Ministry of Higher Education and
Scientific Research
Al Kut University College
Medical Physics Department

Fundamental Of Computer Science

First Stage

“ THEORETICAL ”

Lecture 2

Assistant Lecturers :

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Computer Components, Operating System and Graphical User Interface

Parts of a Computer and Their Functions:

1.Central Processing Unit (CPU)

is the primary component of a computer that acts as its “control center.” The CPU, also referred to as the “central” or “main” processor, is a complex set of electronic circuitry that runs the machine's operating system and apps.

2.Memory

A.Random Access Memory (RAM)

is a vital component of the computer. Often referred to as the computer’s “short-term memory,” RAM temporarily stores data that the CPU needs quick access to while running programs.

B. Read Only Memory (ROM)

It is used to store important information which is used to operate the system. we can only read the programs and data stored on it. It is also known as permanent memory.

C.hard disk drive (HDD)

All primary computer hard drives are found inside a computer case and are attached to the computer motherboard. Used to store data permanently.

3.Motherboard

The motherboard is a crucial circuit board that connects all the components of a computer system, allowing them to communicate and work together seamlessly.

4.Power Supply Unit (PSU)

is a crucial component of any computer, responsible for converting the electricity from wall outlet into the specific voltages needed by the internal components of the system.

5.Input Devices (Keyboard, Mouse, etc.)

Input devices are essential peripherals that allow you to interact with your computer, sending commands and data to the system. The most common input devices are the keyboard and mouse.

6. Output Devices(Monitor,Printer)

Output devices are peripherals that allow your computer to display the results of its processing, translating digital data into a form that you can see, hear, or interact with. The most common output devices are monitors and printers.

7.Computer Port :

is a point of connection between the computer and its peripheral devices. The main function of the computer ports is to act as a point of attachment, where the cable from the peripheral can be plugged in and allows data to flow from and to the device.

Personal Computer :

is designed for portability with "clamshell" design, where the keyboard and computer components are on one panel, with a hinged second panel containing a flat display screen. There are many types of personal computers (laptop, tablet, smartphones, etc.)

Understanding the Basics of Common Operating Systems

Operating systems (OS) form the foundation of modern computing, enabling seamless interaction between users and hardware. They manage hardware resources, run applications, and provide a user interface to simplify interactions. Understanding the basics of common operating systems helps users navigate technology more effectively, whether on personal computers, servers, or mobile devices.

Operating System – Definition:

An operating system is a program that controls the execution of application programs and acts as an interface between the user of a computer and the computer hardware.

What is a User Interface?

A user interface is the point of interaction between the user and a system. It can be as simple as a button on a website or as complex as a dashboard for managing large-scale systems. The UI determines how users input commands and receive feedback, making it a critical aspect of usability.

Overview of Mouse Functions

A mouse allows users to interact with the graphical user interface (GUI) by controlling the on-screen pointer. It translates physical movements into actions, enabling users to select, open, drag, and manipulate objects on the screen. The standard mouse typically has three main components:

1. Left Button: Primary interaction tool for clicking and selecting.
2. Right Button: Provides access to contextual menus.
3. Scroll Wheel: Facilitates scrolling through content and, in

some cases, acts as a third button.

Essential Mouse Techniques

Here are the most commonly used mouse techniques:
1. Pointing and Clicking
2. Double – Clicking
3. Right – Clicking
4. Dragging – Dropping
5. Scrolling
6. Hovering
7. Middle – Clicking
8. Click – Select
9. Custom Button Actions

What is a status bar?

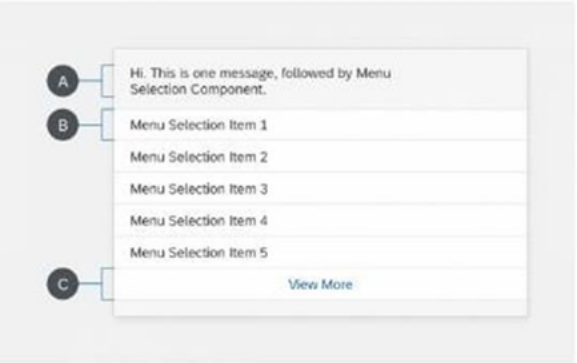
A status bar is a thin horizontal bar that provides users with information related to the current state of an application or device they're using. The minimal design of the status bar allows users to always have easy access to status-related info while they use an application like a word processor or a device like a smartphone.

- Menu and Menu-selection:

The menu selection component includes a list of options that users can select to help them complete an action. These actions let users to give a specific answer to the digital assistant from a list of preset options.

Structure

The menu selection component can display up to five relevant options to avoid a long list of options.



Menu Selection Structure

A. Header Text

The header text includes a response from the digital assistant and introduces the user to the menu options.

B. List Item

The list item displays options that the user can select.

C. "View More" Button

The "View More" button lets the user to expand the menu and see additional options.

Concept of Folders and Directories

Folder: In computers, a folder is a place where you can keep and organize files like documents, applications, and other data. It functions like a physical folder that holds papers, helping you sort and store various items on your computer. You can also place folders within other folders, which are called sub-folders, to help keep your files even more organized.

Types of folders

There are two main types of folders: Hierarchy-based folders and Tag-based folders.

1. Hierarchy-based folders: These are like trees. You start with a main folder, and then you can add more folders inside it.

2. Tag-based folders: Instead of organizing files into a hierarchy, you can assign tags to them. Tags are like labels that you stick on files to group them. You can give a file multiple tags, and it can belong to different groups based on those tags. It's like putting stickers on files to easily find them later.

   How to create a folder?

   To make a folder, follow these simple steps:

   •Go to your computer or device where you want to create the folder.

   •Right-click on a space on your screen. If you're using a touchscreen, tap and hold on a space.

   •A menu will pop up. Look for an option that says "New" or "Create" and click on it.

   •From the options that appear, choose "Folder."

   •A new folder will appear on your screen with the default name "New Folder" or something similar.

   •Type in a name for your folder that describes what it will contain. For example, if you're making a folder for pictures, you might name it "Photos."

   •Press Enter or click away from the folder to save the name.

   Now you've created a folder! You can double-click on it to open it and start adding files or documents.

Directory: is a container that is used to contain folders and files. It organizes files and folders in a hierarchical manner. In other words, directories are like folders that help organize files on a computer. Just like you use folders to keep your papers and documents in order, the operating system uses directories to keep track of files and where they are stored.

Different Types of Directory in OS

In an operating system, there are different types of directory structures that help organize and manage files efficiently. Each type of directory has its own way of arranging files and directories, offering unique benefits and features. These are :

1) Single-Level Directory
2) Two-Level Directory
3) Tree Structure/ Hierarchical Structure
4) Acyclic Graph Structure

Opening and Closing Different Windows in Computer Systems

Open windows

a. On Windows OS

- Using Start Menu:

o Click the Start button (Windows icon).

o Search or browse for the application you want.

o Click to open the application window.

- Using Desktop Shortcuts:

Double-click the shortcut icon of the desired application on the desktop.

Closing windows

a. Using Close Button

- Locate the close button (usually marked as "X" in the top-right corner on Windows and the red dot on macOS) and click it.

b. Keyboard Shortcuts

- Windows: Alt + F4 closes the active window.

Creating a shortcut using the Desktop menu

- Go to the Desktop and press the Applications key (or Shift + F10) for the Desktop menu. You may need to press (Control + Spacebar), if necessary, to unselect an icon on the Desktop.
- Arrow down to New and press Enter.
- Arrow down to Shortcut and press Enter.
- Type in the full location of the file or folder or application or Webpage item. Alternatively, Tab to the Browse button, press Enter, and use arrow keys to find the item that you want.
- Press Enter to select the item.
- Tab to the Next button and press Enter.
- Give it a name and press Enter.
- The new icon will appear on the Desktop.