



# Operating Systems

## OS Basics

### A The Bigger Picture

**Software** means all the **programs** that contain the **instructions** to tell the computer **what to do**.

There are two main types of software: **systems software** and **applications**, which we'll cover later.

We're now focusing on the **operating system** because it's the prime example of systems software.

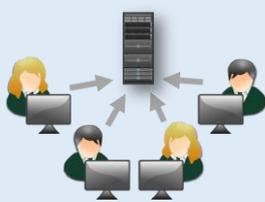
### B What is an OS?

The operating system **controls the operation** of the computer.

- It **manages** all the hardware and software or programs.
- And it **provides a link** between user and computer.

Basically, a computer simply wouldn't work without the operating system !

### C Two types of OS



**Server OS**

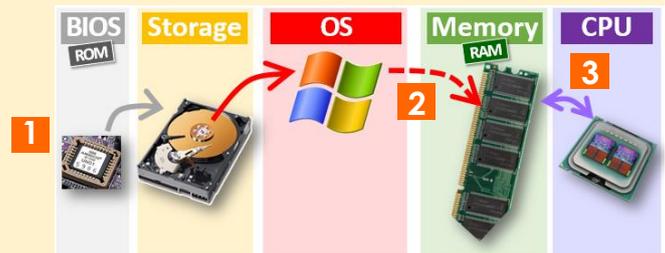
Controls the server behind the scenes in a **network**.



**Client OS**

Controls a computer for **one user**.

### D How the OS takes over



- 1 Computer boots using the **BIOS ROM**
- 2 The OS is loaded from **storage** into **RAM**
- 3 The **CPU** starts the **fetch-execute cycle**

### E Functions of an OS

The OS handles several key functions in a computer, such as:

- 1) **User interface**
- 2) **Multi-Tasking**
- 3) **Memory Management**
- 4) **File Management**
- 5) **Peripheral Management**
- 6) **Security**
- 7) **Utilities**

More follows on the 'Extra' pages.

### F Utilities

The OS uses programs called utilities to handle **housekeeping tasks**, such as:

- **Anti-virus**: Utility to protect from malicious programs called viruses
- **System Clean-up**: Deletes old system files to clear storage space
- **Disk De-frag**: Re-arranges files on a hard drive to improve access times
- **Software Updates**: Automates downloads of software updates

**Got It?  
Check**

Software

Operating System

Server OS

Client OS

7 Functions of OS

7 examples of Utilities



# Basics – Test Yourself

## A The Bigger Picture

What is **software**?

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Name two types of **software**:

**1**

**2**

## B What is an OS?

Give **3 points** to say what an OS does

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## C Two types of OS

Explain the **two types** of OS:

**1**

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**2**

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## D How the OS takes over

Outline 3 start-up steps for a PC:

**1**

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**2**

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**3**

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## E Functions of an OS

List **6 functions** of an OS:

**1**

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**2**

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**3**

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**4**

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**5**

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**6**

## F Utilities

Give **3 utilities** & say what they do

**1**

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**2**

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**3**

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**Think About...**

- Does your phone or PC do 'automatic updates' – and is it useful or annoying?
- Do you use anti-virus on your home PC – and how often do you update it?



# Extra - Functions of an OS

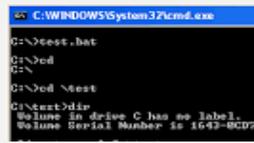
## i User Interface

OS provide two types of user interface:



### Graphical

A GUI uses windows, icons, menus & the pointer (**WIMP**)

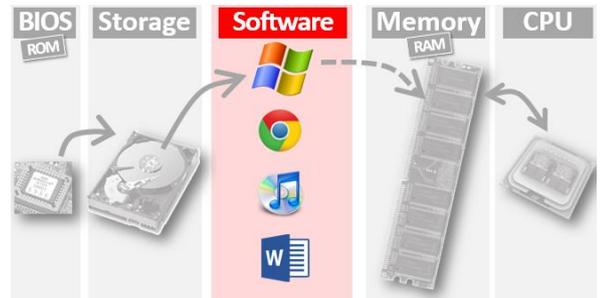


### Command Line

A CLI uses a prompt where users type commands, such as with Linux

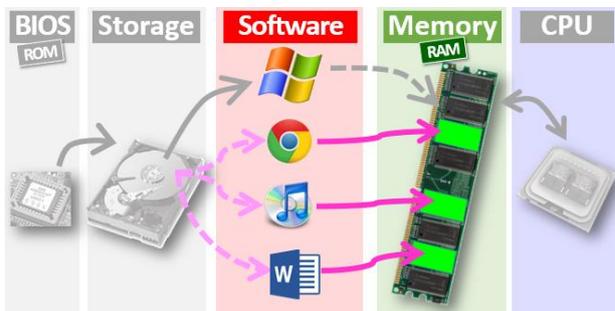
## ii Multi-Tasking

The OS makes it possible to **run several programs at once**.



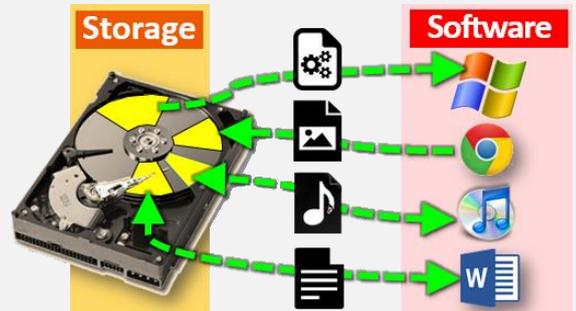
## iii Memory Management

The OS also **divides up the RAM** to share it between different applications.



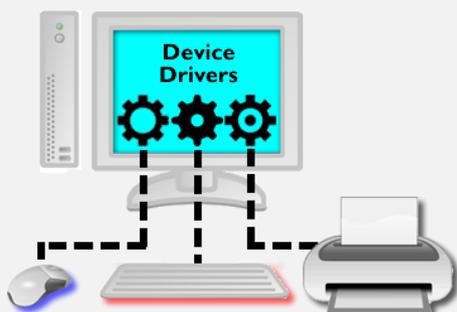
## iv File Management

The OS **organises all the files you install or save** on storage, such as the hard drive



## v Peripheral Management

The OS **manages connections with i/o peripherals** using special programs called **device drivers**.



## vi Security

The OS provides security by handling **logon accounts and passwords**, as well as **access rights**.



### Got It? Check

- GUI
- Memory management
- File Management
- Peripheral
- WIMP
- Memory/RAM
- Storage/Hard drive
- Device driver



# Extra - Test Yourself

## i User Interface

Explain the **2 types** of user interface

**1**

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**2**

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## iii Memory Management

Why is **memory management** needed?

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## v Peripheral Management

How does an OS manage **peripherals**?

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## ii Multi-Tasking

Why is **multi-tasking** so good for users?

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## iv File Management

Why is **file management** needed?

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## vi Security

How does an OS handle **security**?

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**Think About...**

- Multi-tasking is great – how many applications do you usually run at once?
- How do 'access rights' control what areas you can use on our school network?