serial communication

parallel= i/o ports, better for short distances, fast, more expensive

serial communication modes=

① simplex= □→□ keyboard → computer

② half-duplex = □←→□ telsiz (not at the same time)

② full-duplex = □⇆□ telephone (requires multiple cables)

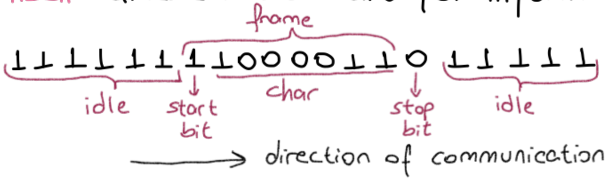
synchronization=

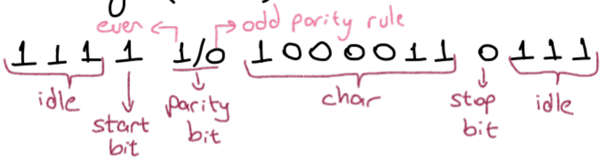
asynchronous= start bit + one char + stop bit (each has own clocks)

synchronous= block of data + clock signal / bit pattern (common 1 clock)

protocols=

ASCII= american standard for information interchange (7-bit)





0→ odd 1's (odd rule) 1→ odd 1's (even rule)

10 bits= 1 start , 1 stop, 1 parity, 7 data → %30 overhead for asynchronous

8N1= 8 data + 1 stop + 1 start (no parity) → % 20

8O1 = 8N1+ odd parity bit 8E1 = 8N1 + even parity bit

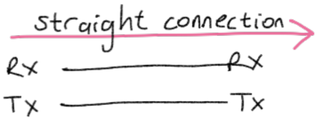
baud rate= unit of data transmission rate, # discrete events occurring per second

bit rate = baud rate × # bits in a baud

RS-232= standard for data transmission 0→ [+3,+12], space 1→ [-12,-3], mark

DCE (data communication equipment)

↳modem



DTE(data terminal equipment)

↳computer • DTE→DTE cross conn.

RxD → data receive pin TxD → data sent pin

PIC PORT

USAT (universial synchronous/asynchronous receiver/transmitter) serial port

- async – full duplex
- sync – half duplex (master)
- sync – half duplex (slave)

modes