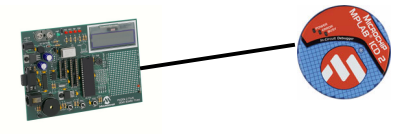
Getting started with the ICD 2 and PICDEM 2 board



PICDEM ICD 2

First, open the workspace for your “First ICD2 Program”

Comments

// Single line comments

/*
Comment out
multiple
Lines
*/

```
/*********************************************************************
* FileName:         (change filename of template).c
* Processor:        PIC18F4520
* Compiler:         MPLAB C18 v.3.06
*
* This file does the following....
*
*
* Creation and Revisions:
*       Author                  Date            Comments
*   (Your name here)
********************************************************************/

/** Header Files ****************************************************/
#include <p18f4520.h>

/** Configuration Bits **********************************************/
#pragma config OSC = EC  // EC = External 4MHz Crystal for PICDEM board only
#pragma config WDT = OFF
#pragma config LVP = OFF
#pragma config BOREN = OFF

/** Define Constants Here *******************************************/
#define SAMPLE 100

/** Local Function Prototypes ***************************************/
void sampleFunction(void);

/** Global Variables ************************************************/
int sampleVariable = 0;

/*********************************************************************
* Function:         void main(void)
********************************************************************/
#pragma code
void main (void)
{
    // This area happens once
    // Good for initializing and things that need to happen once

    while (1)
    {
        // This area loops forever
    }
}

/*********************************************************************
* Additional Helper Functions
********************************************************************/

/*********************************************************************
* Function:         void sample(void)
* Input Variables:  none
* Output Return:    none
* Overview:         Use a comment block like this before functions
********************************************************************/
void sampleFunction()
{
    // Some function that does a specific task
}
```


Preprocessor Directives

```
/** Header Files ****************************************************/
#include <p18f4520.h>
```

- Standard 18F4520 header plus others
  - #include “aHeaderInCurrentFolder.h”

```
/** Configuration Bits **********************************************/
#pragma config OSC = EC  // EC = External 4MHz Crystal for PICDEM board only
#pragma config WDT = OFF
#pragma config LVP = OFF
#pragma config BOREN = OFF
```

- Configurations for PIC (that you won’t change for now)

```
/** Define Constants Here *******************************************/
#define SAMPLE 100
```

- Constants
- Help code readability

The Main Function

- Code starts running here

```
/*********************************************************************
* Function:        void main(void)
*********************************************************************/
#pragma code
void main (void)
{
    // This area happens once
    // Good for initializing and things that need to happen once

    while (1)
    {
        // This area loops forever
    }
}
```

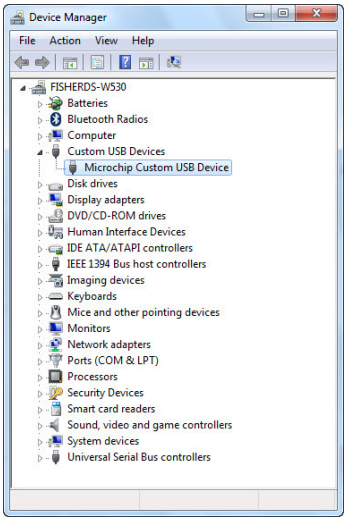

First ICD2 Program

- Comment out any printf lines. Leave only.

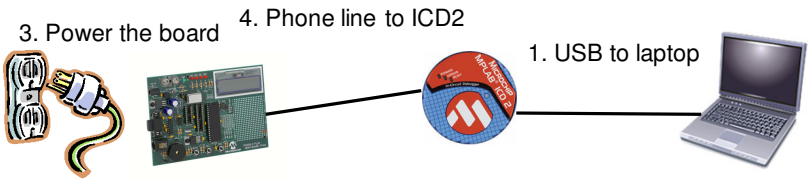
```
#pragma code
void main (void)
{
  ADCON1 = 0x0F;
  TRISB = 0x00;
  PORTB = 0b1001;

  while (1) {
  }
}
```

Device Manager

- Open your device manager by clicking the Start button and type “device manager”
- We’ll watch the installation as it happens



Overview



Don't plug in anything yet!

5. Run ICD2 Setup Wizard
6. Build the program
7. Program the debugger
8. Run the program
9. Set tool back to None in MPLAB
10. Partner repeats 1-9.

Puck (ICD2) Connections

- Connect *just* the puck (ICD2) to your computer with *just* the USB cable.
- Note: Each USB port is independent. If you plug your ICD2 to a different USB port on your laptop, you'll need to re-install the driver.

Plug in the ICD 2 to your computer

- One of three things might happen
  - It'll install the correct driver
    - You are all set!
  - It won't find the driver
    - Most common (and easy to fix)
  - It'll install the wrong driver (**WinUSB** is bad)
    - Uncommon but also easy to fix
    - Uninstall that driver and delete it

Unknown device (most common)

- If the driver didn't install
  - Log in as an Administrator
  - Right click on the Unknown device within the device manager
  - Select "Update driver software"
  - Browser for the ICD2 driver folder
    - (path shown on next slide)

Driver location

C:

Program Files (x86)

Microchip

MPLAB IDE

ICD2

Need more detailed instructions?

- In MPLAB, go to Help -> Driver Installation
- On the menu that appears, click on MPLAB IDE 64-Bit USB Device Driver Installation and *follow those instructions.*
- Once you have completed those instructions you can go on. Get help if you run into trouble.

Connecting the Green Board

- Connect the power to the green board
- Connect the green board to the ICD2 puck with the short telephone-type cable
- There is a jumper by the LEDs labeled J6. Make sure that jumper is in place.
- In MPLAB, go to Debugger -> Select Tool -> MPLAB ICD2
- The MPLAB ICD2 Setup Wizard should start automatically
- If it doesn't start, manually go to Debugger -> MPLAB ICD2 Setup Wizard

ICD2 Setup Wizard Settings

- Com Port – USB
- Target has own power supply
- MPLAB IDE automatically connects to the MPLAB ICD2 (check box)
- MPLAB ICD2 automatically downloads the required operating system (check box)

Debugger Programming Process

- Set debugger to ICD2 (already done today)
  - Debugger -> Select Tool -> MPLAB ICD 2
- To make a program run on the board
  - Click Build button (fix any errors)
  - Click Program Target Device button(downloads program to green board)
  - Click Run button

Light an LED on the Green Board

In your ".c" file you should

- Comment out the printf statements
- Uncomment the TRISB, ADCON1, and PORTB lines
- Build -> program target device -> run
- See the LED light!
- Now change the code to light a different LED and re-download it. See it work!
- If ambitious, do Kitt Lights (google it and grab a YouTube video)

Your Partner's Turn

- Go to Debugger -> Select Tool -> None
  - Wait at least 2 seconds
- *NOW* unplug and give to your partner
- Go through the entire install and lighting thing again
- Get checked off on the front of Lab 3!
  - Once BOTH partners have it working