EE4144 – Communications HW
PROBLEMS

1. Determine the appropriate bit settings for UCSR1A, UCSR1B, UCSR1C,and UBRR1 to manage a serial interface using the following specific details:
   - use normal transmission speed (i.e., disable the x2 speed),
   - disable the multi-processor communication mode,
   - turn on the *RX* complete interrupt, turn off the *TX* complete interrupt, turn on the data register empty interrupt,
   - turn on the receiver, turn off the transmitter,
   - set the character size to 8 bits,
   - use the asynchronous USART mode,
   - use no parity,
   - use 1 stop bit,
   - set the baud rate to 115200 bits per second.

2. Create a function that initializes the USART based on the values determined in problem 1.

3. Create a program that utilizes the USART to send and receive bytes via the USB converter chip to and from the host computer terminal program. Use a switch statement to send a different message in response to different bytes received (like a chat app). For example, consider the following
code piece.

```
switch ( GetNextReceivedByte ())
{
case '1':
TransmitString("One\n", 4);
break ;
case '2':
TransmitString("Two\n", 4);
break ;
default :
TransmitString("Default\n", 8);
break ;
}
```

Download your program and open a terminal program operating at 115200 baud rate. Verify that you receive appropriate messages in response to bytes that you send to the embedded device via the terminal program.