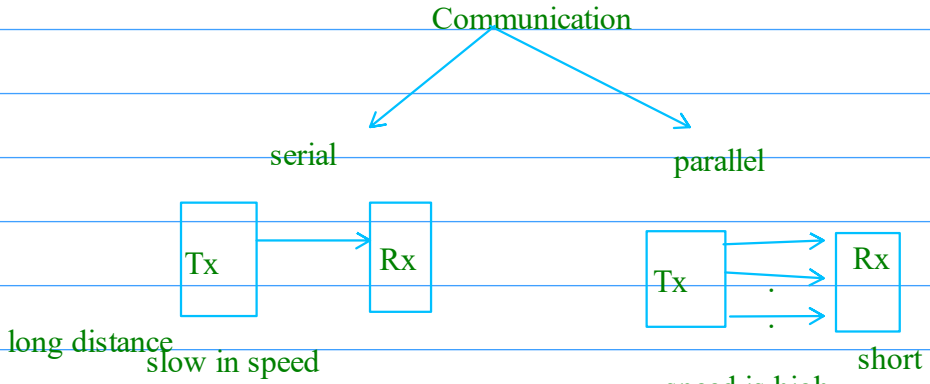
UART(Universal asynchronous receiver transmitter)

General communication requires following parameters to understand:

Tx

Rx

Communication



long distance

slow in speed
but wires used less

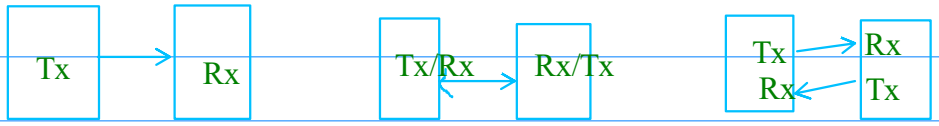
ex: tv remote

GSM/GPS

short

speed is high
but wires are more

ex:printer



Simplex

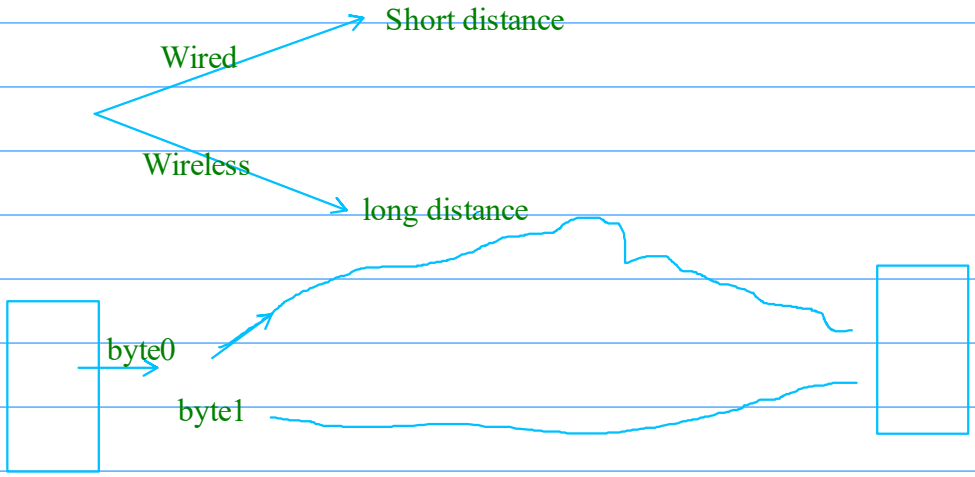
Half duplex

Full duplex

ex: printer
radio

W-T

Mobile



data/byte pos

extra logic

P-P ---telephone call
Multicast ---conference call
Broadcast --satellite

Asynchronous

serial

Synchronous

data is transmitted along with the clock

mostly parallel commn will be synch

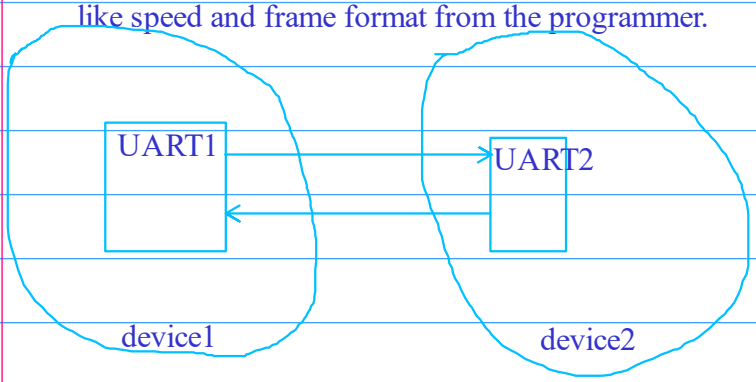
ex: Mail sending

ex: video conference call

Both tx/rx should be active at the same time

UART:

It is a physical circuit used for serial communication which requires configurations like speed and frame format from the programmer.



on same speed and frame format.

ex: uC,Desktop,GSM/GPS/FP/RFID/Smartcard readers/Xbee/WIFI etc

UART can be used for communicating between the CPUs and Between CPU and peripheral devices.

UART features:

serial ,asynchronous,full duplex communication.
shorter distance communication.
wired communication
supports error checking method(parity)
p-p communication

frame format:

General frame format:

start field | data field |parity field |stop field

start field: single bit(fixed that to logic 0)

stop field: 1/2 bits(always high)

parity: may/may not be supported. if supports then even/odd parity

data field : can be 5-9 bits of field size
mostly used is 8-bit data field size.

baud rate: 4800 bits/sec
9600 bits/sec
etc
bits/sec