Relative addressing mode: This mode uses an offset or displacement from the current program counter or instruction pointer to calculate the operand's address.

Indexed addressing mode: Here, the operand's address is calculated by adding an index register's contents to a base address specified in the instruction.

BASIC I/O OPERATIONS

In computer organization, Input/Output (I/O) operations refer to the process of transferring data between the computer's central processing unit (CPU) and external devices such as keyboards, mice, printers, and storage devices. There are two types of I/O operations:

Input operations: These involve receiving data from an external device and storing it in the computer's memory or registers. Examples of input operations include reading a file from a hard drive or receiving user input from a keyboard.

Output operations: These involve sending data from the computer's memory or registers to an external device. Examples of output operations include displaying text on a monitor or printing a document.

In order to perform I/O operations, the CPU communicates with input/output devices through input/output controllers. These controllers manage the transfer of data between the CPU and the external devices. The communication between the CPU and the controllers is done through special instructions known as Input/Output instructions.

There are several ways to perform I/O operations in computer organization, including:

Programmed I/O: This involves the CPU issuing I/O instructions to the controller to perform the data transfer. The CPU waits for the controller to complete the operation before proceeding with the next instruction.

Interrupt-driven I/O: In this method, the CPU sends a request to the controller to perform an I/O operation and continues with other instructions. The controller sends an interrupt signal to the CPU when the operation is complete, allowing the CPU to process the data.

Direct Memory Access (DMA): This method allows the controller to access the computer's memory directly, without the involvement of the CPU. This results in faster data transfer speeds, as the CPU is not required to transfer the data.

Overall, I/O operations are an essential component of computer organization and allow for the exchange of data between the computer and external devices.