ASSEMBLING OF A PENTIUM III PERSONAL COMPUTER

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Matric no: 06/145

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CERTIFICATION

I hereby certify that the Design of a Pentium III Personal Computer was carried out by Ahmed in Computer Engineering Department of Abraham Adesanya Polytechnic Ijebu Igbo, Ogun State.

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Project Supervisor — **Date & Signature**

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H.O.D — **Date & Signature**

ACKNOWLEDGEMENT

It has all been God for the wonderful works He has done, I give God the glory and adoration for given me vision, strength and wisdom to actualize the working of this project and for the success of completing National Diploma Programme.

I express my appreciation to my project supervisor Engr. Lawrence Oborkhale for his support and guide throughout the process of my project. Also, my appreciation goes to my former HOD (Late) Mr. Adekunle S.B. for his assistance during his lifetime.

I hereby express my heart-felt gratitude to my ever loving parents for their kindness, financial assistance, spiritual and moral support for making this project a reality. May you all live long to reap the fruit of your labour (AMEN).

I wish to acknowledge the support of everybody that has me in one way or the other in this project. My love for you all remains unshakeable. God bless you all.

ABSTRACT

The use of computer has played an important role in all fields of human endeavors like business, Engineering, Medicine, Law, Public Administration and communication and for this reason this project work and carried out.

Chapter Five of this project gave introduction about computer areas of application of computer.

Chapter one of this project gave introduction about computer, areas of application and the aims of the project. In addition, the limitation and the scope of the project was also given.

Literature review of this project explain the developments changes in the world of computing before the present day PCs were invented.

However, the procedure followed and pre cautions for building Pentium III type of computer was explained in the third chapter.

The project built was tested and the operational analysis was given in the south chapter.

In conclusion, the project enable one to know how to build a PC while the recommendation was made which include the fact that it could be used to meet both domestic and industrial needs.

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CHAPTER ONE

INTRODUCTION TO COMPUTER

1.1 INTRODUCTION

A computer is an electronic device (calculating machine) that solve problem by applying prescribed instruction on data presented to it. It performs its data processing operation accurately at high speed with little or no human interventions by loading it with different packages or programs.

It is also called an automatic device and has the ability to perform calculations, sort, files and edit information. Due to speed and accuracy of processing, computer machines are fast becoming more popular and there is increase in their demand in the world over.

The computer also perform any kind of work involving airtime and logic operation on data. Its according to the instruction given and gives information as output.

Computer is perhaps the most powerful and versatile tool ever created by man. Computers have made a serious foray into every nook and canny of our everyday lives. The presence of the computer can be felt at almost every working place viz. Schools, colleges, homes, offices, industries, hospital, banks, railways, airways, research organizations and so on. Computers, large and small, are used nowadays by all kings of people for a variety of purposes.

A digital computer is basically an electronic device that can transmit, store and manipulate information i.e., data.

This computer (digital) can be defined as a multipurpose programmable machine built by logic circuits which accepts binary data as input processes the data according to the binary instructions, read from its memory and provides result in the form of binary or analog as its output.

Several different types of data can be processed by a computer. These include numeric data, character data (name, address, etc), graphics data (charts, drawings, photographs, etc) and sound (music, speech pattern etc).

Computer performs three major operations, they are:

(i) It accepts data.

(ii) It processes data.

1.2 AIMS OF THE PROJECT

The aims of the project is to develop manual skill in the assembling of a Pentium III personal computer by using different theories, techniques, proofs and concepts in the design and assembling process.

Also, to provide the basic knowledge of various components, ratings and parts used in the design and assembling of a Pentium III personal computer.

1.3 SCOPE OF THE PROJECT

The project is based on the design and assembling of a Pentium III personal computer. The assembling has the following configurations, 230V power supply, processor speed of 933MHZ, 256MB RAM, 40GB HDD (hard disk drive), CDROM and ATX motherboard and power supply.

1.4 LIMITATION OF THE PROJECT

The limitations encountered during the design and assembling of the Pentium III personal computer are the financial source required for the project, the fund, the total capital or the total amount that will be enough for the design and the assembling process of the project.

1.5 COMPUTER APPLICATION AND USES

Many people are now applying computer in their various areas of specialization and fields became of the characteristics.

Some of its application areas and uses are listed below:

(i) **HOME**

Used for playing games

Used for typing documents.

Used for calculations

Used for entertainments

Used for documents productions.

(ii) **OFFICE**

Document production

Record keeping

Communication e.g. E0mail, internet

Calculation of staff salary

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(iil) **BANK**

For keeping customers account

For production of statement of account

For dispensing money to customers such as automatic teller machine (ATM)

For security purpose.

(iv) **SCHOOLS**

For calculating

For recording grades

For student records

For personal records

It can be used for teaching the student's computer practical

The school administrator can use it for keeping school records

(v) **HOSPITAL**

Keeping records of beds

Keeping records about patients

Keeping records of doctors and nurse

Bull of patients

Diagnosis of ailments and disease.

Around about the year 1200the Chinese used this method to count. The beads were threaded on lines of wire frame. The beads on the first line counted the units, the beads on the second wire counted the tens, and the beads on the third wire counted the hundreds and so on. By moving the beads back and front along wires, numbers, could be added and subtracted. This device was called and ABACUS.

CHARLES BABBAGE

A professor of mathematics at the can brodge university gave the idea of "DIFFERENCE ENGINGE" in the year 1822, which could produce reliabletables.

In 1842, Babbage came out with his new idea of "ANALYTICAL ENGINE" that was intended to be completely automatic. It is for his effort that he is today known as a father of modern Digital Computers.

He wanted to use this for more complicated calculations, Babbage died before he could complete this difficult tasks. He was the first to exploit the concepts from Jacquard's loom in a computing machine. Charles Babbage is known as the father of computers because of the ideas which he introduced.

A friend of Babbage called ADA, countries of lovelace showed how the "ANALYTICAL ENGINGE" could be used to do some particular calculations. Sir Charles Babbage is often thought of as the inventor of the computer and lady lovelace is regarede as the first computer programmes, she is also one of the few woman to have been involved in the early history of computing.

2.2 THEORETICAL ANALYSIS

The personal computers are the one which is extensively used for various kinds of application purposes. Personal computers do not have a step up or step down transformer to reduce the current caring into the device. It uses an Uninterrupted

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Power Supply (UPS) to sore power and a voltage stabilizer to regulate the current coming into the device.

2.3 CLASSIFICATION OF COMPUTER

GENERATION OF COMPUTER

After the first mechanical computer, the design of computer evolved over a period of time. The generations of computers are:

(I) FIRST GENERATION OF COMPUTER

In the Second World War 1939 to 1945, some of the first electronic computers were built. In Germany, a computer helped to design the German flying bombard missiles.

The British used a computer called COLOSSUS to crack the secret code used by Germany to send messages.

The colossus computer was very large indeed. It contained 1500 values. It was used for the first time in 1943. After the war more large computers were built, some of the first cones were used for carrying out complicated calculations one of the first was called ENIAC and was built in the state. It contained 1800 values. ENIAC is an acronym for Electronic Numerical Integrator and calculator. The computer that used Universal Automatic Computer (UNIVAC).

The technology was based on vacuum tubes. The computer used vacuum tubes circuit were called the First Generation Computer; the vacuum tube circuit contained a filament that was heated to emit electrons.

Most of the first electronic computer were built and used in universities for solving scientific problems.

The first generation of computers were characterized again by often enormous size, taking up entire rooms.

They were expensive, difficult to operate, consumed a great deal of electricity and generated a lot of heat. This was often the cause of malfunctions. They relied on machine language to perform operations and application program.

Features of the first generation computer include

(i) Huge size

(ii) Slow and often unreliable

(iii) Instructions were coded in machine language

(iv) Limited internal storage

(II) SECOND GENERATION

First generation computer relied on values, these were quite large and often had to be replaced. This was a big drawback with first generation computers. It was overcomed with the invention of the TRANSISTOR. Second generation of computer were not just more reliable than the earlier computers, they could also carry out more difficult calculations. They used more sophisticated English like computer language for coding e.g. COBOL, FORTRAN etc. External storage like magnetic tape or magnetic disks supplemented the internal storage for which magnetic cores were used instead of magnetic drums.

Bells labs of USA invented transistors that were used in place of vacuum tubes-Transistors are electronic circuit that were small in size and not require any heating for emitting electrons.

The computers that used transistors were called the second generation computers.

Features of the second generation of computer include:

(i) They were developed in 1955 and 1965

(ii) Smaller in size in comprises with the previous generation and generated less heat.

(iii) Internal storage capacity was increased and processor speed measured in microseconds.

(iv) Magnetic core memories as primary storage.

(III) THIRD GENERATION OF COMPUTERS

These used Large Scale Integrated (LSI) circuits for processing. The LSI circuits were invented in mid-1960's. LSI circuits integrate several circuit components into a single chip.

The third generation of computer used less power, cost less, they were smaller in size and are much reliable. Their internal memory increased and COMPATIBILITY was introduced. This period also marked the emergence of software industry and the development of mini computers.

Features of the third generation of computer include

(i) Smaller in size and it was developed in between 1968-1970

(ii) The use of high level language such as COBOL, FORTRAN

(iii) Disk used as backing store medium

(iv) Complex and sophisticated technology used for CPU design

(IV) FOURTH GENERATION OF COMPUTERS

The fourth generation of computers used Large Integrated Circuit (LSI) and a silicon chip is very small, it is very powerful, computers using chips may be small in size but they can solve very complicated problems, computers are no longer so big that they have to fill large rooms. They are small enough to sit on a small table, these computers are called **MICRO COMPUTERS**, Chips used in micro computers are called micro processors.

The introduction of standard architecture helped in greater mobility of systems, the introduction of micro-technology and significant software development.

Features of the fourth generation of computer include:

(i) They were developed in 1970's

(ii) Development of micro-processor based on technology

(iii) Semi-conductor memory used

(iv) Personal and home computers availability

(v) Sophisticated system software

(V) FIFTH GENERATION OF COMPUTER

Recent research has focused on developing "thinking computers i.e. artificial intelligence. These computers are called fifth generation computers and are developed in the laboratories of USA and JAPAN. These had a (VVLSI) (Very Very Large Scale Integration) technology with sophisticated operation system interface capability, these computers will have KIPS (Knowledge Information Processing System).

The race towards the ends of one millennium to the beginning of another has caused the development rate of the computers to be very rapid. Reducing the size of the computers and enhancing its power are areas of concentration. Movement was

made in such a way that greater memory capacity was possible. New words such as 'SIMMS', "SDRAM" were introduced to re-Christian "CHIPS".

Large sized software in terms of memory utilization and complexity are common features.

Additional storage devices and drives such as CD-ROM (Compact Disk Read Only Memory) are common features of this generation of computers.

Communication between hardware, no matter the distance in between them, it was conquered as in the INTERNET. The speed of operation could range from 233 to 550MHz, the RAM from 32MB to 128MB, and the hard disk from 6.4 to 20GB as in Pentium III.

(VI) FUTURE GENERATION OF COMPUTERS

Since the urge now is to endow computers with the ability to take decisions in various circumstances. It is expected that this will now be the area of interest to achieve this, software will have to develop more, so that its artificial intelligence and robotics can grow.

The computer system too will have to be developed to cope with the software that will be developed and the task at hand to be accomplished. Every components of the computer and aspect of computing will go through changes so that both able and disable people, in whatever manner, can use the computer and enjoy the world of computer alike.

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CHARACTERISTICS OF A COMPUTER

Computers are now being applied in all human endeavors. The reason for this because of its characteristics. Some of the characteristics are:

PEED

As you know computer can work very fast. It takes only few second for lculations that we take hours to complete. Suppose you are asked to calculate the erage monthly income of one thousand perform in your neighborhood. For this you ve to add income from all source for all persons on a day-to day basic and find out e average for each one of them. How long will take for you to do this? One day or e week? Do you know your small computer can finish this work in a few minutes r the computer to process this huge amount of data and give the result. You will be rprised to know that computer can perform millions of instruction and even more r second. Therefore, we determine the speed of computer in terms of microsecond. om this you can imagine how fast your computer perform works.

CCURACY

The degree of accuracy of computer is very high and every calculation perform th some accuracy. The accuracy level is determined on the basic of design of mputer the error in computer are due to human and inaccurate data.

ROGRAMMABILITY

It can be instructed to do a particular thing based on instructions and it will do

LLGENCE

A computer is free form firedness, lack of concentration, fatigue etc. it can k for hours without creating any error. If millions of calculations s are to be formed, a computer will perform every calculation with the same accuracy. Due to capability. It overpowers human being routine type of work.

RABILITY

It is a consistency machine that can last longer than people think of carefully dled.

NSISTENCY

It is a consistency machine that work with people ideas, it does not give me lt now and later change the same of the data is not changed the same of the data is changed.

RSATILITY

It means the capacity to perform completely different type of work. You may your computer to prepare payroll slips. Next moment you may use it for inventory agement or to prepare electric bills.

VER OF REMEMBERING

Computer has the power of storing any amount of information or data. Any rmation can be stored and recalled as long as you require it. For any number of s it depends entirely upon you how much data you want to store in a computer and n to lose or retrieve these data.

NO I/O

Computer is a dumb machine and it cannot do any work without instruction rom the user. It performs the instructions at tremendous speeds and with accuracy. It s you to decide what you want to do and in what sequence. So a computer cannot take s own decision as you can.

IO FEELING

It does not have feeling or emotion, taste, knowledge and experience thus it oes not get tired even after long hours of work. It does not distinguish between users.

TORAGE

The computer has an in-built memory where it can store large amount of data. You n also store data in secondary storage devices such as floppies, which can be kept outside ur computer and can be carried to other computers

5 PARTS OF A PERSONAL COMPUTER

A personal computer consists of four main parts, which are:

OFTWARE

Software is used in contrast to hardware, to describe all instructions (programs ich are used in a particular computer installation purposely to activate the hardware mponents.

It is the software that drives the hardware, it is designed to exploit and provide potential capabilities of the hardware to the intending computer user. It tinguishes a computer from an ordinary machine. Hence, for a set of electronic mponents to be called a computer, there must be present software to make these mponents to become functional because the combination of hardware and software kes a computer system to be complete.

Central processing Unit (CPU) or system unit.

A peripheral device is any components in a computer system that is not ctually the computer itself. Peripheral devices are components that are external to the PU. The components includes the input unit, output unit and the backing storage i.e. yboard, monitors, mouse, printer, scanner, microphones, speaker, cameras, adphones, tape drivers, hard disk drives (HDD), floppy disk drive (FDD), Compact sc Read-Only Memory (CD-ROM) drive e.t.c.

ASIC PART OF COMPUTER HARDWARE are:

The basic parts of computer hardware consist of the following:

PUT DEVICES

Input devices are equipment used to get instructions into the computer. Some mon input devices are :

OUSE

This is a simple device that moves a pointer around the computer screen and les simple commands to be sent to the computer screen. It normally works in unction with a keyboard and it dependent on the software being used.

This is also a simple hand-held pointing device that can be used to direct us actions on your monitor screen, when using a program that supports a mouse, can control your PC quickly by pointing to and manipulating on screen objects. can be easier that remembering and typing commands.

HOW THE MOUSE WORKS

As you guide the mouse over a flat surface, the ball on the underside rolls in he direction of the movement. As it moves, it turns two rollers within the mouse. hese rollers turn sensors that sends signals a but the direction and speed of the ovement via the mouse cable to your PC'S system unit, within the system unit. The gnals are converted into instructions that move the pointer on the monitor screen, hen you click on a mouse button, additional signals are sent to the system unit that ay bring about special actions depending on the program.

EYBOARD

The keyboard resembles QWERTY typewriter keyboard, but usually has veral additional keys, which is used to control and edit the display. The keyboard ditions alphabetical keys in the original layout known as the QWERTY layout ng with:

meric Keys: Both above the alphabets and in a separate optional group.

ecial Key: For Example shift key, return key, cursor control on VDU e.t.c.

nctional keys: Processing function used by a program.

Keyboard entry is by far the most common way to enter data into the computer, ou need to be familiar with the keyboard your micro computer uses.

W THE KEYBOARD WORKS

Each key on the keyboard is a small electrical switch, the keys are connected as id and each is monitored by a process or inside the keyboard.

The processor checks several hundred times every second to see if any rical circuits have been opened or closed, indicating that the key has been

essed. Any change prompts a signal called "SCAN CODE" to be sent to the mputer's central processor.

here are two codes for every key, one for when the key is pressed and one for when is released.

RITHMETIC AND LOGIC UNIT (ALU)

This unit carries out arithmetic operations such as addition, subtraction, ltiplication, division and logic operation such as less than (<), greater than (>), less n or equal to (<=), greater than or equal to (>=), not equal to (<>), if e.t.c. The U has a number of registers where the data can be stored during processing. These isters are also know as ACCUMULATORS and they are used for data handling rations.

NTROL UNIT

This is the part that controls the coordinates the other parts of the computer em as directed by the programs instructions one at a time from the main memory. control unit monitors the entire parts that make up a computer system. It prets instructions, issues commands to all parts of computer.

Hence, it is the function of the control unit to select instructions from the am in the man store decode the instructions and then cause them to be carried

IORY

A major attribute of the computer is its ability to store almost unlimited amount data or information in a relative small space. Is a fast storage device. It operates at eeds approaching that of light.

The memory determined the capability of data or information computer can ld. Data and information reside on the computer either permanently or temporarily long as the unit is still in good working condition.

The memory unit, as part of the hardware components, is divided into primary l secondary storage.

TPUT DEVICES

This is where the result of processing is sent together as printed result or inform lata for future processing example.

NITOR

The most common form of display monitor is the CRT which means Cathode Tube. This is the type of monitor use with micro computers.

RT MONITOR

The monitor can put either text or pictures or both in monochrome (mainly two urs e.g. black and white) or colour. No computer is complete without a monitor, television like device that sits on top of or near the system unit. Your monitor lays information visually, whether in the form of text, charts, or graphic images, wing you to see the result of the work going on inside your PC.

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PRINTER

This is the most common output device which produces a permanent record input. There are various types of printers available and are dependent on the quality of production. Examples are dot matrix printers, laser printers, and inkjet printers.

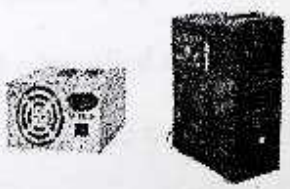
EXTERNAL STORAGE DEVICES

The external memory (also called secondary of backing store) is used to permanents store data and information. They come as devices can be attached to the nput and the output units.

.6 COMPONENTS OF A PERSONAL COMPUTER

The components that constitute a personal computer (i.e. component assembled ogether to form a personal computer) are listed below.

COMPUTER CASE AND POWER SUPPLY



This houses the components on the motherboard, whether you are buying a ower or desktop computer, it should confirm to the ATX standard and have at lease 50watt power supply. Make sure that the case you purchase comes with a tray that llow easy access to the internal component and provides enough room for expansion, ook for space drive bags, easily removable motherboard mounting plates and drive acks.

Verify the sturdiness of the case, because of some of the cheaper ones can be limsy. Power supplies provide electrical power for every component inside the ystem unit. The computer power supply performs the critical roles of converting ommercial electrical power conceived from a 120-volt AC, 60Hz or 220-Volt, 50Hz Outside the United State) outlets into other level requires by the components.

IOTHERBOARD

All the electronics components in a PC are monitored on a piece of fiberglass lled motherboard. Fiberglass cannot conduct electricity, so each components is sulated from all the others. Thin lines of metal on the surface of the fiberglass nnect pins from one components to another; forming the computers electrical rcuits. Also, the AT motherboard is very large and old, most manufacturers now oduce the ATX, which is more compact.

The processor may be installed already or purchased separately and fixed into socket. Beside the processor, the next most important component on board is the HIPSET, which determines the capabilities of the motherboard, such as memory pport and power management. The motherboard is, without a doubt, the primary mponent of the entire system.

E CPU AND THE HEAT SINK

The microprocessor, or central processing unit, is the computer most important gle item. It does all the PC's thinking and runs the programs (series of instructions)

iat you request. The main functional parts of the central processing unit (CPU) are ie control unit, the main memory and Arithmetic and Logic Unit (ALU) when you art a typical personal computer by placing a disk in the drive and turning on the ower, the CPU causes a program to be transferred from the disk into the memory. It lso accesses and uses the main memory RAM (Random Access Memory) within a omputer. Processors execute machine instructions at a speed determined by their ternal clock.

The CPU's speed or clock is measured in megahertz (MHz) and Gigahertz GHz). The higher the speed of the processor, the faster the computer works. It is nportant to note that Pentium II and some of Pentium III processor are available in ther slot or socket technology, However, Pentium IV processor come with socket 7 8 technologies.

AM

Memory used by the computer, when the operating system loads from disk hen you first switch on the computer, It is copied into RAM. The original computer ay have the RAM of 16, 32, 64, 128, 256 and 512 and recently IGB. Each bytes is entified by its own ''address" and its contents can be picked up and changed dividually. In present-Day technology this sort of memory is volatile i.e. the data at holds currently are lost when the machine is switched off.

LOPPY DRIVES

Each floppy drive consists of a slot to accept a floppy disk.

motor that spins the disks, and a recording/reading device that moves across the sk in order to read and write data.

Computer use disk to store information. Although there is a permanent hard disk that lives inside the system unit, you can use floppy disk to store and move data easily from one PC to another. You should copy into your floppy disks any important information that is kept on your hard disk in case your hard disk fails.

HARD DRIVE

The hard disk is your computer main permanent storage unit, holding large mounts of data and programs, unlike data held in RAM, the information on your hard isk is not affected when you turn off the PC. It remains there unless you instruct the C to overwrite it on the hard disk is damaged. As with memory, the amount of data at can be stored on a disk is measured in kilobytes (thousand of bytes) or megabytes. he hard drive on your PC may have a capacity from 20 megabytes up to 200 mega ytes or more.

D-ROM DRIVE

CD-ROM drive can held several hundred million characters of data enough to ore hundreds of thousands of pages of typed text thousands of images, how of unds, or a mixture of these media. To use these discs, you need a CD-ROM drive.

The information is recorded during the disc's manufactures at this time, you nnot record your own data onto a CD-ROM drive. However, you can play a variety CD-ROM discs in a CD-ROM drive in the same way that you use a floppy disk ive for reading from different floppy disks.

SOFTWARE

This is a program which coordinates all computer hardware together to perform complete operation. It connects the cable and the internal hardware together before eration can be materialized.

PES OF SOFTWARE

tware has been categorized into two major parts, which are:

SYSTEM SOFTWARE

System software is the part that controls various internal computer activities. software that controls such activities will fall into one of three categories of em software.

TEGORIES OF SYSTEM SOFTWARE

Programming Language: Programming language are various methods of writing computer instructions. The instructions adhere to a particular set of protocols for each language, through the years, more than 200 languages have been developed, some of the most popular languages includes Pascal, c-programming, C^{++}, Visual Basic, Basic, COBOL, and FORTRAN. The First generation of programming language was called Machine Language. The **second generation** is called Assembly Language, the third generation was called Very High-Level Language (VHL).

Operating Systems: The operating system is a group of system programs that helps in the operation of a computer. It tells the computer how to interpret command process the inputs and outputs and manage data. The operating

system (OS) is automatically loaded when the personal computer (PC) is started and activated other programs. By for the most common operating system (OS) for personal computer is the **Disk operating system are:** IBM'S, OS/2, APPLES system 7, Microsoft Window as and window MT, AT and TS UNIX, Window as, Window me, Window 2000 etc.

Utilities: Utility software expands the performance of the operating software by adding functions that are not part of the original system (OS). Utilities perform jobs as troubleshooting the hardware, inspecting diskettes for damages, file conversion, defragmenter, data compression and file spooling. They are retrieve data from damaged disks and they can also be used to customize the operation system environment. Examples of utilities are: Symantec's Norton, Utilities, Norton disk Doctor.

APPLICATION SOFTWARE

Application software is used to perform specialized functions or specific jobs e computer. It also loads and non application on the computer.

EGORIES OF APPLICATION SOFTWARE

Spread sheet: The first spreadsheet was introduced and it was VisiCalc. It gives user the ability to prepare detailed budgets and financial analysis. It enables personal computer users to do something that a main frame cannot.

Database management: One of the applications that initially seemed to be limited to mainframes and micro-computer use the management of large data base.

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Word processing: A major problem for word processing software reports full of numbers not word, the first was a small program called Electric pencil.

Entertainments: It helps to use computers system as an entertainment tools. Video games can be played and developed using the computer

Education software: It helps to use computer as teaching and learning language tool. Examples are teaching of mathematics, recognition of alphabet e.t.c.

CHAPTER THREE

METHODOLOGY

ASSEMBLING THE PERSONAL COMPUTER SYSTEM

The highest priority when working with computers is safety. The procedure ailed can help to protect the technician and the computer components. Computer embly helps computer engineering students learn about the inner working of a puter. It also help to create confidence that is needed to advance in the computer ineering profession. Before beginning an assembly project, it is good to review the owing safety precautions.

(i) Keep the work area free from clutter, and keep it clean

(ii) Keep drinks out of the work area

(iii) Avoid opening a computer monitor unless you are trained to do so.

(iv) Do not look into the laser beam that is found in computer related equipments such as CDROM and DVD ROM

(v) Make sure a fire extinguisher and first aid kits are available

STEPS IN ASSEMBLING PROCESS

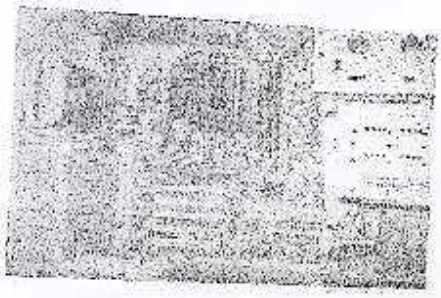
EPARING THE CASING

Before opening this computer casing at all, the workplace need to be prepared y well with adequate lighting, good ventilation, comfortable room temperature, rkbench accessible from all sides, avoid cluttering workbench, an antistatic mat on table and a small container to hold screws and other small parts. Then, the casing now be removed using screw driver.

NSTALLING THE MOTHERBOARD

Safety procedures and ESD precaution are critical when installing the otherboard. Before touching any part of the motherboard, ground yourself by uching the case of your computer or any other metal object with both hands.

ISTALLING THE MOTHERBOARD INTO THE CASING



Before installing the motherboard, be sure to handle the board by the edges. e following steps summarize the motherboard installation process.

(i) Locate the holes on the motherboard and the corresponding holes on the case. Hold the board just above the case so that you can see the holes on the case and motherboard for alignment purpose. The expansion card slots give you a good indicator of how the board should be oriented.

(ii) Insert the spacers that came with the motherboard securely into the holes on the case or mounting plate.

(iii) Install plastic stand offs into the holes on the motherboard that lied up with and eyelet a hole that is long and key shaped so that you can slide things into the eyelet.

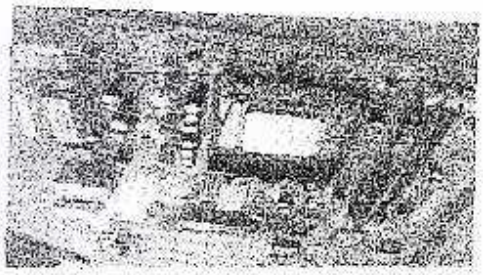
(iv) Carefully slide the board into the case, making sure that it sits on the spacers and that all the spacers lie up with and available hole on the motherboard.

(v)

(vi) It is a good practice to insert plastic washers on each screw before the screws are installed. These prevent the metallic screw from overlapping and possibly destroying or shorting any part of the circuitry near the holes

(vii) Tighten the board to the case, first by hand, and then finish by screwdriver.

STALLING THE CPU



(i) Turn over the chip and inspect the pins to make sure that none are damaged. All pins should stick straight out of the chip.

(ii) Locate pin 1 on both the chip and socket, and position the chip. Notice that the pin is always marked at pin 1.

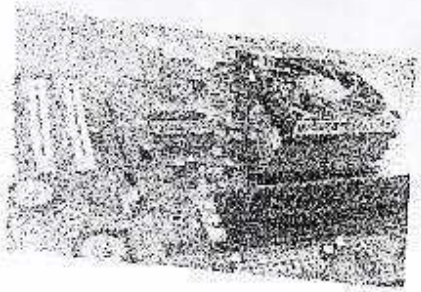
(iii) After positioning the chip, open the ZIF socket. Shift the lever slightly away from the socket, from its default closed position and raise it to the open position. Do this with care, to avoid breaking the lever.

(iv) With the socket open, insert the processor. Align pin 1 according to the orientation that was determined in step 2.

(v) Check to make sure that no gaps exist between the bottom of the CPU chip and the socket. If you see gap, the processor needs to be reinserted.

(vi) To secure the installed CPU, push the lever gently back down to the closed position. A little resistance might be left, but the lever and ZIF socket should close fairly easily.

STALLING THE HEAT SINK AND FAN



Most microprocessor produces a lot of heat, which can cause system problem. way to dissipate heat from processors is to use a heat sink and cooling fan. Proper llation is crucial to the performance of the unit. Although, the heat sink can be nted before installing the processor chip on the motherboard, you risk causing age to the pins on the chip.

) If the CPU fan did not come with heat sink already attached to it, use the screws that come with the fan to attach it to the heat sink.

i) Apply the heat sink thermal compound to the surface of the chip. Apply a thin layer-just enough to cover the surface of the chip. The thermal compound improves contact between the CPU's surface and heat sink, thereby permitting better heat dissipation.

ii) Attach the heat sink carefully. Place the heat sink squarely on top of the processor, and press the heat sink down gently. The most recent use heat sink uses set of clips at side to attach the heat sink firmly. You might need to use slight force to bend the clips in place.

v) Wipe off the excess heat sink compound or thermal grease that might have oozed out the sides of the contacts surface.

v) Carefully plug in the power cord from the fan to the fan power pins that are provided on the motherboard.

Light emitting diodes (LEDs) or status lights indicate whether the components
de the computer are on or working. Connecting the LEDs is usually the next step
ssembling the computer, after the motherboard is securely installed.

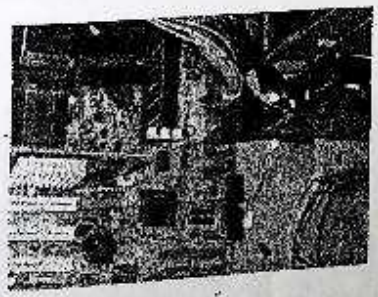
WER ON LED- Check the label on the motherboard for matching connectors to
ect the LED, plug the connector into the corresponding plug on the system board.
e sure the LEDs are connected separately if the system provides a separate power
and key lock switch

D DRIVE ACTIVITY LED- This LED comes in either 2- pin or 4- pin plugs.
sionally, only 2- pin of the 4- pin plug provide the connectivity.

LOCK SWITCH- It is common with older systems. It was mainly used to
nt unauthorized individuals from booting the computer and changing the BIOS
They are rare in newer systems.

PEAKER- Most computer cases uses a 4- wire plug to connect the PC speaker.
he speaker wire into the designated plug, making sure that it plug into pin 1 and

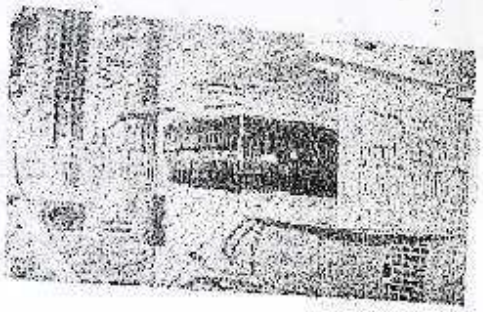
NECTING THE POWER SUPPLY CABLE TO THE MOTHERBOARD



On an AT system, locate the two large wire leds, labelled P8 and P9, that come
he power supply. Locate the layer 12 pin power connector on the motherboard.

g the P8 wite LEDs connector into the 12 pin power connector on an ATX system.

TALLING FLOPPY, CD ROM, AND HARDDISK DRIVE



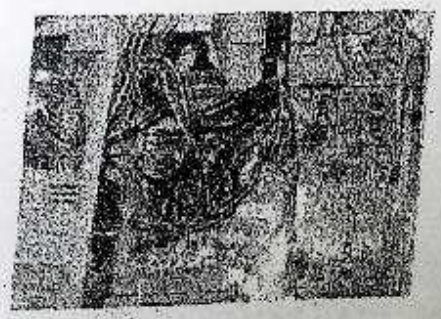
The following step by step process is use for the installing of a Floppy, CD and Hard disk drive.

Select which drive bay is to be used for the Floppy, Hard disk drive and the CD ROM drives. The bays for hard disk drive are internal.

Without making any connection, insert each drive into the chosen bay, making sure that it fits properly.

) Select the correct size screws. First, tighten with hand, and then use a screwdriver to tighten it. Make sure that they are not too tight.

NECTING THE FLOPPY, HARD DISK AND CD ROM TO THE HERBOARD



The following steps details how to connect the each drive to the motherboard:

that goes with each drive.

v) Identify pin 1, the red edge of the cable, and align this with pin 1 on the rear of each drive. Gently push on the cable connector until it is fully inserted

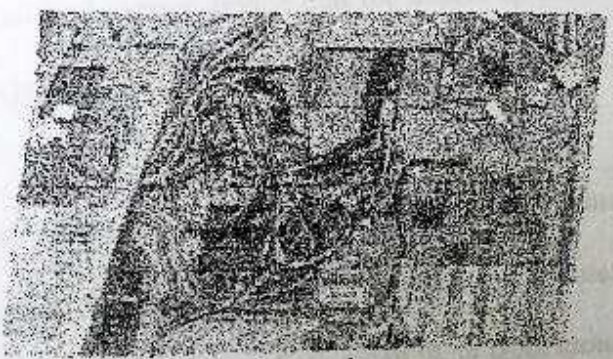
vi) Identify each drive controller on the motherboard by consulting the motherboard manual. Attach the connector on the far end of the ribbon cable to each drive controller

If the pin as accidentally been reversed, the drive will not work and the drive will stay on until the problem is corrected.

NECTING THE POWER CABLES TO THE FLOPPY, CD ROM AND D DISK DRIVE

PY DRIVE: Identify the proper connector that goes with the floppy drive inch. connectors are usually the smallest plugs that are coming out of the power . Push the plug in gently. And don't force any connections.

DRIVE AND CD ROM: Identify the proper power connectors for these The connectors were larger than that of floppy drive; there are labels on these plug which are labeled p1, p2, p3, and so on. These connectors are harder to , so, rock them gently back and forth, if indeed, until they snap into place.



ST ASSEMBLY CHECKLIST

This enables you to double check all your work before turning on your computer the first time. The following post assembly checklists should be used before sing the case.

1. All expansion cards are fully inserted into appropriate slots.
1. The CPU is attached to power.
2. The 110/230v switch is configured properly.
3. Each drives are properly connected to power
4. Ribbon cable are attached properly
5. No wire are protruding into the fan
6. CPU voltage setting are correctly configured
7. The power switch is off, and power supply connectors are properly connected to the motherboard
8. All connections are sufficiently tight
9. All pins are properly aligned

NECTING BASIC INPUT AND OUPUT DEVICE

The last step before installing the operating system on the personal computer is nect basic input and output device that the makes up the computer system. This connected in any order. The following list includes instructions for connecting levices:

ct the keyboard to the back of the case: Older models motherboard uses a 5- nector, but most computers use a 6- pin ps/2 port. Sometimes, the keyboard tors and port are color- coded to distinguish them from mouse.

Connect the mouse to the back of the computer: If you are connecting a ps/2 mouse, the mouse port is usually adjacent to the keyboard connections. Follow any color codes where applicable. If you are using a serial mouse, plug into serial port. Some motherboard have number ports

INSTALLATION OF THE OPERATING SYSTEM.

This method describes how to install Windows XP on the newly assembled computer. This is typically done when a new hard disk is installed on your computer. Before you start, start your computer by using one of the following media:

- Microsoft Windows 98/Windows Millennium startup disk
- Windows XP CD or Windows XP boot disks

Note The Windows XP CD is the preferred media in the following steps. However, the Windows XP boot disks will work if you do not have the CD.

To install Windows XP to a newly assembled system, follow these steps:

1. Start your computer from the Windows XP CD (or boot disks). To do this, insert the Windows XP CD into your CD or DVD drive, and then restart your computer.
2. When the "Press any key to boot from CD" message appears on the screen, press any key to start the computer from the Windows XP CD.
3. At the **Welcome to Setup** screen, press ENTER to begin Windows XP Setup.
4. Read the Microsoft Software License Terms, and then press F8.

When you are prompted for the Windows XP CD, insert your Windows XP CD.

Restart your computer.

When you see the "Press any key to boot from CD" message, press any key to start the computer from the Windows XP CD.

At the **Welcome to Setup** screen, press ENTER to start Windows XP Setup.

Follow the instructions on the screen to select and format a partition where you want to install Windows XP.

Follow the instructions on the screen to complete Windows XP Setup. Then you have finally installed an operating system on your newly assembled system then followed by the applications software.

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Restart your computer.

When you see the "Press any key to boot from CD" message, press any key to start the computer from the Windows XP CD.

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CHAPTER FOUR

OPERATIONAL ANALYSIS

You may find a protective piece of cardboard or plastic inside your floppy drive (the wide slot at the front of the system unit.) pull out the card and keep it other packing materials.

Switches on both system units and monitors most often consist of a single ton (usually at the front of the unit and marked power) or an I/O switch ("O" for and "T" for on"). Switch may be located at the front, back or side of the unit. ways switch the monitor on first, then your system unit, and you're ready to mpute

If nothing happens when you turn on you pc, check the power cord if it is gged into the wall socket and into the PC. If you can hear the PC's fan whirring but nothing on the screen, make sure the monitor switch is on, check also if monitor bles are plugged firmly into the correct sockets at the back of the system unit. If you e a surge protector, be sure it is turned on also.

MAINTENANCE AND PROCEDURE

Maintenance is the preventive measure(s) put in place in order to ensure a continous, safe and proper working condition of the personal computer. There are different methods of maintaining a personal computer VIZ opportunity maintenance, operational for failure, fixed time or fixed period maintenance etc.

(i) Use an uninterrupted power supply (UPS) with your personal computer.

(ii) Make sure you look for good antivirus software all virus coming into personal computer.

(iii) Make sure there is failure of electricity or illegal shutdown, allow your operating system to scandisk the hard disk for you, and don't cancel the scandisk operation

(iv) Try to put administrative password to secure your computer from illegal unauthorization.

(v) Provide a cooling system for your personal compute to reduce the heat generated by the microchips of the mother board.

TESTING

There are four of human that are employed in determining whether a personal mputer is faulty of not, include

(i) Hearing
(ii) Visual test
(iii) Smelling
(iv) Touch

HEARING: Sound coming out of the personal computer enables one to own that this is the particular problem arising to this personal computer or its rking properly.

VISUAL TEST: This is done by using our sense of sight in the following nner, to watch the monitor during the booting of the personal computer (i.e. visual splay of the monitor) if there is any malfunctioning that it recognized.

4.4.3 **SMELLING-** This enable the user to quickly know that a particular or mputer has burnt or the wires which are been used are burnt.

4.4.4 **TOUCH-** This can be done by placing one palm on the system unit of the rsonal computer, this will enable one to know may be there is electrical discharge m the machine which can be quickly rectified.

4.5 PRACTICAL TROUBLESHOOTING TABLE

Symptom	Possible solutions
- Dead computer	- Check if power cable is connected and supply power.
- (nothing happens when you press power button) - "OS not found"	- Ensure UPS is ON and supplying - Check boot sequence in setup - The hard disk may be bad, check the hard disk on another system
- No sound output	- Ensure that speakers are on, and connected. - Re-install sound drivers.
- Computer fails to "see" other computers on the network	- Ensure that the right network cable is used, and that is well connected - Try using another one
- System comes on but does not display on the monitor	- Ensure the monitor is on and connected - Ensure the VGA card is OK and well seated.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

SUMMARY

In Summary from the project, the computer system is an electronic device culating machine) that solves problems by applying prescribed instructions on data sented to it.

It performs its data-processing operations accurately at high speed with little or human intervention by loading it with different packages or programmes. It is also lled an automatic device and has the ability to perform calculation, sort files and information.

From the basic design and construction, the problem associated with the mputer system is short circuiting which is generally caused by the temperature, that where the computer system is been placed. But normally it is advisable that the mputer system should be placed in a welled ventilated area because computer chips duce heat on operation and needed a lot of cooling. Also, the computer room floor ust be layed with carpet or rug in other to avoid short-circuiting because of moisture uld up from the floor.

CONCLUSION

This project enabled us to know how the computer system is designed nstructed, and assembled, also it exposed us on how the computer system is intained in other to prolong its life Span.

It also expose us to how and where computer components can be bought at sonable price.

RECOMMENDATIONS

The project was worth doing in that it improved our knowledge about puter components and various specutication. Having completed this project work, computer system can be recommended to schools, homes, hospitals, research tre etc.

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