

Panel 1

Prior to Le11

Debugging

(Learning the MPLAB debugging tools)

ME430 Mechatronics

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Panel 2

Debugging Lecture

In this lecture you will be working with MPLAB

There is a file to download from the calendar. You will need to make a new project with that .c file.

You will be capturing a screen shot from Part D to show you have finished the lecture. Bring that printout and attach it to you notes to submit in class.

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Panel 3

Debugging Tools

Part A: Basic Debugging Control

- Debugging toolbar
- Breakpoints
- Watch window

Part B: Instruction Cycle Stopwatch

- Changing the simulator clock frequency
- Timing C and Assembly instructions

Part C: Stimulus Inputs (MPLAB SIM only)

- Asynchronous stimulus inputs

Part D: Logic Analyzer (MPLAB SIM only)

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Panel 4

Part A: Basic Debugging Control

Label the buttons

Watch window

How do you open the watch window?

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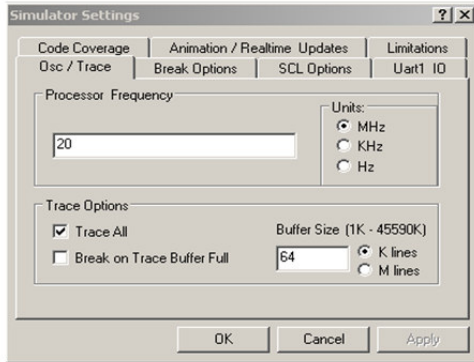
Panel 5

Part B: Instruction Cycle Stopwatch



```
Delay10TCYx(10);
Nop();
```

Measuring delay functions

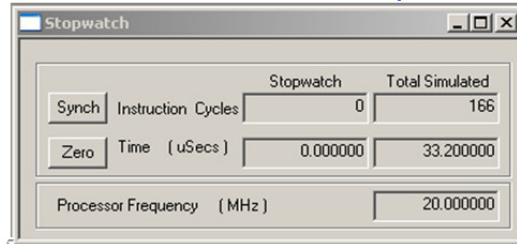


Change frequency to 4 MHz

Where in the menu is the stopwatch?

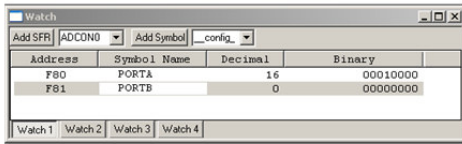


Stopwatch

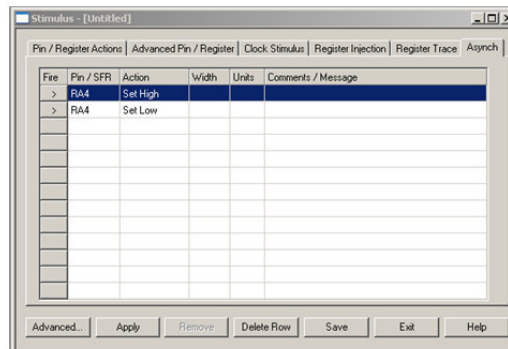


Panel 6

Part C: Stimulus Inputs (MPLAB SIM only)

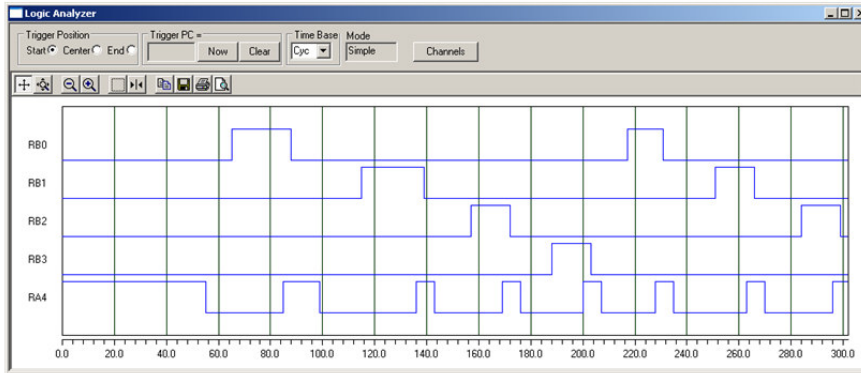


How do you send the signal?



Panel 7

Part D: Logic Analyzer (MPLAB SIM only)



Include a screen shot of your Logic Analyzer

In addition to the Logic Analyzer get some portion of the .c file that has your name in it.

Also feel free to sneak in the watch window or stimulus generator.

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Panel 8

Sample screen shot. Note how my name is visible

The screenshot shows the MPLAB IDE interface. The main window displays a C source file named 'debugging.c' with the following content:

```
6 * This file shows some debugging features of MPLAB SIM
7 *
8 *
9 * Author      Date      Comment
10 -----
11 // David Fisher 12/12/07
12
13 /** Header Files ****
14 #include <pl18f4520.h>
15 #include <stdio.h>
16
17 PORTBbits.RB1 = 1;
```

The Watch window shows the following variables and their binary values:

Symbol	Binary
ADCON0	00001111
TRISA	00010000
TRISB	00000000
TRISC	00000000
TRISD	00000000
TRISE	00000000
PORTA	00000000
PORTB	00000000
PORTC	00000000
PORTD	00000000
PORTE	00000000

The Logic Analyzer window shows digital waveforms for RA4, RB0, RB1, RB2, RB3, and LEDs. The x-axis represents time from 0.0 to 1300.0. The LEDs channel shows a sequence of pulses labeled 1, 2, 3, 4.

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