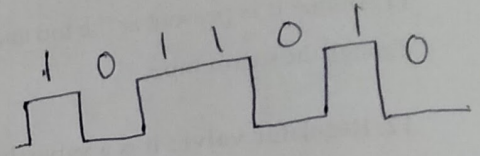


### Line coding →

It is defined as the process of converting binary data to a digital signal.

ex → 1011010  
Binary data

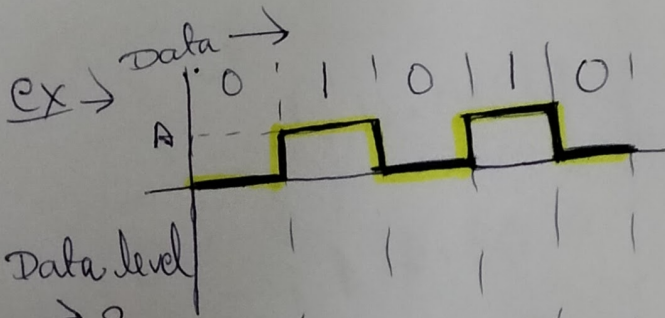
line coding →



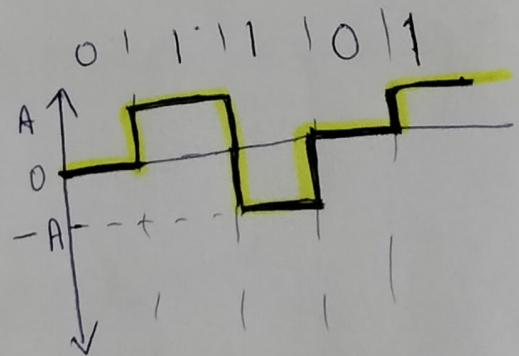
Signal level → It is defined as the number of values allowed in a particular signal.

### Data level →

The number of values to represent data is called as the number of data levels.

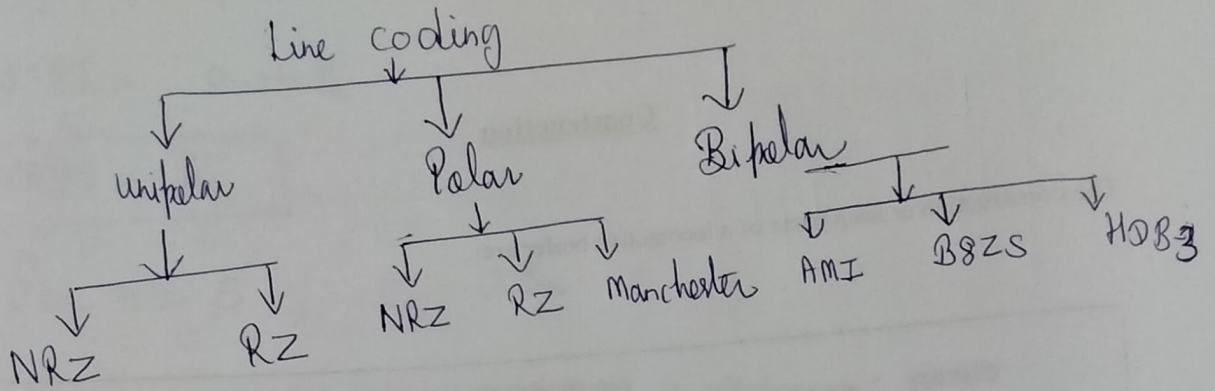


Signal level → 2



Signal level → 3  
(+A, 0, -A)

# Line Coding Technique →



unipolar →

Bits	Levels
1	→ A
0	→ 0

Polar →

Bits	Levels
1	→ A
0	→ -A

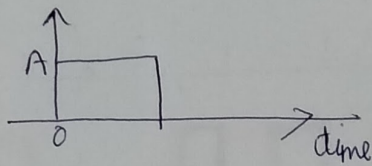
Bipolar →

Bits	Levels
1	→ A, -A
0	→ 0

There are three amplitudes in bipolar, so it is even referred as Pseudo ternary code.

## Basic Pulses (NRZ, RZ, Manchester)

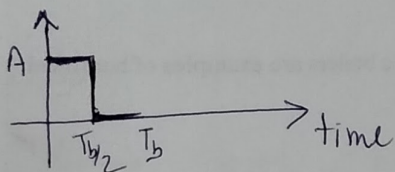
NRZ →



(Not return to zero)

Within  $T_b$ , pulse not return to zero.

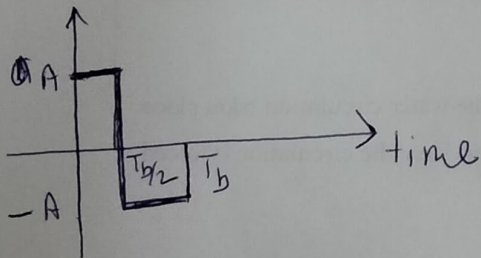
RZ → (Return to zero)



Pulse occupies half of bit duration  $T_b/2$

Manchester pulse →

At half duration there is transition from high to low or low to high.



unipolar RZ →

$$\text{for '1'} \rightarrow x(t) = \begin{cases} A & \text{for } 0 \leq t < T_b/2 \\ 0 & \text{for } T_b/2 \leq t < T_b \end{cases}$$

$$\text{for '0'} \rightarrow x(t) = \begin{cases} 0 & \text{for } 0 \leq t < T_b \end{cases}$$