1. Doctor J needs a PWM output signal with a PWM period of 25 ms and a duty cycle of 85%. His timer is clocked by the 10 MHz peripheral bus clock with a clock prescale of 4. Help Poor Dr. J configure both Timer 2 and Output Compare module 3 so he can complete his lab and go home!
2. Doctor J is now trying to measure the frequency of a periodic signal (not the signal from Question 1) with a period of approximately 50 us. Assuming he uses the “counting signal periods in a measurement interval” method, what is the minimum measurement interval needed to achieve a measurement resolution of 250 Hz?
3. If he instead decides to use the “counting timer ticks in a signal period” method to measure the frequency of the signal above, what is the appropriate configuration of his timer?
4. Using your answer from (3) what is the effect on measurement resolution in Hz if he uses the input capture module with an event prescaling value of 4?
5. (a) Now calculate the “range” of frequencies that you can measure, using your answer from (4), i.e., minimum and maximum signal frequency. (b) How do the range and resolution change if he doubles the timer clock prescale value?