

Taposh Kumer Sarker (80741495)

get_actual_bit function:

We will send 1's for start and stop bits. That means when it is not middle 8 bits we will automatically send 1's. When it is concerning middle 8 bits, we will first find out which byte we are considering and then which bit in that byte we are considering. For that particular bit we will check if it is a 1 or 0 and return that.

```
def get_actual_bit(text, k):
    start_bit = 0
    stop_bit = len(text) * 10 + 1 # because each byte is 10 bits
    if (k == start_bit) or (k == stop_bit):
        return True
    else:
        byte_idx = k // 10
        bit_idx = (k % 10) - 1
        byte = text[byte_idx]
        bit = (byte >> bit_idx) & 1
        if bit==1:
            return True
        else:
            return False
```

get_bit function: We want to send 1's when we are not sending actual bits. So before the start bits and after the stop bits we will be sending bit value 1. We will continue when we are before start bits, but we will stop after the stop bit. So done value will be 1 and 0 respectively.

For middle 8 bits, we will get actual value from the get_actual_bit function and we will send 0 for done.

```
def get_bit(text, i):
    start_bits = tstart * baud // 1000
    stop_bits = tstop * baud // 1000
    if i < start_bits:
        return True, True
    elif i >= (len(text) * 10 + stop_bits):
        return False, True
    else:
        idx = i - start_bits
        actual_bit = get_actual_bit(text, idx + 1)
        return actual_bit, False
```