

Lab 6 stuff

1. Consider a system where the DAC is updated every 4 μ s (250kHz) with a value from a 200-element wave table containing a single cycle of a waveform. What would be the frequency of the output wave?

$$T = 4\mu\text{s} \cdot 200 = 800\mu\text{s}$$

$$F = \frac{1}{800\mu\text{s}} = 1.250\text{kHz}$$

2. Consider the ADC in 12-bit mode divides the input voltage range (0-3v) into 4096 steps (where 0v is 0 and 3v is 4095)

- a. What is the voltage/measurement resolution (how much does the voltage change per bit) of the ADC?

$$2^{12} \rightarrow 4096 \text{ steps}$$

$$\frac{3\text{v}}{4096} = .0007324\text{v} \\ = 0.732\text{mV}$$

- b. What would be the ADC output value (nearest integer) if the input voltage was 1.75v?

$$\frac{1.75\text{v}}{.0007324\text{v}} = 2389.4$$

$$\approx 2389$$