	جامعة المستقبل كلية العلوم قسم الفيزياء الطبية	

computer science

The first lecture

Subject: <u>PRINCIPAL OF COMPUTER1</u>

Class: First stage

Lecturer: Msc :Najwan thaeer ali

Introduction

Computers are essential tools used in education, work, and everyday activities, and understanding their basic components helps users operate them effectively. A computer system consists of **hardware** (physical parts) and **software** (programs that control the hardware). Basic computer skills also include managing the **desktop environment, screen settings, taskbar, system controls**, and properly **exiting or shutting down the computer**.

A Brief Overview of the Computer

Computers play a significant role in modern life by enabling fast and efficient processing of calculations and information. One of the key features that distinguishes computers from humans is their extremely high speed and remarkable accuracy in performing tasks. In addition, computers can operate continuously for long periods without fatigue or loss of efficiency.

Computers are widely used in various fields and institutions, including airports, healthcare centers, archives, police stations, banks, financial institutions, and administrative offices. Their versatility allows them to support many different tasks, making them essential tools in both professional and organizational environments.
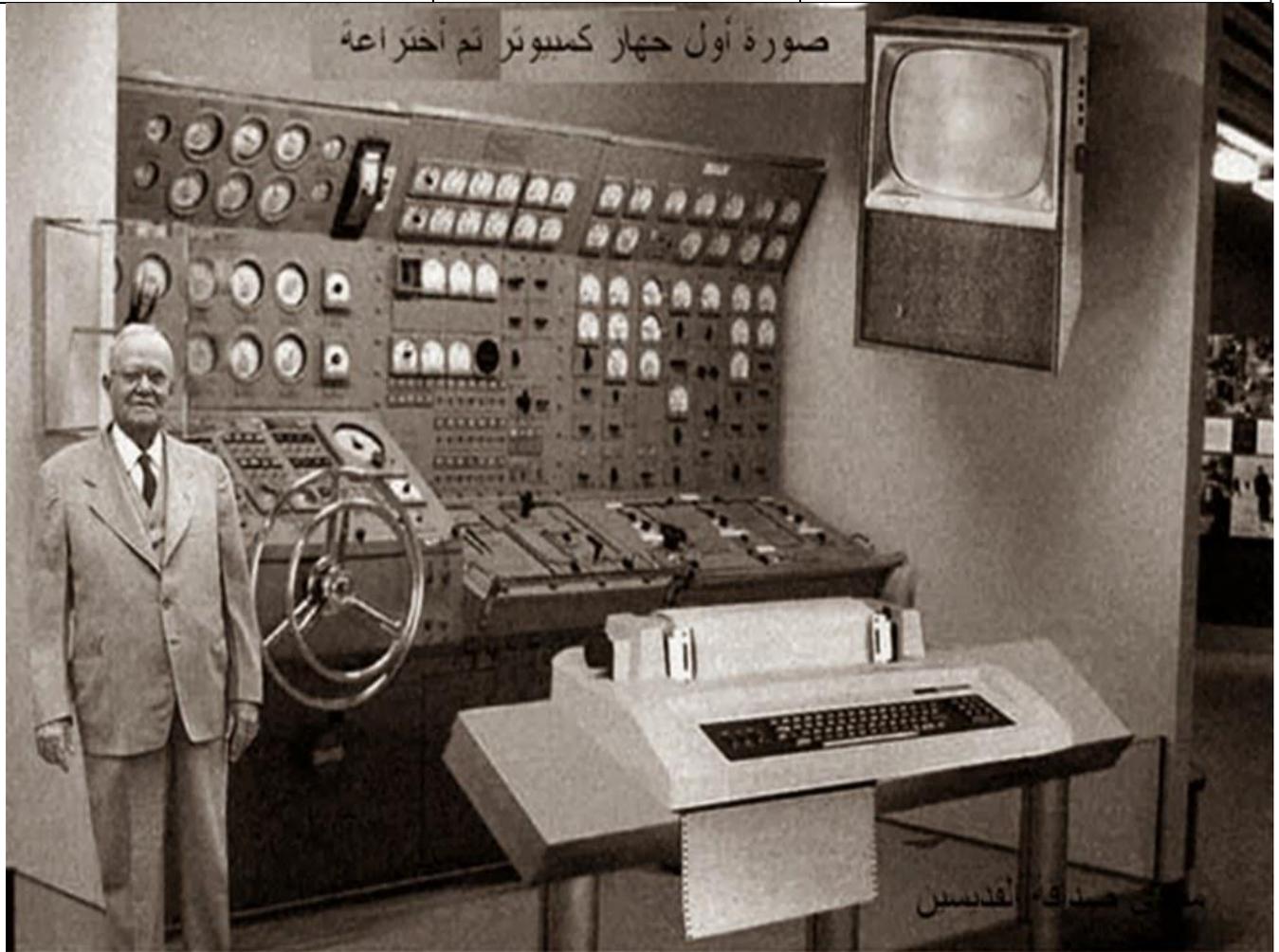
Computer Generations

First Generation Computers (1942–1954)

During this period, computers were built using vacuum tubes. They operated using machine language (binary: 0 and 1), which made them difficult to use and required specialized operators. These computers were very large, relatively slow, had limited memory, and produced a large amount of heat.

Second Generation Computers (1952–1964)

This generation used transistor technology, which made computers smaller, faster, and more reliable. Memory capacity also improved through the use of magnetic core memory, and the heat generated by computers was reduced compared to the first generation.
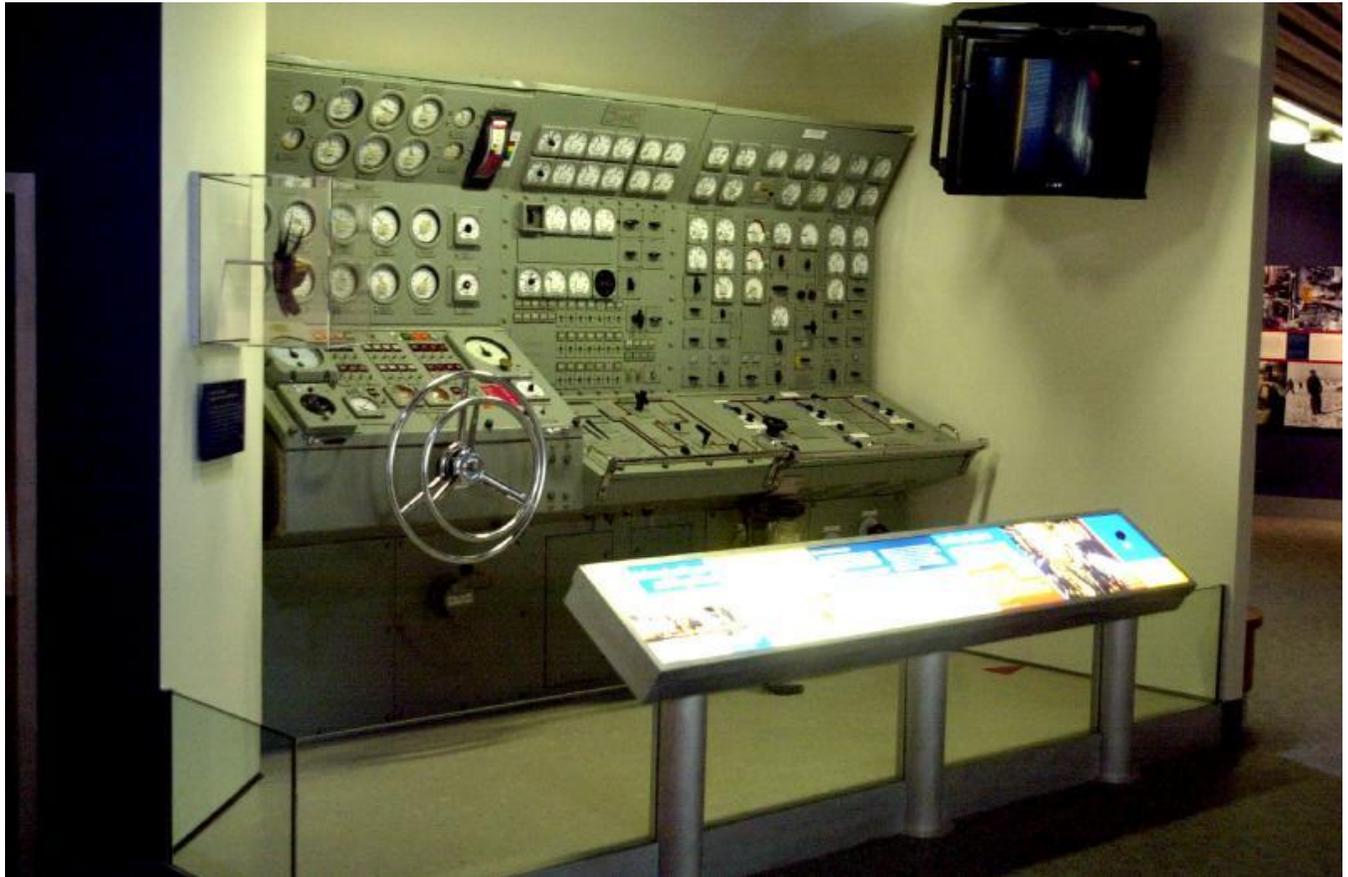
Third Generation Computers (1964–1972)

This generation used **integrated circuits (ICs)** in computer manufacturing. Computers became **smaller, faster, and more efficient**, with **larger memory capacity**. They also produced **much less heat** compared to second-generation computers. One of the key developments of this generation was the **emergence of smaller computers and improved operating systems**.

Fourth Generation Computers (1972–1991)

Computers in this generation became **much smaller, faster, and less expensive**, with **large memory capacity**. Processing speed was measured in **millions of operations per second**. Important developments included the introduction of **RAM and ROM memory**, the use of **hard disks and floppy disks**, more advanced **input and output devices**, and **improved operating systems**.

Fifth Generation Computers (1992–Present)

This generation focuses on the development of **intelligent computers** with higher efficiency. It includes technologies related to **artificial intelligence**, such as **voice recognition**, **natural language processing**, and the ability to **analyze and execute commands using different languages and dialects**.

- **Computer:**
  An electronic digital device that has the ability to receive data, process it, and output the results in the form of information.

- **Data:**
  A set of facts and observations collected from a specific statistical population and entered into the computer to be processed and produce processed results.

- **Information:**
  A set of results obtained from the computer after processing the data, such as the final result of a student. These results help in the decision-making process.

- **Central Processing Unit (CPU):**
  One of the main components of a computer that interprets instructions and processes the data contained in software programs.

- **Digital:**
  Representing data in the form of **0 and 1**, which is the language understood by the computer. This language is called **machine language**, for example: **0101010**.

Windows 10 Operating System:

Windows 10 is an operating system for computers produced by **Microsoft**. It was first unveiled on **September 30, 2014**, and officially released on **July 29, 2015**. It is designed to run personal computers and provides a graphical user interface that allows users to manage files, run programs, and interact with hardware easily.
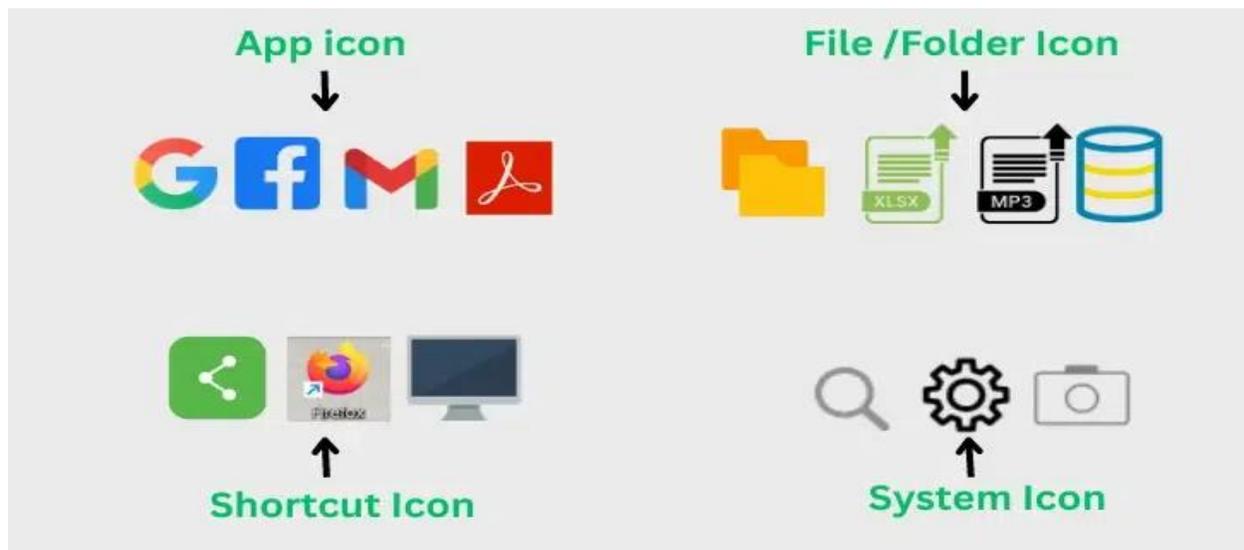
Desktop Components

What is meant by the Desktop?

The **Desktop** is the main screen area that appears after turning on the computer and logging into the operating system. More precisely, the desktop consists of icons and buttons on the screen that represent a group of programs, allowing users to control most of the computer's settings through a graphical interface that simulates an office desk. This environment is called the **Desktop Environment**.

What is meant by Icons?

An **Icon** is a small graphical symbol that appears on the main screen interface. It may represent a **file, folder, program, or a button** on the toolbar.

Different Types of Computer Icons

Now, there are several types of icons such as

- **System Icons:** Some icons are used for basic functions like the start menu, system settings, etc.

- **Application Icons:** Application icons are like representing the software program. For example facebook ,youtube and Twitter have some unique icons.

- **File and Folder Icons:** File or folder icons help user to identify and organize their documents, files, or folders in their computer file manager.

- **Shortcut Icons:** Shortcut icons provide quick access to applications and files, usually placed on the desktop or taskbar.

Applications of Icons

In today's digital world icons have many applications such as:

- **Operating Systems:** Icons are used to easily navigate and manage systems such as files, folders, functions, or applications.

- **Web Design:** Icons help allot files, folders, functions, or applications to users in navigating and providing quick information and certain actions such as sharing content, searching, and accessing menus.

-

- **Mobile Apps:** Since the screen size of mobile apps is small these are usually the ones that give the most valuable touch-friendly functions. Software Applications: Icons are also applied in software applications to improve the user interface of the software and make features more accessible.

-

- **Accessibility:** Alt text is added with icons so that if the visuals are not loaded, we can navigate the content using a screen reader.

How to Arrange the Desktop

To arrange icons by **name, type, date, or size**, right-click on an empty area of the desktop, then click **Arrange Icons**. After that, select the command that indicates how you want to arrange the icons (such as **by name, by type**, and so on).

If you want the icons to be arranged **automatically**, click **Auto Arrange**.

If you prefer to arrange the icons **manually**, click **Auto Arrange** again to remove the check mark.

Taskbar

The **Taskbar** in **Windows 10** is located at the bottom of the screen. It is a bar that contains a group of icons such as the **sound icon**, **internet network icon**, **time**, and **date**, which are usually located on the right side of the bar. It also includes the **Windows icon** on the left side of the screen, which represents the **Start Menu**.

The taskbar consists of the following parts:

1. **Start Menu:**
   Contains all installed programs and applications on the computer.

2. **Sound:**
   Allows the user to control the volume, either increasing or decreasing it.

3. **Date and Time:**

Used to set and view the system's date and time.

4. **Active Applications:**

Applications that are currently running, such as the internet browser or antivirus programs.

5. **Open Windows:**

The windows that are currently open, allowing the user to switch between them easily.

How to Shut Down the System and Computer

In **Windows 10**, to shut down the system, follow these steps:

1. Click **Start**.

2. Click the **Power** button once.

3. A menu will appear with several options.

4. Select **Shut down**.

To Restart the System (Restart):

1. Click **Start**.

2. Click the **Power** button once.

3. A menu will appear with several options.

4. Select **Restart**.

To Put the Computer into Sleep Mode:

1. Click **Start**.

2. Click the **Power** button once.

3. A menu will appear with several options.

4. Select **Sleep**.