ECSESS RoboElectronics Fall 2014

Week 2 Build

Goals for Today

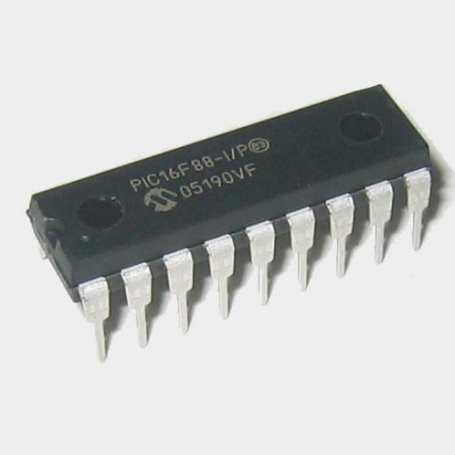
- Hook up pic16f88 properly and upload code
- Write a program which turns on an LED
- Write a program which flashes LED/s using a delay()
- Use an IR/phototransistor to trigger an action

Next Week

- Learning how to use an ADC
- Learning how to find the find distance using the debugger and Pickit3

Required Material

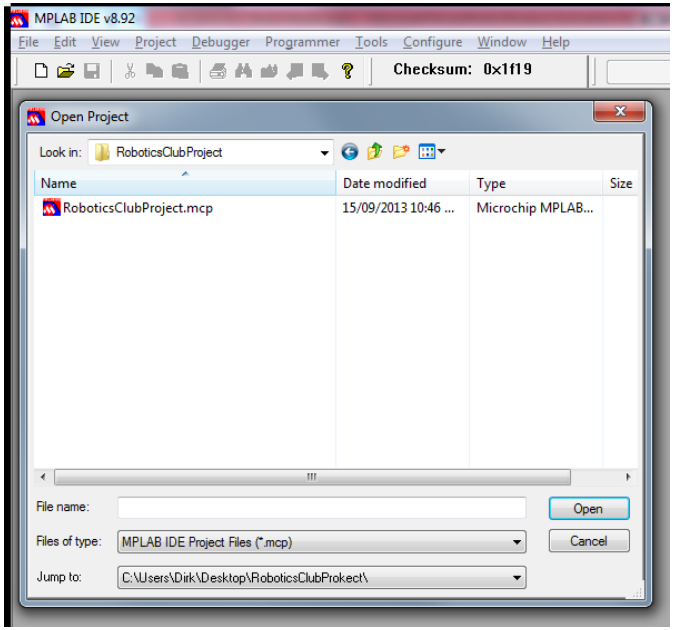
- Circuit
  - Breadboard
  - PIC16F88
  - PicKit3
  - Yellow & blue LED
  - 100, 150, 10k ohm resistor
  - IR/Phototransistor pair



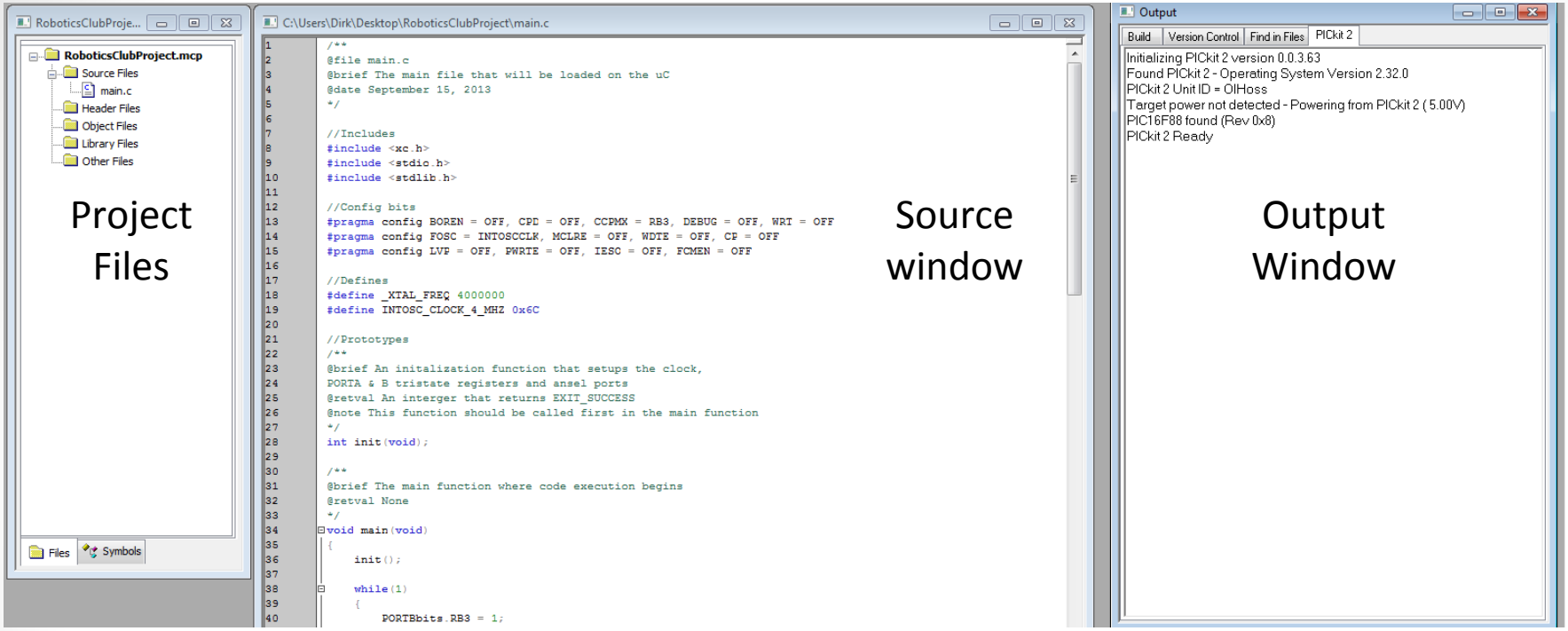
- Robot
  - Start building your chassis

Setting up MPLAB IDE

- Install all the software
- Open MPLAB IDE
  - Go to Project, Open Project
  - Select the RoboElectronicsProject.mcp in the provided project file
- The project should be configured and ready to go
  - Be sure to **plug in your PicKit3** before you open the project



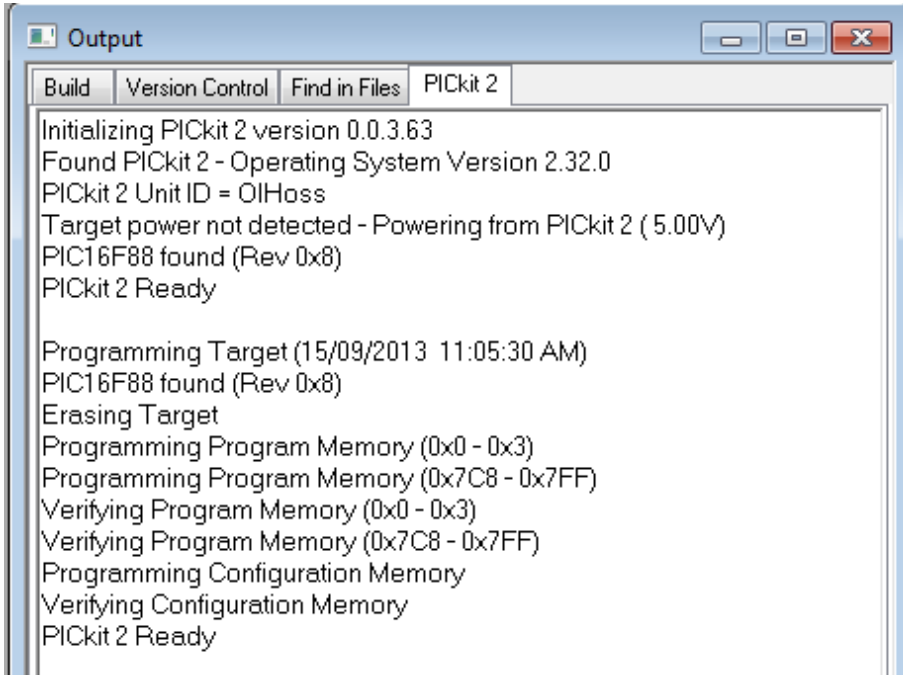
Using MPLAB IDE



- The left window contains project files
- The middle window is your open source file
- The right window shows the output
  - This displays build and programming errors
  - When you open your project the PicKit3 tab should say “PICKit3 ready “ on the last line

Programming with MPLAB IDE

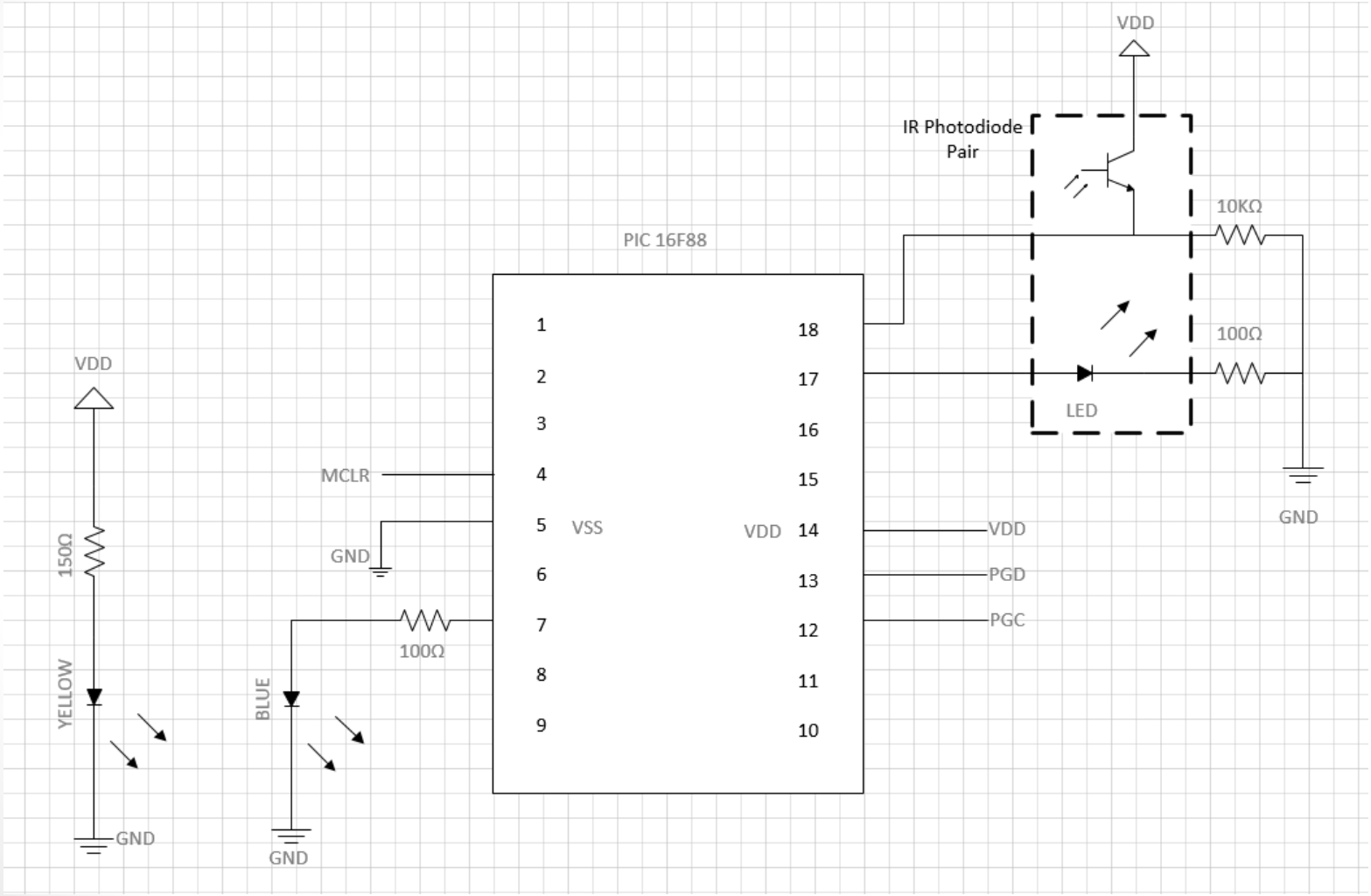
- To build your project go to
  - Project
    - Build (F10)
- This will compile your project and display any errors in the **Output** window
- If your code compiled without any errors it will send it to your programmer
- Your 16F88 should now be programmed with your code



Common problems with MPLAB IDE and PicKit3

- Q: My Pickit 3 says it doesn't recognize my device
  - A: Are you sure you correctly connected your Pickit 3 to the PIC16F88 ?
- Q: I get a huge list of build errors, what do I do with it?
  - A: Often one error can generate others deal with the **first error** in the list and build again
- Q: Can I connect other things to the programming lines?
  - A: No. Easy right?

Circuit to Build



Robot Component to Build

- Keep working on the chassis

Advanced Goals

- Can you make a rainbow sequence with the RGB led?

Resources

- Software
  - XC8 Compiler: http://www.microchip.com/mplabxc8windows
  - MPLAB IDE: http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=1406&dDocName=en019469&part=SW007002
- Datasheets
  - PIC16F88: http://ww1.microchip.com/downloads/en/DeviceDoc/30487D.pdf
  - PIC16F88 XC8 header file (on your local machine): C:\Program Files (x86)\Microchip\xc8\v1.12\include\pic16f88.h
- Further Reading
  - Pickit2 Programming Guide: http://ww1.microchip.com/downloads/en/DeviceDoc/51553E.pdf
  - C tutorial: http://www.learn-c.org/