# CHAPTER FOUR

# SYSTEM IMPLEMENTATION

# 4.0 INTRODUCTION

System implementation is a stage in system life cycle whereby a new system is developed, installed and made ready for use. It is this stage that all details and key point in the requirement specification are practicalised. System implementation therefore, is a very essential stage in which its success determines to a great extent the success of the new system. At this instance, after all is said and done the system is duly ready to be implemented (fingerprint attendance Management System).

System design is concerned mainly with the coordination of activities, job procedures and equipment utilization in order to achieve organizational objectives. It addresses data input and output data, processing and interface.

This stage involves the design of the new fingerprint attendance Management System a case study of Computer Science Department Federal Polytechnic Bauchi

## 4.1 CHOICE OF PROGRAMMING LANGUAGE

Choosing a programming language depends on your language experience and the scope of the application you are building. While small applications are often created using only one language, it is not uncommon to develop large applications using multiple languages.

The propose application to be built is not mobile based application that needs internet facilities to function but a standalone application.

The choice of programming language to use for this programme is Android. The structure of the Basic programming language is very simple, particularly as to the executable code.

Android has many new and improved features such as inheritance, interfaces, and overloading that make it a powerful object-oriented programming language. It is particularly easy to develop graphical user interfaces and to connect them to handler functions provided by the application.

Android Studio fully integrates the fire-base framework and the common language run-time, which together provide language interoperability, garbage collection, enhanced security, and improved versioning support. Android Studio

**4.2 SYSTEM TESTING AND DEBUGGING**

Testing is an integral part of software development processes. This is to ensure that the quality requirement of the application is not compromised by testing and debugging program modules before they are integrated, testing the system to ensure an effective inter-operability after integration.

Debugging has to do with fixing of errors encountered during program execution. System testing deals with the real life testing of the system, to ascertain how far it has gone in carrying out the expected task. This was carried out in two phases.

Number one is the source code testing which examine the logic of the program. Secondly, the specification testing which involves the examination of the system as regard to what it should do and how it should be done given specific conditions. This includes inputting data, collecting its output and comparing it with the output of the old system and assessing it to see if it can replace the old system.

# 4.3 SYSTEM DOCUMENTATION

System documentation is a crucial aspect of implementation process. It describes the working of components and serves as a method of communication between application developers and users. It also helps future analysis of application either by the same or different system analysts and developers.

To setup the system, there must be visual basic 6.0 software installed on the computer before it can work.

# 4.4 HARDWARE REQUIREMENT

* A minimum hard disk space of 20 Gigabytes (GB)
* RAM size of 4GB
* Pentium 4 dual processor CPU
* A VGA colour monitor
* Mouse
* Keyboard
* Arduino Nano Board
* BreadBoard
* Jumper Cables
* Fingerprint Module.
* Usb cable

**4.5 SOFTWARE REQUIREMENT**

* Windows operating system \ Linux
* Android Studio
* Android Software Development Kit (SDK)
* Arduino IDE.

# 4.6 DATABASE SPECIFICATION

A database is a single file which consists of structured data and records which are stored in minimum or no duplication of data. It is therefore a constructed, consistent and controlled pool of data. A good database must be common to all users and independent of the programs which use it to generate output.

However, Firebase was used as the database application tool for designing the database management system. The database management system is limited only to database Lecturer (Management). Whilst the system designer / developer / programmer is responsible for maintaining and upgrading of the database and the whole software.

# 4.7 MODULE DESCRIPTION

**SAMPLE OUTPUT FORMS**

# 4.8 SYSTEM MAINTENANCE

Maintenance is a continuous process of making modifications and upgrading the application. This usually commences after the application has gone into use. There are two different ways by which this application can be maintained. They include:

* Additive or Enhancement maintenance**:** Business processes are dynamic. As business processes change, applications that support these processes must evolve to reflect these changes. Thus, for this application to perform optimally and to meet changing user requirements, it must be modified continuously.
* Corrective maintenance: This is required in the event that an error occurred when the application is in use. Corrections must be made to changes discovered that can cause malfunctioning of the system.

# CHAPTER FIVE

# CONCLUSION AND RECOMMENDATION

# 5.0 SUMMARY

Fingerprint Attendance Management System is designed to improve the accuracy, enhance efficiency in taking student attendance. It is a mobile based system which helps the lecturer to to perform attendance taking with ease and less stress, and also to tackle plagiarism etc.

Fingerprint Attendance Management System was developed to ensure proper taking of attendance of the student as well as to tackle plagiarism The information gathered during the data collection was properly analyzed and the results provided the basis for the new system. The system was tested and found to be functional and the outputs produced by this system were encouraging. The application will hence reduce the loss of information unlike the existing system and also information will be processed fast.

# 5.1 CONCLUSION

Effective implementation of this software will take care of the basic requirements of the Attendance management system because it is capable of providing easy and effective storage of information related to activities happening in the stipulated area. With these, the objectives of the system design will be achieved.

In order to allow for future expansion, the system has been designed in such a way that will allow possible modification as it may deem necessary.

# 5.2 RECOMMENDATION

Designing this application (Fingerprint Attendance Management System) is not an easy task. It all started from the requirement gathering and passes through so many other stages before completion.

Based on the benefits of this system and tremendous value it will add to lecturer satisfaction, the below recommendation will be considered;

1. It is recommended that the new system should be used with the necessary specifications of the system requirements and provision for an uninterrupted power supply should be made available throughout the hours of operation of the pharmacy to avoid power outage which may lead to damage of the arduino components.
2. It is recommended that the Users (Lecturer) should also posses basic computer knowledge for the use of the software.
3. It is recommended that the software be improved especially in areas of
4. Query of Student and Lecturer Information (By Upgrading from the Current Plan.
5. Attendance Report Sheet Should be able to be developed per Specific Period of time.
6. Automatic Storing of Student attendance details after fingerprint Verification is successful