# Exercises

For all of these questions, assume the Discovery peripherals are used unless specified otherwise.

See spreadsheet for models and solutions.

## Digital to Analog Converter

1. Consider a 12-bit DAC with a reference voltage of 3.3 V. What input code will result in an output of 1.43 V?
2. Consider a 10-bit DAC with a reference voltage of 2.7 V. 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 3.0 V?

## analog Watchdog

1. How would you configure the analog watchdog to trigger whenever the input voltage rises above 2.0 V? Assume the reference voltage is 3V.

## Analog to Digital Converter

1. Consider a 12-bit ADC with a reference voltage of 3.3 V operating in single-ended mode. Given an input voltage of 0.92 V, what will the output code be?
2. Consider an 8-bit ADC with a reference voltage of 2.7 V 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 3.3 V operating in single-ended mode. If it samples the internal temperature sensor and reads a voltage of 0.621 V, what is the temperature? Assume VTemp25=719 mV and m = 1.175 mV/°C.