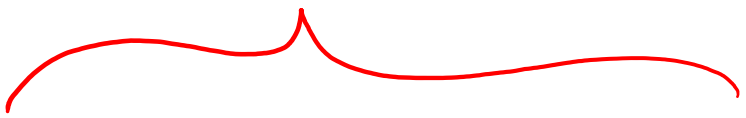
4 x AA batteries

Using the Bumblebee board

Programming

1. toolchain (gcc + avrdude)

2. download the Bumblebee library



- Windows
  - avr tools
  - make
  - avrdude
- Linux
  - avr-gcc
  - avrdude
- Mac
  - VM
  - avr_build.sh

add directories to your PATH

Programming

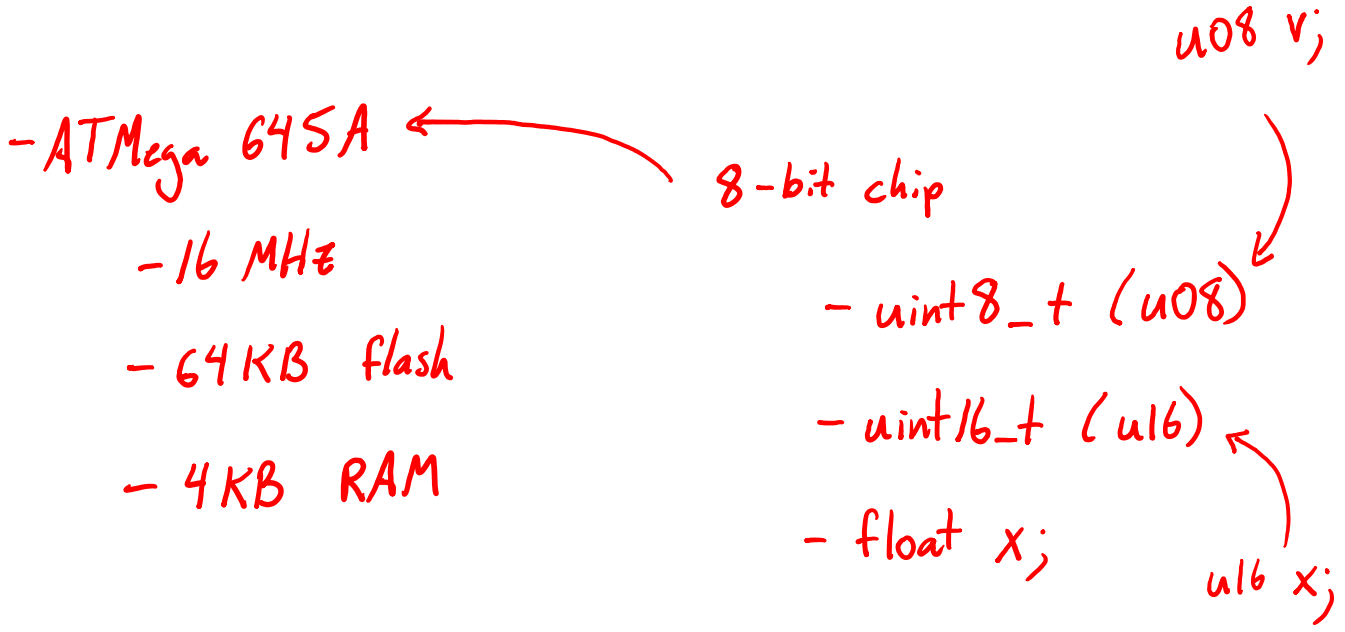
Build the library

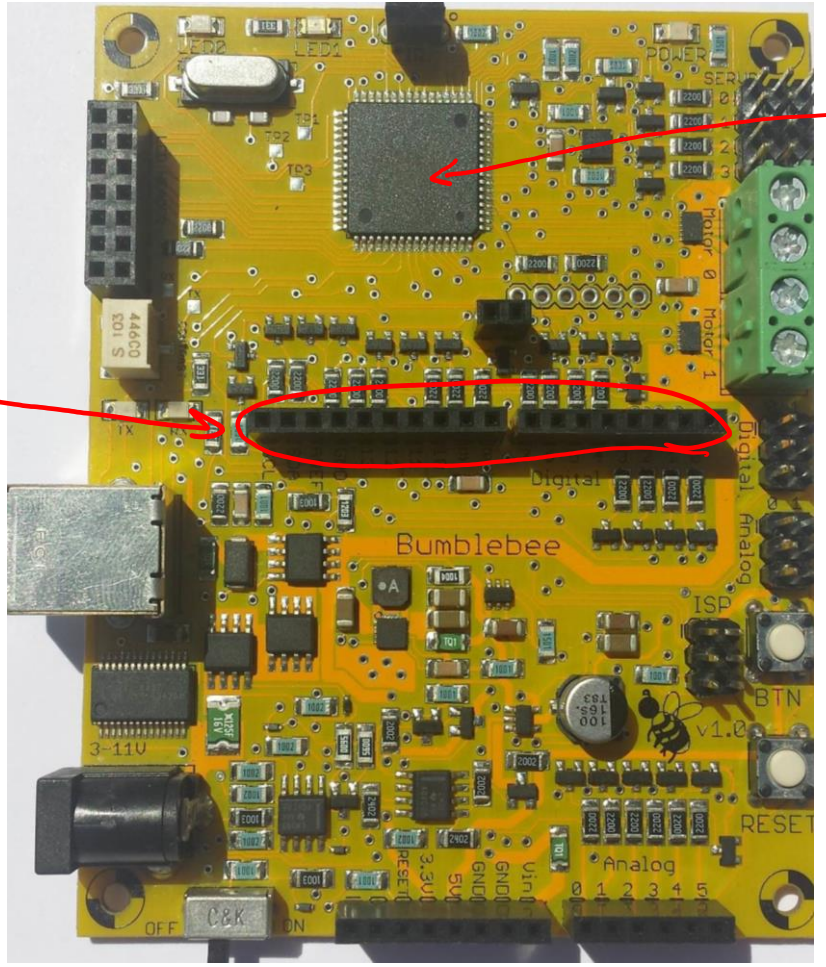
make program_windows

program_mac

program_linux

Programming in C





digital

CPU

input

output

To read a pin:

digital(num);

returns 0 or 1

digital_dir(num, dir);

sets direction

e.g. 5

1 = output
0 = input

digital_out(num, out);

pin number

output value

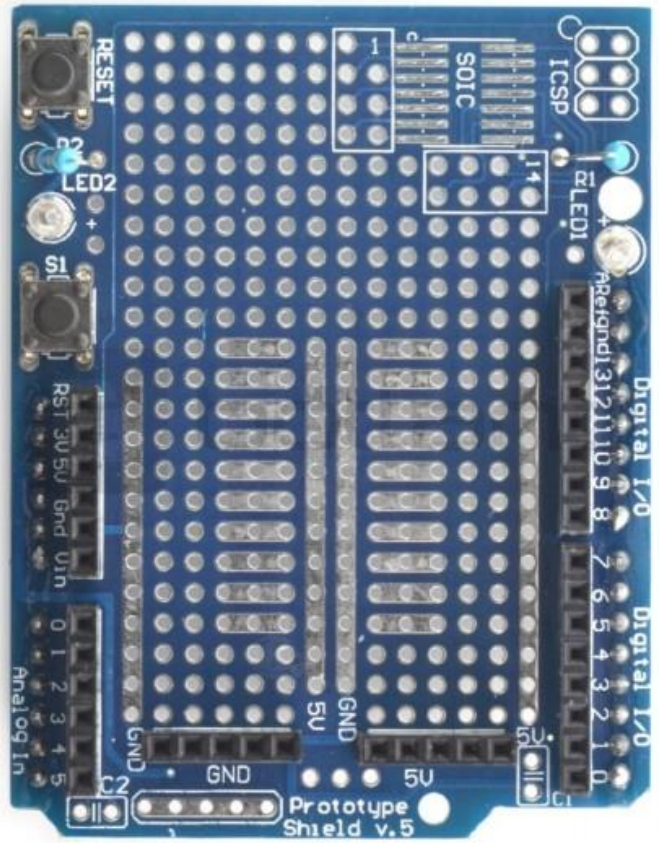
Utility Functions

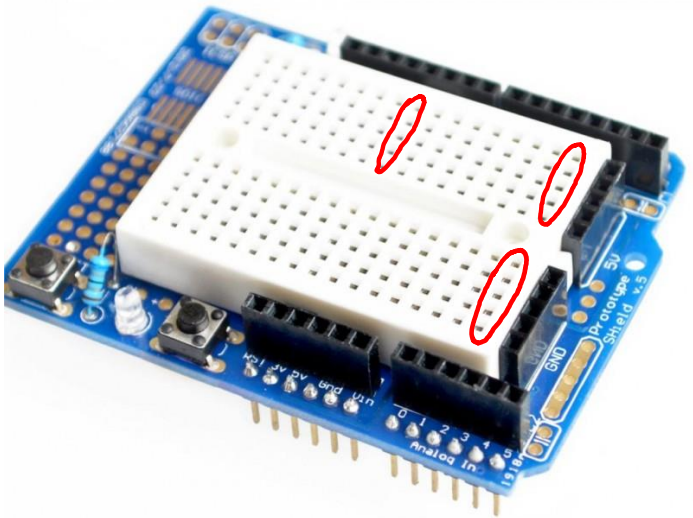
- init()
  - configures the board
  - always call at the start of your program
- led_on(u08 num), led_off(u08 num)
- get_btn() ← returns a 1 when pressed

LCD Functions

- clear_screen();
- print_num(ul6 num)
- print_string(char* str);
- lcd_cursor(col, row);

Breadboard Shield





Accelerometer Functions

```
u08 get_accel_x()
    get_accel_y()
    get_accel_z()
```

Board Debug Mode

- Lab 1 due next Monday

To enter debug mode:

- hold down BTN and press RESET

- check voltage
- read sensor
- test motors

} tilt the board to select which option