

**GENERAL SYSTEM PROBLEMS, CAUSES AND LIKELY
SOLUTIONS
A CASE STUDY OF BE-J SYSTEMS NIGERIA LIMITED,
ABUJA.**

BY

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**A PROJECT SUBMITTED TO DEPARTMENT OF
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ELSEIF BC = 2 THEN
PRINT "ENSURE A CORRECT DRIVE CONFIGURATION"
ELSEIF BC = 3 THEN
PRINT "CHECK AND CONNECT THE DRIVE POWER SUPPLY AND DATA CABLE PROPERLY"
PRINT "RUN A SCANDISK TO FIX THE ERRORS ON THE DRIVE"
ELSEIF BC = 4 THEN
PRINT "CHECK FOR THE FOLLOWING"
PRINT "GENERAL PROTECTION FAULT CAN BE DUE TO MANY PROGRAMS RUNNING AT
THE BACKGROUND, SO CLOSE THEM"
PRINT "NOT HAVING ENOUGH SPACE IN THE HARD DRIVE CAN CAUSE PROBLEM, SO
DELETE SOME FILES"
PRINT "ANOTHER MEASURE IS TO LOWER THE DESKTOP COLOUR DEPTH TO ABOUT 16
BITS"
ELSEIF BC = 5 THEN
PRINT "CHECK THE FOLLOWING"
PRINT "1. MY COMPUTER DID NOT COMPLETE BOOTING WHILE A MESSAGE 'FATAL
EXCEPTION ERRORS' IS DISPLAYED"
PRINT "2. MY PROBLEM IS KEYBOARD FAILURE"
PRINT "3. STRANGE CHARACTERS ARE DISPLAYED WHEN THE KEYS OF THE KEYBOARD
ARE PRESSED"
PRINT "4. EXECUTABLE FILES ARE UNEXPECTEDLY VANISHING"
PRINT "5. PROGRAMS ARE RUNNING MORE SLOWLY THAN USUAL AND SYSTEM
REBOOTING WHEN PREVIOUSLY CORRECT PROGRAMS ARE RUN"
PRINT "6. NONE OF THE ABOVE"
PRINT "SELECT YOUR PROBLEM FROM ABOVE (1-6)"; EF
IF EF = 1 THEN
PRINT "PERFORM THE FOLLOWING:"
PRINT "RUN THE SYSTEM IN SAFE MODE BY HOLDING DOWN THE CTRL KEY WHILE THE SYSTEM IS
BOOTING"
PRINT "IF THE PROBLEM IS SOLVED, TRY REINSTALLING THE PROGRAM THAT WAS RUNNING WHEN THE ERROR
OCCURRED"
PRINT "IF THE ERROR STILL OCCUR IN SAFE MODE, CHECK THE RAM MODULE"
PRINT "ALSO ENSURE THAT THE CPU FAN BLOWS WELL"
ELSEIF EF = 2 THEN
PRINT "THE FOLLOWING CAN HELP SOLVE SUCH PROBLEM"
PRINT "ENSURE THAT THE KEYBOARD IS FIRMLY PLUGGED INTO ITS SOCKET"
PRINT "CHECK THE KEYS AND ENSURE THAT NONE IS STUCKED WHILE THE SYSTEM IS
BOOTING"
PRINT "IF THE ABOVE STEPS COULD NOT SOLVED THE PROBLEM, CHECK THE DEVICE MANAGER AS FOLLOWS"
PRINT "CLICK ON START"
PRINT "POINT ON SETTING"
PRINT "CLICK ON CONTROL PANEL"
PRINT "CLICK ON DEVICE MANAGER TO SEE IF THE KEYBOARD IS INSTALLED OTHERWISE REINSTALL IT"
ELSEIF EF = 3 THEN
PRINT "CLICK ON START"
PRINT "SELECT SETTINGS"
PRINT "CLICK ON CONTROL PANEL"
PRINT "DOUBLE CLICK ON KEYBOARD ICON"
PRINT "CLICK ON LANGUAGE TAB"
PRINT "CLICK ON 'ADD'"
PRINT "SELECT THE REQUIRED LANGUAGE "
PRINT "THEN CLICK OK"
ELSEIF EF = 4 THEN
PRINT "THIS IS LIKELY VIRUS-INFECTED SYMPTOMS "
PRINT "INSTALL AN ANTI-VIRUS PROGRAM TO HELP CHECK SOME OF THOSE ABNORMALITIES "
ELSEIF EF = 5 THEN
PRINT "IF THE PROBLEM IS NOT SOLVED, TRY REINSTALLING THE OPERATING SYSTEM"
ELSEIF EF = 6 THEN
PRINT "IF THE PROBLEM IS NOT SOLVED, TRY REINSTALLING THE OPERATING SYSTEM"

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CERTIFICATION

This is to certify that this project was carried out by Nwanji Chukwuma Benedict of Post Graduate Diploma (PGD) Programme in Mathematics/Computer Science Department of Federal University of Technology, Minna.

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ABul

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Project Supervisor

16-06-06

DATE

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DATE

EXTERNAL EXAMINER

DATE

DEDICATION

This project work is dedicated to my beloved Parents, Mr. And Mrs. A. Nwanji , to My Brothers and Sisters.

ACKNOWLEDGEMENT

My gratitude to the Almighty God for giving me the strength and wisdom to accomplish this noble task, may His name be praised forever.

I also thank my humble and dedicated supervisor, Mal. Abdullahi .I. Enagi for his immense efforts, wise advice and words of encouragement throughout the period of carrying out this project. May God bless you.

My thanks also go to all the lecturers in the Department for their untiring efforts while I was running the entire programme.

Finally I use this opportunity to extend my sincere gratitude to Mohammed Kabir S. Mashegu and Mal. Dauda of the Post Graduate school, Federal University of Technology, Minna as well as my Colleagues for some ideas we shared throughout the programme.

ABSTRACT

This project deals with the various problems, likely causes and possible solutions to a malfunctioning System. Moreover, various methods of troubleshooting were equally discussed. Also, emphasis was laid on software and hardware components as well as various methods adopted for the maintenance of a computer system. To achieve the above tasks, certain research methodology was applied – observation method, interview and investigation of existing systems. In the observation method, I closely watched some system engineers at work in an organisation with a case study of BE – J Systems Nigeria Limited, Abuja. Moreover, some Workers and Engineers were interviewed to get some facts.

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CHAPTER ONE

GENERAL INTRODUCTION

INTRODUCTION:

The concept of the world becoming a global village cannot be realistic without much emphasis on the “wonder machine” called computer.

Most major scientific / technological breakthroughs of our modern time is achieved with the aid of a functional computer. For example, researches in Nuclear reaction, Automobile industries, Medical field are carried out by Simulation with the aid of a computer. This is more economical as well as risk-free. In addition, Project management, Business activities, Communication, computer aided designs are tasks performed by a functional computer which are vital for the existence of mankind. Hence, the need to ensure the functionality of this “wonder machine”.

This project is written in a simplified language to assist computer users faced with a malfunctioning computer, not only understand why it is malfunctioning but more importantly, how to fix it back to normalcy. However, the project may not cover all problems or faults faced by a computer but concentration will be on more serious ones as well as common problems faced by a computer user.

Basically, a computer system is made up of both hardware and software components; therefore any problem associated with any of these components will automatically affect the functionality of the computer.

1.1 HARDWARE

This is the physical components of the computer system. They include the keyboard, mouse, monitor, CPU, CDROM drive, floppy drive etc.

1.2 SOFTWARE

This is the non physical component of the computer system. It is a set of programs concerned with the operations of a computer system. A program is a series of instruction to the computer to perform a desired function or task. Therefore software forms a means of communication between the user of a computer system and the hardware components.

1.3 TROUBLE SHOOTING TECHNIQUES

The indispensable nature of computer in today's economy worldwide usually result to losses when it takes a lot of time to resuscitate a malfunctioning computer to a working condition.

The following steps are applied in detecting the cause and possible solution to a malfunctioning system ---

- (a) Observe and identify the symptoms
- (b) Locate and isolate the cause (Elimination)
- (c) Change or repairs the part (Substitution)
- (d) Test the system.

1.4 OBJECTIVE OF THE STUDY

The objectives of this study is as follow:

- To help those computer users who are facing computer malfunctioning but do not know what to do in such situation.
- To enable me to carry out further research on causes and possible solution to computer malfunctioning
- Applying the findings in this project will minimize the cost of maintaining your system.

1.5 SIGNIFICANCE OF THE STUDY

Unlike other books on this project, the inclusion of a written program, makes it easy to detect a fault in a malfunctioning computer system.

For example, this program is user friendly because the program simply asked certain questions with which the computer uses to display the likely cause and possible solution to the given problem.

1.6 SCOPE OF STUDY

The project covers major components of a computer system, computer problems, – causes and possible solution, various methods of maintaining a system like Preventive, Corrective, etc, using BE-J SYSTEMS NIG LIMITED, MARARABA, VIA NYANYA, ABUJA – F.C.T as a case study. The project also includes a written program for trouble shooting a faulty computer system.

1.7 LIMITATION OF THE STUDY

Accomplishing this project is not an easy task because of certain constraints. For example, the cost of transportation was unbearable, there was also restriction of access to certain document in the company, probably they do not want to disclose all the activities concerning their business. Moreover, some of the company's Engineers were not too friendly, hence it was difficult to get all the necessary information from them.

1.8 DEFINITION OF TERMS

Simulation: This is a process whereby a computer system is made to imitate a real life situation or the use of computer to show how something works or will work in future

Hard ware: These are the physical components of a computer system. For example Keyboard, Monitor, Mouse, CD-Rom drive, Floppy drive etc.

Software: The non physical component of a computer system. It is also an interface between the user and the computer hardware.

System Software: Software that makes applications run on hardware.

Application Software: This is a set of programs that perform certain functions defined by the user

Operating System: This is a set of programs that controls and supervises a computer hardware to make it run efficiently and provides an interface or means of interaction between the user and other types of software which are used in the system.

Troubleshooting: This is the process of tracing faults in a malfunctioning system.

1.9 STATEMENT OF PROBLEM

Computer Virus is a destructive program that usually hides in a normal program. Its effect can be deadly to the store files in the computer system. Hence adequate measure should be taken to ensure that systems are prevented from virus infections. However some viruses

Are not international. This usually come as a result of errors in the program coding which eventually result in some unexpected and distorted operation of the soft ware.

Most of the viruses are however intentionally designed and Destructive. The virulent code can be embedded in a software as a

legitimate application until it is triggered based on certain condition to show its real nature. The effects of these viruses vary from one to another. Some can cause modification to a program, Others can erase files while there are also viruses that can effect incorrect calculations and even reformatting the hard disk.

The target of some viruses is the command processor which is the Command. Com. When this is affected, the viruses can now have access to other Dos facilities.

Another target of the viruses is the boot sector. This action affects The start up files such that they cannot boot at all.

1.10 TROUBLE SHOOTING

Troubleshooting is the method of tracing a fault in a malfunctioning Computer when you are faced with a faulty system, Consider the following step.

1. Try to understand the symptoms rather than jumping into the action
2. Trace and isolate the likely cause (elimination)
3. Change or repair the affected part (substitution)
4. Test of the system is now functional.

Note

In some cases, a system usually develop faults as a result of the following

- (a) Downloading from Internet
- (b) Installing a peripheral

- (c) Installing a program.
- (d) Changing from cp setting.
- (e) Upgrading your system with new card.
- (f) Improper shutting down..
- (g) Too much voltage into the system.

Chapter Two

INDEPT REVIEW OF THE PROJECT

2.0 Literature Review

Basically, a computer system is made up of two major components, which are hardware and software. The hardware component comprise of those physical parts like the keyboard, mouse, monitor, central processing unit (CPU) and so on while the software components are the non physical components. They are set programs that instruct the computer on how to accomplish a problem or task. There are basically the system and application software.

General problem of the computer system can therefore be trace to either software or hardware malfunctioning. The task of determining the cause of such problem is known as trouble shooting,

Troubleshooting can be done either through elimination or substitution methods.

Elimination involve the removing completely any suspected component of the system while substitution is done by replacing the suspected component by a known functional components

2.1 Installation

M. Weiberge and Dennis P.Geller (1993) define installation as placing the system into operation in its final environment while T.G Rowan (1982) define installation as the process of physically

computer equipment on the site and making it operational. He further said that installation plan must be designed to protect the system from certain major problems.

2.3 SYSTEM CRASH

This is a situation in which the system refuses to proceed or hang without rebooting. It is usually caused by a faulty software, though in most cases, no permanent damage occurs.

2.4 MAINTENANCE:

Maintenance is explained by Williams Davis (1969) as any activity intended to eliminate faults or to keep hardware or software in satisfactory working conditions including tests, replacement, adjustments and repairs.

Maintenance can be carried out in order to:

- (a) Adjust the system to change in requirements e.g. New information required by Management or due to changes in the environment of the program. This is called adaptive maintenance
- (b) Correct undiscovered system errors i.e. failure to implement a specific function like incorrect handling of files. This is referred to as corrective maintenance.

Maintenance could also be referred to as changes to a system in operation arising from error corrections, performance improvement and enhancement in function.

According to Donald V. Steward (1987), Maintenance includes the repair of errors discovered after a system is put into use, change in the program required as the underlying hardware or operating system is updated. Hence, evidence from existing systems show that maintenance costs are the greater costs incurred in developing and using a system. Though these costs were usually underestimated when the system was designed and implemented. It is therefore worthwhile to invest time and effort when designing and implementing a system to reduce maintenance and hence overall system costs.

2.5 TROUBLE SHOOTING TECHNIQUES

Tracing the cause of a computer system malfunctioning may not be as easy as one perceived. It could atimes frustrating. However, there are things one can do which will help swing the odds in one's favour to some extent.

When you are confronted with a malfunctioning system, the first step is to take a few minutes initial thoughts about what is happening before actually doing anything. For example, in a system lockup or freeze, so many people go for the "reset" button and thus risk corrupting their

hard drive, rather than pressing the Ctrl + Alt + Del buttons on the keyboard. This will display the cause of such lockup and possibly request for the program to be closed down.

Another consideration to be made during troubleshooting is the recent changes made in the computer system. For example

- (a) Downloading from the internet
- (b) Installing a program
- (c) Upgrading your PC with a new card
- (d) Installing a peripheral
- (e) Changing your computer settings
- (f) Shutting the system in an improper way.

2.6 ELIMINATION

Problems in a computer can be perceived as a myriad of possible causes. In this case you need to adopt a logical approach and eliminate as much possibilities as you can in order of likelihood. Some peripherals can be disconnected while disabling as much of the systems hardware as possible. Any suspected software can equally be uninstalled. Reboot after each change is made to enable you trace the cause of each problem.

2.7 SUBSTITUTION

This is one of the best and easiest way to check a suspected component in your system. The component is usually replaced by a good and functional one. For example, a non-working mouse can be

2.10 SYSTEM INSTABILITY

Computers function only when instructions are given to them. As long as instructions are logical and do not conflict, the operating environment are within the designated parameters, the computer can function exactly as should. But when the instructions are illogical and the computers are subjected to something it isn't designed to cope with, the reliability of the computer disappears and instability sets in.

The indication of instability are usually

- (a) Unpredictable behaviour
- (b) Crashes, Lockup / Hanging
- (c) Error Messages

METHODS ADOPTED FOR CARRYING OUT THE PROJECT

3.0 RESEARCH METHODOLOGY

Several methods were used in the cause of this Project work. These are:

- (a) Interview Method
- (b) Observation Method
- (c) PC Magazines

INTERVIEW METHOD

In this method, some Technicians as well as the Engineers in the Company (**BE – J SYSTEMS NIG LTD**) were interviewed on how some malfunctioning computer systems can be put back to normalcy. However, some explanations were clear while others were vague.

OBSERVATION METHOD

The observation method enabled me to have first hand idea of solving problems in faulty computer system. I watched closely how troubleshooting is done, installation and maintenance of a faulty computer system. Moreover, I compared the operations in this company with some other firms. Observation method gave me a clearer picture of solving some computer problems.

PC MAGAZINES

Further research was done with the aid of some PC magazines which were centered mostly on troubleshooting and Installations.

3.1 BRIEF HISTORY AND ORGANIZATION OF THE CASE STUDY

Be-j Systems Nig Ltd is a private liability Company, registered and incorporated on the 3rd of December, 2002. it was commissioned on the 4th of January, 2003. Since its commission, Be-j Systems Nig Ltd has been engaged in Repairs and Services of Computer systems for both Multinationals and Private liability companies, thereby making it a household name. It is also involved in the sale of computer accessories.

3.2 TECHNOLOGY AND MANPOWER OF THE COMPANY

Mararaba branch is one of the branches of BE-J SYSTEMS NIG LTD, with its head Office in Lagos.

During its operations, relatively sophisticated technology is applied. This explains why some expatriates were involved and also some Nigerians were sent overseas for training prior to their resumption of duties after employment.

The company has now provided employment for about 250 Nigerians nationwide.

3.3 PROBLEMS – CAUSES AND POSSIBLE SOLUTIONS IN A COMPUTER SYSTEM

Boot up Problem

When the system is switched on, it appears to be dead, monitor is blank, the following should be done:

- ◆ Check whether Power is supplied to your computer
- ◆ Check the LED on the case (Is the light “on”)
- ◆ Check if the Power fan is blowing

If none of the above is responding, then do the following

- Connect another appliance to the mains to ensure that it is functioning
- Remove any surge suppressor or similar device and connect the computer direct.
- Replace the Power cable with a good working one

If all of the above is responding, then

- Check if the monitor power light is “on”, otherwise it is not getting any power, hence check its power cable.

GENERAL PROBLEMS, CAUSES AND POSSIBLE SOLUTIONS

4.0 POWER SUPPLY PROBLEMS

The source of power to the entire computer system is the power unit (pack). Therefore, problems with this component can equally bring the whole system to a halt.

The following could be traced to power related problems.

- i. Spontaneous rebooting or intermittent lockups during normal operation
- ii. Intermittent parity check
- iii. Hard disk and Fan simultaneously failing to spin
- iv. System is completely dead
- v. Small brown out causes the system to reset
- vi. The LED light on the casing is not ON

SOLUTIONS TO POWER SUPPLY RELATED PROBLEMS

- ◆ Check if the wall socket (mains) is working by connecting a good known appliance to it
- ◆ Ensure that the PC power cable is firmly seated in either the stabilizer or UPS socket and in the power supply socket
- ◆ Most PCs also have an ON/OFF switch at the rear of the case. Make sure it is not in the OFF position otherwise, switch it ON
- ◆ If there was an explosion (sound) before the computer system stopped working, replace the power unit

4.1 FROZEN OR HUNG PC

Sometimes, in the course of using the system, it refuses to respond to any Command. However, it indicates that the system have encountered a problem somewhere and needed little time to sort it out.

encountered a problem somewhere and needed little time to sort it out.

When faced with such situation, do the following:

- ◆ Wait for a few moment to see if the system will normalize itself
- ◆ If nothing happens, press the Ctrl + Alt + Del keys simultaneously on the keyboard
- ◆ In the list of currently running programs displayed, click on the one indicating " Not responding"
- ◆ Click on " end task" button

The above actions forcibly close the program and return the user to windows.

Note: if the system still did not respond, the press the "reset" button and allow the scandisk to run so that other problems can be repaired

4.2 RESOURCE CONFLICTS

One of the most likely faults to be encountered on a computer is a Resource conflict. This is usually specific to a particular hardware device.

The following are the computer resources shared by its components:

- The Interrupt request Channels (IRQ)
- The Direct Memory Access Channels (DMA)
- Input / Output Port Address (I/O)

IRQ: This allows the system Hardware devices to communicate with the CPU in an orderly fashion.

DMA: This allows data transfer directly to RAM. These channels are used by high speed communications devices like sound cards and SCSI adaptors.

I/O: these are used by device drivers to communicate with software applications.

It is the responsibility of the operating system to allocate the available system resources wherever they are needed. However, the operating system sometimes loses control of things, hence resulting in individual devices competing for the same resources as their own.

Classic signs of resource conflict are:

- System freezes during boot
- Erratic device behaviour
- System fails to boot.

RESOLVING RESOURCES CONFLICTS:

The first step here is to identify which device is conflicting. This is done as follows:

- Click on programs
- Point to settings
- Click on control panel
- Double click on Systems
- Click on Device Manager tab
- Double click on a Category from the various listed categories for all the hardware devices in your system
- Click on any device with yellow exclamation (conflicting device)
- Click on "Remove" button
- Reboot the system to enable window re-install it and re-assign the appropriate resources.

However, if the above does not solve the problem, do the following:

- Perform Steps i – iv above
- Click on " Properties" button
- In the next dialog box, click on "Resources" tab
- Click the conflicting IRQ

- Uncheck the " Use Automatic settings" box
- Click on "Change Setting" button
- Select a different configuration from " setting based on" edit box
- In the dialog box that appears, select a different IRQ number
- Click n Ok Button

4.3 OPTICAL DRIVES PROBLEMS

"CDROM DRIVE FAILS TO READ CD"

CAUSES

- improper insertion of CD
- Dusty CD
- Scratches on the CD
- Improper Drive Installation

SOLUTION

- Ensure that the CD is inserted the right way
- Check the Drive for dust, use cleaning CD
- Check for scratches on CD data surface and possibly clean with spirit
- Ensure that the Drive shows up as working in system properties
- Remove the Drive from Device Manager and allow the system to re-detect the Drive and re-install the driver as you reboot.

4.4 DVD PLAYBACK IS SLOW OR JERKY

CDs and DVDs use the same technology but the difference lies in the volume of Data held by the two. For example, a DVD can hold up to 18 GB (gigabytes) of data while CD holds 650 MB (mega bytes) of Data.

The following can be outlined as likely causes of slow playback and jerky video -

- Low speed CPU
- Graphic card capability

- Dirty or scratched DVDs
- Too many Applications running at a time

SOLUTIONS

- Ensure that the right CPU Speed is used, otherwise, upgrade it
- Upgrade the graphic card to achieve a satisfactory playback
- Keep the Disk clean and use brass or silver polish to remove any scratches
- Minimize the number of applications running at a time

4.5 FLOPPY DRIVE RELATED PROBLEMS

The importance of floppy Drive cannot be over-emphasized, hence the need to ensure a functional floppy drive. The following are related floppy drive problems –

(A) FLOPPY DRIVE CANNOT WRITE TO A DISKETTE

CAUSES

- (i) Diskette may be write protected
- (ii) Not enough space left on the Diskette
- (iii) Wrong Diskette might have been inserted
- (v) Diskette might be damaged

SOLUTIONS

- (i) Disable the write protect feature

- (ii) Use another Diskette or Delete unwanted files from the Diskette
- (iii) Replace with the right Diskette
- (iv) Format the Diskette
- (v) Replace with a good Diskette

(B) THE DRIVE DOES NOT SPIN AND LED NEVER COME ON

Causes

- (i) Bad Data cable
- (ii) Defective Drive
- (iii) Bad Power Supply or Power Cable
- (iv) Defective Controller.

SOLUTIONS

- (i) Replace the Data cable with a tested and functional one
- (ii) Replace the Drive with a good one
- (iii) Ensure that the power cable is properly fixed

(C) DRIVE LED REMAINS "ON" CONTINUOUSLY

Causes

- (i) Connection of Data cable is backward on either the Drive or controller

- (ii) The Data cable could be offset on the connector by one or more pins

SOLUTIONS

- (i) Disconnect the Data cable and reconnect it the right way
- (ii) Disconnect the Data cable and ensure that the connector holes correspond to the available pins

(D) PHANTOM DIRECTORIES

- (i) Defective cable
- (ii) Improper Drive configuration
- (iii) Defective Drive

SOLUTIONS

- (i) Replace the Data cable with a good one
- (ii) Ensure that the Drive is properly configured
- (iii) Replace the Drive with any available functional one

4.6 MEMORY RELATED PROBLEMS

All processing done by the processor is carried out with the help of the memory; hence memory is the work space for the computer processor.

In this project, the RAM (Random Access Memory) is to be

considered. It is therefore obvious that any problem with the RAM will equally halt the smooth operation of the computer system.

The first indication of memory problem is usually during POST (Power On Self Test). During this process, the memory is tested and counted. The counting is compared to the amount counted the last time Bios setup was run, if it differs from the previous count, an error message is used. If the problem is fatal or critical, an audio message (Beeping) will be heard. Other error messages relating to Memory problem are -

- Parity Error: Parity Checking Circuitry on the board has detected a change in memory since the data was originally stored.
- General or Global protection faults: Indicating the program has been corrupted in the memory, resulting in the immediate termination of such program.
- Fatal Exception Error: When an illegal instruction has been encountered, invalid data or code being accessed etc, this message is usually displayed.

In addition to the above messages, a blank monitor with the LED light "on" can equally indicate a memory failure.

SOLUTION TO MEMORY RELATED PROBLEMS

If it is identified that POST reported a memory problem, do the following -

- Restart the system and enter the BIOS setup (using F1, F2 or Del button while the system is booting depending on the BIOS manufacturer)
- Select BIOS or setup Defaults, save the settings and reboot
- If the above does not solve the problem then open the system for physical access to the memory modules on the mother board
- Readjust the modules by pulling and re-installing them, since partial contacts can make it not to function
- If the problems persists, replace the Modules suspected with a good working ones

Note

When there are two or more modules, check them one after the other.

4.7 MONITOR RELATED PROBLEMS

- (1) Jittery Picture Quality: The image produced on the monitor is neither steady nor clear, hence makes the output unreadable sometimes.

SOLUTIONS

- (a) Check the cable at the video and monitor connectors, ensuring that it is properly fixed (tight)
- (b) If the cable is damaged, replace it with a good one

- (c) Interference from a microwave device can cause intermittent jittery, hence ensure that no such device is close to the monitor
 - (d) The refresh rate settings can be checked and reduced until acceptable picture quality is obtained
- (2) No Picture. In this case, there is no image displayed on the monitor.**

SOLUTION

- (i) If there is no light on monitor, ensure that the power switch is “on” and then check the power cable and possibly replace it with a known working one
- (ii) Check the Data cable at the monitor and video card end
- (iii) Monitor could be in power saving mode, hence move the mouse or press Alt + tab keys on the keyboard to wake up the system
- (iv) If the above methods cannot restore the system, replace the monitor with a good one.

4.8 PROCESSOR RELATED PROBLEMS

Normally, Processors are very reliable, however they can equally have their related problems

- (a) Locks up during or shortly after POST

CAUSES

- (i) Poor heat Dissipation from CPU

- (ii) Wrong CPU Clock Multiplier

SOLUTION

- (i) Check and replace the CPU heat sink or fan, with a higher capacity type
- (ii) Use the Jumper on the monitor board for proper clock multiplier

4.9 HARD DRIVE PROBLEMS

HARD DRIVE FAILURE

When faced with the above problem, the PC will usually refuse to boot and with certainty an error message being displayed

CAUSES

- Bad sectors due to constant power fluctuation
- Improper power or data cable connection to the Disk
- Non-recognition of the disk by the system
- Continuous improper shut down by the system user

SOLUTIONS

- Run a scandisk to help fix the error created by the bad sector
- Ensure that your system (PC) is connected to a stabilizer via UPS (Uninterrupted Power Supply) always

- Check the power connector and ensure that the data cable is properly connected to both the disk and main board.
- Enter the BIOS setup program as follows -
Reboot the computer and follow the on-screen instructions for accessing the BIOS.
While in BIOS, select "The standard (MOS) setup option"
- Press the "Enter Key" in the keyboard
- In the next screen, select Primary Master and press the enter key, if the hard drive specification is displayed press the Esc Key, otherwise check the Primary Slave, Secondary Master or Secondary slave before pressing the Esc key, in the Next Screen, select "Save and Exit Setup"
Press Y to confirm and press the "enter" key

PROBLEM WITH FDISK PARTITION

SOLUTION

- Check and correct the settings in BIOS
- Repartition the Drive

Note: Partitioning will automatically involve formatting the Drive

4.10 HARD DRIVE ERROR MESSAGES AND POSSIBLE

"No Boot device available"

Cause

Boot record on the Hard Drive is either missing or corrupted.

Solution

- Check for a boot sector virus using anti-virus software

- Use your Startup disk to transfer system files to the Drive

“Hard Drive controller failure”

Cause

Improper Data cable connections

Solution

- Power down the system; ensure that the data cable is properly connected to both the Drive and main board

“A serious disk error occurred while trying to read/write to Drive”

Cause

Physical or Connection problems with the Disk

Solution

- Check and connect the Drive’s power supply and cable properly
- Run Scandisk to fix errors on the Disk

“Invalid Drive specification”

Causes

Incorrect Drive configuration

4.11 KEYBOARD RELATED PROBLEMS

Keyboard failure

Causes

- Wrong connections: The keyboard is not properly plugged into its socket
- Stucked keys
- Improper installation of keyboard driver
- Failing keyboard controller

SOLUTION

- Ensure that the keyboard is firmly plugged into its socket
- Check the keys and ensure that none is stuck while the system is booting
- If the above steps could not solve the problem, then check the Device Manager as follows:
 - Click on Start
 - Select Settings
 - Click on control panel
 - Double click on 'system' icon
 - Click on Manager Device tab
 - Check if the keyboard Driver is installed, otherwise reinstall it.

Note: At each of the above steps, try and reboot the system

Strange Characters are displayed as keys are pressed

Cause

Keyboard was set to a different language

Solutions

- Click on start
- Select settings
- Click on control panel
- Double click on keyboard icon
- Click on language tab
- Click on Add and then select the required language
- Click on ok

4.12 MOUSE RELATED PROBLEMS

MOUSE APPEARS TO BE DEAD

SOLUTIONS

- i. Ensure that the mouse is plugged into the right port

- ii. If the above does not solve the problem, check the Device Manager to see if the window has seen the mouse.
- iii. If the mouse is not seen or it is conflicting with another device, remove and reinstall it
- iv. After all above and the problem persists, change the mouse.

Note: After each of the above steps, you should reboot the system.

JERKY MOUSE MOVEMENT

CAUSES:

- i. Dirt
- ii. Wrong Mouse pad

SOLUTIONS:

- i. Open up the Mouse, remove and clean the rubber ball
- ii. Clean also some plastic rollers inside, which are usually lined round with dirt.
- iii. Shiny and smooth pad is not very ok for mouse movement, so look for a pad that will give a better grip to the mouse for better efficiency.

4.13 VIRUS RELATED PROBLEMS

Virus is a program designed to cause some undesirable actions in a system.

SYMPTOMS OF VIRUS PROBLEMS

- Programs running more slowly than usual
- Executable files unexpectedly vanishing

- Executable files unexpectedly vanishing
- Programs attempting to write to write-protected media
- Unusual things appearing on the Display
- PCs unexpectedly rebooting when certain previously correct programs are run
- Unusual messages appearing when certain commands are given to the system.

Solution

Run an anti-virus program to help check some of those abnormalities. If the problems persist, reformat the Hard disk and reinstall the needed software.

4.14 COMMON ERROR MESSAGES, CAUSES AND LIKELY SOLUTIONS

“General Protection Faults”

Cause

Program is trying to access a part of the system RAM already in use

Solution

Close most of the programs running in the background e.g. Screen saver

Ensure that you have enough space in the Hard drive

If the desktop colour is 32 bits, lower it down to 16 bits as follows:

- Right click on the desktop
- Click on Properties
- Click on ‘settings’ tab
- Select 16 bits from the edit box

“Fatal Exception Errors”

Causes

- Two applications are trying to access the same section of RAM simultaneously
- Defective Memory Module
- Faulty CPU

Solution

- Run the system in a safe mode by holding down the ctrl key on the keyboard while the system is rebooting
- If the error still occurs in safe mode, check the RAM module as well as ensuring that the CPU fan blows very well
- If the problem is not solved, try reinstalling the program that was running when the error occurred

“Invalid Page Faults”

Causes

Windows run out of RAM and also not able to use virtual memory

Solution

- Run a scandisk to check and fix damaged sectors of the hard drive
- Check the RAM by replacing the Chip module with good working ones if the first step does not solve the problem.
- Run Scanreg/Restore to restore the system registry

“Windows Protection Errors”

Causes

- Improper loading of an essential device driver when windows boots up
- Virus

- Faulty RAM

Solution

- Uninstall any device that might have just been installed, reboot and if the problem is solved, try reinstalling the device
- Check the system for virus
- If the problem persists after using the above steps, check and possibly replace the RAM modules with good ones

5.0 CONCLUSION AND RECOMMENDATION

This Chapter emphasizes on the Recommendation and Concluding part of the Project work.

5.1 RECOMMENDATION

Most Computer users are usually disgusted and sometimes frustrated when faced with a malfunctioning system. This is because they have no idea about what next to do, most especially when they are in the middle of their jobs or about to start some important work. Therefore, this project work is recommended for such class of people as well as some Computer professionals.

Moreover, this Project is aimed at running the computer system at a minimal cost.

5.2 CONCLUSION

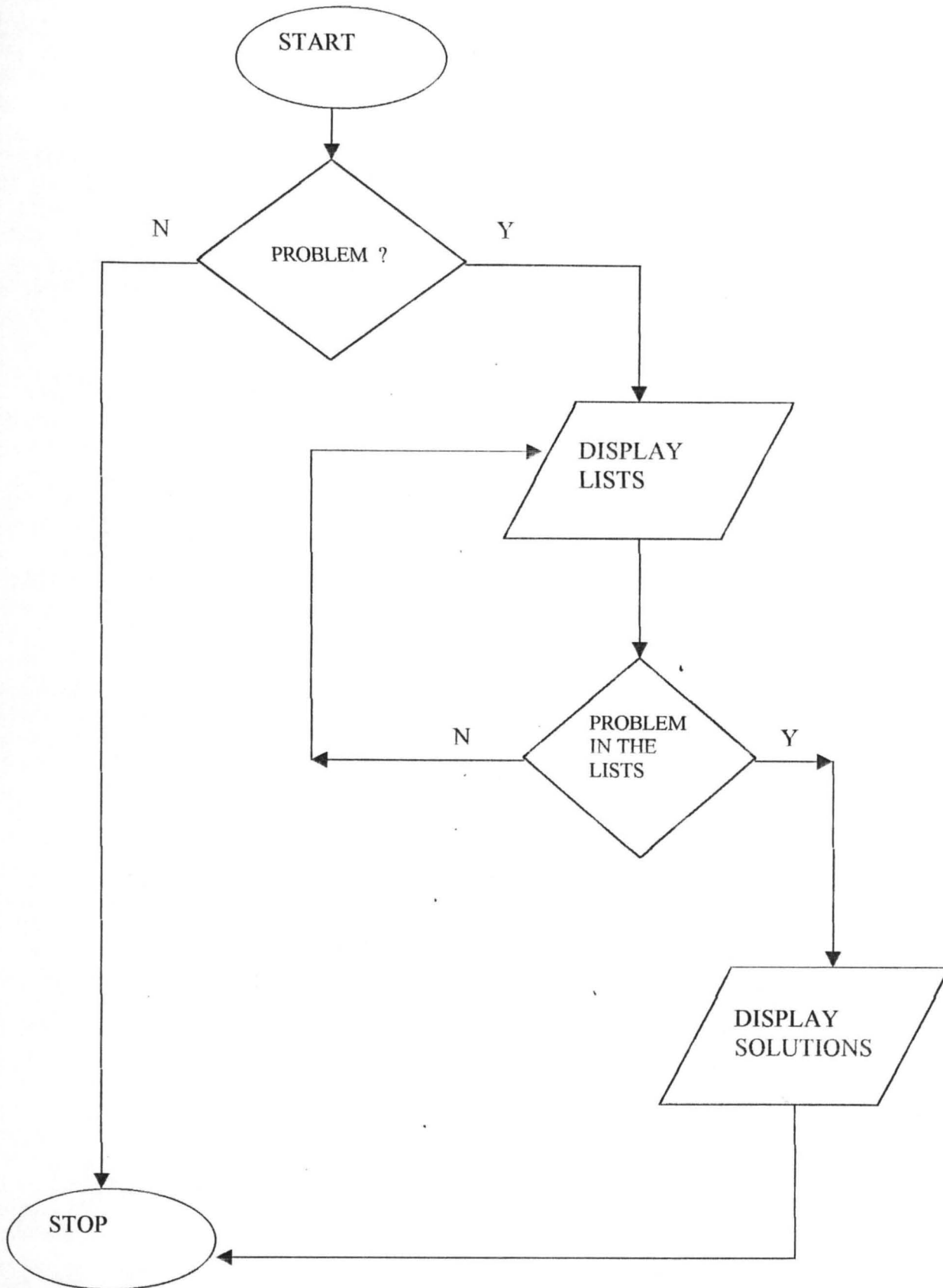
Apparently, it is not possible to cover every fault of the computer system but rather emphasis was laid on most common and more serious ones.

Finally, the key to solving problems of faulty computer system lies in a considered and logical approach.

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FLOWCHART FOR THE PROGRAM



PROGRAM ASSOCIATED WITH THE PROJECT

```
CLS
REM PROGRAMME TO EXPLAIN THE CAUSES AND LIKELY SOLUTIONS OF A FAULTY SYSTEM
PRINT "BE-J SYSTEMS NIGERIA LIMITED"
PRINT "ABUJA"
PRINT "FCT"
INPUT "DO YOU HAVE ANY PROBLEM WITH YOUR SYSTEM (Y/N)"; P$
IF P$ = "Y" OR P$ = "y" THEN
PRINT "CHECK WHETHER THE PROBLEM IS LISTED BELOW"
PRINT "1. MY COMPUTER APPEARS TO BE DEAD"
PRINT "2. MY COMPUTER IS ALWAYS REBOOTING AND INTERMITTENT LOCKUPS DURING
      NORMAL OPERATION"
PRINT "3. MY HARD DISK AND POWER FAN SIMULTANEOUSLY FAIL TO SPIN"
PRINT "4. THERE WAS AN EXPLOSION WHEN I SWITCHED ON THE COMPUTER"
PRINT "5. NONE OF THE ABOVE"
INPUT "MAKE A CHOICE FROM ABOVE (1-5)"; CH
CLS
END IF
IF CH = 1 THEN
CLS
PRINT "1. CHECK WHETHER THERE IS POWER SUPPLY TO YOUR SYSTEM"
PRINT "2. CHECK ALSO IF THE LED LIGHT ON THE CASE IS ON"
PRINT "3. CHECK IF THE POWER FAN IS BLOWING AND POSSIBLY THE ON/OFF SWITCH AT
      THE REAR OF THE CASE"
PRINT "IF NON OF THE ABOVE IS RESPONDING, THEN DO THE FOLLOWING:"
PRINT "CONNECT ANOTHER APPLIANCE TO THE MAINS TO SEE IF IT IS FUNCTIONAL"
PRINT "IF THE ABOVE APPLIANCE WORKS, THEN THE POWER CABLE OF YOUR SYSTEM MAY
      BAD, SO REPLACE IT"
PRINT "OTHERWISE, THE MAINS MAY BE FAULTY"
ELSEIF CH = 2 THEN
PRINT "THIS IS LIKELY TO BE A POWER RELATED PROBLEM"
PRINT "ENSURE THAT THE PC POWER CABLE IS FIRMLY SEATED IN EITHER THE"
PRINT "STABILIZER OR UPS SOCKET AND IN THE POWER SUPPLY SOCKET"
ELSEIF CH = 3 THEN
PRINT "CHECK THE REAR OF THE CASE FOR AN ON/OFF SWITCH"
PRINT "ENSURE THAT THE PC CABLE IS FIRMLY FIXED IN EITHER"
PRINT "THE STABILIZER OR UPS SOCKETS AND IN THE POWER SUPPLY SOCKET"
ELSEIF CH = 4 THEN
PRINT "CHECK THE POWER PACK AND POSSIBLY REPLACE IT"
ELSEIF CH = 5 THEN
GOTO 200
END IF
END
CLS
200 PRINT "SELECT FROM THESE LISTED PROBLEMS"
CLS
PRINT "1. MY PC IS FROZEN OR HUNG"
PRINT "2. MY SYSTEM FREEZES DURING BOOTING"
PRINT "3. I AM EXPERIENCING ERRATIC DEVICE BEHAVIOUR"
PRINT "4. CDROM DRIVE FAILS TO READ MY CD"
PRINT "5. NONE OF THE ABOVE"
INPUT "CHOOSE FROM ABOVE THE RELATED PROBLEM"; SCH
IF SCH = 1 THEN
CLS
PRINT "WAIT FOR A MOMENT TO SEE IF THE SYSTEM WILL NORMALIZE ITSELF"
```

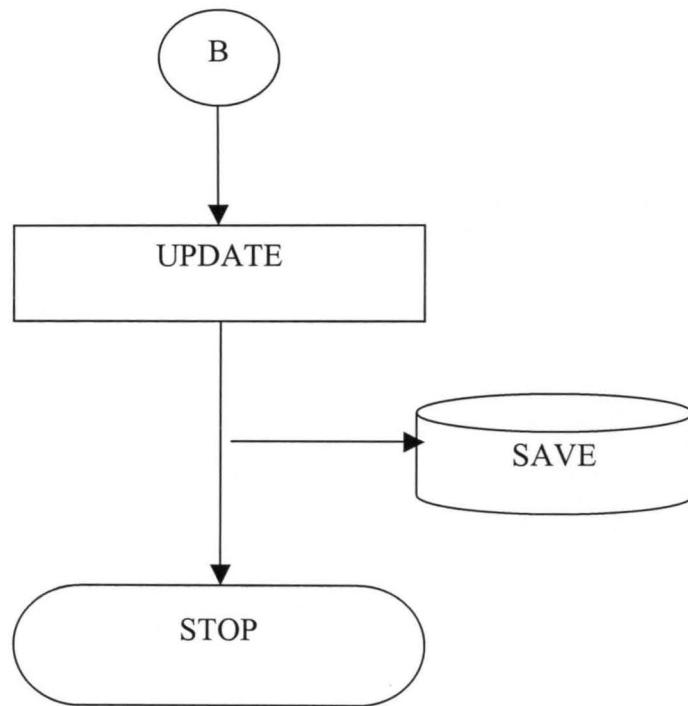
```
PRINT "IF NOTHING HAPPENS, PRESS THE CTRL + ALT + DEL KEYS ON THE KEYBOARD  
SIMULTANEOUSLY"  
PRINT "IN THE LIST OF THE CURRENTLY RUNNING PROGRAMS, CLICK ON THE ONE INDICATING  
'NOT RESPONDING' "  
PRINT "CLICK ON END BUTTON"  
PRINT "IF THE ABOVE ACTION DID NOT RETURN THE SYSTEM TO NORMALCY, PRESS THE  
RESET BUTTON"  
PRINT "ALLOW THE SCANDISK TO RUN"  
ELSEIF SCH = 2 THEN  
CLS  
PRINT "THE PROBLEM MAY BE RESOURCE CONFLICT"  
PRINT "IF YOU HAVE JUST CONNECTED OR INSTALLED NEW DEVICE, UNINSTALL IT"  
PRINT "REBOOT THE SYSTEM"  
PRINT "A FAILING MEMORY CAN ALSO CAUSE SUCH PROBLEM, SO CHECK THE MEMORY"  
ELSEIF SCH = 3 THEN  
CLS  
PRINT "CLICK ON START"  
PRINT "POINT TO SETTINGS"  
PRINT "CLICK ON CONTROL PANEL"  
PRINT "DOUBLE CLICK ON SYSTEM ICON"  
PRINT "CLICK ON DEVICE MANAGER TAB"  
PRINT "DOUBLE CLICK ON A CATEGORY FROM THE LISTED CATEGORIES FOR ALL THE  
DEVICES IN YOUR SYSTEM"  
PRINT "CLICK ON ANY DEVICE WITH YELLOW EXCLAMATION"  
PRINT "CLICK ON THE 'REMOVE' BUTTON"  
PRINT "REBOOT THE SYSTEM TO ENABLE WINDOW INSTALL THE DEVICE"  
PRINT "AND REASSIGN THE APPROPRIATE RESOURCES"  
PRINT "IF THE PROBLEM IS NOT SOLVED, DO THE FOLLOWING:"  
PRINT "PERFORM STEPS 1 -IV ABOVE"  
PRINT "CLICK ON 'PROPERTIES' BUTTON"  
PRINT "IN THE NEXT DIALOG BOX, CLICK ON 'RESOURCES' TAB"  
PRINT "CLICK ON THE CONFLICTING IRQ"  
PRINT "UNCHECK THE 'USE AUTOMATIC SETTING' BUTTON"  
PRINT "CLICK ON 'CHANGE SETTING' BUTTON"  
PRINT "SELECT A DIFFERENT CONFIGURATION FROM 'SETTING BASED ON' EDIT BOX"  
PRINT "SELECT A DIFFERENT IRQ NUMBER"  
PRINT "CLICK ON OK BUTTON"  
ELSEIF SCH = 4 THEN  
CLS  
PRINT "CHECK IF THE CD IS INSERTED THE RIGHT WAY"  
PRINT "IF THE CD IS INSERTED PROPERLY, INSERT ANOTHER CD AND SEE IF THE  
PROBLEM PERSISTS"  
PRINT "IF THE PROBLEM PERSISTS, CHECK THE DRIVE FOR DUST USING A CLEANING CD"  
PRINT "YOU CAN ALSO CLEAN THE CD WITH SPIRIT IN CASE THERE ARE SCRATCHES"  
PRINT "OTHER OPTION IS TO CHECK IN THE SYSTEM PROPERTIES, REMOVE THE DRIVE  
FROM THE DEVICE MANAGER"  
PRINT "ALLOW THE SYSTEM TO REDETECT THE DRVE AND REINSTALL IT WHILE REBOOTING"  
ELSEIF SCH = 5 THEN  
GOTO 300  
PRINT "MORE SUGGESTIONS ARE STILL AVAILABLE"  
END IF  
END  
CLS  
300 PRINT "LET US TRY ANOTHER CHOICE (1-5)"  
CLS  
PRINT "1. MY DVD PLAYBACK IS SLOW AND JERKY"
```

```
PRINT "2. FLOPPY DRIVE CANNOT WRITE TO A DISKETTE"
PRINT "3. FLOPPY DRIVE DOES NOT SPIN AND THE LED LIGHT NEVER COME ON"
PRINT "4. THE FLOPPY DRIVE LED LIGHT REMAINS CONTINUOUSLY ON"
PRINT "5. MOUSE APPEARS TO BE DEAD"
PRINT "6. MOUSE MOVEMENT IS JERKY"
PRINT "7. NONE OF THE ABOVE"
INPUT "TRY THE OTHER OPTIONS ABOVE (1-7)": OP
CLS
IF OP = 1 THEN
PRINT "JERKY OR SLOW DVD COULD BE DUE TO LOW SPEED CPU, DIRTY OR SCRATCHED DVD"
PRINT "JERKY OR SLOW DVD COULD ALSO BE DUE TO WRONG GRAPHIC CARD"
PRINT "TOO MANY APPLICATIONS RUNNING AT THE SAME TIME CAN EQUALLY CREATE SUCH
PROBLEM"
PRINT "THEREFORE TRY THE FOLLOWING:"
PRINT "ENSURE THAT THE RIGHT CPU SPEED IS USED, OTHERWISE UPGRADE IT"
PRINT "UPGRADE THE GRAPHIC CARD IF POSSIBLE"
PRINT "USE BRASS OR SILVER POLISH TO REMOVE SCRATCHES ON THE CD"
PRINT "ALWAYS CLEAN THE DVD TO AVOID DUST"
PRINT "ALWAYS ENSURE THAT THE NUMBER OF APPLICATIONS RUNNING AT A TIME IS
MINIMISED"
PRINT "IF AFTER ALL EFFORTS, THE PROBLEM PERSISTS, REPLACE THE DRIVE WITH A
GOOD ONE"
ELSEIF OP = 2 THEN
PRINT "DO THE FOLLOWING:"
PRINT "DISABLE THE WRITE-PROTECT FEATURE IF ENABLED"
PRINT "THE DISKETTE MAY BE FULL, SO DELETE SOME FILES TO CREATE SPACE"
PRINT "IF THE ABOVE DOES NOT WORK, FORMAT OR REPLACE THE DISKETTE"
ELSEIF OP = 3 THEN
PRINT "CHECK AND POSSIBLY REPLACE THE DATA CABLE"
PRINT "ENSURE THAT THE POWER CABLE IS PROPERLY FIXED"
PRINT "IF THE PROBLEM PERSISTS, REPLACE THE FLOPPY DRIVE"
ELSEIF OP = 4 THEN
PRINT "CHECK IF THE DATA CABLE IS CONNECTED BACKWARD ON EITHER THE DRIVE OR
CONTROLLER"
PRINT "THE DATA CABLE MAY ALSO BE OFFSET ON THE CONNECTOR BY ONE OR MORE PINS, SO
CORRECT IT"
ELSEIF OP = 5 THEN
PRINT "A. ENSURE THAT THE MOUSE IS PLUGGED CORRECTLY INTO THE RIGHT PORT"
PRINT "B. IF THE ABOVE DOES NOT SOLVE THE PROBLEM, CHECK THE DEVICE MANAGER TO SEE
IF THE WINDOW HAS SEEN THE MOUSE"
PRINT "C. IF THE MOUSE IS NOT SEEN OR IT'S CONFLICTING IN DEVICE MANAGER, REMOVE AND
REINSTALL IT"
PRINT "D. IF THE PROBLEM PERSISTS, CHANGE THE MOUSE WITH A GOOD ONE"
PRINT "AFTER EACH OF THE ABOVE STEPS, YOU SHOULD REBOOT THE SYSTEM"
ELSEIF OP = 6 THEN
PRINT "I. OPEN UP THE MOUSE, REMOVE AND CLEAN THE RUBBER BALL"
PRINT "II. CLEAN ALSO SOME PLASTIC ROLLERS INSIDE, WHICH ARE LINED ROUND WITH DIRT"
PRINT "III. SHINY AND SMOOTH PA IS NOT VERY OK FOR MOUSE MOVEMENT"
PRINT "IV. SO LOOK FOR A PAD THAT WILL GIVE A BETTER GRIP TO THE MOUSE FOR BETTER
EFFICIENCY"
ELSEIF OP = 7 THEN
GOTO 400
END IF
END
```

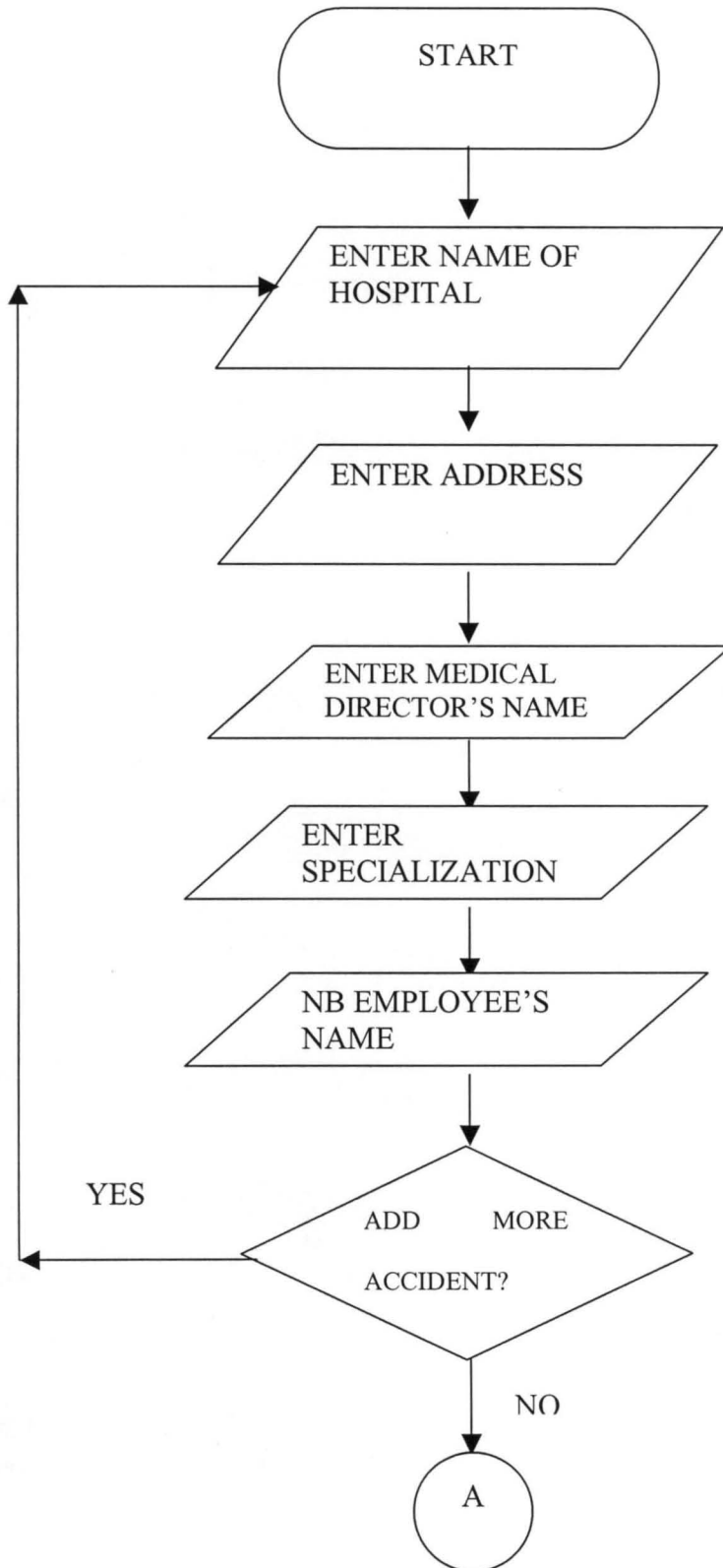
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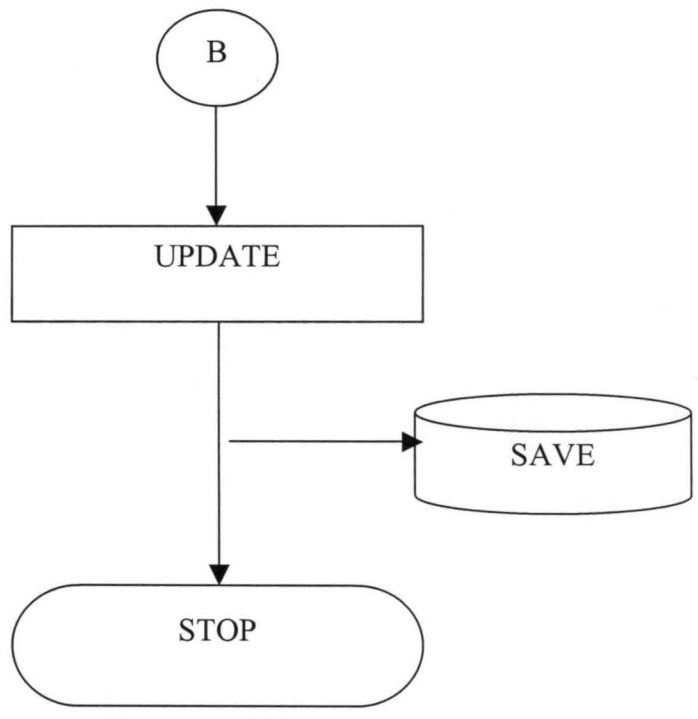
400 PRINT "LET'S CHECK THE OTHER PROBLEMS"
CLS
PRINT "1. MY FLOPPY DRIVE DISPLAYS THE CONTENT OF A DISKETTE THAT HAS BEEN REMOVED
(PHANTOM DIRECTORIES) "
PRINT "2. PICTURE ON THE MONITOR IS NEITHER CLEAR NOR STEADY"
PRINT "3. THERE IS NO PICTURE OR IMAGE ON THE MONITOR"
PRINT "4. MY COMPUTER DISPLAYS 'HARD DRIVE FAILURE' MESSAGE WITHOUT COMPLETE BOOTING"
PRINT "5. MY COMPUTER DISPLAYS 'NO BOOT DRIVE AVAILABLE' MESSAGE"
PRINT "6. NONE OF THE ABOVE"
INPUT "WHICH OF THE OPTIONS ABOVE IS YOUR PROBLEM"; PD
IF PD = 1 THEN
CLS
PRINT "CHECK THE FOLLOWING:"
PRINT "DATA CABLE MAY BE BAD, SO REPLACE IT"
PRINT "ALSO ENSURE THAT THE DRIVE IS CONFIGURED WELL"
PRINT "IF THE PROBLEM PERSIST, REPLACE THE DRIVE"
ELSEIF PD = 2 THEN
PRINT "TRY THE FOLLOWING SOLUTIONS"
PRINT "A. PROPERLY FIX THE CABLE AT VIDEO AND MONITOR CONNECTORS"
PRINT "B. IF THE VIDEO CABLE IS DAMAGED, REPLACE IT"
PRINT "C. ANY MICRO WAVE DEVICE CLOSE TO THE MONITOR CAN CAUSE JITTERY, HENCE,"
PRINT "D. IF THE PROBLEM IS NOT SOLVED, REDUCE THE REFRESH RATE SETTINGS UNTIL_"
ELSEIF PD = 3 THEN
PRINT "ENSURE THAT THE MONITOR POWER IS SWITCHED ON"
PRINT "THEN CHECK THE POWER CABLE AND REPLACE IT IF IT IS BAD"
PRINT "CHECK AND FIX THE VIDEO CABLE AT THE MONITOR AND VIDEO CARD END"
PRINT "MONITOR COULD BE IN POWER SAVING MODE, SO MOVE THE MOUSE OR PRESS ALT +
PRINT "IF THE PROBLEM PERSISTS, REPLACE THE MONITOR"
ELSEIF PD = 4 THEN
PRINT "CHECK THE POWER CONNECTOR AND ENSURE THAT THE DATA CABLE IS PROPERLY CO
PRINT "IF THE PROBLEM PERSISTS, ENTER BIOS SETUP TO DETECT THE HARD DRIVE IF N
PRINT "CHECK AND CORRECT THE SETTINGS IN BIOS"
PRINT "RUN A SCANDISK TO HELP FIX THE ERRORS CREATED BY BAD SECTORS"
PRINT "ENSURE THAT YOUR SYSTEM IS ALWAYS CONNECTED TO A STABILIZER VIA UPS"
PRINT "PROBLEM WITH FDISK PARTITION CAN ALSO CAUSE HARD DRIVE FAILURE"
PRINT "IF POSSIBLE, REPARTITION THE HARD DRIVE"
ELSEIF PD = 5 THEN
PRINT "PERFORM THE FOLLOWING"
PRINT "ENSURE THAT THE HARD DRIVE IS FIRMLY FIXED"
PRINT "CHECK FOR A BOOT SECTOR VIRUS"
PRINT "USE YOUR STARUP DISK TO TRANSFER SYSTEM FILES TO THE HARD DRIVE"
ELSEIF PD = 6 THEN
GOTO 500
END IF
END
500 PRINT "LET'S TRY THE FOLLOWING OPTIONS"
CLS
PRINT "1. MY SYSTEM DISPLAYS 'HARD DRIVE CONTROLLER FAILURE'"
PRINT "2. MY COMPUTER DISPLAYS 'INVALID DRIVE SPECIFICATION' WITHOUT COMPLETE BOOTING"
PRINT "3. A MESSAGE 'A SERIOUS DISK ERROR OCCURRED WHILE TRYING TO READ/WRITE DRIVE'"
PRINT "4. MY COMPUTER DISPLAYED 'A GENERAL PROTECTION FAULT'"
PRINT "5. NONE OF THE ABOVE"
INPUT "LET'S MAKE ANOTHER CHOICE FROM ABOVE (1 - 5)"; BC
CLS
IF BC = 1 THEN
PRINT "POWER DOWN THE SYSTEM AND ENSURE THAT THE DATA CABLE IS PROPERLY CONNECTED

```

7. MEDICAL CAPITATION FLOWCHART





**APPENDIX IV: MORE ABOUT NB PLC AND
CAPITATION SCHEME**

NIGERIAN BREWERIES Plc AT A GLANCE



Mission :

*“To be the leading Beverage
Company in Nigeria marketing high
quality brands to deliver superior*

SCOPE OF OPERATIONS

Nigerian Breweries Plc, the pioneer and largest brewing company in Nigeria was incorporated in 1946 and recorded a landmark when the first bottle of STAR Lager beer rolled off the bottling lines in its Lagos Brewery in June 1949. This was followed by Aba Brewery, which was commissioned in 1957, Kaduna Brewery in 1963 and Ibadan Brewery in 1982. In September 1993, the company acquired its fifth brewery in Enugu. On April 9, 2001, it laid the foundation for yet another brewery in Enugu, which was completed in year 2003. The sixth brewery, sited at Ama in Enugu State, is the biggest and most modern brewery in Africa. Thus, its high quality products are distributed to all parts of this great country.

COMPANY EQUITY

With about 70,000 shareholders, the authorized share capital of Nigerian Breweries Plc is ₦2 billion, divided into 4 billion ordinary shares of 50 kobo each. The issued share capital as at 10th June 2004 stood at ₦1,890,640,585 divided into 3,781,281,170 ordinary shares of 50 kobo each. Heineken N.V of Holland has a majority shareholding of 54.10% while 45.90% is held by Nigerian citizens and associations.

The company's turnover in year 2003 was ₦56.5 billion, out of which the sum of ₦3.63 billion was paid to the Federal and State Governments as taxes and levies. Also in year 2003, the company's profit before tax was ₦10.99 billion and it paid a dividend of ₦4.15 billion i.e. ₦1.10 per 50 kobo share.

BRAND PORTFOLIO

Nigerian Breweries Plc has a rich portfolio of high quality brands: Star Lager Beer (1949); Gulder Lager Beer (1970); Maltina (1976); which now has four varieties (Maltina Classic, Maltina Strawberry, Maltina Exotic and Maltina with Pineapple), Legend Extra Stout (1990); Amstel Malta (1994); Heineken Lager (1998).

EXPORT

Nigerian Breweries Plc has an increasing export business that dates back to 1986. Currently, we export to the U.K, U.S.A., Italy, Netherlands, Germany and Kenya.

RESEARCH AND DEVELOPMENT

Nigerian Breweries Plc keeps pace with key international developments, thus ensuring that its systems, processes and operational procedures are always in conformity with world-class standards. It is in line with this policy that the company established a Research and Development Centre in 1987 to enhance its research activities on all aspects of brewing operations.

ANCILLARY INDUSTRIES

The company encourages the establishment of ancillary businesses. These include manufacturers of Bottles, Crown Corks, Labels, Cartons, Plastic Crates and such services as Hotels/Clubs and our Key Distributors.

SOCIAL RESPONSIBILITY

Nigerian Breweries Plc is a socially responsible corporate citizen with a very good record of corporate philanthropy in the areas of education, the environment (water) and sports, among others. The company in 1994 established an Education Trust Fund of N100 million to take more active part in the funding of educational and research facilities in higher institutions, all in an effort to provide and encourage academic excellence in Nigeria. This is in addition to its secondary and university scholarship programme for children of its employees.

Nigerian Breweries Plc is the foremost sponsor of sports by variety in the country with sponsorship covering Football, Table Tennis, Lawn Tennis, Cycling, Chess, Golf, Badminton, Dart, Boat Racing and Ayo. The aim is to develop Nigerian sportsmen and women to participate in national and international sports, and boost the sports profile of the country. The company is also involved in the development of musical talents, through various programmes.

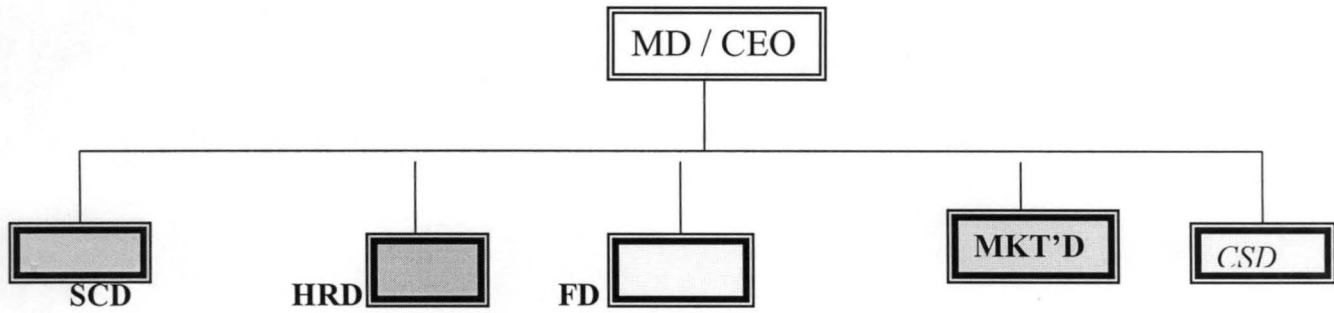
TRACK RECORD

Nigerian Breweries Plc has won several awards. It has consistently won the prestigious Nigerian Stock Exchange President's Merit Award for several years now. For three consecutive years (2001, 2002 and 2003) the company won the Nigerian Stock Exchange Quoted company of the year award. It has also won the Nigeria Industrial Standards (NIS) Awards for its various products. Also for two consecutive years (1999 and 2000), the company won the keenly contested Africa Beer Award organized by Heineken for its operating companies in Africa and the Middle East.

CONCLUSION

Nigerian Breweries Plc is a model corporate citizen with a vision to be a world-class company. The company's successful operations can be traced to good product quality, efficient management of operations and strategic penetration into the market environment. Others are proper understanding of consumer attitudes and habits and high social responsibility profile at national and zonal levels.

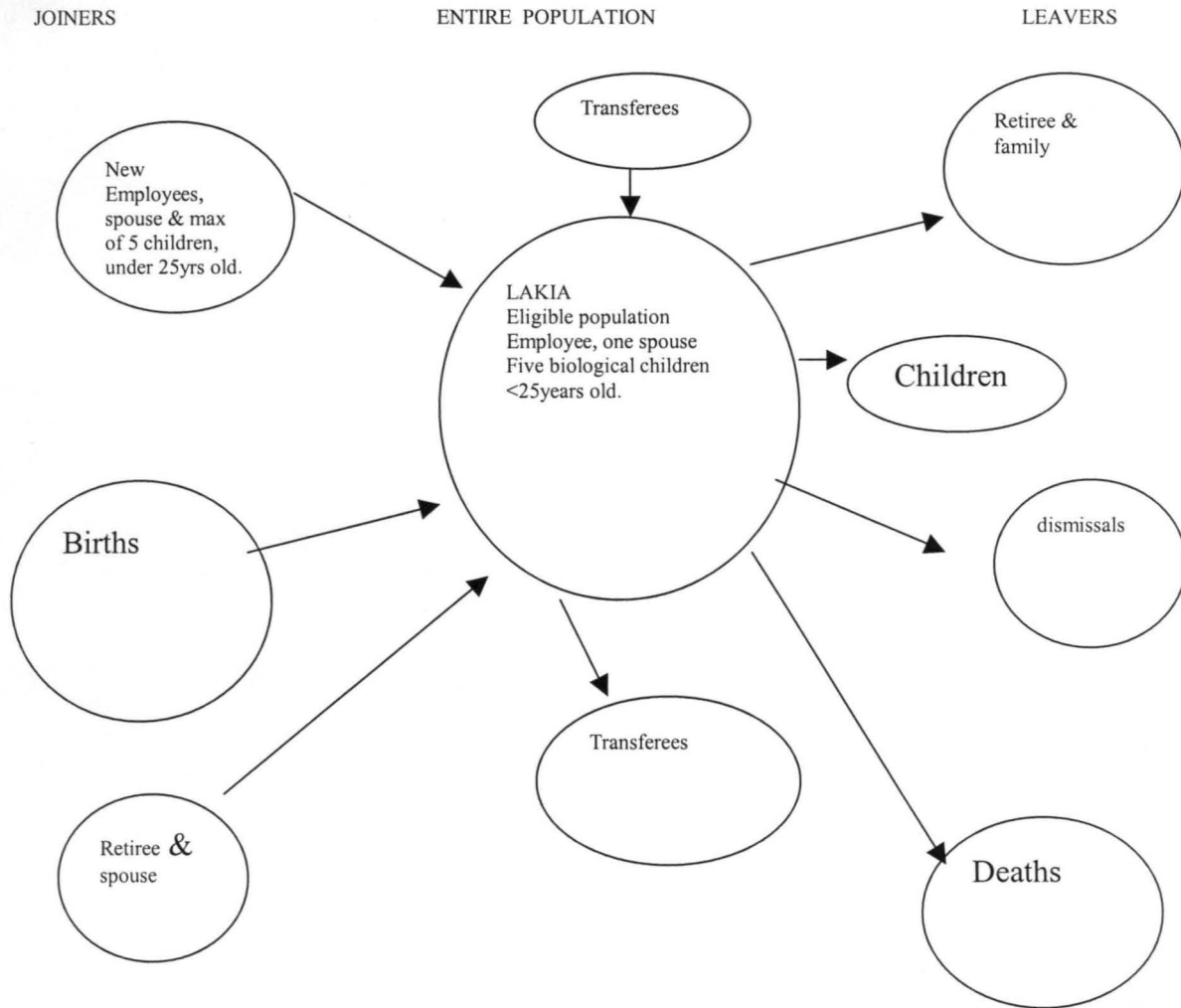
ORGANISATIONAL CHART: NB Plc- HEADQUARTERS



GLOSSARY :

- SCD - Supply Chain Director
- HRD - Human Resource Director
- FD - Financial Director
- MKT'D - Marketing Director
- CSD - Customer Service Director

NB Plc MEDICAL CAPITATION SCHEME POPULATION



PROCEDURE FOR CAPTURING BIRTHS AND DEATHS UNDER THE NB Plc MEDICAL CAPITATION SCHEME.

A: As stated in the Head Industrial Nurses' weekly hospital visit "checklist", information on births and deaths is to be obtained from the hospitals.

B: Births are registered after due consultation with employee- parent, who will be required to fill Enrollee Registration Form accordingly.

C: Deaths are deleted.

CHILDREN ABOVE 25YEARS OLD.

A: A prompter from SAPHR data notifies on this target population, who are deleted accordingly.

B: Employee- parent, is notified thereafter.

DISMISSALS.

A: HRMs and ERAM, to notify BMDs (Brewery Medical Doctor) in their respective locations of dismissals.

B: Such persons and their dependants are deleted IMMEDIATELY.

C: Relevant provider Hospitals are communicated with in writing on dismissal cases, by the location's BMD.

NEW EMPLOYEES.

A: At their visit to the CMA, during Induction Week, Enrollee Registration Forms and the list of company – wide (LAKIA) Provider Hospitals are handed over to the new employees- managers.

B: At locations, HRMs to refer new employees- staffs, to BMD for enrollment under the company medical scheme.

C: In both instances above, properly completed forms are to be returned to the BMD/HIN (Head Industrial Nurse), within the first week of employment.

C: A one month grace period is allowed, during which reminders will to sent to the new employees, at the expiration of the grace period, concerned employees would be notified in writing, by the BMD, copying the HRM, CMA, ERAM and HRD, that their health needs, requiring hospital care shall be borne by themselves.