A

Project Report

On

Faculty Management System

Submitted To:

Faculty of computer and information Tanta University

Submitted By:

Mohamed Mansour

Mohamed Sobhy

Basmala Hekal

Mariam Elsudany

Aya Saber

Under Guidance of: - Dr. Basma Elsharkawy

What is our project aimed to

Our project Seek to enhance the educational experience within our college community by introducing innovative solutions aimed at streamlining various academic processes. Recognizing the challenges faced by both students and faculty members in managing their academic responsibilities efficiently, Our project plans to ease these problems using technology and careful planning.

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CHAPTER-1

INTRODUCTION

Introduction

The goal of any system development is to develop and implement the system cost effectively; It most suited to the user's analysis is the heart of the process. Analysis is the study of the various operations performed by the system like as (add, update, delete, search faculty details) and maintain relationship within through the system. During analysis, data collected on the files, decision points and transactions handled by the present system.

The Faculty Management System can be entered using a username and password. It is accessible by an administrator.

Administrator only they can add data into the database. The data can be retrieved easily.

The data are well protected for personal use and makes the data processing very fast. This system objectives of easily & maintainable information.

1.1 PURPOSE

The purpose of this project is to address the administrative challenges faced by colleges and universities by developing a comprehensive management system. By implementing advanced technology, such as barcode-based attendance tracking and intuitive test creation modules, the system aims to revolutionize the way faculty members manage their daily tasks.

Beyond simplifying administrative processes, the project seeks to enhance the overall educational experience for both faculty and students. By providing a centralized platform for communication, faculty members can easily engage with students, share important announcements, and provide timely feedback. This fosters a collaborative learning environment that promotes student success and academic growth.

Overall, the purpose of this project is to empower colleges and universities with the tools and resources needed to optimize their operations, enhance faculty-student interactions, and ultimately, improve educational outcomes for all stakeholders involved.

1.2 SCOPE

The scope of the project included the development of a comprehensive college management system designed to streamline administrative processes and enhance interaction between faculty and students. Key features include an advanced attendance management module using barcode scanning or manual entry, and an easy-to-use quiz creation and management tool with support for different question types. The system will include data analysis capabilities to analyze student attendance patterns and academic performance trends, providing valuable insights for informed decision-making.

1.3 OBJECTIVES

1. **Streamline Administrative Processes:** Develop an intuitive college management system to automate routine administrative tasks such as attendance tracking, test creation, and communication, thereby optimizing faculty members' time and efficiency.
2. **Enhance Faculty-Student Interaction:** Facilitate seamless communication between faculty members and students through a dedicated platform, enabling timely feedback, announcements, and engagement opportunities to foster a supportive learning environment.
3. **Improve Data Analysis Capabilities:** Implement advanced data analytics tools to analyze student attendance patterns and academic performance trends, empowering faculty members to make data-driven decisions and interventions to support student success.
4. **Ensure Scalability and Customization:** Design the system with scalability in mind to accommodate the needs of institutions of varying sizes, while offering customization options to tailor the platform to specific institutional requirements and workflows.

1.4 DEFINITION, TERMINOLOGY, ABBREVIATIONS

Definitions:

1. **College Management System:** A comprehensive software solution designed to streamline administrative processes, facilitate communication, and enhance educational management within colleges and universities.
2. **Attendance Management Module:** A component of the college management system that allows faculty members to track student attendance electronically, record absences, and generate attendance reports.
3. **Test Creation Module:** A feature of the system that enables faculty members to design, create, and administer tests or assessments for students, including various question types and grading options.

Terminology:

1. **Barcode Scanning:** The process of using barcode technology to scan and record student attendance, typically through student ID cards or attendance sheets embedded with barcodes.
2. **Data Analytics:** The practice of analyzing raw data to uncover insights, trends, and patterns that can inform decision-making and optimize processes, such as analyzing student attendance and performance data.
3. **User Roles:** The roles assigned to different users within the system, such as faculty members, administrators, and students, each with specific permissions and access levels tailored to their responsibilities.

Abbreviations:

1. **CMS:** College Management System.
2. **AMS:** Attendance Management System.
3. **TCM:** Test Creation Module.
4. **QR:** Quick Response (referring to QR codes used for attendance tracking).

1.5 REFERENCES

1- Faculty of computer and information Tanta University

2- Google

3- Wikipedia

CHAPTER-2

FEASIBILITY STUDY

2.1 INTRODUCTION

Whenever a new system (a hardware or software) is to be introduced, there is a need to study the new system in every aspect or manner before working on it. We get the idea whether the project is adequate or not.

The feasibility study on 3mejor questions:

1. Does the candidate system meet the user requirement?
2. Is the problem worth solving?
3. The impact of the system on organization.

Weakness of our current system:

1-Manual Attendance Tracking:

Reliance on manual methods for tracking attendance, leading to inefficiencies, errors, and difficulty in maintaining accurate records.

2-Lack of Centralized Information:

Absence of a centralized system for students and faculty to access important information such as attendance records, grades, and assignment deadlines, leading to confusion and inconvenience.

3-Time-Consuming Administrative Tasks:

Administrative tasks related to attendance recording, grade management, etc, are time-consuming and prone to human error, diverting valuable time and resources from other academic activities.

4-Difficulty in Monitoring Attendance:

Faculty members may face challenges in accurately monitoring student attendance across multiple classes ,which leads to discrepancies in attendance records.

5-Inefficient Feedback Mechanisms:

Limited or inefficient feedback mechanisms for students to receive timely feedback on their performance.

what is the goal of our project?

1- Student Identification:

Incorporate a login system where students can authenticate themselves using their unique student IDs to access the application.

2-Attendance Tracking:

Develop a feature enabling faculty members to digitally record attendance for each student during classes.

3-Grades and Tasks:

Integrate a section allowing students to view their grades, assignments, and upcoming tasks conveniently.

4-Exam Results:

Implement functionality for students to access their exam results easily, facilitating tracking of academic performance.

5-ttendance Alerts:

Create a system that monitors students' attendance and sends alerts or notifications if their attendance drops below a defined threshold, encouraging regular attendance.

2.2 OPERATIONAL FEASIBILITY

Operational feasibility means is it possible to practically implement the project. While installing this software, the hardware and software requirements should be specified.

1. **User Acceptance:**

- **Faculty Members:** The system aims to simplify administrative tasks for faculty members, such as attendance tracking and test creation, which are integral to their daily operations. Feedback from faculty during the development phase has been positive, indicating a high likelihood of user acceptance.
- **Administrators:** The system provides comprehensive reporting and analytics capabilities to assist administrators in decision-making processes. Initial discussions with administrative staff have shown enthusiasm for the system's potential to streamline operations and improve efficiency.
- **Students:** The communication platform and user-friendly interfaces are designed to enhance student

engagement and communication with faculty members. While student acceptance may vary, the system's intuitive design and benefits to academic performance are expected to garner favorable reception.

2. **Resource Availability:**

- **Hardware and Software:** The system requires standard hardware components such as computers, servers, and networking infrastructure, which are readily available in most educational institutions. Additionally, the software can be deployed on common operating systems and web browsers, ensuring compatibility and ease of implementation.

Overall Our system will be easy to install and use. Hence our system is operationally feasible.

2.3 TECHNICAL FEASIBILITY

Possible Choices of Software:

4- **Programming Language:** A suitable programming language/framework for application development will be selected, such as JavaScript with Node.js for the backend and React or Angular for the frontend.

5- **Database Management System:** MySQL or PostgreSQL will be used for data storage and management.

6- **Communication Module:** Real-time messaging will be implemented using libraries like Socket.io or frameworks like Firebase Cloud Messaging.

7- **Development Tools:** IDEs such as Visual Studio Code or JetBrains WebStorm will be used for development, and

version control systems like Git will be utilized for collaboration.

Estimates of Users, Data, Transactions, etc.:

1- **Users:** The number of students and faculty members expected to use the application will be estimated.

2- **Data:** The amount of data to be stored, including user profiles, attendance records, grades, and communication logs, will be estimated.

3- **Transactions:** The frequency of transactions, such as login/logout, attendance marking, message sending/receiving, and data retrieval, will be estimated.

2.4 ECONOMIC FEASIBILITY

Our system cost is Intangible One-time .

1- **Development Costs:** Salaries for developers, designers and other team members involved in the development process.

2- **Hardware Cost** : TO implement the system we require more than one computer. Since the system will be implemented in existing environment there will be no need to buy the computers. The system is economically feasible to implement

Risks :

- **technical Risks: could be a Difficulty in integrating with existing university systems or databases.**
- **Security Risks: Privacy concerns related to the handling of sensitive student data and Risks of data breaches or cyberattacks compromising user information.**

- **Operational Risks: Operational disruptions due to server downtime, maintenance issues, or technical glitches.**

CHAPTER-3

SYSTEM ANALYSIS

3.1 INTERVIEW WITH OUR STACKHOLDERS

There are three Stackholders in our project :

1- Admin

2- Teaching assistant

3- Student

Interview for a Teaching assistant:-

Closed-Ended Questions:

- هل تستخدم حاليًا أي برامج أو أدوات محددة لمساعدتك في مهام التدريس أو الإدارة ؟ (نعم – لا)
- هل تفضل نظاما الكترونيا يدمج جميع جوانب ادارة الطالب علي مدار العام الدراسي؟ (نعم – لا)
- هل من الممكن عرض درجات اعمال السنه للطالب؟ (نعم – لا)
- هل من الأفضل يكون في قناة اتصال مباشره بين الطالب و عضو هيئة التدريس ام لا؟ (نعم – لا)

Open-Ended Questions:

- **ما هي المهام الأكثر استهلاكا للوقت التي تقابلها في مسؤولياتك اليوميه ؟**

  تسجيل الغياب والحضور للطلاب

- **كيف تتعامل مع المهام اليوميه مثل تسجيل الغياب والحضور؟**

  بطريقه ورقيه علي مدار الترم الدراسي وفي نهاية الترم الدراسي يتم تجميع غياب كل طالب

- **هل هناك جوانب محدده في عملك يمكن تحسينه من خلال سوفتوير؟**

  1- تسجيل الغياب والحضور بطريقه الكترونيه 2- ارسال الأشعارات الي الطلاب

- **هل تعتقد ان هناك فرصه لتحسين تجربة الطلاب من خلال استخدام السوفتوير في العمليه التعليميه وكيف؟**

نعم , عن طريق سوفت وير يدمج (تسجيل الغياب والحضور مع عرض عدد ايام غياب الطالب – تسليم التاسكات بسهوله مع ارسال رسائل تذكيريه بميعاد انتهاء التاسك –)

Interview for a Student:-

Closed-Ended Questions:

- بتفضل طريقة تقييمك تكون ورقي ولا الكتروني؟ (ورقي – الكتروني)
- هل ترغب في وجود تقارير دوريه لمتابعة حالة الطالب علي مدار العام الدراسي؟ (نعم – لا)
- ما هي انسب طريقه لتسجيل الغياب والحضور؟ (ورقي – الكتروني)

Open-Ended Questions:

- **ازاي السوفت وير يقدر يسهل عليك العمليه التعليميه؟**

بطريق كتير اهمها متابعة حالتي الدراسيه علي مدار الترم

- **ما هي اهم ميزه تتمني تلاقيها في السوفتوير الخاص ب الكليه؟**

ارسال تذكيرات بمواعيد تسليم التاسكات المطلوبه لكل الطلاب

- **ما هي اقتراحاتك لتحسين تجربة الطالب في الكليه؟**

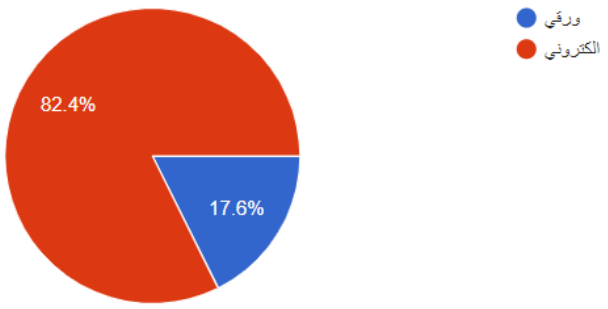
تجميع كل ما هو مرتبط ب المقرر الدراسي في مكان واحد سهل الوصول اليه

3.2 SURVERY

نسخ

5- من وجهة نظرك اي أنسب طريقه يتم تسجيل بيها الحضور؟

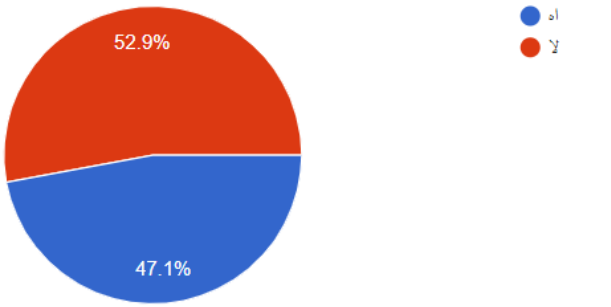
34 ردًا



نسخ

8- بتقابل صعوبه في الوصول للماتيريال الخاصه ب كل سكشن؟

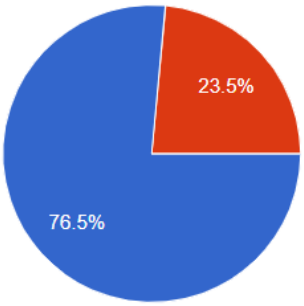
34 ردًا



9- بتقابل صعوبه في تذكر مواعيد الكويزات وتسليم التاسكات؟

34 ردًا

نسخ

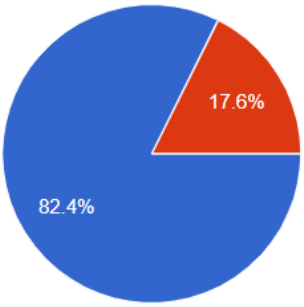


اه
لا

11- كليتك نظام التقييم والتسليمات فيها ورقي ام الكتروني

34 ردًا

نسخ

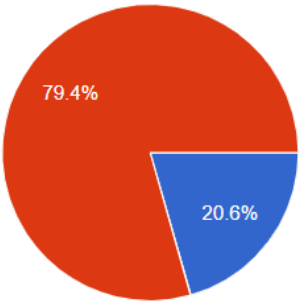


ورقي
الكتروني

10- هل من الأفضل ان يكون نظام الكليه ورقي ام الكتروني؟

34 ردًا

نسخ



ورقي
الكتروني

3.4 REQUIREMENTS DEFINITIONS

Functional Requirements:

1- User Authentication and Authorization:

• Users should be able to register and log in with their credentials (username and password).

• Different roles (e.g., students, faculty, administrators) should have appropriate access permissions.

2- Dashboard:

• Each user role should have a personalized dashboard displaying relevant information and functionalities.

• The dashboard should provide quick access to essential features such as course registration, grades, attendance, etc.

3- Course Management:

• Faculty members should be able to create, update, and delete courses.

• Students should be able to view available courses, register for them, and drop courses if needed.

4- Grading System:

•Faculty members should be able to input and update grades for assignments, quizzes, exams, etc.

•Students should be able to view their grades for each course and overall GPA.

5- Attendance Tracking:

• Faculty members should be able to take attendance for each class session.

• Students should be able to view their attendance records for each course.

6- Notifications and Announcements:

• System should send notifications and announcements to users regarding important events, deadlines, or updates.

• Users should be able to receive notifications through email, SMS, or within the system.

Non-Functional Requirements:

1- Performance:

• The system should be responsive and capable of handling concurrent user interactions without significant latency.

• Response times for loading pages and executing actions should be within acceptable limits.

2- Scalability:

• The system should be scalable to accommodate an increasing number of users, courses, and data volumes over time.

3- Security:

• User data should be securely stored and transmitted using encryption techniques to prevent unauthorized access.

• Access controls should be implemented to ensure that users can only access data and functionalities relevant to their roles.

4- Usability:

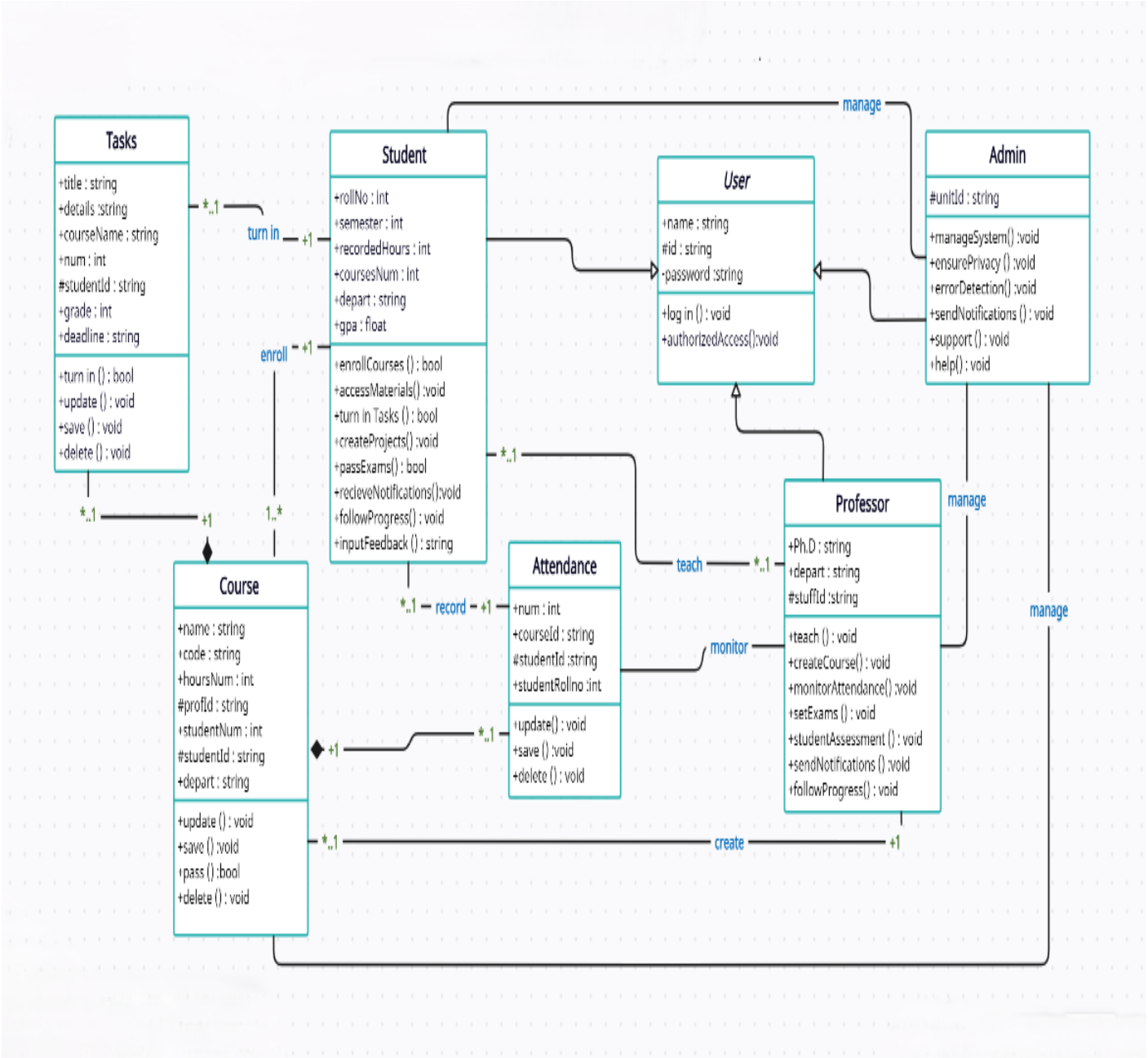
• The user interface should be intuitive and easy to navigate, with clear instructions and labels.

• Users should be able to perform common tasks (e.g., course registration, grade viewing) with minimal effort and learning curve.

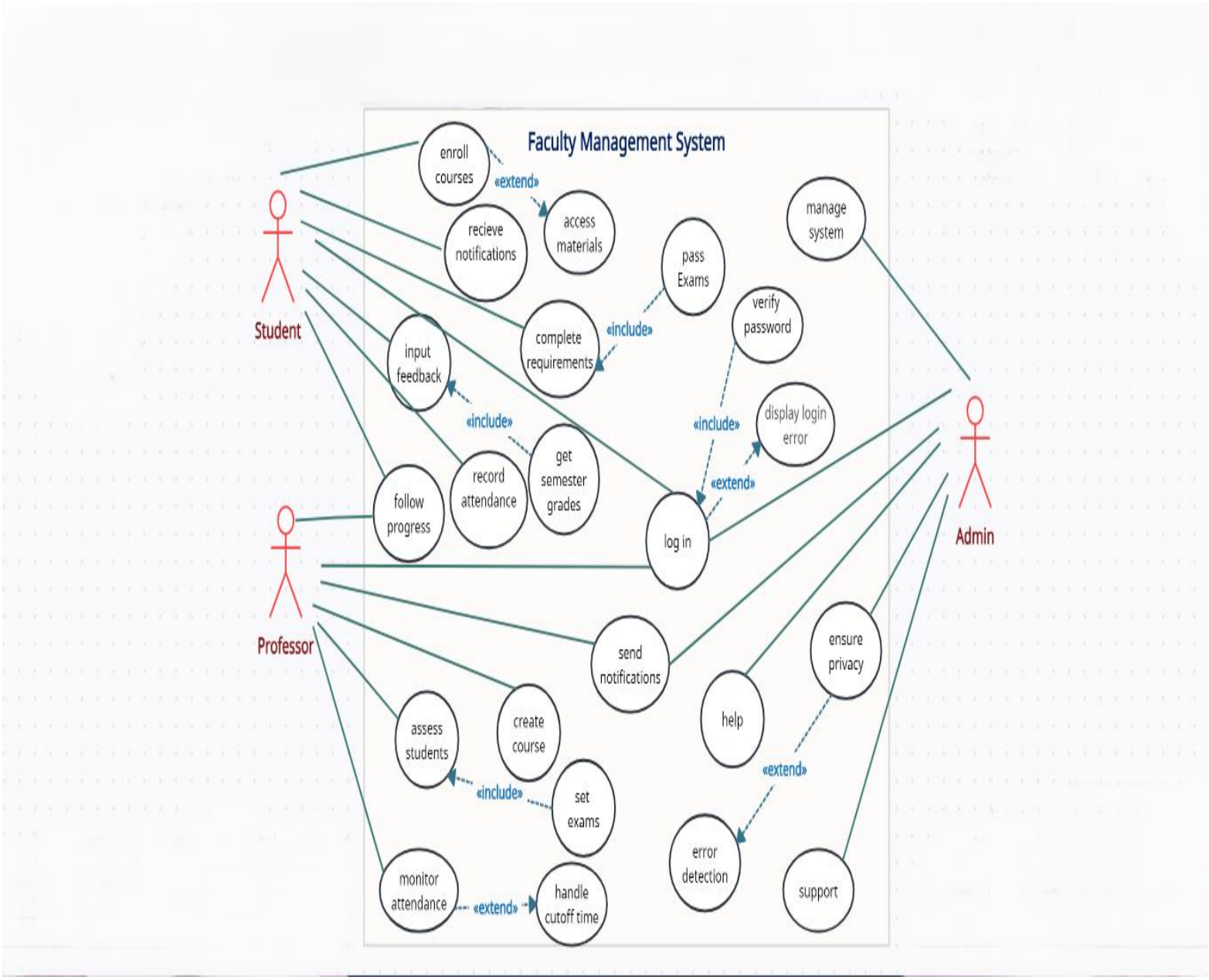
CHAPTER-4

SYSTEM MODELING

4.1 CLASS DIAGRAM



4.2 USE CASE + FLOW OF EVENT



FLOW OF EVENT:

Flow of event#1

Use case: enroll in courses.

Actors: student

Description: the student login to app and browses for available course for the semester to enroll in and register for courses in the system.

Flow of event#2

Use case: Receives notifications.

Actors: student

Description: when prof set task or put grades for exams , they will send notification to student through system app

Flow of event#3

Use case:Access materials.

Actors: student

Description:after enrolling the course the student has right to access to the matrials of the course like book , slides , sheets.

Flow of event#4

Use case:complete requirements.

Actors: student

Description: to pass the exam student should complete requirements like turn in task , attend lectures & sections and get a good grade in the test

Flow of event#5

Use case: record attendance.

Actors: student

Description: to record attendance student scan the QR code by QR code scanner or mobile app.

Flow of event#6

Use case: follow progress .

Actors: student

Description: to follow progress by system app there is a feature to view absence times and midterm grade and task that need to be turned in

Flow of event#7

Use case:create course .

Actors: Prof

Description: in the head of semester the prof chose course to teach which is suitable for his qualifications .

Flow of event#8

Use case monitor attendance .

Actors: Prof

Description: after students record the attendance of the session the prof could download the attendance sheet from system app

Flow of event#9

Use case send notifications .

Actors: Prof

Description: when prof add task or want to tell student any thing ,sending notification through the system app

Flow of event#10

Use case assess students.

Actors: Prof

Description: prof assess students through tasks , attendance ,projects ,sheets and the final test to pass the course

Flow of event#11

Use case login .

Actors: admin, prof, student

Description: The faculty member enters the faculty management system [display login]. The system verifies their password [verify password]. If the password is incorrect, an error message is displayed [include error message].

Flow of event#12

Use case manage .

Actors: admin

Description: The admin can ensure privacy [ensure privacy], send notifications [send notifications], and likely perform other actions not detailed in the diagram.

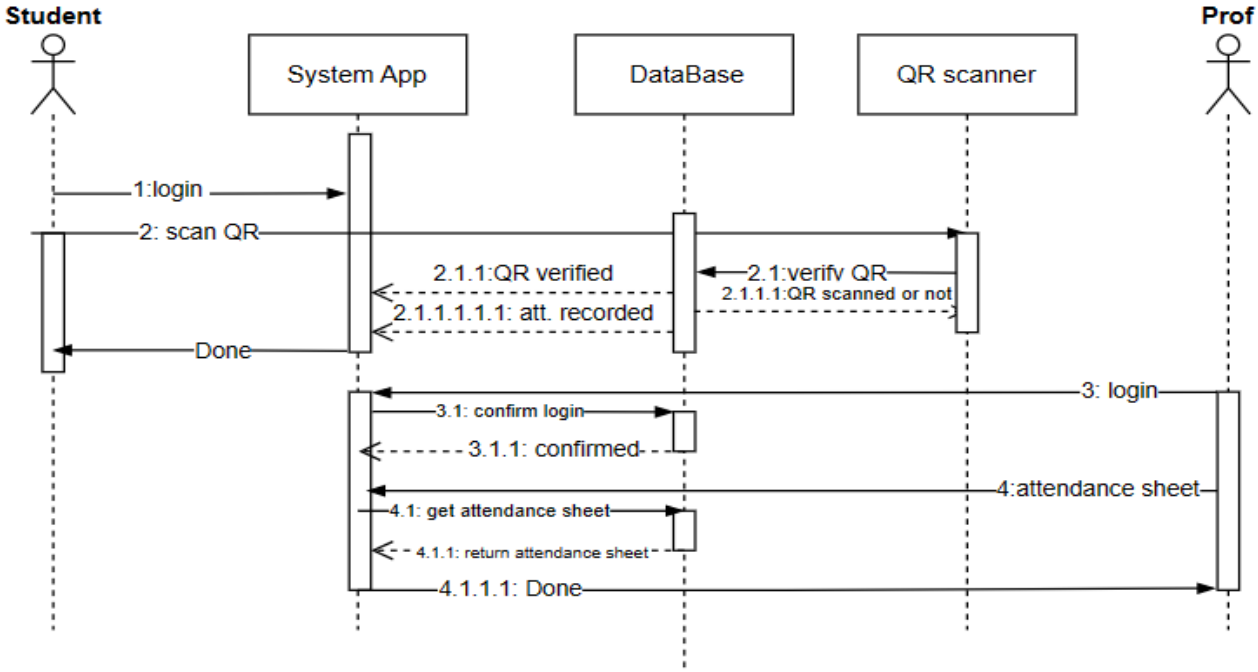
Flow of event#13

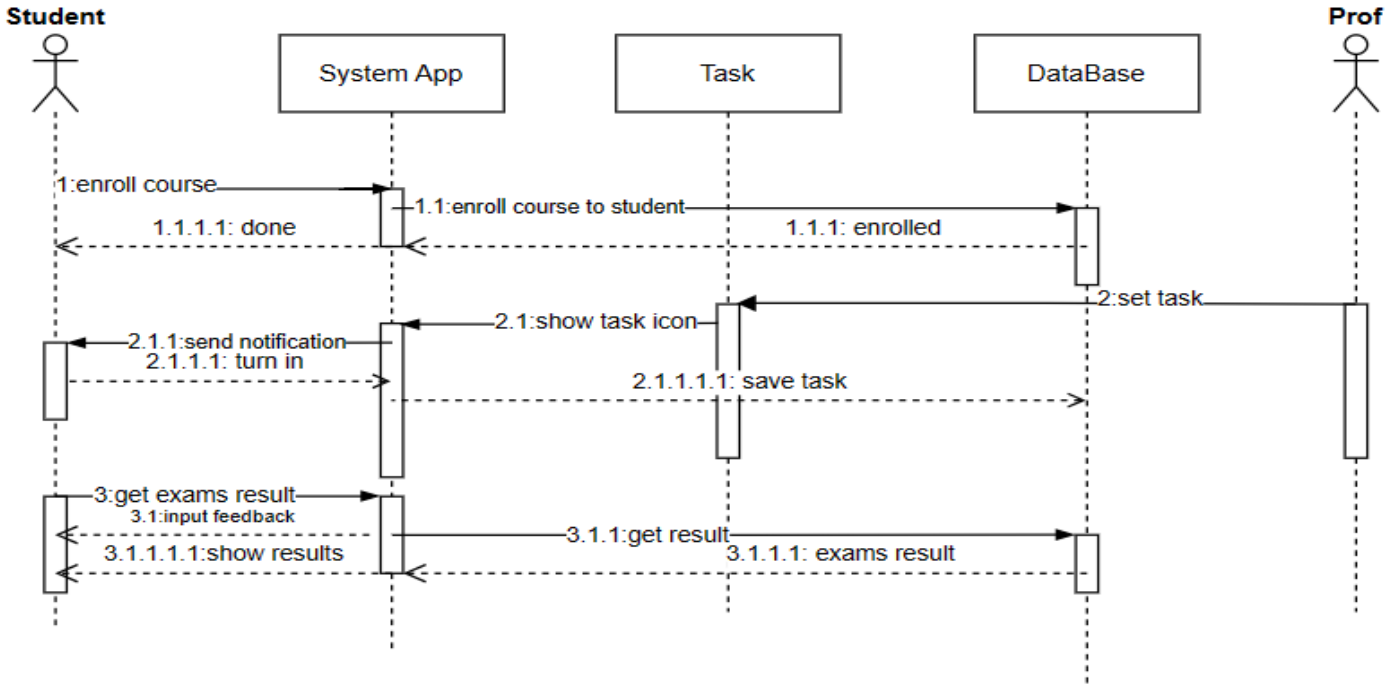
Use case help .

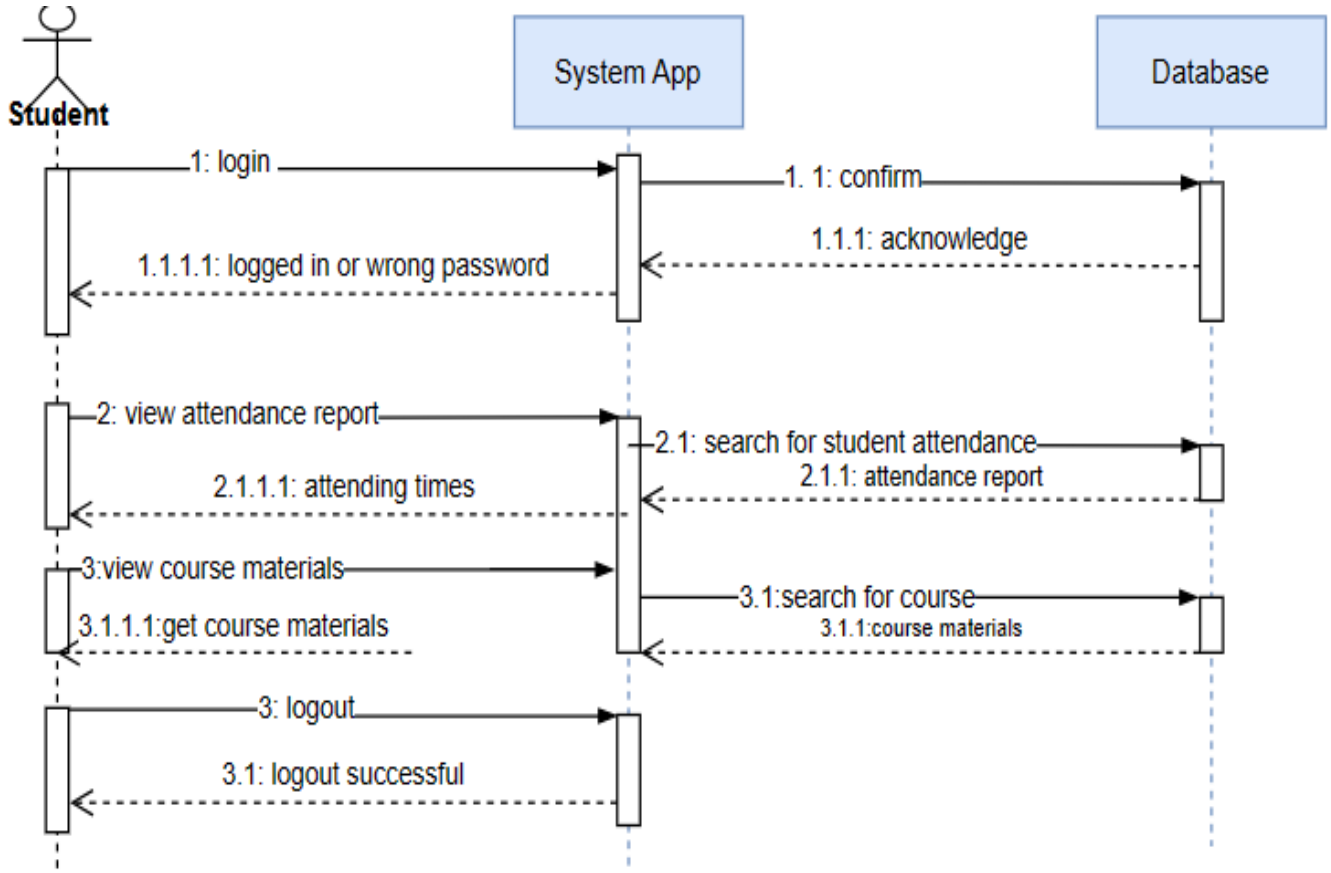
Actors: admin

Description: the admin(it unit) is the destination for student who face a problem dealing with the system.

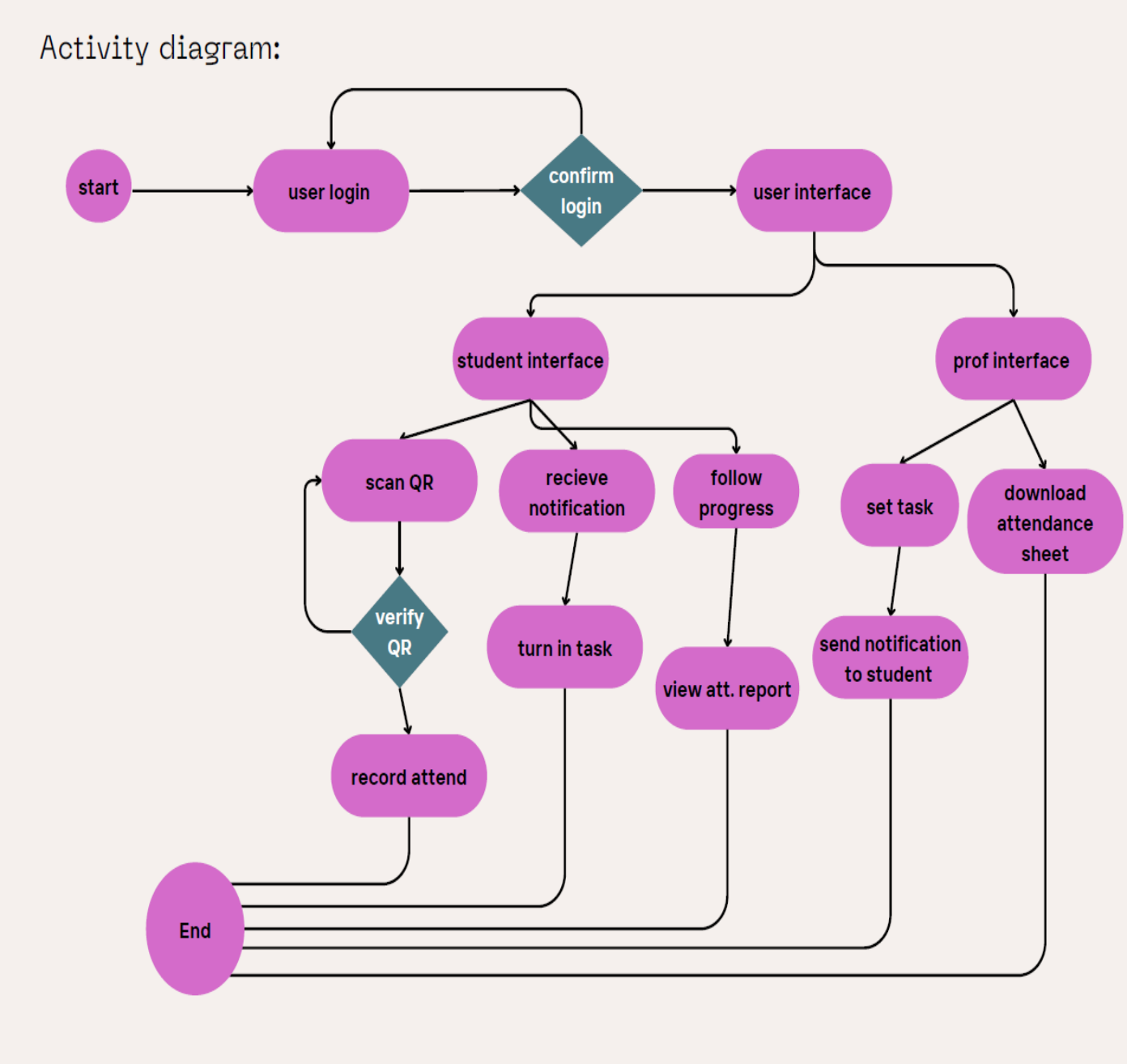
4.3 SEQUENCE DIAGRAM






Student
System App
Database
1: login
1. 1: confirm
1.1.1: acknowledge
1.1.1.1: logged in or wrong password
2: view attendance report
2.1: search for student attendance
2.1.1: attendance report
2.1.1.1: attending times
3:view course materials
3.1:search for course
3.1.1:course materials
3.1.1.1:get course materials
3: logout
3.1: logout successful

4.4 ACTIVITY DIAGRAM

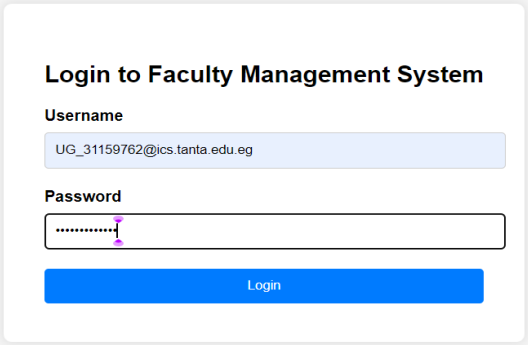


CHAPTER-1

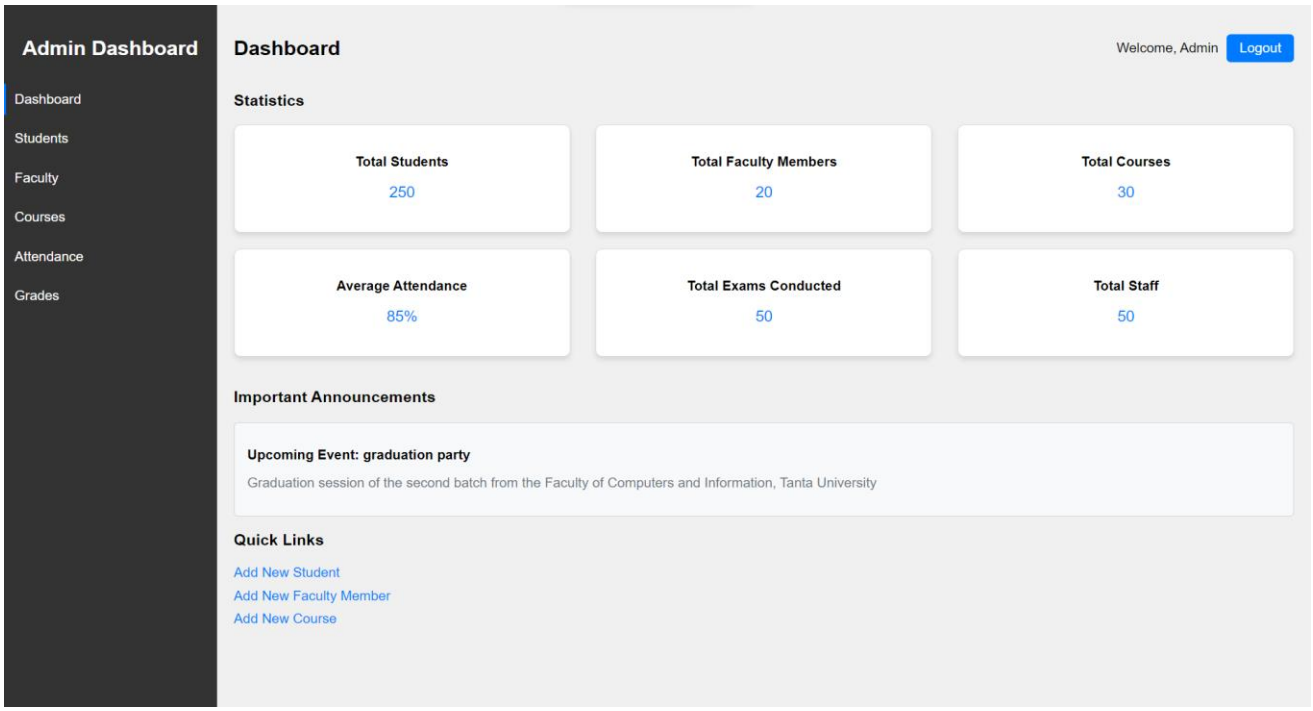
SYSTEM INTERFACE

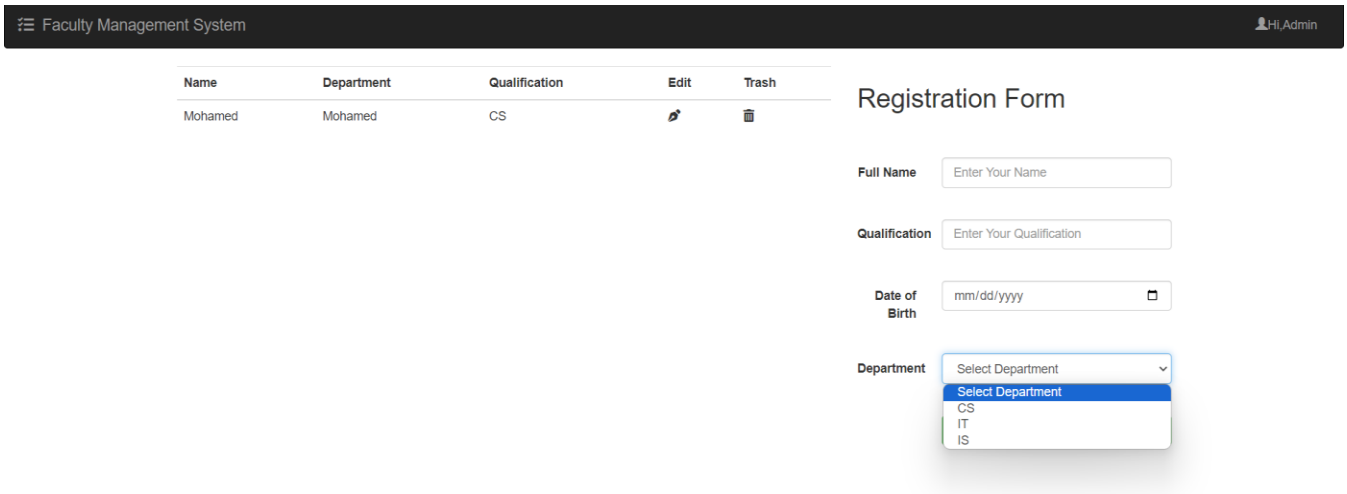
5.1 USER INTERFACE

Login Page

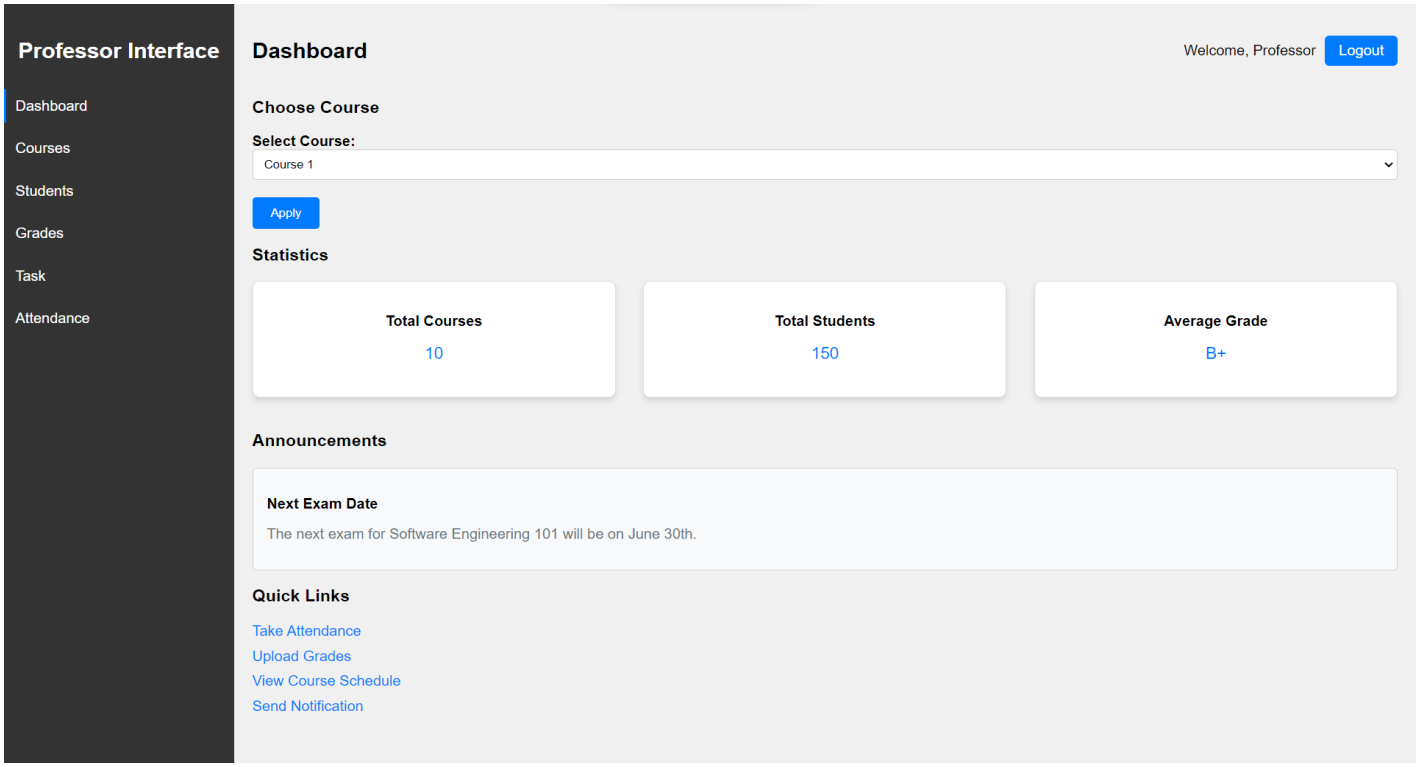


Admin Interface

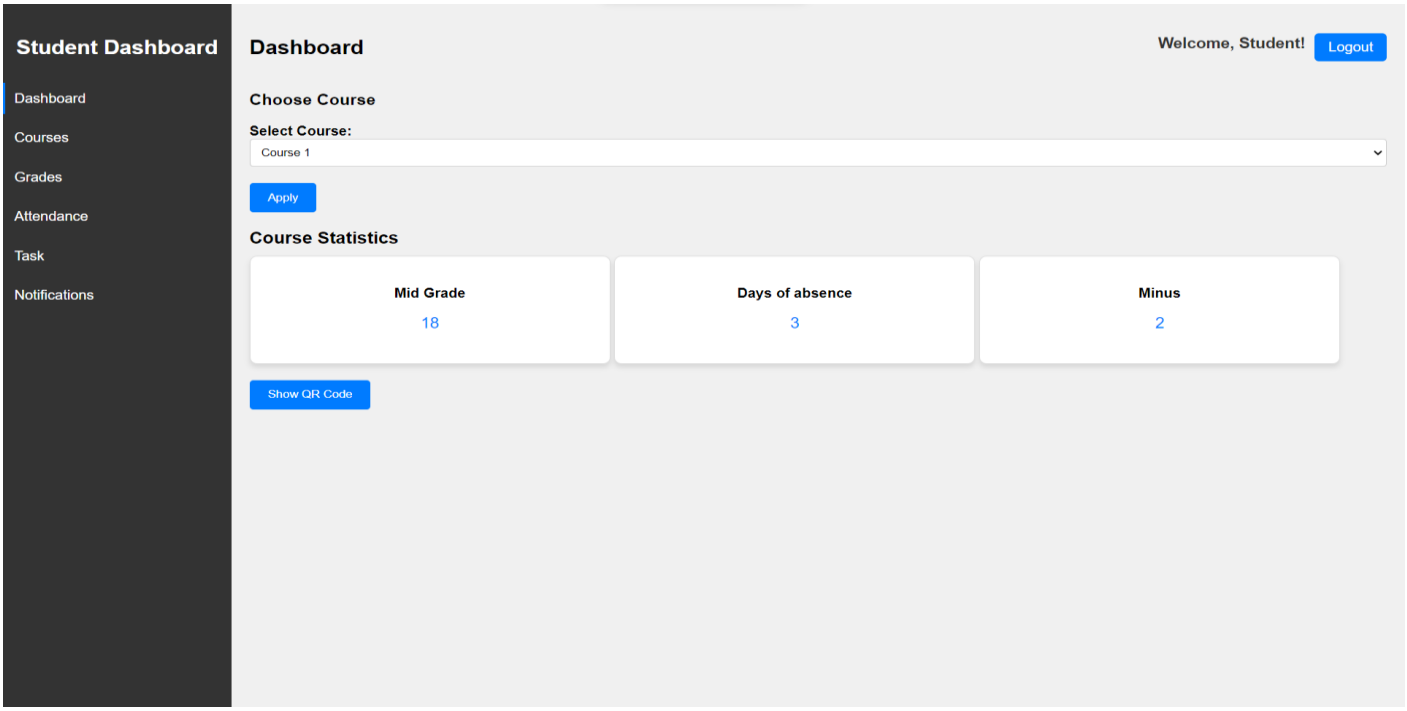




Professor Interafce

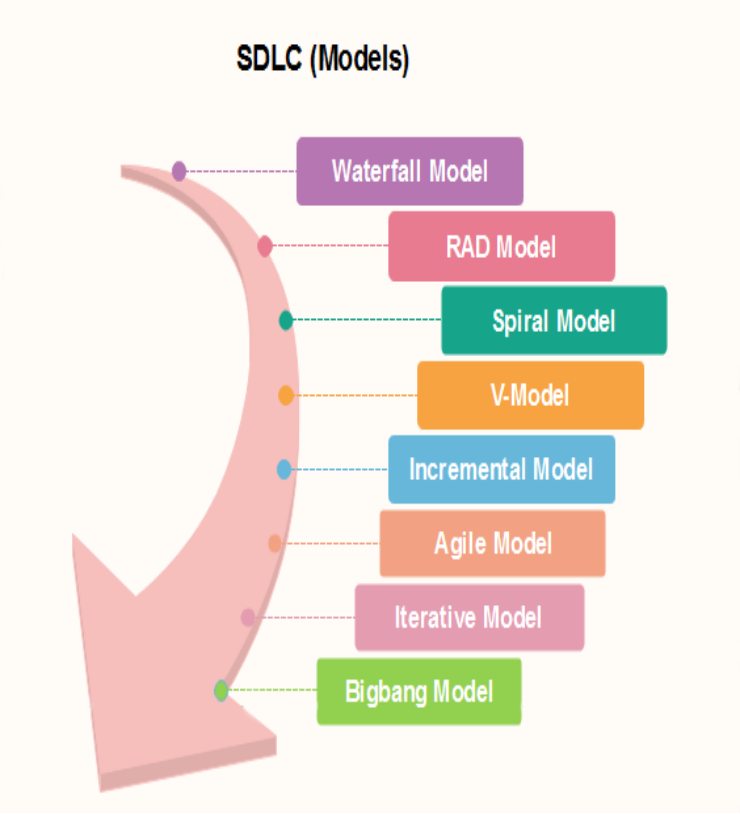


Student Interface



SDLC MODELS

Software Development life cycle (SDLC) is a spiritual model used in project management that defines the stages include in an information system development project, from an initial feasibility study to the maintenance of the completed application.



There are different software development life cycle models specify and design, which are followed during the software development phase. These models are also called "Software Development Process Models." Each process model follows a series of phase unique to its type to ensure success in the step of software development.

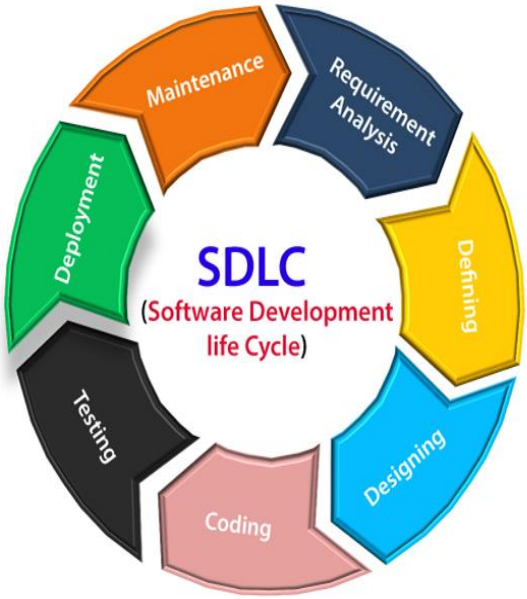
Need of SDLC:

The development team must determine a suitable life cycle model for a particular plan and then observe to it.

Without using an exact life cycle model, the development of a software product would not be in a systematic and disciplined manner. When a team is developing a software product, there must be a clear understanding among team representative about when and what to do. Otherwise, it would point to chaos and project failure. This problem can be defined by using an example. Suppose a software development issue is divided into various parts and the parts are assigned to the team members.

From then on, suppose the team representative is allowed the freedom to develop the roles assigned to them in whatever way they like. It is possible that one representative might start writing the code for his part, another might choose to prepare the test documents first, and some other engineer might begin with the design phase of the roles assigned to him. This would be one of the perfect methods for project failure.

The stages of SDLC are as follows:



- *Stage1: Planning and requirement analysis*
- *Stage2: Defining Requirements*
- *Stage3: Designing the Software*
- *Stage4: Developing the project*
- *Stage5: Testing*
- *Stage6: Deployment*
- *Stage7: Maintenance*

Our model:

The spiral model is one of the most crucial

SDLC models that provides support for

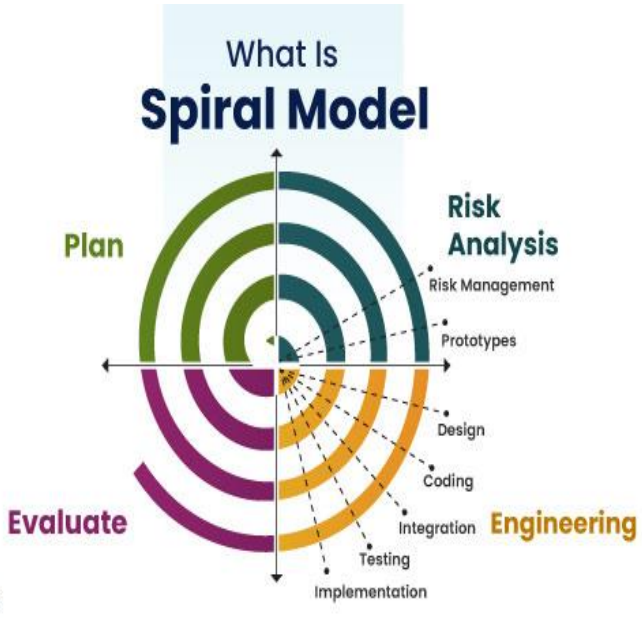
risk handling. It has various spirals in its

diagrammatic representation; the number

of spirals depends upon the type of

project. Each loop in the spiral structure

indicates the Phases of the Spiral model.



Why we use this model in our project?

- the project is large
- requirements are unclear and complex
- requirements changes may require at any time
- Iterative and Incremental Approach(flexibility and adaptability)
- Risk Handling
- Improved Quality