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// CARL 6.1 CODE - Sept 2018  codemyrobot@gmail.com
// This code will run the motors, RGB light and buzzer
// new ping ultrasonic is commented out
// teachers upload your student video to the codemyrobotchallenge.com
//#include <NewPing.h>
/////////////////////////////////////////////
// Pin defines
/////////////////////////////////////////////
#define MPIN1B 5 // motor 1 pin B
#define MPIN1A 6 // motor 1 pin A
#define MPIN2A 9 // motor 2 pin A
#define MPIN2B 10 // motor 2 pin B
#define buzzerPin 12
/////////////////////////////////////////////
// SRF04 pin definitions
/////////////////////////////////////////////
//#define TRIGGER_PIN 7
//#define ECHO_PIN 8
//#define MAX_DISTANCE 200
#define REDPIN A2
#define GREENPIN A1
#define BLUEPIN A0
//NewPing sonar(TRIGGER_PIN, ECHO_PIN, MAX_DISTANCE);
////////////////////////////////////////////////////
// Variables
////////////////////////////////////////////////////
int rSpeed = 195; // robot's max speed (used in Move())
//int TS1 = 75; // turn speed 1
//int FS = 75; // forward speed: the speed at which both motors turn

////////////////////////////////////////////////////
// move function - we pass a speed for each wheel m1,m2
// for each motor, one pin is held low, the other pin is toggled
// the other drive method uses two pwm signals,
////////////////////////////////////////////////////
void Move(int m1, int m2) {
  if (m1 < 0) { // forward
    analogWrite(MPIN1A, rSpeed * abs(m1) / 100);
    analogWrite(MPIN1B, 0);
  } else { // reverse
    analogWrite(MPIN1A, 0);
    analogWrite(MPIN1B, rSpeed * m1 / 100);
  }
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  if (m2 < 0) { // forward
    analogWrite(MPIN2A, rSpeed * abs(m2) / 100);
    analogWrite(MPIN2B, 0);
  } else { // reverse
    analogWrite(MPIN2A, 0);
    analogWrite(MPIN2B, rSpeed * m2 / 100);
  }
}
/////////////////////////////////////////
// Stop Function
/////////////////////////////////////////
void Stop( int delayms) {
RGBled(1, 0, 0); //RED
Move(0, 0);
delay(delayms);
}
/////////////////////////////////////////
// Forward Function
/////////////////////////////////////////
void Forward(int delayms) {
RGBled(0, 1, 0); //GREEN
Move(-75, -75);
delay(delayms);
Move(0, 0);
}
/////////////////////////////////////////
// Reverse Function
/////////////////////////////////////////
void Reverse(int delayms) {
RGBled(0, 0, 1); //BLUE
Move(75, 75);
delay(delayms);
Move(0, 0);
}
/////////////////////////////////////////
// TurnRight Function
/////////////////////////////////////////
void TurnRight(int delayms) {
RGBled(1, 1, 0); //YELLOW
Move(-75, 75);
delay(delayms);
Move(0, 0);
}
```

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/////////////////////////////////
// TurnLeft Function
/////////////////////////////////
void TurnLeft(int delayms) {
RGBled(0, 1, 1); //CYAN
Move(75, -75);
delay(delayms);
Move(0, 0);
}
/////////////////////////////////////
// Forward Function
/////////////////////////////////////
void RGBled(int redValue, int greenValue, int blueValue) {
digitalWrite(REDPIN, redValue);
digitalWrite(GREENPIN, greenValue);
digitalWrite(BLUEPIN, blueValue);
}
/////////////////////////////////////////////
// Buzzer Function
/////////////////////////////////////////////
void buzzer(int duration_ms) {
digitalWrite(buzzerPin, HIGH);
delay(duration_ms);
digitalWrite(buzzerPin, LOW);
}
///////////////////////////////////////////
// Setup - runs once
///////////////////////////////////////////
void setup() {
Serial.begin(115200); // serial for serial port
pinMode(MPIN1B, OUTPUT); // set motor pin as output
pinMode(MPIN1A, OUTPUT); // set motor pin as output
pinMode(MPIN2A, OUTPUT); // set motor pin as output
pinMode(MPIN2B, OUTPUT); // set motor pin as output
pinMode(buzzerPin, OUTPUT); // set buzzer pin as output
pinMode(REDPIN, OUTPUT); // set LED outputs
pinMode(GREENPIN, OUTPUT); // set LED outputs
pinMode(BLUEPIN, OUTPUT); // set LED outputs
Stop(2000);
buzzer(50);
}
///////////////////////////////////////////
// main loop - runs infinetly
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/////////////////////////////////////////
void loop() {
Forward(300);
Stop(150);
Reverse(250);
Stop(150);
TurnLeft(500);
Stop(150);
Forward(250);
Stop(111150);
//Reverse(250);
//Stop(150);
//TurnRight(750);
//Stop(150);
//buzzer(3);
//Stop(100000);
//buzzer(3);
}
//Move(75,0);delay(500); // back to the right 90deg
//Move(0,75);delay(500); // back to the left 90deg
//Move(-75,0);delay(500); // fwd to the right 90deg
//Move(0,-75);delay(500); // fwd to the left 90deg
/*
//Serial.print("Ping: ");
//Serial.print(sonar.ping_cm()); //
//Serial.println("cm");
if(sonar.ping_cm()<= 1){
Move(0,0);delay(250); // stop
Move(0,75);delay(600); Move(0,0);delay(250); // back to the left 90deg
Move(-75,-75);delay(750); Move(0,0);delay(250); // fwd for 250 secs
Move(75,0);delay(500); Move(0,0);delay(250); // back to the right 90deg
Move(-75,-75);delay(1000); Move(0,0);delay(250); // fwd for 500 secs
Move(75,0);delay(600); Move(0,0);delay(250); // back to the right
Move(-75,-75);delay(700); Move(0,0);delay(250); // fwd for 250 secs
Move(0,75);delay(750); Move(0,0);delay(250); // back to the left 90deg
Move(-75,-75);delay(300); Move(0,0);delay(250); // fwd for 500 secs
Move(0,0);delay(10000);
}
Move(-75,-75);
*/
```