

## Homework 10

1. If a DAC with a 10-bit digital input uses  $V_{REF} = 2.048V$ , what is the voltage resolution of the converter?
2. Suppose we need a DAC with a resolution of 1mV and  $V_{REF} = 0.5V$ . What is the minimum number of bits in the digital input code that will achieve these goals?
3. We configure a PWM output with our chip to drive PWM channel 1 using 0x2000 in MR1. With the following values in MRO, what would the duty cycle, in percent be?
  - a) 0x1800
  - b) 0x0000
  - c) 0x800
4. Suppose we use a PWM output as a digital-to-analog converter. The PWM counter has an input clock frequency of 100MHz. If we want the PWM duty cycle to have a resolution of at least 16 bits, what is the maximum possible frequency of the PWM signal?
5. You are given a 10MHz CCLK for your PWM, and you are also told to use an MRO of 100000 decimal and PR of 0 decimal. Write C code that will change the peripheral clock used by PWM so as to generate a time period of 20ms.

6. You are given a peripheral clock of 10MHz into your PWM, find suitable values for PR, MR0, and MR1 such that your PWM will maximize resolution, have a duty cycle of 75% and a period time of 10 seconds.