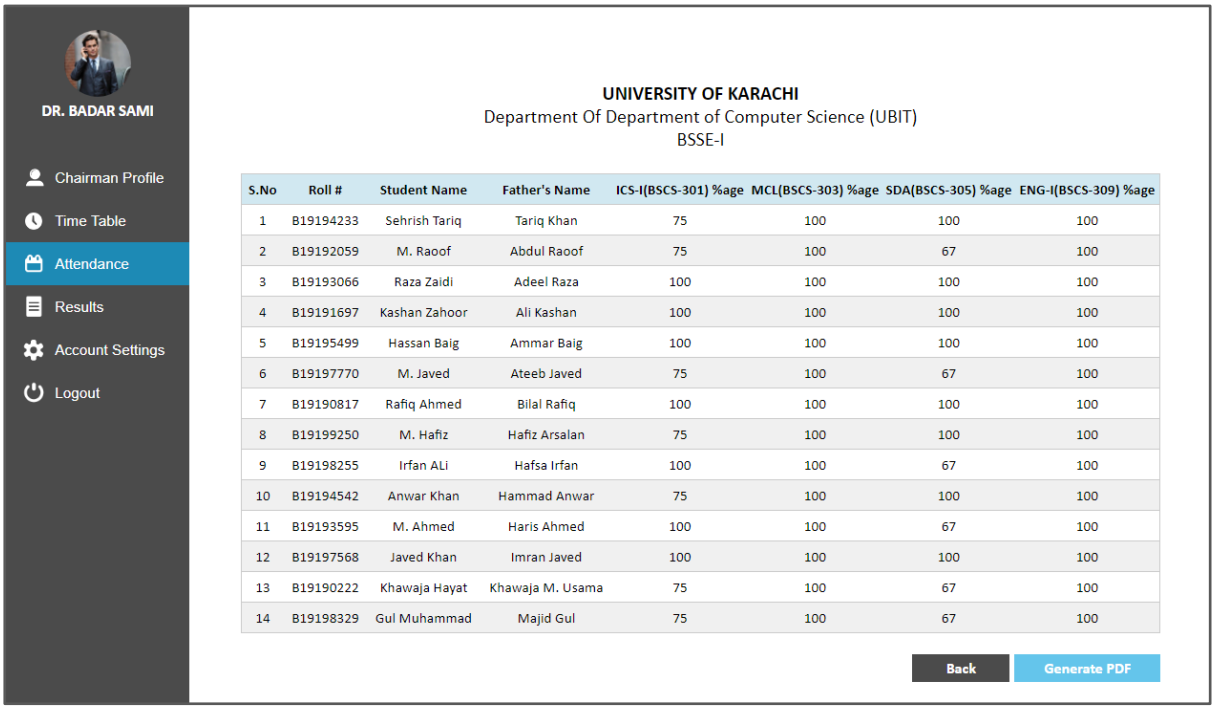
Screen 6.10.2 – Teacher Module: Submit / Edit Result

6.11 Chairperson Module: Department Timetable



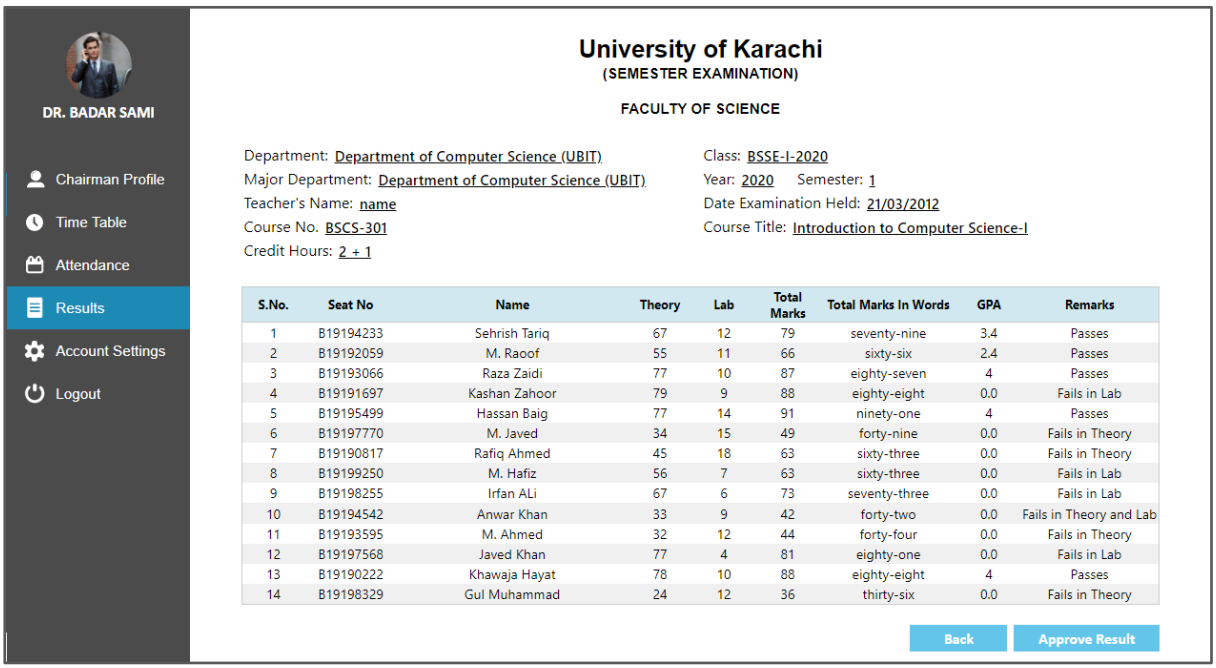
Screen 6.11 – Chairperson Module: Edit / Insert Timetable

6.12 Chairperson Module: Class Attendance (all courses)



Screen 6.12 – Chairperson Module: Class Attendance

6.13 Chairperson Module: Student Results

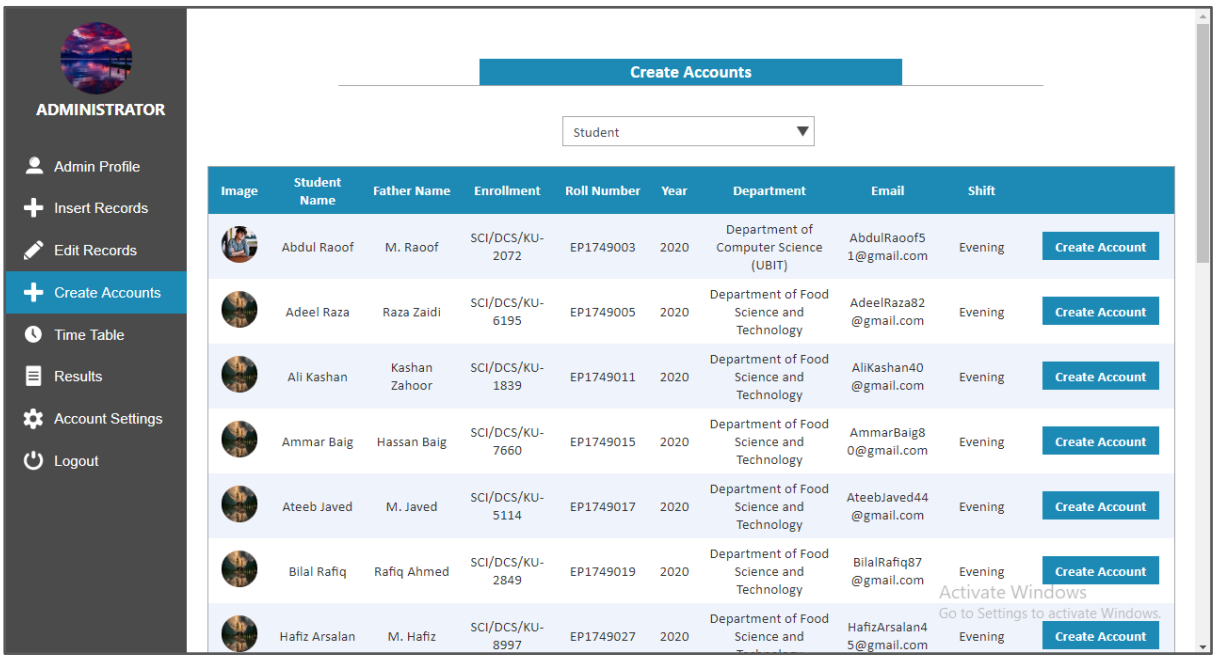


Screen 6.13 – Chairperson Module: Student Results

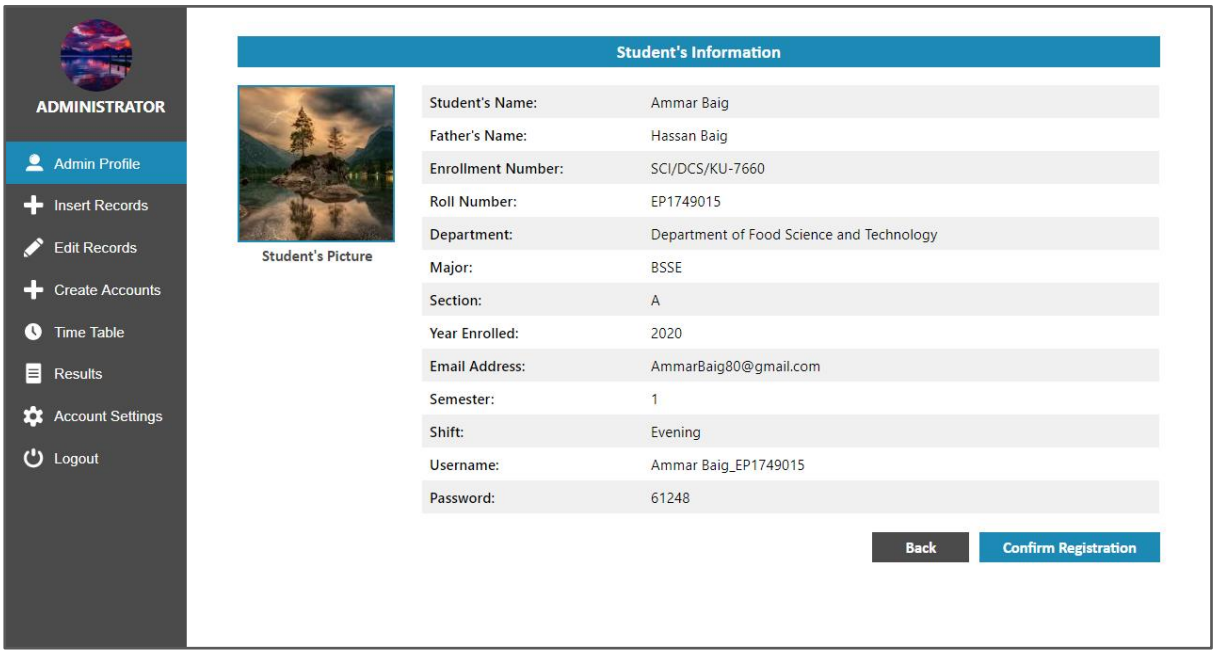
6.14 Administrator Module: Insert / Edit Records

Screen 6.14 – Admin: Insert / Edit Student and Teacher Records

6.15 Administrator Module: Create Accounts



Screen 6.15.1 – Administrator Module Create Accounts



Screen 6.15.2 – Administrator Module: Confirm Registration

6.16 Student Proforma – Report

University of Karachi
Semester Examinations Section
Provisional Marks Sheet For Semester - I
Degree/Class: BSSE
ACADEMIC YEAR 2020

Student's Name	Sehrish Tariq	**Seat No.**	B19194233
Father's Name	Tariq Khan	**Enrolment No.**	SCI/UoK/KU-4896
Faculty of:	Science	**Department**	Department of Food and Sciences

				Marks Obtained		Course			Courses Cleared in Semester	
Course No.	**Course Title**	**Cr.Hrs**	**Max. Marks**	**Theory**	**Lab.**	**Total**	**Grade**	**G.P.**	**I**	4/4
BSCS-301	Introduction to Computer Science-I	2+1	100	45	16	61	C	0	**II**	
BSCS-303	Mathematics-I (Calculus)	3+0	100	87	-	87	A	12	**III**	
BSCS-305	Statistics and Data Analysis	2+1	100	76	18	94	A+	12	**IV**	
BSCS-309	English-I	3+0	100	76	-	76	B+	10.2	**V**	
									VI	
									VII	
									VIII	
									IX	
				Grand Total		**318**		**34.2**	**X**	

Result: **PASSES**

Remarks:

Dated: 13/02/2020 **Checked By:** _____ **Assistant Controller:** _____

Generated by: Shamim A.Raul

Note: 1. University reserves the right to correct any error that may be detected in the Marks Sheet / Proforma

2. This Provisional mark proforma cannot be presented in any court of law by concerned candidate unless he/she is issued commulative marks sheet from the semester examinitions section as per semester rules

Screen 6.16 – Student Proforma

6.17 Student Attendance – Report

UNIVERSITY OF KARACHI
Department of Computer Science (UBIT)
BSSE-I

S.No	Roll #	Student Name	Father's Name	ICS-I(BSCS-301)%age	MCL(BSCS-303)%age	SDA(BSCS-305)%age	ENG-I(BSCS-309)%age
1	B19194233	Sehrish Tariq	Tariq Khan	83	100	100	100
2	B19192059	M. Raoof	Abdul Raoof	83	100	67	100
3	B19193066	Raza Zaidi	Adeel Raza	83	100	100	100
4	B19191697	Kashan Zahoor	Ali Kashan	100	100	100	100
5	B19195499	Hassan Baig	Ammar Baig	100	100	100	100
6	B19197770	M. Javed	Ateeb Javed	67	100	67	100
7	B19190817	Rafiq Ahmed	Bilal Rafiq	83	100	100	100
8	B19199250	M. Hafiz	Hafiz Arsalan	83	100	100	100
9	B19198255	Irfan ALi	Hafsa Irfan	100	100	67	100
10	B19194542	Anwar Khan	Hammad Anwar	67	100	100	100
11	B19193595	M. Ahmed	Haris Ahmed	83	100	67	100
12	B19197568	Javed Khan	Imran Javed	100	100	100	100
13	B19190222	Khawaja Hayat	M. Usama	83	100	67	100
14	B19198329	Gul Muhammad	Majid Gul	83	100	67	100

Screen 6.17 – Student Attendance Report

7. CONCLUSION AND FUTURE ENHANCEMENTS

In this section, we present our conclusions and discuss the future improvements that can be made in our project.

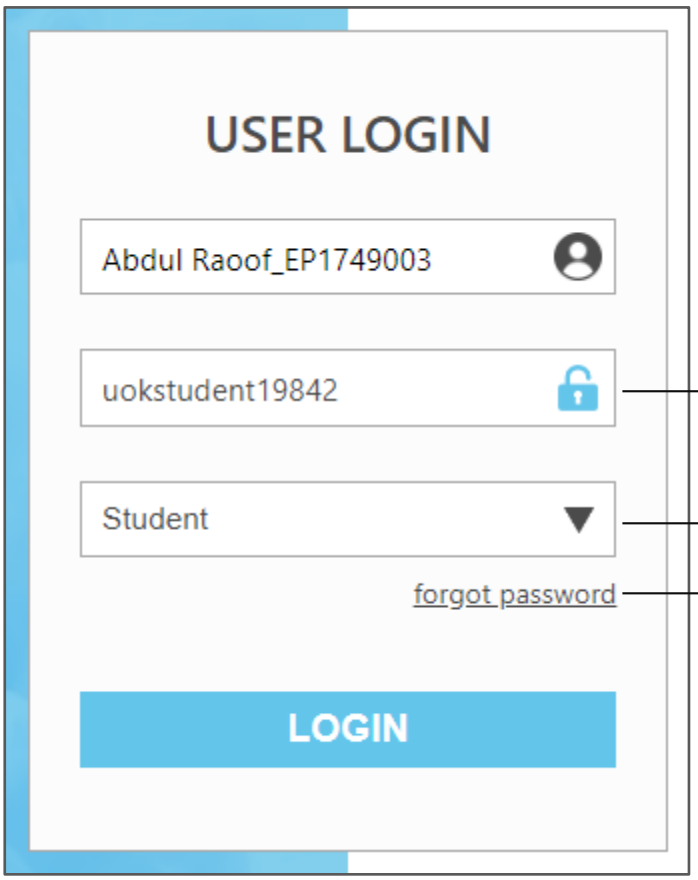
7.1 Conclusion

Despite the flaws and risks involved in the project, UOK Semester Automation system is a good approach to automate all the Semester activities which are done manually to this day. The Application offers complete and necessary functionality that is helpful for carrying out complex tasks. It holds great importance in the business world. The Application is also beneficial for the University of Karachi administration as it is a way for them to manage, arrange and handle all student, teacher and department related data in an organized manner.

7.2 Future Enhancements

Even though our team gave its complete efforts possible in creating this project, there are still many areas where the project can be improved. Both front-end and back-end development could be adjusted to latest technology that is preferred over the technology we used. Our project can be adjusted to newer technology without disrupting the foundation of the project. We hope to work on this project further and aim to build a better version of it, containing fewer bugs and problems.

1. User Login

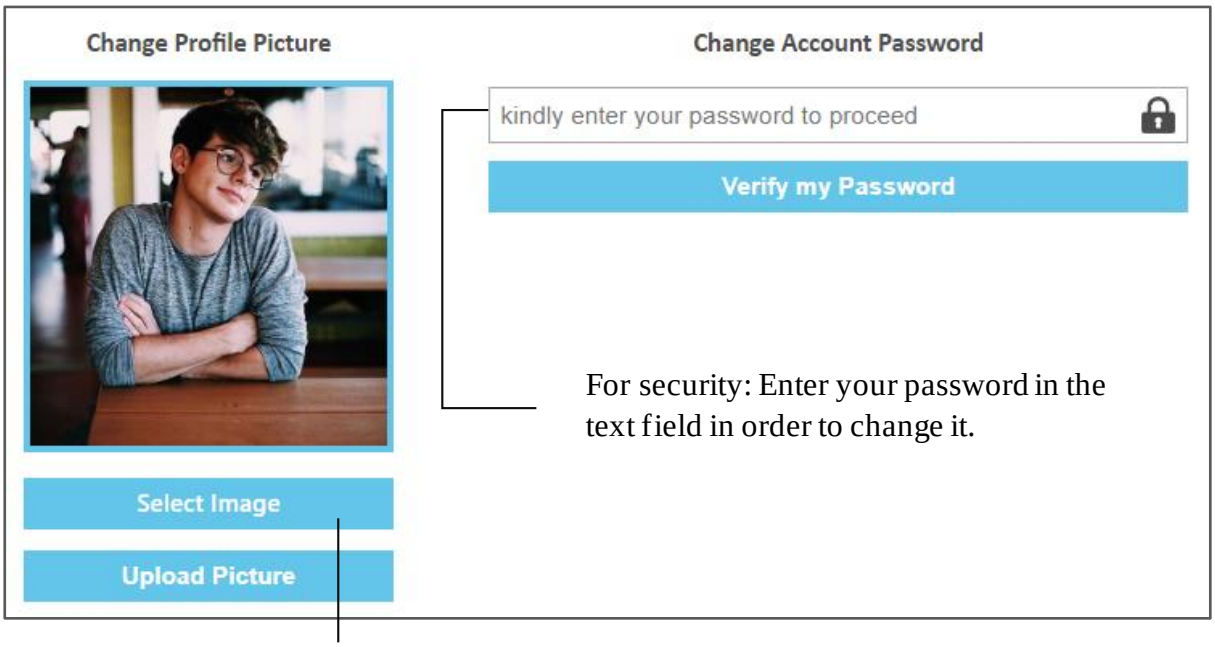


Click on the "Lock" icon to view password while entering.

Select your account type from the drop-down menu

Recover your password by using forgot password module which can be found by clicking this link

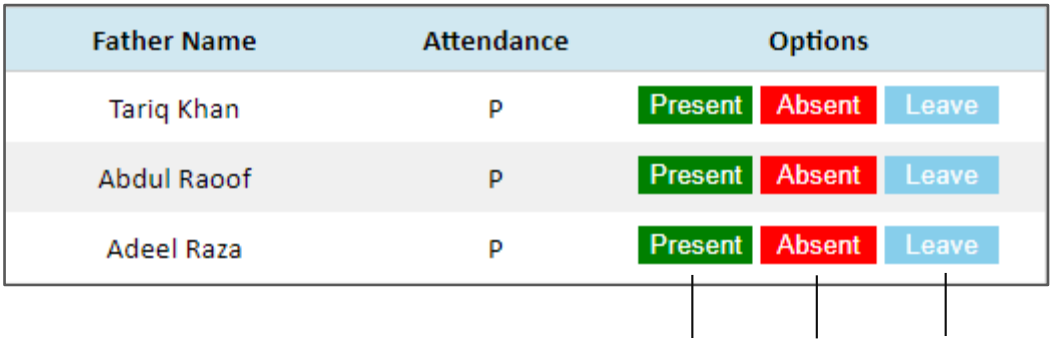
2. Account Settings



For security: Enter your password in the text field in order to change it.

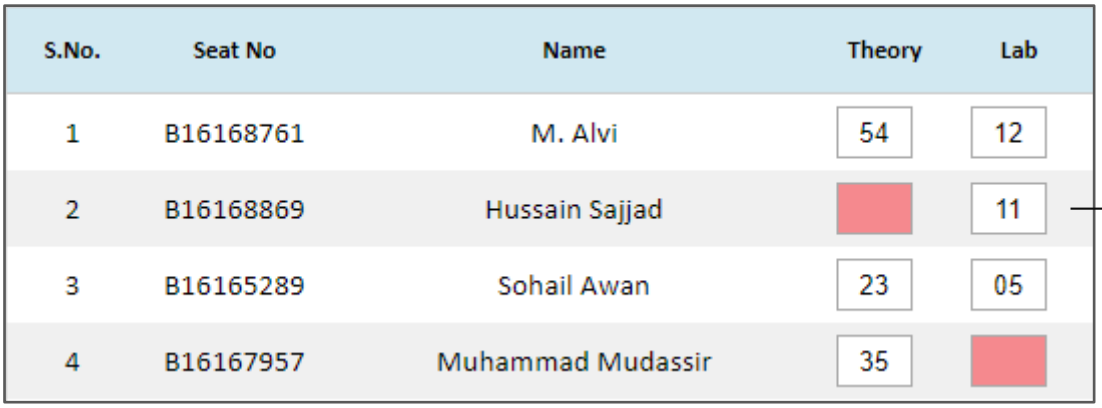
Select an Image from the dialog box
Upload the image to save it.

3. Mark Student Attendance



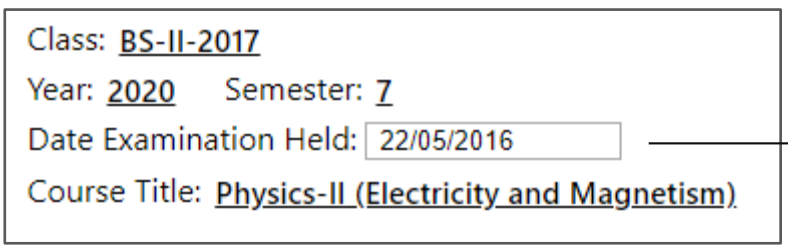
Click on these buttons to mark student attendance as Present, Absent or Leave

4. Insert Student Results



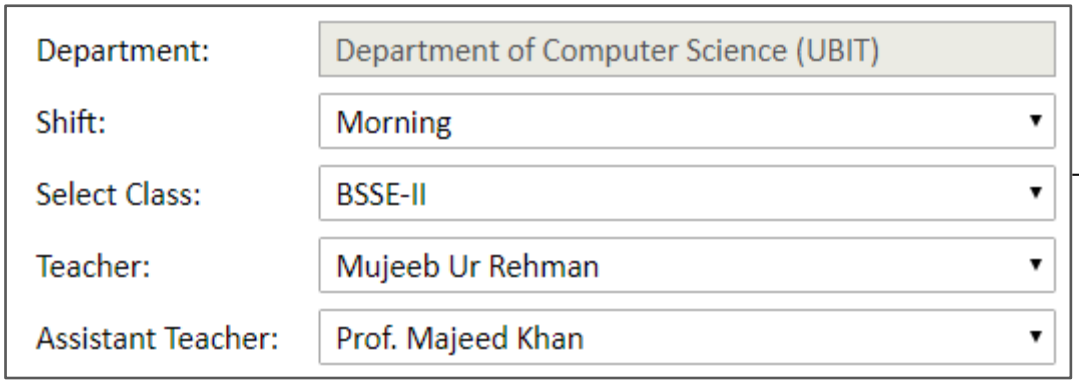
S.No.	Seat No	Name	Theory	Lab
1	B16168761	M. Alvi	54	12
2	B16168869	Hussain Sajjad		11
3	B16165289	Sohail Awan	23	05
4	B16167957	Muhammad Mudassir	35	

Enter student's marks in the required fields. Make sure to enter values in all fields and leave none empty

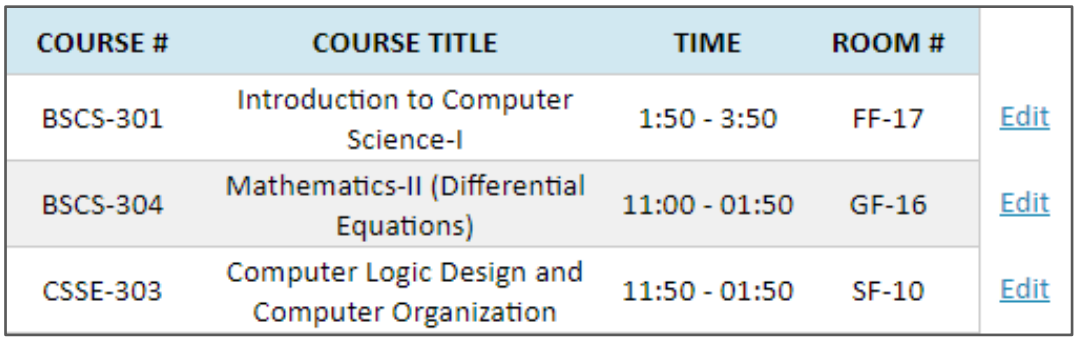


Enter date of the result to be submitted in the correct format: DD/MM/YYYY

5. Insert / Edit Department Timetable



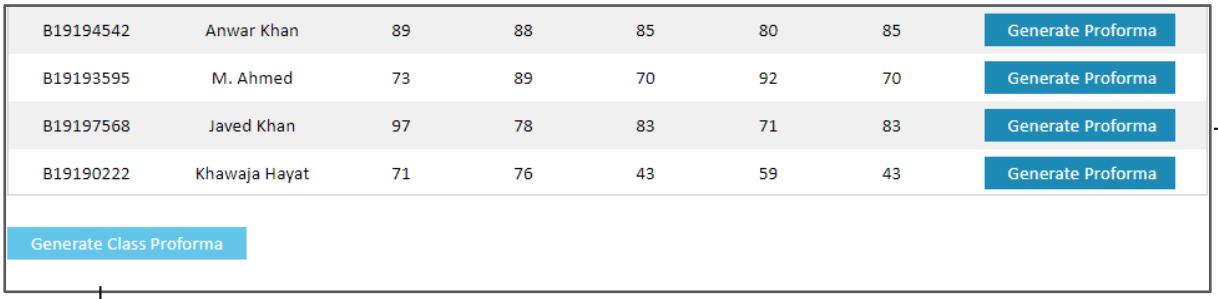
Select all values from the drop-down options when entering or editing a timetable.



COURSE #	COURSE TITLE	TIME	ROOM #	
BSCS-301	Introduction to Computer Science-I	1:50 - 3:50	FF-17	Edit
BSCS-304	Mathematics-II (Differential Equations)	11:00 - 01:50	GF-16	Edit
CSSE-303	Computer Logic Design and Computer Organization	11:50 - 01:50	SF-10	Edit

Edit the timetable row using the "Edit" link

6. Generate Student Proforma



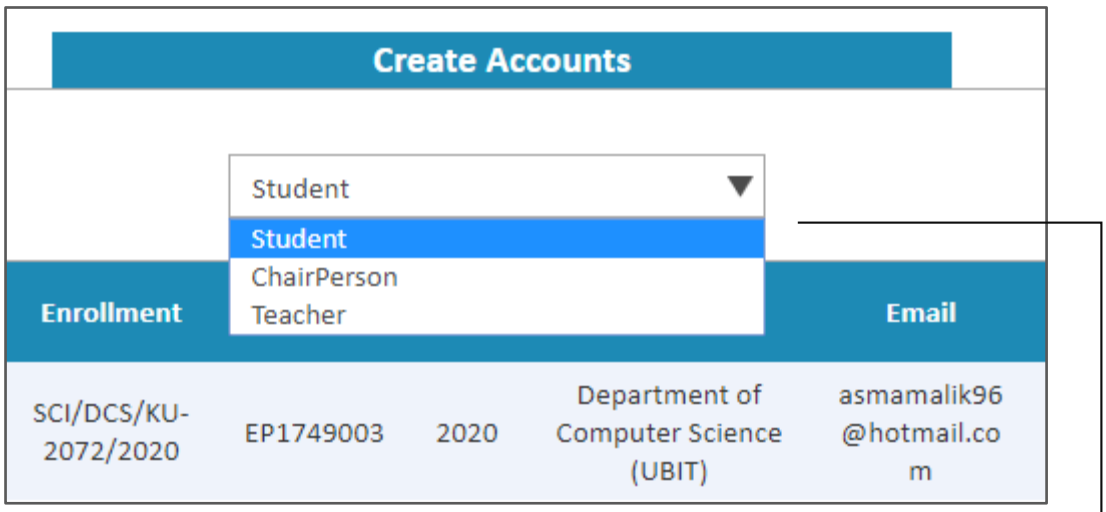
B19194542	Anwar Khan	89	88	85	80	85	Generate Proforma
B19193595	M. Ahmed	73	89	70	92	70	Generate Proforma
B19197568	Javed Khan	97	78	83	71	83	Generate Proforma
B19190222	Khawaja Hayat	71	76	43	59	43	Generate Proforma

Generate Class Proforma

Generate whole class proforma in PDF format.

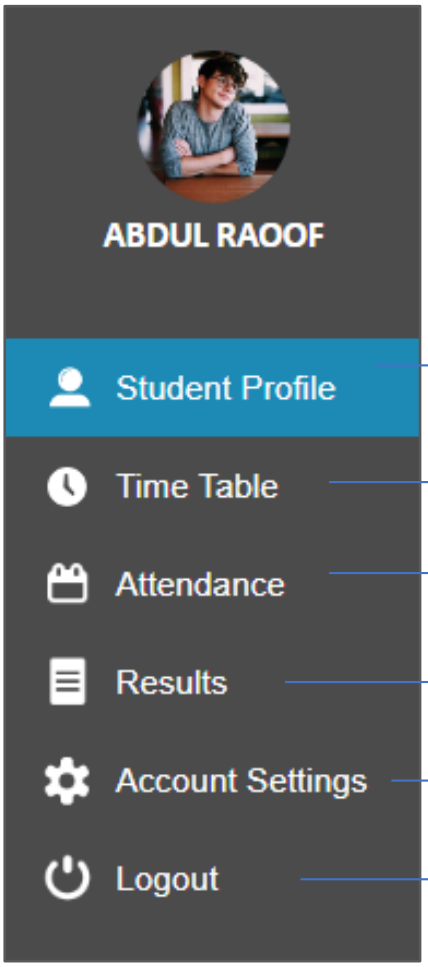
Generate individual student proforma in PDF format

7. Create Accounts



Use drop-down menu to select which type of user account to create

8. Navigate to Pages



Use buttons on the side bar to navigate to different pages of the application

Re-directs to user's profile

Re-directs to timetable / class schedule

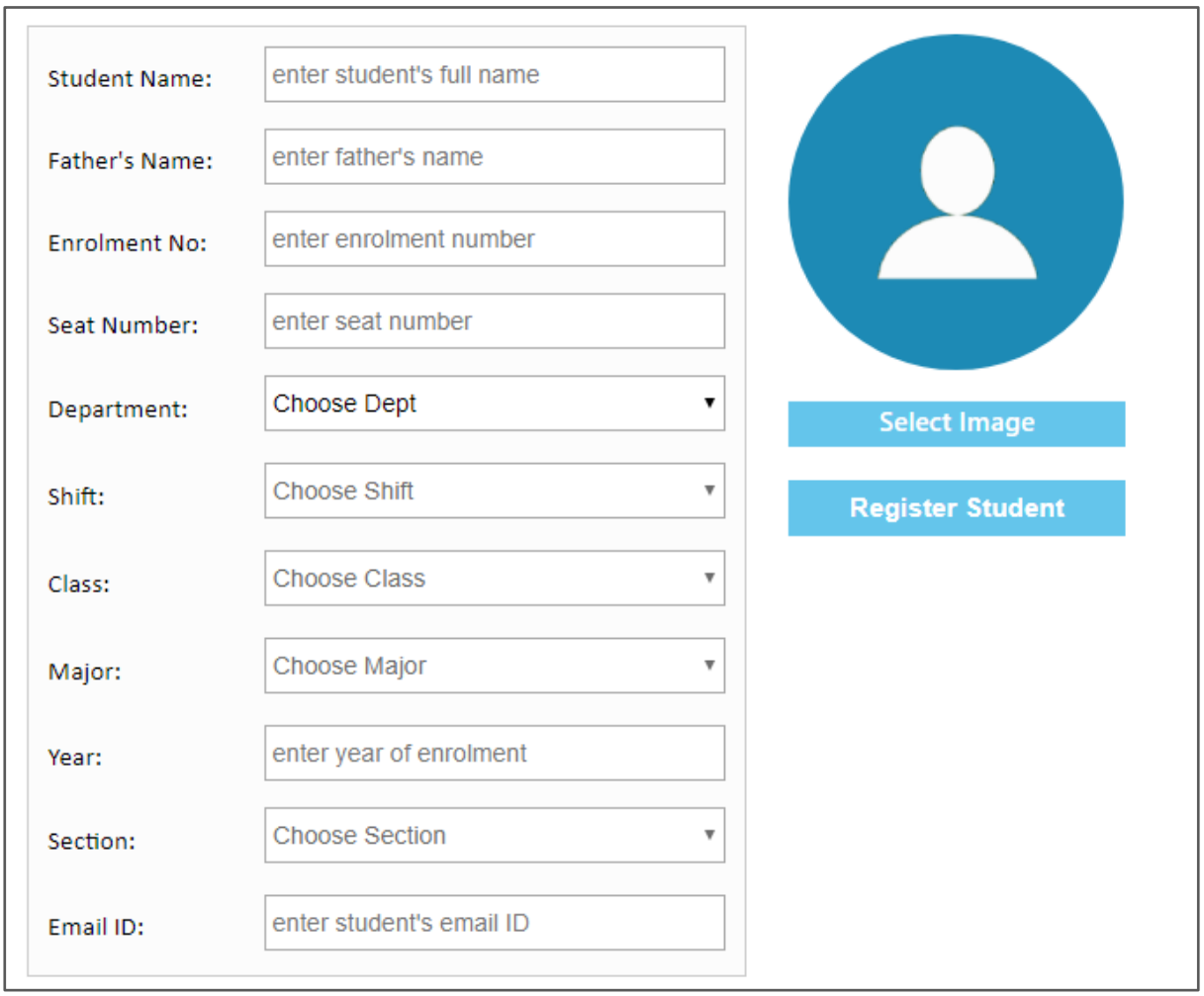
Re-directs to student's attendance records

Re-directs to student's result records

Re-directs to user's account settings

Logs user out of the application

9. Insert / Edit Student and Teacher Records



Fill all fields of the form and select an image in order to register new records.

KEY:

Student Name – Alphabets only

Father's Name – Alphabets only

Enrolment No – Alphabets / Numeric Values / Characters (- /.) only

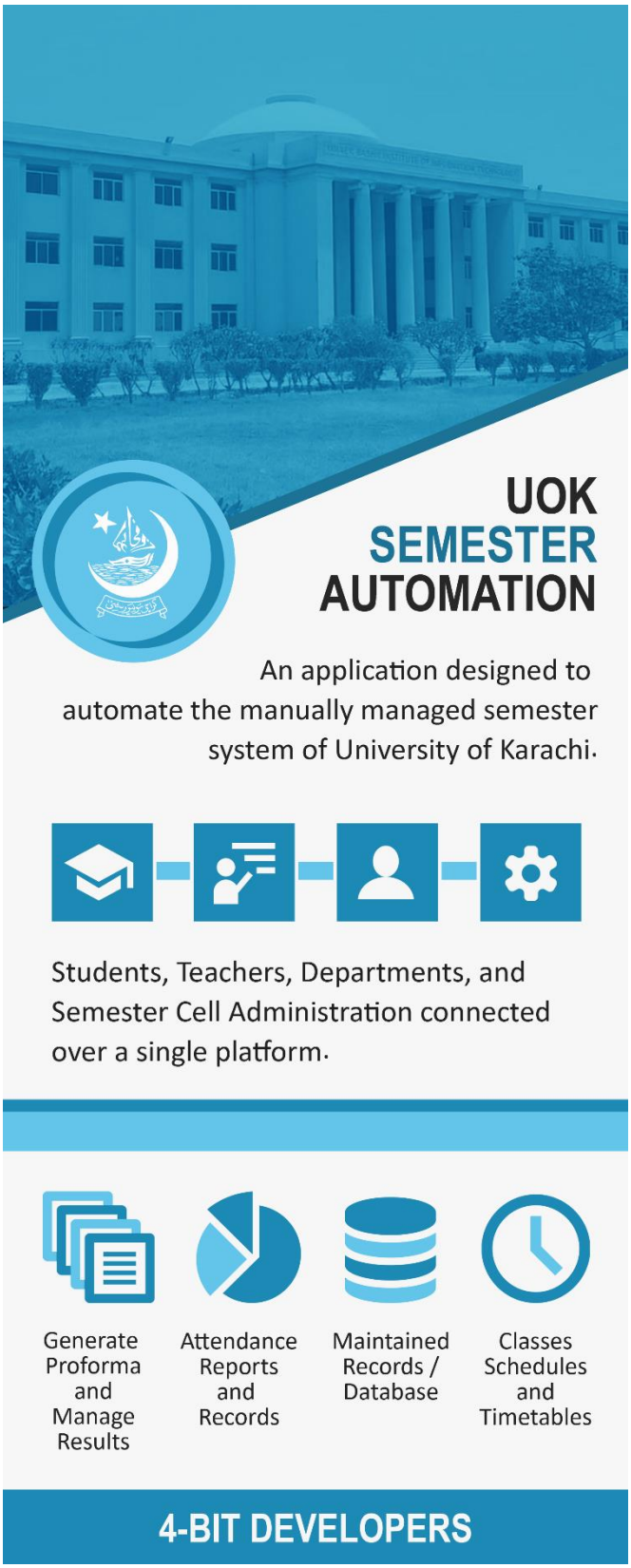
Seat Number – Alphabets / Numerals / Character: - only

Choose Department, Shift, Class, Major and Section

Year – Range: 1900-current year

Email ID – in the format: abcdef@abcdef.com

UOK SEMESTER SYSTEM: STANDEE



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