# Application Software and System Software:

- **Application Software:** Designed for specific tasks or functions like word processing, spreadsheets, design software, etc. Examples include Microsoft Word, Excel, Adobe Photoshop, etc.

- **System Software:** Manages and supports the computer system. Includes operating systems, device drivers, utility

programs, etc. Examples: Windows, macOS, Linux.

## Open-Source Software and Proprietary Software:

- **Open-Source Software:** Software whose source code is freely available for anyone to use, modify, and distribute. Examples: Linux OS, Firefox browser.

- **Proprietary Software:** Owned and controlled by individuals or companies, with restricted access to the source code.

Examples: Microsoft Windows, Adobe Photoshop.

## Computer Languages and Types:

- **Machine Language:** Lowest-level programming language directly understandable by a computer's hardware. Composed of binary code (0s and 1s).

- **Assembly Language:** Uses mnemonics to represent machine code instructions, making it easier for humans

to read and write.

- **High-Level Language:** Easier to understand and program in than machine or assembly languages. Examples: Python, Java, C++.

## Translators, Compiler, Interpreter:

- **Translator:** Converts high-level language code into machine code.

- **Compiler:** Translates the entire program into machine

code before execution. Produces an executable file.

- **Interpreter:** Translates and executes high-level code line by line, without generating an intermediate machine code.

## Operating System and its functions:

- **Operating System (OS):** Software that manages computer hardware and provides common services for computer programs.

- **Functions:**

- **Resource Management:** Manages hardware resources like CPU, memory, and storage.

- **User Interface:** Provides an interface for user interaction.

- **File Management:** Organizes, stores, and retrieves data on storage devices.

- **Security:** Controls user access and protects data.

- **Process Management:** Handles multitasking and resource allocation for running programs.

## Types of Operating Systems:

- **Single-User:** Supports one user at a time.

- **Multi-User:** Allows multiple users to interact with the system simultaneously.

- **Multi-Tasking:** Capable of running multiple tasks or

programs concurrently.

- **Time-Sharing:** Shares the system resources among multiple users by dividing CPU time into intervals.

- **Distributed:** Spreads tasks across multiple computers, often in a network.

- **Real-Time:** Responds to events within a specific time frame, crucial for tasks like process control and scientific simulations.