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**COURSE:** BSC IN COMPUTER SCIENCE

**UNIT:** DESIGN AND IMPLEMENTATION OF COMPUTER APPLICATION

**PROJECT PROPOSAL**: DEVELOPMENT OF A WEB APPLICATION THAT MODERNIZES THE MEDICAL SECTOR WHILE PROVIDING HEALTHCARE MORE EXTENSIVELY.

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**CHAPTER ONE**

1. **Introduction**

**PROJECT TITLE**: TABIBU

TABIBU is an online treatment service that provides health services to people at the comfort of their homes. It is developed as a remedy to the society’s extensive medical problems.

* 1. **Background of the study**

Hospitals however necessary may not be available in remote areas due to a number of reasons such as them being scarce, people may get lazy to visit hospitals when ailing maybe because they don’t believe they are sick enough or they don’t want the effort that comes with visiting a health center and the extra expenses that come with visiting a hospital in areas that are accessible to medical care.

In addition to that, hospitals tend to be congested not to mention poor services that come as a result of the employees in the hospitals tending to the patients in a hurry just to make sure everyone gets the healthcare services they need and yet some still go home unattended to due to the large queues, a situation that has led to percentage of sickness increasing at a very high rate in the society.

The various problems affecting the medical sector has led to various great minds combining to come up with TABIBU a solution of quite a number of these problems. TABIBU promises to deliver in that, it solves congestion in hospitals as patients can access trusted medical care from trusted doctors online without necessarily visiting a hospital.

Moreover, TABIBU attends to patients who are in dire need of medical attention by helping them access medical attention by requesting for an ambulance or enquiring about a medical solution to a current process or even helping them locate the nearest hospital to them.

TABIBU will be a promising, effective and efficient application to the population of sick individuals once developed and fully implemented.

* 1. **PROBLEM STATEMENT.**

Traditionally, to get medical services one had to visit a hospital to get treatment despite the many tribulations that this may come with. In critical situations, the higher population doesn’t know the help service to call for ambulance services neither do they have knowledge of any hospitals neighboring them.

This project will put into consideration all the possible circumstances that will be aimed at reducing psychological stress, cost and time wastage on the side of the patient while providing efficiency, consistency and effectiveness.

* 1. **Objectives**

The general aim is to facilitate treatment services to the members of the public.

The specific objectives of this project that will aim to accomplish this goal are:

1. To develop a web application that will in point facilitate access to wide base medical care to sick people in their homes.
2. Fast and convenient services when needed i.e. easy sign up and usability as the categories are clearly defined.
3. To increase functionality by providing an active interface for effective communication between the doctor and the patient.
4. To provide data integrity by ensuring confidentiality of data and enforcing the necessary security measures to data.
5. To reduce congestion in hospitals.
   1. **Scope of the study**

The scope of the project is to provide an intelligent application for online treatment.

The system to be developed will have three modules as listed below:

**Administrators module-** This module will be used by the applications regulators for setting up application details like defining the pick up locations and applications safety maintenance.

**Finders module/Pick up points module-** This is the module that will allow the finder to post the details of the documents found and s/he will be requested to allow locational services.

**Clients module –** Provision for a single login area and registration for unregistered users for authentication purposes.

**CHAPTER THREE: METHODOLOGY.**

**3.1 Introduction.**

This chapter focuses on the methodology that will make this project complete and working. It will cover areas which include the project development methodology and the data collection in terms of sample population and methods of data collection used. It will also briefly cover the scope of the target population/users. The methods applied here will ensure that the project main objective is met so as to achieve a nearly perfect application with seamless service.

**3.2 Project System Development Methodology.**

We intend to use the prototyping as our basic methodology for the application development. Time constraints among other factors led to the suitability of releasing prototypes to the final user until the final model was achieved. We intend to correct any complaints the user had concerning the project with each prototype released. This will ensure that the user is completely satisfied with the final product as they have been involved throughout the whole development process.

**3.2.1 Steps in prototyping.**

i) identify the user’s basic requirements.

For our case we had a rough idea of what we wanted to create but it took the intervention of the users to specify into details what they had in mind. For instance, the basic requirements were:

1. A platform to post the the user symptoms, details.
2. A welcome message plus an option of logging in or signing up.
3. A text on the page to prompt on methods to make payments i.e. the MPESA PAYBILL
4. The administrator’, users, and client module with specifications on the functionality of each.

ii)Develop the initial prototype.

With limited amounts of time we plan to quickly develop our first prototype putting into consideration the user’s specifications. The first prototype’s functionalities may not all work but it is meant to visualize what we have.

iii)use the prototype.

We will roll out our first prototype to our sample population so they can determine how well the prototype meets their needs. Moreover, their suggestions and feedback will assist us a long way in designing our next prototypes.

iv)Revise and enhance the prototype.

we will release several prototypes in constant intervals that will allow us to make all the necessary changes. With the timeline provided 3-4 prototypes will be in order for us to have a final working system that meets all the user’s requirements. After that we will hide the operational specifics from the user.

In our case the advantages of prototyping in our development system include:

1. We are uncertain of what the target population expects in terms of requirements or design solution- we applied this methodology in order to achieve the best in the user interface.
2. Our final product will most probably fulfill all of our final users as the one on one interaction we had in development.
3. Time to produce the final and working system is reduced since we have an almost clear picture of what we intend to develop.

**3.3 Targeted population.**

Tabibu is an application that will target any member of the public who don’t have access to the hospital. It will be downloadable as a Progressive Web App and will work whether or not a user’s mobile phone is connected to the internet.

It will provide access to a large array of documents in a sever posted by various users and a prominent search button. Moreover, we plan to add more defined categories that will allow the user to filter his/ her data.

The application is as simplistic as they come and will offer services even to those with no IT related knowledge. The application is based on models that tend to serve all Kenyans in need.

**3.4 Sample population.**

For our development process, we intend to use some randomly selected group of our classmates as our sample population. We also intend to add other students from other non-computer related courses to remove bias from our sample as they do not really understand the backward functioning of the application.

The clustering method of sampling will be applied.

**3.5 Method of data collection.**

Requirements collection is a necessary part of our project. Understanding completely what a project will transport is critical to its accomplishment. Many a projects start with the barest headline and a project’s requirements only to find out later that the problem had not been properly understood. We applied the following methods during our data collection:

1. Interviews – we posed our idea to the members of the general public in order to get their feedback about the project.
2. Questionnaire – we issued out questionnaires to the sample population and reviewed their feedback through their responses.

**3.6 Technology used**

The following technologies were applied to ensure the smooth running of the development process. In this module I will major on the software technologies used which include the programming languages (both front en d and backend), database management systems, text editors among others.

1. Python (Flask web framework) – this is a very powerful framework used for web development it is very extensible. It is fast. And our team is comfortable programming in this language and framework. It makes for cleaner code and easily maintainable and scalable.
2. HTML and CSS – Because our app is web-based we are going to use HTML and CSS and JavaScript for our app.
3. MySql- we applied this technology for implementing our database. Our application will need to store large amounts of data hence we needed a stable database management tool.

**CHAPTER FOUR: REQUIREMENTS SPECIFICATIONS.**

1. **Introduction.**

In this particular chapter will discuss the requirements of the application. We shall delve into specifics. What is a requirement? In our case we shall list all the constraints on the system’s development process. Moreover, we shall discuss all of the aspects of what the proposed system seeks to achieve. We shall breakdown the requirements into four distinct parts as shown below.

* + 1. **Functional requirements.**

These requirements describe the services provided to the user and other systems.

For our kind of some of the functional requirements include :

1. The application should allow a user to log in or sign up for the first time on the home page.
2. The system will accept uploads from users inform of files of picture to all the specific details such as X-rays, CT-Scan.
3. The system should allow the patients to search and filter the results to their illness.
4. The system should also allow the users to link to their wallets incase any transaction is required (deposit or withdraw)
5. The application should be able to fetch the geographical locations of nearest hospitals if need be.
   * 1. **Quality requirements.**

Quality requirements ensure the system possesses quality attributes such as efficiency, reliability, maintainability among others.

1. Resource usage – we have worked to minimize the storage usage by our application by reduced application size that does not use up much of a phone’s storage space hence economical. For instance, no more than 20MB of memory space will be used by our application. The application is maintained in such a way that not even 10% of the CPU will be used when processing requests.
2. Availability – we have made our application available in all platforms to ease access. Moreover, we are even working on a web based applet that will allow users to use our services without necessarily downloading the application. Our servers will be up always to allow the users access to information at any time. We have project a slight chance of downtime if many users are logged in at the same time. However, we have greatly reduced down to one and a half minutes and will notify the user incase it happens.
3. Response time-under normal circumstances, a search request will be processed in about 0.36 of a second which is considerably fast. However, this value may change depending on the strength of the internet connection.
4. Throughput – since the processes and requests attended to by our servers are not that hard, we expect the number of computations per minute to be rather high.
   * 1. **Platform requirements.**

The application it is runnable on any platform and totally responsive. The application will use less than 20MB of storage, less than 20% of the processor hence economical.

* + 1. **Process requirements.**

The primary software development methodology to be used was prototyping as the design of the final product was unclear at the start date of the project. Inexpensive and user friendly prototypes were released at constant intervals to allow for the suitability of the final product. This is a great method for the time crunching schedules and in a way assured the success of the final product as the same users were involved in the day to day development of the system.