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// CARL 6 CodeMyRobot.ca
// Ask teachers to upload your video to codemyrobotchallenge.com
// New school libraries can register at codemyrobot.ca
// To get parts or more robots see the Q&A section of the codemyrobot.ca site

##include <NewPing.h>

// Pin defines for motor - outputs
#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
// Ultra pin definitions
##define TRIGGER_PIN A2 // Arduino pin tied to trigger pin on the ultrasonic sensor.
##define ECHO_PIN A3 // Arduino pin tied to echo pin on the ultrasonic sensor.
##define MAX_DISTANCE 200 // Maximum distance we want to ping for (in centimeters).
#define REDPIN 1 // for your lights
#define GREENPIN 3
#define BLUEPIN 4

//NewPing sonar(TRIGGER_PIN, ECHO_PIN, MAX_DISTANCE);
// Variables
int rSpeed = 195; // robot's max speed (used in Move() calculations)
//int TS1 = 75; // turn speed 1
//int FS = 75; // forward speed:

// move function - we pass a speed for each wheel m1,m2 - as a percentage 0-100
void Move(int m1, int m2) {

if (m1 < 0) { // for reverse - not used
  analogWrite(MPIN1A, rSpeed * abs(m1) / 100);
  analogWrite(MPIN1B, 0);
}
else
{ // normal operation
  analogWrite(MPIN1A, 0);
  analogWrite(MPIN1B, rSpeed * m1 / 100);
}
if (m2 < 0) { // for reverse - not used
  analogWrite(MPIN2A, rSpeed * abs(m2) / 100);
  analogWrite(MPIN2B, 0);
}
}

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else
{ // normal operation
  analogWrite(MPIN2A, 0);
  analogWrite(MPIN2B, rSpeed * m2 / 100);
}
}

void Stop( int delaysms){
  RGBled(REDPIN, GREENPIN, BLUEPIN, 1, 0, 0); //RED
  Move(0,0);
  delay(delaysms);
}

void Forward(int delaysms){
  RGBled(REDPIN, GREENPIN, BLUEPIN, 0, 1, 0); //GREEN
  Move(-75,-75);
  delay(delaysms);
  Move(0,0);
}

void Reverse(int delaysms){
  RGBled(REDPIN, GREENPIN, BLUEPIN, 0, 0, 1); //BLUE
  Move(75,75);
  delay(delaysms);
  Move(0,0);
}

void TurnRight(int delaysms){
  RGBled(REDPIN, GREENPIN, BLUEPIN, 1, 1, 0); //YELLOW
  Move(-75,75);
  delay(delaysms);
  Move(0,0);
}

void TurnLeft(int delaysms){
  RGBled(REDPIN, GREENPIN, BLUEPIN, 0, 1, 1); //CYAN
  Move(75,-75);
  delay(delaysms);
  Move(0,0);
}

void RGBled(int redPin, int greenPin, int bluePin, int redValue, int greenValue, int blueValue){
  // pinMode(redPin, OUTPUT);
  pinMode(greenPin, OUTPUT);
  pinMode(bluePin, OUTPUT);
}

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//digitalWrite(redPin, redValue);
digitalWrite(greenPin, greenValue);
digitalWrite(bluePin, blueValue);
}

// 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

  Stop(2000);

}

// main loop - runs infinitely
void loop() {
  //Serial.print("Ping: ");
  //Serial.print(sonar.ping_cm()); //
  //Serial.println("cm");

  Forward(300);
  Stop(150);
  Reverse(250);
  Stop(150);
  TurnLeft(1500);
  Stop(22000);

}

//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

/*
if(sonar.ping_cm()<= 1){
  Move(0,0);delay(250); // stop

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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);
*/
```