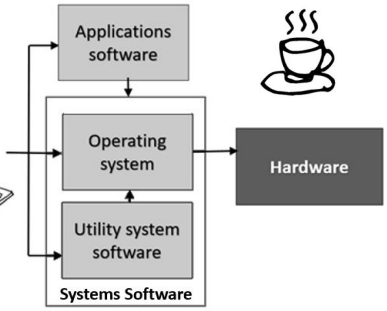
Systems Software

Purpose

To provide an interface between the user, the applications software and the hardware

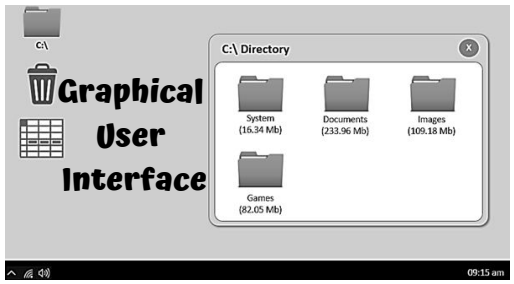
Functions

- Providing an interface for computer users
- Allocating system resources
- Operating and controlling the computer hardware
- Disk and file management



OPERATING SYSTEM

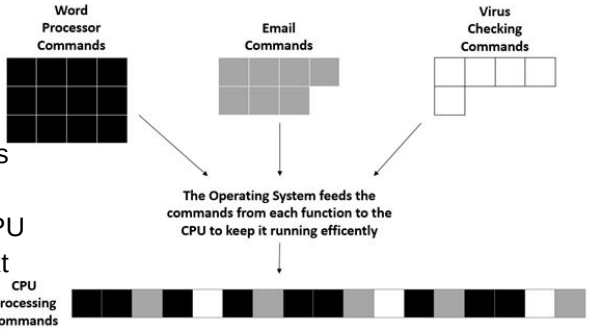
Command Driven Interface



Graphical User Interface

Memory management and multitasking

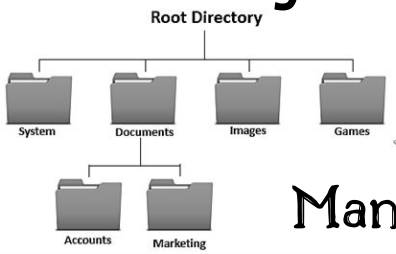
The CPU works at a much higher speed than RAM and can work at full capacity and process one commands without waiting for the next as operating system feeds multiple commands to the CPU so it is not waiting for the next command to be loaded.



Peripherals are controlled by software called device drivers. Standard drivers (mouse and keyboard) are included in the operating system, however more specialist peripherals may need drivers programmed by the manufacturer which convert signals into machine code.

User Management

One computer can be set up to allow several users to log in, each with their own personalised settings and preferences (i.e. left handed mouse) and these settings are all controlled by the operating system.



File Management

The most common way for files to be organised in a system is with a hierarchical system where files are stored in directories (known as "folders" in a Windows system). This is controlled by the operating system.

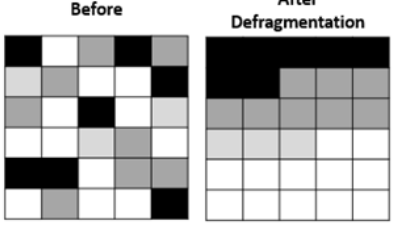
UTILITY SYSTEM SOFTWARE

Utility software are programs that are installed to perform a specific function, usually to improve the efficiency or security of a computer system.

ENCRYPTION

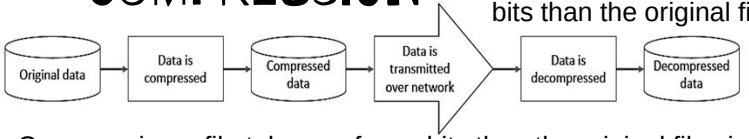
Encryption software converts data into an unreadable format which only authorised users can decode to stop cyber-criminals from "listening in" when messages are transported around a network.

Defragmentation



As files are deleted, they leave gaps and future files fill these gaps by splitting data into small chunks. This can slow down a system and defragmentation (also known as "defrag") software allows the system to reorganise the files so that the pieces of data are put back together.

DATA COMPRESSION



Compressing a file takes up fewer bits than the original file size and can save space.

Compressing a file takes up fewer bits than the original file size and can save space. When data is compressed it can be transmitted over a network more quickly than sending a large file in a decompressed state.

Backing up data allows a copy to be stored in case the original data is lost or damaged

- **Full -** backs up everything
- **Incremental -** only backs up those files which have been altered since last backup

Systems Software

Revise it

Read through the handout and then select a revision technique from those described in this section, you can even do more than one if you want!

Highlight

Highlight key words (maximum of 2 per sentence) and then cover the page and try to write down all the key words you can remember. Go back and fill in all the ones you have missed.

Mind map

Using the handout, draw a mind map and include as many colours, images and diagrams as you can to illustrate it

Bullet Points

Write the main headings (leaving space between each) and then write bullet points of the main key points you need to remember under each heading. Re-read the handout and add any missed points to your list.

Post-it notes

Write a key word and the definition on a post-it note and stick them around your study area as a reminder of the terminology.

Record your notes

Re-write the handout in your own words and record yourself using your phone as you read your notes aloud.

TEST YOURSELF

Cover your notes and the answer before you attempt to answer this practice exam question.

Describe THREE functions of an operating system *[6 marks]*

Mark your answer

1 mark for identifying a function (maximum for 3 marks for identifying functions) and 1 mark for explaining how that function works (maximum of 3 marks for describing the functions identified).

- The operating system communicates with hardware *[1 mark]* using device drivers to convert the signals into machine code. *[1 mark]*
- The operating system provides a user interface *[1 mark]* allowing the user to control the hardware and software without specialist programming knowledge. *[1 mark]*
- The operating system manages the memory and allows for multitasking *[1 mark]* to ensure the CPU is working at full capacity without having to wait for data to be fetched from the RAM chip. *[1 mark]*
- The operating system manages the users of the system *[1 mark]* by storing individual users preferences allowing the same computer to be customised by several different users. *[1 mark]*
- The operating system deals with file management *[1 mark]* to allow files to be stored and organised in directories. *[1 mark]*