Postlab Questions Lab 6

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1. Consider a system where the DAC is updated every 4us (250 kHz) 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?

Using the equation
$f = \frac{T}{S}$ found in 6.2 within the lab
S being the number of samples and T being the period of time between updates.
Given that T = 250 kHz, S =200
$\frac{250kHz}{200} = 1.25kHz$
One can find that it would be at a frequency of 1.25 kHz.

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

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

The voltage measurement/resolution would be for 4096 steps would be found using $\frac{3}{4096} = 0.000732421875\ \frac{V}{step}$ or $0.732421875\frac{mV}{step}$ including the value of 0 V.

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

The ADC value would be $\frac{1.75 * 4096}{3} \approx 2389$ steps.