FACULTY OF APPLIED SCIENCES

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

MANAGEMENT INFORMATION SYSTEMS

PROJECT PROPOSAL

TITLE:

INTERNSHIP MATCHING SYSTEM

SUBMITTED BY:

BRITNEY LUNDUKA (BIS/17/SS/019)

SUBMITTED TO

SUPERVISOR: MR P MUSSA

COORDINATOR: DR A TAYLOR

ABSTRACT

This research proposal contains the introduction which talks about the system that is meant to be developed. The system is meant to help companies identify students from the universities that seem to fit the posted vacancies at the same time helping students find internships with the most ease possible. The first chapter includes the problem statement, preliminary analysis, the goal, the objectives and the research questions. It also includes the justification and ethical considerations.

The proposal further analyses some systems that are being used to do the same (aid job/internship application and employee identification). Some applications and websites have been looked at in detail and from their weaknesses and strengths have been taken into consideration.

The proposal continues to explain the different methodologies that are to be adopted. The waterfall model has been adopted and reasons for this have also been highlighted.

Finally, the activities and work plan have also been clearly indicated.

This document also includes in the reference section all material that have been used in coming up with the document.

Contents

1.0 INTRODUCTION

This section discusses the background of the current system for finding students for internships and applying for internships, the obstacles that exist in the current system, the project's goal and objectives, various implementation methods, and ethical issues or considerations.

1.1 BACKGROUND

The MUBAS at the end of every academic year produces a great number of fresh, knowledge filled, excited to work, eager to learn (as regards to the practicality of things), brilliant, very well trained and educated young men and women. Thousands of students are currently in the system of the University of Malawi pursing either certificates, diplomas or degrees. This means the number that is graduating from the university is very great, hence the number of fresh graduates looking for jobs is extremely great even without taking into consideration the existence of other universities. With over 3000 students in the system at the undergraduate level, the rate at which students may desire internships is also great, now with this great number, it is very understandable why the university is not able to help all students with the finding of internships. On the other hand, it becomes hard for some companies to be able to select properly the employees that they need due to poor ways of vacancy advertisement, among other things. A platform that bridges the gap between companies and potential employees, or interns, a platform that matches companies and specific individuals is necessary and is lacking in the job hunting and internship or employee identification system.

Since the early 2000s, the hiring process has changed substantially, it’s amazing to think that things we take for granted now (such as LinkedIn, video messaging, and texting) didn’t exist in the same capacity only two decades ago. And it is due to quick technical breakthroughs that this transition has occurred. Beyond the internet’s emergence, innovations like video interviewing and interview scheduling software have helped to streamline the hiring process, saving time and money while also making the job of hiring considerably easier. However, there are some small variations between how people acquire skill today and how they did two decades ago.

It is important that we still acknowledge that the way of applying for jobs and the way of dealing with vacancies and networking has truly changed over the decades. Networking used to happen at stiff after work events with lousy snacks and watered-down drinks in the pre-internet era. If you weren’t there at these events, you were missing out on the opportunity to network with the most promising experts in your area. Networking has however taken a whole new meaning thanks to the sites like LinkedIn, twitter, and even Facebook and Instagram. It can happen at any time and in any location, and it is has evolved into a much more relaxed concept. In as much as this opens up opportunities to meet people from various backgrounds and walks of life and has also managed to shift the attention away from business cards and into meaningful conversation

with colleagues, it still doesn't fully bridge the gap that exist for the student that is still an undergraduate, looking for internships and is expected to have some kind of work experience for them to get a basic job in the industry and that of the company that needs interns with very specific knowledge in a field.

1.2 PRELIMINARY ANALYSIS

A lot of research has gone into understanding the main problems that companies face when trying to find interns. A large part of this research includes a number of interviews that have been conducted. Some human resource managers from different organizations namely NBS bank, MRA, TNM and Airtel were contacted and interviewed as well as given the chance to fill in a basic questionnaire.
From these interviews it was brought to light the kind of system that is currently in place for searching for, finding and hiring interns.
They said, they have to contact the school and fill in some paper work, asking them for some students that the school can recommend for internship.
The school then identifies through the heads of department the students that are fit for the work.
However, it is the report for most of them that it is not a quick process, and feedback may take more time than preferred.
During the interviews and from the responses from questionnaires they all showed great interest in the system they confirmed that indeed they need a system that can help them identify students and the proposed system would most definitely be ideal for them.
The main problems pointed out were:

1. It's a lengthy process to search for and identify students from universities.
2. Feedback may sometimes delay.
3. They do not have a direct way to communicate with the students.
4. They are not directly involved in the selection of which students fit (one of the HR managers pointed out that "book smart doesn't always mean they will perform, so a direct way to communicate with the students would be ideal").

From these interviews it is certain that the companies in Malawi need such a system and that would help lighten their work load.

1.3 PROBLEM STATEMENT

The students at MUBAS and of course many other universities go through a lot of challenges trying to find an internship as they are still in university.

- There are some programs (for example in the case of most programs under the faculty of applied sciences) where students are not sent to do attachments as part of their learning process. This means that for the student to gain undergraduate experience, which will put them at a great advantage, the student has to find some internships for themselves. This is extremely terrible because most of the times students don't even know where to start

from in terms of searching for undergraduate internships, and they find themselves in a space where they are done with school and they have no work experience whatsoever.

On the other hand, there are quite a number of companies that face the similar difficulty, they may not necessarily struggle to find people that want the internship, but they definitely struggle to find the perfect candidates for the internship.

- Sometimes companies are looking for help in some areas that may not necessarily require a person with a degree to handle the tasks, but because they are not able to easily find some students that have basic knowledge in the area, they may be forced to use some people that require being paid three or four times as much as they would pay an undergraduate student to do the exact task.

The problem basically is that there is no perfect system, or accurate way that can help a company or an organization, to identify the perfect candidate that can do the job well, for the pay they are willing to let go or sometimes for no pay at all, and on the other hand also no perfect system and accurate way for a student that is still in school find an internship, from where they can gain work experience.

1.4 RESEARCH QUESTIONS

1. What are the functional and non-functional requirements needed to build the proposed online management system?

2. With the system being developed, how will it be implemented so that it achieves its desired goal?

3. How will the system impact/change the way things are currently happening?

4. How will the user test the online management system to provide some feedback?

1.5 GOAL

To develop a system that bridges the gap that exist between the corporate world as they look for employees (interns) and the undergraduate students of MUBAS (specifically the faculty of applied sciences) as they look for internship.

1.6 OBJECTIVES

1. To analyze user and system requirements in order to develop the suggested system.
2. To design user interfaces for the proposed system based on user specifications or requirements, including database structure.

3. To implement the proposed system, where implementation involves testing, deployment and providing user training on how to interact with the system.

1.7 JUSTIFICATION

In an article by Penny Loretto titled "8 ways to find an internship", whose main focus is basically to train people (particularly undergraduate students) and inform them on the active steps that they can take to find an internship, the article shows how much of effort it takes a person for them to be successful in finding an internship. The article is basically advising the undergraduate student to take a few steps in the pursuit of an undergraduate internship such as networking, attending career fairs, looking for internship listings online, and discovering suitable employers through classified advertisements, the local chamber of commerce or by searching online. "Finding an internship requires time and planning" (Loretto, 2016).

In another article by college ave student loans titled "how to find college internships", the very first statement is striking, (Ave, 2019) "ask any student who has looked for a college internship, and they'll tell you one thing: finding the right one is difficult…". It however goes further to explain the importance of an internship and the benefits of it.

These articles are showing the importance of the undergraduate internships, and at the same time describing that it is very difficult for a person to get a good internship, this means that for the students under the university of Malawi to be able to get an internship, it may sometimes come at the cost of their academic excellence, because just the search alone will eat out of their schedule a lot of time, hence a better way has to be devised.

It is completely irrefutable that there has been great improvement in the systems that deal with employment, however all the change that has taken place is all to help mainly those that are already active in the working environment. For example, LinkedIn is most beneficial for the user that has enough work experience. "There is a magic number of connections to have on LinkedIn, and that number is 50. By connecting to at least 50 trusted contacts (past co-workers, clients, classmates, professors, friends and family) you will increase your chances of getting in touch with people and companies that will help you get ahead in your job hunting" (Hudson, How use linkedin to find a job, 2007). From this portion of the article it is very clear that in as much as it is very helpful, but in this specific case of an undergraduate student that is simply trying to find internship their chances of getting in touch with people and companies that can help them get ahead of their career are very low if not nonexistent. In the same light it becomes very hard for the companies to have proper access to students with special skills and knowledge that can be of benefit to them.

1.8 ETHICAL CONSIDERATIONS

The following are ethical considerations that will be taken into account:

1. Participation will be voluntary: The students and companies will not be pushed in any way or given money to be a part of the system or the research.

2. The students and companies will be allowed to withdraw from the system if they intend to do so.

3. During the development of the first version of the system, participants will be informed of the intention of the project and how it will affect their processes.

4. Confidentiality: the identity and profiles of the students will not be published for the viewing of all members of the system, the profiles will only be visible to the owner of the profile and the company whose vacancy matches the profile of the student.

2.0 LITERATURE REVIEW

This chapter will review related systems on the possible matching of individual profiles(CVs) of people to posted vacancies in a system. The chapter entails literature of other scholars on how other systems have attempted to make the application of jobs and internships easy for the masses. The main aim of the chapter is to identify gaps, shortcomings, and limitations in existing research giving context to the study through critical consideration of other scholars' work. Finding key themes in this topic and other general areas of concern are also among the aims of this chapter.

2.1 APPLICANT TRACKING SYSTEM

An application tracking system (ATS) is used by roughly 40% of firms to screen candidates for job opportunities. Applicant tracking systems do not keep track of an individual's progress during the hiring process. They're designed to save companies time, by separating the good from the bad candidates. However, the manner your CV is written, not the information it delivers, is what the technology utilizes to make its decision.

The article indicates that one Josh Bersin said that up to 75% of the resumes are never looked at by humans in the company.

According to Michael Tomaszewski a content creator at Uptowork, in line with how an applicant tracking system works he says, "if a job offer is placed on a job board, your CV will likely be examined by bots before it reaches an actual human being". When an applicant clicks apply, an applicant tracking system searches your resume for terms that match the job description.

2.1.1 APPLICANT TRACKING SYSTEM PROS AND CONS

Although an ATS provides various benefits to the recruiter, it also has some drawbacks that must be considered when using it in the recruitment process.

Advantages of the applicant tracking system

1. Streamlined hiring process

The best part about an applicant tracking system is that it cuts down of the amount of time spent on administrative tasks while speeding up the process. Companies do not need to manually post a

job advertisement on job boards or send emails because they can do all this with just a few clicks in the applicant tracking system.

2. Improved quality of hire

Applicant tracking system have a reputation for improving overall hiring quality. Recruiters only hire the finest talent from the applicant pool because of the initial automatic matching prospects.

Disadvantages of the applicant tracking system

1. Missing of qualified candidates due to wrong keyword selection

Due to the systems automated nature, ATS might limit its own potential, causing businesses to miss out on highly qualified candidates. The bulk of application tracking systems use artificial intelligence and include algorithms that look for pre-determined keywords within an applicant's application in order to categorize them. As a result, application tracking system run the danger of rejecting highly qualified candidates just for failing to mention specific key words in their job application.

2. Automatic elimination of resumes that the algorithm cannot recognize and interpret

All resumes with an unusual format are usually discarded since the ATS is unable to recognize and evaluate them. Exceptionally competent candidates can be flatly rejected by the application tracking system owing to technical errors or simply because their resumes are formatted differently. Some applicant tracking systems are unfamiliar with common fonts such as times new roman and others. As a result, an ATS can also reject applications created using fonts that the system does not recognize. Companies may lose out on a number of well- qualified applicants in this manner.

3. The ATSs are very prone to manipulation.

It is common knowledge that an ATS, like any other tool, many be manipulated. Candidates who are familiar with the applicant tracking system's filtering technology can use it and take advantage of the recruitment process. Regardless of whether or not an applicant is qualified, he or she can just cram a CV with the correct collection of keywords to get chosen. Manipulation of the application system can be immediately harmful to both businesses and meritorious prospects.

2.2 OKCUPID

OkCupid is a dating site that has a huge number of user profiles than would be the proposed system. With this app they use a matching algorithm to match individuals that have similar interests. The site allows individuals to list lots of personal information with over 4,000 questions to choose from. One can display their political opinions, gender preferences, likes and dislikes and many other personal details that can help matching them with the most seemingly perfect match.

Unlike other apps, OkCupid calculates a match percentage with other users to see how compatible they are. Basically, if another user has similar preferences and responses to questions as another, and is looking for the same things relationship-wise, there will be a high match percentage.

The site presents the user with options based on their preferences. This is a very important part of the site.

Adopting this algorithm for the proposed system would be very useful, because the companies would not only have a list of all students studying a specific program, but the companies would only be matched with students that know specific things and students that are willing to do the work indicated by the company.

It being a dating site, it definitely has many modules that are unnecessary for this proposed system and aren't worth reviewing or commenting on. However, since it matches individuals, its algorithm becomes key.

2.3 WOWNER CAREER MATCHER

Wowner is a job matching system that uses PWA (progressive web application) technology to create a job matching portal. Web and native applications are combined in progressive web application development. It has push notifications, works offline, and can be installed on the home screen. Wowner is an intelligent search technology that makes finding jobs based on skills faster and easier. The user's hard and soft skills and requirements are used to guide the search. Monthly/hourly rates, remote/onsite employment, weekend and night shift work, and so on. Based on the information provided, this sophisticated job match system evaluates a user's career prospects in the labor market. In the event that specific talents are lacking in experience, the system provides corresponding professional development courses.

When a user registers, he or she has the choice of uploading an existing CV or building a new one using the Wowner job matcher. This new CV in the Wowner app includes LinkedIn-like user data, such as skills and skill levels at all levels. A user specifies their preferred compensation level, work preferences, and other variables. To be able to find employment based on skills, the Wowner app requires you to fill out a set of primary profile fields. There is no need for any sensitive or restricted information. Only the most basic information about the user is collected: complete name, email, phone number, recent jobs, skills, and the level of each skill. The more information a user provides, the better chance a resume matching algorithm has of analyzing and finding the ideal match. Such a Skills Passport can be downloaded as a PDF and used to apply for jobs once completed.

The Wowner job matcher searches for employment prospects based on a user's CV data. They used Google Maps API to narrow down the search results. Furthermore, their development team used third-party databases of local Dutch job portals. It enables them to expand their employment opportunities.

A user can view their individualized Career Dashboard after completing their Wowner app profile. Based on the data stated in the previous steps when the user was constructing their profile, this board has a user's vacancy pool, labor market score, education, and matched jobs. The Wowner job match system generates a list of jobs that fit the skills set and job requirements. If a user's competency in one or more skills levels is lacking, a smart system will suggest that they take the appropriate courses. After finishing the required course, a user can strengthen their Skills Passport and, as a result, apply for the desired job. Every job posting on this job board has its own set of requirements. A date, a description, responsibilities, and an option to apply from the application are just a few of them. The most interesting job openings can be marked with a star.

For Wowner's career matcher, the tech stack of choice is

Wowner was built with React, Rails API, AWS, Redux, Sidekiq, Redis, Gitlab CI, TypeScript, and Material UI.

React was chosen as the front-end framework because it enables for the creation of a highly interactive user experience. React was chosen because it works well with complicated online apps that evolve over time, such as the Wowner app.

Rails API speeds up product development by providing a large number of free open-source libraries and gems. Many functions have already been written, which speeds up the development process.

Redux allows you to keep track of the state of your web app in one central location. It was employed in order to make changes more predictable and traceable.

AWS: To assure the safe storage of various objects, they employed Amazon Storage Service.

Redis is a server that stores data in an organized format. It was designed to make relational and NoSQL databases and applications run faster.

Gitlab CI: During the early stages of development, they employed Gitlab CI to catch any issues and faults. It's also used to confirm that code that's been pushed to production adheres to the code standards.

JavaScript code is simplified with TypeScript, making it easier to read and debug.

Material UI is a Google Material Design-inspired React component library. This customizable method was utilized to facilitate the building of styled websites faster and easier.

2.4 LINKEDIN

LinkedIn is a professional-oriented social media platform. It allows the user to network and create their professional portfolio, but it also allows the user to go out into the world and explore for new opportunities. Professionals who have been in business for decades, as well as recent college graduates, use LinkedIn. Employers and recruiters who are looking for applicants also utilize it.

LinkedIn, like other social media platforms, has an algorithm that is constantly changed in order to offer users with the best experience possible.

LinkedIn is, in its most basic level, a professional networking site. LinkedIn allows the user to connect with people they know as well as people the user's LinkedIn connections know. It acts as a virtual mixer where the users may rub shoulders with the best in the industry.

The user ought to start with a well-constructed portfolio to get the most of the platform. Include a nice headshot, a title and description that is relevant for the user, and highlights of their job and life experiences, as well as their education and skills. Then get moving. Every day, visit the site and pay attention to the people who matter in the user's field. What are they talking about and posting about? Go along with them. Join groups that are interesting and relevant to the user. The user's relationships will develop in tandem with their degree of participation.

Companies and recruiters looking for talent will be more likely to find people thanks to the positive profiles they've created. However, the user may be proactive by using LinkedIn's "let recruiters know you're available" tab under career interests, as well as its "job recommendations" tab, which assists job searchers in finding jobs. If the user routinely checks the open jobs that are advertised, as well as the "seek employment with connections" section to see who they know who already works at the companies they're interested in, they might be able to locate fresh chances they weren't aware of.

Employers can profit from the same advantages that employees gain from a well-developed professional network. Employers can use the site to look for possible job prospects or to keep track of organizations they've already hired from. Because LinkedIn is also a search engine that searches for positions that match job searchers, it's critical that companies utilize terms and phrases that a great employee may use when looking for new work.

2.5 HOW COMPANIES ADVERTISE FOR INTERNSHIP POSITIONS

1. Making a list of the tasks and responsibilities that the firm expects the intern to complete so that they can construct a profile of their ideal intern and figure out how to reach out to him.

2. Creating a job posting that includes an overview of the organization as well as the internship program. It specifies whether students can obtain college credit, whether the internship is paid or unpaid, and gives samples of a "typical day in the workplace" or duties interns should expect to complete. If the company provides benefits such as flexible work hours, telecommuting options, an environmentally friendly atmosphere, an on-site arcade, a health program, or a fully supplied kitchen, these tempting aspects are mentioned in the job offering.

3. Write an email informing their business colleagues and employees that they are searching for interns, and send it together with the job description. People in their network then assist spread the word, lowering the amount of money spent on sponsored advertising.

4. They use websites like InternMatch, Internships, YouTern, Enternships, and Urban Internships to promote their internship programs. Internship seekers from all across the country utilize these sites to go through various listings to find which internships best suit their abilities and interests. Companies that want to display adverts on these sites often have to pay a fee.

5. They inquire about co-op, internship, and work-study opportunities at area colleges, universities, and youth programs. Companies list their internship programs with the career centers or internship coordinators. Many students attend on-campus and neighborhood job fairs to obtain information for entry-level employment and internships, so the employers sign up to participate as well.

6. They also make advantage of social media to promote their internship program. They update their status on social media sites like Twitter, Facebook, and LinkedIn, including a link them to target college students based on their interests and geographical regions.to their job posting. They may also pay for a Facebook advertisement, which allows

2. OSERVATIONS AND CONCLUSIONS

After a lot of research and analysis it can be concluded that most of these applications and websites lack the proper excellence that is needed to have the easiest experience of intern identification and internship application by the students at the MUBAS in the faculty of applied sciences. Some of these applications and websites yes can be used by the undergraduate students in the MUBAS' faculty of applied sciences and also a number of companies here in Malawi, however the chances of the undergraduate students actually being successful at getting an internship and some of these companies being able to identify and get in touch with students that properly fit their current existing gap is almost impossible.

These platforms are very broad, they have people that have many qualifications, people that have a great deal of experience, and from the literature review it is clear that the systems chose the best candidates, meaning there is no way that the system can choose the student that has not yet

graduated and has almost no work experience for a job when there is another that the system will recognize to have more experience in that field. The system will almost always recognize the students as the least qualified, therefore defeating the purpose of the companies' hunt for undergraduate students for internship.

A system needs to be developed where it is very specific to the students that haven't yet graduated. A system that is tailor made for the purposes of helping the seemingly least qualified to gain experience and build their qualifications.

2.4 METHODOLOGIES

This section goes over system requirements gathering strategies, system requirements analysis techniques, system development methodology, system design, system implementation and testing, sample size, system development languages or technologies, and the proposed system's implementation strategy.

2.5 DEVELOPMENT APPROACH

Every system goes through the system development life cycle (SDLC). The Software Development Life Cycle (SDLC) is a well-defined procedure for producing high-quality, low-cost software in the shortest amount of time possible. From planning to maintenance, a software development life cycle model is a conceptual framework that describes all processes in a software development project. This process is linked to various models, each of which includes a different set of duties and activities. Software development is a time-consuming process that requires accurate requirement identification, implementation, and deployment. However, the fun doesn't stop there. After the software has been distributed, it must be properly maintained in a timely manner.

There are so many different SDLC models in software engineering, and choosing the best one to use in this project isn't exactly easy, below are a few most commonly used models.

1. Agile

- Agile is a philosophy, not a development methodology. It's a whole family of approaches. Scrum, Kanban, and XP (extreme programming) are some of the most popular Agile SDLC implementations.

2. Waterfall

- The waterfall is a cascade SDLC model that depicts the development process as a flow, progressing through the phases of analysis, planning, realization, testing, implementation, and support one step at a time. Every level of the SDLC is carried out gradually in this paradigm. The term "waterfall" connotes meticulous recording. The characteristics of each phase of this SDLC model are predetermined The waterfall life cycle model is one of the most well-known approaches to managing complicated projects. This method allows you to avoid several problems that may arise due to a lack of project control.

3. Iterative

- Although the iterative paradigm resembles the waterfall model, there are significant differences between the two. Consider the following scenario: an app with ten primary functions. All 10 functions will be thoroughly planned during the requirement analysis and design phases of the waterfall model, and then gradually implemented throughout the development phase. The iterative model differs significantly. It means that the entire

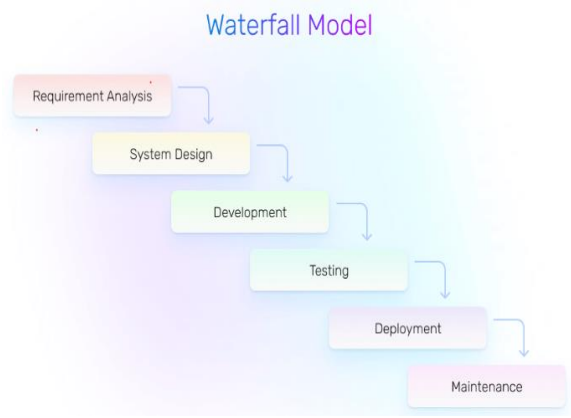
process is divided into a specific number of iterations, each of which includes the development of a specific number of features. As a result, the Iterative SDLC model does not necessitate a complete list of requirements prior to the commencement of the project. The development process could begin with functional requirements that can be increased later. The process is repeatable, enabling for new product versions to be created for each cycle.

4. Spiral

- The spiral approach combines the iterative and waterfall SDLC models, with a strong emphasis on risk analysis. The fundamental problem with the spiral model is determining whether it is appropriate to advance to the next stage. The use of predetermined timeframes is suggested as a solution to this problem. Even if the preceding step's work isn't finished yet, the transition to the next stage proceeds as planned.

This project will use the waterfall model during its development. There are a number of reasons why it is best for the project to use the waterfall model like:

1. It is Simple to use and understand.
2. It is Best suited for small or mid-sized projects with clear and unambiguous needs just like the proposed project.
3. The essential stages of the development cycle are simple to identify.
4. Tasks are simple to classify and prioritize.



Extracted from an article by Existek on SDLC model guide

2.5.1 PHASES OF WATERFALL METHODOLOGY DESCRIBED BRIEFLY

1. Requirements analysis

It involves conducting a meetings or interviews with the human resource directors of a number of companies and finding out the general needs and functionalities that the internship matching system should be able to perform and achieve.

2. System design

It entails creating the proposed system's user interface as well as system functionalities or requirements, with a focus on the needs of the organizations identified through requirements analysis.

3. Development

It pertains to how the proposed system will be constructed, as well as its user interface, in light of the design summarized in the design phase (phase 2). The internship matching system prototype will be the deliverable for this phase.

4. Testing

Before delivering the proposed system to the client, it must be tested to ensure that all of the criteria obtained are met and that the system functions properly.

5. Deployment

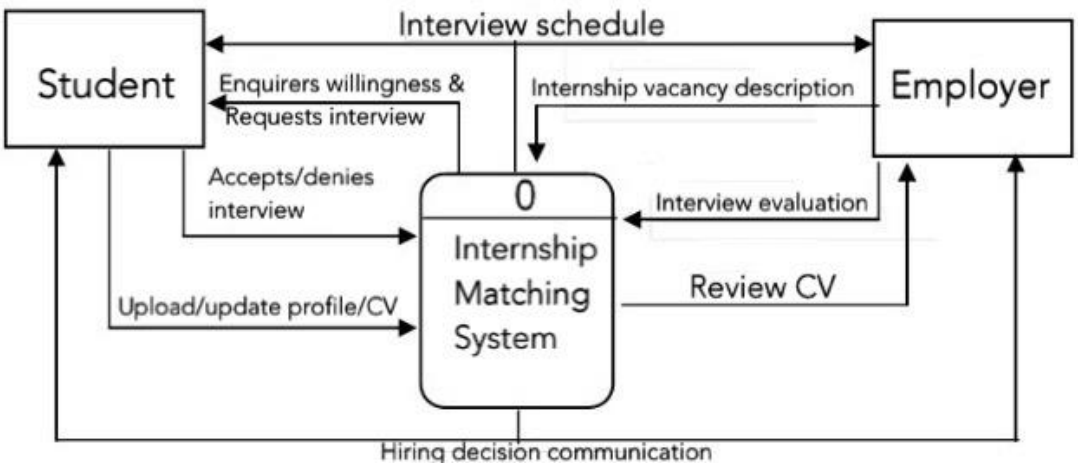
This phase begins only once the testing phase is done or successful, and it entails the distribution of the proposed system to clients (students and companies)

6. Maintenance

This phase will entail gathering feedback and identifying problems found when using the proposed system so that it can be enhanced and resolved as needed. New criteria will be considered throughout this phase, and the major result will be a complete internship matching system.

2.6 NARRATIVE OF THE PROPOSED SYSTEM

The proposed system, which will be used by two types of users namely; the Human resource department of the company and the student of the MUBAS in the faculty of applied sciences. The Human resource personnel responsible for adding vacancies will post the vacancies with as much detail as possible to help the algorithm narrow down the most fit candidates. Once the system identifies the students that are fit for the position posted, the system will send a notification to the matched student prompting them to accept or deny the request for an interview with the company based on what the students wants. The company then send an interview schedule to the student. Once the interviews are done on a platform outside the system, the company then through the system will send a notification to the student letting them know whether they have been offered the internship position or not.



3.2 SYSTEM ARCHITECTURE

The proposed system for the company will use the client-server architecture. The chosen architecture balances the processing between the client and the server (Denis, et al., 2009).

3.2.1 METHODOLOGY FOR REQUIREMENTS COLLECTION AND ANALYSIS

- Information for this study will be collected from both primary and secondary sources. Primary data will be collected through questionnaires to both the students and the companies. Secondary information will be collected from journals, books and other published documents. Overall data collected will be qualitative

1. QUESTIONAIRES

Questionnaires will be formed that will be given to the students and others former that will be for the company human resources department and also for the departments that the students would be working in. These questionnaires will be formed in a way that some relevant information on how the system would affect the existing process and problem.

2. INTERVIEWS

This is a face-to-face interpersonal setting in which one person (investigator/interviewer) asks another person (interviewee) questions in order to get answers to a specific problem (Kerlinger,

2021). There are both open-ended and closed-ended questions in interviews. The interview approach was chosen because of its objectives, which include acquiring information about the current problem and eliciting the respondent's inner feelings and opinions.

3. DOCUMENT ANALYSIS

This is a type of qualitative research that employs a systematic approach to analyzing documentary evidence and answering particular research questions. In order to get meaning and empirical knowledge of the construct being investigated, document analysis necessitates periodic inspection, study, and interpretation of the data. The document analysis will be carried out as part of a broader qualitative or mixed methods study, and it will be used to confirm findings obtained from another data source (observation and interviews). In this project, document analysis will be employed since it helps to understand the background, present system operations, and identify any overlooked characteristics that should be considered during the construction of the suggested system solution.

3.2.2 REQUIREMENTS ANALYSIS

All of the requirements gathered from observation, interviews, and document analysis will be reviewed in order to determine the proposed system's limitations, functional, and non-functional requirements. The requirements will then be checked to see if they are clear, complete, and do not contradict one another. To do this, requirements tools will be used to represent requirements in many formats, including:

▪ Use cases – It is a graphical representation of how users will interact with system elements. It describes a system's behavior in terms of responding to requests from the perspective of a user. The primary actors and procedures are identified, as well as a list of objectives.

▪ Data Flow Diagrams (DFDs) – This will be used to depict business processes and show how data moves throughout the system. The proposed system's logical DFD will be utilized as an input in the design phase, and then refined to indicate how the system will be built.

▪ Entity Relationship Diagram (ERD) – It depicts the relationships between entity sets, which will be used to represent the data that the proposed system will employ. In the design phase, the expected data for this model will be depicted as a physical model to show how it will be kept in the database and files.

3.2.3 SYSTEM DESIGN

System design is the phase of the SDLC where system specifications are determined and a system blueprint is created. The user interface, database structure, and program are all designed during this phase of the SDLC.

1. USER INTERFACE DESIGN

concentrates on defining the user's interaction with the system. The developer will identify and sketch the nature of the inputs and outputs controls (e.g. buttons, informational items, and navigational components) for the proposed internship matching system in this task. The suggested system's interface will feature an interface that will capture student information, corporate information, vacancy information, and so on.

2. DATABASE DESIGN

focuses on establishing how the user interacts with the system In this work, the developer will identify and sketch the characteristics of the proposed internship matching system's inputs and outputs controls (e.g. buttons, informational items, and navigational components). The interface of the proposed system will include a user interface that will capture student information, company information, vacancy information, and so on.

3. PROGRAM DESIGN

This design will aid the developer in determining which modules to include in the program so that they can be written in the suggested system, as well as describing how the various bits of system code will be combined into a single system. It will also entail the creation of software functions that will carry out the application logic of the system. During the implementation and testing phases, program design is critical because each program function or module is examined to see if it will perform as expected.

3.3 METHODOLOGY FOR SYSTEM CONSTRUCTION AND TESTING

3.3.1 SYSTEM CONSTRUCTION

After analyzing the system's requirements, the Laravel web development framework will be utilized to build the system. As a coding tool, the Virtual Studio Code application will be used.

The following are some details.

3.3.2 DEVELOPMENT TECHNOLOGIES

Front-end will use:
- HTML
- Bootstrap
- CSS

Backend tools:
- MySQL
- JavaScript
- PHP

Operating systems (OS):
 The system will run on any OS connected to the internet

Browsers:
 Internet Explorer
 Chrome
 Mozilla Firefox

3.3.3 SYSTEM TESTING

The system will undergo four levels of testing during various phases of development as follows.

1. Unit testing

The programmer will perform unit testing.
The focus will be on a single unit;
the complete system unit or module will be tested independently.
This will be done to guarantee that the module or program does what it is supposed to accomplis h according to the program specification.
The program specification will be used to select black box testing and a test plan will be created straight from it.

2. Integration testing

Integration testing will be used to evaluate how well modules perform together once they have p assed their independent unit tests. The user interface, usage case, data flow, and system interface will all be tested.
Data will be exchanged between program modules during system interface testing.

3. System testing

This will include putting the entire system to the test. These tests look at the system's usability, s ecurity, and performance under excessive load, as well as how well it fits business needs. It also puts the system's documentation to the test.(Dennis, Wixom, & Roth, 2009).

4. Acceptance testing

This test will be carried out by system users.
This testing will be done in two stages: alpha testing, in which users will test the system with sa mple and made-up data, and beta testing, in which users will test the system with real data.
Beta testing is the second type of acceptability testing, in which users use real data.

3.4 IMPLEMENTATION PLAN

Users will be instructed on how to use the system after it is installed on the server. Users will be t old how the system would effect their activities at the start of the training. Classroom instruction

will be used, and consumers will be provided with a user manual. User feedback will be supplied at the end of each training session during the training. Other forms of user support, such as online tutorials and taskspecific help, will be offered once the system is in use, in addition to the training and user manual (via email).

Finally, after the system has been implemented, it will be evaluated through a post-implementation review, which will compare the system's performance to preset requirements (Gary & Rosenblatt, 2012). When analyzing the system, the following activities will be carried out. In order to determine user satisfaction, important users (students and company personnel) will be interviewed first. Second, while using the web-based system, users will be watched. Finally, the efficiency and quality of the generated reports and screen presentations will be assessed.

4.0 IMPLEMENTATION PLAN

4.1 PLANNING OF ACTIVITIES & TIME SCHEDULE

System development takes one semester, or 15 weeks, according to the timetable.
The SDLC will be used to develop the system.

4.1.1 WORK PLAN IN TABLE

Phase	Tasks	weeks	Deliverables
Planning	• Work plan development • Direction and project management	2	• Project plan
Analysis	• Collecting system requirements • Requirements analysis	3	• Requirements definition • Use case • DFD • ERD
Design	• Architecture design • User interface design • Program modules design • Database design	5	• Interface design • Program design • Database • Software and hardware requirements
Implementation	• Coding • System installation • Post implementation plan	5	• Program • Documentation • Test plan • Training plan • User manual

4.1.2 GANNT CHART


Tasks
Months
Jul
Aug
Sept
Oct
Weeks
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
Planning
Analysis
Design
Implementation

5.0 CONCLUSION

Students from the university go through a hard time trying to find a job in the industry, this hard time is multiplied in a world where they are competing with other students that have undergraduate experience and others that have a lot more experience since they are graduated. And for the students that are actively looking for internships while they are still in school, they go through a very tough time as well. The process involves a lot of time and honestly too much effort. If this continues, the MUBAS will continue producing graduates that have theoretical knowledge alone, therefore not exactly the best candidates for hiring, because companies know they will have to invest a lot of time in training these fresh gradates. It is very crucial for a system to be developed that will aid in this internship seeking process. A system that will not take too much time off the students' hands. A system that will help companies identify students and get in touch with them with the most ease possible.

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