DESIGN AND IMPLEMENTATION OF COURSE ADVISING SYSTEM FOR TERTIARY INSTITUTIONS

(A CASE STUDY OF AUCHI POLYTECHNIC)

BY

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A PROJECT WORK SUBMITTED TO THE DEPARTMENT OF COMPUTER SCIENCE, SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY AUCHI POLYTECHNIC, AUCHI

IN PARTIAL FULFILLMENT OF THE REQUIREMENTSFOR THEAWARD OF HIGHER NATIONAL DIPLOMA (HND) IN COMPUTER SCIENCE

JANUARY, 2022.

CERTIFICATION

We, the undersigned certify that this project work was carried out by **OAIKHENA FAVOUR** with aMatriculationNumber**ICT/6251840133** of the Department of Computer Science.

We also certify that the work is adequate in scope and quality in partial fulfillment of the requirement for the award of HigherNationalDiploma **(HND**) in Computer Science, School of Information and Communication Technology Federal Polytechnic, Auchi.

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DEDICATION

This project work is dedicated to God Almighty for His endless grace and protection upon my life.

ACKNOWLEDGEMENT

My deep appreciation goes to God Almighty who in love and infinite mercies saw me throughout my stay in Auchi Polytechnic. May His name be praised.

Special thanks goes to my project supervisor,**Mr. Momodu Mustapha** for the time taken out of his tight schedule to read through my project work. I am very grateful for making this project a reality, May the Almighty God reward you.

My heartfelt and sincere gratitude goes to **Mr. Sylvester Akhetuamen** Head, Computer Science Department and all lecturers in Computer Science Department, who through their ways of life and course offered have added meaning to my life and installed knowledge in me, May God continue to shower His blessings upon you all.

I own a debt of gratitude to my Father in heaven and also my ever-loving parents **Mr. and Mrs. Justina Emmanuel Oaikhena** for their immense contribution to my life. And also to my lovely brother and sisters, for their encouragement and interest over my progress, I love you all

I cannot forget my lovely friends in school who in one way or the other have supported me for the success of my study. I love you alland God bless you all, Amen.

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ABSTRACT

The current institution of student information system is a rigorous one that provides administrators with information about each student's academic standing but does not include its future planning; also, advisors still find it difficult to attend to students due to their schedule. However, its current implementation runs short from delivering a solution to the "last mile" problem and does not deliver this information in a way to be quickly, easily, and efficiently used by the student. The system was implemented using MySQL 6.O as the backend database and PHP 7.0 as the scripting language. The data parameters were used as the rule-base parameters to determine the information of each student. The system designed and implemented such that the following (user validation, students registration, course registration and usage) are carried out during its usage. This research introduces a web-based tool to alleviate the prescriptive nature of the advising process and gives more time for an academic advisor to move into a developmental advising model, an integrated advising model, or a full engagement model. This work showed that the Course Advising brings a lot of value to the advising process for students and advisors individually. We are suggesting that this will be positively compounded when an advisor meets his/her advisee.

CHAPTER ONE
INTRODUCTION

1.1 Background Of The Study

Student course advising system is an essential component of a successful academic experience. It involves tasks where faculty members help students complete the requirements necessary to graduate. It also requires considerable planning on the part of both students and advisors. Academic advisors are exposed to a variety of opportunities, enhancements, problems, and choices as technology becomes more prevalent on university campuses. Various tertiary institutions in Nigeria and institutions around the world use automated advising systems. They are helpful and beneficial for both advisors and advisees in that they contribute to assisting in making better-informed decisions and improved services. Introducing technology to the advising process aims at leveraging repetitive tasks on software and dedicating time to helping a student plan his/her education road map.

The use of technology in academic advising may introduce greater accountability and may provide better services to students. The benefits of the use of technology in academic advising enable administrators to be student centered. Technology is helpful to advisors and advisees in that it contributes to assisting in making better-informed decisions and improved services.

However, technology as a tool to enhance the advising experience, not to replace it. Institutions need a comprehensive plan that addresses advising, adequate faculty and advisor training, web support for targeted students, development of comprehensive databases for managing student data, and ongoing research to evaluate intervention effectiveness. Course advising can be a very time consuming process leading to the need for automating some of its functions. Ideally, an automated advisor gives answers to student's routine questions. The student can then meet with the advisor for further consultation. This combination of human and machine can save time for the human advisor.

1.2 Statement of the Problem

Owing to the inability of tertiary institution students to handle carry-overs, compute their Cumulative Grade Point Average (CGPA), perform excellently in exams, and determine whether they are on probation. The inaccuracy of advising information and length of time required to meet with an advisor is the main complaints voiced by students. This can be traced back to the lack of a central resource related to academic advising. As a result, there is a heavily fragmented process in which students and advisors must search through multiple paper-based and electronic information sources to gather complete information. The auditing tool employed by institutions is the paper-based plan of study, a prescriptive eight-

semester layout of classes and electives that, if properly followed through by the student, ensures on-time graduation.

The current institution student information system is a rigorous one that provides administrators with information about each student's academic standing but does not include its future planning; also, advisors still find it difficult to attend to students due to their tight schedule. However, its current implementation runs short from delivering a solution to the "last mile" problem and does not deliver this information in a way to be quickly, easily, and efficiently used by the student. In response, the researchers proposed the creation of a tool to improve current advising practices by providing more accurate information to students on defining and developing goals as well as academic advisement and planning their study(Grupe 2015).

1.3 Aim And Objectives Of The Study

The aim of this projects work is design and implementation of course advising system for tertiary institutions. The following objectives below are the study;

i. To carefully take care of the burden advisor agent faces in trying to do the work of counseling manually.
ii. Provide an automated student academic counseling system for schools, to ease the work load on school student advisers.
iii. Provide real time counsel and advice to students anywhere, any time.

iv. Help in the fight against students' poor academic performance.

v. Store students' complaint for easy retrieval.

vi. Protect submitted entries from unauthorized personnel.

vii. Design a secured system against theft or loss of vital information.

1.4 Scope Of The Study

The scope of the research is focused on design and implementation of course advising system for tertiary institutions, when fully implemented; the system will solve the challenges of students' record keeping, tracking complaints, reports and generally improve students' general welfare.

1.5 Significance Of The Study

This study is of numerous important to the guidance and counsel or department and the society in general in different ways:

i. It will help the advisors to always direct the students in their best course area with happiness because it will be result oriented.

ii. Itwillalsohelptoeliminatethewordfrustrationamongthestudentswhichisvery commonininstitutions.

iii. Itwilleaseofthestressofthecounselorusinghis/herbraintryingtostore information about different students in their large number and each student's area of interest he/ she is fit for.

iv. Using an automated system in this situation would be very efficient especially in information storage.

1.6 Limitation Of The Study

This project is limited to course advising system for tertiary institutions, because the program might not be useful to other studies. The time constraint during the time for this project work is short. Financial resources are a limitation encountered in the course of this research work. Also availability of materials during this project work was also a limitation.

1.7 Definition Of Terms

Counseling : To give advice to another

Society: This is an organized group of people living together and having things together.

Automated: Less independent of human direction and utilizes techniques of automation.

Prompt: To motivate an action

System: A combination of parts organized in a whole working together to achieve a common purpose

Psychology: The study of mind and its function

Data: This is a random processed facts and figures obtained from experiments,

research, surveys etc. Used to develop something or make decision.

Record: To writed own event so that it can be remember

Computer: This is an electronic device that accepts raw facts as data.

Web-based: Web-based software is software you use over the internet with a web browser

MySQL:is an open-source relational database management system. Its name is a combination of "My", the name of co-founder Michael Widenius's daughter, and "SQL", the abbreviation for Structured Query

PHP: Hypertext Preprocessor is a general-purpose programming language originally designed for web development.

Sublime text: Sublime Text is a proprietary cross-platform source code editor with a Python application programming interface. It natively supports many programming languages and markup languages.

Technology: Technology is the collection of techniques, skills, methods, and processes used in the production of goods or services or in the accomplishment of objectives, such as scientific investigation.

Database: A database is an organized collection of data, generally stored and accessed electronically from a computer system. Where databases are more complex they are often developed using formal design and modeling techniques.

Hardware: Computer hardware includes the physical, tangible parts or components of a computer, such as the cabinet, central processing unit, monitor, keyboard, computer data storage, graphics card, sound card, speakers and motherboard

Software: Computer software, or simply software, is a collection of data or computer instructions that tell the computer how to work.

Report: A report is a document that presents information in an organized format for a specific audience and purpose.

CHAPTER TWO

REVIEWOFRELEVANTLITERATURE

2.1 Course Advising

In most institutions of higher education, faculty members are required to assume the role of academic advisor, until recently faculty advising had received relatively little or no attention in the literature or on individual campuses even though systems of course advising involve hundreds of thousands of students, faculty, and paraprofessionals. In addition, multiplied millions of dollars in both faculty time and physical facilities are required to support and conduct the activity known as academic advising (Bonar, 2017).

Greater interest in advising has developed because of the growing complexity of higher education institutions, because of the ever increasing threat of declining enrollment, and because of the diversity of the students enrolling in the universities. Once viewed as a set of scheduling procedures, academic advising programs have been established to assist students in the development of their human potential (Abel, 2018).

Course Advising canal so involve the use of personality or course interest assessments, such as the Myers-Briggs Type Indicator, which is based on Carl Jung's theory of psychological type, or the Strong Interest Inventory, which makes

use of Holland's theory. Assessments of skills , abilities ,and values are also commonly assessed in course counseling.

According to Habley (2017), emphasis on course advising stems from its obvious importance in actualizing individual and institutional goals. Quality advising fosters student development and at the same time enriches the academic community, the adviser, and the society at large. It contributes to students perceptions of the institution as they teach their students the cultural robes of their institutions. Good academic course advising generally has a positive impact on students' academic performance as well as personal satisfaction with their college experience.

Drake (2018) also highlights that academic course advising assists student to understand their strengths and weaknesses that recurrent and meaningful course advising increases student's engagement and learning outcomes. Smith (2017) identifies proper academic course advising as increasing overall satisfaction with college, promoting effective use of campus support services and encouraging contact with staff outside the classroom. Good academic advising might be the single most under-estimated factor of a successful college experience.

However, Pizzolato (2018) shows that advising is more effective in eliciting learning outcomes when advisers alter their communications with advisees in ways that encourage an interpersonal relationship between adviser and advisee, stress

personal connectedness, genuine concern and accommodation based on the specific needs of the advisee.

2.1.1 The Faculty Advisor's Role

The system advisor is generally a member of the university faculty who has been assigned to the role or who has responded favorably to an invitation to serve as an advisor (Bloland, 2018). The role of the faculty advisor has been described by the following ways:

1. The adviser will assist the student in effecting a program of study consonant with the latter's interests and competencies.

2. The adviser will assist the student in periodic evaluation of his academic progress.

3. The adviser will assist the student in initial exploration of long range occupational and professional plans, referring him to sources for specialized assistance.

4. The adviser will serve as coordinator of the learning experiences of the student, assisting in the integration of the various kinds of assistance rendered health and psychological aids, remedial work, financial aids, religious counseling the panoply of all services available to the students.

To facilitate the foregoing role descriptions, the advisor should have considerable knowledge of the institution's combined educational offerings, including the total available classes, extra classes, special topics classes, independent study classes, laboratories, clinics, and field experiences. It is essential for the faculty advisor to have a comprehensive knowledge of the curriculum. In addition, the advisor should be familiar with the college campus in its many structural parts; should recognize the prevailing learning climate on campus; and should have acquired, or be in the process of acquiring, adequate skills for communicating with various students in authentic, appropriate, and meaningful ways.

2.1.2 Functions Of The Faculty Advisor

Faculty advisors are selected to provide educational counseling for tertiary institution students. To be effective, the advisor must recognize that each student has different abilities, interests, aspirations, needs, experiences, and problems. Academic advising cannot, therefore, be a mechanical, routine matter. The faculty advisor's primary responsibility is to help individual advisees plan the program of study that will satisfy university requirements and at the same time meet each student's specific needs.

To accomplish this goal, the faculty advisor must urge the student to give ample thought to the matter of education; he must direct the student in examining all significant facets of education while making necessary decisions. Although the

functions of the faculty advisor vary for different students, the general advising duties are normally as follows:

1. The faculty advisor explains to the student the program of general or basic education as it relates to the first two years of college, to the major of the student, and to preparation for life pursuits generally

2. The faculty advisor helps the student examine the course offerings in his major, relate these to other possible majors, and understand the graduation requirements for the curriculum leading to an appropriate degree.

3. The faculty advisor helps the student explore the career fields for which his major provides training and obtain related vocational information and survey job opportunities.

4. The faculty advisor serves as a link between the student and the administration by counselling the student on his scholastic problems (course scheduling, course adjustment, and academic progress and by making appropriate referral to other assistance agencies).

5. The faculty advisor serves as a "faculty friend" to the student by demonstrating a personal interest in him and in his adjustment to college; by serving as a central contact person in obtaining information that can be used to help the student; and by allowing the student freedom to make his own choices after the limitations, alternatives, and consequences involved in a decision are pointed out.

The faculty advisors assigned to advise students who are undecided about a major or majors have somewhat different responsibilities. Instead of helping each student explore the selected major, the advisor assists the student's investigation of potential majors by (1) referring the student to the counselling center for possible vocational testing and guidance and by (2) referring the student to special activities wherein interests may be explored and experiences gained. Once an undecided student has elected a major, it may be necessary to transfer him to a faculty advisor in his newly found major department (Brown, 2019).

2.2 The Course Advising System

2.2.1 Goal And Role In The Advising Process

The goal of the Online Advisor is to consolidate all information in one interface. By decreasing the chance of error, and displaying information instantly, an advisor will have more time to spend with his/her student on short and longerterm planning.

2.2.2 Models Of Course Advising

There are four models for academic advising:

(a) Prescriptive advising model

(b) Developmental advising model

(c) Integrated advising model

(d) Engagement model

The Prescriptive advising model: is characterized by an authoritarian relationship in which students follow the prescriptive regimen of their advisors concerning course selection, degree requirements, and registration, without assuming responsibility for decision- making (Crookston, 2019).

The Developmental Advising models: rely on a shared responsibility between the student and the advisor in which the advisor directs the student to proper resources; thus, facilitating the development of greater independence, decision making, and problem solving (Crookston, 2019).

The Integrated Advising model: combines elements of both prescriptive and developmental advising models.

The Engagement model:involves building a relationship between the student-advisee and the professor-advisor to enhance student self-efficacy for completing the degree requirements. This approach would require an even more concentrated effort on the part of the academic advisor in a time when current technological practices might limit the face-to-face student-advisor interactions. Technology should be used to increase and facilitate access to student information and not to replace the face-to-face student-advisor interactions (Crookston, 2019).

2.3 Technology In Course Advising System

The use of technology in course advising may introduce greater accountability and may provide better services to students. The benefits of the use of technology in academic advising enable administrators to be student centered (Kramer, 2018). Technology is helpful to advisors and advisees in that it contributes to assisting in making better-informed decisions and improved services. However, technology does not replace one-on-one interactions. Advisors should recognize technology as a tool to enhance the advising experience, not to replace it (Kramer, 2018). Tertiary institutions need a comprehensive plan that addresses advising, adequate faculty and advisor training, web support for targeted students, development of comprehensive databases for managing student data, and ongoing research to evaluate intervention effectiveness. Advising can be a very time consuming process leading to the need for automating some of its functions. Ideally, an automated advisor gives answers to a student's routine questions. The student can then meet with the advisor for further consultation. This combination of human and machine can save time for the human advisor (Kramer, 2018).

2.4 Technology-Based Advisory Systems

An automated system for academic advising or a technology-based advisory system helps a student plan the proper courses to take, by checking and listing courses for which he/she has satisfied the prerequisites, allowing students to do the

work themselves, without referring to their advisors. This reduces long-term planning errors and puts the responsibility on the student. In addition, a technology-based advisory system can suggest the order in which the courses should be taken to minimize the amount of time required to complete a degree. Such a system is as good as the integrity and freshness of the information it stores. Therefore, it is only necessary to encode accurately the data from the published university catalogue listing the requirements for each major as well as to enter prerequisite rules that guide a student eligible for graduation. Efforts have been made to develop and use technology- based systems to emulate the process used by academics for advising. Expert systems usually reply on the knowledge and rules held by an expert in a discipline (Grupe, 2015).

Expert systems applied to academic advising can be customized to specific student and institution needs.In the 2008s, computerized degree audit programs, either homegrown or commercially available productions like Miami University's DARS or Georgia State University's PACE systems started to appear (Munkwitz-Smith, 2005). Diffenbach (1988) tested a system for selecting candidates for admission to a university. Golumbic (2016), developed systems for advising mathematics and computer science majors. Whers (1992) developed an advisement system for education majors. According to Leonard (2017) reported on an effort to develop better tools for both advisers and advisees based on the university

experience. In 1998, the computer science department of California State University developed a rule-based online academic advising system. The advising system helps students enroll in courses that meet degree requirements and students' interests and then creates feedback output on the student's computer and sends a corresponding e-mail to the department. Patankar (2016) describes and discusses the development of an expert system solution, which has automated academic advising at the Faculty of Aviation at San Jose State University.

Presbury implemented an expert system that allows advisers to try to develop their own expert systems. The Pennsylvania State University has an artificial intelligence component of their advising system that evaluates the impact of a student dropping a course. In this context, Grupe in 2002 developed a web-based expert system that, after assessing a student's capabilities, informs him/her about the best majors to consider. Technology-based advisory systems have come a long way from being data repositories to incorporating more intelligence in their processes. As the systems become more complicated information security will have to be approached as financial and medical data are. The same applies to student privacy. Therefore, the legal aspect will have to be developed. As systems grow in complexity, their reliability and availability will have to have less tolerance to error. When social networking is integrated in future advisor systems a

whole new set of interesting concerns will have to be addressed such as peer-to-peer advising and the even newer role of the advisor.

2.5 Web Usability

We address the literature on web usability to set the grounds for the proposed solution. In order to give maximum benefits, web sites should be user-friendly. However, about 90% of current web sites have low usability. These websites will lead to unsatisfied users and consequently, will not grow into long-term successes. Attitude is the predisposition to respond in a particular way towards a specified class of objects. It comprises affective and cognitive components. User attitude is important because it contributes to users‟ intention to use a system, which is the best predictor of actual system use according to the Technology Acceptance Model. Recently, both web users and web designers are demanding from web pages not only usability but also appropriate feelings. However, despite this, users do not always experience the same kinds of impressions that designers intended to convey through their web pages.

(Richard, 2014)

Prior research suggests increased interactivity to improve web usability. Potential benefits of interactivity include sense of fun and satisfaction, engagement and performance quality, and time saving. To create value for an individual and

therefore positive attitude towards the online experience, satisfaction, effectiveness, and efficiency have to be addresses.

Research indicates that usability of a web site is associated with numerous positive outcomes, including reduction in the number of errors, enhanced accuracy, more positive attitude towards the target system, and increased usage. The International Organization for Standardization (ISO) defines usability as „the extent in which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use". ISO defines satisfaction as the user comfort with and positive attitude towards the use of a system. Satisfied users may spend a longer time on a web site, revisit it and may recommend it to others. ISO"s effectiveness is the accuracy and completeness with which users achieve certain goals (Richard, 2014). Effectiveness is one major factor that can maximize users" perceived value of a web site. The extent to which a web site is informative and the relevance, completeness and timeliness of substantive information are all critical to web site visitors.

ISO defines efficiency as the relation between the accuracy and completeness with which users achieve certain goals, and the resources expended to achieving them. Major complaints from web sites with poor usability include the enormous amount of time and effort expended in getting information. Higher efficiency experienced in using a Web site maybe positively related to a more

favorable assessment of the web site. Product design should satisfy both usability and content requirements of target users. Design is traditionally subdivided into three macro- categories, based on meaningful characteristics both of the whole site and of its single pages: Information representation and appearance, access-navigation-orientation, and information architecture (Willy, 2015).

Course Advising In Auchi Polytechnic

According to Crookston (2017), developmental academic advising 'is concerned not only with a specific personal or vocational decision but also with facilitating the student's rational processes, environmental and interpersonal interactions, behavioral awareness, and problem-solving, decision-making, and evaluation skills.

Tertiary institutions require a fast and reliable system to provide academic advising to its students, register them into different courses, and to manage change requests. Currently in Auchi Polytechnic academic advising is done mostly on online based, as seen in many of the public and private institution. The polytechnic advisor is based on the student result performance. Student of the institution are being advised through the result portal. The polytechnic advisor lacks responsibility for the nature of the advising relationship as well as for the quality of that experience.

The system has no way to control priority that allows senior students to complete pre-advising in advance. If a student misses the particular time allocated for him/her to register for a course, they may have to go through a lot of trouble, which may include server overload, system breakdown, session time out etc. As a result, the student might miss the opportunity to reserve a seat of a course. This can create longer sufferings later on. During advising, there is no physical presentation for advising at the institution to meet the advisor or drop slips and complete the advising process.

Challenges Of Course Advising

i) Limited accessibility and network connection: several research studies indicates that lack of access to resources, including home access, is another complex challenge that prevent institutions from integrating new technologies into education.

ii) Time constraint: Several studies have indicate that many advisors have competence and confidence during advising but still make little use if technologies because they lack the time.

iii) Limited ICT facilities:one of the major problems that militates course advising system is lack of ICT facilities. Many institution face this drawback.

iv) Limited Technical support: without good technical support advisors cannot be expected to overcome the obstacles preventing them from using the system.Technical supportproblems is a barrier in using the advising system.

Other related courses to course advising system are:

i) Computerized Registration Application for School Enrollment

ii) Web Application For Graduates Course Advising system

iii) A Web-based Interactive Student Advising System

iv) Student Advising and Planning Software

The purpose of the registration process at an academic institution is commonly to determine which studentswill be taking what courses within the university education system as well as for the administration to keep itsrecords up-to-date. From the students' point of view, the registration process enables them to acquire thenecessary authorized membership of the University and enables them to obtain their legal & authorizedbenefits and privileges. Here the methodology used are strategic and questionnaire which helps to know exactly what the students are facing and what are their opinion , to make registration easier and faster.

Some of the limitation to these projects is that studentssuffer with problems such as, class expulsion after two or three weeks ofthe start because of prerequisites requirement, delayed graduation due to unnecessary additional takencourses, drop of a complete semester because of minimum number of courses requirement, etc. Another is that, insufficient utilities in handling student's registration, inability of student to remotely register and access their registration number immediately.

The development phase and production phase can be given as:

Hardware Requirements

• Laptop or PC running chrome browser for testing

• PC for development

Software Requirements

• Frontend/UI: Angular 1.6, HTML5,

• Backend: Express.js(Node.js) 4.15.2,

• Operating Systems: Windows 10

• Database: PostgreSQL 10.0

• IDE tools: IntelliJ WebStorm 171.4249.40

• Internet

The major objective here are:

i) To collect the detail record of students.

ii) To create a database for the students.

iii) To create an easy to use friendly user interface.

iv) To help the management effectively manage student data.

v) To stop or solve the problems students face during payment of various fee.

In conclusion , all of the project courses listed above all helps to improve student performance and make registration easy for them all. But what make my project course different from them is that it advices more on student on how to

improve in their courses and also create room for interaction between students and Advisors.

CHAPTER THREE

SYSTEM ANALYSIS AND DESIGN

3.0 Introduction

System analysis and design deal with planning the development of information systems through understanding and specifying in detail what a system should do and how the components of the system should be implemented and work together.

3.1 System Analysis

Course Advising system are tests that come in a variety off ormsandrely on both quantitative and qualitative methodologies.The system can help studentsidentifyandbetterarticulatetheiruniqueinterests,values,andskills and areas of their course. Good student performance is not always an easy task mostly for students in higher institution, especially in results that is based on several criteria to achieve a good grade. This important decision not only affects the academic and professional life of the student but also the efficiency of schools. The system will help make easier decisions in terms of better performance in academic courses. The System design involves the evaluation of alternative development solutions and the specification of detailed computer – based solution. The key designs here are object-oriented design. Whereas the analysis focuses on the logical,

implementation independent aspects of a system, design deals with the physical or implementation dependent aspect of the system. In design of the system the analysis is used as a guide in developing the interface between the system provider and the students and the system users.

3.2 Analysis Of The Existing System

The existing systems have many drawbacks such as advisors are not available always as per the individual's comfort. Guidance and counseling has been limited to few institutions therefore not all the students can get course advisors and websites charge huge fees for guidance which is not affordable for students. Many websites have clumsy GUI and users find it difficult to use and interact with them.Sometimes advisors may not be committed to students and can sometimes be unapproachable. Generally, students in higher institution with limited knowledge about course prospects related to the courses they are enrolled. The current system of guidance and academic performance counseling programme in many institutions may not adequately tackle academic performance since student academic needs are not addressed. They may fail their examination or drop from higher institution and resources and thus minimize their chances of employment.

In the existing system most students seem to remember endless assessments with silly semester results, Even if there is good academic advisor, it seems students are afraid to use it based on negative word of mouth from others. It's more obvious the problem is that a course advisor has an image problem. In the existing system students face difficulties getting high academic advisor who are accessible, approachable, and helpful in providing guidance that connects their present academic experience with their future life plans.

3.2.1 Disadvantages Of The Existing System

i. The processof collectinginformationistedious.

ii. Therecordkeepingsystemispoor.Lossesofvitalrecordshavebeenreportedinthepastconsequently.Besides,protectingthefilesystemfromunauthorized access isaproblemthathasdefiedsolution.

iii. Theprocessofreportgenerationisinefficient.Sometimes,vitalreportshave beendelayed.

iv. The advisor may take too long to respond to students

v. Lack of facilitation in accurate advising sessions on campus, as well as provide a complete history of past advising sessions

3.3 Analysis Of The New System

The system is designed to have several windows PHP form. These windows have three mainsections, namely: the login window, the main menu and sub menu. The login window requests avalid user name and password from the Administrator to be able to gain access into the software.The Administrator is any staff that is authorize by the management of the school to be in charge ofexams and records unit, hence he should have a valid user name and password created by him to beable to login to the software.Some of the core features are as follows;

(a) View student's transcript and degree plan, grades, etc.

(b) Perform substitutions and exceptions

(c) View course descriptions

(d) Search complete set of degree plans available

(e) Leave comments for students or other staff

(f) See complete advising history

(g) Easy to customize for developers and administrators

(h) Compatible with all major browsers

While the Administrator should be able to perform the following function: Create user account for Lecturers (academic staffs), Departmental Exams officers and Head of Departments .The Head of Departments must have a valid user name and password to perform the following function; Register students in His Department,

Register staff in the Department, Register, and courses offered in the Department, Assign courses to registered staff in the Department and Assign examination officers to Different levels.

The system will ensure that course advising system will be reliable, unbiased and effective system which can reduce this issue and will able to neutralize the complexity of such problems. The course advising system is an approach to resolve problems in student academic performance and to provide a better guidance to the students for building their academics to have a clear academic perspective helping them to achieve the zenith of the success in their academic studies.

3.3.2 Advantages Of The New System

The proposed system will also have the advantages which are made mention below:

1) Accuracy in the handling of data.
2) The volume of paper work will be greatly reduced.
3) Flexibility(i.e.)it can be accessed at anytime.
4) Better storage and faster retrieval system.
5) Errors in there ports will be greatly minimized.
6) The process of collecting information is tedious.
7) Theprocessofreportgenerationisinefficient.Sometimes,vitalreportshave been delayed.
8) Better Data security and integrity

3.4 System Design

In this system design, main system and subsystem that will operate in the new system are exactly formulated. Most often, how information and data are to be stored, retrieved in the systems are specified.

The first step in system design is to determine how the output is to be produce and what format sample of the output and input are also presented. Secondly, input data and master file (database) have to be design to meet requirement of the proposed output. The operational (processing) phases are handled through program construction and testing includes a list of programs needed to meet system objectives and complete documentation.The modular programming approach is used; this system is with models streamlined to performing specific functions. The modules are:The system was implemented using MySQL 6.0 as the backend database and PHP 7.0 as the scripting language. The data parameters were used as the rule-based parameters to determine the information of each student. The system is designed and implemented such that the following are carried out during its use:

User validation: To be able to use the software, staffs are to be registered by the Administratorwith a default password on the first login to the software.

Students Registration: Students in the Department are to be registered on the system.

Course Registration: Courses offered from first year through final year should be registered inevery department.

Usage: At the end of the period (semester or session) staff will login to the software and enterstudents' marks from the score sheet (agreed marked sheet) for any course they are assigned. Staffcan also view results already submitted, if they want, or change their password when desired,while Departmental Exams officers will have the authentication to process students' results (i.e.calculate GPAs and CGPAs) for their respective units for any academic session they choose.

TheDepartmental Exams officers can also view any student's GPA and CGPA in his unit. Finally, theHOD can view all staff, students and course registration, as well as be able to view any student'sresult irrespective of the student's unit in the department

3.4.1 Model Design for the System

In designing the system, the prescriptive model will be used. This model of advising holds thpat the academic advisor tells the student what to do, and the student does it. Prescriptive advising is linear communication from the advisor to the advisee and places most of the responsibility not on the student, but the advisor. Patankar (2016).

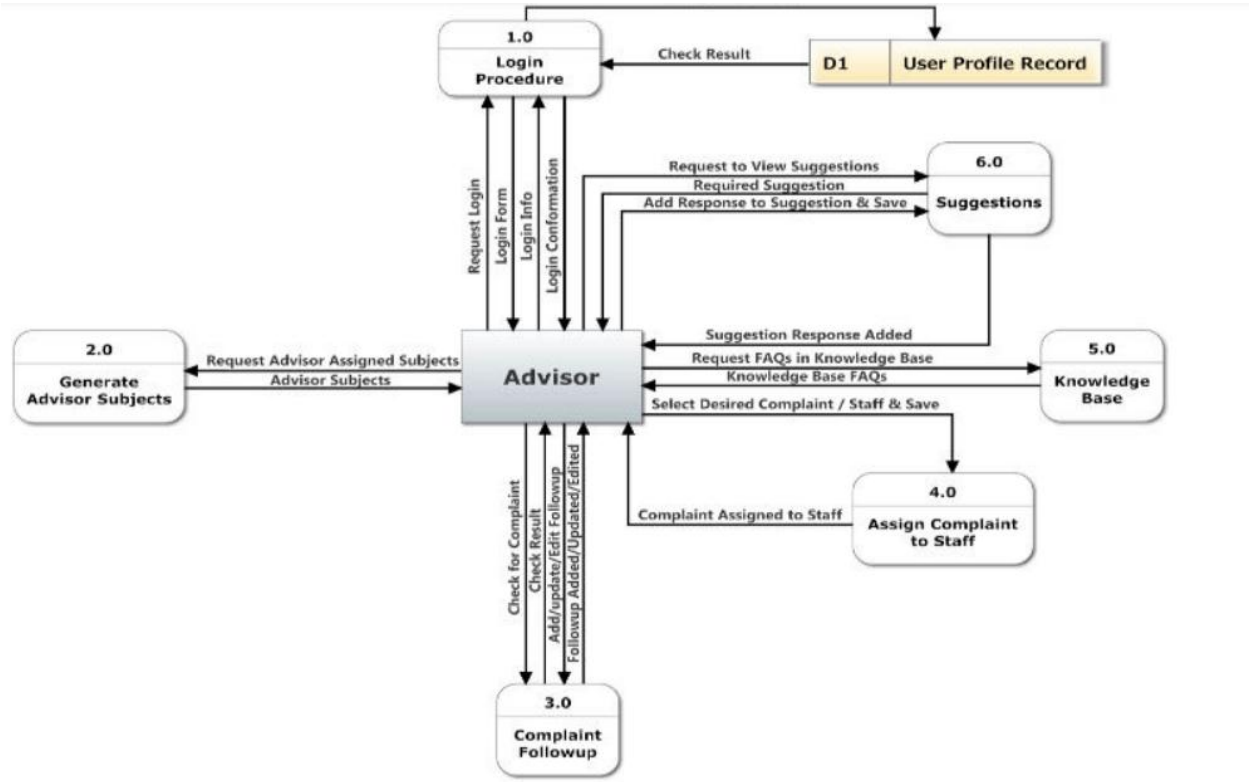


fig 3.1: Model Design

3.4.2 Input Specification And Design

The aim of designing this new system is to produce specification which will enable the complete and accurate implementation of the system without going back to the user for more information.

Administrator Login

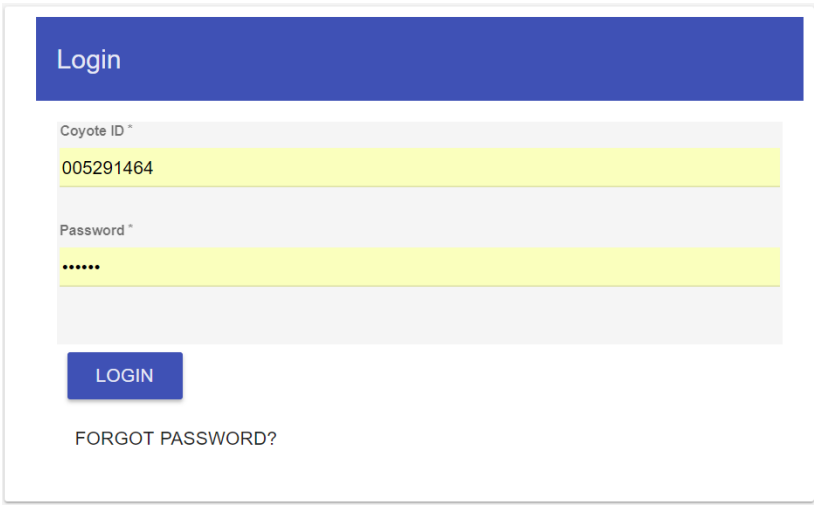


Fig 3.2: Administrator Login

The administrator, advisor and students log into the application from the login screen as shown in above. The administrator login form allows the admin to login to the system dashboard. When the login button is clicked then the system makes a request to the database, hence the information provided is being authenticated before access to the dashboard is granted.

Student registration

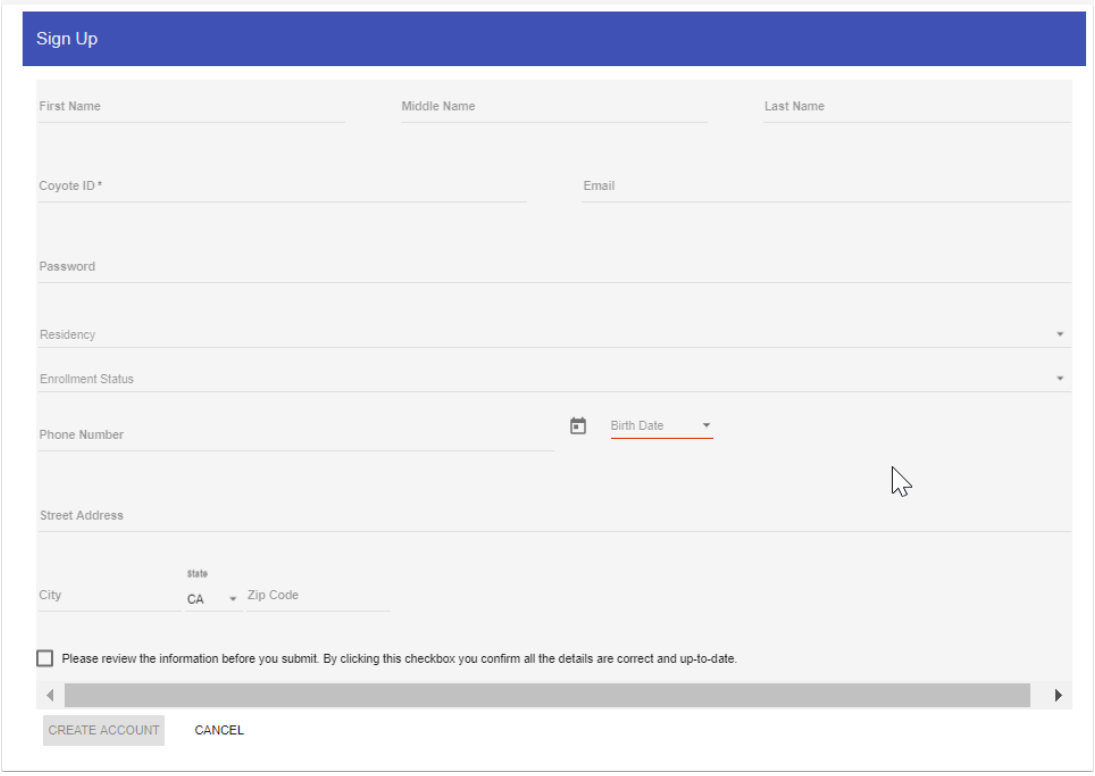


Fig 3.3: Student Registration

The student signup input form page allows every new user (students only) must first fill out to create an account before using the system.

3.4.2 Output Specification And Design

This design start from the submitted by guest (a mentioned on the registration card) the processing of the data (creation of customers file) and the output desired information via the visual display unit or the print out.

Student Home Page

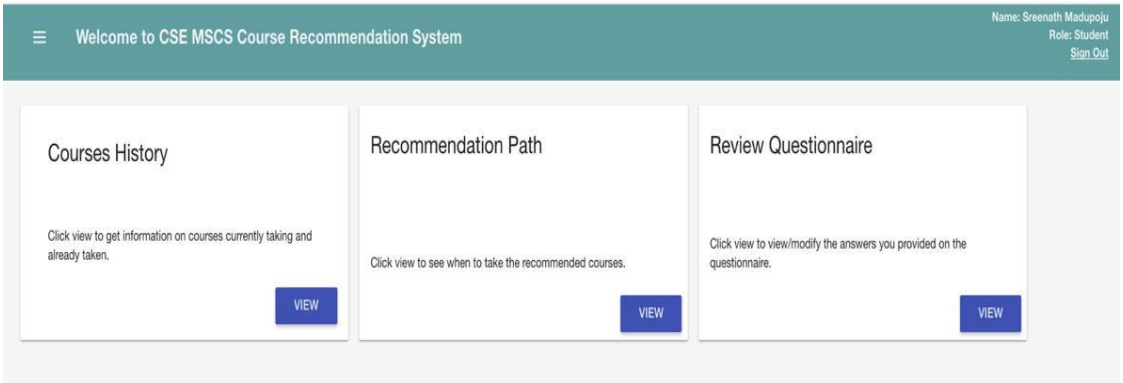


Fig 3.4: Home Page

The student home page output design shows the student home page with three cards: Courses History,Recommendation Path and Review Questionnaire.

Courses History Page

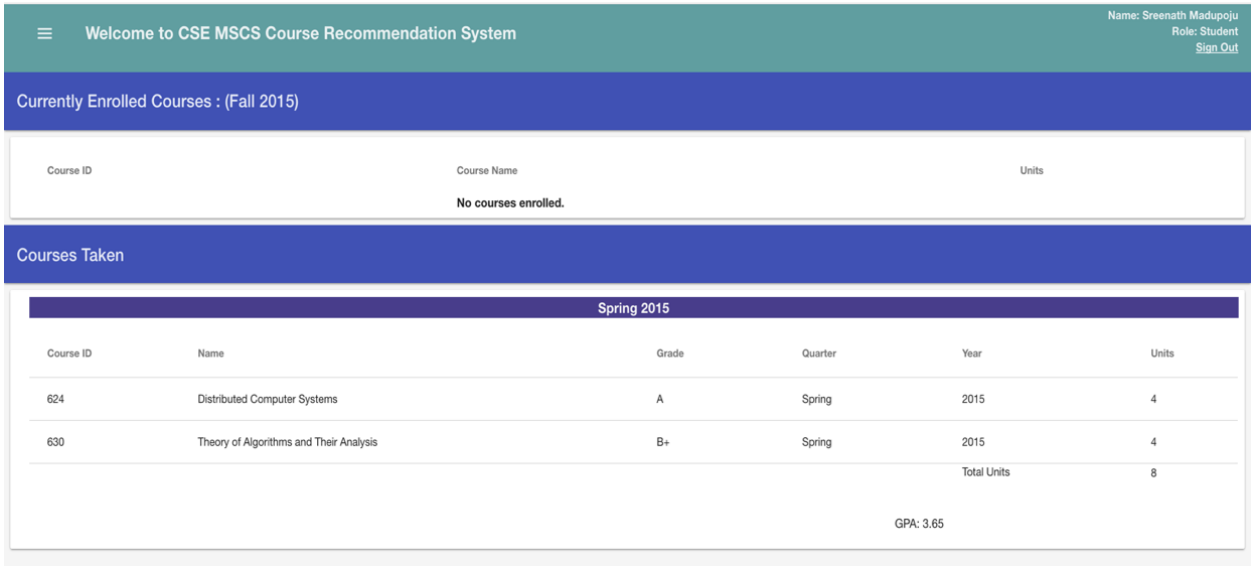


Fig 3.5: Course History

The student course output specification provides detailed information about the list of courses offered by the student.

3.5 Data flow diagram

System data flow diagram is a way of displaying how data flows in a system and how decisions are made to control events. To illustrate this, symbols are used. They are connected together to show what happens to data and where it goes. Note that system flow charts are very similar to data flow charts.

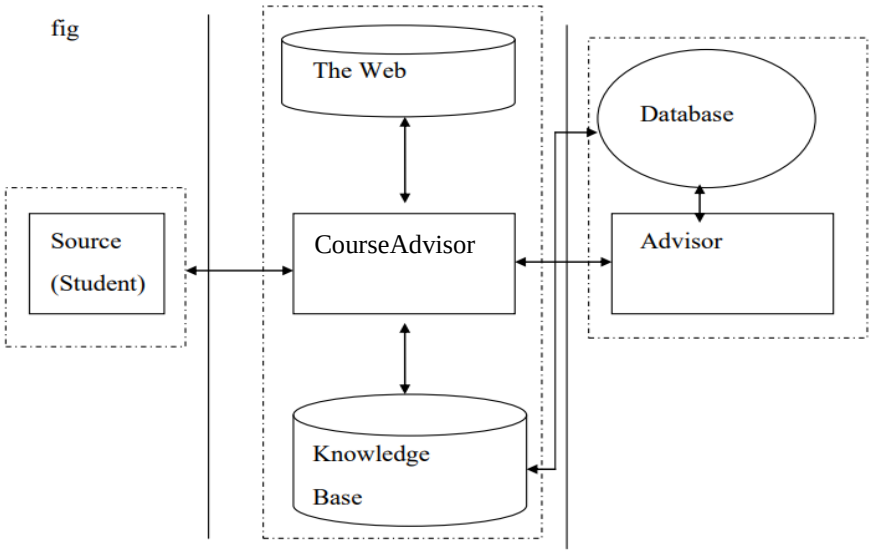


Fig 3.6:Data flow diagram

3.5.1 System Architectural Design

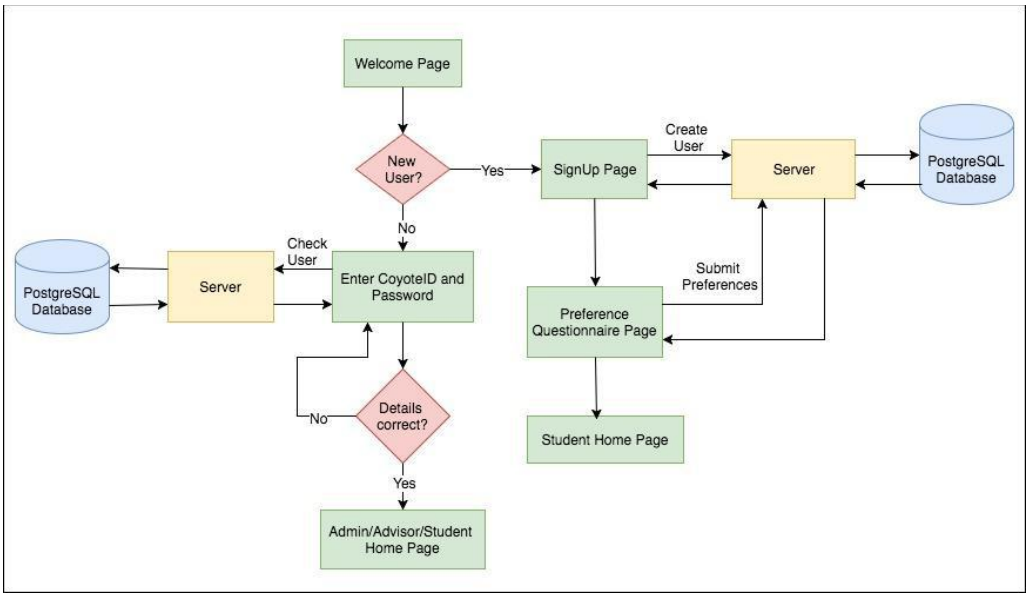
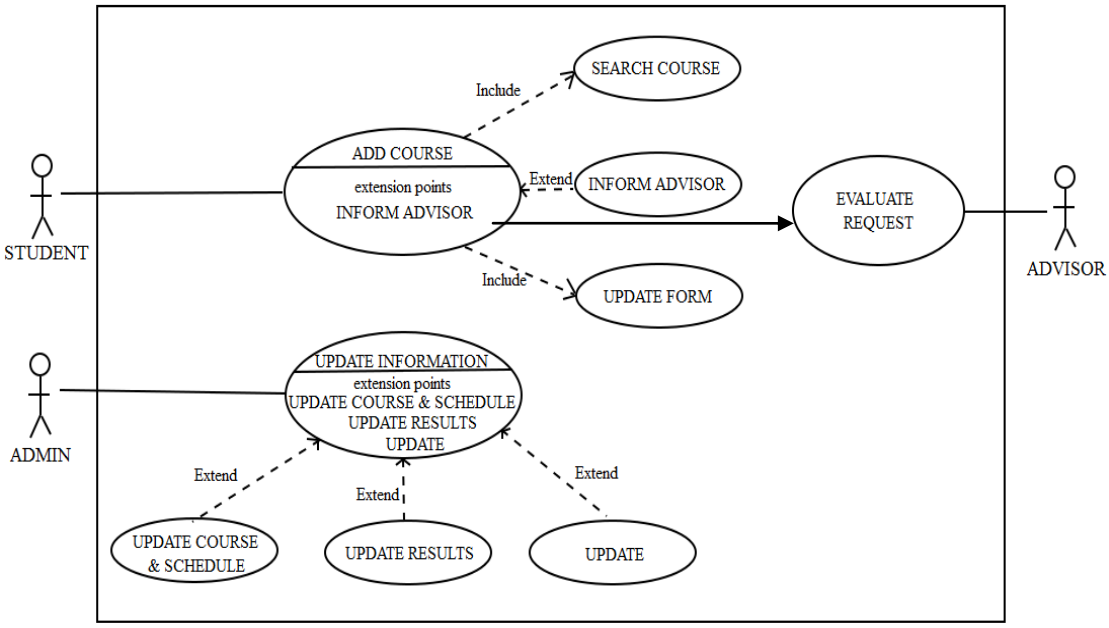
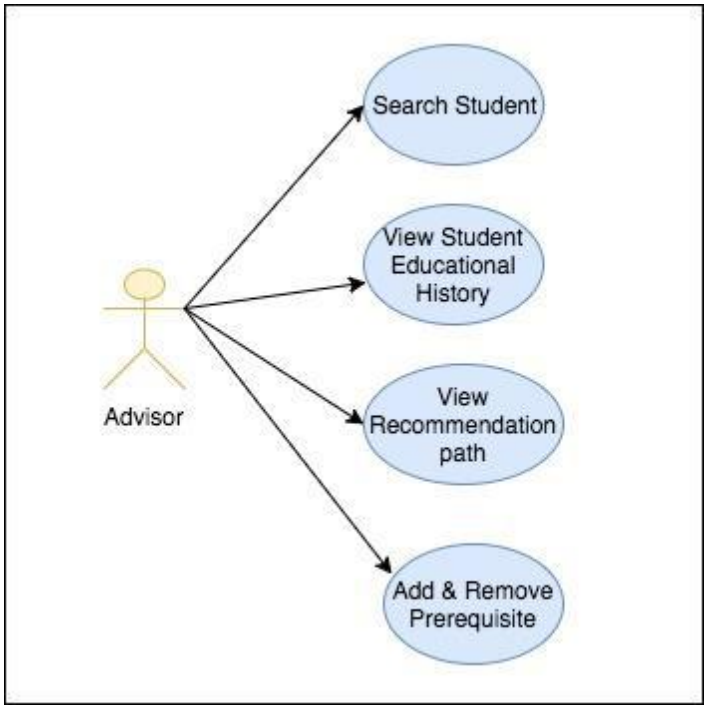


Fig 4.1: System Architectural Design

Use-Case Diagram

A use-case diagram is used to model a system functional requirement. It allows one to visualize the behavior of a system. They are drawn to be independent of the specific user interface design. Users are called actors and are represented in use-case diagrams by labeled stick figures. Use-case nodes are labeled with user tasks.


SEARCH COURSE
Include
ADD COURSE
extension points
INFORM ADVISOR
Extend
INFORM ADVISOR
EVALUATE REQUEST
STUDENT
ADVISOR
Include
UPDATE FORM
UPDATE INFORMATION
extension points
UPDATE COURSE & SCHEDULE
UPDATE RESULTS
UPDATE
ADMIN
Extend
Extend
Extend
UPDATE COURSE & SCHEDULE
UPDATE RESULTS
UPDATE


Search Student
View Student Educational History
View Recommendation path
Add & Remove Prerequisite
Advisor

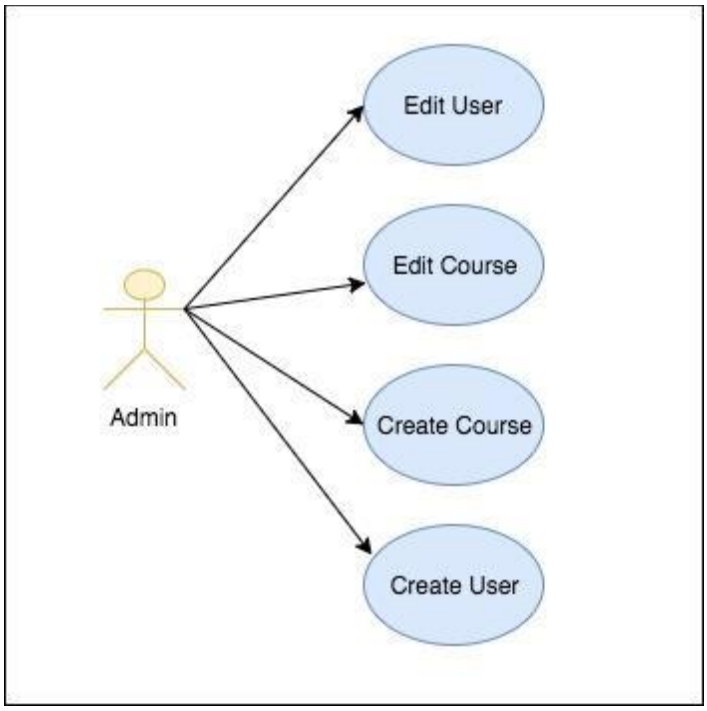


Fig 4.2:Use case diagram of the proposed system

3.6 File Design

Table 1: Student Registration

Field name	Datatype	Field size
S/N	Text	20
Full_Name	Text	50
Department	Memo	100

Matriculation_No:	Memo	100
Email	Tetxt	50
Phone	Text	50
Password	Date/time	8
Passport	Varchar	100

Table 2: Administrator Login

Field name	Datatype	Field size
S/N	Text	20
Username	Varchar	50
Password	Varchar	50

Table 3: Administrator Login

Field name	Data type	Field size
S/N	Text	20
Username	Varchar	50
Password	Varchar	50

3.7Source Of Data Collection

There are two main sources of data collection in carrying out this study:

(a) Higher Institution

(b) Interview interaction between students.

3.7. 1 Primary Source

Primary source refers to the sources of collecting original data in which the researcher made use of empirical approach such as personal interview.

Q1. What affects student academic performance?

Q2. What does student engaged mostly in campus?

Q3. Do you find interest in your courses?

Q4. Do you worked with classmates outside of class to prepare class assignment?

Q5. To what extent has your institution experience contribution to your knowledge, skills and personal development in the following areas?

According to the research Q1, shows that 80% of student academics were affected by students' relationship with lecturers. Q2 research shows that 85% student engaged much in social media lifestyle will affects their performance in grades because of lack of time for studying. Q3 research result shows that 75% has no interest in their courses based on lecturers communication and teaching. Also student lacks interest in their courses because its theoretical based without practical. Q4 research shows that 83%students fails to carry out their assignments outside school because most of them have less communication relationship with their course mates. Lastly from the research result of Q4, shows that the institution has not contributed to the growth of academic performance because there is no suitable academic advisor to help the student perform better in their courses.

CHAPTER FOUR

SYSTEM IMPLEMENTATION

4.1 Introduction

Every automated system must be implemented to know the success or failure if such system. Hence, an automated system that is not implemented or is not successful implemented cannot perform well or totally will not perform, as the case may be. Even after the development phase is over, the system project isn't complete. The new system must be implemented or installed.

4.2 Choice Of Programming Language

In developing a web based voting system there is much need to use high level sensitivity programming language. Upon the implementation of the system, the following are choice of language that will be used in the implementation of the system;

Front-end(HTML5 and PHP 7): Hypertext Pre-processor which stands for (PHP), have much reason why it is used for web development, firstly it is one of the current trend programming language in web technology and it's a free language with no licensing fees so the cost of using it is minimal. The system has higher Pipeline process that can handle the voting system and

interact with many different database languages including MySQL as the back-end design.

i) **Back End (MYSQL):** Mysql is relational Database Management System software which is commonly used with PHP MySQL is very fast reliable and flexible Database Management System. It provides a very high performance and it is multi-threaded and multi user Relational Database management system. Mysql will provide high security and easy user interface.

JavaScript (Client Server): JavaScript is mainly used for web-based applications and web browsers. But JavaScript is also used beyond the Web in software, servers and embedded hardware controls. Here the JavaScript is used for event handling and form validations.

4.3 Software And Hardware Requirements

4.3.1 Software Requirements

i. The softwarerequirementsinclude:
ii. Windows7,8or higher version for faster 5processing
iii. Microsoft Access
iv. HTML

4.3.2 Hardware Requirements

In the cost of the design, the software developed needed the following hardware for an effective and efficient operation of the new system;

1.Atleast 1GB RAM.

2.Atleast 80GBharddisk.

3.Display monitor.

4.An uninterruptible power supply(UPS)units

5.Printer.

4.4 System Testing And Implementation

4.4.1 System Testing

The modules tested include the module discussed earlier in the previous chapters. Each of these modules was tested with some test data. After each debugging stage, the module would be integrated into the main system

i. Main System Driver Testing

Being the Home Page of the system portal was tested for proper connectivity to the database, improper linkage to the database was immediately corrected and assurance was made to see that data were adequately retrieved and presented without errors.

ii. Database Testing

Database testing was tested basically for connectivity and storage. The test started with the design stage, where efforts were ensured that the correct data representation was made.

4.4.2 Implementation

The system is designed to make use of menu driven technique. It starts by displaying the menu page. The top down chart is used. The options on the main menu are selected by the user to execute one task or the other .On the close of the sub program control is transferred back to the main program.

4.4.3 User Documentation

To use this software, the following steps must be followed;

1. Open your browser
2. Type in the web address of the portal to get you to the home page
3. Use the hyper links to navigate around the web portal

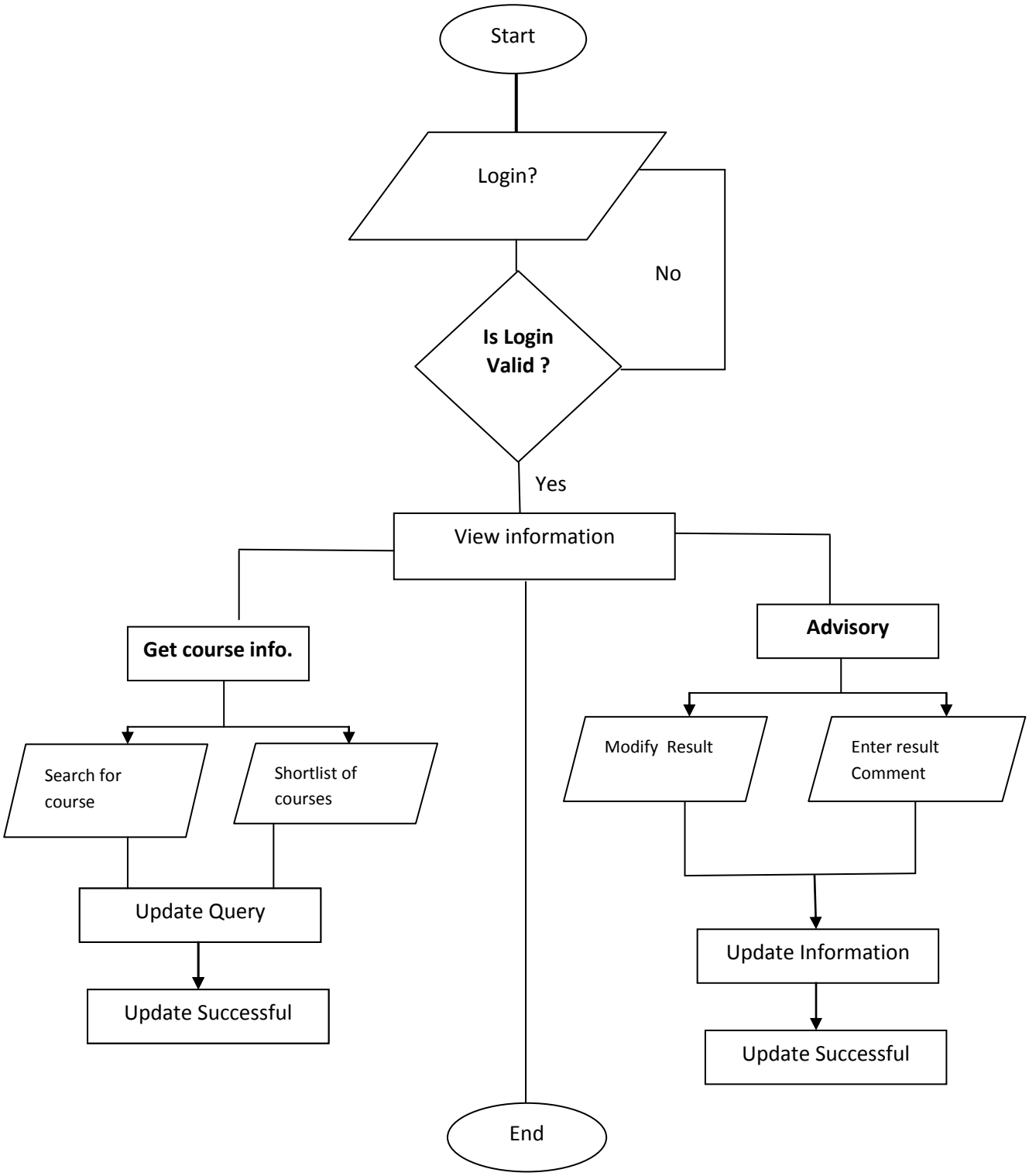
4.4.4 System Documentation

i) For the new system to be operated, a conducive computer room has to be created and less than three computers installed for staff

ii) A strong Network connection is need to make operation of the system

iii) A qualified computer literate is required to manage the system.

4.4.5 System Flowchart



CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This research wanted to introduce a web-based tool to alleviate the prescriptive nature of the advising process and give more time for an academic advisor to move into a developmental advising model, an integrated advising model, or a full engagement model.

5.2 Conclusion

Using technology in the advising process offers certain advantages over the traditional advising process. The course advisor system has a simple menu; information is displayed in a way that is familiar for both advisors and students. While this research compared a student's evaluation of his/her current advising process to a web-based tool, it is not the intention of the authors‟ to suggest that the Course Advisor should replace an academic advisor. This work showed that the Course Advisor brings a lot of value to the advising process for students and advisors individually. We are suggesting that this will be positively compounded when an advisor meets his/her advisee. Since the advisor will still need to provide counselling to the student, the Course Advisor offers an effective means of collecting information about the student before meeting with his/her advisor.

Given that the quality of academic advising is the single most powerful predictor of satisfaction with the campus environment. It is disturbing to note that college student's rank advising so unfavorably. Student satisfaction with faculty advising is very polarized, tending to rate this kind of interaction very favorably or very poorly. One reason is that the faculty are neither trained nor assessed for the quality of their advisement. This will reduce the time needed to acquire complete information from the student, thus allowing advisors to see morestudents or to counsel them in greater depth.

5.3 Recommendations

The Course Advising system has several parts that can be improved further infunctionality and application. This can only be through extensive use bystudents and academic advisors. The real measure of success is the extent towhich it will be adopted on campus. Measures have to be taken to secure thatthe Online Advisor delivers what it is designed to do. It has to support the faceto-face meeting between advisor and student and not replace it except for optional prescriptive functions. It has to provide advisors more time to focus on student development and contribute in making better planning and scheduling.

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Scheduling.Oxford Publisher. 37(6), 853- 864.

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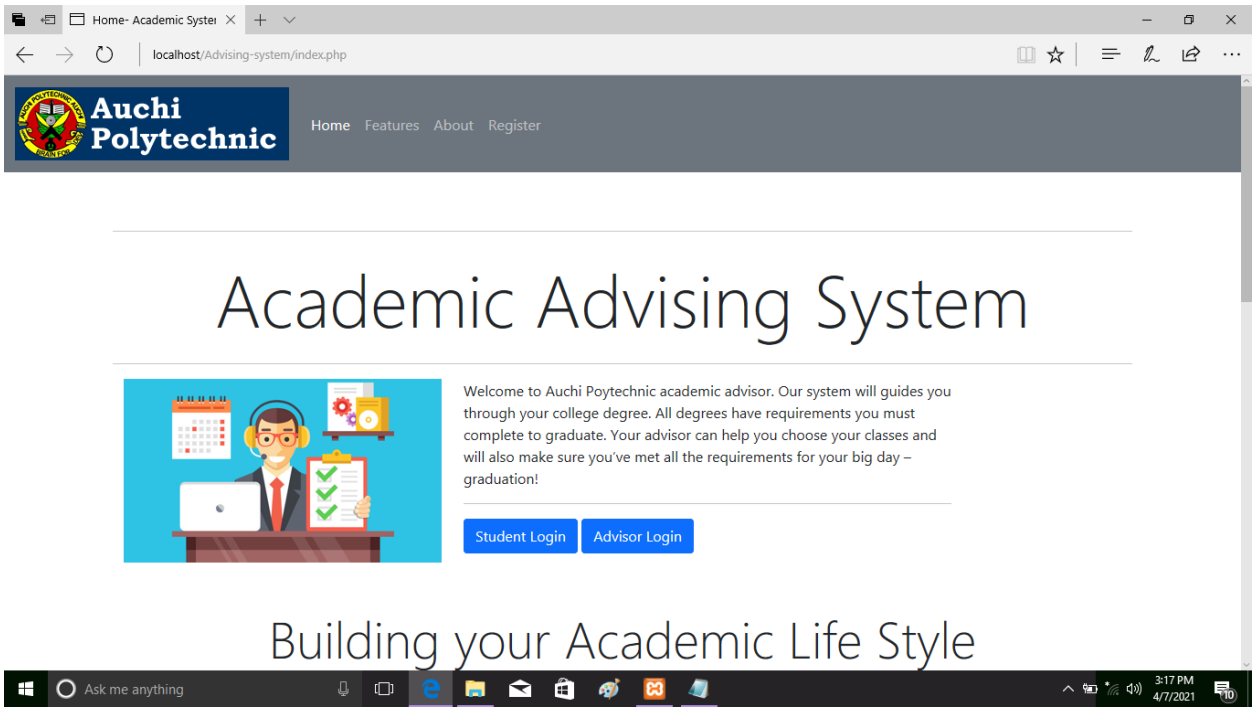
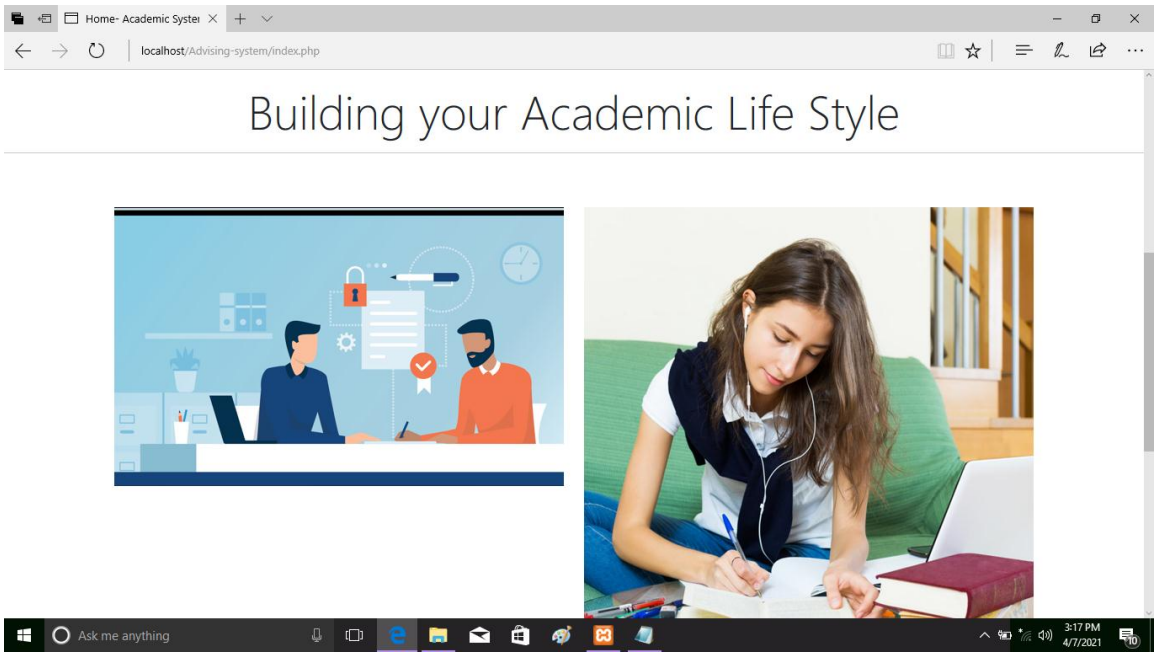
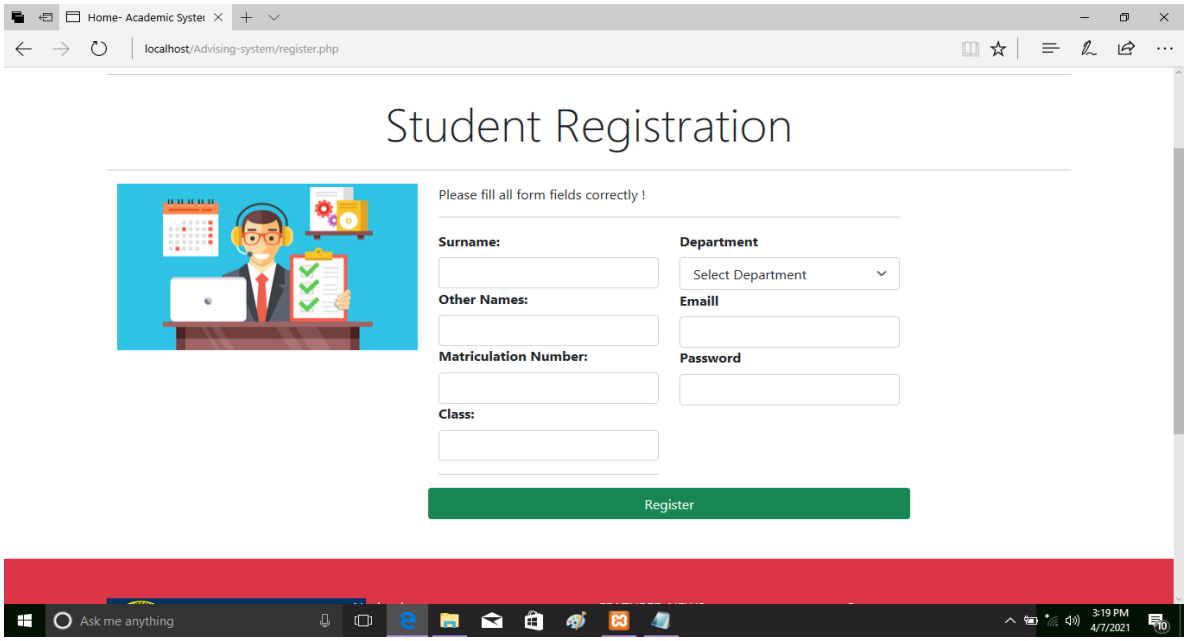
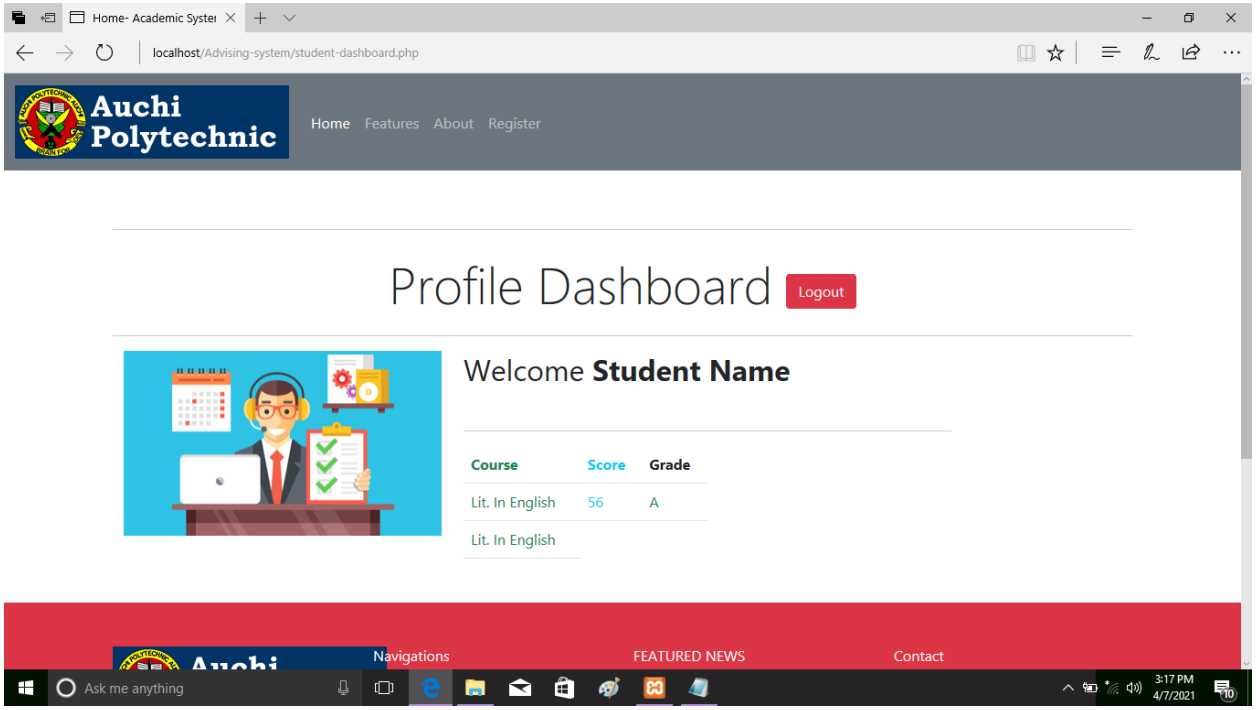
Willy, A. (2015):Using an Expert System to Support Academic Advising. *Journal of Research on Computing in Education,*24(4), 545-562

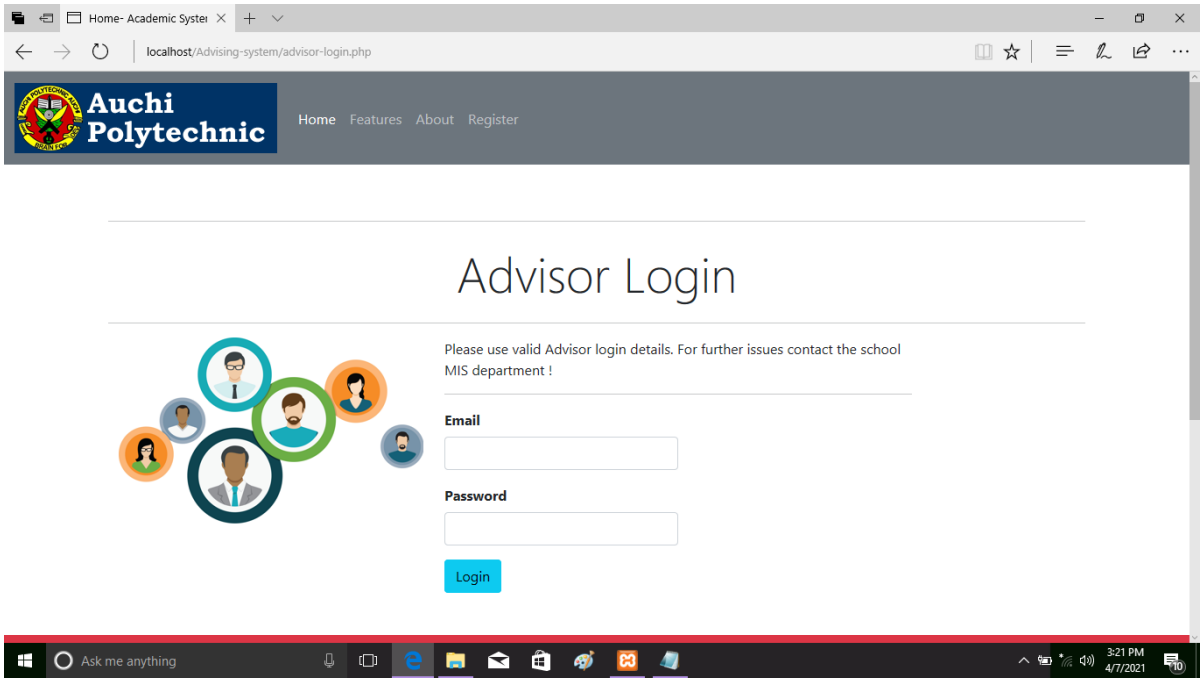
APPENDIX I:PROGRAM OUTPUT

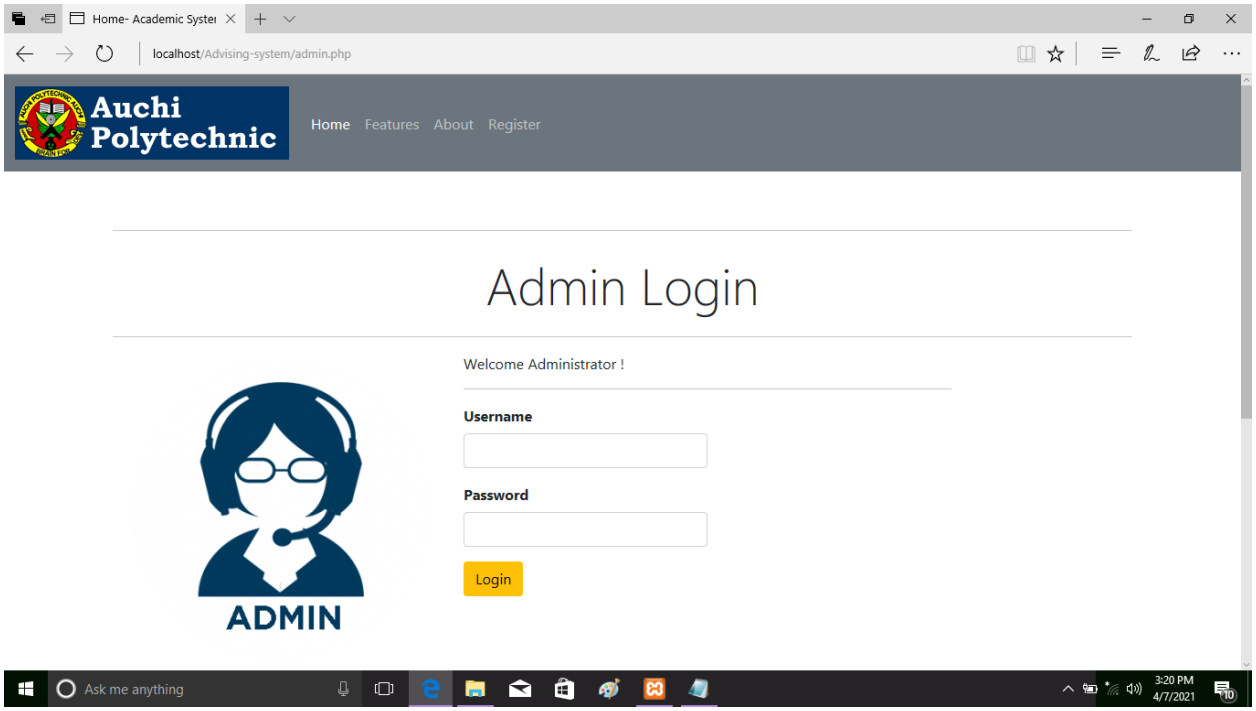





Home- Academic Syster
localhost/Advising-system/register.php
Student Registration
Please fill all form fields correctly !
Surname:
Other Names:
Matriculation Number:
Class:
Department
Select Department
Emaill
Password
Register
Ask me anything
3:19 PM
4/7/2021


Home- Academic Syster
localhost/Advising-system/student-dashboard.php
Auchi Polytechnic
Home
Features
About
Register
Profile Dashboard
Logout
Welcome Student Name
Course
Score
Grade
Lit. In English
56
A
Lit. In English
Navigations
FEATURED NEWS
Contact
Ask me anything
3:17 PM
4/7/2021


Home- Academic Syster
localhost/Advising-system/advisor-login.php
Auchi Polytechnic
Home Features About Register
Advisor Login
Please use valid Advisor login details. For further issues contact the school MIS department !
Email
Password
Login
Ask me anything
3:21 PM
4/7/2021


Home- Academic Syster
localhost/Advising-system/admin.php
Auchi Polytechnic
Home Features About Register
Admin Login
Welcome Administrator !
Username
Password
Login
ADMIN
Ask me anything
3:20 PM
4/7/2021

APPENDIX II: PROGRAM SOURCE CODE

```
<!DOCTYPE html>
<html lang="en">
<head>
<?php include 'header.php';

 global $password_err, $username_err, $accountNotExistErr,$username_signin;
 $password_err = $username_err = $accountNotExistErr ="";

?>
</head>
<body>

<!-- Start About Us -->

<!-- End About Us -->

<section class="container py-5">
<hr>
<h1 class="display-4 text-center py-2">Student Login</h1><hr>
<div class="container-fluid">
<div class="row">
<div class="col-sm-4"><img src="images/cartoon.jpg"  class="w-100" ></div>
<div class="col-sm-6">Please use valid student login details. For further issues contact the school MIS
department !
<br>
<hr>

<form method="POST" action="">
<div class="d-grid gap-2 col-6">


<div class="mb-3">
<label for="exampleInputEmail1" class="form-label text-bold"><b>Matriculation Number</b></label>
<input type="text" class="form-control" name="MatNo" required>
</div>
<div class="mb-3">
<label for="exampleInputEmail1" class="form-label"><b>Password</b></label>
<input type="password" class="form-control" name="Password" required>
</div>
<input type="submit" class="btn btn-success btn-block" name="login" >


</div>
</form>
</div>
</div>
</div>
```

```
</section>

<?php

   // Database connection
   include('database.php');


   if(isset($_POST['login'])) {
      $username_signin = $_POST['MatNo'];
      $password_signin  = $_POST['Password'];


      //Query if email exists in db
      $sql = "SELECT * From studenttbl WHERE matric_num= '{$username_signin}' ";
      $query = mysqli_query($conn, $sql);
      $rowCount = mysqli_num_rows($query);

      // If query fails, show the reason
      if(!$query){
        die("SQL query failed: " . mysqli_error($conn));
      }

      if(!empty($username_signin) && !empty($password_signin)){
         // Check if email exist
         if($rowCount <= 0) {
            $username_err = '<div class="alert alert-warning">
                  Online User account access does not exist.
</div>';
          } else {

            // Fetch user data and store in php session
            while($row = mysqli_fetch_array($query)) {

                        $id = $row['id'];
                        $cid = $row['cid'];
                        $email = $row['email'];
                        $username = $row['username'];
                        $password = $row['password'];

            }

            // Allow only verified user
       if($username_signin == $username  && $password_signin == $password) {


   $_SESSION['id'] = $id;
                           $_SESSION['cid'] = $cid;
                           $_SESSION['email'] = $email;
                           $_SESSION['username'] = $username;
```

```
                    echo '<script type="text/javascript">';
                      echo 'setTimeout(function () { swal("Account Login Successful !" ,"Preparing
account", "success");';
                      echo ' setTimeout(function(){
                      window.location = "./profile.php";
                       },2000); }, 1500); </script>';
                         //end sweet alert

               } else {
                  $accountNotExistErr = '<div class="alert alert-info">
                          Password is incorrect. Please Check and try again !
</div>';
                }
           //else {
              //$accountNotExistErr = '<div class="alert alert-warning">
                   // Your Account is currently placed on hold. Contact our customer care for further info
                  //</div>';
            // }

         }

      } else {
         if(empty($username_signin)){
            $username_err= "<div class='alert alert-danger email_alert'>
                    Username not provided.
</div>";
         }

         if(empty($password_signin)){
            $password_err = "<div class='alert alert-danger email_alert'>
                   Account Password not provided.
</div>
}

?>


<?php include 'footer.php'; ?></body></html>
```