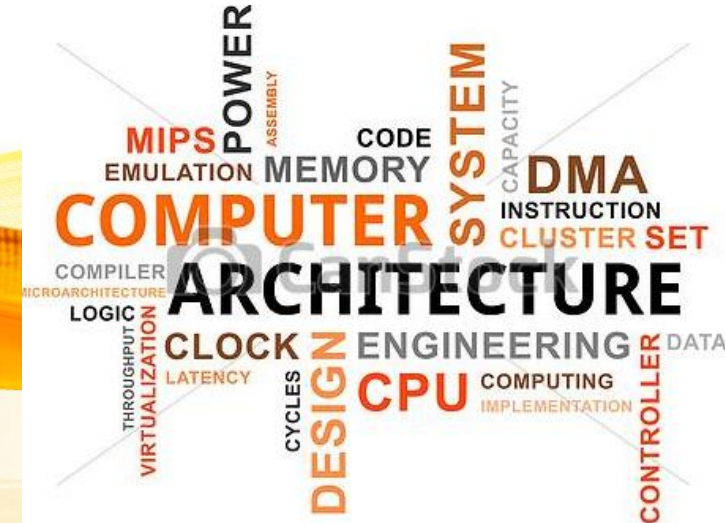


# UNIT V

## I/O ORGANIZATION AND PARALLELISM

Accessing I/O devices – Interrupts – Direct Memory Access - Buses–  
**Interface circuits** - Standard I/O Interfaces (PCI, SCSI, USB)–Instruction  
Level Parallelism : Concepts and Challenges – Introduction to multicore  
processor Graphics Processing Unit.





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# Recap the previous Class



# Function of I/O Interface

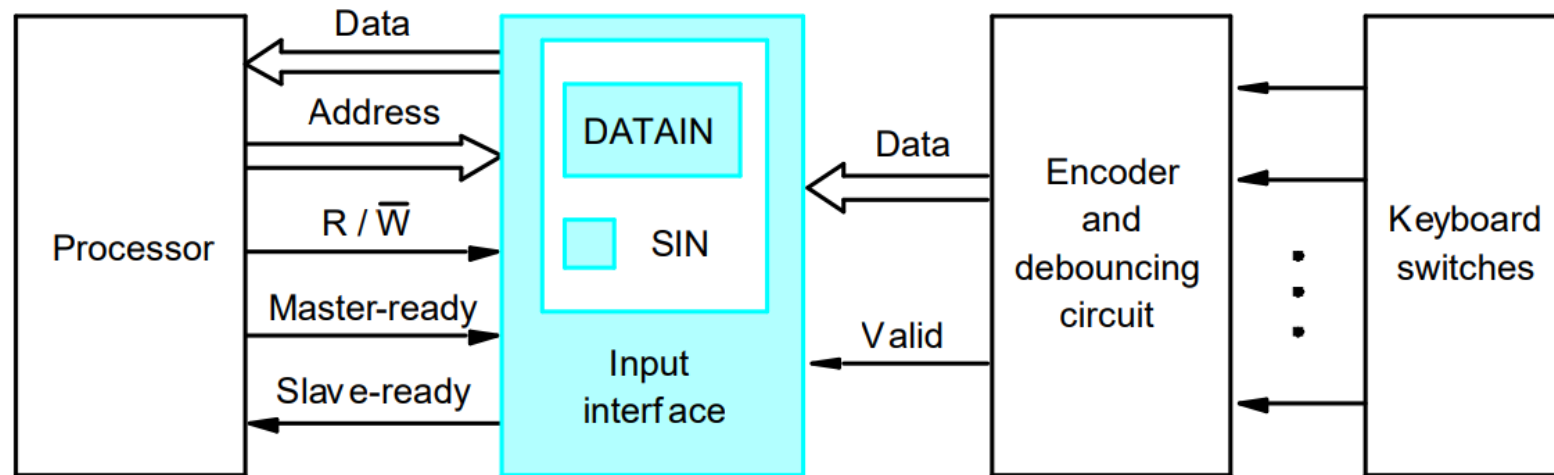
- Provide a storage buffer for at least one word of data;
- Contain status flags that can be accessed by the processor to determine whether the buffer is full or empty;
- Contain address-decoding circuitry to determine when it is being addressed by the processor;
- Generate the appropriate timing signals required by the bus control scheme;
- Perform any format conversion that may be necessary to transfer data between the bus and the I/O device.

# Parallel Port

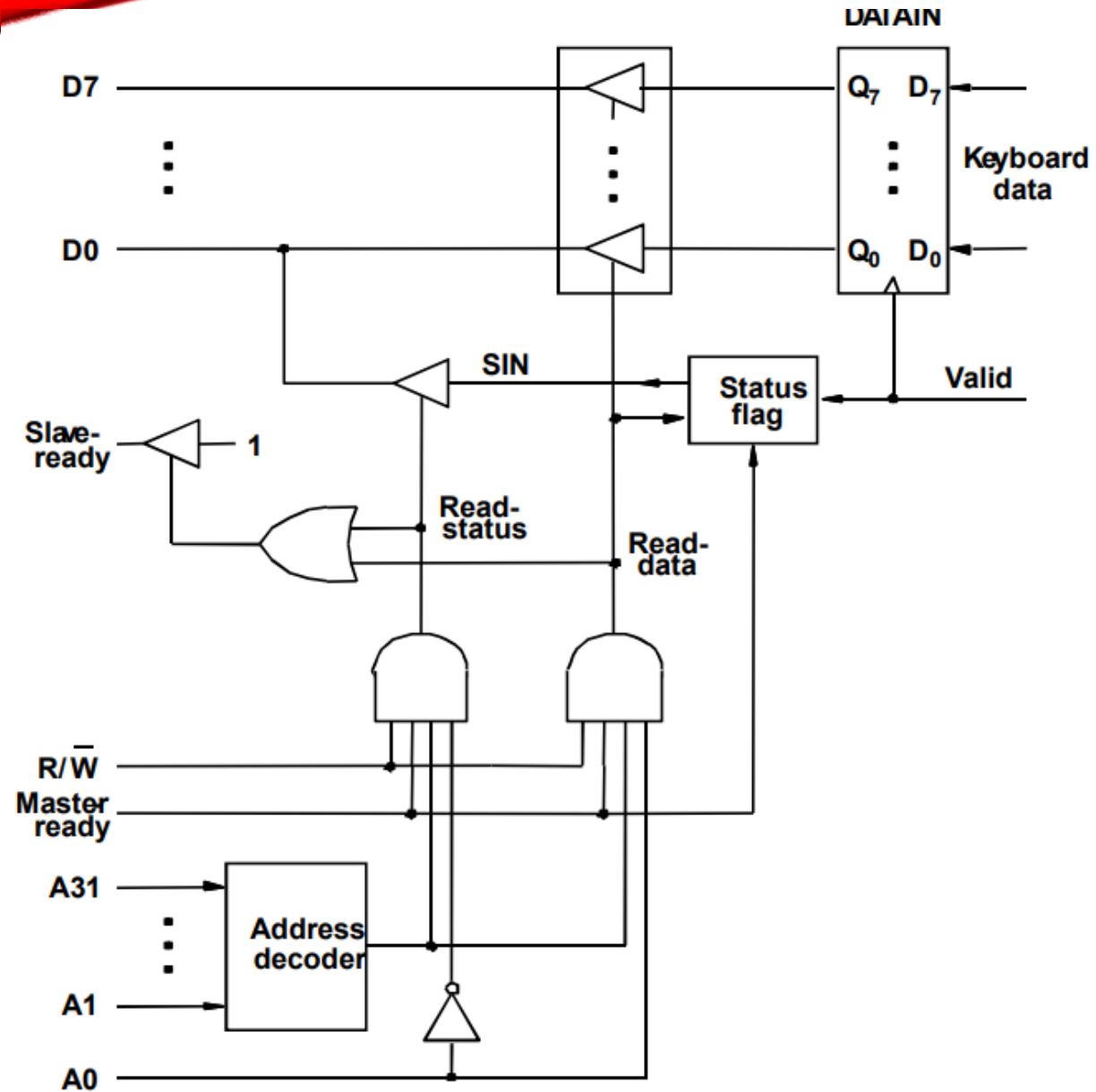
- A parallel port transfers data in the form of a number of bits, typically 8 or 16, simultaneously to or from the device.
- For faster communications

# Parallel Port – Input Interface (Keyboard to Processor Connection)

Keyboard to processor connection

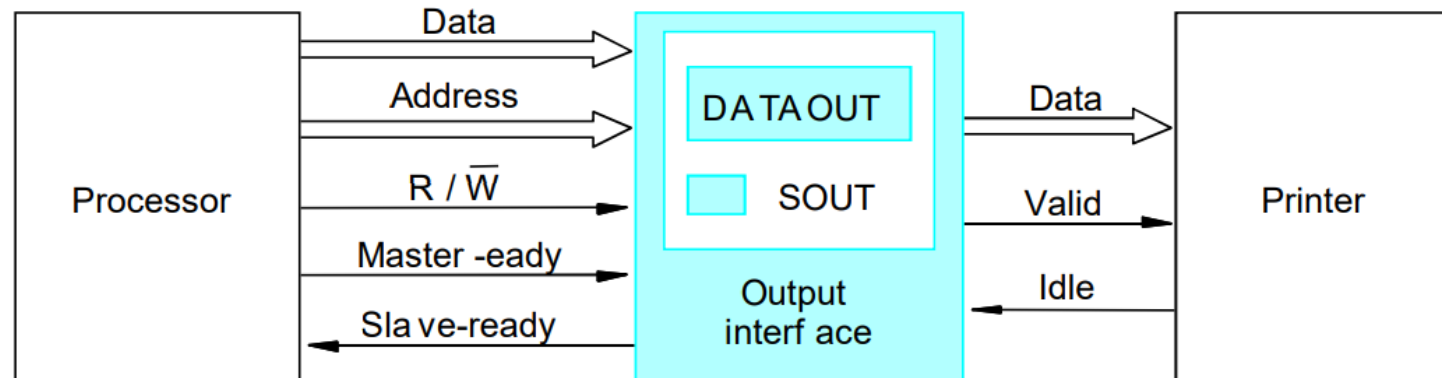


## Input interface circuit

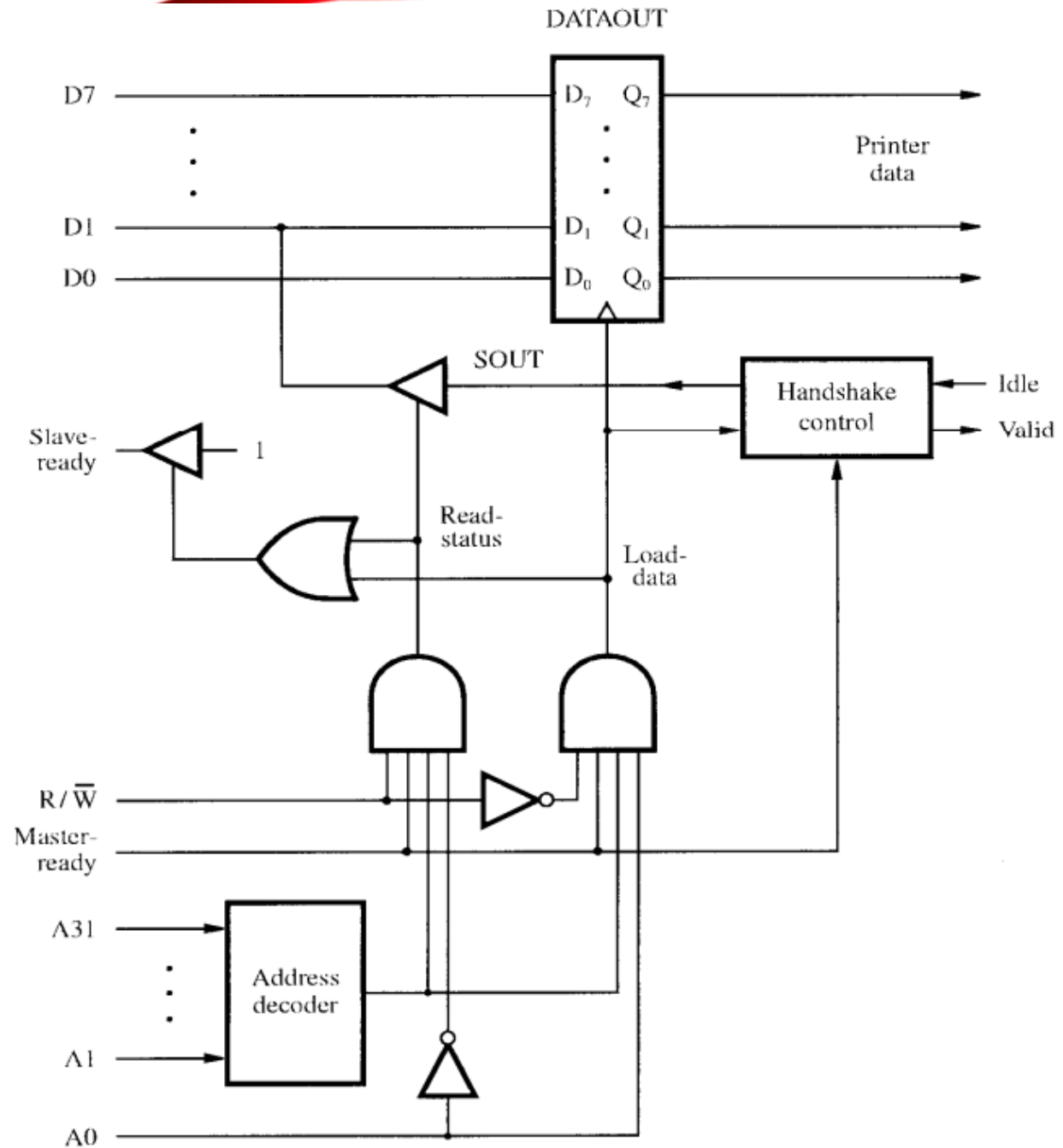


# Parallel Port – Output Interface (Keyboard to Processor Connection)

Printer to processor connection



## Output interface circuit

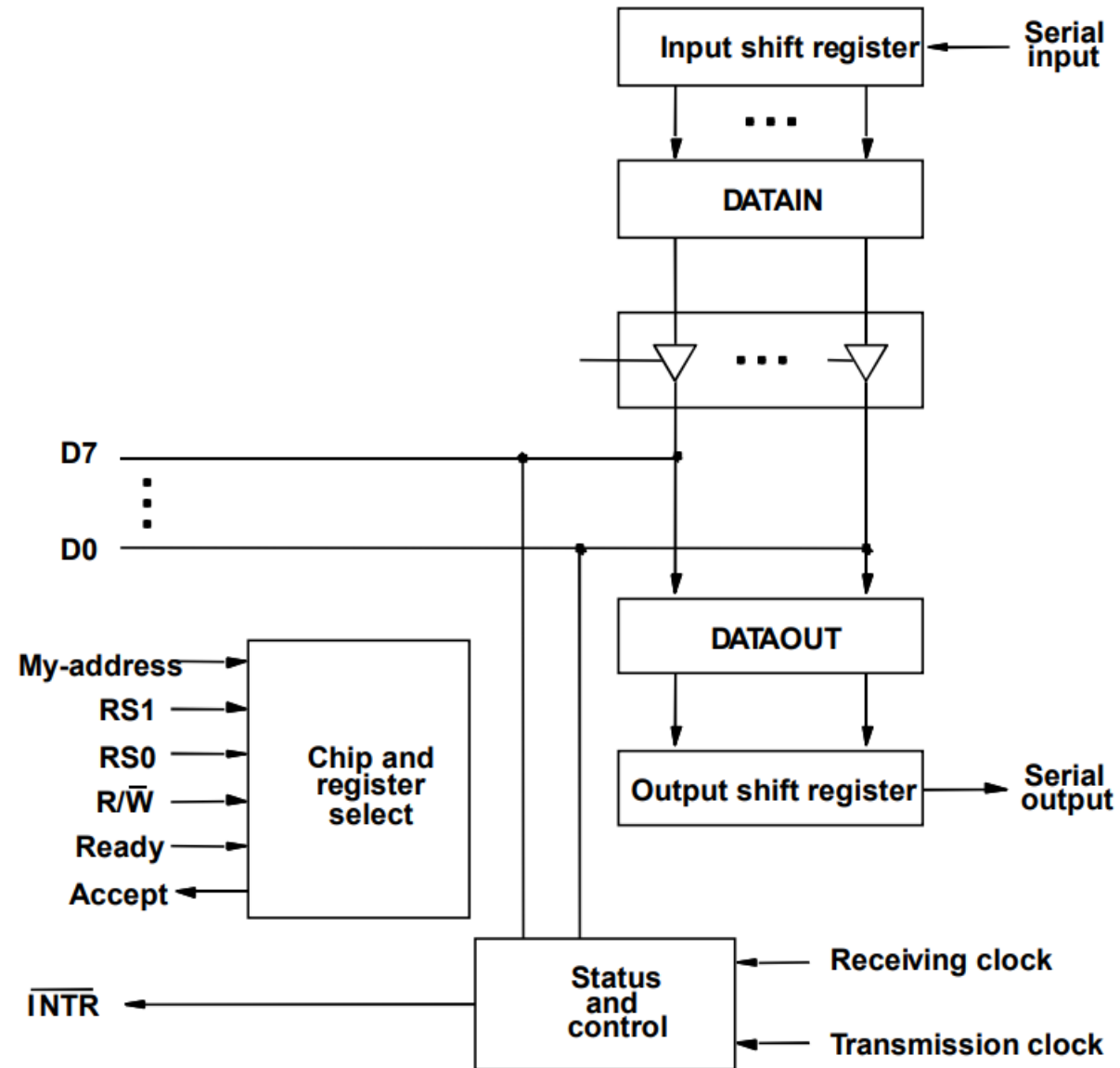




# Serial Port

- A serial port is used to connect the processor to I/O devices that require transmission of data **one bit at a time**
- The key feature of an interface circuit for a serial port is that it is capable of communicating in **bit-serial fashion on the device side and in a bit-parallel fashion on the bus side**
- Capable of longer distance communication than parallel transmission.

## serial interface





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*Thank You*