SUBSIDIARY ICT

KCB CLASS NOTES

SUBJECT OUTLINE S.5

1. Introduction to computing
2. Computer management
3. Computer lab care and maintenance
4. Computer hardware
5. Computer software
6. Internet and World Wide Web
7. Word processing
8. Spreadsheets
9. Presentation software

Practical

INTRODUCTION TO COMPUTING

What is a computer?

A **computer** is an electronic device that can accept data input, process it according to some specified instructions, output the information, and store the results for future use.

What is computer literacy?

Computer literacy is the ability of an individual to properly use and interact with a computer and all its accessories to solve his problem.

CHARACTERISTICS OF MODERN COMPUTERS

1. **Accuracy** - Computers are meant to be so accurate that they do not make mistakes. It is rather the user who makes mistakes.
2. **Diligence** - Computers have the ability to perform the same task over for long time without getting tired.
3. **Automation** - Computers also work automatically. They do not need any supervision in order to perform programs when instructed.

XTICS OF THE MODERN COMPUTERS (CONT..)

4. **Artificial intelligence** - Computers are artificially intelligent. They can respond to requests given to them and provide solutions. The evidence of this is seen in industrial robots.
5. **Storage** – computers have the ability to store data/information either temporarily in memory during processing or permanently on storage media future reference
6 .**Speed** - Computers are quite faster and a computer processor determines their speed. Their speed is measured in millions of instructions per second (MIPS).

XTICS OF THE MODERN COMPUTERS(CONT..)

7 . Versatility: - It means the capacity to perform completely different types of work. You may use your computer to prepare payroll slips. Next moment you may use it for inventory management or to prepare electric bills.

PARTS OF A COMPUTER AND THEIR USES

A computer is made up of physical parts and software

Physical parts include

i. System Unit with its internal components
ii. Basic hardware attached to the system unit(peripheral devices)

Software includes that coordinating the hardware and that used by the user

THE SYSTEM UNIT/SYSTEM CASE

This is the rectangular case /box that houses the electronic components inside the computer. It contains the following:-

i. The power supply unit(PSU)
ii. System fan
iii. Heat sink
iv. Hard disk drive
v. CD/DVD drive

THE SYSTEM UNIT….

i. The motherboard
ii. The CPU
iii. CMOS battery
iv. RAM chips
v. Expansion slots
vi. Bus lines
vii. Ports
viii. Real- time clock

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1. **Power Supply Unit**-converts the wall outlet Alternative current (AC) into direct current (DC) power to run the computer.
2. **Fan / system fan** –generates air to keep the power supply and other components in the system unit from getting too hot.
3. **Hard disk drive**-This stores users data and the operating system that can be used when ever booting is taking place.
4. **DVD/CD drive**-this provides a means of writing or reading information to or from DVD or CD respectively.

5. **Mother board-** The main circuit board in the system unit which serves as a single platform to connect all of the parts of a computer together

Through buses, it allocates power and allows communication to the CPU, RAM, and all other computer hardware components.

Components mounted on the mother board

a. **Central processing unit**(CPU)-carries out all the calculations, processing instructions .

b). **RAM Chips-**Temporarily hold data and instructions that will be needed shortly by the CPU.

c). **ROM Chips-**Contains firm ware i.e. startup instructions for the computer.

d). **Expansion slots -**Are sockets on the motherboard into which you can plug expansion cards e.g. PCI (peripheral component interconnect), memory slots and AGP

e). **Bus** –is an electrical channel /path that allows the various devices inside and attached to the systems unit to communicate with each other.

f). **CMOS Battery**-Supplies power to CMOS chip to store startup settings and keep the real-time clock running even when the computer is turned off.

CMOS-Complementary metal oxide semi - conductor)

g). Ports –a port is a physical point through which an external device like keyboard/ printer or monitor can be connected to the computer

h). Video or graphics and audio or sound card that allow visual and audio

i). Real-time clock, is an integrated circuit on a computer's motherboard .It provides an accurate date and time, in addition to allowing a computer to regulate the timing and speed of all of its functions.

Question.

i. Apart from the above mentions components, identify other parts that are held by the mother board
ii. List down some of the components that can be replaced on the mother board
iii. Give two functions of the mother board in the system unit

DATA AND INFORMATION

Data -refer to raw facts or figures that are of little meaning until they are put or sorted in a more useful format e.g. scores in a subject, prices, date, time (i.e. unorganized facts)

Information - It refers to the processed data that has meaning and is there fore very useful to a human being e.g. a produce report

Data processing-It refers to a step-by step procedure of converting data(raw facts) into information.

Computer System-is a series or combination of hardware, software, user, data, procedures and communication that co-ordinates to perform a task

CONSIDERATIONS WHEN BUYING A COMPUTER

Computer specifications describe the operational and performance requirements of a computer.

Therefore before buying a computer one may consider the following specifications

1.Type /speed/power of the CPU

Larger computers use CPUs made up of separate, high-speed, modern components. In most cases, the nature of the CPU determines the speed of computer.

2.Amount of RAM main memory the CPU can use

A computer equipped with a large amount of RAM can support more advanced programs and can even hold several different programs in memory at the same time.

3. Capacity of the storage device(HD)

Larger computer systems are equipped with higher capacity storage devices. Small computer systems have lower capacity storage devices. The capacity varies depending on the nature of the computer system itself

4. **Ability to connect/accommodate different peripheral hardware-** this can be in relation to the number of ports that can connect different devices .

5. **Screen specifications** in terms of resolution, and size

6. **Battery life span**-this is important in case of a laptop computer that is portable

Checking specifications

- Go to the Desktop
- Right click on My computer
- Select properties
- See all the information you require about your computer e.g; Operating System and the version, CPU type, speed, the amount of RAM

To check on the disk space;

- Go to the Desktop
- Double click on My computer to view the storage devices.
- Right click on the one you want.
- Select properties

OTHER FACTORS CONSIDERED MAY INCLUDE

a).Speed of output devices

Speed of microcomputer output devices is rated in terms of the number of characters per second (cps) that can be printed.

b).Number of users that can access the computer at one time

Most small computers can support only a single user; some can support as many as two or three at a time.

c).Cost of the computer

Many users look at the price of a computer to determine its quality. It is known that the higher the price the better the computer set a user gets

a).Size of the computer

If the computer is to be used by people in the field other than on table, many people will prefer buying laptop or palm top portable computers

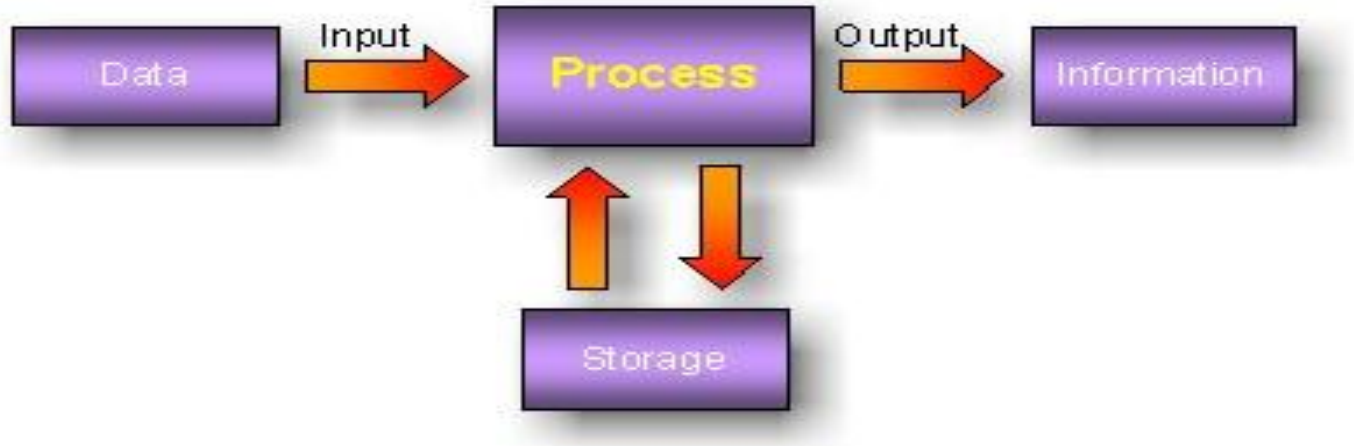
Questions

1. Outline the major specifications one can consider to purchase a computer
2. Study the table below and answer the questions

THE INFORMATION PROCESSING CYCLE

- The information processing cycle refers to the order of events that go into processing information, including input, processing, storage and output.

Diagram showing the information processing cycle



1. **Input of data-** at this stage, entering data using input devices or sending the stored data in the processing system is done. It also involves checking the accuracy and validity of the input data.
2. **Processing of data-** at this stage, calculation or manipulation of the input data is done by processing devices to get information as final output.
3. **Output of information-** this stage involves the display/production of processed results or information e.g. report for use through output devices
4. **Data/Information storage-** this is the stage in which data or information in a computer is kept until it is needed for reprocessing or use.

What is Information communication technology(ICT)?

Information Communication Technology is a set/combination of related technological tools used to create, store, manage and disseminate information

1. ICT APPLICATIONS IN EVERYDAY LIFE

i. Payment by phone services at home
ii. Payroll system in a factory
iii. Report card system in a school
iv. Billing system in the Town Gas Company
v. Electronic funds transfer system in a bank

vi. Mailing list system in a company
vii. Stock control system in a department store
viii. Ticket reservation system in a cinema
ix. Point-of-sale system in a supermarket
x. Traffic control system in transportation

2. ICT APPLICATIONS IN EDUCATION

a). **Computer-based training**, which includes

i. **Computer-assisted instructions (CAI)**, so that teachers can use computers and other IT equipment to present teaching materials in a more interesting way.

ii. **Computer-assisted learning (CAL)**, so that students can use computers and appropriate software to learn at their own pace.

iii. **Computer-assisted assessment (CAA)**, which may reduce the time and labor to mark the answer scripts.

b) **Distance learning** through computer-based training and Web-based training.

c) Simulations of experiments or real-life situations that may be hazardous.

d) Electronic library system for searching, borrowing, and returning books.

e) The **School Administration and Management System (SAMS)** for keeping records of students and producing report cards or other related documents.

f) Edutainment, which is a type of educational software that combines education with entertainment.

Advantages of using IT in learning and teaching include

a) CAI and CAL packages that usually contains multimedia effects make learning more interesting and interactive.
b) Students can learn by themselves when the teacher is not available.
c) Students can learn and proceed at their own pace.
d) Students can usually get their results or feedback immediately after they have answered the question or taken an action.

e. There are rich educational resources on CD-ROMs and the Internet.
f. Teachers can present subject matter and explain abstract concepts more clearly with multimedia.
g. Teachers can show experiments that are difficult to perform or dangerous in nature through simulations software.
h. Advanced instructions can be given to students in areas where the teacher may not be qualified

Disadvantages of using IT in teaching and learning

a) Face to face interaction between students and teachers may be reduced.
b) Students can only follow what the CAL packages are predefined to offer.
c) It increases on the operational costs in acquisition and maintenance of IT devices
d) Wastage of time on materials that may not be educational in nature **STOPPED12/3**

3. Applications of IT in bank

a) Automated teller machine (ATM)
b) Making cash deposits and withdraws on mobile phones
c) Us of inter-switch where cash is transferred between accounts or banks.
d) Receive information on bank account balance through emails.

e) Banking money online from any where
f) Electronic fund transfer EFT a system where funds are directly transferred from one bank account to the other
g) Loan and credit card applications
h) Download monthly transaction information
i) Use magnetic ink character recognition (MICR) to process cheques.

Electronic commerce (e-commerce)

1. E-commerce is a financial business transactions that occurs over an electronic network, such as the Internet.
2. Online shopping and banking are two popular types of e-commerce that uses either **electronic money (e-money)** or **electric data interchange (EDI)**.
    i. **EDI** is a set of standards that control the transfer of business data and information among computers both within and among companies.
    ii. **E-money** is a means of paying for goods and services over the Internet.

Advantages of e-commerce

1. Transactions can occur instantaneously and globally, thus save time for participants on both ends.
2. Transactions can occur 24 hours per day.
3. Businesses have access to millions of people with Internet connections.
4. Businesses have the ability to gather customer information, analyze it, and react if appropriate.

5. Information can be changed and be available quickly.
6. Customers can compare prices easily.
7. Feedback can be immediate.
8. Manufacturers can buy and sell directly, avoiding the cost of the middleman.
9. Distribution costs for information is reduced or eliminated.

4. Applications of IT in entertainment

1. Play computer games
2. Listen to music
3. Watch a video or a movie using computer software
4. Compose and edit a video clips and games
5. Retouch a photograph
6. Read a novel or magazine online for leisure
7. Plan a vacation with recreation centers

Application of ICT in security

1. Use of CCTV cameras
2. Use of biometric devices
3. Use of metal detectors
4. Remote control doors and gates
5. Car tracking systems
6. Body scanners

Application of ICT in transport

1. Mobile /smart form service location e.g. Ubar car services
2. Remote traffic control lights
3. Air traffic regulating systems using radar

8. Applications of IT in health

1. Maintain patient records in hospitals and clinics.
2. Monitor patients' vital signs in hospital rooms and at home.
3. Computer-assisted medical tests.
4. Research and diagnose medical conditions by use of internet.

6. Use computer-controlled devices during operations that require great precision (e.g., laser eye surgery and heart surgery).
7. Telemedicine through computers with videoconferencing capabilities.
8. Use of computer-aided surgery for training prior to performing surgery on live humans through expert systems
9. Implant computerized devices (e.g., pacemakers) that allow patients to live longer.

IMPLICATIONS OF ICT IN THE SOCIETY

A. Positive Social/Ethical impact

1. The electronic office- Allows people to produce reports and other documents quickly, with greater access to relevant information.
2. Variety of contacts- people can communicate by e-mail, mobile phone, teleconferencing which is cheaper.
3. Limited access to private information- people deter un authorized access to personal information.

4. Training and skills acquisition –people are trained to use the new hardware.
5. Productivity- more work can be achieved in less time by fewer people.
6. Costs reduction –people can cut movement costs and working from home through telecommuting
7. Social interaction -there is use of internet to send and receive electronic mail, participate in discussions through social media

Negative Social/Ethical impact

1. Internet fraud e.g. identity theft and denial of service attacks via internet.
2. The interception of credit card details and transactions online through phishing.
3. Hacking into personal, private files with criminal intent.
4. Fraudulent websites- taking of credit cards from customers through pharming

5. The spreading of viruses via the internet and email attachments.
6. Digital divide – where other people can ably use ICT and others are left behind hence creating a gap.
7. Job displacement -replacing man power in an organization with computerized machines.
8. Valuable time wastage-where people use computers without positive purpose e.g. playing games and chatting during working hours
9. Health problems like headache caused by wrong use of ICT device

Positive Economic impacts of ICT

1. Improvement of total factor productivity.
2. Creation of enterprises based on the availability of high capacity telecommunications networks.
3. ICT devices like computers can be used to create jobs or as tools to get jobs

4. Increased efficiency with high transaction costs e.g. using control systems
5. Improvement in quality of working lifestyle e.g. through telecommuting
6. Faster completion of firm transactions e.g. use of multiprocessors
7. Increased innovation by streamlined collaboration among eco-system firms

Negative Economic impact of ICT

1. Creation of counterfeit products that out competes genuine products
2. Use of devices for money laundering
3. Job displacement leading to un employment
4. High maintenance and repair costs

3. Political implications

1. ICT's have increased disaster awareness and preparedness.
2. It promotes democracy since any one can report about anything.eg
3. They also promote effective and efficient election campaigns by candidates.eg
4. They enhance good leadership since the whole world is at a watch, through the internet and satellite systems.eg

5. The technologies foster steady- fast delivery of services to the general public.
6. ICTs decentralize control over mass communication.

4. Positive Environmental implication

1. Used to communicate traditional forms of environmental knowledge to communities and monitoring of environmental through mass media
2. Reduced consumption of energy, water and other essential natural resources e.g. use of softcopies
3. Sensitizing people about pollution by by providing useful information through social media

4. Enable greater participation of human beings in activities that are critical to protecting the environment.
5. Monitors and responds to environmental disasters e.g. use of drones
6. Reduction in pollution caused by storage hardware through cloud computing

Negative Environmental implication

1. Pollution cased by electronic waste wrongly disposed off
2. Increased consumption of power by electronic devices
3. ICT device manufacturing industries dispose waste and fumes that destroy the ozone layer

GREEN COMPUTING

Green computing -is the study and practice of using the computers and other related resources of technology in an environmentally responsible manner.

It is the practice of designing, manufacturing, using and disposing of computer and electronic waste and efficiently using them with minimal or no impact on the environment

Green computing practices

a) Power down the CPU and all peripherals during extended periods of inactivity
b) Use LCD monitors instead of CRT monitors.
c) Use notebook computers rather than desktops whenever possible.
d) Minimize the use of paper and properly recycle waste paper.
e) Dispose off e-waste according to state and local regulations.

f) Employ alternative energy sources for computing work stations, servers networks and data centers.

g) Power-up and power- down energy intensive peripherals.

h) computer virtualization, e.g. running two or more logical computer systems on one set of physical hardware.

i) Resource allocation, directing data to data centers where electricity is less expensive.

EXERCISE

1.Define the term computer.

- Define these terms as used in computing
- Data
- Information
- ICT
- Peripheral device

2. List down all the x- teristics of modern computers.
3. State the factors you would look out for before buying a computer.
4. List 3 aims of learning Subsidiary ICT.
5. Mention 5 areas where PCS are used.
6.Explain the implications of subsidiary ICT.

COMPUTER LABORATORY, CARE AND MAINTENANCE

The Computer Laboratory.

A computer laboratory is a special room prepared specifically for safe installation, teaching of computer use and practice.

Factors considered when preparing a computer Lab.

i. Security of computer Hardware and Software and data.
ii. Reliability of the source of power to run the computer
iii. Number of computers to be set up.
iv. Maximum number of users to be accommodated at ago.

Areas of Laboratory security

a) Physical security-security concerned with safety of computer hardware
b) Data security-security concerned with safety of software and files
c) Electrical device security-security concerned with safety of devices when using electricity.
d) User security-security concerned with safety of computer user

SAFETY PRECAUTIONS AND PRACTICES

Measures that protect computers hardware

(i) Burglar proofing the room- includes fitting grills or doors, windows and a roof to deter forceful entry into the computer room.

(ii) Installation of intrusion detection alarm systems to alert security personnel

(iii) Employing security guards to keep watch and deter thefts of computers and accessories.

iv. Installing fire prevention and control equipment- These include smoke detectors, non liquid based and non powdered based fire extinguishers.
v. Installation of lightening arrestor to prevent damage caused by lightening
vi. Power supply should be stable to avoid power surges or under voltage which will affect the operation of computers. Use of UPS is recommended.

4. Fitting good window curtains dust covers and woolen carpets to control dust and dump.
5. Using dehumidifiers to control dampness .
6. Insulate cables to avoid short circuits which can cause damage to PC components.
7. Keep drinks and eats out of the lab as they may disable functioning of some computer parts like the keyboard

Measures to protect the user

(i) All cables should be insulated to avoid shot circuit.

(ii) Cables should be laid away from path ways

(iii) Furniture provided should be standard to avoid bad sitting posture

(iv) Antiglare screens should be provided to screens to avoid too much direct light.

(v) The room should be properly ventilated and windows opened whenever the computers are in use to create good air circulation

(vi) The walls of the comp room/lab should not be painted with over bright reflective oil paints and screens should face away from the windows to avoid glare caused by bright backgrounds.

(vii) Over crowding should not be allowed as it may cause suffocation.

Measures to protect data/files

1. Use passwords to limited access to data
2. Activate user accounts to limited unauthorized access to computer resources
3. Encrypt files
4. Keep files to external storage in case computer are shared
5. Install an updated antivirus to limit virus spread

RULES THAT GOVERN A COMPUTER ROOM OR LABORATORY

1. Users are not allowed to tamper with, move, swap computer accessories e.g. monitors, Keyboards, Mice, Power, VGA and Ethernet cables.etc

2. Do not force diskettes or CDs in or out of floppy or CD-ROM drives.

3. Foods and liquids such as water, juices, soda are **NOT** allowed in the Lab.

4. Report problems to the Lab attendant/ teacher

5. Hand bags are strictly **NOT** allowed in the lab

6. Playing computer games, drawing graffiti on computer desktops is prohibited.

7. Avoid using computer storage media e.g. CDs, Flash disks etc from other centers before running the virus scan.
8. Users are not supposed to install or uninstall programs on the computer system.
9. Users are not allowed to create personal accounts on computers.
10. The internet should be only used for academic purposes

Computer Maintenance/ Servicing

Computer servicing involves activities meant to ensure that computers are in good working conditions.

Computer repair on the other hand refers to fixing or correcting of faults after total break down of hardware or software failure.

Activities involved in servicing include :

1. Cleaning the hardware, this may involve blowing off dust from computers using PC blowers.
2. Installation and updating of anti viruses.
3. Removing temporary files (cookies)
4. Defragmenting the hard disk
5. Cleaning the CD-ROM Laser Lens.

6. Deleting unwanted applications
7. The frequency of the servicing will depend on how often the computer is used.
8. Updating and upgrading programs
   - Updating a software involves adding new codes (software patches) in order to improve its performance

     while
   - Upgrading software or Hardware involves replacing the old one with a new version but of the same type.

Software installation

This is a process of copying executable files onto hard disk in a format that allows a computer to run program

a) New installation is done on new computers
b) Upgrading- is done when replacing an old program with a new program
c) Multi-boot- is done when two operating systems are installed on the same pc. In this case each Operating system must exist on a separate partition

Before installation of an operating system takes place,

1. The hard disk should be partitioned(divided into sections) in order to
   a) To ease reinstallation in case there is need
   b) To ease back up and recovery of files
   c) To Conveniently upgrade the software

2. Read manufactures installation manuals in order
   a) To under stand the procedures followed when installing
   b) To under stand the terms and conditions for using the software
   c) To identify the minimum system requirements for successful installation in terms of hardware like Memory, CPU, screen resolutions and hard disk space

Steps followed when installing an OS

Method one

i. Start a computer
ii. Insert the installation CD/DVD in the drive and wait for a while
iii. Press any key to boot from CD after seeing a message on a black screen
iv. Continues as per the instructions on the screen
v. Restart the computer when done

Fine tuning the system

Fine tuning is the process of making small changes on the computer to improve on its speed, efficiency and overall performance.

Following are some of the activities that can be done to fine tune

a) Run an Anti-virus scan
b) Defragment your PC
c) Create restore disks

d) Run disk cleanup
e) Restore your PC to factory defaults
f) Optimize start up
g) Free up space by removing files
h) Update windows
i) Remove unnecessary software
j) Turn off visual effects

IMPORTANCE OF SERVICING AND MAINTENANCE

1. To keep machines in a good condition and working order.
2. To reduce on costs that would be incurred when the machine totally breaks down e.g. replacement of parts.
3. To save time that would be worked in active use
4. To encourage continuity and avoid work coming on standard still when a machine breaks/ fails to work.

TROUBLE SHOOTING

Trouble shooting is the process of identifying and solving or fixing a computer problem.

or

It is a systematic search for a cause of the system failure so that the problem can be solved.

Tools needed for computer servicing , maintenance and Lab safety

1. Tool kit -this contains several tools used in assembling and dissembling a PC during repair these may include
   a) Screw driver
   b) Live power line testers (Phase testers)
   c) Combination pliers
   d) Tweezers
   e) Wire cutters.
   f) Chip extractor.

Air conditioner

This regulates/ controls temperatures in the computer laboratory as a way to ensure optimum working temperatures for computers and users

Dust Blower

This is used to remove dust from computer accessories especially the internal parts of the system unit during servicing.

Woolen Carpet

- This is spread on the floor to trap and reduce on the dust raised as people walk in the lab when it is in use
- It may also prevent computer hardware from breaking in case it accidentally falls down

UPS (uninterruptable power supply)

- The UPS provides power to the computer when the mains power goes off allowing one to save work.
- Protects computers from unstable power which may blow the microchips and other parts of the motherboard

Fire extinguisher

A fire extinguisher is a metal container with liquid ,powder or gaseous chemicals in it, that is used for stopping small fires.

A gaseous fire extinguisher is recommended for computer labs because liquids may cause rusting of computer components and powder can increase friction and ware of movable parts

Vacuum cleaner

- A vacuum cleaner is a device that uses an air pump to create a partial vacuum to suck up dust and dirt, usually from floors, and optionally from other surfaces as well.

Form cleaner spray

This produces a fast acting form that cuts efficiently through grease and dirt offering superior cleaning performance on computer hardware and glass

Other cleaning materials may include

1. Wipers/cloth/towels used to remove dust from external parts of the computer
2. Dust covers used to prevent dust from entering the internal parts of the computers

END OF CHAPTER QNS

1. What is a comp lab?
2. What safety measures must be taken to protect
   (i) Users
   (ii) Computers
3. What is UPS in full
4. Of what importance is the UPS to a computer owner?
5. Why are powder fire extinguishers not recommended for use in comp labs?
6. Give five ways you can troubleshoot a computer that has failed to start

EXERCISE

1.Define the term computer.

- Define these terms as used in computing
- Data
- Information
- ICT

2. List down all the x- teristics of modern computers.

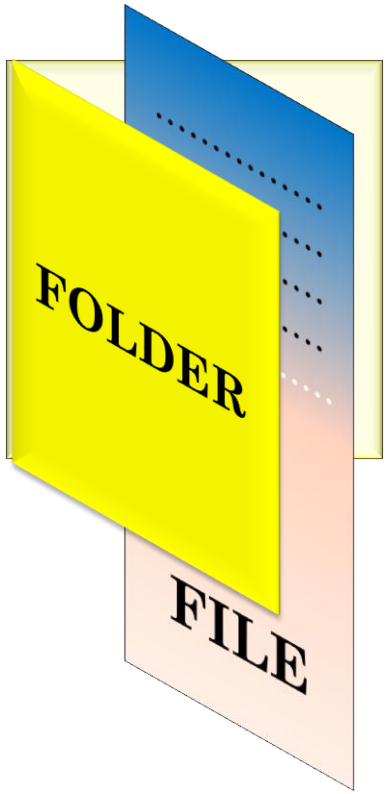
3. State the factors you would look out for before buying a computer.

4. List 3 aims of learning Subsidiary ICT.

5. Mention 5 areas where PCs are used.

6.Explain the implications of subsidiary ICT.

COMPUTER MANAGEMENT



COMPUTER BOOTING

This is the process of starting or resetting a computer, which involves loading an operating system into memory.

TYPES OF BOOTING

There are 2 methods of booting a computer namely;

a) Cold booting
b) Warm booting

1. COLD BOOTING

Cold booting is the initial process of turning on a computer after it has been powered off completely.

Or

Cold booting is when computer starts from the state of completely being off

BASIC COLD BOOTING STEPS

1. Powering the computer – this involves pressing the power button to allow power distribution to all other parts of the computer through the mother board.

2. Basic input- output system

   When a computer is turned on, the Basic Input-Output System (BIOS) on the computer system's Read-Only Memory (ROM) chip is initiated and takes charge

3. Power on self-test(POST)

The BIOS then performs POST initial hardware checks to make sure all the computer's components are operational.

4. Boot loader –This is a computer program that loads the main operating system or runtime environment for the computer after completion of the self-tests.

5. Loading of the operating system

BIOS looks for the Operating System files on the hard disk, copies them and loads them into RAM

WARM BOOTING

Warm booting is the process of restarting a computer that is already working/ switched on.

This is usually done when

a) When the computer hangs.
b) When the computer freezes/does not respond to instructions.
c) After installing new a software/program/driver.

d) After uninstalling new a software/program/driver.
e) After performing a system update.
f) After performing a system restore.
g) When the computer fails to recognize some hardware.
h) After installing a hardware.
i) After uninstalling a hardware.
j) After computer configuration.
k) During troubleshooting a computer.

How to perform a warm boot

i. Press **CTRL + ALT + Delete** at once
ii. Choose end task

or

i. Clicking the **Start button**,
ii. click **shut down**
iii. select **restart**

Startup errors

FILE MANAGEMENT

- The *file management system (FMS)* is the subsystem of an operating system that manages the data storage organization on disk, and provides services to processes related to file access.
- File management describes the fundamental methods for naming, storing and handling files.

FMS TYPICALLY PROVIDES THE FOLLOWING FUNCTIONALITIES:

- File creation, modification and deletion.
- User's (or user groups') ownership of files, and access control on the basis of ownership permissions.
- Facilities to structure data within files (predefined record formats, etc).
- Facilities for maintaining data redundancy against technical failure (back-ups, disk mirroring, etc.).
- Logical identification and structuring of the data, via file names and hierarchical directory structures.

WHAT IS A COMPUTER FILE?

- A ***computer file*** is a specific piece of data that is held on a *computer* always identified with a name.
- A collection of data or information that has a name, called the *filename*.

TYPES OF FILES:

- System files- these files contain information that is critical for the operation of the computer.
- *data files*
- *text files* ,
- *program files/ application files- hold programs or application files.,*
- *directory files etc*

NB: Different types of files store different types of information. For example, program files store programs, whereas text files store text.

TERMS RELATED TO FILE MANAGEMENT

(i) **Drive:** Is a piece of hardware that is used to read and store information on the **computer.** The Hard disk (hard drive) is usually designated with the letter "C".

(ii) **Folder :** Is a virtual location where programs, files, and other folders can be located. It is used to put related files together under one name. A folder, unlike a file, is a storage unit or container. Like a file, it also has a name.

(iii) **Directory:** is an organisation unit or container used to organise folders and files into a hierarchical structure.

Importance of keeping files in a folder

- It is easier to locate and access files.
- It enables users to organise work easily.
- It enables users to backup work.
- It is easy to protect files like applying folder locks.

(III). FILE NAME:

Is a *name* used to uniquely identify a computer *file* stored in a *file* system. Different *file* systems impose different restrictions on *filename* lengths and the allowed characters within filenames.

(IV) FILE EXTENSION:

Is a group of letters appearing after a period in a file name, indicating the format or type of the file.

Or A file extension *is a is the ending of a file name that helps identify the type of file in operating systems such as Microsoft Windows*.

Examples:

.doc – Microsoft Word document

.jpg- for image files

.exe- executable files/ application/program

.ppt- presentation file.

.jpeg- used for digital images.

- .xls - Ms. Excel file
- .pub- publication file
- .html - webpage
- .pdf - portable document file
- .accdb - Ms. Access file
- .txt - text file
- .zip - compressed file

(v) File size:

- This is the size of a file measured in bytes. Different storage media hold different file capacities. CDs hold approx 700MB, DVD 4.7GB, Flash disk- 1GB, 2GB….etc

capacities.

(VI) FILE PATH:

- Is a directory tree hierarchy expressed in a string of characters in which path components are separated by delimiting characters (comma, colon, etc..) .
- The data that we work with on computers is kept in a hierarchical file system in which directories have files and subdirectories beneath them.
- It is used to provide the exact location of a file.

EXAMPLE OF FILE PATHS

C:\Users\Budo\Desktop\Exams\SubICT-BOT,2015.doc

- **C:** - Root directory.
- **Users** - Computer Name.
- **Budo** - User Name / privilege / Account.
- **Desktop** - Folder Location.
- **Exams** - Folder name.
- **SubICT-BOT,2015** - File name
- **.doc** - file extension.

FORMS OF FILE OPERATIONS

- File operations are simply those things that you can do to a file.
- There are many different types of file operations. The main ones that most people use are:

1. **Creating a file**. Two steps are necessary to create a file.
   - ✓ Space in the file system must be found for the file.
   - ✓ An entry for the new file must be made in the directory.

2. **Writing a file**.
3. **Reading a file**
4. **Repositioning within a file-** This file operation is also known as a file seek.
5. **Deleting a file**.
6. **Truncating a file**. The user may want to erase the contents of a file but keep its attributes.

7. Opening a file.
8. Closing a file.
9. Copy the File from one Location to another.
10. Sorting or Arrange the Contents of File.
11. Edit a file.
12. Update a file.
13. Send a file.

14. Combine / split a file.
15. Zip / compress a file.
16. Convert from one format to another e.g. From .doc to .rtf.
17. Print a file.
18. Save a file.

Causes of Data Loss

1. Deleting files accidentally.
2. Viruses and damaging malware.
3. Mechanical damages of hard drive.
4. Power failures.
5. Spilling coffee, and other water damages.
6. Fire accidents and explosions.

SAFEGUARDING COMPUTER FILES

1. **Back up early and often**.
2. **Use file-level and share-level security-** To keep others out of your data eg. share permissions to control what user accounts can and cannot access the files across the network.
3. **Password-protect documents.**

4. **Use EFS encryption-** protects individual files and folders

5. **Use disk encryption.** Protects the entire disk.
6. **Hide data with steganography.** You can use a steganography program to hide data inside other data. For example, you could hide a text message within a .JPG graphics file.
7. **Protect data in transit with IP security.**
8. **Secure wireless transmissions.**

9. **Use rights management to retain control**
10. **Install an** antivirus program **to protect your computer from viruses.**

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Saving Files

- When you chose **File ⟶Save As**, three features appear in a dialogue box. ie

(i) **Save in:** This feature allows you to browse for a location where to save a file e.g on the desktop, My documents folder etc.

(ii) **File name**– This is a feature that allows you to provide a name to a file/ identifier which should be related to the contents of the file.

(iii) Save as type: This feature allows you to chose a file format to be saved in.eg a word document can be saved as, **Word document format**, **Web page**, **Plain text** etc.

LOCATING LOST FILES

1. Use a "Find file" facility on your operating system by going to "**Start**" ⟶ "**Search for and files**" ⟶ -type the name of the program or file and it will show.
2. One can also use the "**Search computer**" option on the Top Right Corner of a Folder.