int Debug\_LED\_13 = 13; // pin 13, debug LED

int LeftMotor\_Enable\_18 = 18; // pin D18/A6, motor left, enable

int LeftMotor\_Forward\_22 = 22; // pin 22, motor left forward, digital out

int LeftMotor\_Reverse\_23 = 23; // pin 23, motor left reverse, digital out

int RightMotor\_Enable\_19 = 19; // pin D19/A7, motor right, enable

int RightMotor\_Forward\_21 = 21; // pin 21, motor right forward, digital out

int RightMotor\_Reverse\_20 = 20; // pin 20, motor right reverse, digital out

//int LeftMotor\_Aout\_0 = 0; // pin D0, motor left, Aout

//int LeftMotor\_Bout\_1 = 1; // pin D1, motor left, Bout

int LeftEncoder\_C1 = 3; // pin 3, PWM

int LeftEncoder\_C 2 = 4; // pin 4, PWM

int RightEncoder\_C1 = 5; // pin 5, PWM

int RightEncoder\_C2 = 6; // pin 6, PWM

int LeftIncrement = 0;

int RightIncrement = 0;

int IR1\_14 = 14; // Right Right

int IR2\_15 = 15; // Right Middle

int IR3\_16 = 16; // Left Left

int IR4\_17 = 17; // Left Middle

int IR\_Read1\_14 = 0;

int IR\_Read2\_15 = 0;

int IR\_Read3\_16 = 0;

int IR\_Read4\_17 = 0;

void blinkLED() {

digitalWrite(Debug\_LED\_13, HIGH);

delay(500);

digitalWrite(Debug\_LED\_13, LOW);

delay(500);

}

//The counters are too long to be used as ISRs. We should think up of something way shorter. (One line)

void interrupt(){

attachInterrupt(digitalPinToInterrupt(LeftEncoder\_C1), LeftCounter, CHANGE);

attachInterrupt(digitalPinToInterrupt(LeftEncoder\_C2), LeftCounter, CHANGE);

attachInterrupt(digitalPinToInterrupt(RightEncoder\_C1), RightCounter, CHANGE);

attachInterrupt(digitalPinToInterrupt(RightEncoder\_C2), RightCounter, CHANGE);

}

void LeftCounter(){

LeftIncrement = LeftIncrement++ ;

}

void RightCounter(){

RightIncrement = RightIncrement++ ;

}

//After turning left…

void Proportional(){

//get value from pin 16 (should be smaller)

//get value from pin 14 (should be larger)

if(pin 16 > pin 14){

int error = value14 – value 16;

speed14 = speed14 + error;

speed16 = speed16 + error;

}

else{

}

}

//After turning right…

//void RightProportional(){

}

void forwardLeft(int i) {

digitalWrite(LeftMotor\_Enable\_18, HIGH);

analogWrite(LeftMotor\_Forward\_22, i);

analogWrite(LeftMotor\_Reverse\_23, 0);

}

void forwardRight(int i) {

digitalWrite(RightMotor\_Enable\_19, HIGH);

analogWrite(RightMotor\_Forward\_21, 128);

analogWrite(RightMotor\_Reverse\_20, 0);

}

void reverseLeft() {

digitalWrite(LeftMotor\_Enable\_18, HIGH);

analogWrite(LeftMotor\_Forward\_22, 0);

analogWrite(LeftMotor\_Reverse\_23, 128);

}

void reverseRight() {

digitalWrite(RightMotor\_Enable\_19, HIGH);

analogWrite(RightMotor\_Forward\_21, 0);

analogWrite(RightMotor\_Reverse\_20, 128);

}

void turnLeft() {

digitalWrite(LeftMotor\_Enable\_18, HIGH);

digitalWrite(RightMotor\_Enable\_19, HIGH);

analogWrite(LeftMotor\_Reverse\_23, 128);

analogWrite(RightMotor\_Forward\_21, 128);

}

void turnRight() {

digitalWrite(LeftMotor\_Enable\_18, HIGH);

digitalWrite(RightMotor\_Enable\_19, HIGH);

analogWrite(LeftMotor\_Forward\_22, 128);

analogWrite(RightMotor\_Reverse\_20, 128);

}

void readIR() {

IR\_Read1\_14 = analogRead(IR1\_14);

IR\_Read2\_15 = analogRead(IR2\_15);

IR\_Read3\_16 = analogRead(IR3\_16);

IR\_Read4\_17 = analogRead(IR4\_17);

}

void setup() {

// put your setup code here, to run once:

// setup LED

pinMode(Debug\_LED\_13, OUTPUT);

// setup Left motor

pinMode(LeftMotor\_Enable\_18, OUTPUT);

digitalWrite(LeftMotor\_Enable\_18, LOW);

pinMode(LeftMotor\_Forward\_23, OUTPUT);

analogWrite(LeftMotor\_Forward\_23, 0);

pinMode(LeftMotor\_Reverse\_22, OUTPUT);

analogWrite(LeftMotor\_Reverse\_22, 0);

// setup Right motor

pinMode(RightMotor\_Enable\_19, OUTPUT);

digitalWrite(RightMotor\_Enable\_19, LOW);

pinMode(RightMotor\_Forward\_21, OUTPUT);

analogWrite(RightMotor\_Forward\_21, 0);

pinMode(RightMotor\_Reverse\_20, OUTPUT);

analogWrite(RightMotor\_Reverse\_20, 0);

pinMode(IR1\_14, INPUT);

pinMode(IR2\_15, INPUT);

pinMode(IR3\_16, INPUT);

pinMode(IR4\_17, INPUT);

Serial.begin(9600);

}

void loop() {

// put your main code here, to run repeatedly:

blinkLED();

forwardLeft();

forwardRight();

//reverseLeft();

//reverseRight();

//turnLeft();

//turnRight();

readIR();

Serial.print("IR1: ");

Serial.println(IR\_Read1\_14);

Serial.print("IR2: ");

Serial.println(IR\_Read2\_15);

Serial.print("IR3: ");

Serial.println(IR\_Read3\_16);

Serial.print("IR4: ");

Serial.println(IR\_Read4\_17);

}