

AUTOMATED CLINIC MANAGEMENT SYSTEM

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**BEING A PROJECT SUBMITTED IN THE DEPARTMENT OF COMPUTER
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CERTIFICATION

This Project titled, **AUTOMATED CLINIC MANAGEMENT SYSTEM**, prepared and submitted by **AGBOMEDARHO JEREMIAH** in partial fulfilment of the requirements for the degree of **BACHELOR OF SCIENCE (Computer Science)** is hereby accepted.

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DEDICATION

This project work is dedicated to the giver of life and wisdom: The Almighty God

ACKNOWLEDGEMENT

The success and final outcome of this project goes to the Almighty God for wisdom and understanding.

I specially appreciate my Supervisor Prof O.A Ojesanmi who took keen interest in my project work and guided me all along, and never relented to attend to me anytime I came to him for assistance.

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I heartily would like to thank my parents, Mr & Mrs Agbomedarho and siblings, thank you all for your moral and financial support. I am grateful for all the investments into my education and future. I would not forget to remember all the students in the Department of Computer Science and Mathematics, for making my stay a worthwhile one, I say God bless you all richly.

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CHAPTER ONE

1.0 INTRODUCTION

The Pharmacy management system is a system designed to improve precision, protection and efficiency of pharmaceutical shop. It is a computer-based system that helps optimize inventory control, cost and patient safety for the clinic.

This method helps the customer to enter the date of production and expiry of a specific product or drug stock opening and sales transaction for a particular product. The system will also include a report showing the list of items expiring before a given date. It also requires manual entry for a certain period of time since the delivery of new sets of drugs and drug shipment from the clinic e.g. every month, the pharmacy will want to produce reports about the shipment of drugs in and out of the clinic, collecting information about the drugs, e.g. expiry date, purchased date, amount of type of drug left, position of the drug in the clinic.

The manual method is used in the pharmacy, as at present. It allows the clinic to track each medication available in the store manually. As the workload increases, this typically leads to errors.

1.1 BACKGROUND TO THE STUDY

The Pharmacy has a large client range due to the scale and quality of operation of the clinic. Such clients tend to visit the pharmacy mostly when they close the job for services. The number of clients patronizing the clinic is large at this time, thereby making

the pharmacist's workload even more boring. This condition makes it harder for the pharmacist to attend to clients within a short period of time.

Meanwhile the pharmacist has to ensure satisfaction in services to keep their clients. The factors mentioned above, results in the delay of services being rendered to the clients, thereby causing the risk of losing valuable clients over time.

1.2 STATEMENT OF THE PROBLEM

In filing cabinets, the pharmacy administration held paper recordings. It would be strenuous and difficult to keep track of the stock of drugs in the pharmacy, the number of drugs available depending on the categories and their functions, to operate a large clinic with paper records.

To replace the already dwindling stock the nurse has to order medicines. Furthermore, prescription ordering is carried out manually. As the nurse has to go through the stock balance and sketch a simple calculation of the sum to order based on the numbers, considerable time is allocated for writing the order.

This project work will inform the nurse about medications that are near expiry, preventing those drugs from being sold and also providing a solution to the problems previously mentioned.

1.3 AIM AND OBJECTIVES

The purpose of this project is to create a web-based pharmacy management system that will be able to achieve the following goals:

- Ensuring effective policing by offering in-stock drug statistics.
- Maintaining a proper database by offering an opportunity to update the stock of drugs.
- Increase the system's performance by ensuring efficient monitoring of resources and activities.
- To provide optimal control of drug inventory by tracking the flow of drugs in the clinic.
- Ensuring that a degree of restricted access based on features and task exists.
- To ensure that the system is user friendly.
- To be able to generate report within a specified period of time.

1.4 SCOPE AND LIMITATION

The scope of this project is limited to the clinical store's activities, which include improving patient outcomes, decreasing admission to hospitals and long-term care, improving and making the best use of resources within the school community, using a computer-based management system to increase the performance of a clinic, and it is an integral part of every modern evolution.

The machine will not be able to manage the prescribing of medications, drug to drug interaction. The machine will not be able to cope with the contraindication and concurrent use of medications; this ensures that the nurse will manually administer these services.

1.5 RESEARCH METHODOLOGY

An overview of how the clinic management system for Mountain Top University will be built given in the research method used for this project work.

Therefore, the method used in the design and gather information from different sources is as follows;

- Studying the present system in detail and the organizational style.
- Knowing and understanding the mechanisms of input and output processes of the current system.

1.6 DEFINITION OF TERMS

System: series of interrelated elements that work together to achieve a certain goal.

Drug interaction: is a condition in which one drug's administration alters another's clinical results.

Polypharmacy: is a patient's concurrent use of several drugs.

Contraindication: is a particular case in which a medicine cannot be use as it could be harmful to the individual.

CHAPTER TWO

LITERATURE REVIEW

2.0 INTRODUCTION

A nurse is a medical professional who dispenses drugs to patients according to a prescription ordered by a physician or other clinician. Nurses have an in-depth knowledge of the chemistry of various drugs and how they react in humans, and also how drugs interact with each other (Charles E. Rosenberg, 1980). Nurses must calculate and package medication correctly, ensuring that its dose and protection are appropriately administered to a patient. Although the nurse usually does not pick or administer the drug; the nurse advises the patient how to take the medication and what reactions or issues to prevent. As pharmacy specialists, in matters relating to drug delivery and use and disease state control, nurses are concerned with safeguarding the welfare of the public. Nurses have a critical role to play via the medication and knowledge they have, improving patient care.

2.1 CLINIC PRACTICE IN THE PAST

It provides a summary of events that have taken place in clinical practice over many decades, both in the past and present, and also shows potential future events.

2.1.1 THE HISTORY OF CLINIC

There have been experts and doctors, as long as there have been cultures, whose sole function was to plan and administer medical therapies. In what is now called

pharmacognosy, which is the research and use of plants and herbs for healing, the earliest healers participated. Proof that early man used pharmacognosy to cure disease is indisputable, with archaeological finds attesting to the fact that either the growth of agriculture or animal husbandry was pre-dated.

Clinics' origins are old. This art was studied when the first individual conveyed juice from a succulent leaf to be applied to a wound. Asclepius, the god of healing art, entrusted to Hygeia the task of compounding his remedies in Greek mythology. She was an apothecary or nurse for him. Clinics' origins are old. This art was studied when the first individual conveyed juice from a succulent leaf to be applied to a wound. Asclepius, the god of healing art, entrusted to Hygeia the task of compounding his remedies in Greek mythology. She was an apothecary or nurse for him. Egypt's doctor-priests were divided into two classes: those who visited the sick and those who stayed in the temple and prepared patient remedies (Homan, 2008).

The nursing career can be traced back at least as far as the Sumerian population used medicinal plants such as liquorice, mustard, myrrh, and opium, living in modern day Iraq from about 4000 BC. As a different function from diagnosis and care carried out by doctors, there were separate individuals who worked to prepare medicines. They also combined their function with that of a priest with these precursors to nurses. The earliest surviving prescriptions were written by the Sumerians from at least 2700 B.C. – so nearly 5000 years ago (Griggs, 1999).

The Ancient Egyptians, known as Pastophor, had unique medicine preparers. Pharmacy was seen as a medicine branch of high status, and again, these pharmacists, like the Sumerians, were also priests who served and practiced in the temples (Anderson, 2005).

We know from surviving papyrus scrolls, especially the Ebers Papyrus dating from 1500 BC, that infusions, ointments, lozenges, suppositories, lotions, enemas, and pills were made and used by the Egyptians. 875 prescriptions and 700 medications are part of the Ebers Papyrus. Meanwhile, in about the same era in China (2000 BC), the first native herbal, which included details of 365 plant-based drugs, was written by a man named Shen Nung (Anderson, 2005).

Around 1900 B.C., there were stalls and shops selling medical supplies. On the Euphrates River in the town of Sippara. The earliest known shop dealing with medicine sales in London, however, was opened in 1345. The art of healing recognised a separation between the duties of the physician and those of the herbalist, who provided the physician with the raw materials from which to produce medicines, in ancient Greece and Rome and throughout the middle ages in Europe. However, during the 8th century, the Arab influence in Europe culminated in the practice of separate duties for nurses and physicians. A law passed by the town council of Bruges in 1683, forbidding doctors to prepare drugs for their patients, later intensified the movement towards specialization. In America, when he named an apothecary to the Pennsylvania Hospital, Benjamin Franklin took a central step in holding the two occupations apart.

Since World War II, the growth of the pharmaceutical industry has led to the discovery and use of new and successful drugs. It also changed the pharmacist 's position. The need

for extemporaneous drug compounding has been greatly reduced and the need for the deceptive skills traditionally applied by the pharmacist to the preparation of tablets, plasters, and potions has been greatly reduced (Rosenberg, 2008). The nurses, however, continue to fulfil the intentions of the prescriber by providing advice and information; by formulating, storing, and providing correct dosage forms; and by ensuring the effectiveness and consistency of the medicinal product dispensed or supplied.

2.1.2 CATEGORIES OF TECHNOLOGIES:

- Clinical decision support tools.
- Advances in technology for bar-coding and even radio-frequency recognition can assist nurses to verify the effective use of drugs.
- Telecommunication networks. To be able to give a text message alert to a patient, for example, to take drugs or measure blood glucose levels. This will contribute to better behaviour in the management of self-care.
- Automation and robotics.
- Connectivity to shared practice, accomplished by a combination of electronic prescribing (e-prescribing) and the opportunity to connect with laboratories and physician offices and share data.
- Support for distribution service, using GPS-driven routing, monitoring, order status, dispatch, location, and oversight telecommunication systems.
- Clinic surveillance and safety systems which, even when nurses are off-site, will provide a higher level of safety for clinics.

In making contributions to patient care, nurses will play an important role and these contributions will be reported and transmitted using technology, and that care will be registered in the future in the EHR (electronic health records). As far as the care of patients is concerned, nurses will be integral team members. The cornerstones of this relationship between nurses and automation would be better treatment and decreased errors.

2.1.3 BENEFITS OF THE PROPOSED SYSTEM

The proposed framework would be structured to promote the comprehensive activities carried out in a pharmacy by supplying in-stock drug statistics, tracking the movement of drugs in the clinic, and ensuring efficient monitoring of clinic activities.

The new framework will be built in the interest of the pharmacy to have the following benefits;

- The scheme would improve management services and enhance productivity.
- The framework would boost the user / system interface.
- The system would be cost effective.
- The system would improve information quality and accessibility.

CHAPTER THREE

SYSTEM ANALYSIS AND DESIGN

3.0 INTRODUCTION

The system is a collection of interrelated elements that work together to achieve an objective. System analysis refers to a systematic evaluation or thorough review of a system in order to identify system issues and to suggest changes or solutions to the system using the knowledge collected during the analysis stage.

System design is an abstract representation of a part of a system and its relationship, defining the system 's aggregate functionality and results. System design is also the overall plan or blueprint for how the question being asked will be answered. The design defines which of the different method styles are used.

3.1 SYSTEM ANALYSIS

System analysis is the study, including computer systems analysis, of sets of interacting entities. It is also "a specific systematic investigation undertaken to assist someone determine a better course of action and make a better decision than he would have otherwise made." System Analysis is a technique involving the use of systemic methods

to gather information about a current system in order to enhance or substitute it with a more effective system in the light of the resources available. In other words, system analysis can also be seen as the system investigation process, the detection of issues and the use of knowledge to suggest system changes.

3.1.1 ANALYSIS OF EXISTING SYSTEM

We need to carefully illustrate the issues of the current system before testing the architecture of the new system, in order to prevent recurrence. This study serves as a guide to how to start building the planned framework that will allow the nurse to provide optimal control of the drug inventory by tracking the clinic 's drug movement and condition. The new system 's issues should be highlighted. Some of the concerns associated with the current system are below;

- As the nurse has to go through the stock balance and make a rough calculation of the quantity to order based on figures, a considerable amount of time is reserved for writing the order.
- It is manually tested for the condition of drugs in stock.
- Error in the marketing to clients of expired medications.
- Too much workload on staff.
- Clinic filing cabinet with paper documents.

3.1.2 ANALYSIS OF PROPOSED SYSTEM

From the problems listed in the existing system, the implementation of the proposed system shall focus on;

- Clinic having access to the proposed system at any time.

- Ensuring effective policing through the provision of stock data on drugs.
- Enhancing the system's performance by ensuring efficient monitoring of facilities and activities.
- Report generation within a defined time span.
- Reducing the workload of the workforce.

3.2 REQUIREMENTS DEFINITION

In establishing a satisfactory criterion, preliminary investigation plays an important role. As a result of a detailed analysis of how the new or existing system operates, the information collected in the preliminary investigation are used to reflect on the possibilities of replacing the current system or strengthening the current system. This assignment includes collecting information.

3.3 METHOD OF INFORMATION GATHERING

In order to be able to compose the project, collecting reality is the act of acquiring and collecting information from different sources. Data used for the design of the device was obtained by several methods. Therefore, the methodology used in the design and processing of data from different sources is as follows:

- Collecting and analysing existing materials written by different experts on the project topic.
- Studying the present method and the organizational style in depth.
- Knowing and understanding the current system's input and output processes.

- Interviews: In the pharmacy, a qualitative form of interview was performed to understand the equipment required and the old system's mode of operation.

3.4 SYSTEM DESIGN

System design is the approach used by system modelling to determine the architecture, components, modules, interfaces, and data for a system to meet defined requirements. One might see it as the application of the theory of systems to produce development. This system 's architecture will be user friendly. It is structured in such a way that workers can quickly navigate through the information given by the system.

In other words, system design consists of design operations that create system specifications that meet the functional requirements established in the process of system analysis. The architecture of the system determines how the system will operate. The structural implementation of the study of the system is system architecture.

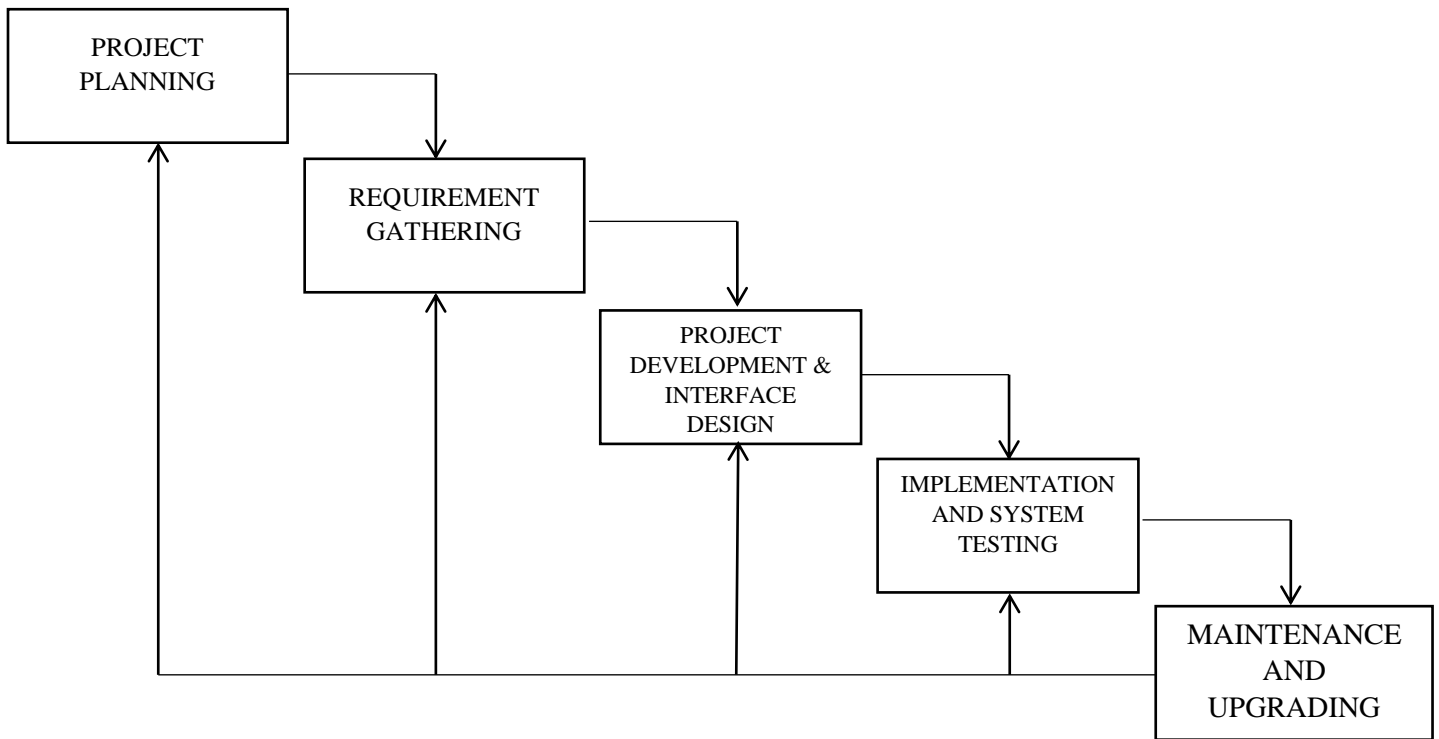


FIG. 3.3.1 WATERFALL MODEL OF SYSTEM DEVELOPMENT LIFE CYCLE

The diagram above is a system development life cycle that illustrates how the design of the project is broken down into five different phases, which are Project Planning, Requirement Gathering, Project Implementation and Interface Design, Implementation and System Testing, Maintenance and System Upgrading.

The proposed Pharmacy Management System for Mountain Top University Clinic will start with project planning by determining the users of the system, aim and objectives of

the project. After these, extensive research will be done to determine how to design an effective system, as well as to review the current system. Then, the design was with an initial prototype of the system, and then refined it based on their suggestions. Phases of analysis, design and implementation were performed iteratively until users and designers agreed on a final system specification. At this point, the project could move to the final implementation phase.

3.5 SYSTEM MODELLING

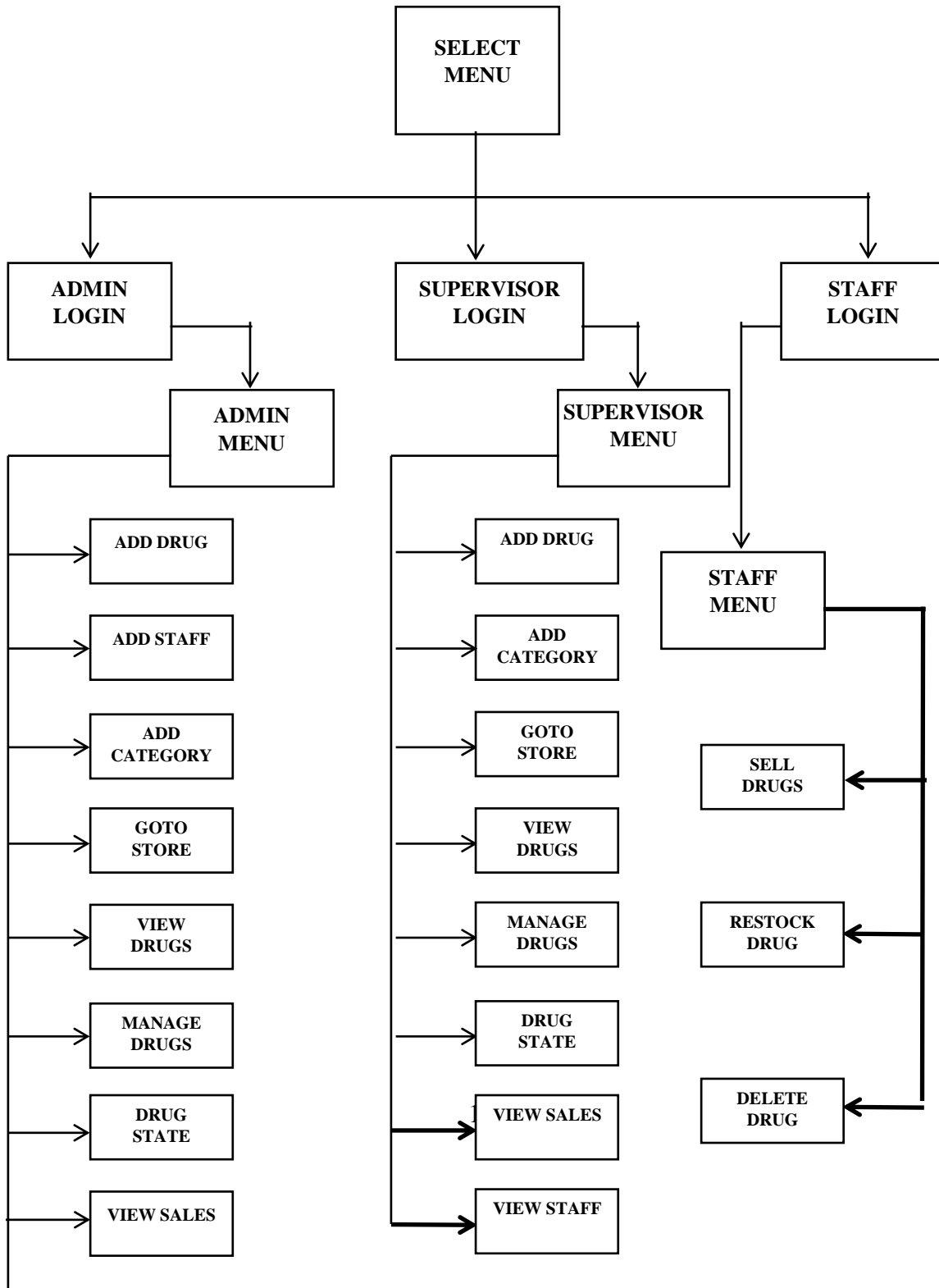
During the system requirements and design activity, systems may be modelled as a set of components and relationships between these components. These are normally illustrated graphically in a system architecture model that gives the reader an overview of the system organisation. System modelling helps to give more detailed system specifications which are in form of graphical representations that can describe problem to be solved or the system that is to be developed. Because of the graphical representations used, models are often more understandable than detailed natural language description of the system requirements. Examples of such modelling tool is a System Flowchart.

3.6 SYSTEM FLOWCHART

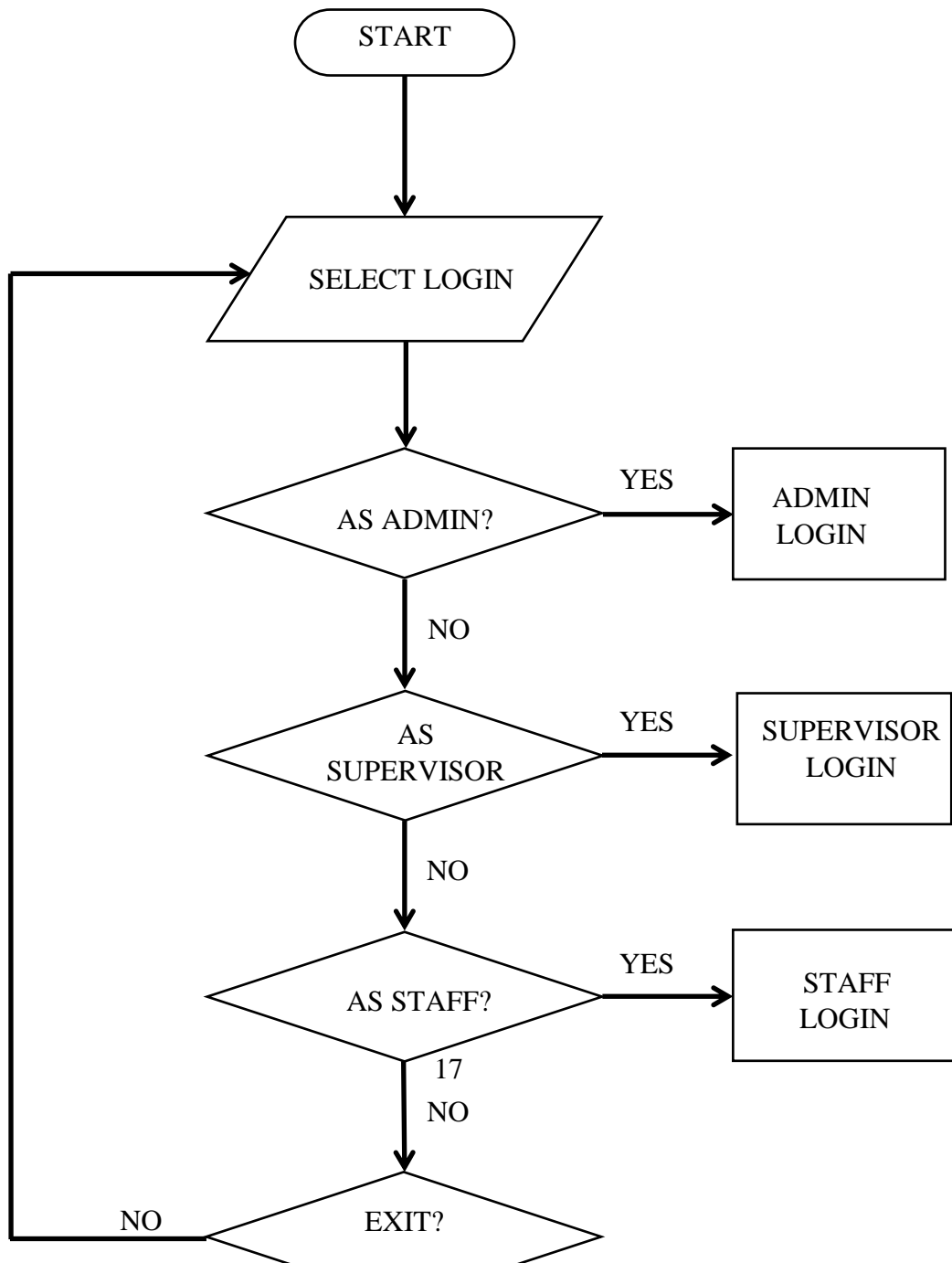
System flowchart is a type of diagram that represents an algorithm or process, showing the steps as boxes of various kinds, and their order by connecting these with arrows. This diagrammatic representation can give a step-by-step solution to a given problem. Process

operations are represented in these boxes, and arrows connecting them represent flow of control. Flowcharts are used in analysing, designing, documenting or managing a process or program in various fields. Different symbols are used in the flowchart to represent input, output, decision, connectors and process.

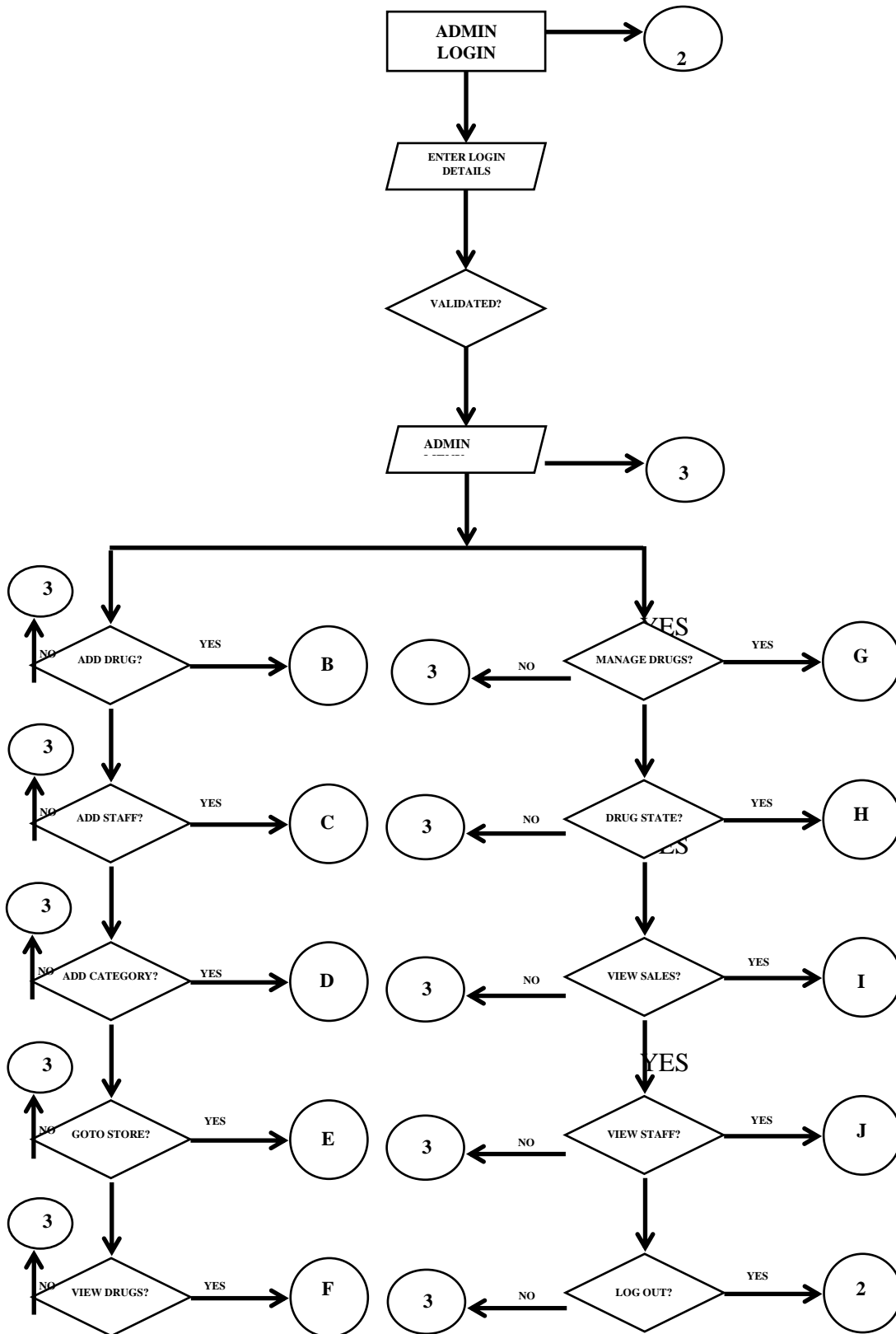
3.6.1 STRUCTURE CHART



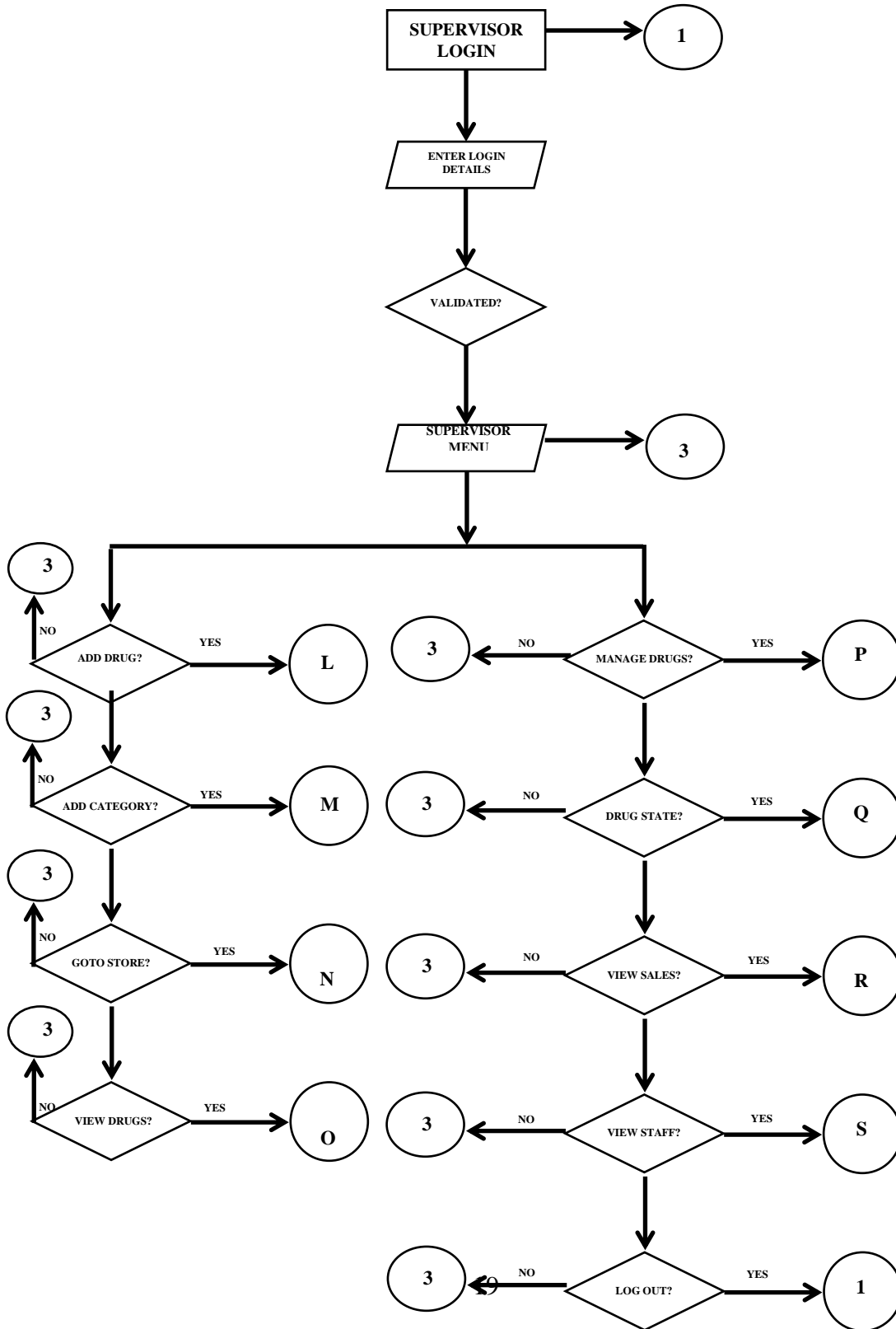
3.6.2 SYSTEM FLOWCHART



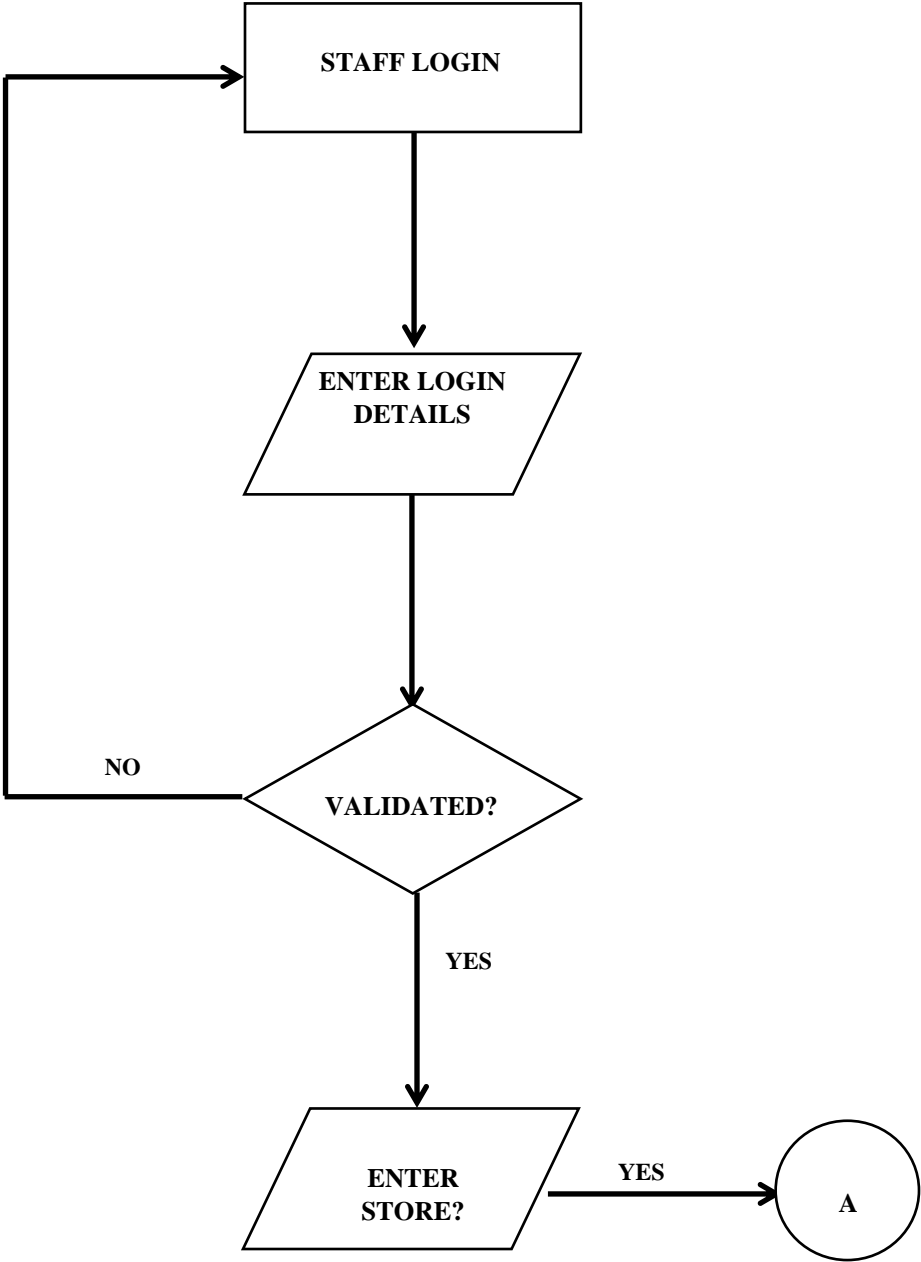
3.6.3 ADMIN FLOWCHART

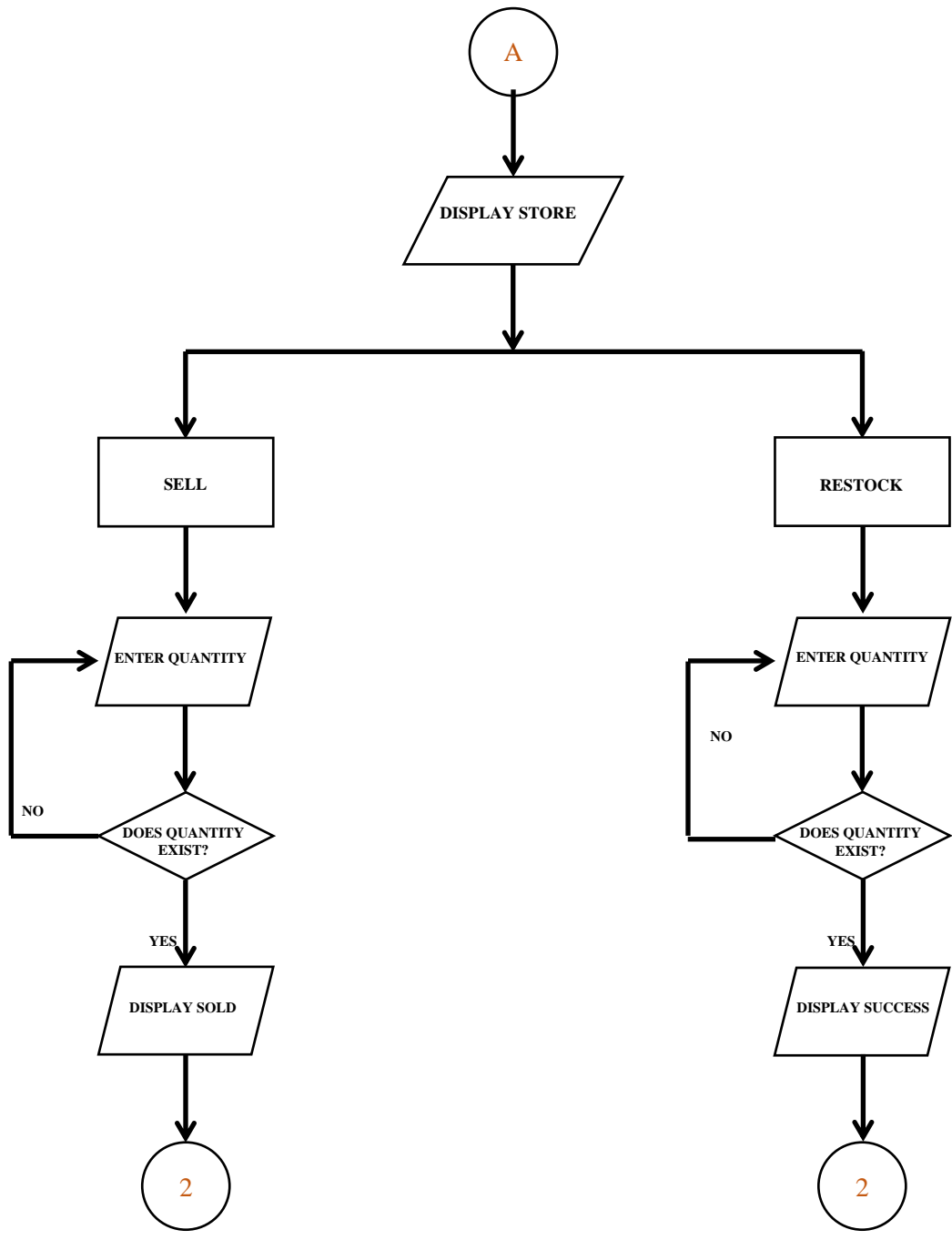


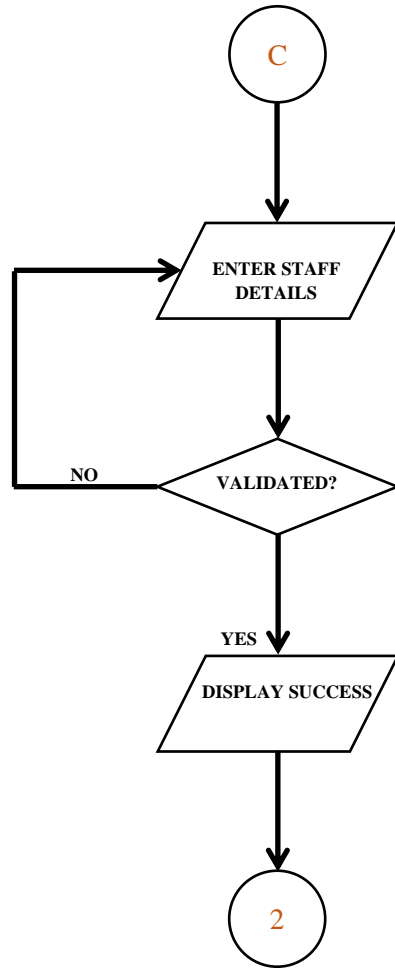
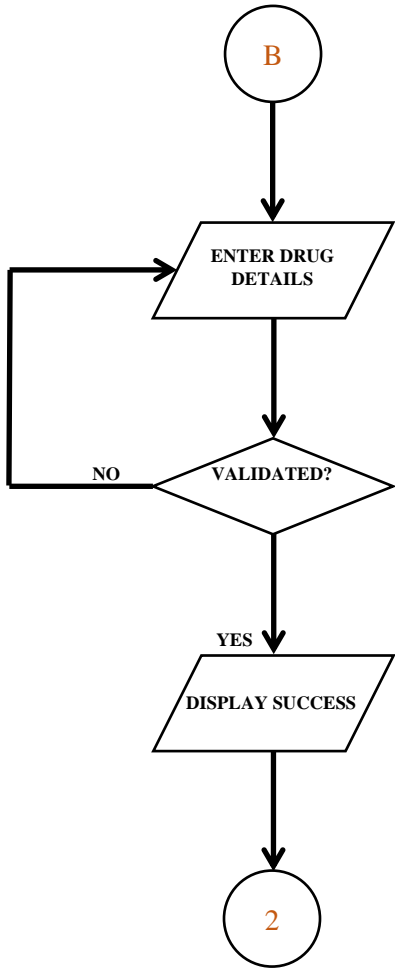
3.6.4 SUPERVISOR FLOWCHART

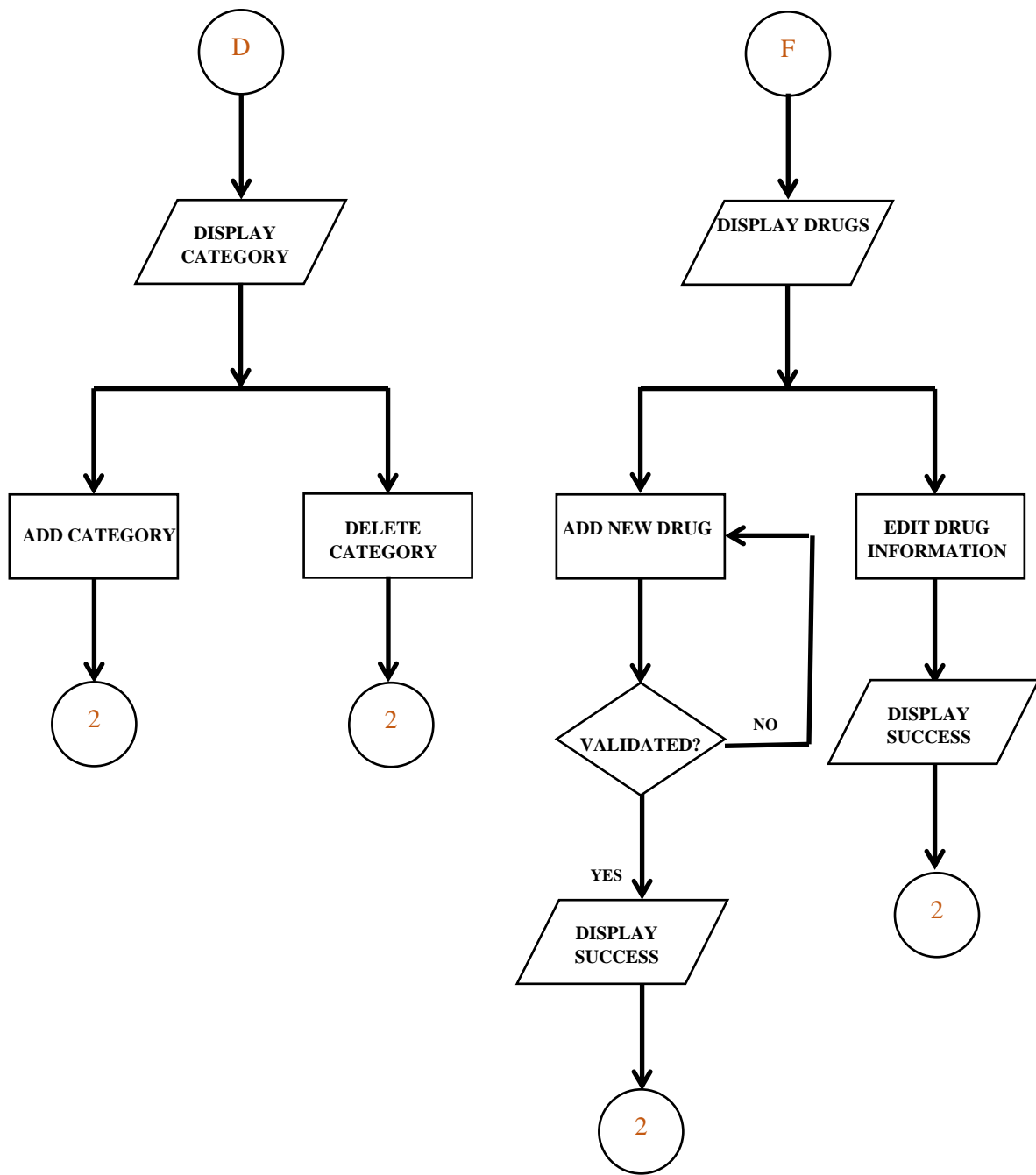


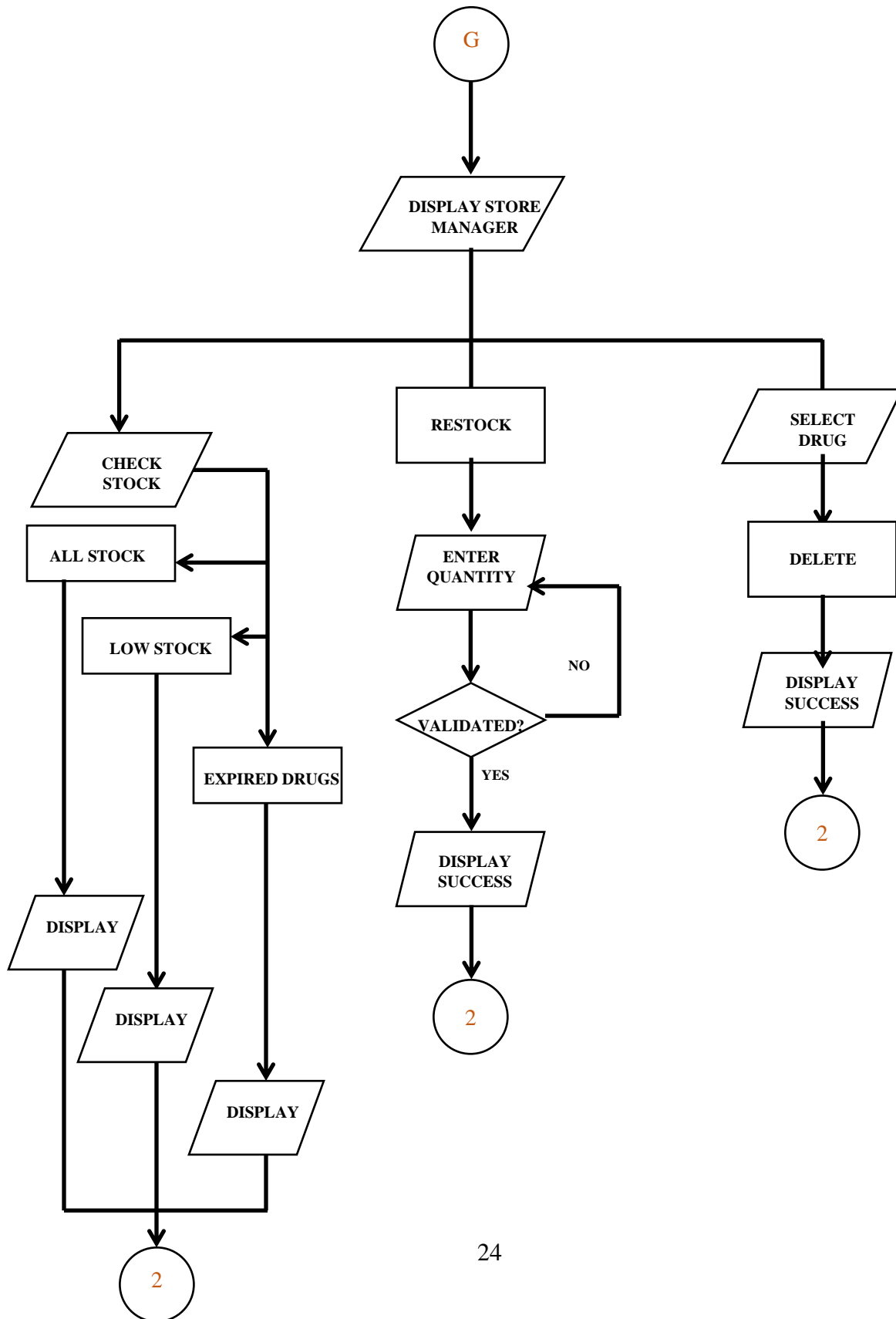
3.6.5 STAFF LOGIN FLOWCHART

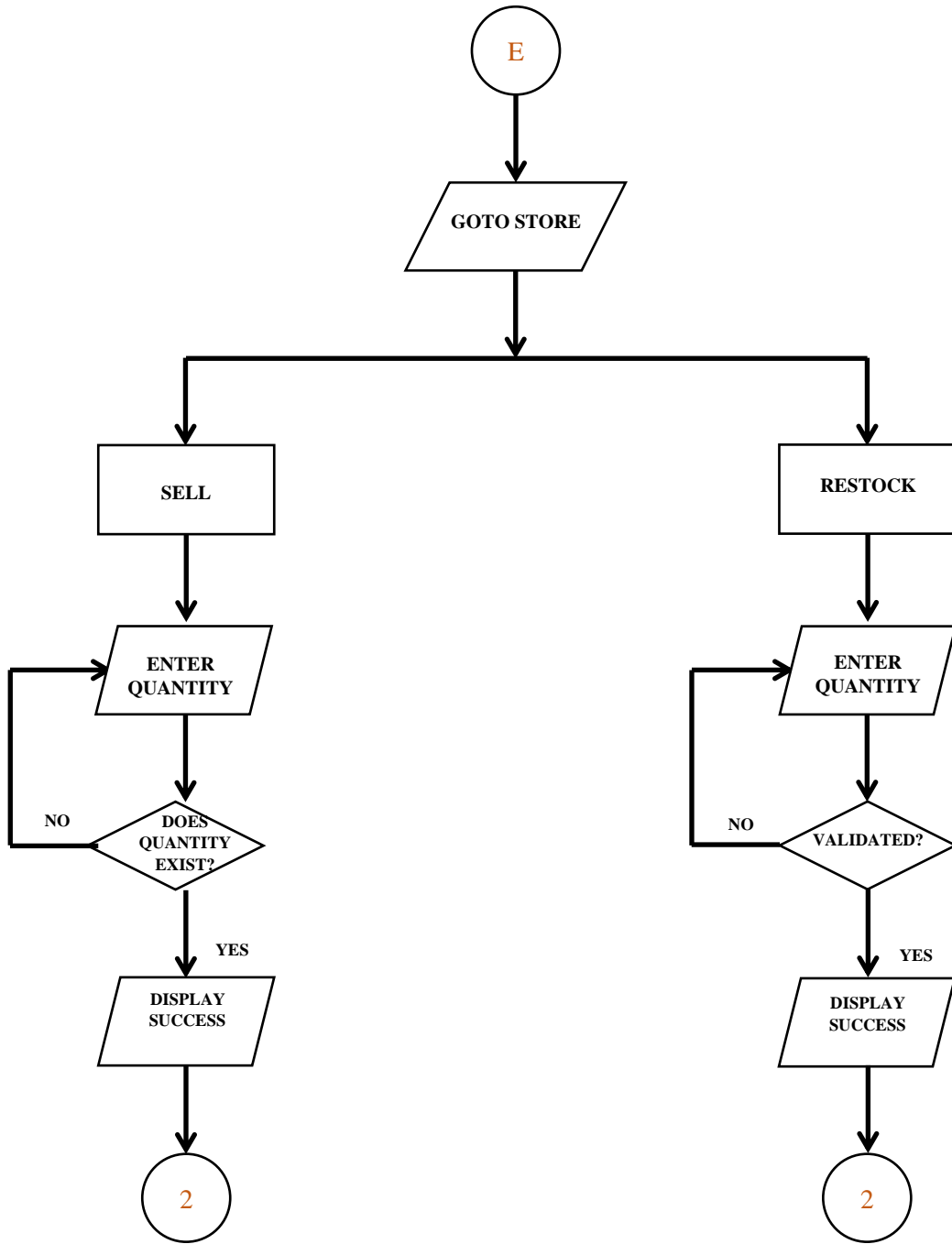


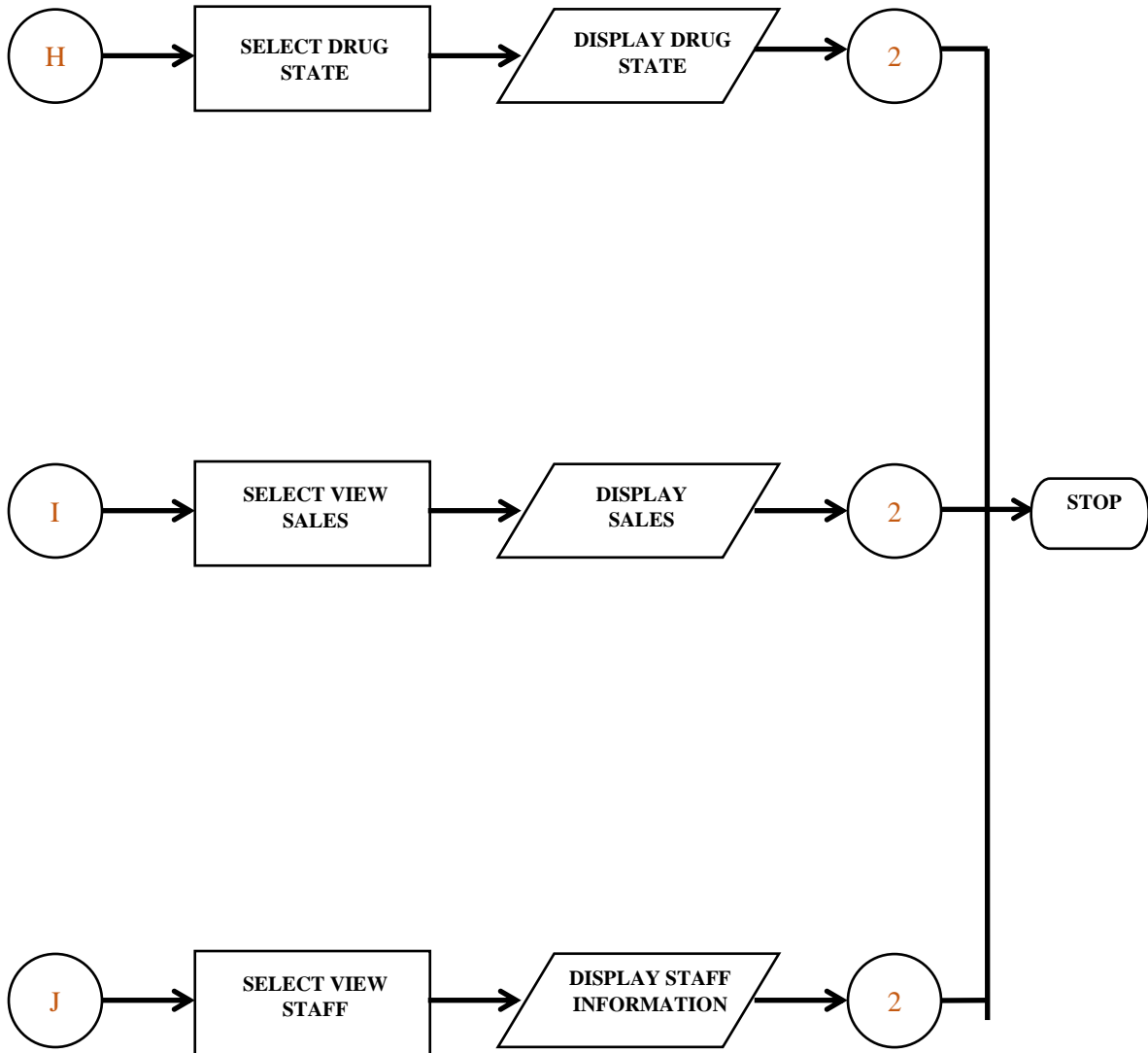












3.7 DATABASE DESIGN

This is a shared collection of data that are related or files that are to meet the immediate need of authorized users. These data may be in form of text, numeric, date or encoded images.

ADMINISTRATOR LOGIN TABLE:

Field Name	Field Type	Field Length	Description
Admin_Username	Varchar	(15)	Admin Username
Password	Varchar	(15)	Admin password

Table 3.1 Administrator table

Table 3.1 above serves as a repository for administrator details, that will be able to have access to the entire details on the application. It is a table that stores the administrator login details.

DRUG INFORMATION TABLE

Field Name	Field Type	Field Length	Description
Drug Name	Varchar	(15)	Drug Name
Drug ID	Varchar	(7)	Drug Number in stock
Manufacturer	Varchar	()	Manufacturer
Batch No	Varchar	()	Batch Number
Production Date	Date/Time	()	Production Date
Expiry Date	Date/Time	()	Expiry Date
Dosage	Text	()	Dosage
Reg Date	Date/Time	()	Registration Date
Quantity	Int	()	Quantity
Cost Price	Int	()	Cost Price
Interest Rate	Int	()	Interest Rate
Expected Sale	Int	()	Expected Sale

Table 3.2 Drug information table: This table is named tblDRUG, it depicts the information of the drugs in the pharmacy.

Table 3.2 shows the information about the drugs in the pharmacy and is being queried from the database on the drug registration page to show all the drugs for user to select.

SUPERVISOR LOGIN TABLE

Field Name	Field Type	Field Length	Description
USERNAME	Varchar	(15)	Supervisor username
PASSWORD	Varchar	(15)	Supervisor password

TABLE 3.3 SUPERVISOR TABLE

Table 3.3 above serves as a repository for supervisor details, which will be able to have access to the required details on the application as stipulated by the administrator. It is a table that stores the supervisor login details.

STAFF LOGIN TABLE

Field Name	Field Type	Field Length	Description
USERNAME	Varchar	(15)	Staff Username
PASSWORD	Varchar	(15)	Staff Password

TABLE 3.4 STAFF LOGIN TABLE

Table 3.4 above serves as a repository for a staff details, that will be able to have access to the required details on the application as stipulated by the administrator. It is a table that stores the staff login details.

STAFF INFORMATION TABLE

Field Name	Field Type	Field Length	Description
STAFF_NAME	Varchar	()	Staff Name
REGNO	Int	(6)	Registration number
STAFF_SEX	Varchar	(6)	Staff Sex
NATIONALITY	Varchar	()	Nationality
STAFF_STATUS	Varchar	(15)	Staff Status
DOB	Date	()	Date of Birth
PHONE_NO	Int	(11)	Phone Number
ADDRESS	Varchar	()	Contact Address
STATE	Varchar	()	State
EMAIL	Varchar	()	Email
USERNAME	Varchar	()	Username
PASSWORD	Varchar	(15)	Password

TABLE 3.5 STAFF INFORMATION TABLE

Table 3.5 above consist of information of the list and information of the employed staff in the clinic. The information of staff on the required field can be seen from the table 3.5 above.

CHAPTER FOUR

SYSTEM IMPLEMENTATION

4.0 INTRODUCTION

System implementation is a stage in the life cycle of the system whereby a new system is designed, implemented and prepared for use. It is this stage in which all the information and key points in the definition of the specifications are partialized. The implementation of the system is therefore a very critical stage in which the performance of the new system is primarily determined by its success. In this case, the system is properly ready to be implemented (Pharmacy Management System) after everything is said and done.

In order to accomplish organizational goals, system design is concerned primarily with the arrangement of tasks, job procedures and the use of equipment. This addresses data, processing and interface input and output data.

This stage involves the design of the new Pharmacy Management System

4.1 CHOICE OF PROGRAMMING LANGUAGE

Choosing a programming language depends on the knowledge of your language and the complexity of the application that you are creating. Although small applications are mostly developed using only one language, the creation of large applications using multiple languages is not unusual.

The proposed application to be created is not a web-based application that involves the operation of internet services, but a standalone application.

The programming language options to be used for this application are HTML and CSS.

The structure of the basic programming language, especially with regard to executable code, is quite simple.

HTML stands for Markup Language for Hypertext. It helps the user to build and organize sections for web pages and applications, paragraphs, headings, links, and blockquotes. HTML is not a programming language, which means it has no ability to construct complex features. Instead, it makes it possible, similar to Microsoft Word, to organize and format documents.

CSS stands for Cascading Style Sheets used to define a text presentation written in a markup language such as HTML. CSS is designed to allow presentation and material, including layout, colors, and fonts, to be separated. This separation will enhance usability of content, provide more flexibility and control in the presentation features specification, allow multiple web pages to share formatting by defining the related CSS in a separate format.

4.2 SYSTEM TESTING AND DEBUGGING

Testing is an integral part of software development processes. This is to ensure that the application's quality specifications are not violated by the testing and debugging of software modules until they are integrated, and the system is reviewed to ensure successful interoperability after incorporation. Debugging has to do with correcting errors

found during the execution of the program. System monitoring deals with the system 's real life testing, to assess how far it has come in carrying out the intended mission. This was done in two stages. The source code examination that tests the program's logic is number one. Secondly, given particular circumstances, the specification testing includes evaluating the device as to what it should do and how it should be done. This involves inputting data, gathering its output and comparing it with the old system's output and reviewing it to see whether the old system can be replaced.

4.3 SYSTEM DOCUMENTATION

A critical part of the implementation process is device documentation. It defines the functioning of components and acts as a method of communication between developers and users of applications. It also allows for potential application review by either the same or different device analysts and developers. Visual Basic 6.0 software must be installed on the device to set up the system until it can operate.

4.4 HARDWARE REQUIREMENT

- A minimum hard disk space of 20 Gigabytes (GB)
- RAM size of 1GB
- Pentium 4 dual processor CPU
- A VGA colour monitor
- Mouse

- Keyboard

4.5 SOFTWARE REQUIREMENT

- Windows operating system such as Windows 2000, windows XP, Windows Vista, Windows 7.
- Visual basic 6.0 software.

4.6 DATABASE SPECIFICATION

A database is a single file composed of organized data and documents that are stored with minimal to no data replication. Therefore, it is a built, consistent and regulated knowledge pool. For all users, a good database must be common and independent of the programs that use it to produce output. However, for the configuration of the database management system, Microsoft Access was used as the database application tool. The information management system is limited only to the administrator of the database.

4.7 MODULE DESCRIPTION

SAMPLE OUTPUT FORMS

HOME PAGE



Figure 4.1 showing HOME PAGE

Figure 4.1 shows the select login page. It is the first interface that appears on the screen when the application is being loaded. This interface displays the name of the application and some other information about the software. The page consists of logins that exist for several other levels in the application. They consist of administrator, supervisor and staff login.

ADMIN LOGIN MENU



Figure 4.2 Showing Admin login menu

Figure 4.2 above, shows the admin login area of the application. After a successful login supplying the correct username and password, it opens into another page where the activities of the admin module are fully stipulated. The admin controls all the major activities of this application. Activities such as Addstaff, Add Drugs, Change Username and password, Manage drugs, View sales etc can only be controlled by the admin. Furthermore, the Admin has control over the supervisor and all other users of the application.

SUPERVISOR LOGIN



Figure 4.3 above shows the supervisor login. The supervisor is an employee that manages the activities of the pharmacy. After a successful login, some of the activities that can be performed by the supervisor are Manage drugs, view sales, view drugs etc. The supervisor has a high level of access on the application except for adding a new staff.

STAFF LOGIN

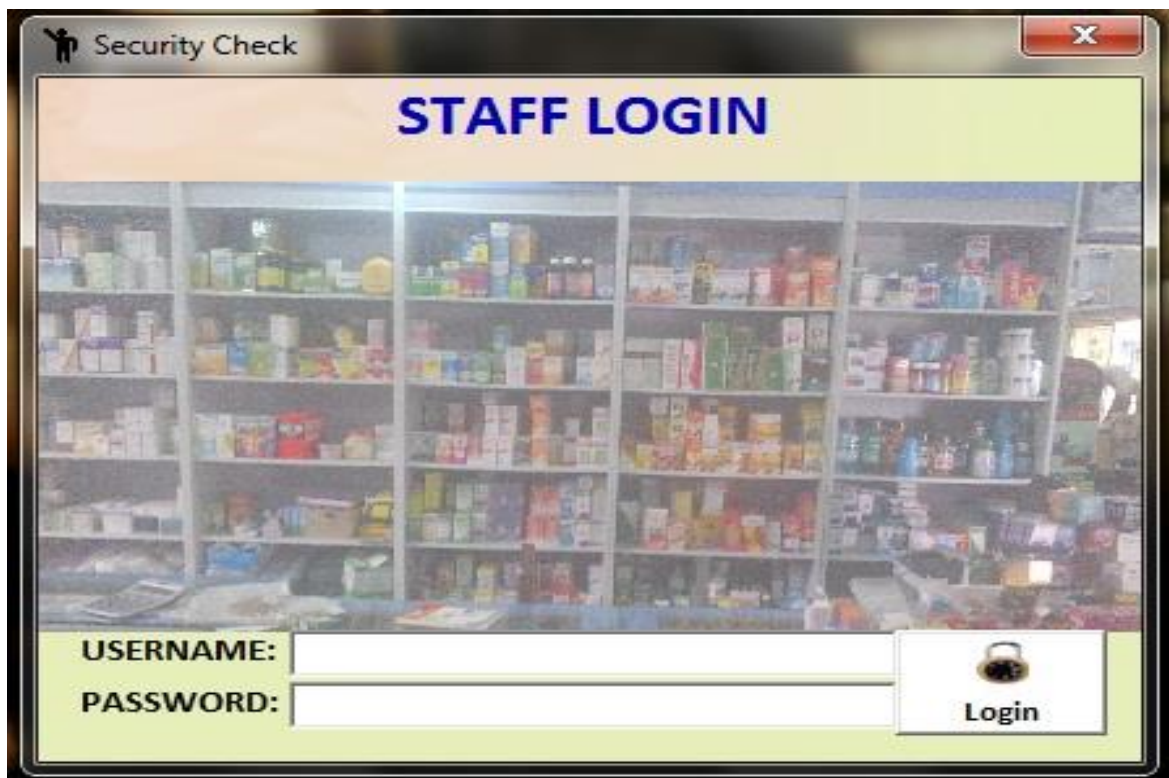


Figure 4.4 Showing Staff login

Figure 4.4 above shows the staff login section. The staff is responsible for updating the list of drugs in the store. The staff can also engage in buying and selling of drugs. The staff is

required to provide a valid username and password in order to be able to perform its activities.

ADMIN MAIN MENU



Figure 4.5 Showing Admin Menu Module

Figure 4.5 above shows the Admin module menu. It lists activities that can be performed by the administrator. The Administrator is the person responsible for the upgrade, management on the

software.the administrator is given an unlimited access as to performing the operations in the pharmacy.

DRUG REGISTRATION FORM

The screenshot shows a software window titled "DRUG REGISTRATION" with a close button in the top right corner. The window header features the logo "BONIKS PHARMACY & STORES" over a background of pills. Below the header, the form is titled "DRUG REGISTRATION" in red text. The form contains the following fields and controls:

- DRUG ID:** Text input field containing "DRUG008".
- DRUG NAME:** Empty text input field.
- MANUFACTURER:** Empty text input field.
- DRUG GROUP:** Dropdown menu with the selected option "<<SELECT GROUP>>".
- COST PRICE:** Empty text input field.
- QUANTITY:** Empty text input field.
- DOSAGE:** Empty text input field.
- STORAGE:** Dropdown menu with the selected option "<<SELECT STORAGE>>".
- BATCH NO.:** Empty text input field.
- FUNCTION:** Empty text input field.
- PRODUCTION DATE:** Date picker showing "25/04/2013".
- EXPIRY DATE:** Date picker showing "25/04/2013".
- REGISTRATION DATE:** Date picker showing "25/04/2013".
- TOTAL COST:** Empty text input field.
- INTEREST RATE:** Dropdown menu with the selected option "0".
- PRICE PER ITEM:** Empty text input field.
- EXPECTED SALE:** Empty text input field.
- DRUG LOCATION:** Empty text input field.

At the bottom of the form, there are two buttons: a red "CANCEL" button and a green "SAVE" button.

Figure 4.6 Showing Drug Registration Form

Figure 4.6 above shows the drug registration form. New drugs brought to the pharmacy are registered here. It receives the details of new batches of drug in the pharmacy.

STAFF REGISTRATION FORM

The screenshot displays a web-based staff registration form for 'BONIKS PHARMACY & STORES'. The form is titled 'STAFF REGISTRATION' and is divided into two main sections: 'STAFF INFORMATION' and 'STAFF LOGIN DETAILS'. The 'STAFF INFORMATION' section contains various input fields for personal and professional details, including a photo upload area. The 'STAFF LOGIN DETAILS' section contains fields for username and password. At the bottom of the form, there are 'CANCEL' and 'SAVE' buttons.

STAFF INFORMATION	
STAFF REG ID:	BPS011
STAFF NAME:	AHMAD IBITOYE
STAFF SEX:	<input checked="" type="radio"/> MALE <input type="radio"/> FEMALE
STATUS:	SINGLE
DATE OF BIRTH:	16/07/1989
STAFF AGE:	24
NATIONALITY:	NIGERIAN
STATE OF ORIGIN:	OSUN
ADDRESS:	HSE25, BCLOSE 21RD, GWARIMPA ESTATE-ABUJA
PHONE NO:	08039266927
EMAIL:	ahmadibitoye@gmail.com
DATE EMPLOYED:	05/04/2012
STAFF LOGIN DETAILS	
USERNAME:	AHMAD
PASSWORD:	*****

UPLOAD PIX

CANCEL SAVE

Figure 4.7 Showing Staff Registration Form

Figure 4.7 above shows the staff registration form. Important information like the contact details is collected with this form. A login detail that is, a username and a password is assigned to the new staff as well.

STORE MANAGER

The screenshot shows a software application window titled "STORE" with a close button. The main header features the text "BONIKS PHARMACY & STORES" in blue, 3D-style letters over a background of white and grey pills. Below the header, the interface is organized into three panels:

- STORE MANAGER:** This panel contains several input fields and labels:
 - "PLEASE SELECT CATEGORY:" with a dropdown menu showing "VITAMINS".
 - "PLEASE ENTER DRUG TITLE:" with a dropdown menu showing "VITAMIN C GLUCOSE".
 - Fields for "DRUG ID:" (DRUG004), "DRUG NAME:" (VITAMIN C GLUCOSE), "DOSAGE:" (ONE THREE TIMES DAILY), "AVAIL. QUANTITY:" (25), "PRICE:" (50), "LOCATION:" (A20), and "EXPIRY DATE:" (18/07/2014).
 - "ENTER QUANTITY TO BE SOLD:" with a text input field containing the number "4".
 - A red label "AMOUNT SOLD: # 1140".
 - Three buttons at the bottom: "Exit" (pink), "SELL" (blue), and "BILL" (green).
- LIST OF THIS SALE:** A list box containing three items: "PANADOL" (highlighted in blue), "BRUSTAN N", and "VITAMIN C GLUCOSE".
- CONTROL PANEL:** A panel on the right side containing:
 - A "SEARCH" text input field.
 - "CHANGE VIEW" with a dropdown menu showing "<<CHANGE VIEW>>".
 - "CHECK STOCK" with a dropdown menu showing "<<CHANGE STOCK>>".
 - A "CANCEL" button.

Figure 4.8 Showing the Store Manager

Figure 4.8 above shows the store manager. Here drugs can be sold. The user will be required to select a category of drug to sell. Drugs in the pharmacy are categorised based on their function. When the drug needed to be purchased is selected, the software generates important information about the drug such as dosage, available quantity, selling price, expiry date, location of the drug in the pharmacy etc. Also, the user can sell drugs, print bill, check all stock, low stock or check the expired drugs in stock.

SALES WINDOW

The screenshot shows a software window titled "SOLD DRUGS" for "BONIKS PHARMACY & STORES". The main area contains a table of drug sales records. The table has the following columns: DRUG ID, DRUG NAME, MANUFACTURES, PRICE, QUANTITY, DRUG FUNCTION, and DOSAGE. The data rows are as follows:

DRUG ID	DRUG NAME	MANUFACTURES	PRICE	QUANTITY	DRUG FUNCTION	DOSAGE
DRUG005	BRUSTAN N		99	10		TWO, THREE TIMES D
DRUG005	BRUSTAN N		99	2		TWO, THREE TIMES D
2213	ELA DAVID			3		GHANA
DFKFFFK	LFMLFLFMDLFMDFM			13		FDFFDFDF
DRUG007	PANADOL		110	3		TWO, THREE TIMES D
97847	SANGTRAN			7		NIGERIAN
97847	SANGTRAN			8		NIGERIAN
97847	SANGTRAN		500	2		NIGERIAN
4566	SIMPLE CHIDI			10		GHANA
4566	SIMPLE CHIDI			4		GHANA
DRUG004	VITAMIN C GLUCOSE		50	3		ONE THREE TIMES D

On the right side of the window is a "CONTROL PANEL" with the following options:

- SEARCH
- CHANGE VIEW: <<CHANGE VIEW>>
- CHECK STOCK: <<CHANGE STOCK>>
- GET DRUGS SOLD BETWEEN: 08/12/2012 AND 08/12/2012
- GO
- VIEW ALL RECORDS
- DELETE DRUG

Figure 4.9 Showing Sales

Figure 4.9 shows the list of drugs sold in the pharmacy. There is an option to view the sales in the pharmacy within a specified date.

4.8 SYSTEM MAINTENANCE

Maintenance is an ongoing method of making improvements and updating the program.

This normally begins after the program has been put into use. There are two distinct forms that can be preserved by this program. They include:

- **Maintenance of Additive or Enhancement:** business processes are complex. Applications that help these processes must adapt to incorporate these changes as business processes shift. Therefore, it must be constantly updated in order for this application to work optimally and to satisfy changing user requirements.
- **Corrective maintenance:** This is important in the case of an error occurring when the program is in operation. Corrections must be made to the modifications found that can cause the device to malfunction.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.0 SUMMARY

The clinic management system is designed to improve the accuracy of the pharmaceutical store, to improve safety and efficiency. It is a computer-based system that helps improve inventory control, expense, medical protection, etc. for the clinic.

In order to ensure the confidentiality of information and the reliability of clinic records while accessing and delivering services to customers, a clinic management system was developed. During the data collection, the information collected was thoroughly analyzed and the findings formed the basis for the new method.

In order to ensure the confidentiality of information and the reliability of clinic records while accessing and delivering services to customers, a clinic management system was developed. During the data collection, the information collected was thoroughly analyzed and the findings formed the basis for the new method. The system was tested and found to be functional and it was rewarding to produce the outputs provided by this system.

Unlike the current method, the application would also minimize the loss of information and information will also be processed rapidly.

5.1 CONCLUSION

In order to incorporate this program efficiently, the basic specifications of the clinic management system would be taken care of because it is capable of providing a simple and efficient storing of information related to activities in the specified field. With these, the targets of the device design will be met.

In order to allow potential expansion, the system has been built in such a way as to allow possible change, as may be deemed necessary by the management of the clinic if the idea occurs.

5.2 RECOMMENDATION

Designing this software (Clinic Management System) is not an easy task. It all began from the selection of requirements and passes before completion through so many other processes. The following suggestion will be considered based on the advantages of this method and the immense value it will bring to customer-user satisfaction;

It is recommended that the new device should be used in compliance with the required system requirements and that the availability of an uninterrupted power supply should be made available during the clinic's operating hours in order to prevent power outages. Basic programming information for the users of the program should also exist.

Particularly in accounting areas, it is recommended that the software be improved as it will have a major impact on the development of retail clinic.

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