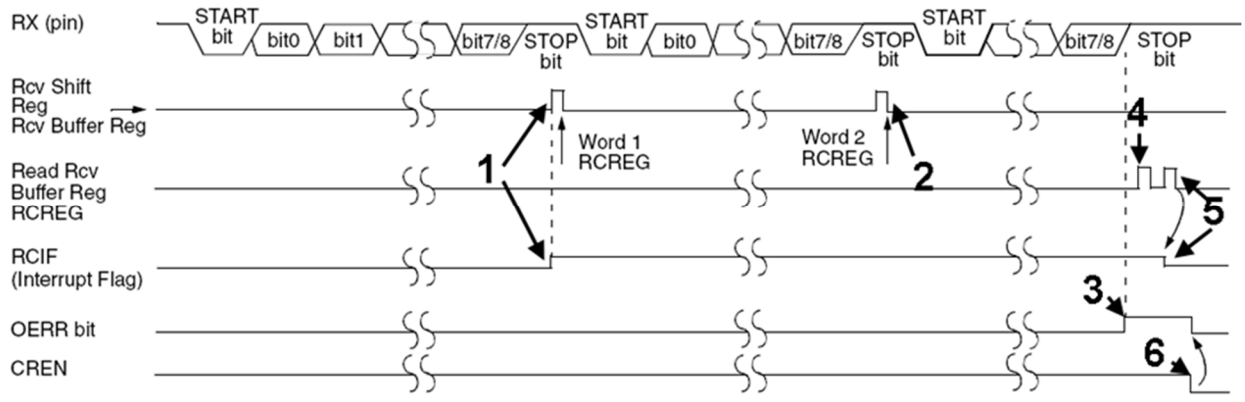
EE 2004
Week 11 Homework

1. Assuming the clock frequency is 4MHz, the baud rate generator of the UART module is chosen to operate in 8-bit mode, and BRGH is set to 1, calculate the values required to be loaded to SPBRG to program the following baud rates:
    a. 1200
    b. 2400
    c. 9600
    d. 19200
    e. 57600

2. Change BRG16 to 1 and maintain the rest of the settings in Question 1, calculate the values required to be loaded to SPBRGH:SPBRG for the baud rates listed in Question 1.

3. Assume the clock frequency is 4MHz and we are using the 8-bit mode of the BRG to generate a baud rate of 57600 bps when BRGH = 1. Answer the following questions:
    a. What is the value that is required to put in the SPBRG register?
    b. What is the % error of the baud rate? Is this error acceptable? If not, what change can you make to keep it in an acceptable range?

4. The following diagram is the timing diagram for UART reception. Overflow error occurs at Time Point 3. Explain why overflow error occur at this time point, but not earlier or later? If the OERR flag is raised, what implication does it have with UART reception? How to clear the OERR flag?



5. Write a program to send the message “Hello world” through the UART serial port.