Chapter 1

---

1. What is the difference between hardware and software?
Hardware: is the collection of physical components that make up a computer system/physical parts of a computer that can be touched software: is made up of the instructions that can be stored and run by hardware/ any set of machine-readable instructions/software directs a computer's processor to perform specific operations/programs that control the computer system

2. What is the job of each internal hardware device?
a. Motherboard:
It is a printed circuit, allows the processor and the other hardware to communicate, it contains several sockets and slots to connect other components

b. Processor:
The processor or central processing unit (CPU) is the part of a computer that:
o Carries out software instructions (Control Unit; CU) o Performs calculations (Arithmetic Logic Unit; ALU)
c. Video card:
Allows the computer to send graphical information to a monitor, TV or projector (connected to the motherboard). It acts as ADC, DAC
d. Sound card:
Allows the computer to produce sounds from speakers and input sound from a microphone (connected to the motherboard).
e. RAM:
Random Access Memory, stores data currently in use.
f. ROM:
Read only Memory, stores the instructions to start up the computer
g. Internal hard disc drive

3. What are the 2 components of a processor?
The processor or central processing unit (CPU) is the part of a computer that:
• Carries out software instructions (Control Unit; CU)
• Performs calculations (Arithmetic Logic Unit; ALU)

4. What is the job of each system software

a. Operating system:

Operating system is the most important program that runs on a device.
The main tasks of operating system:

1) Provides user interface (The user interface is the means by which the users interact with the particular machine, device or with the whole system)

2) Loads & runs application software (allows other programs to be installed and used) 3) Manages error messages 4) Manages Security

b. Device driver:

It enables any hardware device to communicate with the operating system, when a device is connected to a USB port the operating system looks for the appropriate driver

c. Compiler: Translate a program written by a programmer (High Level Language; HLL) into a machine code (code understood by the computer).

d. Linker: Link more than one object file and combine them into single program

e. Utilities: It helps to manage and maintain computer resources.

Chapter 2

---

1. Comparison between OMR, OCR, MICR:

OMR (Optical mark reader):

• Multiple choice candidate exam answers

• Questionnaires where responses are recorded by shading in specified positions

disadvantages :

• Expensive for printing the paper accurate

• The marks must be fully shaded

• We must shade in pencil or black pen

OCR (Optical character reader):

• Convert scanned image to a text file which can be edited (processed) by another software package such as word processors, spreadsheets, databases etc.

disadvantages :

• Not all the letters are identified correctly

• Expensive

• Not working with handwriting

MICR (Magnetic ink character reader):
Reads magnetic ink characters from bank cheques to make sure they are not fake.
Disadvantages:
• Very expensive to print on cheques

2. Compare laser , inkjet , dot-matrix , graph plotter and 3D printer
Graph plotter
• large printouts such as A0
• continuous printouts
• high quality accurate printouts
3D printer
• makes three dimensional solid objects from a design on computer
• using any material (powdered metal, paper, ceramic, etc)
• objects built layer by layer
Laser printer
• high speed/ high volume
• Noise: low
• high quality
• stationery : separate sheets
• Example uses: most offices, schools
Inkjet printer:
• Noise: medium
• medium speed/ medium volume
• high quality
• Initial cost: lowest
• stationery : separate sheets
• Running cost: highest (changing cartridges frequently)
• Example uses: most offices, schools stand alone systems digital
Dot matrix printer:
• Noise: high
• low speed/ low volume
• low quality
• Dirty environment: most suitable
• stationery : continuous
• Example uses: industrial environments, car sales and repair companies, manufacturing sites

Chapter 3

1. What is backup? Why is backup used?

Backup is an extra copy of important files stored away from the original copy in case of damage or loss of original copy.

This may happen due to:

• hacker deleting the data

• virus damaging data

• corruption of hard disk

• user accidentally deleted the data

2. Why does the computer have RAM , ROM and Backing storage?

RAM to store data currently in use as it has very high access speed but it's volatile so we need backing storage for permanent storage and to transfer the data from one computer to another. The price per unit storage of RAM is very expensive compared to backing storage. ROM is used to store instructions to start the computer.

3. State 3 magnetic storage devices and for each give 2 advantages and 2 disadvantages.

Fixed hard discs:

Advantages: very high storage capacity, direct data access so higher access speed

Disadvantages: not portable, Hard disks can crash which stop the computer from working.

Portable hard discs:

Advantages: large capacity, portable

Disadvantages: Expensive, Overheating

Magnetic tapes:

Advantages: extremely large storage capacity, cheap

Disadvantages: slow access speed - uses serial access for reading and writing (in sequence), drive not commonly available

4. State 2 solid state storage devices and for each give 2 advantages and 2 disadvantages.

Memory sticks/Pen drives:

Advantages: portable, more robust, the port is found in all computers

Disadvantages: more expensive, can be easily lost

Flash memory cards:

Advantages: portable, more robust

Disadvantages: more expensive, can be easily lost, not all devices have memory card reader

5. Describe characteristics and uses of the types of DVD.
DVD- ROM: prevent deletion of data, accidental or otherwise
DVD R: single 'burning' of data
DVD RW: updating of information and ability to record over old data
DVD RAM: Same properties as DVD RW but: quicker access, data can be overwritten more easily

6. Describe characteristics and uses of Blu-ray.
• for storing movies (25Gb holds 2 hrs HDTV, 13hrs standard definition TV)
• (will be) used for storage of PC data
• capacities of 25Gb, 50Gb and 100 Gb
• possible to playback video on a disc while simultaneously recording HD video

7. Cloud backup:
a. What is it?
It is a cloud computing model in which data is stored on remote servers accessed from the Internet, or "cloud.
b. Advantages compared to external hard disk storage
• Easy to access data outside home
• Don't have to pay for large computer/mobile storage capacity
• Ability to synchronize files across multiple devices (automatically if requested) easily
• Automatic backups at regular time intervals
c. Disadvantages compared to external hard disk storage
• Risk of hacking
• Risk of error by manufacturer leading to data loss
• Slower download/upload than storage media

Chapter 4

---

1. State 3 differences between LAN & WAN.
LAN:
Privacy: Private
No. of computers: Limited no. of computers
Close / far: Close to each other
WAN:
Privacy: public
No. of computers: Unlimited no. of computers
Close / far: Far away

2. What is WLAN?
Wireless local area network connected using radio waves

3. Describe advantages & disadvantages of WLAN compared to LAN.
WLAN:
Tripping over cables: No
Hacking: Easier
Transfer speed: Lower
Add devices: Easier
Can connect mobiles: Yes
Allows portability during use: Yes
LAN:
Tripping over cables: Yes
Hacking: More difficult
Transfer speed: Higher
Add devices: More difficult
Can connect mobiles: No
Allows portability during use: No