Exercises

# Digital to Analog Converter

1. Consider a 12-bit DAC with a reference voltage of 3.3V. What input code will result in an output of 1.43V?
2. Consider a 10-bit DAC with a reference voltage of 2.7V. Given that the input code is 0x104, what is the output voltage?
3. What is the output voltage resolution of an 8-bit DAC with a reference voltage of 3.0V?

# Analog to Digital Converter

1. Consider a 12-bit ADC with a reference voltage of 3.3V operating in single-ended mode. Given an input voltage of 0.92V, what will the output code be?
2. Consider an 8-bit ADC with a reference voltage of 2.7V operating in single-ended mode. What input voltage range will lead to an output code of 0x34?
3. Consider a 12-bit ADC with an unknown reference voltage operating in single-ended mode. What is the reference voltage if sampling the 1.0V band gap reference results in a code of 0x513?
4. Consider a 12-bit ADC with a reference voltage of 3.3V operating in single-ended mode. If a temperature sensor and reads a voltage of 0.821V, what is the temperature? Assume VTemp25=719mV and the temperature coefficient (m) = 10mV/°C.
5. How would you set up and read a sample from the ADC on your board? List the masks that need to be set in each of the relevant registers.