Group 30 Lab #2

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# Delay Time Calculations

Crystal frequency = 22.1184 MHz = 22118400 Hz

To calculate the number of cycles for a certain time *x* in *msec:*

Since we’re using C (and not assembly), we need to calculate the number of loops required. The microcontroller has 8-bit registers so the maximum cycles for any loop is 256. The required clock cycles needed for the delay can be achieved through 3 nested loops. The two inner ones will be repeated for 256 times each, and each loop cycle consumes 2 clock cycles. So, we can get the number of times the outer loop should be repeated for a certain time x using this formula:

Example: to achieve a delay of 500 msec

So, a delay of 500 msec can be achieved using 3 nested loops with counts of 7, 265 & 265 respectively.