This homework assignment is due on Thursday, March February 12th at 5:00pm. Your work may be handed in electronically (use the Homework 2 digital dropbox on D2L) or in hardcopy form (in person or under door).

This assignment must be done individually: do not share/discuss your answers with others or look at the answers of others.

Question 1

Consider the following circuit:

Assume $V_0 = 5V$.

1. (10pts) Assume $R_2 = 100\Omega$. Show $V_1$ and $I$ as a function of $1\Omega \leq R_1 \leq 299\Omega$. Show your derivation.
2. (10pts) Assume $R_2 = 300 - R_1$. Show $V_1$ and $I$ as a function of $R_1$ (same range). Show your derivation.
1. (10pts) Consider the above circuit. Assume $R = 500\Omega$. Show $IR$ as a function of $V_0$. Show your derivation.
2. (20pts) Consider the above circuit. Assume $V_f = 0.5V$ and $R = 500\Omega$. Show $IR$ as a function of $V_0$. Show your derivation.
Question 3

Suppose we want to produce a regular interrupt at a period of approximately 32.8 ms. Assume that we are using a 16 MHz crystal for our clock.

1. (5 pts) Which timer should we use?

2. (5 pts) How should we configure this timer?

Question 4

Suppose we want to produce a regular interrupt at a frequency of 1.953 KHz. Assume that we are using a 16 MHz crystal for our clock.

1. (5 pts) Which timer should we use?
2. (5 pts) How should we configure this timer?

**Question 5 (ALL)**

How much time did you spend on this homework assignment?