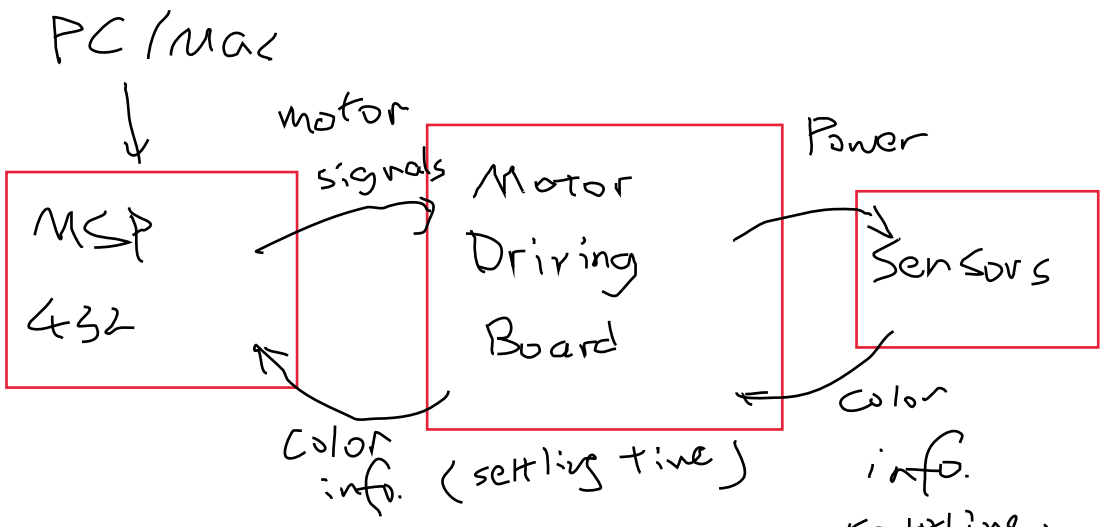
FIRST PROJECT DAY IN LAB

1. Start with no batteries in RSLK.
2. Download Basic Code from CCLE, under Week 4.
3. Launch Energia.
4. Tools | Board | Boards Manager, scroll down to Energia MSP432 EMT RED boards. Check version #; should be 5.6.3 and have "INSTALLED" next to the version number.
5. insert USB cable, check for green LED.
6. Remove USB cable.
7. Insert batteries.
8. Push slide switch to ON, check for both blue and green LEDs.
9. Push slide switch to OFF, then depress pushbutton switch. Both LEDs should turn off.
10. insert USB cable.
11. File | Examples | 01.Basics | Blink
12. Click on right-facing arrow in upper left corner of window.
13. Blinky should compile and load successfully, red LED should start blinking.
14. In lines 28 & 30, change the numbers in the arguments to delay().
15. Click on right-facing arrow in upper left corner of window.
16. The red LED should blink at a different rate.
17. Push slide switch to ON, check for both blue and green LEDs.
18. Download Basic Code from CCLE,under Week 4, store in some appropriate place.
19. In Energia, File | New; Paste Basic Code into the sketch.
20. Pick up the RSLK, click on the right-pointing arrow. One wheel should turn, one yellow LED on right front of Chassis Board should flash.
21. Power down the Chassis Board. Download the MSP432 Pinchart on CCLE, under Week 4.
22. Modify the Basic Code to make the RSLK do a doughnut.
23. Modify the code to make the car run straight on the floor.
24. Download ECE3 from CCLE, under Week 1. Do NOT unzip the zip file.
25. Sketch | Include Library | Add .ZIP Library… navigate to ECE3.zip and select.
26. Sketch | Include Library; ECE3 Library should appear on pulldown list
27. ~/Documents/Energia/libraries/ECE3/examples/IR_Sensor_Example; double-click IR_Sensor_Example.ino
28. Power up the Chassis Board.
29. Compile and download to the RSLK.
30. Tools | Serial Monitor should show 8 columns of numbers from ~500 to ~2000, depending on amount of reflection from surface.

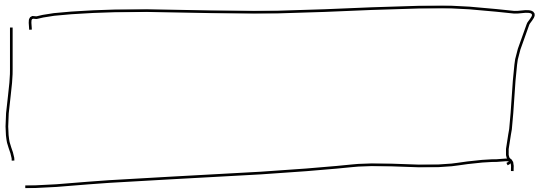
Class Project Basics:

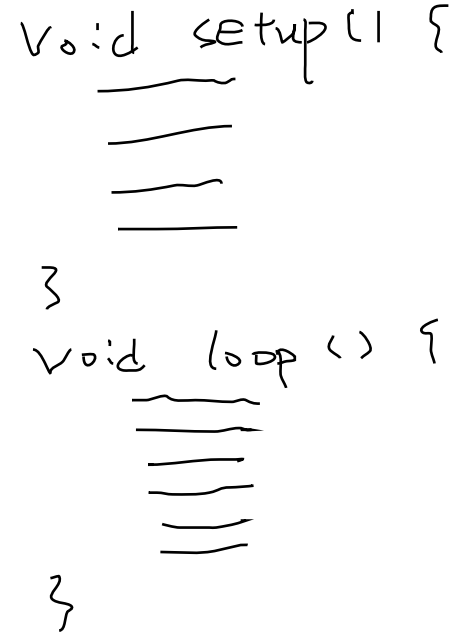
(1) Pins, Inputs and Outputs:



(2) Basic Energia Coding Scheme:

```
//#include <ECE3_LCD7.h>

uint16_t sensorValues[8]; // right -> left, 0 -> 7

const int left_nslp_pin=31;
const int left_dir_pin=29;
const int left_pwm_pin=40;

const int LED_RF = 41;

///////////////////////////////////
void setup() {
// put your setup code here, to run once:
  pinMode(left_nslp_pin,OUTPUT);
  pinMode(left_dir_pin,OUTPUT);
  pinMode(left_pwm_pin,OUTPUT);

  digitalWrite(left_dir_pin,LOW);
  digitalWrite(left_nslp_pin,HIGH);

  pinMode(LED_RF, OUTPUT);

//  ECE3_Init();

// set the data rate in bits/second for serial data transmission
```





```
  Serial.begin(9600);
  delay(2000); //Wait 2 seconds before starting

}

void loop() {
  // put your main code here, to run repeatedly:
  int leftSpd = 70;

//  ECE3_read_IR(sensorValues);

  analogWrite(left_pwm_pin,leftSpd);


//  ECE3_read_IR(sensorValues);

  digitalWrite(LED_RF, HIGH);
  delay(250);
  digitalWrite(LED_RF, LOW);
  delay(250);
 }
```

turn on

turn off

(3) Important Functions:

→ pinMode (pin_number, OUTPUT/INPUT)

↓

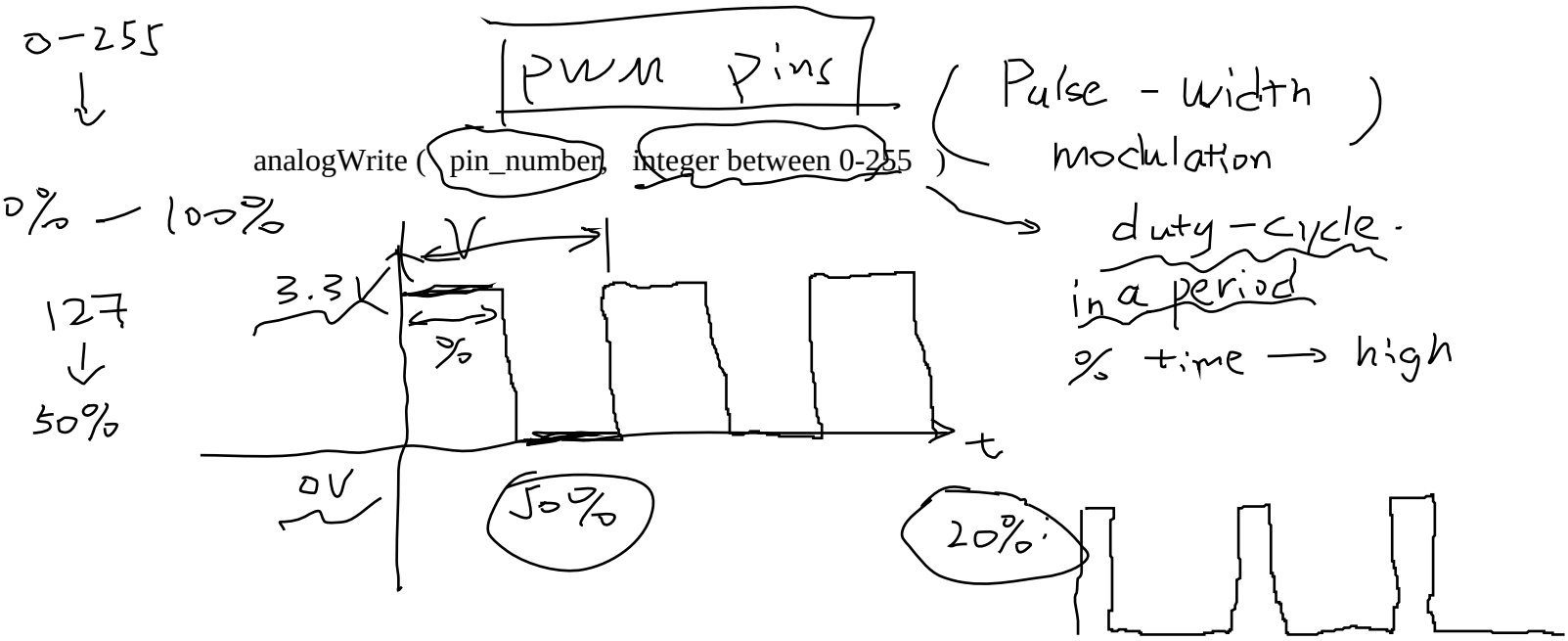
msp432

pin Chart

→ digitalWrite (pin_number, HIGH/LOW)

↓ ↓

3.3V 0V



(4) Important Pins for Motor Control:

① Non-sleep pins:
nslp
HIGH: enable
LOW: disable

3 pin — Left motor
3 pin — Right motor

② Direction pins:
HIGH: rotate one way
LOW: rotate the other way

③ PWM pins:
Integer value 0-255: how fast the motor rotates