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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

// Variables
//NewPing sonar(TRIGGER_PIN, ECHO_PIN, MAX_DISTANCE);
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);
}
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

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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);

  //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(100);

}

// main loop - runs infinitely
void loop() {
  //Serial.print("Ping: ");
  //Serial.print(sonar.ping_cm()); //
  //Serial.println("cm");
  //330 ms = 180degrees
  //200 ms = 90degrees

  Forward(375);
  Stop(1000);
  Reverse(375);
  Stop(1000);
  TurnLeft(175);

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Stop(1000);
Forward(375);
Stop(1000);
Reverse(300);
Stop(1000);
TurnLeft(165);
Stop(1000);
Forward(375);
Stop(1000);
Reverse(375);
Stop(1000);
TurnLeft(165);
Stop(1000);
Forward(375);
Stop(1000);
Reverse(375);
Stop(1000);
TurnLeft(185);
Stop(10000);

}

//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

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); */

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