

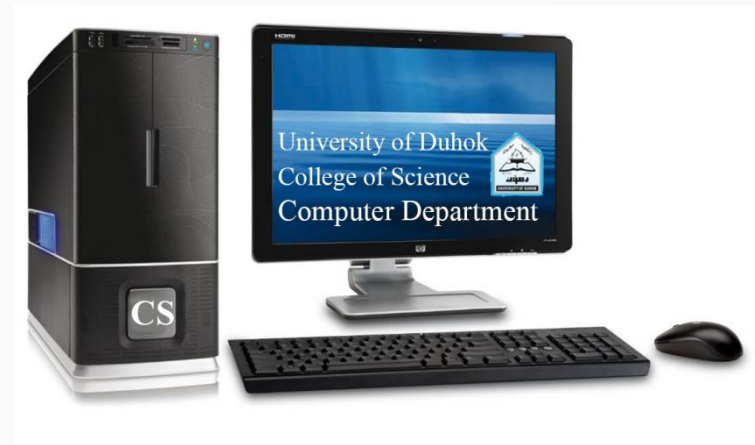
Computer Skills

Department of Biology

First Year

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2020

IT Lecture 1



What is a Computer?



➤ **A computer:-**

- It is an electronic general-purpose device, programmable that is capable of calculating, manipulating and storing results



Hardware and Software

Hardware

- The term hardware:- refers to the physical parts of a computer such as the system unit, mouse, keyboard, monitor etc.
- Those parts which you can see or touch

Software

- The software a set of instructions coded in a special way that computers can understand
- held either on computer's hard disk, CD-ROM or DVD and is loaded (i.e. copied) from the disk into the computers RAM (Random Access Memory), as and when required
 - **Operating system software** – works in the background and controls your software and hardware devices (e.g. Microsoft Windows)
 - **Applications software** – used to perform tasks (e.g. Microsoft Word)

General concepts of ICT

Information and Communication Technology (ICT)

- General term used to describe the use of computers as an aid to process and transfer information
- all forms of technology used to create, manipulate, store, exchange, and use information in its various forms (business data, voice conversations, still images, motion pictures, multimedia presentations, and other forms, including those not yet conceived)
- Also refers to other office equipment (such as faxes and telephones) which contain tiny computers
- Computer departments within large organizations are called IT departments
- Alternative are IS (Information Services)



Different types of computer

- Mainframe computers
- Supercomputer
- Networked computers
- Personal computers (desktop/tower)
- Portable computers (laptop/notebook)
- Hand-held computers

Mainframe computers



Mainframe computers – Cont.

- They are big, powerful (fast), expensive computers
- Used by large organizations such as large insurance companies, banks or multinational companies
- The power of the mainframe can be distributed amongst many people, connect hundreds or thousands of users
- Users connect via terminals which are located in different cities or even abroad
 - **Dumb terminals** – cannot be used unless they are connected to the mainframe
 - **Intelligent terminals** – e.g. a personal computer connected to a mainframe, can also be used when not connected to the mainframe

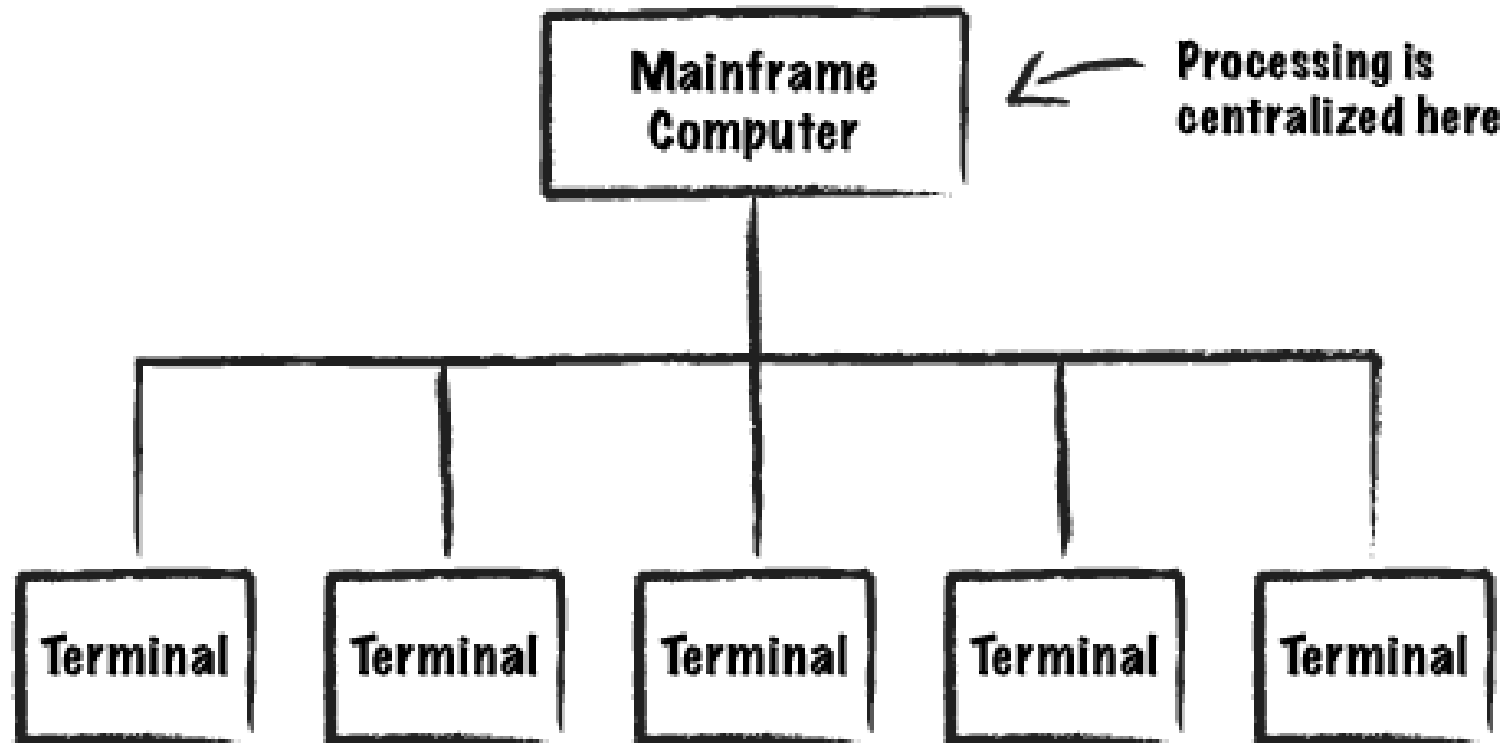
Mainframe computers – Cont.

➤ Mainframe features

- **Capacity:** very powerful computers often connected to many individual PCs over a network.
- **Speed:** much faster than PCs used for processing large amounts of data such as mail-shots, salaries, tax, etc.
- **Cost:** very expensive, only affordable by large companies.
- **Typical users:** only used by large companies including banks, buildings etc.

Mainframe computers – Cont.

Mainframe / Terminal



Supercomputers



Supercomputers – Cont.

- Supercomputer is non-ordinary computer. It is an extremely high performance computer that can perform hundreds of billions of floating point operations (gigaflops) per second.
- Supercomputers are very expensive and are employed for specialized applications that require immense amounts of mathematical calculations.
- It is a high performance computing machine designed to have extremely fast processing speeds.



Supercomputers – Cont.

- Supercomputers have various applications, such as weather forecasting, performing complex scientific calculations, modeling simulations, animated graphics, fluid dynamic calculations, nuclear energy research, petroleum exploration and large amounts of 3D
- The main difference between a **supercomputer** and a **mainframe** is that a supercomputer channels all its power into executing a few programs as fast as possible, whereas a mainframe uses its power to execute many programs concurrently.



Supercomputers – Mainframe

1. It utilizes all its processing speed and power in executing a few programs as fast as possible.
2. The performance of Supercomputer is measured in terms of Flop/s (Floating Point Operations per Second).
3. Supercomputers are used for scientific and engineering problems which are limited by processing speed and memory size.

1. It uses its processing power to execute multiple programs concurrently.
2. performance is measured in terms of MIPS (Millions of Instructions per Second).
3. Mainframes are used for problems which are limited by data movement in input/output devices, reliability and for handling multiple business transactions concurrently

Networked computers



Networked computers – Servers

- All computers on the internet can be divided into two groups (**Server** and **Client**)
- In a network client/server communicate with one another.
- The term server is often used to describe the hardware (computer), but it also refers to the software (applications) running on the computer.
- Many servers are dedicated, meaning they only perform specific task (email sever, web server)
- email sever is a computer that has SW running on it allowing it to serve email-related service.

Networked computers – Clients

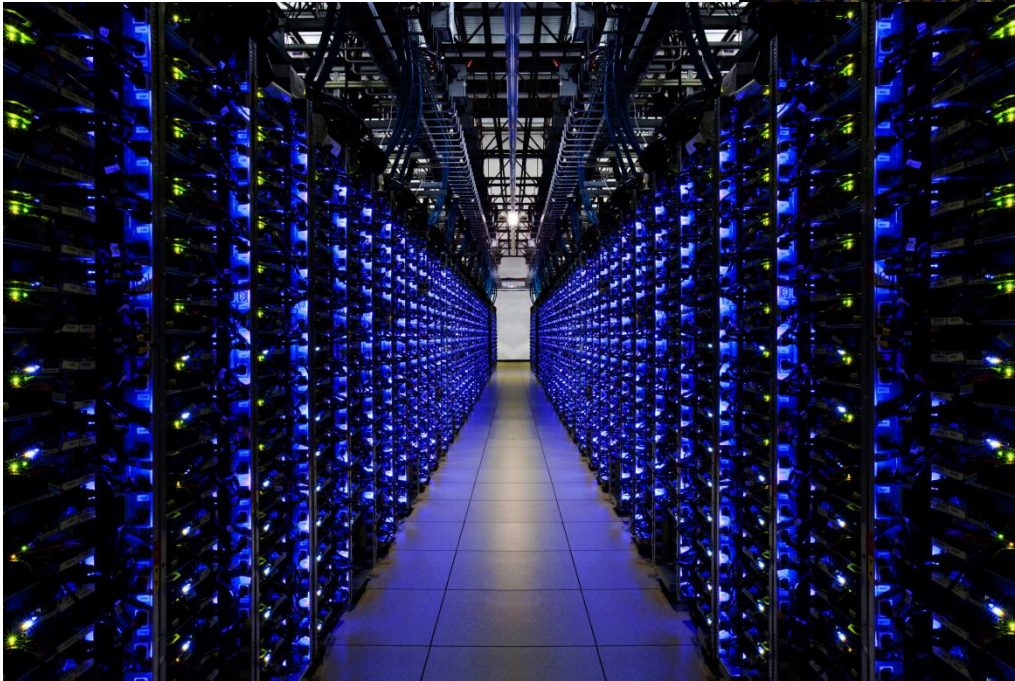
- Independent computers connected to server via network cards and cables/wireless are called **client**.
- Most likely your home or office computers
- and does not provide services to other computers.
- Clients run multiple client software applications that perform specific functions.
- An email applications such as Microsoft Outlook , Internet Explorer and Google Chrome are client software.
- The network also enables a fast Internet connection, printers and scanners to be shared

Servers and Clients communicate

- Your computer (client HW) is running a web browser such as **Google Chrome** (client SW).
- When you want to surf the web, your browser connect to a remote server and request a web page (like a Facebook page).
- The remote server (server HW) runs web server software (server SW) .
- the web server sends the web page to your computer's web browser.
- Your web browser displays the page.

Networked computers – Cont.

CBS NEWS



Chat Server

Personal computers



Personal computers – Cont.

- An indispensable tool for managers, office workers and home users
- Two main types:
 - **Desktop model** – the system unit sits horizontally on a desk and the monitor is placed on top
 - **Tower model** – the system unit is vertical so can be placed on the floor to save desk space
- Hardware devices (such as screen, keyboard and mouse) connected to the main system unit are called **peripheral devices**.

Portable computers



Portable computers – Cont.

- Similar in specification to a personal computer
- Screen and keyboard are integrated into a single unit
- Can be used from the mains or with a built-in rechargeable battery
- More expensive than personal computers due to miniaturization of computer components
- Ideal computer for business people who are constantly on the move

Hand-held computers



Hand-held computers – Cont.

- Hand-held computers, such as **personal digital assistants** (PDAs), have superseded electronic organizers
- Some use a stylus which you use to write or draw on the screen
- Can be connected to a PC to synchronize data
- PDAs can also be used as mobile phones and can access the Web to send and receive emails
- The distinction between mobile phones, cameras and PDAs is becoming more blurred



➤ **Any question**

THANK YOU