TECHNICAL UNIVERSITY OF KENYA

FACULTY OF APPLIED SCIENCES AND TECHNOLOGY

SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND INFORMATICS

PROJECT TITLE: SCIT COMPLAINT MANAGEMENT SYSTEM

PRESENTED BY:

ANGEL PRAISE ANGOYA

REG NO:

SCCI/03781P/2020

SUPERVISED BY:

MR. MUCHIRI

MR. KAPKIYAI

PROJECT SUBMITTED TO THE SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY IN PARTIAL FULFILMENT FOR THE BACHELOR OF TECHNOLOGY IN COMPUTER TECHNOLOGY PROJECT OF THE TECHNICAL UNIVERSITY OF KENYA

SUBMISSION DATE:13/01/2024

DECLARATION

I declare that this project as presented is my original work and it has not been presented anywhere else for any degree or diploma award. To the best of my knowledge and belief, the proposal contains no material previously published or written by another person except where due reference is made in the proposal itself.

Signature: _____

Date: _____

ANGEL PRAISE ANGOYA

SCCI/03781P/2020

Approval

This paper was reviewed and approved by the following lecturers:

Mr. Kapkiyai

School of Computing and Information Technologies

Technical University of Kenya

Mr. Muchiri

School of Computing and Information Technologies

Technical University of Kenya

ACKNOWLEDGMENT

I would like to convey my sincere gratitude to acknowledge my supervisors Mr. Muchiri and Mr. Kapkiyai for their continuous guidance, support, and motivation towards this project. I would also want to thank my family for their financial and moral support greatly. My sincere gratitude also goes to all my friends and classmates for the support during the research period and helpful insight. Above all, I would like to express my deepest appreciation to God for granting me good health, strength, wisdom, and knowledge to undertake this project.

LIST OF FIGURES

Table of Contents

ABSTRACT

Effective handling of student complaints is critical to creating a positive learning environment in the dynamic world of education. This project introduces a Student Complaint System, an innovative solution designed to simplify and enhance the process of handling student grievances within the academic institution of Technical University of Kenya. The goal of the system is to enhance response times, guarantee equitable handling of student issues, and raise overall student satisfaction. It is a web-based online complaint platform that will allow the end users or rather students to be able to submit complaints, track the progress of resolutions, and engage in a transparent communication process with relevant authorities at the comfort of the homes/workplace, anywhere and anytime.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Complaining is an act of expressing dissatisfaction or grievances about a situation or an event. It is a common aspect of human behavior. A complaint management system is a structured and organized approach employed by organizations to receive, document and respond to complaints or concerns from customers regardless of the industry. The SCIT complaint management system in the Technical University of Kenya will enable students to file for complaints or concerns they may have in their learning environment. The main purpose of the system is to ensure complaints are addressed in a timely manner to improve the relationship between students and the university. It not only aids in addressing individual concerns but also helps the institution in rectifying recurring problems and enhancing overall quality. The traditional way of filing for complaints has shown to be rather stressful on students since it requires many journeys and standing on long queues to relevant offices.

This can be averted by use of an interactive web based complaint platform that enables end users or rather students who have concerns with the institution to be able to file for complaints with ease. It will provide an efficient and user-friendly method for users to voice their concerns for problems they encounter in various areas of learning.

1.2 Background of study

1.2.1 Background

The Technical University of Kenya(TU-K) was established through the elevation of The Kenya Polytechnic University College(KPUC) to full university status in 2013. TU-K was established as the first technical University in Kenya in line with the provisions of the Universities Act,2012. The university was created with the objective to be a technological force behind the Vision 2030 drive and the general economic development of the nation. This has come about from the realization that most countries that have been able to make major technological breakthroughs were heavily propelled through this by their technological universities.

The university's main campus is in the heart of Nairobi. TUK has its roots in the Kenya Polytechnic, founded in 1961, which offers a wide range of undergraduate, postgraduate and diploma programs in various technical and engineering fields. The Kenya Polytechnic was initially authorized to carry maximum 2,075 students. (Technical University of Kenya, n.d.) Over the years, TUK continues to grow and admit more students to the university which potentially brings more students concerns and complaints related to academic services, facilities and administrative matters. Traditionally, students are used to form queues in offices to make a compliant which would consume a lot of time as some issues would take a longer time to be resolved by the management.

To provide excellent student services, it's essential to address and resolve students concerns in a timely manner ensuring their academic and personal needs are met. Implementing a complaint management system can help ensure a positive student experience, maintain academic quality and meet regulatory requirements as the old fashion way of filing for complaints has been proven tiresome for both staff and students.

1.2.2 Overview of current system

The current system which also I refer to as the traditional system tends to be tedious and cumbersome for both students and staff. The existing system is time consuming and lack transparency resulting in delays in addressing issues. This is caused by the long queues made in various offices which equally results to staff burnout.

The set of procedures a student has to take includes the following;

- Send emails or letters to appropriate offices.
- If email is not responded to, students queue to the respective offices and wait for their turn to air their concerns.
- Complaint is assigned to appropriate staff responsible to address it.
- Communication is done with student either in person or phone calls if their complaint is resolved.

Disadvantages

- Some concerns may receive priority from personnel, while others may not be taken into account.
- Difficult for complainants and institution to track the development and resolution of concerns since they frequently lack procedures for tracking and documenting complaints.
- Lack of privacy since students are prevented from discussing delicate.
- Staff burnout as they may be overwhelmed by the in-person queues potentially leading to decreased job satisfaction.
- Time-consuming since a student stand in lines at different offices to complain manually.
- Communication barriers as the complainants may not have the opportunity to thoroughly explain their issues while in a queue leading to misunderstanding and incomplete information provided to staff.
- Limited hours of operation which can be inconvenient for complainants who have urgent concerns outside of regular business hours.

1.2.3 Overview of the proposed system

The system will be a web-based online platform that will allow the end users or rather students to be able to make complaints online with ease and check its status. It will also be able to document past grievances and give automatic solutions if there is a repeat of a problem.

The set of procedures a student has to take includes the following;

The procedures which are to be followed in this new system will be as follows;

- Upon a user accessing the website, he or she will have to log in or sign up by creating an account.
- After creating an account and logging in, the student can view the options provided by the system on the dashboard which entails; file a report and show past complaints.
- The student will click on the file a report button, enter the description of the complaint and proceed to report it.
- The student will also be able to view their complaint status.

Advantages

- Improved response time: Automated workflows and notifications ensure that complaints are promptly assigned to appropriate personnel.
- Enhanced communication between complainants and staff allowing for clear and documented exchanges which can lead to better understanding and quicker resolutions.
- The system will enable complainants to monitor the progress of their complaints anywhere anytime.
- The system can assign deadlines for resolving complaints.
- Can prioritize complaints based on urgency, ensuring that critical issues receive immediate attention.
- Compliant details, action taken and resolutions are systematically documented to help in future cases.

1.3 Problem statement

Many education institutions face challenge of effectively addressing and resolving student complaints leading to negative impact on student satisfaction. Current complaint system is time consuming and lack transparency resulting in delays in addressing issues. This is caused by the long queues made in various offices which results to staff burnout hence time consuming and complaints may end up not being addressed. This study intends to come up with effective, efficient and reliable way to handle and resolve concerns raised within the institution. I intend to develop an interactive web-based online complaint system with a user-friendly user interface that can be used to file for complaint anywhere any time.

1.4 Objectives

1.4.1 Project goal (Major objective) Overall goal

To provide excellent student services by addressing and resolving students concerns in a timely manner ensuring their academic and personal needs are met.

1.4.2 Specific objectives

a. To develop an interactive web-based platform for students to; Login/Sign up by creating an account, file a complaint, check their complaint history and see the response.
b. To design a system with both the end-user/student and admin side.
c. To develop an interactive web-based system platform that will enable the admin to; access the necessary complaint and send a resolution to student
d. To develop system where user can attach evidence to support their complaints.

1.5 Justification

The following are the advantages that this project would provide to the end-user which is the students:

a. Enhanced student satisfaction: The well-functioning complaint system will address student concerns which will eventually lead to increased satisfaction. Students will grow to have a positive perception of the institution.
b. Accessibility: Since the system is online, it makes it easier for users to file complaints whenever its convenient for them.

c. Documentation: Users can easily attach documents or images as evidence to support their complaints.
d. Transparency: Users are provided with ability to track status of their complaints.

1.6 Scope of the study

The web-based application will be able to do the following;

a. Allow a user to sign up by creating an account and be able to log in.
b. It will only be limited to students in the TU-K.
c. Allow the end-user/student to be able to file/report a complaint and check their history.
d. It will ensure privacy for students to freely express themselves since they will not undergo any pressure from the surrounding.
e. Allow admin users to communicate with involved parties.

1.7 Limitations of proposed system

- My system will not address issues outside the institution's control.
- One must sign up by creating an account to get access to the services.
- Requires an electric gadget that can access the internet hence those without might be left out.

1.8 Project Risk and Mitigation

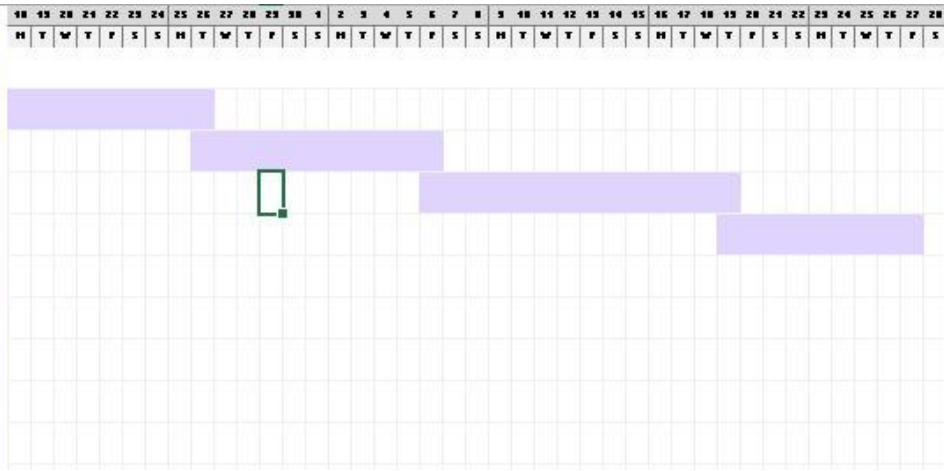
- Devices such as laptops; may have technical issues which may lead to data loss. Hence it is advised to have a backup of the work done locally on devices such as flash disks and remotely such as cloud storage or google drive since they can aid in data recovery.
- Malicious attacks and viruses can be prevented by enabling a firewall and installing anti-virus software.
- The system may display errors or perform the opposite of the expectations; this can be prevented by running tests at every stage of development before proceeding to the next.

1.9 Project Schedule

This gives a brief description of the project workload breakdown. All this will be done with the help of my supervisors. The whole project is divided into two major sections Project A and Project

B. For the first semester of September- December 2023, I am working on project A which is made up of the project proposal document that has 4 chapters. The proposal document gives the design and layout of the application on paper.

TASK	PROGRESS	START	END
Project A			
Come up with Project idea	100%	9/15/23	9/26/23
Generate concept paper	100%	9/26/23	10/6/23
Assigning of supervisors	100%	10/6/23	10/13/23
Writing chapter one	100%	10/13/23	10/27/23
Writing chapter two	100%	11/22/23	11/30/23
Writing chapter3	100%	12/20/23	1/1/24
Project Presentation	0%	1/15/24	1/15/24



1.10 Budget and resources

RESOURCES	DESCRIPTION	SPECIFICATIONS	UNITS	PRICE
Internet access	To facilitate access to online features	At least 5Mbps	-	Kshs 5,000 monthly
Google drive	To provide storage for backing up data and progress of web-based application development.	At least 20 GB	-	free
Antivirus	To protect laptop against malicious attacks such as viruses that may destroy data	Avast antivirus	one	Ksh 2,500
Miscellaneous	Printing cost throughout the project			Ksh 2,500
TOTAL				Ksh 10,000

Table 1: Budget and resources

CHAPTER TWO: LITERATURE REVIEW

Educational institutions have realized in recent years how critical it is to have effective and transparent grievance resolution procedures in order to quickly address student complaints. In order to promote a healthy learning environment, Student Complaint Management System (SCMS) deployment has become essential. The notion of developing web-based online platforms or applications to facilitate access to services like filing complaints from the comfort of their homes, workplaces anywhere and anytime is not a new one. This section will examine the current systems that have been implemented, their functioning, and error-correction strategies to aid in the development of a more effective system.

2.1 Reviewed Similar Systems

2.1.1 Online students' Complaint

This is the English Study Program of Victory University, Sorong's online student complaint management system. Started in 2018 and has developed a system for resolving online student grievances. Through its implementation, we can see that it has resulted in the development of an efficient and versatile framework that students can access at any time and from any location. It aided the English Study Program in resolving and resolving grievances, allowing it to assess the strengths and weaknesses of its body as an educational service provider and develop a more effective strategy for quickly and easily improving its service. By utilizing the client's inputs, the prototype model aided in developing this software. This online complaint is the result of realistic implementation as a whole, capable of providing details more quickly, precisely, and accurately than the manual method. This research has limitations in terms of data protection. The researcher proposes to incorporate the algorithm framework for further study to enhance data security and to integrate this system into the other systems in the system's body, such as the English Study Program . (M.A Manuhutu, 2018)

2.1.2 Online Complaint Management System

Online Complaint Management System (OCMS) enables the public to resolve issues more quickly and effectively while also eradicating corruption. The complaints management system aims to make filing complaints easier, monitor complaints handling, and identify and target problem areas. Online complaint management is a customer service management strategy used to examine, analyze, and resolve customer complaints. A complaint resolution system is used to track,

identify, and resolve customer complaints, requests, and feedback, as well as handle any other kind of communication . (N, 2015)

2.1.3 Online Students Complaint Management System

This is a case study done at the Bowen University in Nigeria. It is system to developed to assist the University in evaluating its complaint handling. This system is made available for twenty four hours; thus providing a more accessible medium of making complaints, it is also a convenient method of making complaints for students (with the advent of mobile devices) (LAUTECH, 2023)

2.1.4 Computerised Student Complaint System

This system is mainly used in the University of Limpopo to help solve student's grievances in the school. The web-based student complaint system is a platform that allows students to submit complaints or feedback regarding various aspects of their educational experience, such as course content, faculty behavior, issues with semester results, or administrative issues. The system may also allow students to track the status of their complaints and receive updates on any actions taken. The goal of the web-based student complaint system is to provide students with a convenient and efficient way to voice their concerns and ensure that their complaints are addressed in a timely and appropriate manner. It can also help the institution to identify and address areas for improvement and enhance the overall student experience. The developed CSC system has students' side and administrator's side. In the students' side, students can post their complaints and view the responses while in the administrator's side the administrator's task is to view students' complaints and inform responsible people through their emails (L.J.Mabotja, 2020)

2.1.5 ZohoDesk

The Zoho desk gives you the ability to accept, handle, and respond to customer complaints through multichannel capabilities, extensive reporting tools, and cross-functional cooperation. It allows you to solve a variety of problems with simple fixes, freeing up your time for other crucial tasks. With Zoho's three-user free plan, you can get your customers' compliant management efforts off to a quick start.

2.2 Tools and Methodologies

2.2.1 Online Students' Complaint

The students platform was designed the user module where he or she can sign in and file a complaint. User is also able to upload images to support their concerns.

Advantages

- Allows user to express themselves freely by enabling users to uploading images.

Disadvantages

- Has no Admin Sign In module.
- One is unable to track status of the complaint.
- Complex interface.

2.2.2Online complaint Management

The complaints management system aims to make filing complaints easier, monitor complaints handling, and identify and target problem areas.

Advantages

- One can check the status of the complaint.
- Platform is user-friendly.

2.2.3 Online Students Complaint Management System

It enables users to create case and track the complaints. Users can also add documents or images to support their statements. Moreover, the system has a chat page where they can interact with student affairs unit.

Advantages

- Customizable: users can not only login with their laptops/computers but also log in with their mobile phones.

- Workflow Automation: Streamlines the resolution process, reducing manual efforts and improving efficiency.

Disadvantages

- Complexity of system.

2.2.4 Computerised Student Complaint System

Advantages

- Robust Tracking and Reporting: Limpopo's SCMS offers robust tracking and reporting capabilities, enhancing the efficiency of the complaint resolution process.
- Centralized System: The system provides a centralized platform for managing and resolving student grievances.

Disadvantages

- Complex Interface: Some users find the interface complex, leading to potential barriers in usage.
- Delayed responses.

2.3 Gaps in existing systems

In the Online Students' complaint systems, users are unable to check status of complaint which can lead to frustration and anxiety from the students. The system also has issues with complexity leading to potential barriers in usage.

In Online complaint management system the response data is not saved hence a student filing a complaint which had already been solved will have to be solved again instead of showing the past response.

2.4 The proposed solution

The proposed solutions to previously discussed challenges include:

i. Developing a web based platform which is user-friendly, allowing students to submit complaints seamlessly.
ii. The system will allow tracking of complaints to reassure students that their concern is in the process of being solved.
iii. The system will allow student to search or automatically give solutions to already solved complaints.
iv. The system will also allow admin user to login as well as perform functionalities.
v. Easy accessibility for the institution and the students.

CHAPTER THREE: METHODOLOGY

3.1 Methodology and tools

Different systems incorporate various methodologies when it comes to designing them. This chapter will elaborate more on the methodology I intend to deploy in my project and the various tools that will be used to analyze the data.

3.1.1 Methodology

I will create the system using the agile system development process. By dividing the project into features and delivering them in several stages during the development cycle, the agile methodology primarily focuses on feature delivery.

The selected approach will allow for increased efficiency, flexibility, and quicker delivery times while also fostering high levels of customer connection and satisfaction.

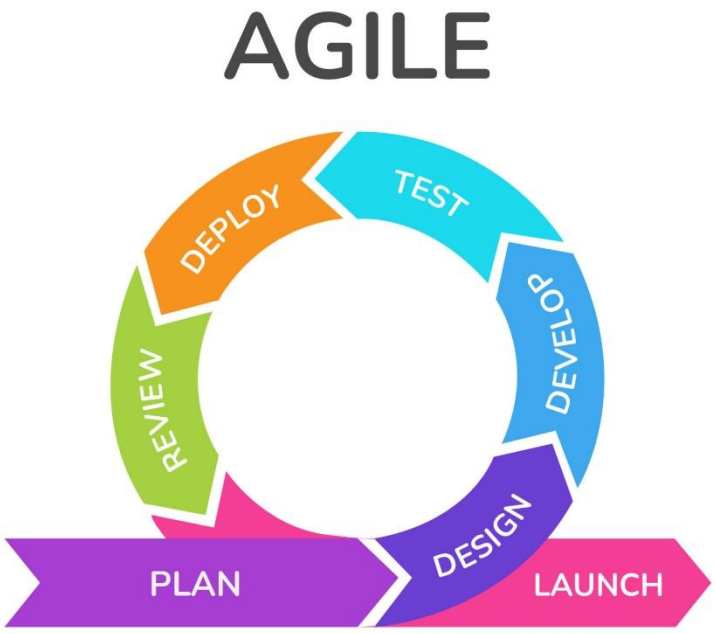


Figure 1: Agile cycle

The methodology consists of the following phases:

I. **Concept**

This is the first phase of the whole process. It majorly involves the project scope. This phase will deal with envisioning the project, determining the viability of the project, and determining the feasibility of the project concerning technical feasibility, economic feasibility, and operational feasibility.

II. **Inception**

Having outlined the concept, the project is initiated and prioritized by allowing for requirements modeling by defining the user requirements to achieve product functionality. A mock-up of the user interface is created and the initial architecture is also developed.

III. **Iteration**

The iteration phase is also referred to as construction. In this phase, I will combine all product requirements and students feedback, turning the design into code. After every iteration, testing will be conducted to avoid possible errors and maintain the quality to deliver a working system that will meet the changing requirements of the user.

IV. **Release**

This stage focuses on quality assurance testing, documentation development, and the final release of iteration into production. It is in this phase, that I will perform different tests to ensure the goals are met, that the code is clean, and that the software is fully functional. After going through these various testing stages, I will be done and release the application to the users to give room for reworking the application in the case of errors found that need fixing.

V. **Maintenance**

After all the testing and successful results, the product will be made live. During this stage, the software is fully deployed and available for customers. The goal of this phase will be to allow the system to keep running error-free, and productive after being deployed and keep offering assistance to any of the users in regards to how the system works.

VI. **Retirement**

This phase involves the removal of the final release of the project. (Wrike, 2006)

Reasons for using agile methodology:

1. Satisfied customers

By actively involving students in the development process of the student complaint system, the agile team demonstrates a commitment to valuing student opinions. This engagement ensures that the final product is tailored to meet the specific needs of the students, leading to higher satisfaction levels.

2. Improved quality

Agile methodologies, through their iterative approach, continually refine and enhance system processes. This consistent focus on quality control aligns with the core principles of Agile, resulting in the development of a superior student complaint system.

3. Adaptability

Agile's central theme of flexibility is particularly advantageous in the context of a dynamic university environment. The system can respond promptly to changes in complaint resolution requirements, allowing for adjustments to be made mid-project.

4. Predictability

The agile methodology's use of short development cycles, or sprints, contributes to predictability in the development process. This structure facilitates easier measurement of team performance, efficient resource allocation, and simplified cost estimation for shorter project durations.

5. Reduced risk

The regular assessment of progress during agile sprints provides better visibility into the student complaint system's development. This allows for the identification of potential obstacles at an early stage, enabling proactive risk mitigation strategies.

3.1.2 Tools to be used in the methodology

This methodology will use various system design tools to show the conceptual and logical flow of the processes in the application.

a. Flowcharts

A flowchart refers to a graphical representation of steps in sequential order. I will use flowcharts to show the breakdown of the application process into logical parts that are easily understood by the user. They will show how various processes such as user registration, login, etc. occurs in the system. They will be drawn using an open-source tool for drawing flow charts called lucid charts.

b. Sequence diagrams

They are visual representations of how the information is going to flow through the application. It will show how data will enter and leave the system and also where the data is stored. The design of these diagrams will be done using an open-source tool called the visual paradigm.

c. Use case diagram

A use case diagram is a representation of the external world which is the user represented by an actor’s interaction with the system. They are used to show what the user can do in the system under development. They represent the functional requirements of the system. I will draw the use

case diagram using Visual Paradigm online free edition, an open-source tool for drawing use case UML diagrams.

3.2 Source of data

For this project to come to the realization and be fully functional, data must be gathered and incorporated to aid in its development. There are various methods to collect and gather data using different sources both primary and secondary.

3.2.1 Primary Sources

This is the type of data that is collected by researchers directly from main sources. It is highly reliable since it is firsthand information. I will employ sources such as conducting interviews and questionnaires to make this a success.

3.2.2 Secondary Sources

Secondary data refers to data that has been collected in the past by someone else but made available for others to use. Some of the sources I will imply to get this data will include; reviewing literature and analyzing systems that already exist.

3.3 Data Collection Methods

1) Interviews

Interviews are a method of data collection that involves two or more people exchanging information through a series of questions and answers. I will deploy this method since it will help me get fast feedback and sincerity from the interviewees when relaying information by observing their body language.

2) Questionnaire

I will structure out a detailed series of questions that I will issue to help me gather the data concerning the topic at hand. This will be beneficial since they are easy to administer and analyze and provides anonymity to the end-user.

3) Observation

This is one of the primary data sources for getting firsthand information. This will entail watching, listening, touching, and reading to get the actual point of view of the problem. This method will eliminate the problem of getting biased feedback from the users since the sample group will be unaware of this process going on.

4) Analysis of existing system

This will entail having an analysis of similar projects and checking how they have been operating and also how to curb the risks they have been experiencing to come up with a project to solve them.

3.4 Resources required / materials

Hardware Specifications

- Laptop – Used as the working platform for the project
- Processor speed – Intel (R) Core i5 ,2.60GHz
- Memory requirements – Minimum of 4 GB RAM.
- Hard disk capacity – Minimum of 500 GB.

Software Specifications

- Virtual Studio Development Environment – This is an Integrated Development Environment for web-based development
- Backend development tools – They will include: a Firebase real-time database (to store files and data that will be used in the project), Firebase authentication (to signup, sign in and sign out users in and out of the system).
- Software configuration management tools – Include GitHub and bit bucket to track changes in the software.
- Operating System – Windows 10.

- Kaspersky anti-virus - Used to scan any virus that may be in the external devices to protect them from destruction of the data.

CHAPTER FOUR: SYSTEMS ANALYSIS AND REQUIREMENTS MODELLING

4.1 Introduction to the system analysis

The primary goal of system analysis is to assist system developers in analyzing a system or its component pieces in order to determine their goals. It is a method of problem-solving that enhances the system and guarantees that each part functions effectively to fulfill its intended role. As a result, this chapter will include an overview of the present online complaint systems and suggest strategies for their improvement.

4.2 Objectives of the system analysis

The analysis that will be carried out will aid in formulating the following objectives.

- To determine the technology infrastructure and software tools required for the student complaint system
- To help me get more input from the end users since it ultimately provides a sense of participation from the users.
- System analysis will enable me to establish the system boundaries which would define the scope and the coverage of the system.
- To assist me in determining the viability from many perspectives. Given that the system needs to meet operational, financial, and technical viability
- The analysis of the system will also help me to conclude whether the system is a closed type or open, deterministic, or probabilistic. Such an understanding of the system is necessary before designing the process, to ensure the necessary design architecture is achieved.

4.3 Problem definition

There is currently no organized and effective framework in place at our educational institution for handling and resolving student complaints. Students find it difficult to file and follow up on their concerns, and administrators have trouble handling and handling these complaints in an orderly and open way. To improve overall satisfaction and expedite the complaint response process, a specialized student complaint system must be developed.

The development of a Student Complaint System aims to address these challenges by introducing an automated, transparent, and user-friendly platform.

4.4 Feasibility study

The objective of conducting a feasibility study is to establish the reasons for developing a system that is acceptable to users, adaptable to change and conformable to established standard. In this study, I intend to conduct out operational, economical, technical and schedule feasibility of the current and proposed system to determine if my system is feasible.

A. Operational feasibility

This is typically done to assess whether a project plan satisfies the requirements established during the system development analysis phase.

B. Economic feasibility

This assessment typically involves a cost/ benefits analysis of the project, which helps one to determine the viability, cost, and benefits associated with a project before financial resources are allocated. It also serves as an independent project assessment hence aids in decision making. The cost benefit analysis is usually calculated using a method called ROI (Return on Investment) that is a measure of the average rate of return earned on the money invested in the project.

C. Schedule feasibility

It ensures that the project is completed within the given time constraint or schedule. Concerning the project schedule in chapter one, I intend to complete chapter one to chapter four by the end of January 2024. Also, complete the remaining part regarded as Section B by end of April the same year. Regarding my progress, the deadlines have been adhered to thus making this project feasible.

D. Technical Feasibility

This study evaluates the specifics of providing clients with this good or service. In relation to that, all of the hardware and software specs listed in this project's third chapter are easily accessible. Furthermore, the majority of the required software specifications are freely accessible and usable as they are open source. The project is viable due to the factors mentioned above because the resources are easily accessible.

4.5 System analysis tool

4.5.1 Flowcharts

They will be used to show the breakdown of the systems processes e.g., from the time a user signs up, to them being registered if successful, etc. into logical parts that are going to be easily understood by the users. They communicate the steps in a project efficiently.

4.5.2 Sequence Diagrams

They are visual representations of how the information is going to flow through the application. It will show how data will enter and leave the system and also where the data is stored. The processes involved will include logging in/ signing up by creating an account etc.

4.5.3 Use Case Diagram

A use case diagram represents the interaction between the system and the external world by the user who is represented as an actor. They mainly represent how a system interacts with the environment by illustrating the activities performed by the users of the system and the system's response. The actors (Students) and the use cases (Sign in/log in, create an account) and the interaction between the two are identified.

4.5.4 Wireframes

They are diagrammatic illustrations of the application of the system to show different views of the user interface. They can give the user a look and feel of how the prospective interface of the system will be for example login page, signup page, etc.

4.6 System investigation

4.6.1 Introduction

System investigation is the process of finding out what the system is being built to do and if the system is feasible. This will help in gaining a better understanding of the technical aspect of resources of the organization and the applicability to the needs of the system.

4.6.2 Data collection

- Questionnaire

  I will structure out a detailed series of questions that I will issue to help me gather the data concerning the topic at hand. This will be beneficial since they are easy to administer and analyze and provides anonymity to the end-user.

- Observation

This is one of the primary data sources for getting firsthand information. This will entail watching, listening, touching, and reading to get the actual point of view of the problem. This method will eliminate the problem of getting biased feedback from the users since the sample group will be unaware of this process going on.

- Analysis of existing system

This will entail having an analysis of similar projects and checking how they have been operating and also how to curb the risks they have been experiencing to come up with a project to solve them.

4.6.3 System requirements

4.6.3.1 Functional requirements

- Each student should be able to create an account by logging in or signing up using their email/username and password.
- The student should then be able to file, cancel and view a complaint.
- The admin user should be able to add a student, delete a student upon year of completion from the database, show all students from database etc.

4.6.3.2 Non-functional requirements

- The system should have a high availability percentage rate.
- The system shall be able to provide confidentiality for all parties registering with it.
- The system user interface should be simple and easy to use.

4.7 System analysis

4.7.1 Flowchart diagrams

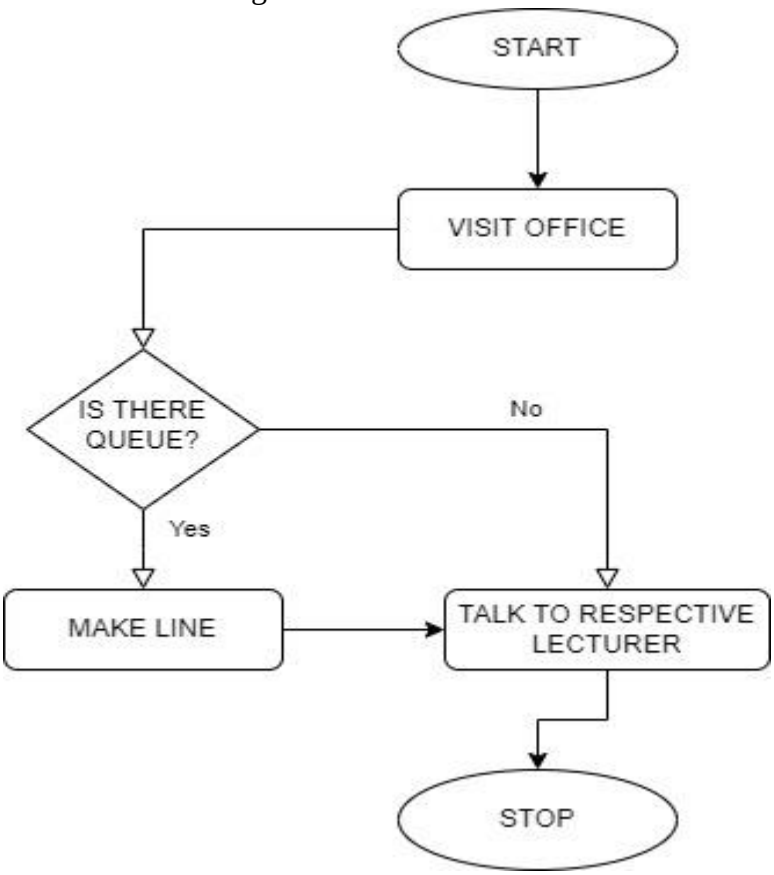


Figure 2:Flowchart of existing system

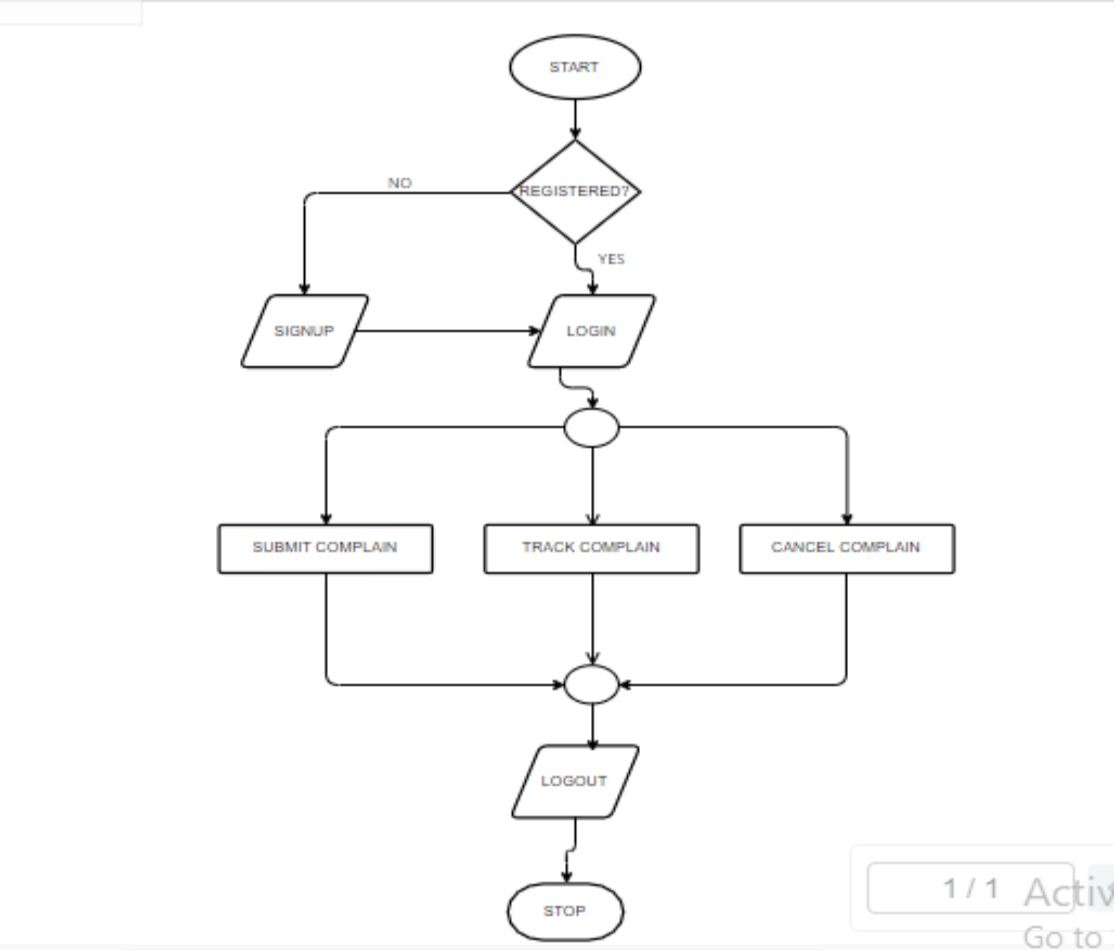


Figure 3: Student flowchart for the proposed system

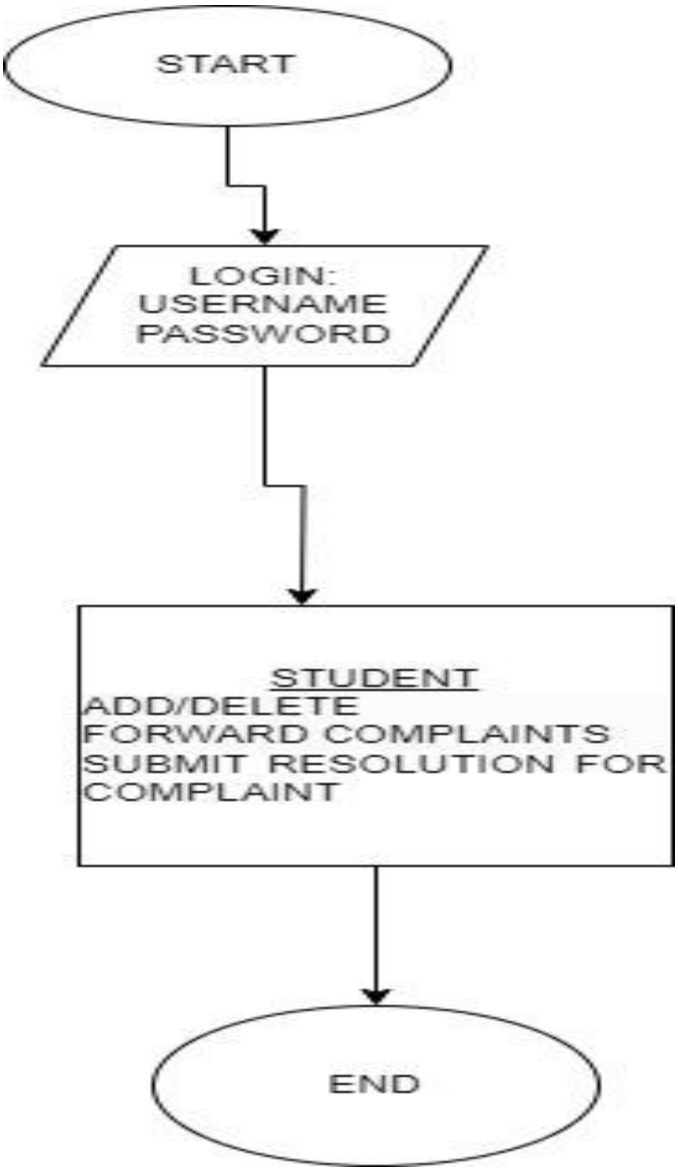


Figure 4:Admin flowchart for the proposed system

4.7.2 USECASE

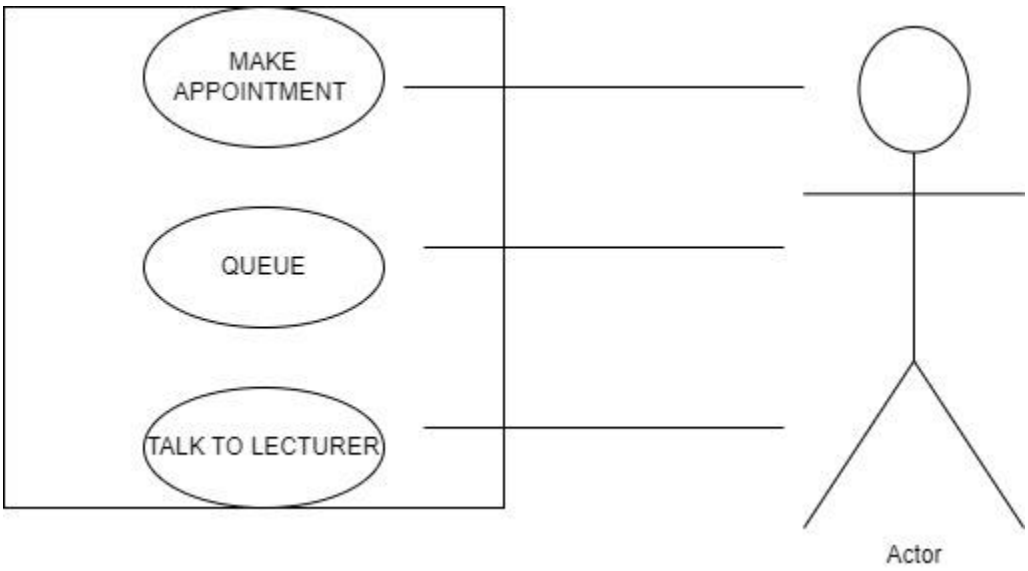


Figure 5: Use case of the existing system

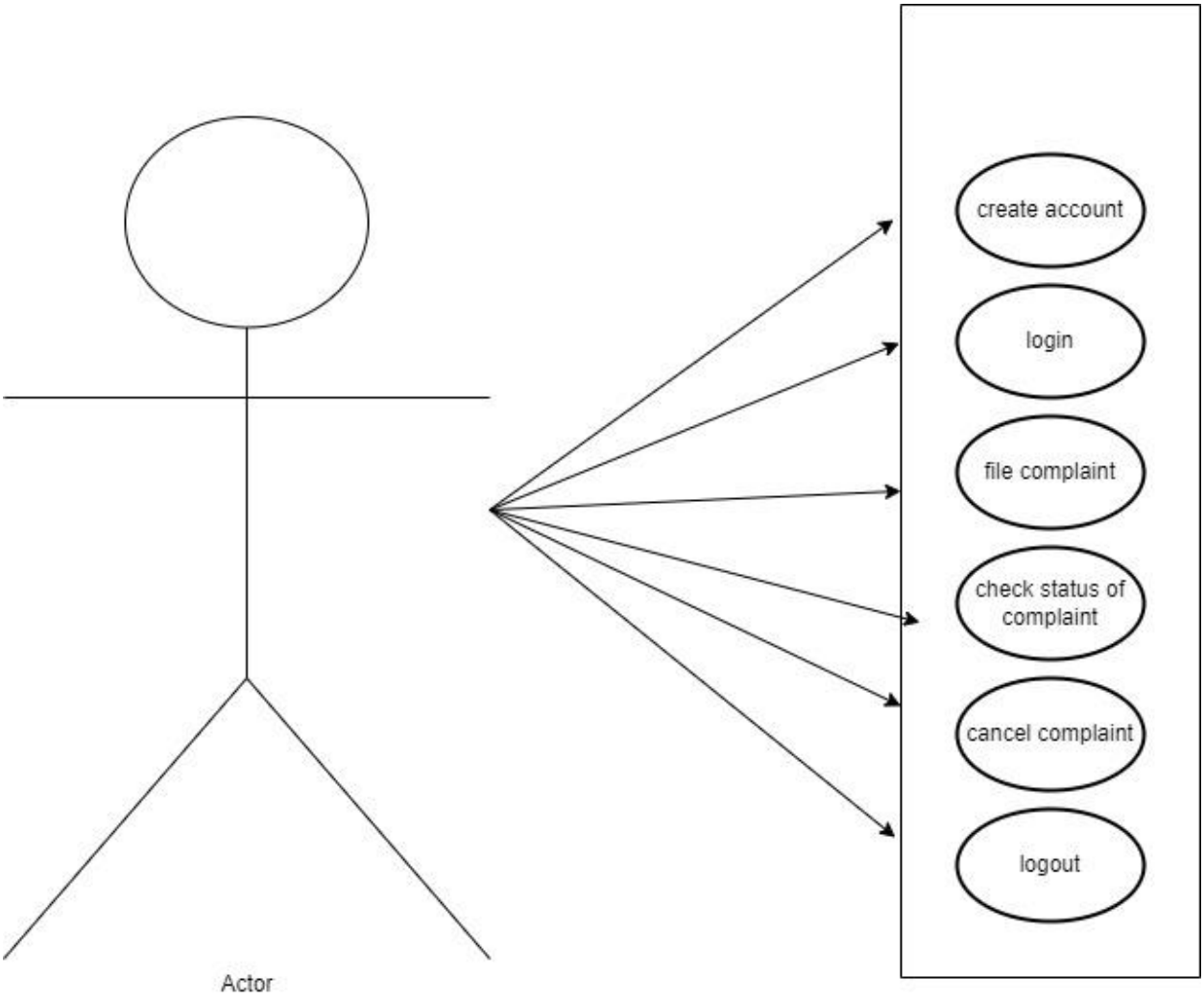


Figure 6: Student use case for the proposed system

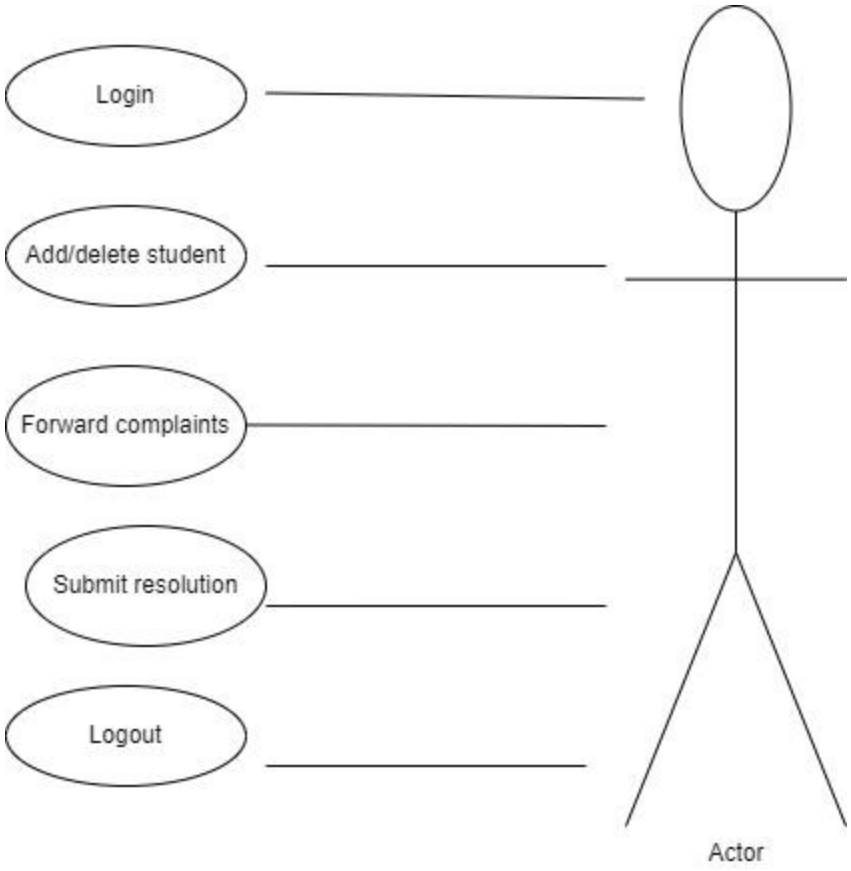


Figure 7:Admin use case for the proposed system

4.7.3 Sequence diagram

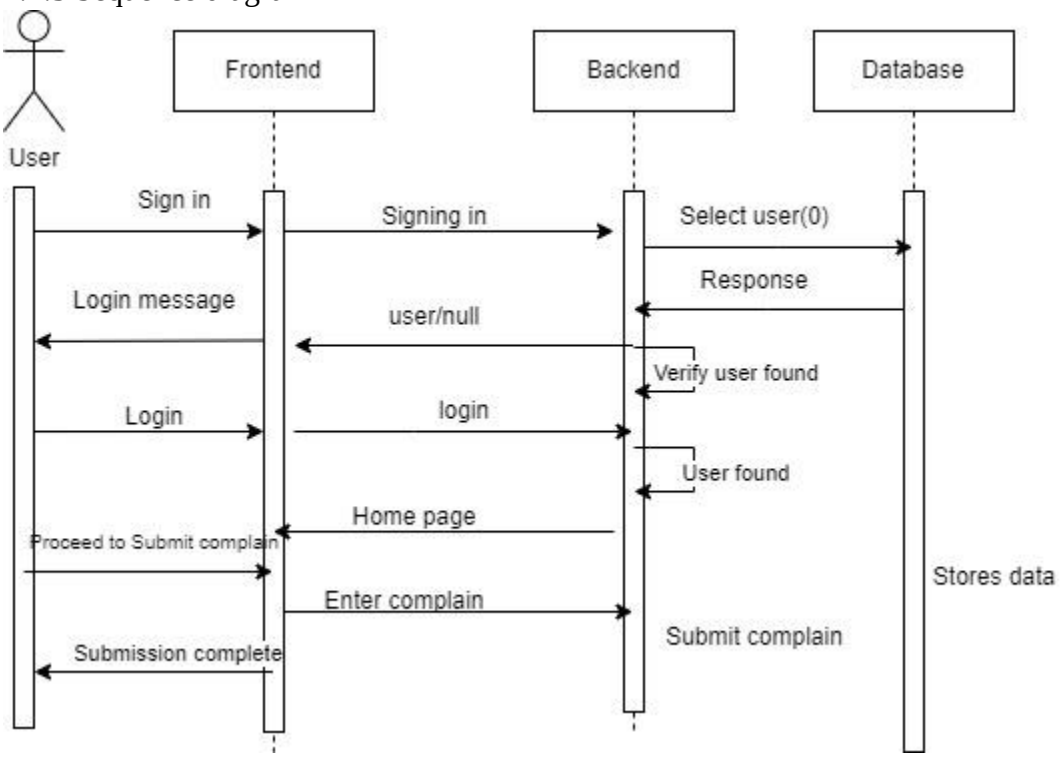


Figure 8:Student sequence diagram for the proposed system

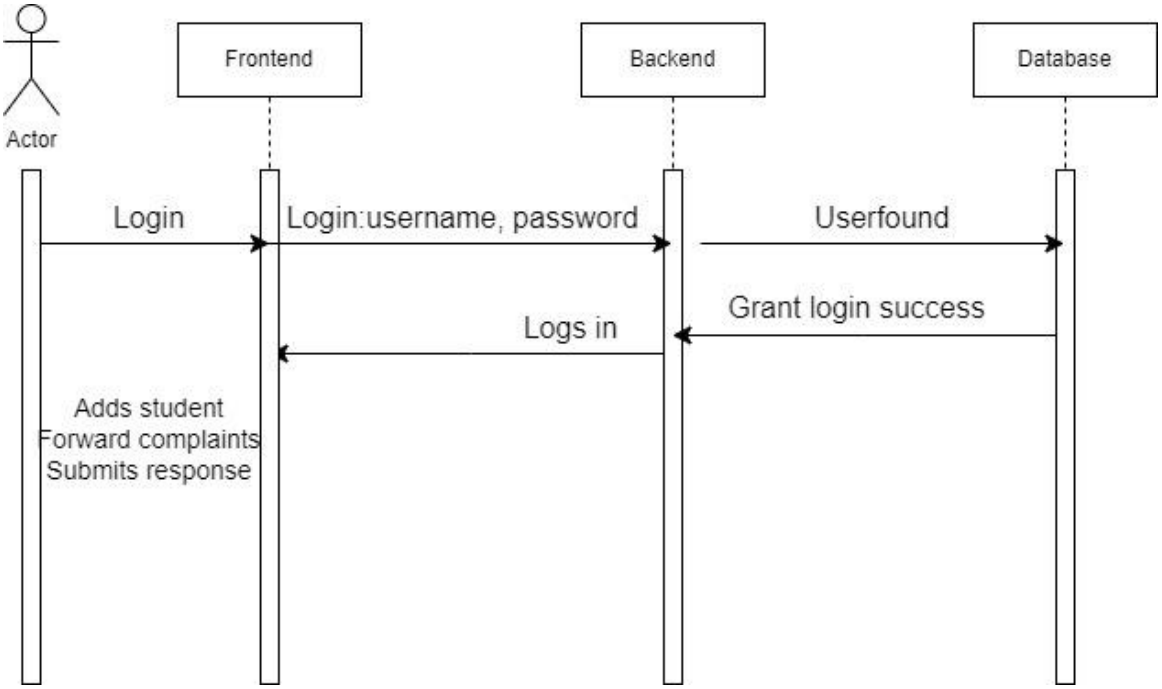


Figure 9:Admin sequence diagram for the proposed system

4.7.4 Wireframe

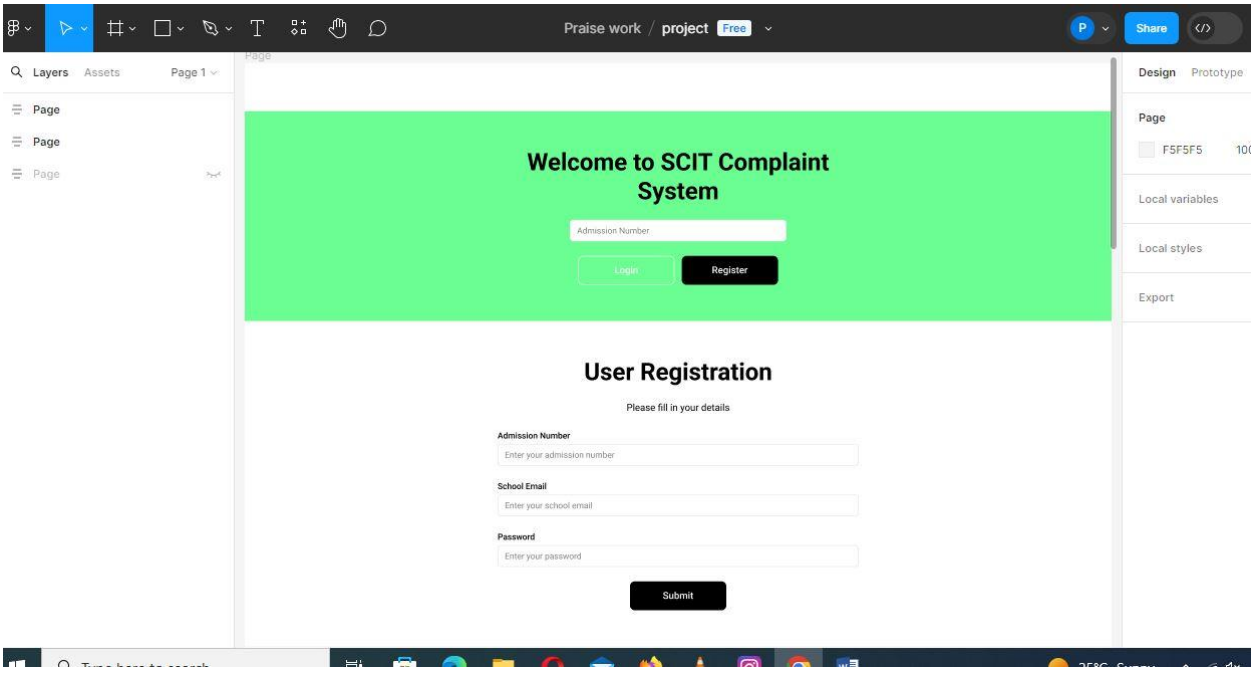


Figure 10:Student registration/login wireframe for the proposed system

CHAPTER FIVE: SYSTEM DESIGN

5.1 Introduction to system design and nature of the system

System design is the process of designing elements of a system like modules, architecture, product design, interfaces and data for a system to satisfy the specified requirements and desired objectives of an organization.

5.2 Objectives of system design

System design helped me to achieve the following:

- To evaluate the tools and techniques used in the system.
- To produce a model of the build system.
- To determine the specific needs of the system.
- To ensure the design is consistent, there should not be any inconsistency in the design.
- To ensure the design is flexible when it comes to modification to changing needs.

5.3 Logical design

It pertains to an abstract representation of the data flow, inputs, and outputs of the system. It describes the inputs (sources), outputs (destinations), databases (data stores), and procedures (data flows) all in a format that meets the user requirements.

5.3.1 Logic data design

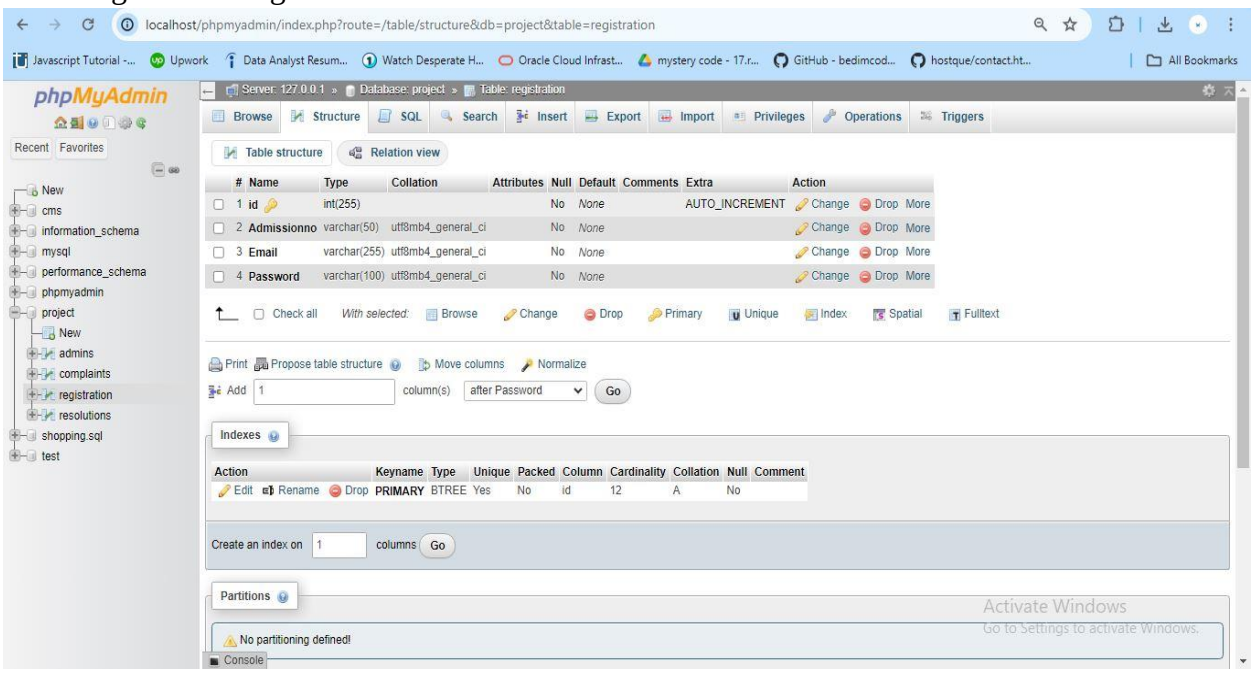


Figure 11: Database structure for students

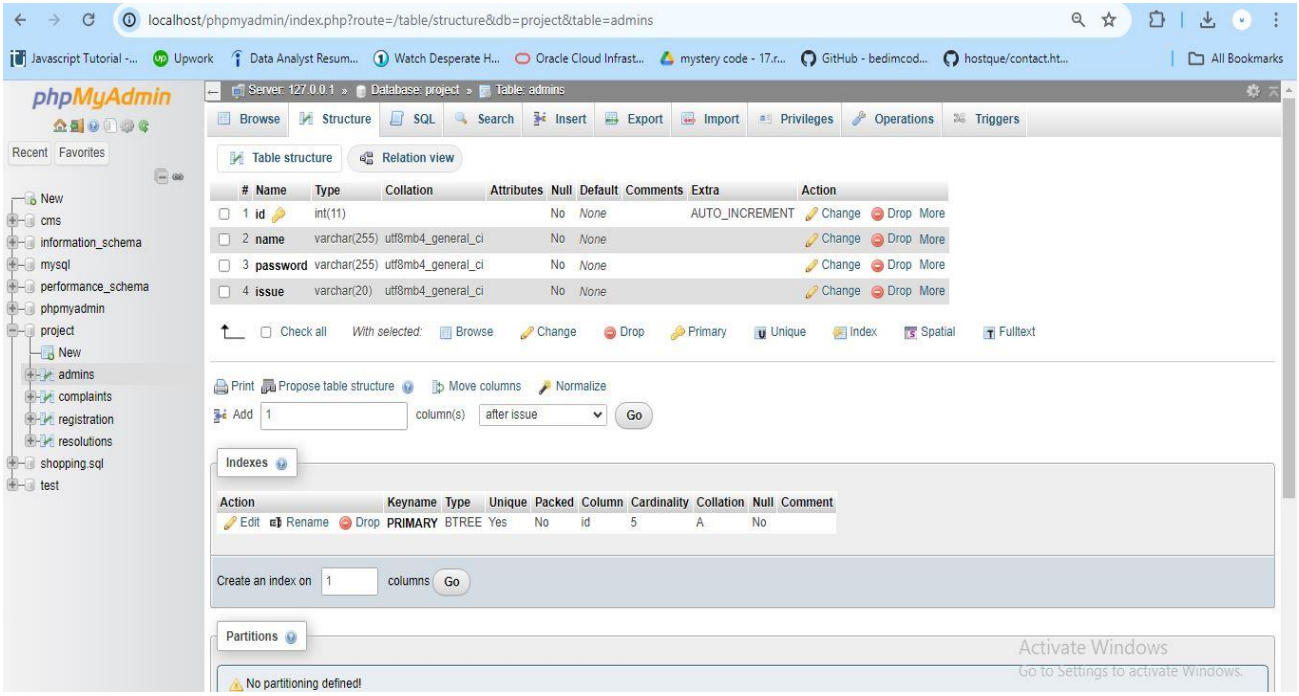


Figure 12: Database structure for admins

5.3.2 Entity Attributes Relationships

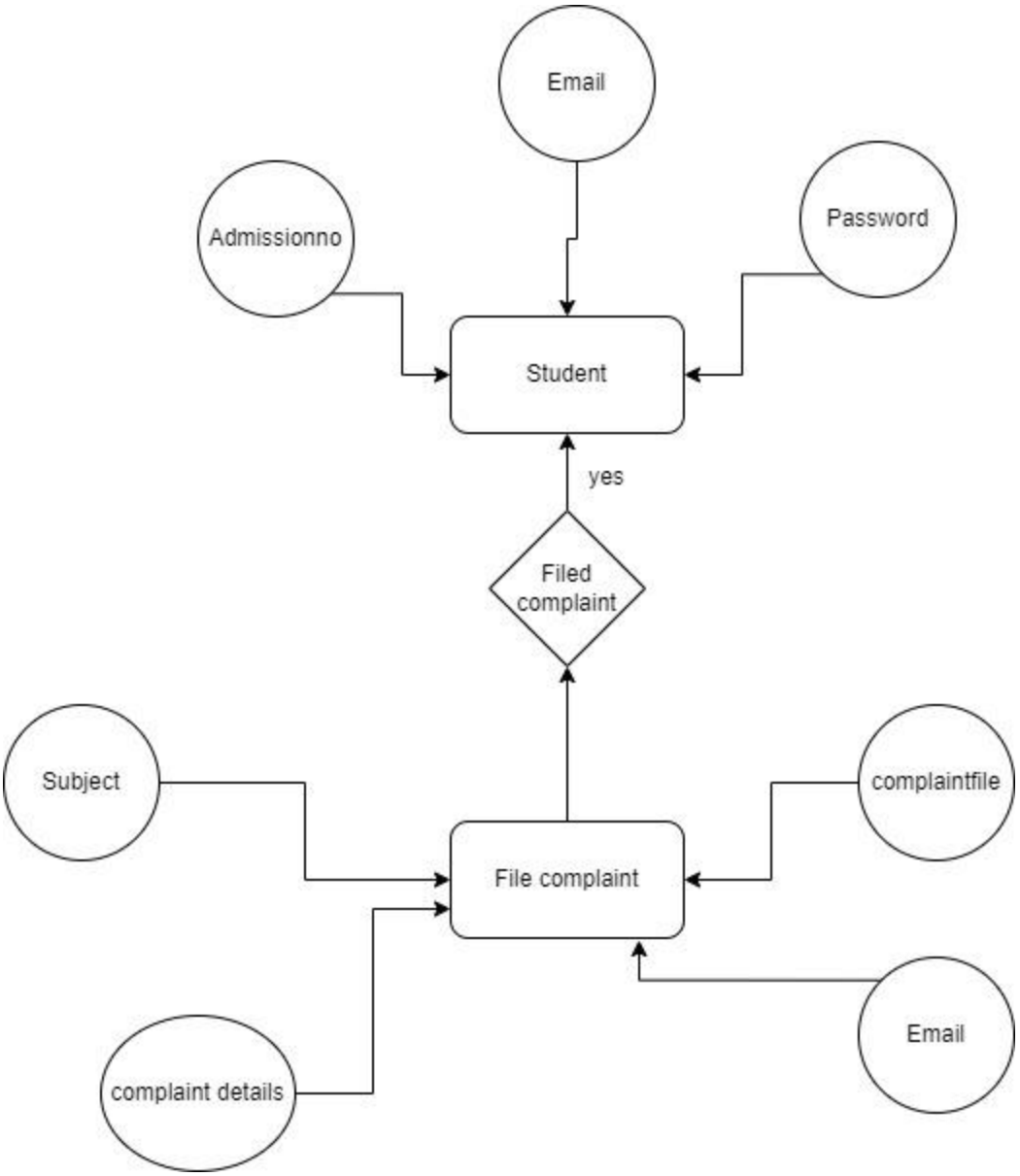


Figure 13:Entity relationship

5.3.3 Entity Life History

It is a diagrammatic method used to record how information may change over time, and models the complete catalogue of events that can affect a data entity from its creation to its deletion, the context in which each event might occur, and the order in which events may occur.

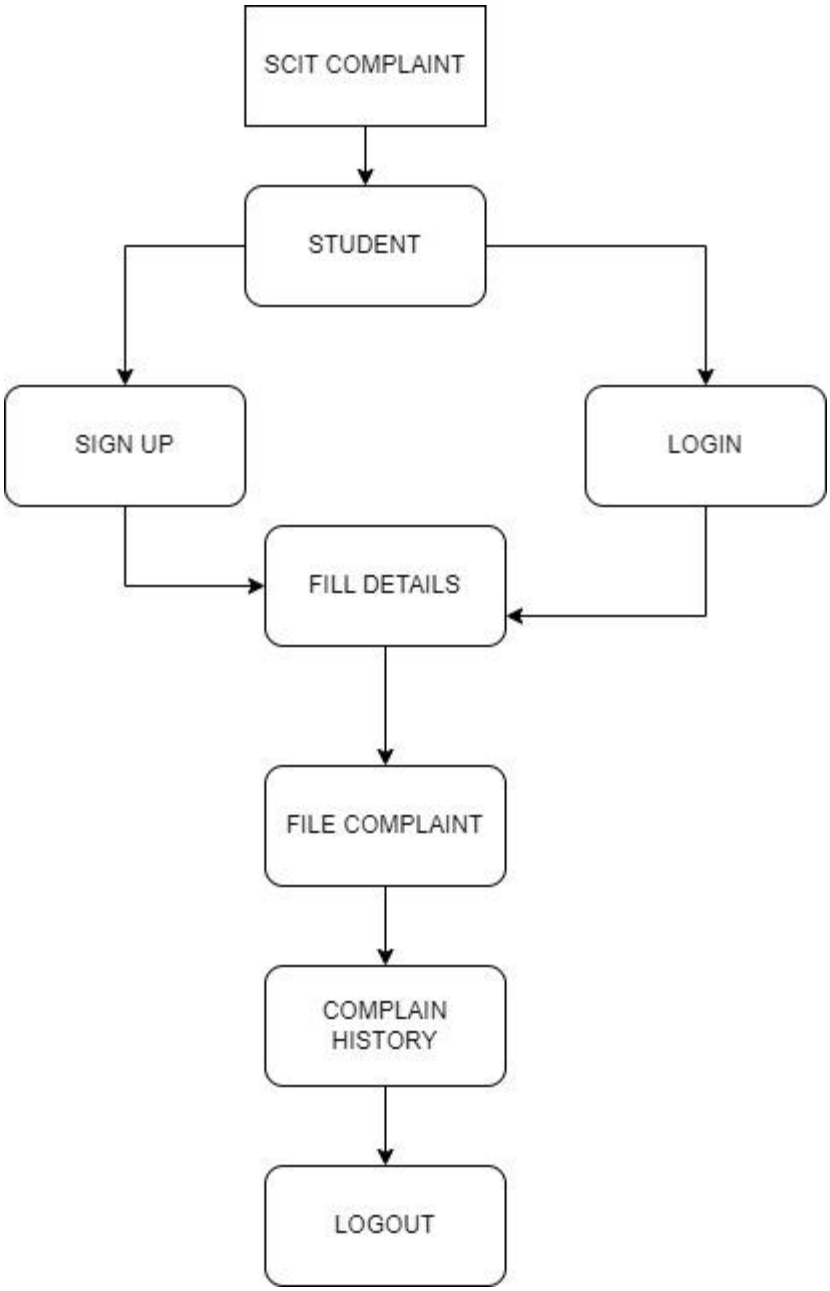


Figure 14:Entity life history

5.4. 1 Data Dictionary

A data dictionary in design is a centralized repository of information about data such as meaning, relationships to other data, origin, usage, and format. It maintains information about the definition, structure, and use of each data element that the system uses.

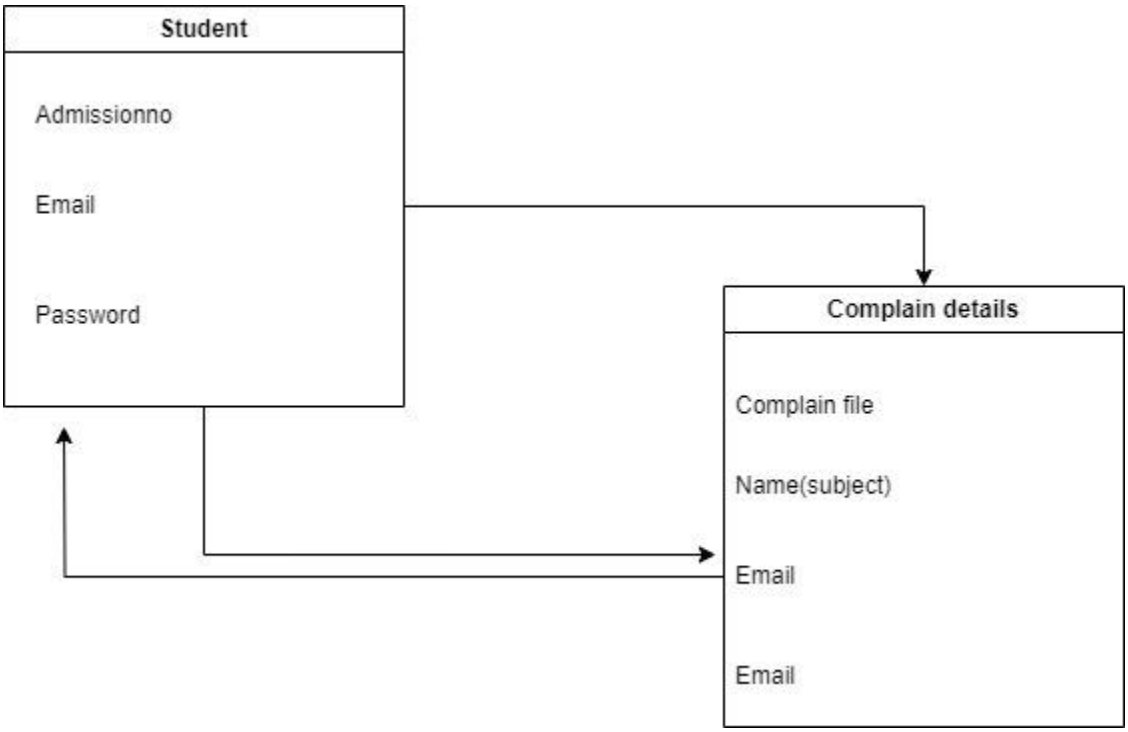
The following is a data dictionary outlining a database of students details.

Field Name	**Data Type**	**Data format**	**Description**	**Example**
Admissionno	Varchar	Scci/sccj/scie/scii	Admission no for students in SCIT	SCCI/03781P
Email	Varchar	afrggtt@gmail.com	Email for every student	Ap89@gmail.com
Password	Varchar	12345ccd	Password for each student	12vj

Field Name	**Data Type**	**Description**	**Default**
Complain file	Varchar	File supporting complain(optional)	yes

Name(subject)	Varchar	Type of complaint	No
Email	Varchar	Email for every student	No
Complain details	Varchar	Details	no

5.4 Database design



5.4 3. Input screen – for Table Entries

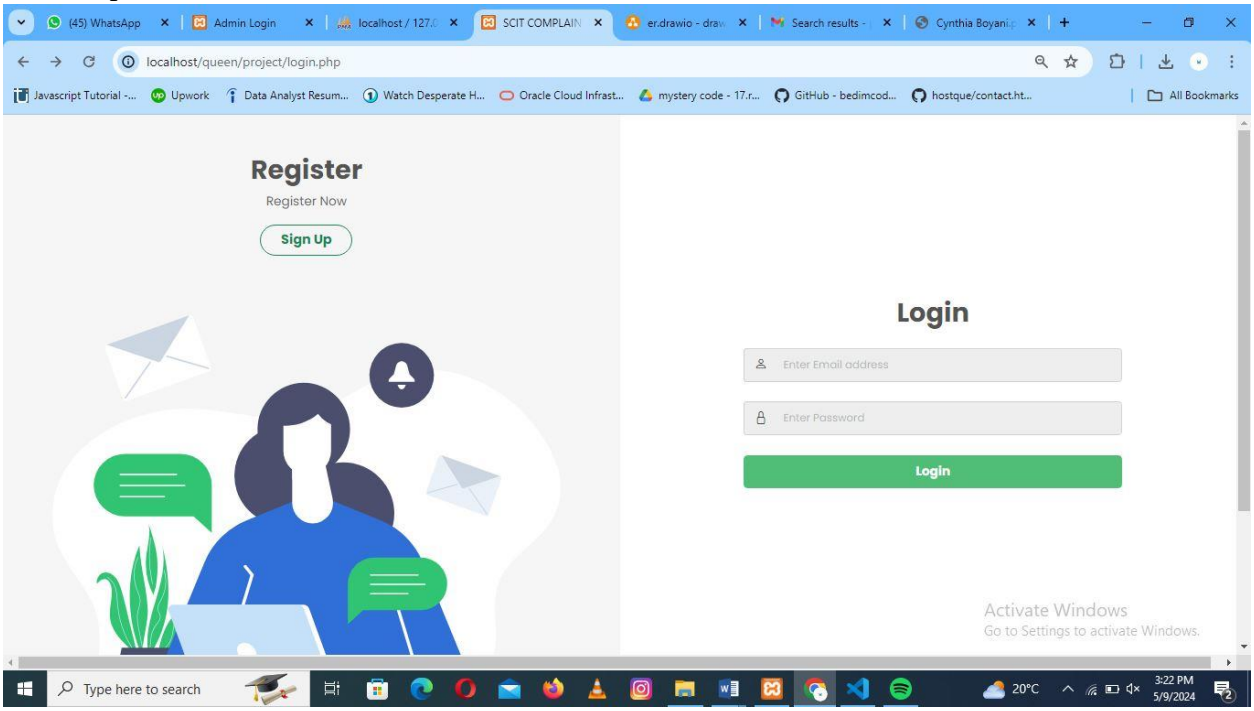


Figure 15:Student login

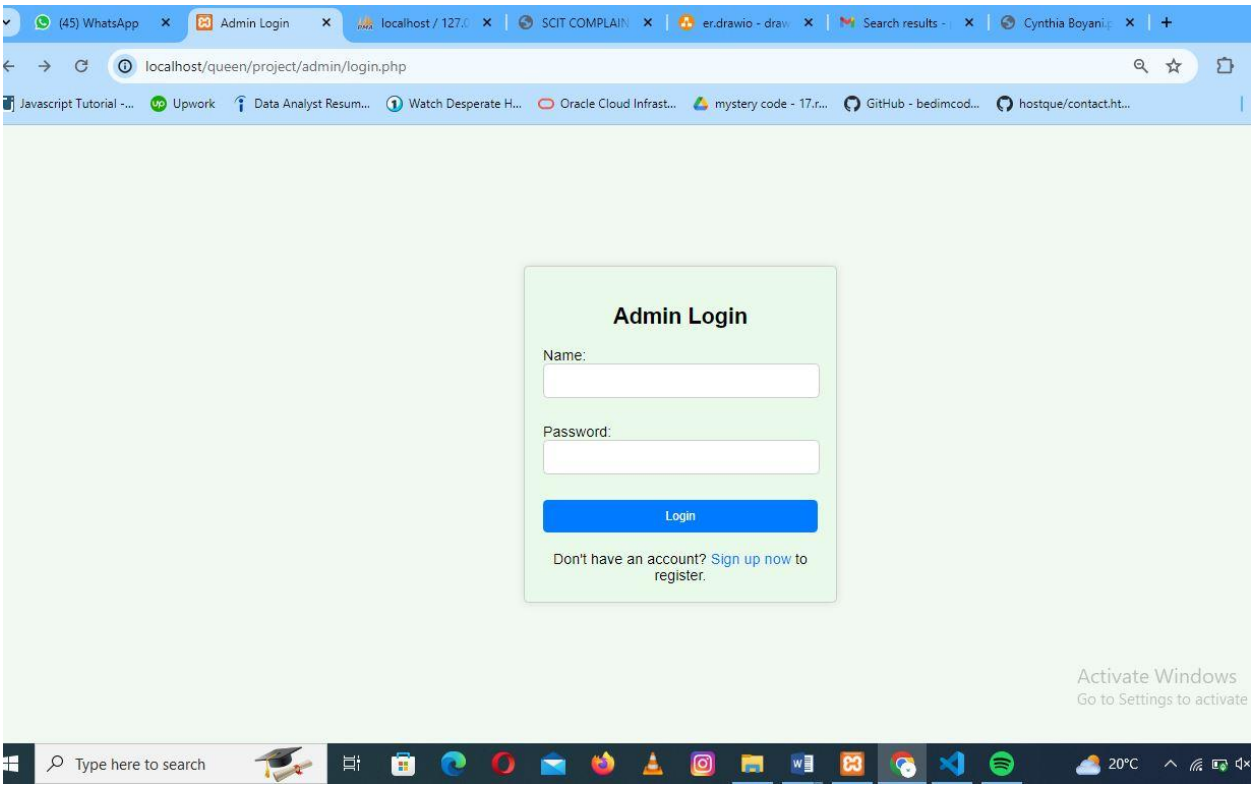


Figure 16: Admin login

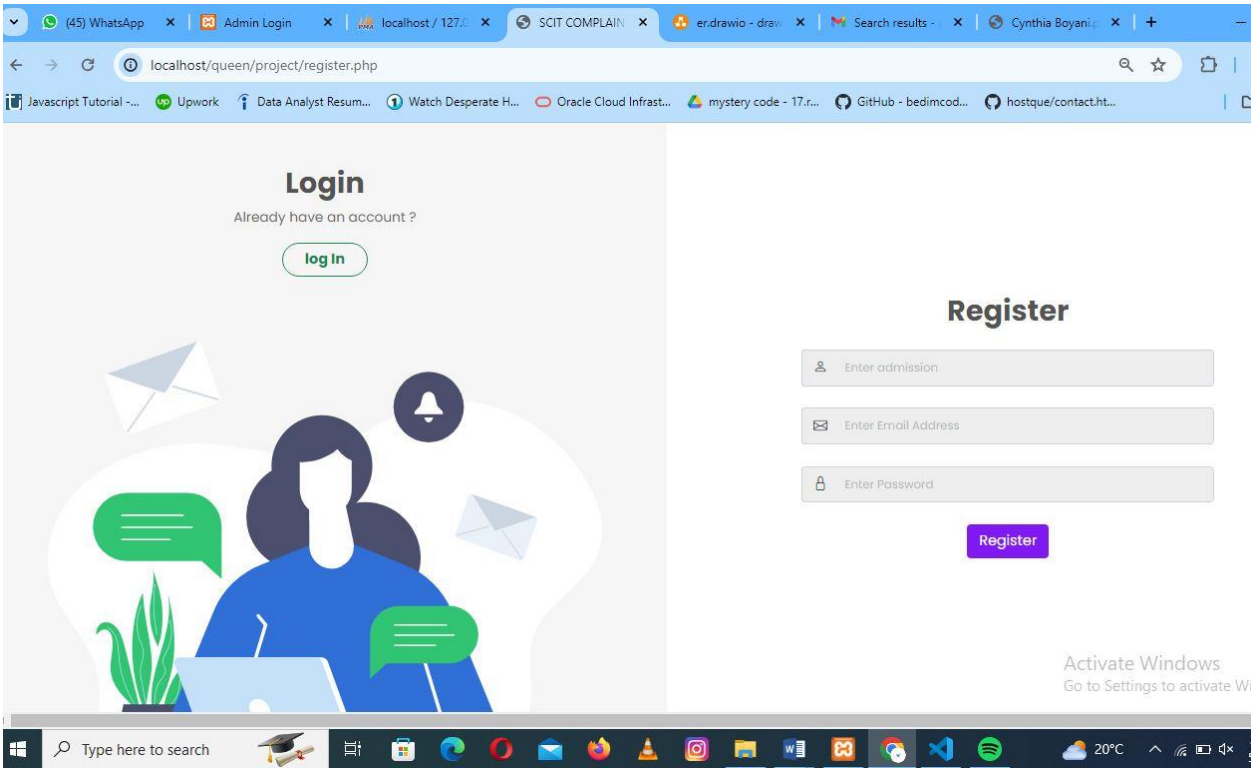


Figure 17: Student Register

5.4 Output Screen Design

5.4 5 Code design

The following is a sample code design for register.php

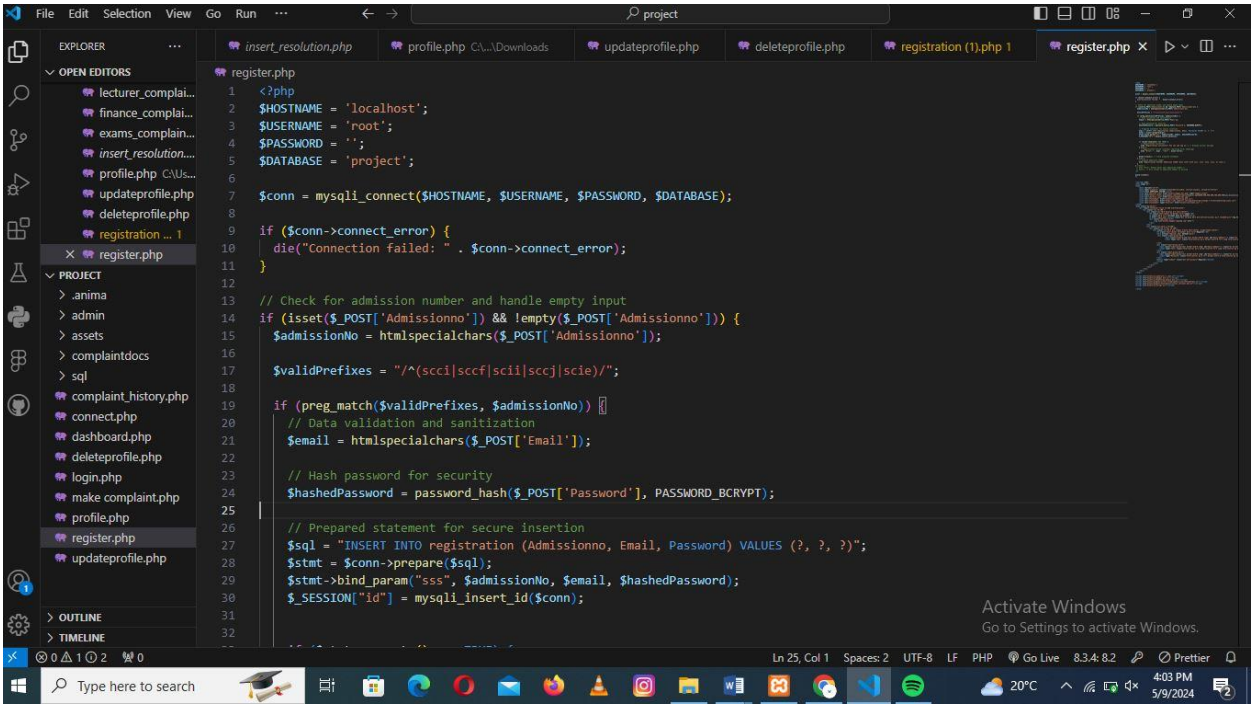


Figure 18:Register code

CHAPTER SIX: SYSTEM IMPLEMENTATION

6.1. Tools used for coding and testing

This entails the tools that were used to implement the system including the hardware and software requirements.

6.1.1 Hardware requirements

These are the basic minimum requirements needed by the application to run efficiently.

Hardware	Requirement	Reason
Device memory	4GB RAM	Relatively fast
Processor speed (Intel core i5 2nd generation)	800MHZ to 1GHZ	Accommodate most PCs
Bandwidth (network connection)	1Mbps	To perform the basic functionalities of communicating with the server

6.1.2 Software requirements

These are the software the system uses as it performs its functionalities

Software	Requirement	Reason
Operating system	Windows 10	It is stable and supports more features and is more user-friendly
Coding software	Visual studio code	It is easy to use
Database Management System (Server Side)	MYSQL	It is easy to maintain and retrieve records by simple queries.
Programming languages.	HTML, CSS, PHP, JavaScript,	Will be used to write the whole code develop pages, and for server-side scripting.

Table 2: Software Requirements

6.1.3 Coding

This entails writing all the logical functions and processes in a specified programming language as well as the design of the user interface.

6.1.4 Programming language

The programming languages that were used to develop this system are HTML combined with CSS and JavaScript for the front end of the project (web pages). For server-side scripting, PHP was used.

6.1.5 Database

MYSQL database is used to provide database services since it is a relational database management system based on SQL (Structured Query Language). It's mostly used for web databases since it can be used to store anything from a single record of information.

6.2 System test plan

The testing of the developed system is done to ensure all the functionalities of the system are based on the specified objectives and the gathered user requirements.

The objectives of testing are:

a) To ensure the modules specified are working properly and if any errors come up, they will have to be corrected so that the project reaches the specific objectives.

b) To identify errors and bugs in the system as well as figure out possible solutions to them.

c) To confirm that the system meets the needs of the users.

6.2.1 Unit testing

In order to determine the response a user receives from the system. For example, when they enter incorrect information or leave a field blank, it is necessary to evaluate the various screens and activities that a user encounters while traversing it

6.2.2 Functional testing

All the modules in the system are checked to ensure that they are working all together to achieve the main goal of the system and functioning as intended. For instance, when the student logs in or signs up by creating an account, they are allowed to use the other functionalities of the system (perform the assigned tasks), and work as intended without errors.

6.2.3 Usability testing

The user interface of the system should be easy for the user to interpret the wording as well as use symbols the users understand at each point in the usage of their system. Consistency in the interfaces gives the user a good impression to continue using the services provided rather than inconsistent interfaces which may confuse the user.

6.3 SYSTEM TEST DATA

Test data is used to check which mandatory fields cannot be left blank and which can be skipped.

Admissionno	**Email**	**Password**
SCCI/0433	Janet5@gmail.com	*********
SCIE/0000	Robert4@yahoo.com	******
SCII/777	Stacy56@gmail.com	*******

.

CHAPTER SEVEN: USER MANUAL – DOCUMENTATION

7.1 Installation Environment

A laptop or desktop running on Windows 10 and Xampp should be installed in the machine.

7.2 Installation Requirements

The requirements include:

i) A laptop or desktop with Windows operating system and Xampp installed in it.

ii) Internet

7.3 Installation Procedure

Go to Local Disk C, Xampp click on htdocs, then add the folder containing all the other folders for the system, (the folder is called ap).

Open Xampp go to Xampp Control click Start on both Apache and MySQL.

Open your browser can either be Chrome or Firefox then type localhost/scit/project/index.php and click enter. This will start the project.

7.4 USER INSTRUCTIONS

7.4.1 Students' and Admin Instructions

The following are guidelines for the end-user which is the student and the admin on how to use the system effectively. For the student;

- Successfully launch your default browser either Chrome, Mozilla Firefox, or Safari, and type www. SCITComplaint.com on the search bar to load the website.
- Scroll through and click on the Login/ Sign Up tab, to create an account using your username, email, and password.
- Proceed to click on the make complaint.
- Enter your details respectively as required/guided by the system ie the type, complain details, email
- Click on the submit icon after entering your details to file a complaint
- On the dashboard page, you can click on complain history to view your past filed complaints

- And finally click the logout button to sign out

For the admin;

- Click the admin login icon at the bottom of the homepage to log in with your username and password.
- You can then proceed to perform the functionalities required
- Alternatively, you can type localhost/phpMyAdmin on your local browser to access the database where you can perform the same functionalities.

7.5 System Conversion Method

Since the new system is an automation of the current manual system, a parallel conversion method will be used where both the old and new systems are used simultaneously. This mechanism will be the best since the users will need training before they fully learn how to operate the new system. After deployment training modules/ procedures will be made available to enable the end-users or patients of the system to learn how to fully operate it effectively and efficiently.

7.6 User Training

The following user training methods will be used:

- **Online/remote training**

  This involves uploading video/audio tutorials which will enable self-paced learning for the end user to access and be able to learn everything and how to interact with the website. This method allows users to be provided with in-depth knowledge and skills, grasping concepts, and is relatively cheap.

- **User manual/self-instruction**

  This entails providing a detailed user manual in a predefined readable format that lists down all the instructions and procedures to the end-user (student & admin) for him or her to follow to be able to interact and get a better understanding of the system. This method is pocket friendly and very flexible.

7.7 File Conversion

Parallel conversion will be used where both the old method (manual) of storing the files and the new (computerized) will be used in use until when the system will be able to capture all the files correctly without errors into the system.

CHAPTER EIGHT: LIMITATIONS, CHALLENGES, CONCLUSIONS, AND RECOMMENDATIONS

8.1 Limitations

During the development of the system, I faced quite some challenges such as a lack of in-depth knowledge and mastery of the development technologies to use hence I had to make an extra effort in learning and making sure the system implementation is done.

Internet was also an issue given that it is expensive to maintain an internet connection during the development.

8.2 Degree of Success

The project was completed despite the challenges and limitations experienced during the implementation process. Almost all the project objectives were achieved.

8.3 Learning Experience

Developing the web-based SCIT complaint system had a great impact on my learning experience, in terms of hard skills such as understanding diverse programming languages much better i.e., HTML, CSS, PHP, and JavaScript, and also soft skills such as efficient time management, communication, hard work, etc., and how to troubleshoot the errors.

8.4 Conclusion

The developed system automated the manual system and filing complaints can be done online.

8.5 Recommendations

- Developing a mobile application version of the system to enhance accessibility for students who primarily use smartphones.
- Implementing an AI chatbot to provide instant responses to common queries and guide students through the complaint submission process.
- Implementing an automated escalation system for complaints that are not addressed within specified timeframes

BIBLIOGRAPHY, REFERENCES, APPENDIX

References

Technical University of Kenya, no date. *About tu-k: Technical University*. Retrieved from Technical University Website: https://tukenya.ac.ke/

M, M., & Uktolseja, L.(2018) Design and implementation of online students' complaint (Case study of English study program at Victory University, Sorong). Retrieved from International Journal of Computer Sciences and Engineering.

N, O., & Alkhider, E. (2015) Online complaint management system. Retrieved from International journal of innovative science, engineering & technology.

LAUTECH(2023) DEVELOPMENT OF A MODEL FORONLINESTUDENTSCOMPLAINT MANAGEMENT SYSTEM. A CASE STUDY OF BOWEN UNIVERSITY NIGERIA. Retrieved from Journal of Computing and Informatics.

L.J. Mabotja & P.T. Malatji (2020) ACADEMIC COMPLAINTS SUBMISSIONS THROUGH A COMPUTERISED SYSTEM. Retrieved from South Africa International Conference on Education.

Q, F. Zoho Desk. "Customer service, now easier done than said," [Online]. Available: Zoho Desk, https://www.capterra.com/p/169505/Zoho-Desk/

Wrike,2006. *Agile development life cycle*. Retrieved from wrike website https://www.wrike.com/agile-guide/agile-development-life-cycle/

Appendices

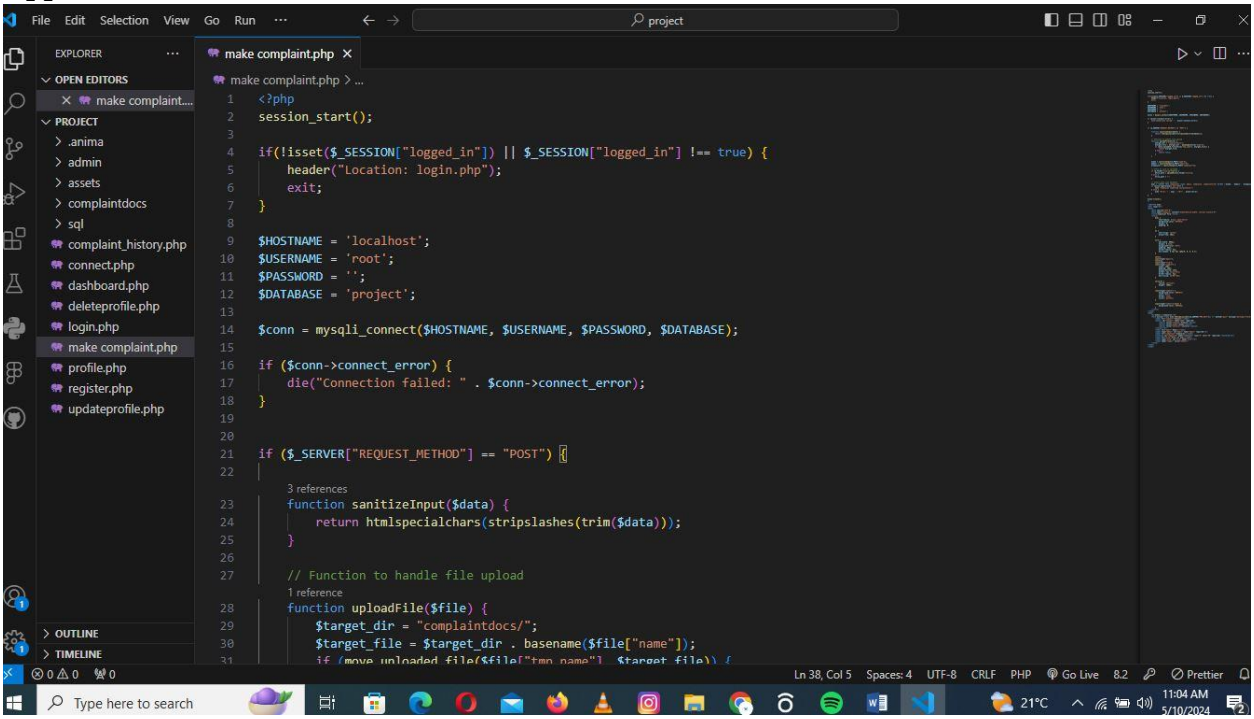


Figure 19: Sample code