# Open system Interconnection (OSI)
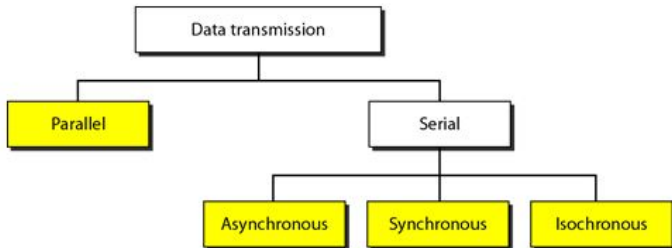
## Transmission Modes

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# Transmission modes

- The transmission of binary data across a link can be accomplished in either **parallel or serial mode**
  - In parallel mode, multiple bits are sent with each clock tick.
  - In serial mode, 1 bit is sent with each clock tick.

# Parallel Transmission

- The mechanism for parallel transmission is a conceptually simple one: Use n wires to send n bits at one time
- The advantage of parallel transmission is speed
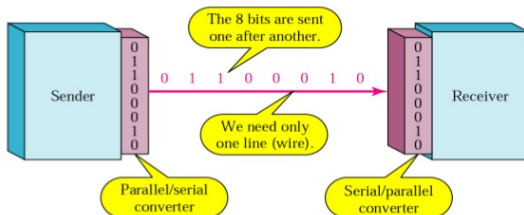- There is a significant disadvantage: **cost and shorter distance.**
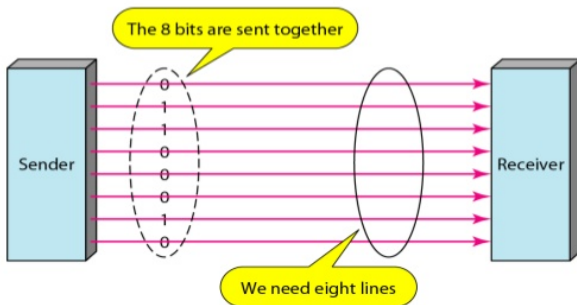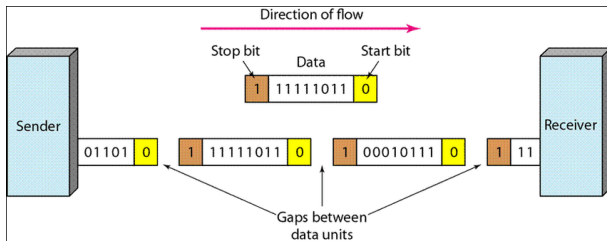
# Serial Transmission

- In serial transmission one bit follows another, so we need only one communication channel rather than n to transmit data between two communicating devices.
- Serial transmission occurs in one of three ways:
  - Asynchronous
  - Synchronous

## Serial Transmission
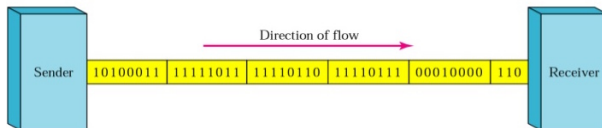
# Asynchronous Transmission

- Asynchronous transmission is so named because the timing of a signal is unimportant.
- To alert the receiver to the arrival of a new group, an extra bit is added to the beginning of each byte
  - Usually a 0, is called the start bit.
  - 1 or more additional bits are appended to the end of the byte
  - Each byte is increased in size to at least 10 bits, of which 8 bits is information and 2 bits or more are signals to the receiver
  - Asynchronous here means "asynchronous at the byte level;' but the bits are still synchronized; their durations are the same.
  - It is cheaper, slower and effective mode of communication.

# Synchronous Transmission

- In synchronous transmission, the bit stream is combined into longer "frames"
- Frame may contain multiple bytes
- In synchronous transmission, we send bits one after another without start or stop bits or gaps.
- It is the responsibility of the receiver to group the bits.
- The advantage of synchronous transmission is speed.

## Synchronous Transmission

*Thank You*