STANDARD HIGH SCHOOL - ZZANA

SYSTEM START UP AND CONFIGURATION

SUB-TOPIC 1: COMPUTER BOOTING

Computer Booting
Booting refers to the starting process of a computer.

Types of Booting
There are two major types of booting and these include:
Cold boot
Warm boot

Cold Boot
This refers to the starting of the computer for the first time when it has not been in use it performs Power On Self Test (POST).

Warm Boot
This refers to the restarting process of a computer that has been working

A warm boot is performed when the computer is not responding to commands or hardware .g. the mouse may fail to respond to cursor or the keyboard may fail to print characters on the screen no matter what you do in this case a warm boot becomes necessary hence the computer has to be restarted

To perform the warm boo press the RESET button of the system or press the combination of keys ALT + CTRL + DEL on your keyboard.

A warm boot is preceded by a cold boot and performs Power On Reset (POR) instead of POST

Step by Step Process of Booting
Before you boot your computer first locate all the necessary switches. On many computers the switch is marked either on or off or 1 or O or power. These switches are sometimes push buttons. After locating all your switches on your computer system start switching on from the;

1. Socket wall
2. The UPS (Uninterrupted Power Supply)
3. The System Unit
4. Then the monitor power button
5. Speakers, printers, scanners etc.

After successful switch on operation, the computer will perform POST routine to check the main memory and compactness of the control circuits. And if any error is encountered during this routine check it will be reported on the screen e.g. if the computer booted on a ‘non system disk’ a message ‘ non system disk ’ will be displayed on the screen.

The above described booting procedure is known as cold booting.

SUB-TOPIC 1: SYSTEM CONFIGURATION

System Configuration

James Luwagga 0755216576

System Specification (Computer System Selection)

A. Hardware Considerations

The main hardware factors to consider when selecting a computer system are the type of CPU, processing speed, amount of main memory, storage capacity, user needs and cost. In addition to this there are other things to consider such as warranties, expansion and up grade, portability and so on.

1. Processor type and Speed

Microcomputers use microprocessor chips also known as the CPU. The microprocessors used in microcomputers usually have all the required functions on 1 chip. There are a number of manufacturers who make chips for microcomputers such as Intel, AMD and Lynx for IBM computers and Motorola for Apple computers

Large computers such as super computers, mainframe and mini computers tend to use custom made CPU made of separate high speed sophisticated computers are not all on one chip.

The processing speed depends on the clock speed if the micro processor and is measured in MHZ (Mega Hertz) that is million cycles per second.
The speed can also be measured in millions of instructions per second (MIPS) were one instruction may be one or more cycles. The processing speed of small computers ranges from 3-5 million instructions per second and the speed of large computers can be 70 – 100 MIPS or more.

Super computers can process from 200 up-to billions of instructions per second. This implies that super computer can process your data more faster than a micro computer.

2. Memory Capacity (Main Memory)

All computers have some amount of main memory also known as RAM which is used to hold programs which are being used.

Larger computers have more memory or RAM due to the large volume of data to be handled and the first speed of operation.

It is important to get the right amount of memory because the more the RAM you have the better and faster the computer performs.

3. Secondary Storage Devices

The storage capacity is the amount of space that is available for storing data and instructions required to manipulate the data

Larger computer systems tend to be equipped with higher storage capacities than micro computers due to the higher volume of data involved in such systems.

Operating systems and software are getting bigger all the time, so you need more hard disk space than you think. Standard microcomputer hard disks range from 8 GB – hundreds of Giga bytes.

Larger computer systems have secondary storage with capacities in the order of Tera-bytes.

4. Expansion and Upgrade

When you buy a computer system, the specifications are usually enough to meet your current requirements but as time goes on you find that it is not big enough or fast enough.

James Luwagga 0755216576

At this point there are two options:
i). buy an entirely new system which is expensive
ii). Up grade the existing system which is usually cheaper.

Software type and data volumes are some of the factors that will demand system upgrade and expansion e.g. windows 2000 operating system demands more memory compared to Windows 95.

It is important to be aware of the expansion and upgrade on a PC. There are some PCs that are not upgraded. The things that you can usually up grade on a PC are as follows:

a) Ports

You need plug devices into your computer such as printers, modems, mouse, scanner, light pen and other devices that may upgrade in the future. If you do not have enough ports you cannot plug them all in.

b) RAM *(Random Access Memory)

The more RAM you have the faster the system so it is important to buy a PC with room to add more memory

c) Hard disks

No matter how large one hard disk you buy initially is, it soon run out of space. Depending on what you will be doing with a PC, it may be necessary to ensure that you can add a hard disk if need be. Alternatively you can replace the existing hard disk with a higher capacity one but this will require transfer of all programs and data which may be tiresome.

d) DVD drive / CD ROM drive

If your computer does not have a DVD drive, you may want to install it after sometime. Thus it is important to make sure that there are extra drives that can hold a DVD drive or any other form of drive.

e) USB port *(Universal Serial Port)

The easiest way to add devices to your computer is the use of the USB port. You can plug all types of things such as joystick, scanner, mouse, modem, flash etc to the USB port.

f) Expansion slots

When you add certain things to your computer such as network cards, graphics cards, internal modems, you need to plug them into the expansion slot on the mother board and in order to do that you will need the slots

5. User Needs

The user needs focuses around what / the main reason for using the computer system.

The application area will determine the type of software which will in turn determine the hardware specification e.g. the system that will be used to produce the engineering drawing will require CAD software (high resolution monitor, large amount of RAM and laser printers or plotters)

Another example is a burn that will have large amounts of data that will require a very large Storage capacity and mini frame computer or mainframe computer to handle data processing

6. Cost

The cost of a computer is related to the size and the additional component that may withstand a

computer e.g. microcomputer price ranges from 700 – 1500, laptops and note books tend to be expensive depending on their specification such as a processor, RAM, hard disk, screen resolution, wireless connection, expansion and upgrade, compatibility etc.

Minicomputer, main frame computers and super computers cost a lot and more than the microcomputers. They are usually used by medium large organizations, institutions of higher education and research purposes.

7. Compatibility

It is important to ensure that new computer system that are purchased can interact with the existing hardware i.e. they are compatible. This is very important especially in a network environment where the computer must communicate with other computers on a network.

8. Portability

If you have a lot and need to have access to your computer whenever you are on your job then you need a computer that you can carry with you, in such situation, you may need a lap top or hand held device depending on the power and storage capacity requirement.

Hand held devices have very limited portability but are easy to carry around and can be used for simple word processing maintenance.

Lap top on the other hand have mostly the same power as desktop but have limited expandability and are more costly.

9. Warranty

When you buy a computer you do not expect it to break but sometimes things may go wrong and it is advisable to have protection of the same kind.

A computer usually comes with a warranty. When you get a warranty, the seller or manufacturer of the computer agree to repair or replace your computer if something goes wrong with the right time of the warranty.

Software Consideration

The primary condition when selecting software is suitable for a particular application and is of a good standard however there are various factors that need to be taken into consideration to ensure that we get the right software for a particular application and these include the following:

1. Authenticity

Software is an intangible product and it is quite easy to pirate software (i.e. make illegal copies of software). When purchasing software it is important to get the original software that will be supported by the developer. Authentic software will be licensed and is provided by the user.

2. User Needs

The software must meet the user needs it is usually difficult to find a software that meets all user needs, but it should at least provide the major functions in situations where it is difficult to find the package that meets the user requirements a bespoke requirements / may need to be developed.

The things to look for when evaluating application software are the method for input and out put just the problem with suitable data and investigate all aspects of the program to see that it does not meet the user requirements.

3. User Friendliness

In addition to meet the user requirements a software must be user friendly if the software is not easy to use there is a huge chance it is not to be used at all. Some factors to gauge user friendliness are as follows:

- Are the messages provided by the software user
- Data has to be entered, is it easy to understand, what is required?
- Can you easily get the program to do what you want? If the answer to the point is yes, then the software is user friendly.

4. The System Requirements

These are basically the hardware specifications required to run a particular program. These requirements are usually indicated on the package e.g. you need a minimum of 16 MB of RAM to run an access database but 32 MB is recommended

This implies that a computer with 8MB of RAM will not be able to load the program in the memory and as a result will not run it

5. Cost

The cost of software application is a major contributing factor in deciding whether to purchase it or not it is usually cheaper to purchase general purposes software and circumstances where it is able to meet the user requirements , it the ideal solution.

How there are situations when general purpose software simply does not meet with the user requirements A Standards application may be required and the cost of that will depend on the plat form on which the program has been developed.

When up grading software, it is essential that the upgrades are backward compatible.

6. Compatibility

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7. Portability

The ability to transfer data to/ from another package/ hardware platform is a feature that is increasing becoming an important requirement for users.

Data is said to be portable if it can be transferred from one application to another in electronic form.

8. Documentation

The documentation is important and should tell you whether the programs can be used to solve your particular problem as well as provide the user with assistance on using the program.

Other software considerations include the following ,

(i).Upgrade

Software developers are always trying to add new features and functions to existing software and at the same time trying to exclude the number of bugs in the program.

(ii).Training

It is not really a software issue, but it is important to know if it is on the package or is readily available or not.

COMPUTER PARTS

A typical computer system comprises of a keyboard and mouse for entering data into a computer, a system unit which houses the processor, storage and power supply, a display unit *(monitor) and a printer for making print out.

a. SYSTEM UNIT

This is the housing (casing) that contains the main components of the computer. These include the

motherboard, storage unit, and power unit and data cable.

The motherboard is the circuit board on which electronic parts are built.

Storage units like the CD, floppy drive and hard disk stores files for the system to use later.

Data cables carry data between the processor and other devices.

b. PRINTER

Monitors suffix for many interactive applications but a permanent record of the out put on paper may be needed. Printers are used to create the hard copies or paper copies or as out put.

c. KEYBOARD

The keyboard resembles a type writer. It has letters, numbers and other keys through which data is entered into the computer.

d. MOUSE

A mouse is an input device. It is a pointing device that fits in the palm of the hand. It is the most commonly used pointing device on desktop computers.

Other computer parts include the following:

- Light pen
- Joystick
- Touch screen
- Speakers
- 3D spectacles
- Scanners
- Modem
- Digital camera
- Digitizer
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CONNECTION AND SETUP OF HARWARE COMPONENTS

CONNECTION PORTS

i. PARALLEL PORTS

This port is commonly used to connect a printer

ii. SERIAL PORTS

This port is typically used to connect an external modem

iii. UNIVERSAL SERIAL BUS *(USB)

Quickly becoming the most popular external connection, USB ports offer power and versatility and are easy to use.

- **Fire wire (Jeee 1394)**

Fire wire is a very popular method of connecting digital devices e.g. digital camera to your computer connections, internet, and network.

a) MODEM

This is the standard method of connecting to the internet

b) LOCAL EREA NETWORK

This is used by many computers vertically these in an Ethernet office Network, connected to each other.

c) CABLE MODEM
Some people now use the cable television system in their homes to connect to the internet.

d) DIGITAL SUBSCRIBER LINE
This is a high speed connection that works over a standard telephone line.

CONNECTING BASIC COMPUTER COMPONENTS
The components connected to the system unit over the ports at the computer system are as follows:

- The mouse and the keyboard connect through the USB ports
- The monitor connects via the graphics card.
- Additional devices such as the printer and modem would connect via the parallel and serial ports.

  Most computers come with at least one parallel and one serial port.
  Modern computers come with a number of USB ports as well as to new additional devices to be connected to the computer system.

  Each of the components will have a cable attached with a connector at the end and that will plug into the applied port on the bar of the computer system.

  Behind the system unit

SUB-TOPIC 3: SYSTEM INSTALLATION

System Installation
Installing Operating System
An operating system is a program that links / interfaces the user to the computer hardware and the application software.

Installing Application And Utility Software

Installing Application Software
An application software is a program set to perform a specific task.

Examples of application software include the following

1. **Word Processors**

These are programs used to produce typed documents e.g. letters, memos, notices, posters, reports, labels etc

2. **Spreadsheet**

These are programs that are used to perform mathematical calculations and logical operations and help in the maintenance of numerical data and calculations.

3. **Data Management Software**

These are programs used to keep and manage records or data e.g. in hospitals, colleges, business, schools etc.

4. **Desktop Publishing Software**

These are programs used to create publications such as newsletters, brochures, booklets etc.

5. **Communication Software**

These are programs used to facilitate communication between more than one computer. They allow you to create messages, send messages, receive messages and get information from other computers.

6. **Graphics Software**

These are programs used to create, edit simple and complex graphics

7. **Draw Programs**
8. **Presentation Software**

These are programs that help in creation of slides, slide shows, over heads etc

Installing a Utility Software

These are programs that perform a specific task related to managing resources
OR
These are programs that are used to maintain our computers. They check for errors and rectify if there is any error e.g. anti-virus software, scan disk etc.

Examples of utility programs

- Sorting utility
- Merging utility
- Copying utility
- Backup utility

Functions of Utlity Programs

- **Sorting utility**

This takes in data and re-arranges it in any order as specified by the user

- **Merging utility**

This combines data from more than one file onto one file

- **Copying utility/ Backup utility**

Moves the contents of one file to a backup storage device

- **Data compression and data recovery** is done or performed by the utility programs
- Utility programs **monitors programs** designed to check the activity of specific aspects of the computer system to ascertain where the bottleneck exists and to remove the bottleneck e.g. disk defragmentation, removal of viruses

James Luwagga 0755216576