ELEX 4340 - Lecture 4 Exercise Solutions

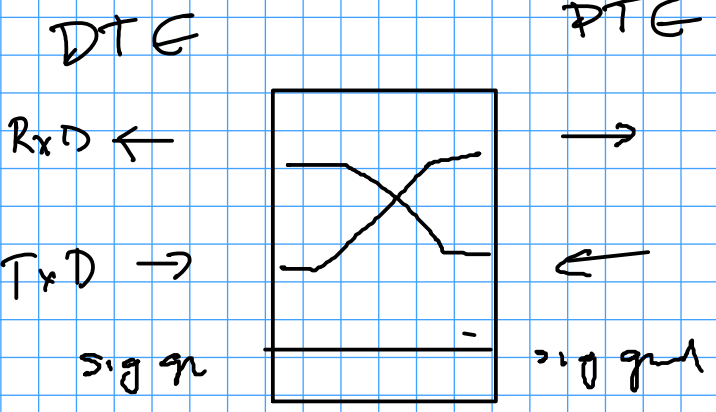
Exercise 1: Is the "Transmit Data" (TxD) signal an input or an output? How about "Receive Data" (RxD)? Is a computer a 'modem' or a 'terminal'?

→ depends on whether it's a DTE or DCE

DTE → RxD is input
DCE → RxD is output

– a computer is usually a DTE (terminal)

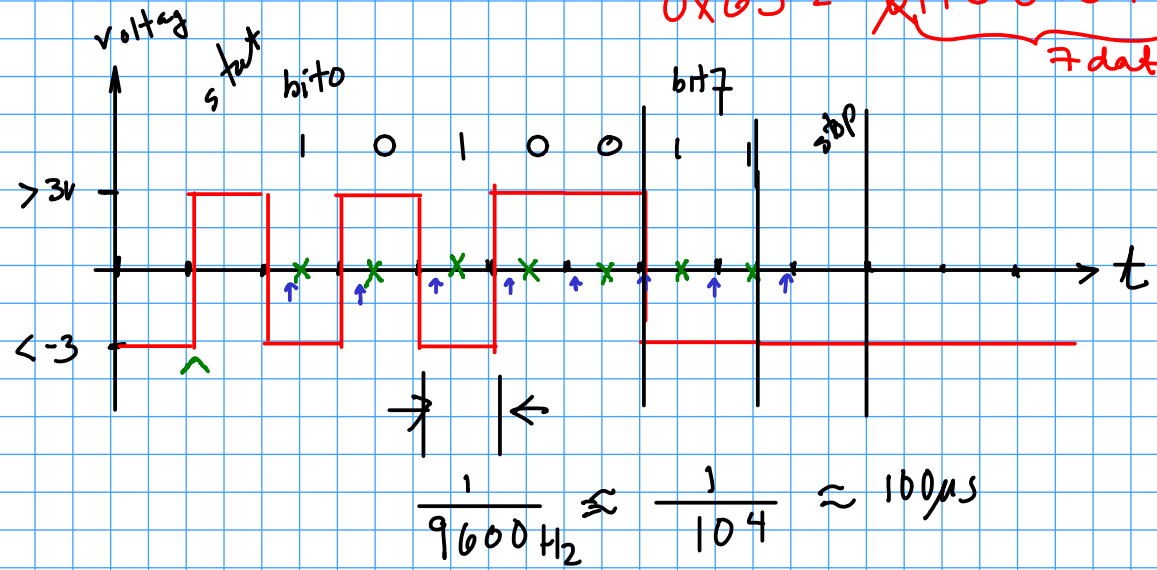
null modem



Exercise 2: Draw the waveform used to send the ASCII character 'e' (hex 65) at 9600 bps with seven data bits and no parity.

0x65 = 1100101 (6 5)

7 data bits



$\frac{1}{9600\,Hz} \approx \frac{1}{10^4} \approx 100\mu s$

X = nominal sampling point

↑ = receiver clock is faster

Exercise 3: What happens if the receiver's clock is running faster than the transmitter clock?

potentially it could sample a bit twice.

Exercise 4: What would happen if the receiver was expecting 8-bit characters and the transmitter was sending 7-bit characters? What about the reverse case?