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Components of a Computer System

1.1 DEFINE THE TERMS HARDWARE, SOFTWARE, INPUT DEVICE, STORAGE DEVICE AND OUTPUT DEVICE

Hardware is the physical part of a computer system.

Software consists of programs, routines and procedures which can be run on a computer system.

Input devices are peripheral devices that can accept data presented in the appropriate machine readable form, decode it and transmit it as electrical impulses to the CPU. Examples include keyboards, mice, digital cameras, microphones and touch screens.

Storage devices are memory devices used to store programs, applications, operating systems and user data when the computer is switched off and for later retrieval. Examples include hard disk drives, CDROM drives re-writable CD-RW, DVDs (R and RW) and USB memory sticks.

Output devices translate signals from the computer into a human readable form or into a form suitable for re-processing by the computer at a later stage. Examples include printers, screens, plotters and speakers.

Define the term hardware. [F451 Q1 Jan 2010 (1)]

- The physical parts of a computer system

Some hardware items are called peripherals. Explain what is meant by a peripheral. (2)

- External to the computer/attached to the computer/outside the processor/connects to computer
- e.g. printer to output hard copy

Define the term software. (1)

- Instructions, programs (to make the hardware work)

State what is meant by an input device. [F451 Q1 Jun 2009 (1)]

- Hardware used to put data into a computer

State what is meant by an output device. (1)

- Hardware used to get information from a computer

A supermarket checkout terminal has both input and output devices. State two input devices and two output devices which would be used at the checkout. In each case state why they would be used. (2,2,2,2)

Input

- Barcode reader ... to input product ID printed on product
- Keyboard ... to manually input data if barcode will not read
- Automatic scales ... to input weight of fresh produce
- Chip & Pin reader/card reader ... to input card details
- Keypad ... to input PIN for card

Output

- Screen ... to show details of objects scanned/current state of transaction
- Printer ... to print till receipt
- Beeper ... to indicate valid reading of code

A library directs all members to an area where they can have their loans input into the computer system. The membership number is read from the members card. Describe two ways that the membership number can be input to the computer system. [F451 Q5 Jan 2010 (2,2)]

- Barcode reader ... reads (thickness of pairs of) lines (and turns them into a code)/scans code with laser
- Magnetic Stripe ... on back of card, containing member no. magnetically

- Keyboard/manual input ... in case automatic data entry fails, number can be typed in/keyboard

Describe two forms of output which could be produced by the system following the input of the membership number. [F451 Q5 Jan 2010 (2,2)]

- Sound/light ... beep to signify that data has been accepted
- Image on screen ... showing details of member and books borrowed
- Hardcopy output/printout ... kept for later use, perhaps to provide evidence for updating other files

Define what is meant by a secondary storage device. [F451 Q1 Jan 2009 (1)]

- A peripheral/external unit which allows storage of data over a long period.

A sixth form student has a stand-alone desktop PC at home and also uses the computers at school. Name three different types of secondary storage device which she might have and give a use for each. [F451 Q1 Jan 2009 (2,2,2)]

- Hard drive ... to store files/Operating System/software
- CD ROM drive/DVD ROM ... to load software/use encyclopaedias
- CD RW/DVD RW ... to backup or transport data
- Memory stick ... to move data between school and home

1.2 DESCRIBE THE PURPOSE OF INPUT DEVICES, STORAGE DEVICES AND OUTPUT DEVICES

The purpose of an input device is to bring data into a computer system for processing. An example might include using a digital camera to input images for later processing by a graphics package before being included in a web page or a document. The purpose of an output device is to take the processed data and output it in a form suitable for us to make use of. An example might be a printed document or the sound of the latest hit single played through a set of speakers. Storage devices save user data, programs and applications for later use.

Input devices are not restricted to keyboards and mice. An input device might for example consist of a sensor, perhaps a pressure sensor to determine when someone or something has stood on a pressure sensitive mat, or a temperature sensor or thermistor to determine the temperature of a room. In such situations a complementary output device might very well consist of an actuator or motor which opens a door in the first instance or turns on a pump in the second.

A sixth form student uses different forms of secondary storage media with her computer system. For each of the following secondary storage media, state what the student may use it for. In each case identify a characteristic of the medium which makes it suitable for the use. Hard disk, DVD ROM and Solid state pen drive. [F451 Q7 Jan 2011 (2,2,2)]

Hard disk drive :

- Store software/OS/data files ...large capacity/fast access to data

DVD ROM :

- Import of software/Encyclopaedias ...cannot be written to/information cannot be changed

Solid state pen drive :

- Transport work to and from school/make back ups ... small/light/large capacity/portable/usable on any machine/robust

A central heating system is used to control the heating in a house. State an automatic input device which would be used with this system, explaining why it is necessary. State an automatic output device which would be used with this system, explaining why it is necessary. [F451 Q1 Jun 2011 (2,2)]

- Temperature sensor/thermistor/thermostat ... to give the computer/processor information about the temperature of the room
- Actuator/heater ... used to turn heater on/used to heat up room/used to turn pump on

State two reasons why it is necessary to have at least one storage device in addition to the computers memory in a computer system. [F451 Q1 Specimen Questions (2)]

- Contents of memory lost when power switched off
- Size of memory not sufficient to store all the software/data required
- Need to import/export files

A client file at a firm of solicitors requires pictures to be stored to identify the clients. Describe two methods of capturing the pictures for the system. [F451 Q3 Jan 2010 (2,2)]

- Scanner to input picture already in hard copy ... pixels scanned/reflected light measured
- Electronic camera to take picture ... lens focuses image onto matrix of receptors/transferred via cable/memory card/USB to computer