

UCS503- Software Engineering Lab

EduCom TU

UCS503 Software Engineering Project Report

Mid-Semester Evaluation

Submitted by:

102017184 ISHITA KAUNDAL (Offline)

102017189 VISHALAKSHI (Offline)

102017192 NIVEDITA VERMA (Offline)

102017195 TWESHA ARVIND (Offline)

BE Second Year, CSE

Group No: 5

Submitted to:

Dr.Ashima Singh



THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)

Computer Science and Engineering Department

TIET, Patiala

March 2022

TABLE OF CONTENT

S No.	Assignment	Page No.
1.	Project Selection Phase	
1.1	Software Bid	
2.	Planning Phase	
2.1	Project Write Up	
3.	Analysis Phase	
3.1	Use Case Template	
3.2	Use-Case diagram	
3.3	Swimlane diagrams	
3.4	Data Flow Diagrams Level 0, Level 1, Level 2	
3.5	Software Requirement Specification (SRS) in IEEE Format	
3.6	Data Dictionary (Process, Data Flow and Data Store)	
4.	Design Phase	
4.1	Class Diagram	
4.2	Sequence Diagram	
4.3	Collaboration Diagram	
4.4	Database Design: ER Diagram	
4.5	State Chart Diagram	
5.	Implementation	
5.1	Component Diagram	
5.2	Deployment Diagram	
5.3	Screenshots	
6.	Testing	
6.1	Test Plan	
6.2	Test Cases	
6.3	Test Reports	

1. Project Selection Phase

Software Bid/ Project Teams

UCS 503- Software Engineering Lab

Group: 2CS8

Dated: 03/02/2022

Team Name: Quad

Team ID (will be assigned by Instructor): 5

Please enter the names of your Preferred Team Members.

You are required to form three to four-person teams

Choose your team members wisely. You will not be allowed to change teams.

Name	Roll No	Project Experience	Programming Language used
Ishita Kaundal	102017184	Women safety app, Automated fan	Arduino, C/C++, SQL
Vishalakshi	102017189	Car parking system using Arduino, Pizza delivery app	Arduino, SQL, Java
Nivedita Verma	102017192	Home Automation using Arduino, Note-taking app	Arduino, HTML, C/C++
Twesha Arvind	102017195	Travel Site, Notes app	HTML, CSS, C/C++

Programming Language / Environment Experience

List the languages you are most comfortable developing in, as a team, in your order of preference. Many of the projects involve Java or C/C++ programming.

1. C/C++
2. Python
3. HTML, CSS

Choices of Projects:

Please select **4 projects** your team would like to work on, by order of preference: *[Write at-least one paragraph for each choice (motivation, reason for choice, feasibility analysis, etc.)]*

First Choice	<u>EduCom TU</u> A portal to serve all the academic needs of students. It would have the assessment records, attendance, timetable and fee payment all under one domain. We aim to create an appealing GUI, easy to operate and well-designed.
Second Choice	Smart health consulting system To highlight the need for mental health as much as physical health, we would like to build a system that caters to a holistic need of prevention,

	detection, and correction of ailments.
Third Choice	<p>Network-based stock price system</p> <p>Instead of spending our time manually analyzing the stock market, we can create a prediction-based model that does the job for us and tell us the right time to invest and sell.</p>
Fourth Choice	<p>Library management system</p> <p>This system has a vast application in educational institutions. Providing good UI/UX and easy-to-use features we would like to build an application that solves the need for availability, issuing, and returning of books.</p>

Additional Remarks/ Inputs

Please tell us about any other factors that we should take into consideration (e.g., if you really would like to work on a project for some particularly convincing reason).

.....

We aim to provide an engaging student experience with single point of access and hub to all applications, information and content. A student portal provides personalized/customized student services. It can also help in management of various tasks with an easy user-interface.

.....

2. Planning Phase

2.1 Project write-up

Problem Statement:

“Manual College systems were paper-based and difficult to maintain, expensive, more manpower required and unable to handle large records, the previous system was not efficient, not effective and there were issues of redundancy and consistency.”

As digitization has evolved in every sector of the economy, many sectors are adopting technology for its smooth functionality. Along with various other sectors, the education sector is also adopting technology at a rapid pace.

The advantage of the management system is to avoid entries in hard copies and it also saves the burden of hard copies of data.

Computerization and automated technology make things much easier for schools, colleges, and universities. It streamlines the whole administrative, academic, and financial day-to-day operations of educational institutions. A web kiosk, also known as a campus management solution automates the daily operations of educational institutions.

Objectives:

- Facilitates hassle-free management of the whole administrative process.
- Allows keeping relevant information about all the students, teachers, and staff members so that it can be accessed by the concerned authority anytime as and when required.
- By eliminating loads of manual work and repetitive tasks, the software helps in saving time, money, and resources.
- It allows all the members including students, teachers, parents, and staff to stay connected and enlightened about assorted aspects of an educational institute.
- It aids in enhancing the standard of an educational institution by reducing the monotony and difficulty of dealing with routine tasks.

Scope:

As Colleges are growing day by day more and more, and also increasing the complexity of storing information of students and related to the college system, they face many related issues: attendance and fee of students etc.

This project is based on the educational institute system where this application gives maximum services in a single software product that is used by teacher and system administration.

In this project that includes SQL. The SQL Server is used for creating the database in which different information will store. **The main focus of this project is to give the best GUI for the users and provide the many modules in a single product.** Admin can view all of the information that is stored in the database through application and admin also can modify this information because the admin has full access to the system.

The teacher can view and modify the information related to students; teachers have limited access. This project can adjust any additional module at any time.

Features:

- **Fees Collection Procedure:** The college management software is a trouble-free and secure way of processing fees from all students. The software helps to keep a record of payments received, create billing heads, enter the due amount and generate and edit fee structures.
- **Student's Attendance:** The software helps to track the attendance of students across different classes in real-time while eliminating the need for maintaining attendance records of students on paper.
- **Examination Management:** The software enables the authority to set up subject-wise examinations or tests and generate admit cards along with date sheets for each exam. Besides, it helps to generate results based on the percentile or grading system.
- **Timetable Generation:** The Software simplifies the time-consuming task of generating timetables for each class as it generates different time slots for each timetable for avoiding conflicts in timings for teachers. Besides, modifications can be done as required by the management.

Benefits:

- **Reduced workload and Enhanced Productivity:** If utilized in a proper manner, college management software enhances the efficiency of any educational institute. By reducing manual work and facilitating a smooth flow of academic and non-academic activities, this management system helps save time for the concerned authority and allows focusing on various other strategic tasks.
- **Smooth Communication:** The software makes it quite easier to transfer information among students, teachers.
- **Data Security:** There are a lot of data and information that an educational institution needs to maintain on a regular basis. By diminishing the need for endless paperwork and manual storage, the software allows storing all the data on the cloud. It is the smartest way of storing and using a large amount of data information.
- **Real-time Information:** The college management software can generate many instantaneous and real-time reports to help the administrative staff of an educational institute.
- **One-time Investment:** The ability to customize and support many modules, the college management software is a one-time investment. As it offers complete automation and allows for better decision-making.

3. Analysis Phase

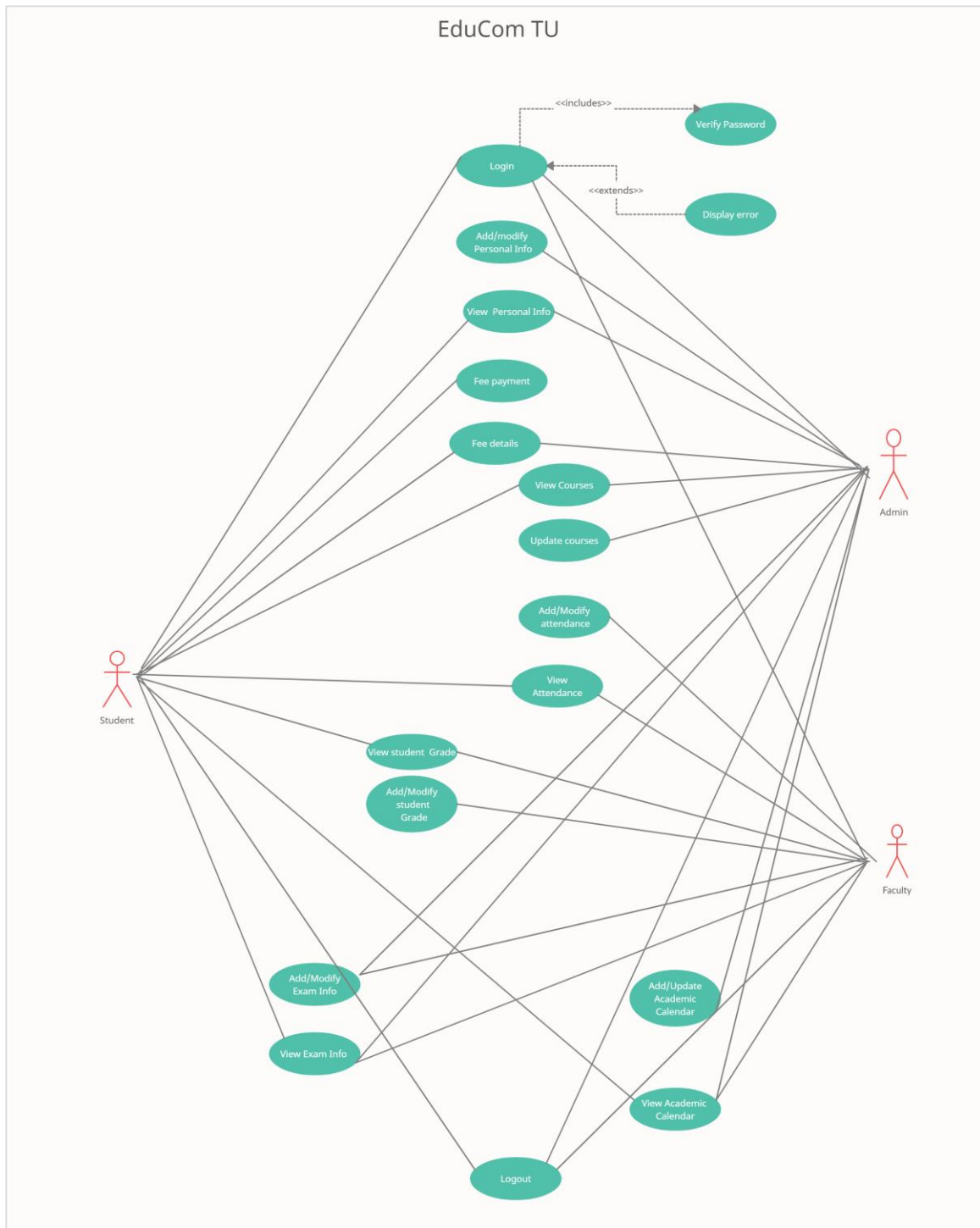
3.1 Use Case template:

1. **Use Case Title:** EduCom TU
2. **Abbreviated Title:** EduCom TU
3. **Actors:** Student, Admin, Faculty
4. **Datastores:** User database, Attendance database, Fee database, Exam/Grades database, Course database.
5. **Description:** to serve all the academic needs of students. It would have the assessment records, attendance, timetable and fee payment all under one domain. We aim to create an appealing GUI, easy to operate and well-designed.
 - 5.1 **Pre-Conditions:** User must be logged in(session).
 - 5.2 **Task Sequence:**
 1. Login page will be shown with User Criteria (Admin/Faculty/ Student) by the portal.
 2. Home page will show up with reminders and notifications.
 3. User can choose from different options available and get desired outcomes.
 - 5.3 **Post conditions:**
 1. User can view his/her desired results.
 2. User can go for another options.
6. **Authors:** Ishita Kaundal, Vishalakshi, Nivedita Verma, Twesha Arvind.

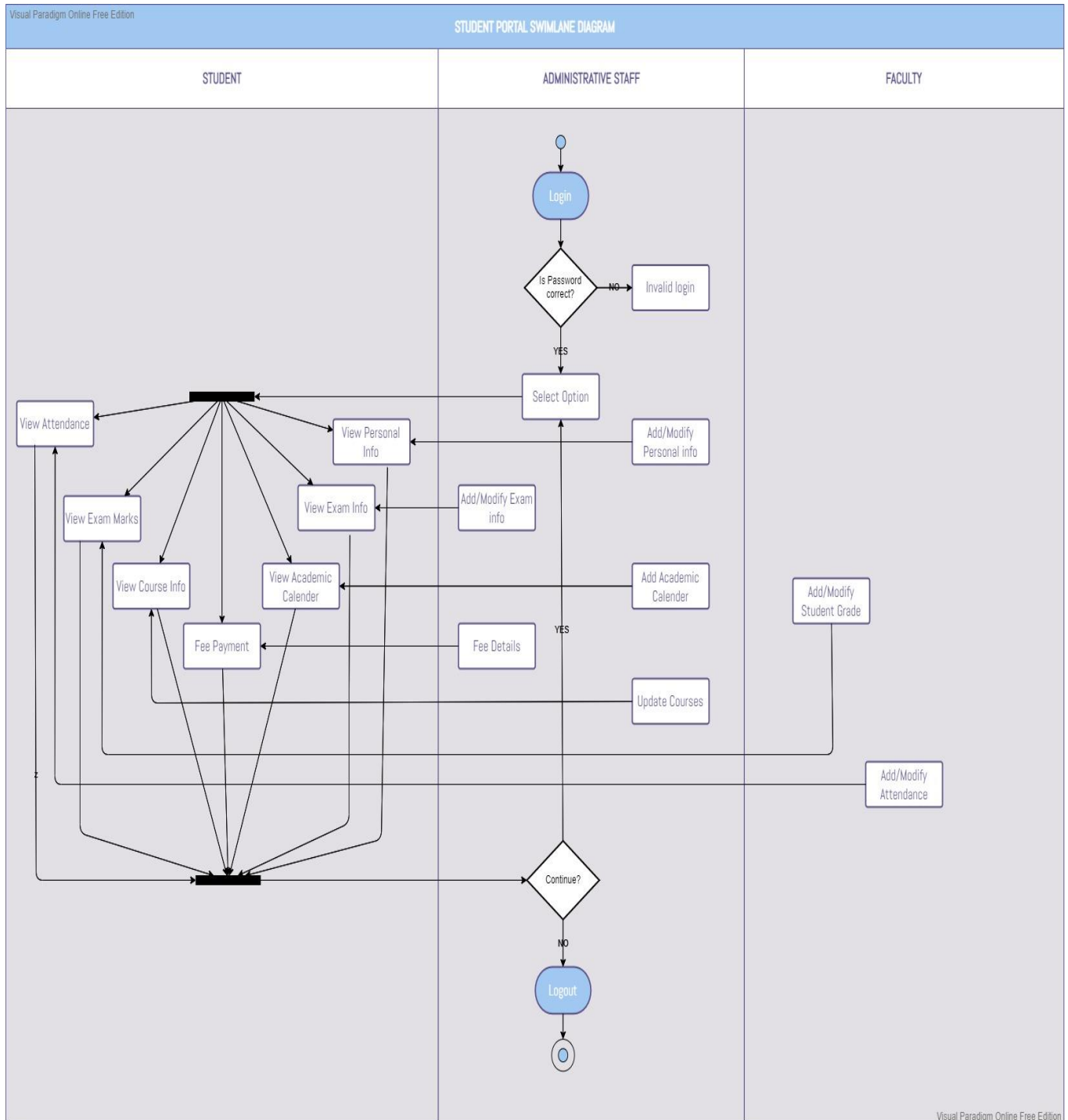
Use Case Scenarios:

1. **(AA):** User logs into portal.
2. **(SR):** The system provides a unique id to all users.
3. **(AA):** User logins using unique id.
4. **(SR):** System validates id and password and if correct takes user to home page.
5. **(AA):** Users selects different available options.
6. **(SR):** System shows desired outcomes.
7. **(AA):** User logs outs of the session.

3.2 Use Case Diagram

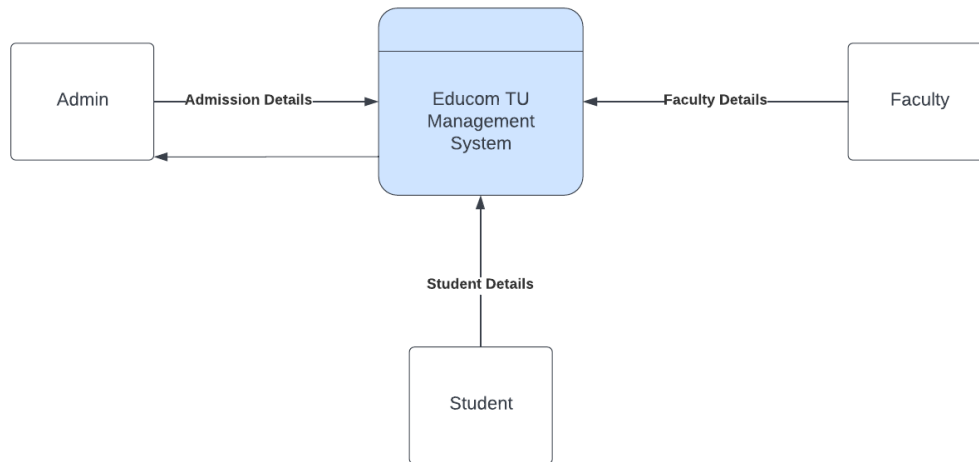


3.3 Swim Lane Diagram

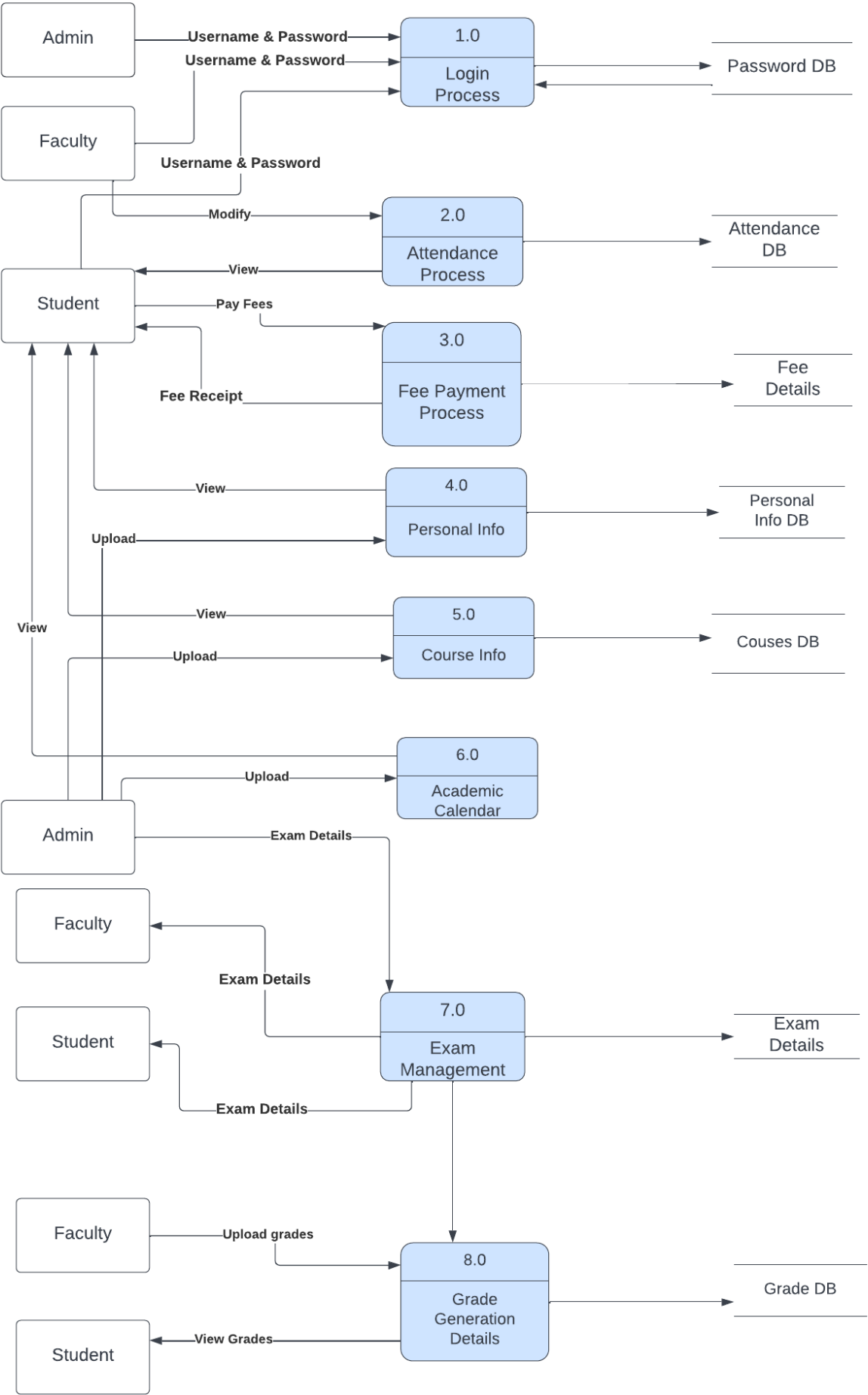


3.4 Data Flow Diagrams (DFD)

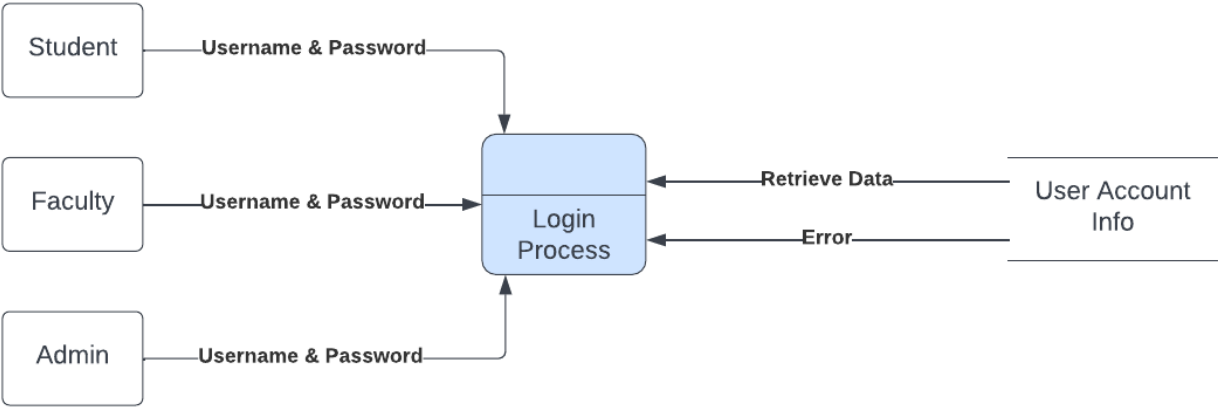
Level 0 DFD:



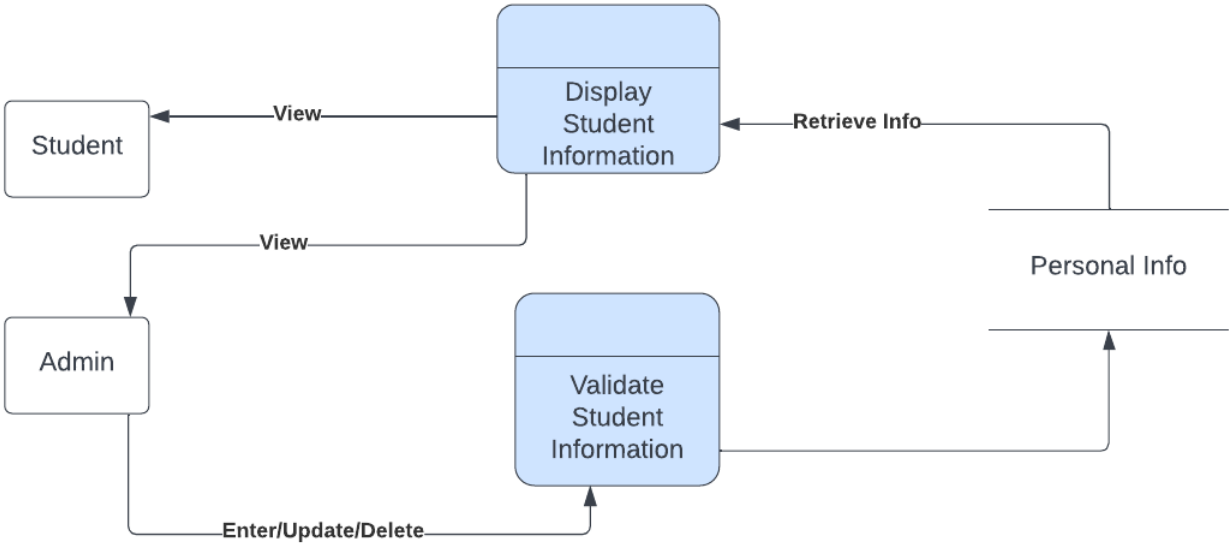
Level 1 DFD



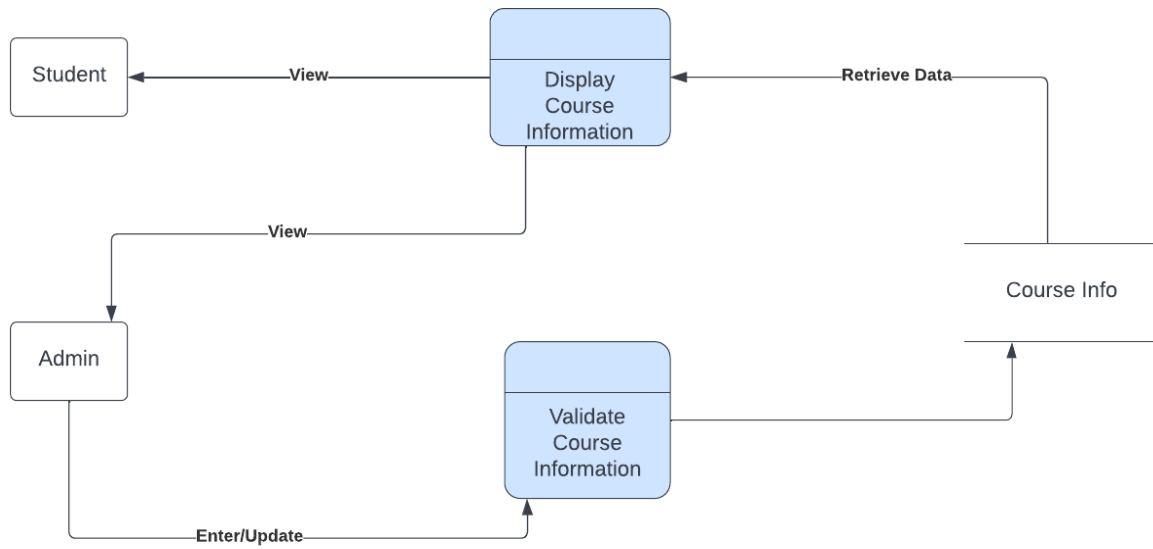
Level 2: DFD for Login Process



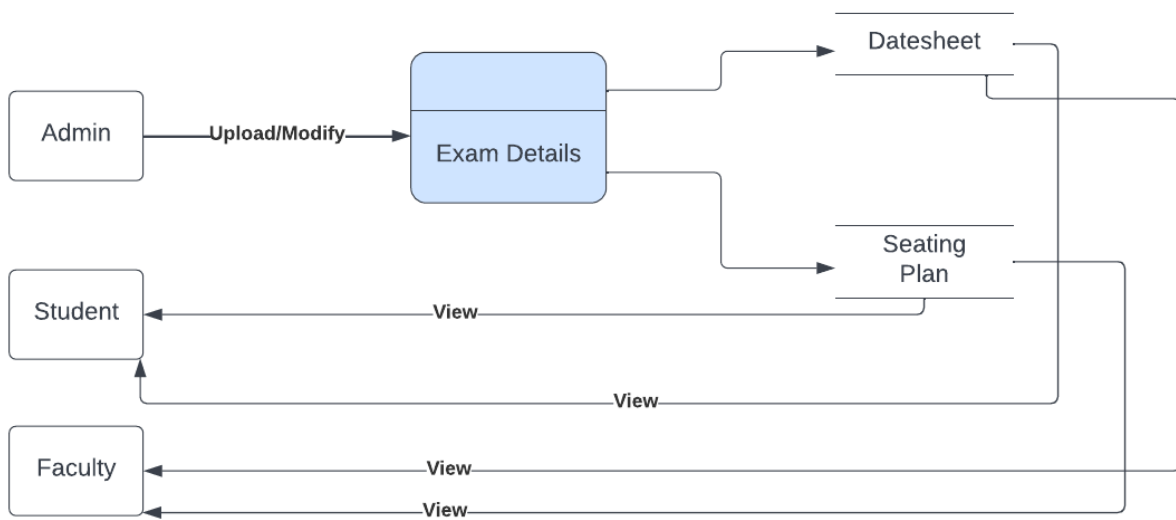
Level 2: DFD for Personal Info



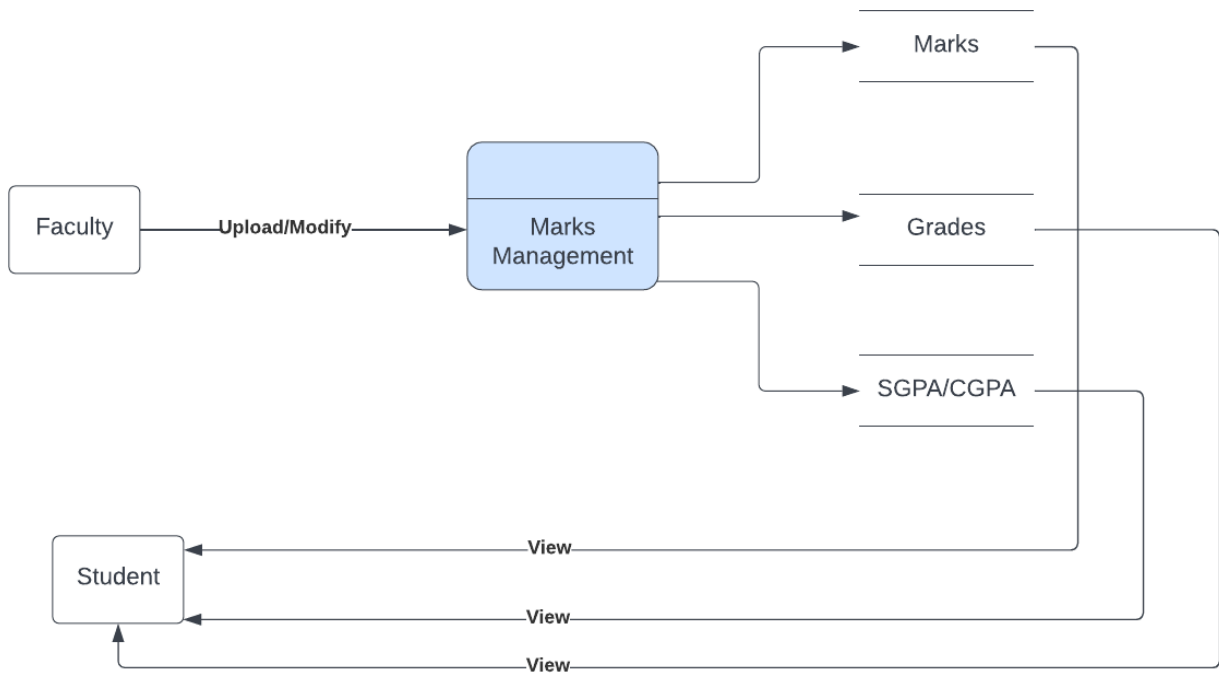
Level 2: DFD for Courses Information



Level 2: DFD for Exam Details



Level 2: DFD for
Grades Management



Software Requirements

Specification

EduCom TU

Prepared by:

Quad-

Ishita Kaundal (102017184)

Vishalakshi (102017189)

Nivedita Verma (102017192)

Twesha Arvind (102017195)

**Organization name: Thapar Institute of Engineering and Technology,
Patiala**

Date created: 24 Feb 2022

Table of Contents

Revision History

1. Introduction

- 1.1 Purpose
- 1.2 Document Conventions
- 1.3 Intended Audience and Reading Suggestions
- 1.4 Product Scope
- 1.5 References

2. Overall Description

- 2.1 Product Perspective
- 2.2 Product Functions
- 2.3 User Classes and Characteristics
- 2.4 Operating Environment
- 2.5 Design and Implementation Constraints
- 2.6 User Documentation
- 2.7 Assumptions and Dependencies

3. External Interface Requirements

- 3.1 User Interfaces
- 3.2 Hardware Interfaces
- 3.3 Software Interfaces
- 3.4 Communications Interfaces

4. System Features

- 4.1 System Feature 1
- 4.2 System Feature 2 (and so on)

5. Other non-functional Requirements

- 5.1 Performance Requirements
- 5.2 Safety Requirements
- 5.3 Security Requirements
- 5.4 Software Quality Attributes
- 5.5 Business Rules

6. Other Requirements

Appendix A: Glossary

Appendix B: To Be Determined List

Revision History

Name	Date	Reason For Changes	Version
------	------	--------------------	---------

1. Introduction

1.1 Purpose

A portal is a web-based platform that **collects information from different sources into a single user interface and presents users with the most relevant information for their context.**

1.2 Document Conventions

font size: 12

font: times new roman

line spacing: 1.5

after space: 6

before space: 0

margin: 1 inch

alignment: justified

1.3 Intended Audience and Reading Suggestions

This document is created for the instructors of the course ‘Software Engineering’ for their review and monitoring progress of the project.

The software development team for their use in analysing the requirements.

1.4 Product Scope

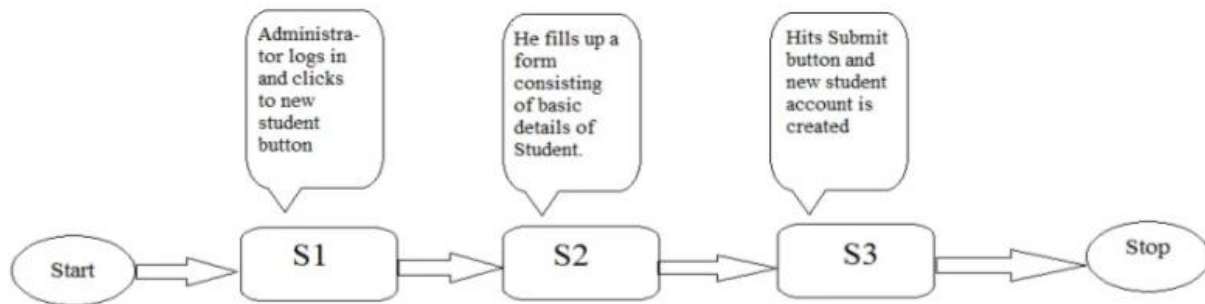
The scope of the to-be-developed 'EduCom TU' software package is:

- i) To cater to ALL types of Courses offered by the administration of TIET to its students.
- ii) To cater to the need of a suitable interface for all students and instructors of an offered course.
- iii) To facilitate effective administration to view any student details quickly.
- iv) To facilitate Students to pay the fees using the portal.

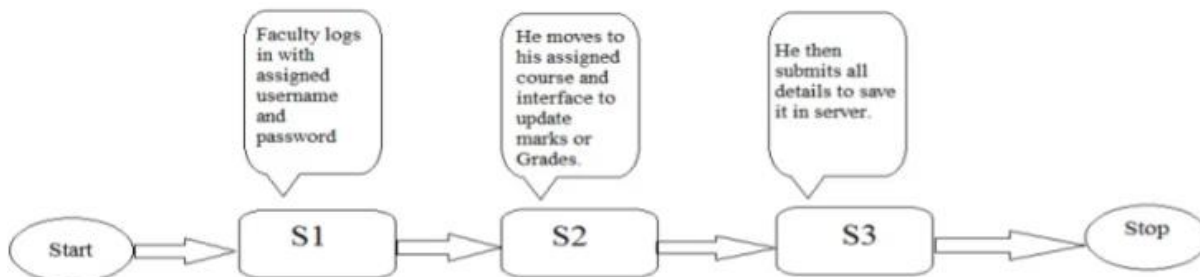
2. Overall Description

2.1 Product Perspective

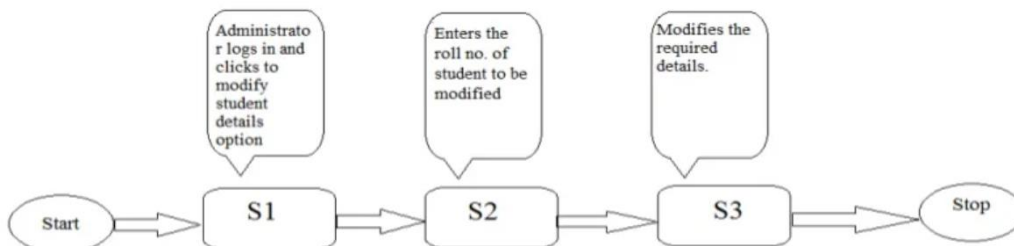
The Student Management Functions Part - I: Creation and Maintenance of Student Details:



The Student Management Functions Part II: Creation and Maintenance of Grade Details of Students:



The Student Management Functions Part III: Creation and Maintenance and Modifying Student Details:



2.2 Product Functions

This software package is expected to offer the following services:

1. for Administrators of TIET:

- a) To facilitate the maintenance of important records of students currently studying in TIET.
- b) To maintain grade reports of any student and courses offered in any semester online.

2. for Faculties TIET:

- a) To keep track of improvement/decline in the performance of any student enrolled in their courses online.
- b) To provide their contact details to students and acquire students' contact details when needed.

3. for Students of TIET:

- a) Facility to go through their course progress and the grades and marks of various fields in the course.
- b) Facility to view their personal details and view some of them.

2.3 User Classes and Characteristics

- a) Faculty: These users will fill the marks of the students that are enrolled in the course, and will calculate the grades of a student and publish them.
- b) Administrator: In the aspect of the student, this user will create a profile for a new student; assign him/her the courses in which he/she has been enrolled. Admin can modify the details related to the registered student. And in the aspect of faculty, Admin can allot them courses to teach according to the particular session.
- c) Student: This user can see their profile and progress in particular or current curriculum via viewing his/her grades uploaded by the faculty on his/her profile and can contact the faculty if there are any issues related to it.

2.4 Operating Environment

This software package is expected to work in the following atmosphere:

- a) OS – Windows, MAC and Linux

b) HTML and CSS

The system will be designed and hosted on a website built with Hypertext Markup Language (HTML) and styled using Cascading Style Sheet (CSS). HTML will enable the user interface become able and working, the look and feel of the website will be improved using the CSS

c) JavaScript

JavaScript will be used in combination with HTML in the design and implementation of dynamic buttons and HTML. This will greatly enhance the usability of the website and allows for interesting buttons and drop-down menus to be created.

d) PHP

PHP is a programming language known as Hypertext Pre-processor and is used in conjunction with HTML. This will be used to improve and enhance the dynamic nature of the website. It will be used all round the system to build Login forms, Registration forms and any other forms that take inputs from users and insert them into the database. This therefore allows the website to access the robbery inside the database either to insert or get users data stored within it.

e) MySQL

This tool will be used to create and store all information that will be accessed by the student portal system. Procedures, Views & triggers creation are enabled by MySQL which allow information to be easily inserted, retrieved, pricing & discount calculated. MySQL allows several reports to be generated and printed off.

f) Macromedia

This will be used to create some graphics and animations which will be used during the design process of the web pages to add aesthetics to the system. Other dynamic content such as android weather/calendar app and audio/video instructions can be added using flash

2.5 Design and Implementation Constraints

The design time constraints are:

a) The software package should be designed so as to handle the access by -20 Instructors/staff, 1 Admin and -150 students concurrently.

2.6 User Documentation

a) This software package will come with a user's manual as a guide to its interface actions.

b) The details of the (i) Analysis, (ii) Design and (iii) Test Cases of this software package will be delivered along with this software.

2.7 Assumptions and Dependencies

There are no assumptions made.

3. External Interface Requirements

3.1 User Interfaces

The set of User Interfaces consists of,

a) To log in to their respective accounts by users.

b) To add and modify courses, add fields to a course such as Quizzes, Attendance, Mid semester and End Semester exams schedule, syllabus and define their respective weightages in the course, save and publish the various data stored in the fields.

c) To read the published' data, by the students/Admin according to the permission of their respective accounts.

d) To generate the grade sheet by the admin for the particular semester for each student.

3.2 Hardware Interfaces

All components able to be executed on personal computers with Windows, MAC OS platforms and other platforms like Linux, Unix.

3.3 Software Interfaces

All the interfaces will be ASPX pages running within the internet browser. The SMS must integrate with the DB through SQL Interface. The system will be hosted in a web server running on Windows Server.

3.4 Communications Interfaces

This software package should be securely accessible through intranet communication channels (wired or wireless).

4. System Features

The requirements of this software package are described per each category of User:

- i) All requirements of the EduCom Portal for The TIET Administrative Staffs.
- ii) All requirements of the EduCom Portal for The TIET Student.
- iii) All requirements of the EduCom Portal for The TIET Faculty.

4.1 System Feature 1: All the Requirements of The Administrative Staff

4.1.1 Description and Priority

The TBD (to-be-developed) software package should facilitate The TIET Administrative staff to,

- i) To add a new Student's Personal details, Academic details, financial details in the EduCom Database.
- ii) Assigning username and password to each Student.
- iii) Viewing and Modifying Personal details, Academic details, financial details,
- iv) Adding Faculty and course information in the EduCom Database.
- v) Assigning username and password to faculty.

4.1.2 Stimulus/Response Sequences

S NO	Stimulus from User	Response from software
1	EduCom TU (Administrative Staff) logs-in using user-id and password (see Appendix-B for user-id and password rules)	Software will validate the user-id and password; Software will display the EduCom TU Administrative Staff Initial Screen by recognizing the user-id.
3	EduCom TU (Administrative Staff) will enter all the fields of the new Student including user-id.	Software will validate all the fields of the new Student (see Appendix-I for all the validation rules); default password will be generated which is same as user id; if there are any errors, the software will re-display the screen with the errors being high-lighted; else, the software will display a message that 'Student Details added to Database'.
4	If errors are displayed, the EduCom TU (Administrative Staff) will correct the errors and re-submits the student details:	Software will display the EduCom TU Administrative Staff Initial Screen.
5	EduCom TU (Administrative Staff) can choose View an existing Student Details.	Software will authenticate the user whether he / she is authorized to perform the chosen option or not and accordingly display either the associated next screen or an error message.
6	EduCom (Administrative Staff) can choose "Modify an existing Student Details"	Software will authenticate the user whether he / she is authorized to perform the chosen option or not and accordingly display either the associated next screen or an error message.
7	EduCom (Administrative Staff) chooses the 'Add Faculty Information option.	The software will display the form to enter the details of the Faculty and all the associated rule sets, else the Software will display an error message
8	EduCom (Administrative Staff) will enter all the fields of the new Faculty including user-id.	Software will validate all the fields of the new Faculty (see Appendix I for all the validation rules); default password will be generated which is same as user id; if there are any errors, the software will re display the screen with the errors being high-lighted; else, the software will display a message that Faculty Details added to Database'.
9	If errors are displayed, the EduCom (Administrative Staff) will correct the errors and re-submits the student details.	Software will display the EduCom Administrative Staff Initial Screen.

10	EduCom (Administrative Staff) can choose View an existing Faculty Details'.	Software will authenticate the user whether he / she is authorized to perform the chosen option or not and accordingly display either the associated next screen or an error message.
11	EduCom (Administrative Staff) can choose to Modify an existing Faculty Details.	Software will authenticate the user whether he / she is authorized to perform the chosen option or not and accordingly display either the associated next screen or an error message.
12	EduCom (Administrative Staff) can choose "Logout'.	Software will logout EduCom (Administrative Staff).

4.1.3 Functional Requirements

As per above table described in 4.1.3

4.2 System Feature 2: All the Requirements of The TIET Student

4.2.1 Description and Priority

The TBD (to-be-developed) software package should facilitate the MIS Portal for The TIET Student to,

- i) View his/her Personal details, Academic details, financial details in the Database:

4.2.2 Stimulus/Response Sequences

S NO	Stimulus from User	Response from software
1	The Student accesses the MIS Portal through the internet;	Software displays the following options: (a) User Id (b) Password.
2	The Student logs-in using user-id and password (see Appendix-I for user-id and password rules)	Software will validate the user-id and password:Software will display the Student portal's Initial Screen by recognizing the user-id;
3	The Student can choose the 'Personal information option.	The software will display the form where the information filled by administrative staff will be present also student will be allowed to edit some information like secondary email id, residential address and mobile no.:
4	The Student can choose the	In this menu there will be two tabs one for the courses

	*Academic Details' option.	which he had done and other for the courses which he is currently doing:
5	If The Student chooses the 'Courses done' option	Software will display him all the courses which he had done and grades he got in the courses. And in the last of the page software
6	If The Student chooses the 'Previous year mark seat' option	Software will display him a drop-down box in which he can select session and accordingly his course for that semester including SPI (Of that semester) will be shown:
7	If The Student chooses the 'Currently pursuing courses' option	Software will display him all the courses which he is doing in the current semester. And he can also view his marks which he got in the quizzes, semester; mid semester, end
8	The Student can choose the 'Financial Details' option	The software will display him. His fees and fines with the total at the end.

4.2.3 Functional Requirements

As per above table described in 4.2.3

4.3 System Feature 3: All the Requirements of The Portal for The TIET Faculty:

4.3.1 Description and Priority

The TBD (to-be-developed) software package should facilitate the Portal for The TIET Faculty to,

- i) View his/her list of courses assigned in the current semester. Faculty are authorized to edit his/her details such as: Name, Phone Number, Mobile Number, Email -id.
- ii) Faculty gets list of all the courses assigned to him/her.
- iii) On selecting particular course will get a list of student registered for that course.
- iv) Faculty can give/edit the marks of Sessionals , Midsem , Endsem of any student assigned to his/her course.
- v) Faculty are allowed to enter grades of each student at the end of semester.

4.3.2 Stimulus/Response Sequences

S NO	Stimulus from User	Response from User
1	The Faculty accesses the Portal through the internet;	Software displays the following options: (a) User Id (b) Password. Upon login will show MIS Faculty initial screen

2	Faculty can edit his/her details such as: Name, Phone Number, Room Number, Mobile Number, Email -id, Password as it fits.	Selecting update, the above field will be uploaded to database (see Appendix-I for all the validation rules);
3	Clicking 'Course' tab.	It will show his/her courses in the current semester.
4	Selecting particular course.	It will generate list of students registered for that course with fields of Midsem-1, Midsem-2, Endsem,-8 quizzes for each student.
5	Selecting 'Update' after entering the marks and grades.	The uploaded details will be added to database.
6	Assigning 'Final Grades' to students.	After selecting this option, faculty cannot edit the grades of students
7	(Faculty) can choose 'Logout';	Software will logout (Faculty).

4.3.3 Functional Requirements

As per above table described in 4.3.3

5. Other Non-functional Requirements

5.1 Performance Requirements

EduCom TU shall be built upon the web development technique and put on the web server online.

The system and the server must be capable of handling the real-time error functionality that occurs by the defined users. In addition, the system must be safety critical.

All failures reported by the server side must be handled instantaneously to allow for user and system safety

5.2 Safety Requirements

This software will ease the process of student grading. At the end of every semester each student will receive a grade sheet generated by the administration using the data uploaded by the course instructor on this software. All important details should be maintained in hard copy as well.

5.3 Security Requirements

A strong security mechanism should be placed in the server side of the system to keep unwanted users from hacking or damaging the system.

However, all users of the system should give and store the details of privacy related to personal information and many others.

However, our system can be accessed online so we need a very secured system as far as security is concerned.

5.4 Software Quality Attributes

NIL

5.5 Business Rules

There is no such business role.

6. Other Requirements

A degraded mode of operation should be possible in which each system can operate independently of central scheduling. The software shall have failure and error recognition codes acting as a safety net, thus keeping the software from performing any major catastrophic functions.

Appendix A: Glossary

Definitions and Abbreviations

Definitions:

EduCom TU is an automated version of manual Student Management System. It can handle all details about a student. The details include college details, subject details, student personnel details, academic details, exam details etc.

Our system has three types of accessing modes, administrative staff, faculty and student. EduCom TU is managed by administrative staff and faculty. Their job is to insert, update and monitor the whole process. When a student login to the system he would view his details and cannot make any changes.

Abbreviations:

DB: Database

LM: Log in Module

RUM: Registered Users Module

NUM: Normal Users Module

AM: Administrator Module

SM: Server Module

Appendix B: To Be Determined List

Appendix 1: Username and Password Rules:

1. Username should begin with any letter.
2. Username should be unique for all users.
3. Username should be at-least 6 characters long.
4. Password should contain at least one special character and one number.
5. Password should be at least 6 characters long.

3.6 Data Dictionary (Process, data flow and data store)

➤ Database Processes

PROCESS	INFLOW	OUTFLOW	DESCRIPTION
Login	Login Credentials	Authentication successful/failed	<ul style="list-style-type: none"> ➤ Allows the user to log in student Portal
Attendance	User Request	Attendance Details	<ul style="list-style-type: none"> ➤ Student can see his/her attendance for different courses ➤ Faculty uploads attendance of students
Fee Payment	User Request	Fee Details	<ul style="list-style-type: none"> ➤ Student can pay fee using the links given and get the receipt ➤ Faculty/Administrative Staff can see fee details
Personal Info	User Request	Personal Information details	<ul style="list-style-type: none"> ➤ Student/Faculty can view his/her personal Information ➤ Administrative staff can add/modify personal information
Courses Info	User Request	Courses Information details	<ul style="list-style-type: none"> ➤ Student can view his/her Course Information ➤ Faculty/ Administrative staff can add/modify course information
Academic Calendar	User Request	Academic Calendar	<ul style="list-style-type: none"> ➤ Students/faculty can view the academic calendar . ➤ Administrative staff will upload the academic calendar
Exam Management	User Request	Exam details	<ul style="list-style-type: none"> ➤ Student/Faculty can view exam related details e.g. seating Plan ,date sheet etc. ➤ Administrative staff will upload details for students.
Grade Generation	User Request	Grade details	<ul style="list-style-type: none"> ➤ Students can view their grades for different courses ➤ Faculty can view/modify grades

➤ Data Flow

Data Flow	Starting Process	Ending Process	Description
Login Credentials		Login	User enters email id and password
Attendance record	User details	Attendance details	Attendance corresponding to the user details is shown
Course Information		Course description	Displays the content of courses chosen by user
Reminders		Administration	Upcoming tasks, activities, events are notified
Fee Receipt	Payment	Account management	Student/Parent receives a receipt when payment is complete
Fee Details	Payment		Fee payment status is shown to the user
Exam Result		Administration	Academic performance of student is displayed
Personal Details		User records	Displays the details of user
Time-table	Branch details	Administration	Provides the schedule of lectures and labs

➤ Database Store

1. Administrator Table

Field	Data type (size)	Constrains	Description
admin_id	Varchar(20)	Primary Key	Store Admin ID
admin_pwd	Varchar(20)	Not null	Store Password
admin_name	Varchar(30)	Not Null	Store Admin Name
address	Varchar(40)	Not Null	Store Address
phone_no	Integer(10)	Null	Store Phone Number

2. Student Table

Field	Data type (size)	Constrains	Description
Stu_name	Varchar(20)	Not Null	Store stu Name
St_pwd	Varchar(20)	Not null	Store Password
Address	Varchar(30)	Not Null	Store Address
Cont_no	Int (10)	Not Null	Store Contact details
Roll_no	Int(10)	Primary Key	Store Roll no
Course	Varchar(20)	Not Null	Store Course Details

3. Faculty Table

Field	Data type (size)	Constrains	Description
fac_id	Varchar(20)	Primary Key	Store Admin ID
Fac_pwd	Varchar(20)	Not null	Store Password
Fac_name	Varchar(30)	Not Null	Store Admin Name
Address	Varchar(40)	Not Null	Store Address
Phone_no	Integer(20)	Null	Store Phone Number

4. Course Table

Field	Data type (size)	Constrains	Description
Course_id	Varchar(20)	Primary Key	Store ID Number
Course_name	Varchar(30)	Not Null	Store Course Name
Department	Varchar(30)	Not Null	Store Department

5. Exam/Grade Table

Field	Data type (size)	Constrains	Description
Stu_name	Varchar(30)	Not Null	Store Student Name
Roll_no	Integer(10)	Primary Key	Store Roll Number
Marks	Integer(20)	Not Null	Store Marks
Course	Varchar(30)	Not Null	Store Course Details

6. Attendance Table

Field	Data type (size)	Constrains	Description
Roll_no	Integer(10)	Primary Key	Store Roll Number
Stu_name	Varchar(30)	Not Null	Store Student Name
Course	Varchar(30)	Not Null	Store Course Details
Percentage	numeric(20)	Not Null	Store Attendance Percentage

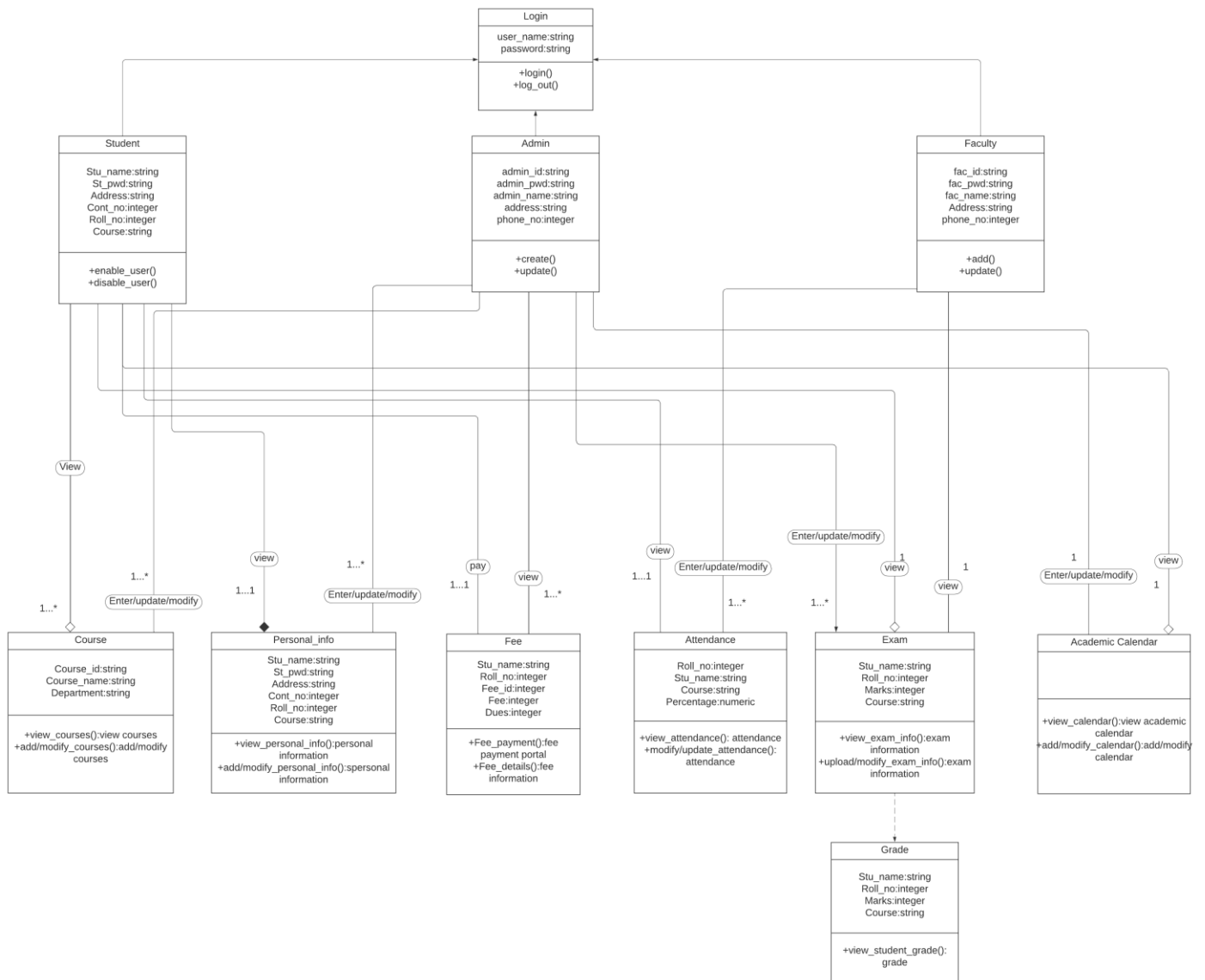
7. Fee Table

Field	Data type (size)	Constrains	Description
Stu_name	Varchar(30)	Not Null	Store Student Name
Roll_no	Integer(10)	Primary Key	Store Roll Number
Fee_id	Integer(11)	Unique	Store Fee id
Fee	Integer(10)	-	Store Fee
Dues	Integer(10)	-	Store dues if any

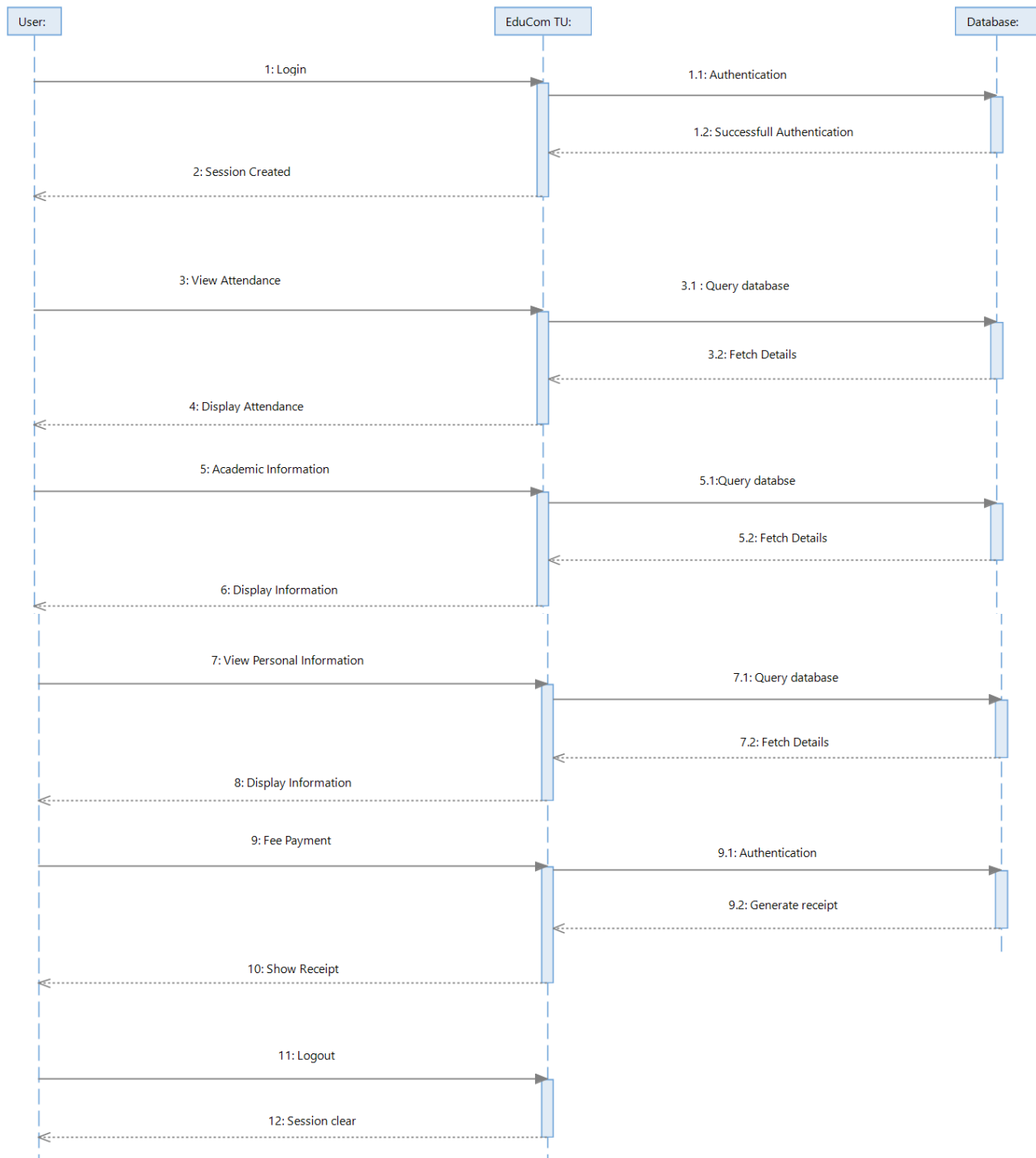
4.Design Phase

4.1 Class Diagram

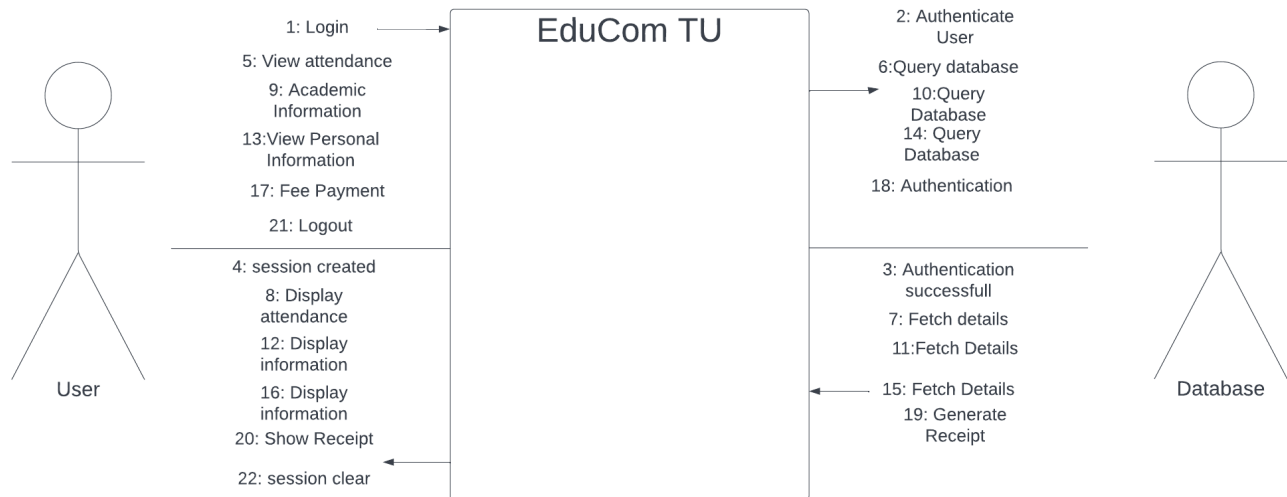
CLASS DIAGRAM



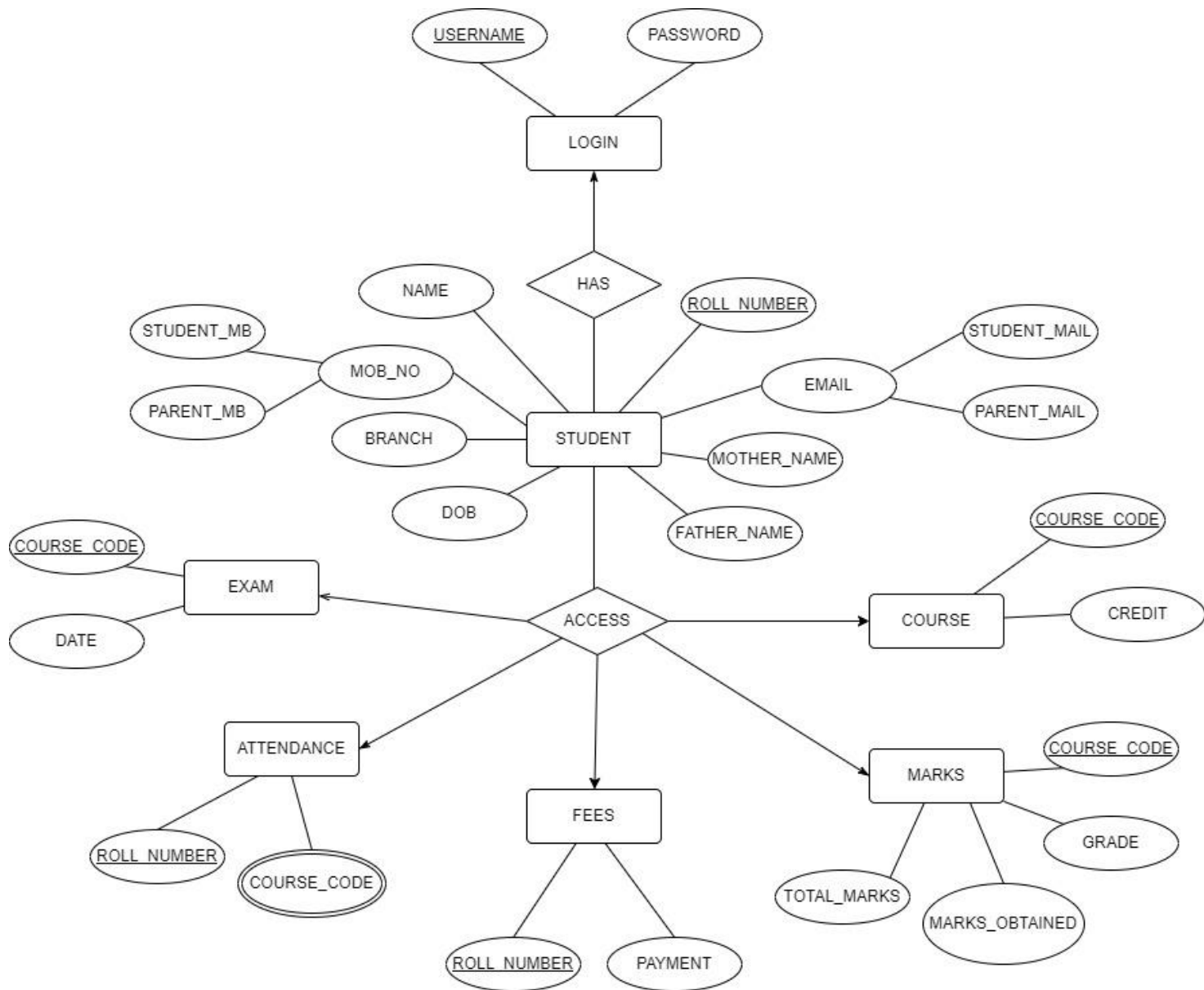
4.2 Sequence Diagram



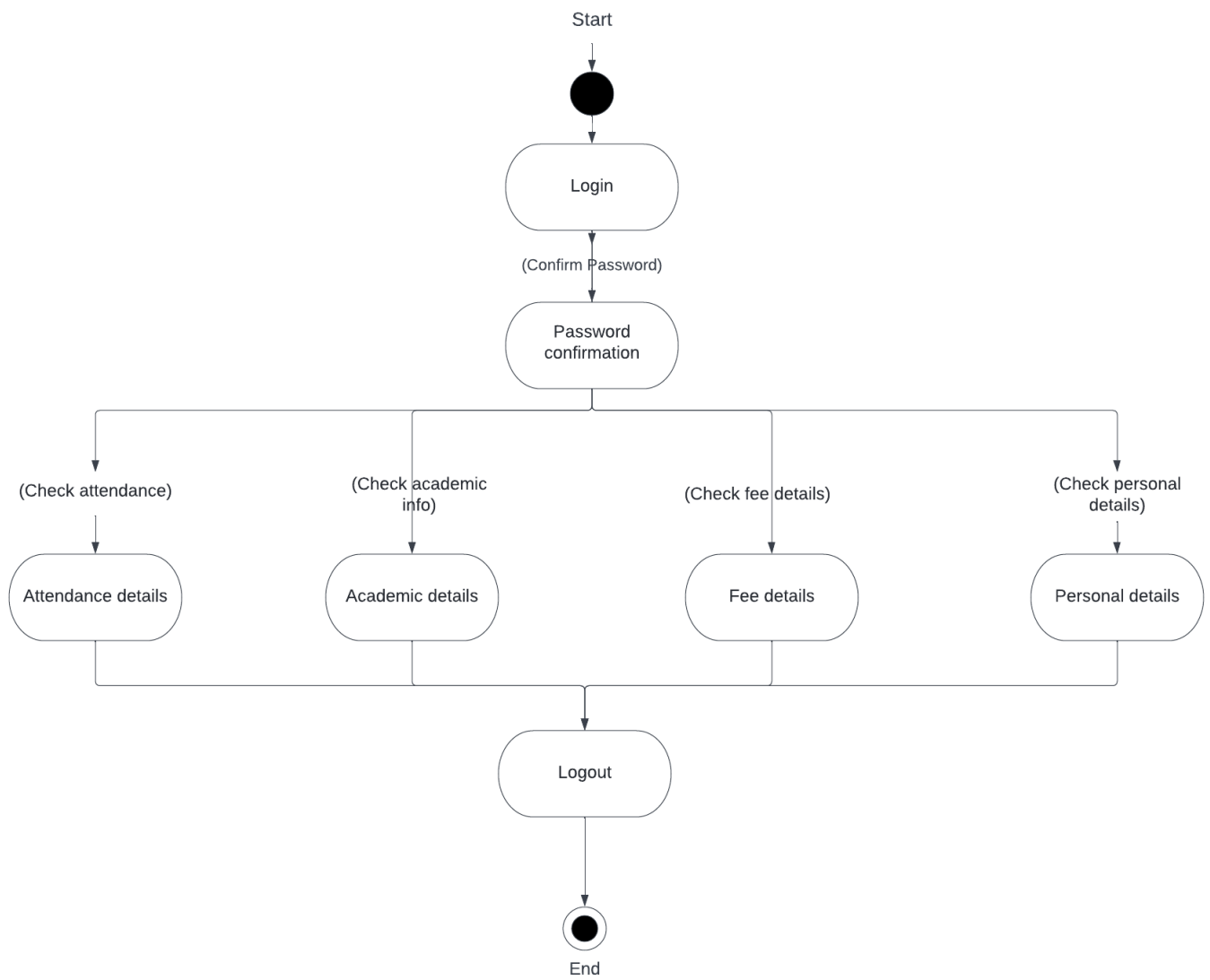
4.3 Collaboration Diagram



4.4 ER Diagram

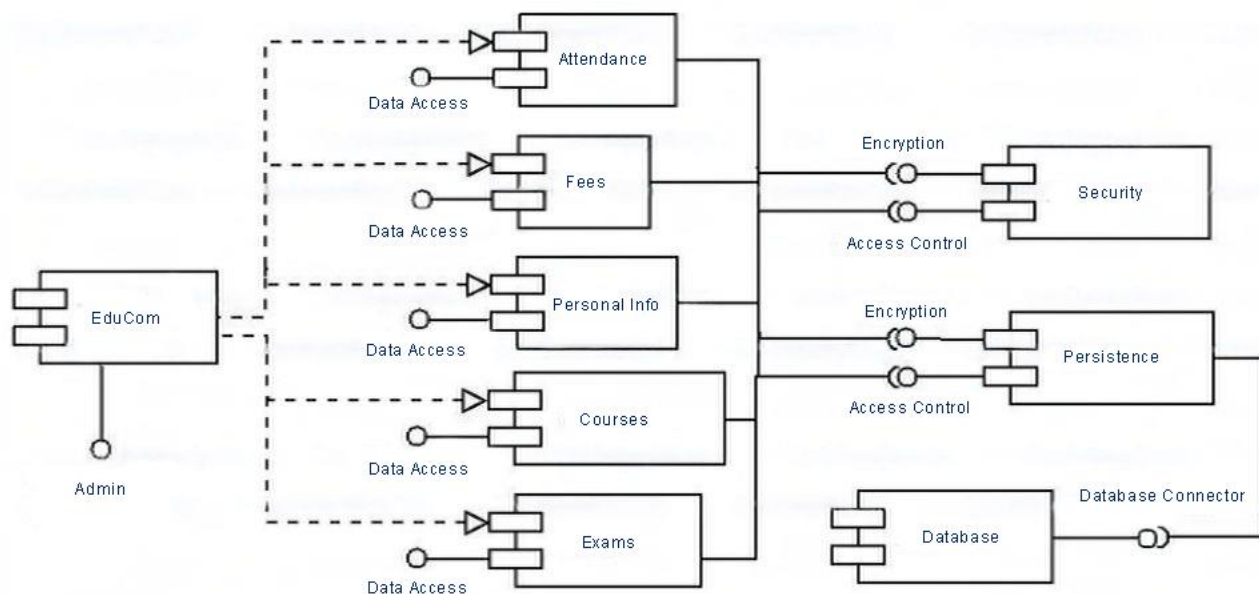


4.5 State Chart Diagram



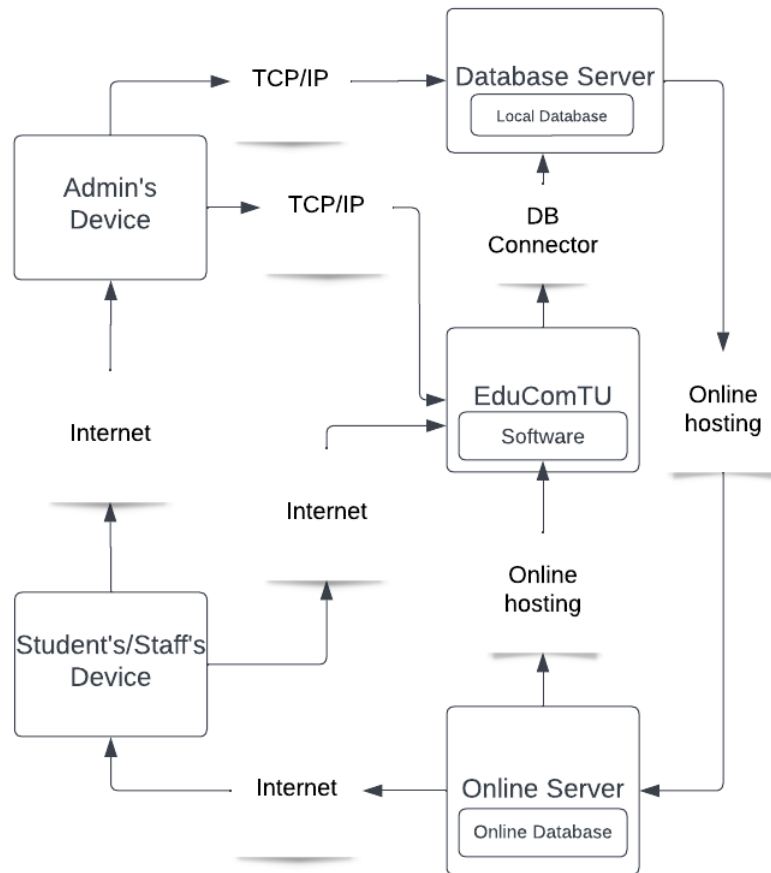
5.Implementation

5.1 Component Diagram



Component Diagram

5.2 Deployment Diagram



5.3 Screenshots



Login

Username

Password

Login

EDUCOM TU

PERSONAL DETAILS

ATTENDANCE

FEE DETAILS

COURSE DETAILS

EXAM DETAILS

ACADEMIC CALENDAR

EduComTU

Welcome to EduCom TU

EDUCOM TU

- [HOMEPAGE](#)
- [ATTENDANCE](#)
- [FEE DETAILS](#)
- [COURSE DETAILS](#)
- [EXAM DETAILS](#)

Personal Information



---Details---

Name: Hitesh
Roll Number: 10221785
Branch COPC
Date of Birth 2003-04-05
Father Name Deepak
Mother Name: Laxmi
Student E-mail: student2@mail.com
Student Contact No: 9746391426
Parent E-mail parent2@mail.com
Parent Contact No. 8745309531
Address: H.NO.-45, Shimla

EDUCOM TU

- [HOMEPAGE](#)
- [PERSONAL DETAILS](#)
- [ATTENDANCE](#)
- [COURSE DETAILS](#)
- [EXAM DETAILS](#)
- [ACADEMIC CALENDAR](#)

Your fees is pending!

Pay your fees here: [Click here to pay](#)



EDUCOM TU

- [HOMEPAGE](#)
- [ATTENDANCE](#)
- [FEE DETAILS](#)
- [COURSE DETAILS](#)
- [EXAM DETAILS](#)

MARKS

Course	Total Marks	Marks Scored	Grade
UCS503	100	65	B-
UCS310	100	74	B
UCS411	100	59	B-
UMA035	100	88	A





COURSE DETAILS

SE

Course Code: UCS503
Course Name: Software Engineering
Credit: 4

DBMS

Course Code: UCS310
Course Name: Database Management System
Credit: 4

AI

Course Code: UCS411
Course Name: Artificial Intelligence
Credit: 4

OT

Course Code: UMA035
Course Name: Optimization Techniques
Credit: 4

EDUCOM TU

- [HOMEPAGE](#)
- [PERSONAL DETAILS](#)
- [FEE DETAILS](#)
- [COURSE DETAILS](#)
- [EXAM DETAILS](#)

ATTENDANCE



UCS503 : 80%
UCS411 : 79%
UCS310 : 95%
UMA035 : 100%

EDUCOM TU

- [HOMEPAGE](#)
- [PERSONAL DETAILS](#)
- [ATTENDANCE](#)
- [FEE DETAILS](#)
- [COURSE DETAILS](#)

Exam Details



DATESHEET

UCS503 : 01-06-2022
UCS411 : 06-06-2022
UCS310 : 03-06-2022
UMA035 : 09-06-2022

6. Testing

6.1 Test Plan

Testing is done with an objective of finding most errors with minimum amount of time and effort.

WHITE BOX testing sometimes called glass-box testing, is a test-case design philosophy that uses the control structure described as part of component-level design to derive test cases. Using white-box testing methods, you can derive test cases that :

- (1) guarantee that all independent paths within a module have been exercised at least once,
- (2) exercise all logical decisions on their true and false sides,
- (3) execute all loops at their boundaries and within their operational bounds, and
- (4) exercise internal data structures to ensure their validity.

Basic Path Testing is a White Box testing technique that enables to derive logical complexity and defines basic test of execution paths. The test cases are prepared so that each execution path will occur at least once.

6.2 Test Case

Case 1:

User enters username and password

- The password and username is validated

If it is correct, then redirect to home page.

Case 2:

User enters username and password

- The password and username is invalid

If the credentials are invalid then restrict access and display message of wrong login details.

Case 3:

User leaves the details blank

- Throw an error message that this field is necessary.

6.3 Test Report

Sr No.	Test Case	Expected	Actual	Pass/Fail
1.	User login	Is true username and password provided?	Successfully login	Pass
2.	Invalid username/password case	If username/password is wrong, display error message	Error message	Fail
3.	View page case	Is requested page available?	Successfully view that page	Pass
4.	Test field	All information must be input	All information must be input	Pass
5.	Validation test cases	Mandatory field should not be blank	You have to enter some not null value	Pass

Screenshots:

Case1: Valid entry (Login successful)- Directs to homepage

Case2: Invalid entry



Login

Wrong Username or Password!

Username
heloo

Password

Login

Case3: Blank entry not accepted



Login

Username

hello

Password

Please fill out this field.

Login