# Interface circuits

An I/O interface consists of the circuitry required to connect an I/O device to a computer bus. On one side of the interface, we have bus signals. On the other side we have a data path with its associated controls to transfer data between the interface and the I/O device - port, we have two types:

* serial port and
* parallel port

A parallel port transfers data in the form of a number of bits (8 or 16) simultaneously to or from the device. A serial port transmits and receives data one bit at a time. Communication with the bus is the same for both formats. The conversion from the parallel to the serial format and vice versa, takes place inside the interface circuit. In parallel port, the connection between the device and the computer uses a multiple-pin connector and a cable with as many wires. The arrangement is suitable for devices that are physically close

to the computer. In serial port it is much more convenient and cost effective where longer cables are needed.

Typically the functions of an I/O interface are:

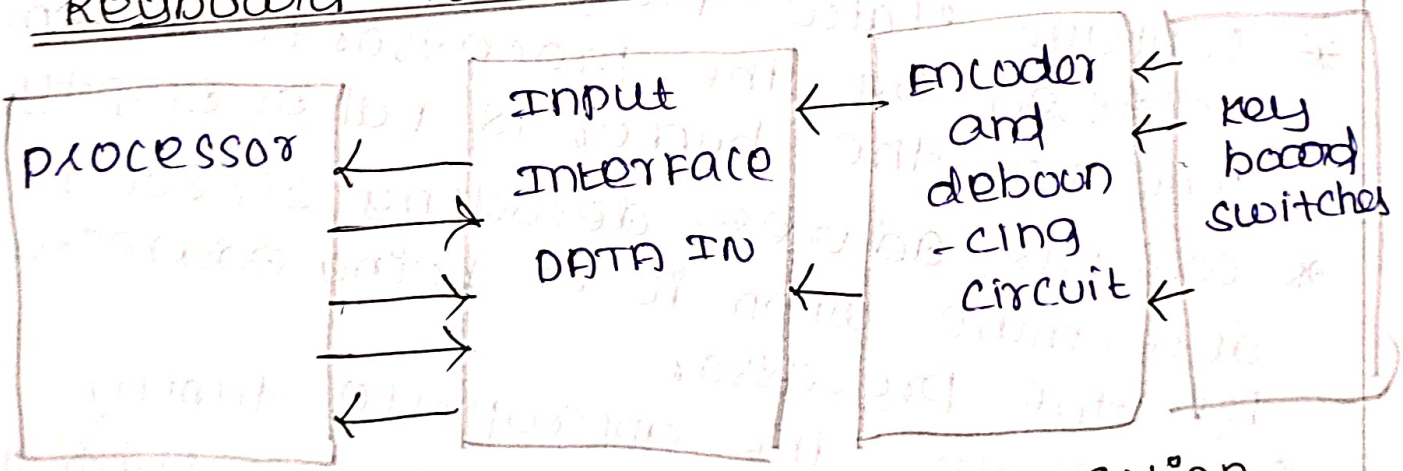
* provides a storage buffer for at least one word of data.
* contains status flags that can be accessed by the processor to determine whether the buffer is full or empty.
* contains address-decoding circuitry to determine when it is being addressed by the processor
* Generates the appropriate timing signals required by the bus control scheme.

* performs any format conversion that may be necessary to transfer data between the bus and the I/O device, such as parallel-serial conversion in the case of a serial port

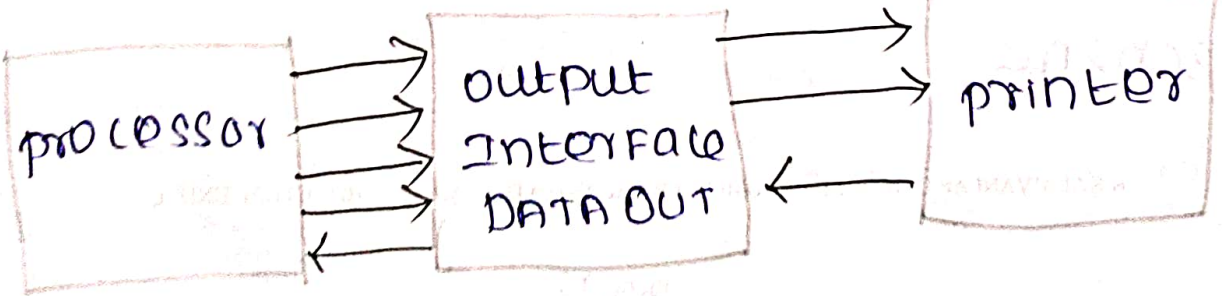
parallel port: The hardware components needed for connecting a keyboard to a processor consider the circuit of input interface which encompasses

* Status Flag, SIN
* R/~W
* master-ready
* Address decoder

Keyboard to processor connection




Printer to processor connection



The hardware components needed for connecting a printer to a processor are: the circuit of output interface, and

* Slave-ready
* R/~W
* Address decoder
* Handshake control

The input and output interfaces can be combined into a single interface. The general purpose parallel interface circuit that can be configured in a variety of ways. For increased flexibility, the circuit makes it possible for some lines to serve as inputs and some lines to serve as outputs under program control.

Serial port: A serial interface circuit involves- chip and register select, status and control, output shift register, DATAOUT, DATAIN, Input shift register and serial input/output.