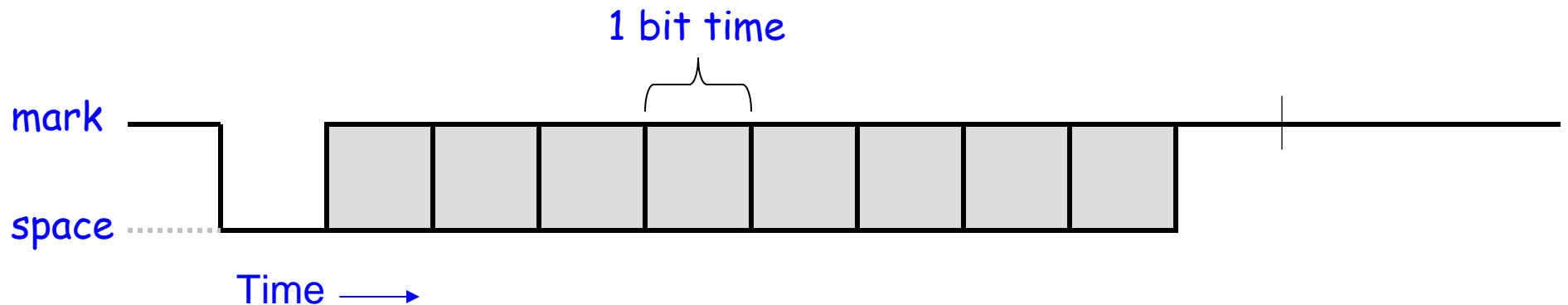


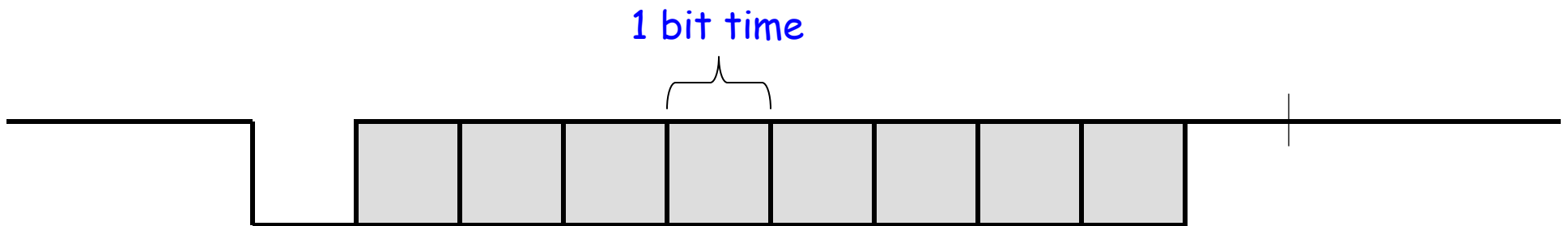
# UART Character Transmission

- Below is a timing diagram for the transmission of a single byte
- Uses a single wire for transmission
- Each block represents a bit that can be a **mark** (logic '1', high) or **space** (logic '0', low)



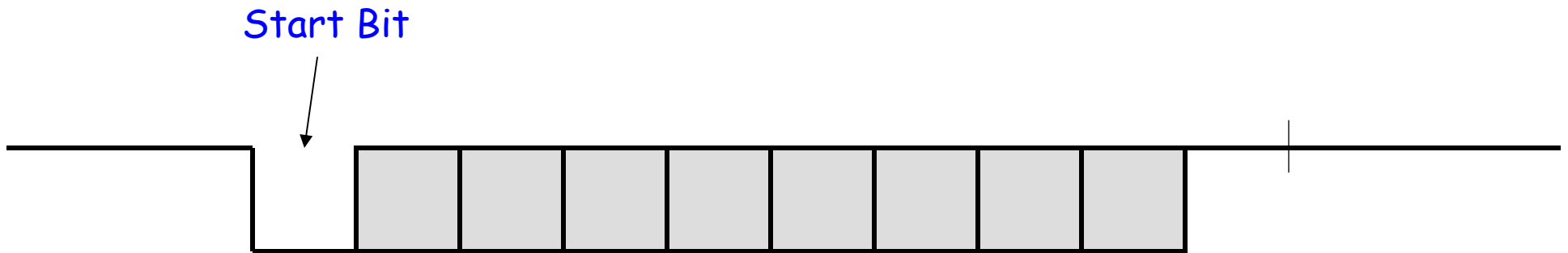
# UART Character Transmission

- Each bit has a fixed time duration determined by the transmission rate
- Example: a 1200 bps (bits per second) UART will have a  $1/1200$  s or about  $833.3 \mu\text{s}$  bit width



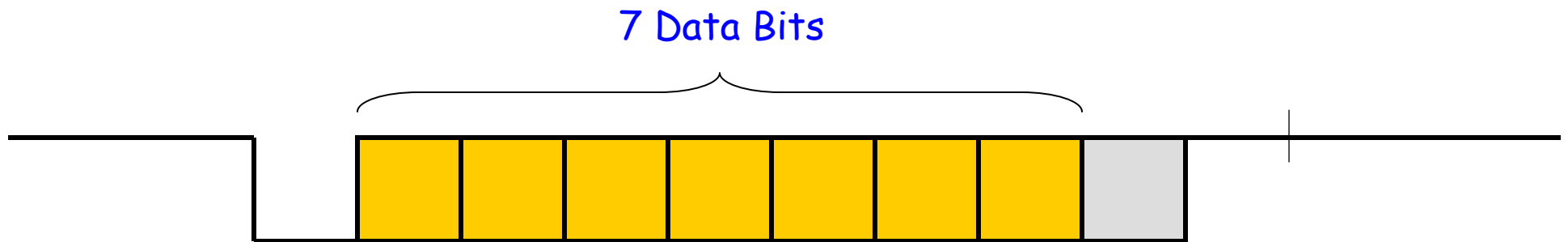
# UART Character Transmission

- The **start bit** marks the beginning of a new word
- When detected, the receiver synchronizes with the new data stream



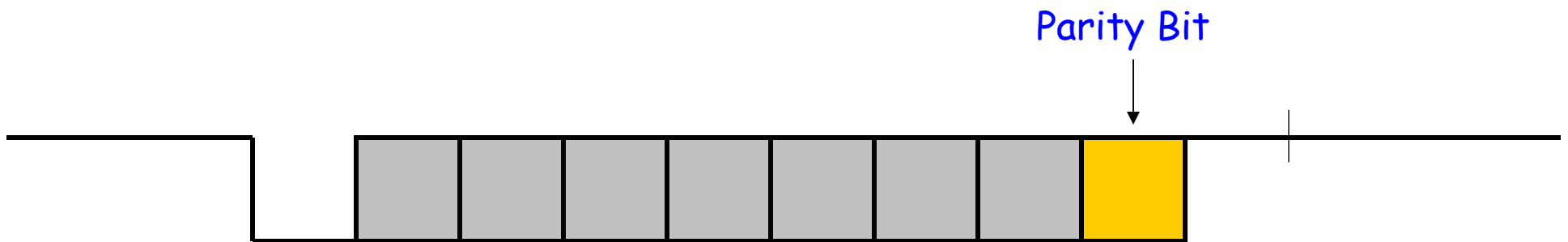
# UART Character Transmission

- Next follows the **data bits** (7 or 8)
- The least significant bit is sent first



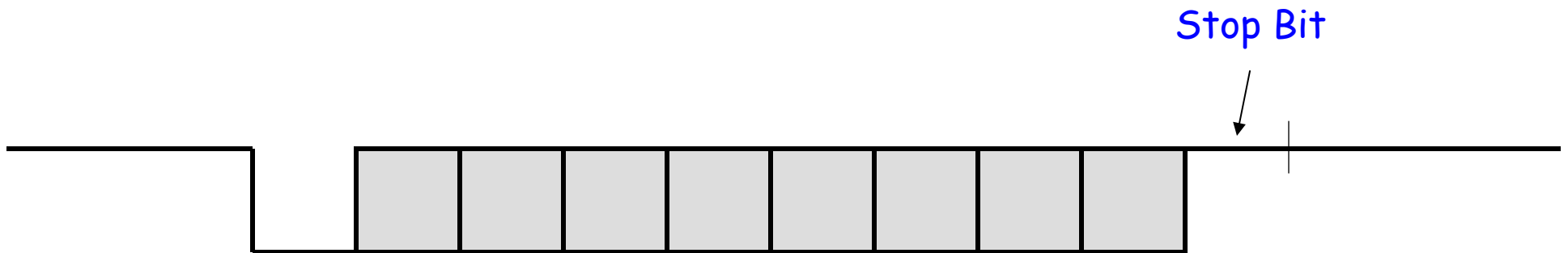
# UART Character Transmission

- The **parity bit** is added to make the number of 1's even (even parity) or odd (odd parity)
- This bit can be used by the receiver to check for transmission errors



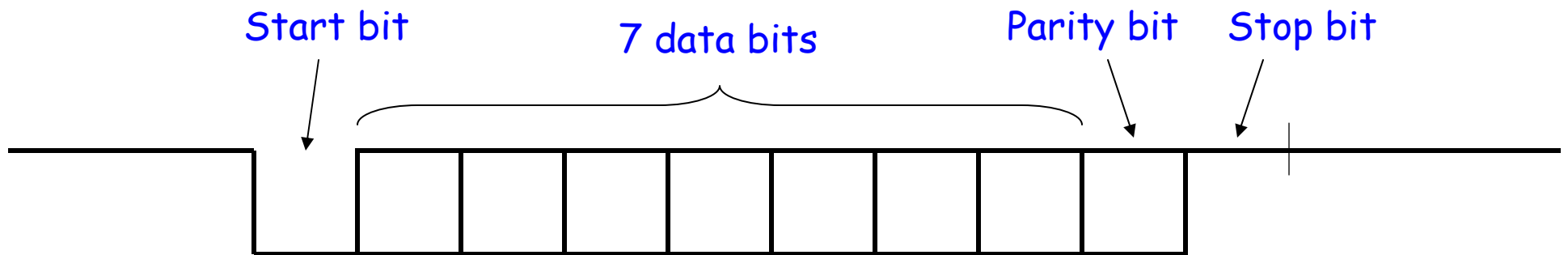
# UART Character Transmission

- The **stop bit** marks the end of transmission
- Receiver checks to make sure it is '1'
- Separates one word from the start bit of the next word



# UART Character Transmission

- In the configuration shown, it takes 10 bits to send 7 bits of data



# UART Transmission Example

- Send the ASCII letter 'W' (1010111)

