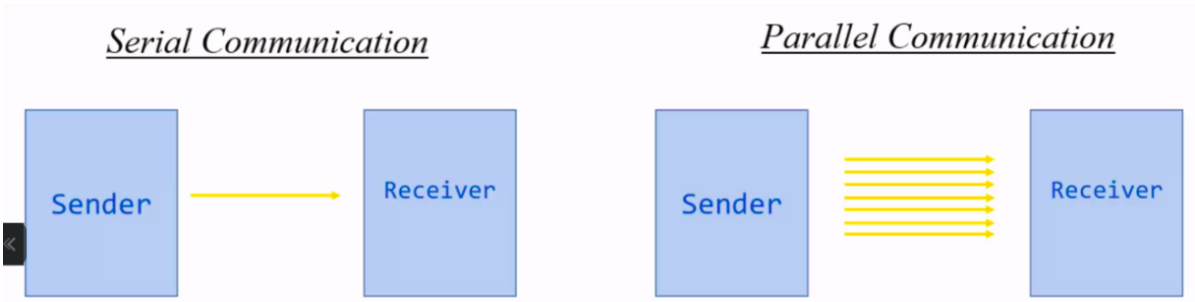


- **Parallel** : 8-bit data is transferred the same time
- **Serial** : 8-bit data is transferred one bit at a time

Serial data communication uses two methods :

- **Synchronous**

  Clock is transmitted with the data

- **Asynchronous**

  No clock is transmitted. Transmitter and receiver agree on the Clock speed for the data transmission (Baudrate)

- **UART**

  Universal Asynchronous Receiver/Transmitter

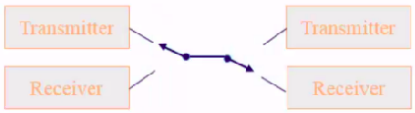
- **USART**

  Universal Synchronous Receiver/Transmitter

Duplex :
Data can be transmitted and received

Simplex :
Data can be transmitted only or received only. i.e. one direction only

Half Duplex :
Data can be transmitted in only one way at a time.



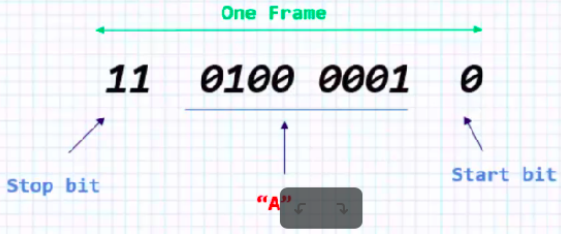
Full Duplex :
Data can be transmitted in both ways at a time.

In asynchronous transmission, each byte (character) is packed between *start* and *stop* bits.

- Start bit is always **1 bit**, the value of the **start bit is always 0**
- Stop bit can be **1 or 2 bits**, the value of the **stop bit is always 1**

E.g.

Transmitting ASCII '**A**' = ***0100 0001***



- **Baudrate**
  Connection speed expressed in bits per second
- **Stop Bit**
  Number of stop bits transmitted, can be *one* or *two*
- **Parity**
  Indicates the parity mode, whether *odd* or *even*.
  Used for error checking.

- **Mode**
  Specifies whether RX or TX mode is
  enabled or disabled.
- **Word Length**
  Specifies the number of data bits transmitted
  or received. Can be 8-bits or 9-bits.
- **Hardware Flow Control**
  Specifies whether Hardware Flow Control is enabled
  or disabled.