

# Session 01

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## BACKGROUND AND SCENE SETTING



# What is a Personal Computer (PC)?

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- A computer that can fit on a single desk (or lap) for use by [ordinary people](#)
- Although the acronym “PC” technically refers to any such computer, in these sessions we will use the term to mean the multi-purpose machines running the [Microsoft Windows](#) operating system, as opposed to the Macintosh (Mac) machines made by Apple or Android-based devices such as Samsung’s Galaxy range of tablets



# The first desktop PC

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- IBM PC (model number 5150)
- Introduced on August 12, 1981
- Came with:
  - display monitor
  - keyboard
  - system unit
  - one or two floppy disk drives
  - 16 – 256 kilobytes of main memory (max)
- Cost ~\$1600 – that's over \$4000 today




 *for information only*

# An early “portable” PC

- Compaq Portable
- Shipped in January 1983
- Came with:
  - 9” green screen monitor
  - detachable keyboard
  - system unit
  - one or two floppy disk drives
  - 128kilobytes of main memory
- Looked like a sewing machine, about as powerful and weighed 13kg!
- Cost ~\$3,000 – that’s over \$7,000 today



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# What's changed over the last 30+ years?

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- The hardware technology that goes in to PCs has got faster, bigger, smaller and cheaper
- Microsoft Windows has pretty-much dominated – that's good or bad depending on your view
- The interfaces for end-users have got much simpler – graphical ('point and click') has replaced textual typing of (often cryptic) instructions
- The ability to do more than one thing at a time (multi-tasking) is now a reality
- There is heaps of great software to choose – much of it inexpensive or free
- The internet means we are no longer isolated on our PCs – we can communicate and access a pool of knowledge (the world-wide web – the 'web') that is virtually unlimited

## BUT ...

- There are still some people who do not feel comfortable using PCs and working online to use the web – they really are losing out ... and that's a shame



# PC changes over 30 years or so

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	<b>1980s</b>	<b>Today</b>	<b>Increase</b>
Processor speed	4.77 Megahertz	2.0 Gigahertz	400 times
Main memory (RAM)	64 Kilobytes	6 Gigabytes	~100,000 times
Display resolution	640 by 480 pixels	1920 by 1080 pixels	
Disk storage	10 Megabytes	1 Terabyte	~100,000 times
Cost (£) in today's money	£3,500	£400	about 1/10th

And, communication speeds have gone from a typical 4800 bits per second to around 50 megabits per second

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# Modern PCs

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## LAPTOP

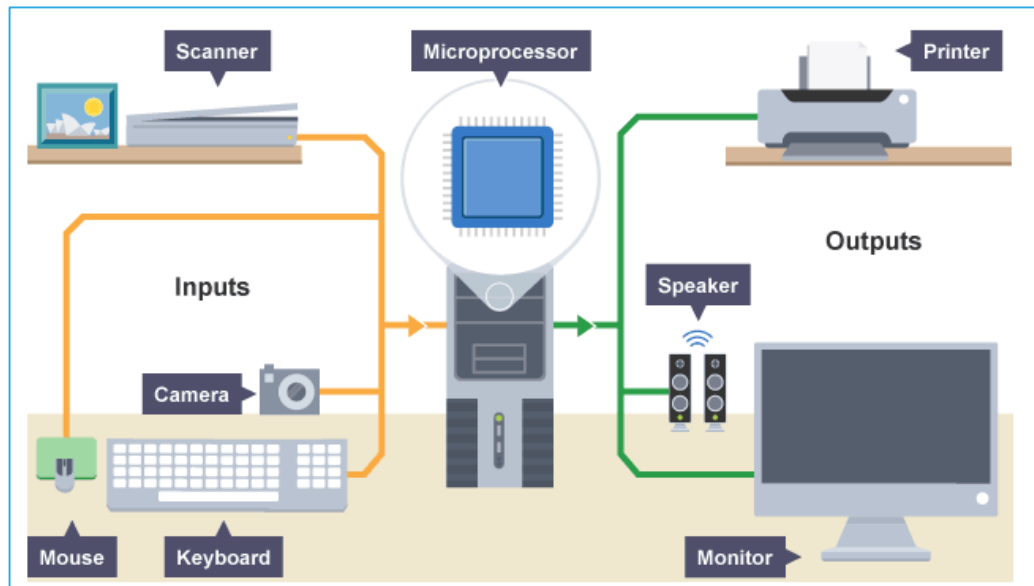


## ■ DESKTOP



# PC Hardware and Software

- **Hardware** is the stuff you can (mostly) see!
- You interact with the PC through hardware:
  - Primary input devices are the keyboard and mouse
  - The main output device is the screen or monitor
- **Software** – sometimes called programs or applications – is a set of instructions that does something useful
- For example, a very simple application might convert kilometres to miles
- Software runs (operates) on the hardware
- The main software application we will be using is called a web browser – it allows you to view and interact with web pages





# Common devices found around PCs

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- Monitor – part of a laptop
- Keyboard – wired or wireless – part of a laptop
- Mouse – wired or wireless
- TrackPad – usually part of a laptop's keyboard (can replace the need for a mouse)
- Hard Disk – built in to both laptops and desktops but can also add external units
- Printer/Scanner - wired or wireless
- Web Camera and Microphone – usually built into a laptop
- Speakers – basic speakers are usually built into a laptop
- DVD drives – often built in to laptops and desktops but can also add external units
- Modems / Routers – to access the internet and the web
- USB storage devices – sometimes called memory sticks, pen drives, etc. – useful for offline storage
- Other more specialist devices are sometimes used e.g. digital tablets and pens



# Bits and Bytes

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- A **bit** is the basic unit used by all computers
  - it is either 1 (one) or 0 (zero)
- A **byte (b)** is 8 bits long – one character takes up one byte, so for example:
  - the character A is 0100 0001
  - the character B is 0100 0010
- What do all those prefixes mean?:
  - Kilo (**Kb**) = 1000 bytes
  - Mega (**Mb**) = 1000 \* Kilo
  - Giga (**Gb**) = 1000 \* Mega
  - Tera (**Tb**) = 1000 \* Giga
- Typical file sizes on a PC:
  - one page, plain text (unformatted) letter 1Kb
  - one page formatted letter 20Kb
  - good quality digital camera image 3Mb
  - 3 minute music track 7Mb
  - 6 minute home video 250Mb
  - 2 hour movie 1.5Gb
- Typical PC hard disk capacity today:
  - at least 500Gb – more likely 1Tb or more

 *for information only*

# What is a PC Operating System?

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- The **most important software** that runs on a computer
- It manages the computer's **memory, processes**, and all of its **software, hardware and files**
- It also allows you to **interact** with the computer without knowing how to speak the computer's language
- It does this through a **graphical user interface** or GUI
- The GUI lets you use your mouse to click icons, buttons, and menus, and everything is clearly displayed on the screen using a combination of graphics and text
- Our operating system is **Microsoft Windows** – the latest version in Windows 10 – earlier versions are Windows 7 and Windows 8.1 and they are broadly similar to Windows 10

