Tutorial 11 – I/O and Interrupts

1. C and Assembly
Write an assembly subroutine "average" that can be called from the following C main program. The subroutine should calculate the average of two 8-bit values.

cchar average(char a, char b);

int main()
{
    DDRA = 0; DDRB = 0; /* input */
    DDRD = 0xFF;       /* output */

    while(1) PORTD = average(PINA, PINB);
}

2. Interrupts
Write an interrupt service routine in C counting the falling edges on port pin E0.

3. Serial Transmission
Assume a serial transmission using 1 start bit, 8 data bits, 1 odd parity bit, 2 stop bits.

At a transmission speed of 9600 Baud, how long does it take to say "HI!"?

Draw the transmitted bit sequence for this message.