ECSESS Robotics Club

Week 3 – Introduction to microcontrollers

Common Mistakes People made last week

- Be careful with bending the pins on stuff, the are sensitive and break. ESPECIALLY THE CHIPS.
- Don’t burn yourself with the soldering iron. It’s hot and you’re not invincible.

Week 3 – Introduction to uCs and H-bridge

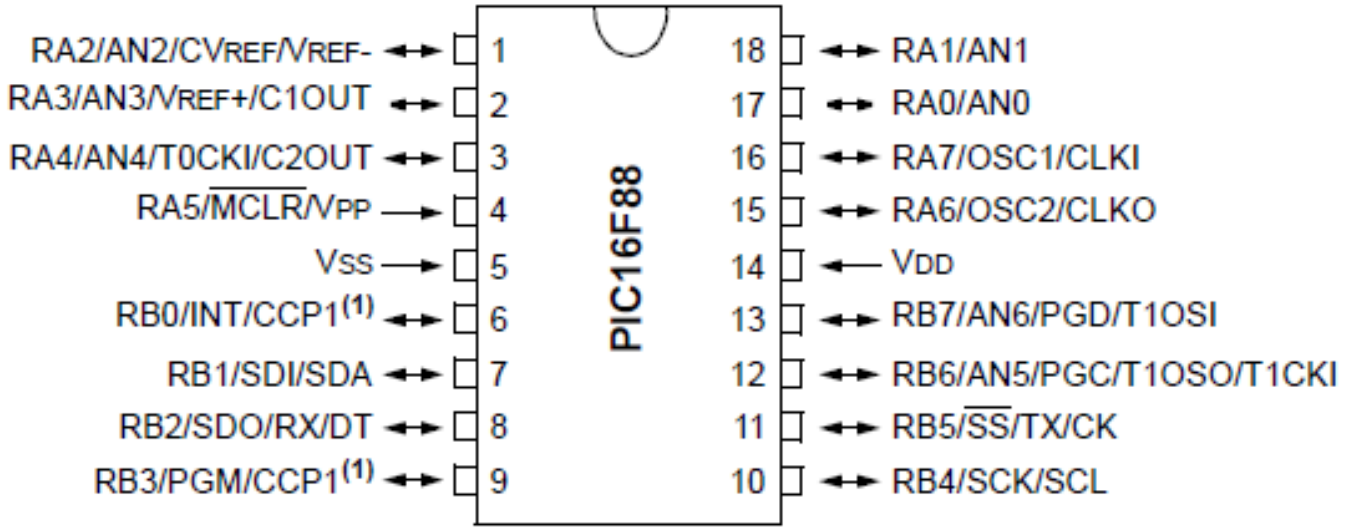
- Lets cover:
  - How to connect the microcontroller properly
  - How to program the microcontroller
  - What the provided code will do
  - 7-segment displays

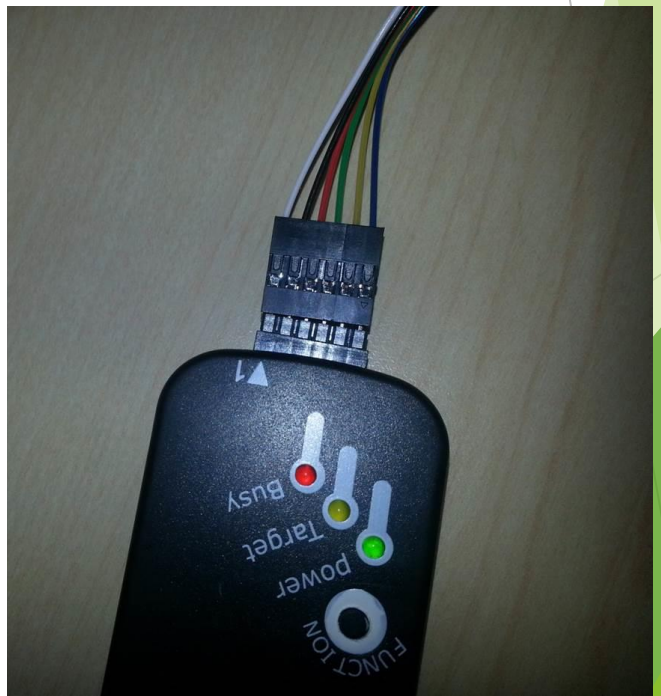
Microcontroller and Programmer

We'll use the PIC16F88
4kb of memory
512 bytes of ram

MCLR = White = Pin 4
Vss = Red = Pin 5
Vdd = Black = Pin 14
PGD = Green = Pin 13
PGC = Yellow = Pin 12

18-Pin PDIP, SOIC

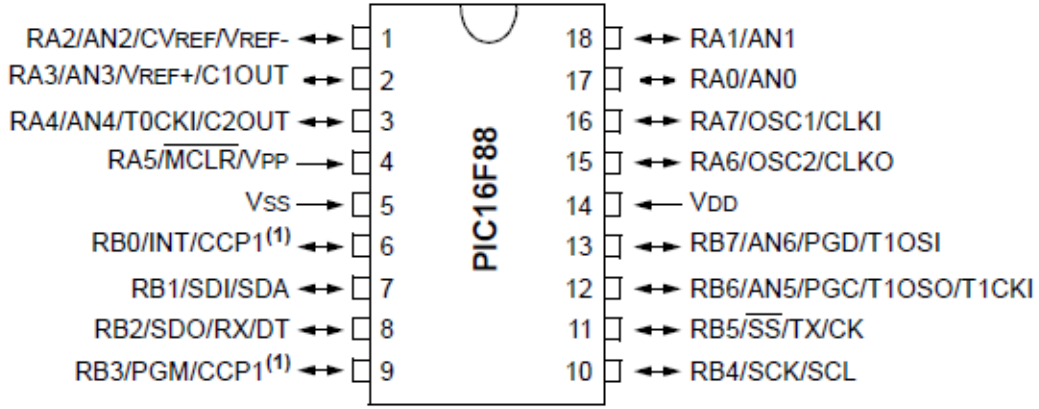




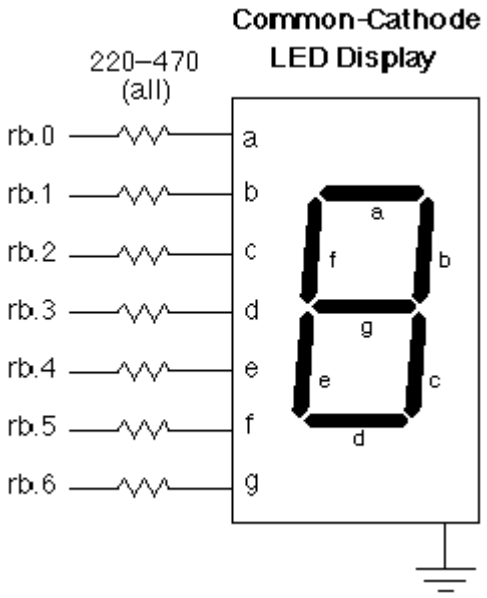
PORTS and TRISTATE Registers

- TRISTATE Controls if a pin is INPUT (1) or OUTPUT (0)
- PORT Controls if a pin is ON (1) or OFF (0)
- PORTA and TRISA also PORTB and TRISB

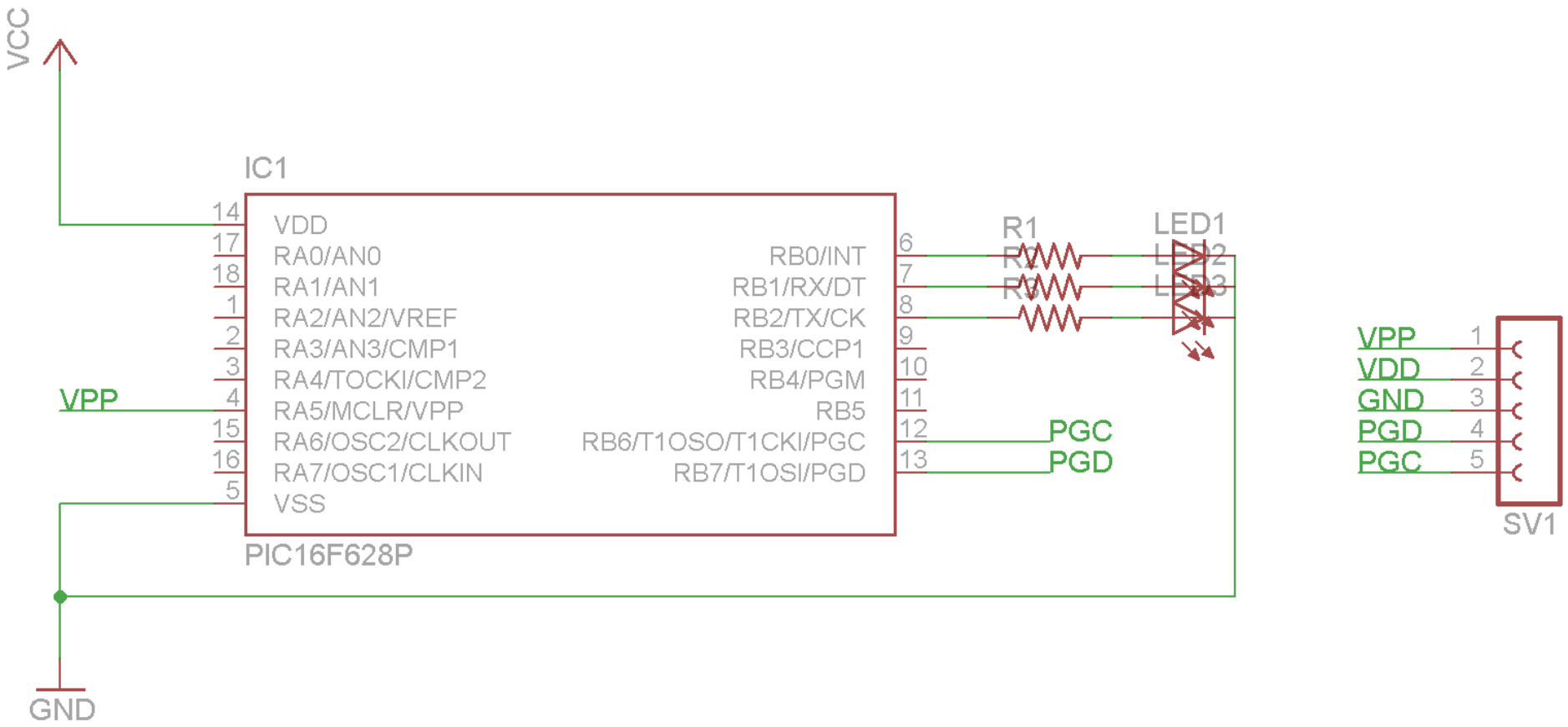
18-Pin PDIP, SOIC



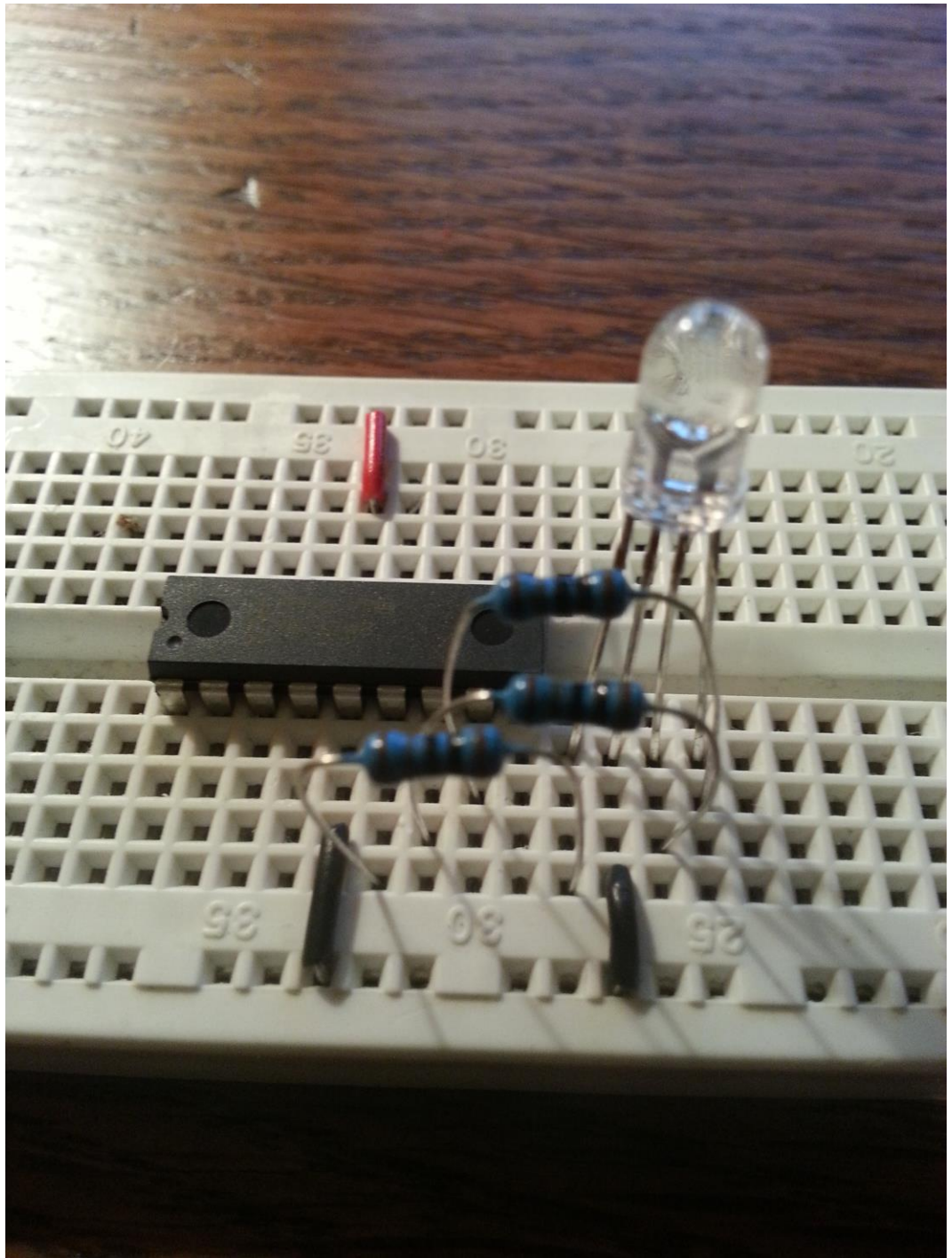
7-segment Display



MAKE SURE EACH PIN HAS A RESISTOR (EXCEPT GROUND)!


VCC
IC1
14
17
18
1
2
3
4
15
16
5
VDD
RA0/AN0
RA1/AN1
RA2/AN2/VREF
RA3/AN3/CMP1
RA4/TOCKI/CMP2
RA5/MCLR/VPP
RA6/OSC2/CLKOUT
RA7/OSC1/CLKIN
VSS
6
7
8
9
10
11
12
13
RB0/INT
RB1/RX/DT
RB2/TX/CK
RB3/CCP1
RB4/PGM
RB5
RB6/T1OSO/T1CKI/PGC
RB7/T1OSI/PGD
PIC16F628P
R1
LED1
VPP
PGC
PGD
GND

VPP
VDD
GND
PGD
PGC
1
2
3
4
5
SV1



To-Do

- Catch up on Week 1 and 2 stuff
- Get provided code to work with RGB LED
- Try flashing your LED banks with the microcontroller
- Get your 7-segment display to count

- If you finish all this: come ask me for a button and I'll show you how an input works