

An operating system is software that manages a computer system.

Manage resources:

Manages peripherals such as input and output devices

- Communicates with and sends data input/output to a printer/monitor/other valid input/output device.

Manages printing using spooling

- Data is stored in a queue and is printed when printer is free. Can carry on working/ or log off when waiting for job to print.

Manages backing store

- Ensures that data is stored and can be retrieved correctly from any disk drive.

Manages memory (RAM)

- Ensures that programs/data do not corrupt each other and that all programs and data including itself is stored in correct memory locations.

Manages processes

- Ensures that different processes can utilise the CPU and do not interfere with each other or crash.

Manages security

- Allows creation and deletion of user accounts.
- Allows users to logon and change passwords.

Manages multitasking

- Allows a user to seemingly perform more than 1 task at a time
- Tasks are allocated a time-slice by the CPU

Manages Interrupts

- Hardware interrupts are generated when a key is pressed or when the mouse is moved
- Software interrupts are generated by a program requiring disk input or output.

Operating Systems Knowledge Organiser

Provides a user interface

The operating system provides a user interface by:

- allows **copying/deleting/moving/sorting/searching** of file or folders
- allows **access to system settings** such as hardware
- provides a **command line interface**
- allows users to **have more than one window open**
- provides a **graphical user interface** (Windows, Icons, Menus, Pointers)
- provides user with **errors/help messages**
- allows **customisation of interface**, e.g. change desktop background/layout
- allows user **to switch between tasks** (programs/windows)

Graphical User Interface (GUI)

- Windows/icons/menus/pointers
- Easy to navigate / uncomplicated
- Uses large amount of memory & disk space



Touch sensitive

- Very intuitive/ Easy to use
- Screens easily damaged

Command line interface (CLI)

- Quick to use if you know commands
- Little memory and storage needed
- Only suitable for experts



Menu driven

- Easy to navigate /Ideal for beginners
- Navigating can be long

Voice driven

- Quick /Hands free
- May misunderstand voice commands



Human-computer interaction (HCI) To allow a person and a computer system to communicate, an interface is required

Utility software

- **File transfer** - transfers data from one location to another. (e.g copying a file from one folder to another)
- **Formatting** - prepares a disk for use. All files may be erased ready for new data to be stored.
- **Compression** - making a file size smaller. Allows more data to be stored on the disk and speeds up data transfer (e.g via email).
- **System backup** – makes a copy of data to prevent data loss.
- **System restore (roll back)** – replaces lost or corrupt data with an earlier backup
- **Defragmentation** - Re-arranges/puts fragmented (split) files back together to speed up disk access.
- **Control panel** - gives the user control of software and hardware features. Enables the user to change settings e.g sound, device, display settings.
- **Virus scanning** -checks files for viruses
- **Firewall**-monitors incoming/outgoing network traffic
- **System monitoring** – monitors resources like CPU usage and amount of free RAM
- **Task management** – provides information about processes currently running
- **Disc scanning and repair** – detects and repairs physical errors on the disk

Must Know

Know it:

- Identify the 3 key ways an operating system manages a computer system
- List the key ways in which an operating system manages resources
- Explain what an interface is
- Explain what HCI is.
- Give examples of different user interfaces

Should know

Grasp it:

- Describe using keywords and with an example, the **FOUR** ways in which an operating system manages resources
- List 5 utility software programs
- Describe 2 utility software programs explaining their function
- State advantages and disadvantages of different user interfaces

Top of the class

Think it:

- Describe the functionality of the operating system in providing a user interface
- Describe the features provided by a GUI
- Describe 2 reasons for using a CLI.
- Describe 1 drawback of using a CLI.
- Describe 5 utility software programs explaining their function
- Explain advantages and disadvantages of different user interfaces