Dc Motor Car Project

**This code is made for a Car with these Specifications:**

* Potentiometer
* OnoFF switch button
* Direction Witch Btn
* Spin Btn
* RGB led (excluding Blue due to lack of pins)
* UltraSonic Distance Sensor
* H-Bridge
* Power LED check

**Code:**

const int cP1 = 10;//cp = control pin

const int cP2 = 8;

const int enablePin = 9;//PWM pin

const int SecondCp1 = 12;

const int SecondCp2 = 13;

const int enablePin2 = 11;

const int dSwitchBtn = 5;// direction switch

const int PowerBtn = 4;// on off switch pin

const int potPin = A0; //this is the potentiometer pin

const int Flipbtn = 2;// will make car turn 180 when come to close to something then revert back to full stop after button is pressed again when in range

int PowerState = 0;//on off switch state variable

int dSwitchState = 0;// direction Switch state variable

int FlipState = 0;// flip state variable

int previousPstate = 0;//previous on off switch state variable

int previousDstate = 0;// previous of direction switch

int previousFstate = 0; // previous flip variable

int mEnabled = 0;

int mSpeed = 0;

int mDirection = 0;

int mFlipDirection = 0;

int Trig = 6;

int Echo = 7;

int redled = 3;

int greenled = 1;

int blueled = 0;

void setup()

{

pinMode(cP1, OUTPUT);

pinMode(cP2, OUTPUT);

pinMode(enablePin, OUTPUT);

pinMode(SecondCp1, OUTPUT);

pinMode(SecondCp2, OUTPUT);

pinMode(enablePin2, OUTPUT);

pinMode(dSwitchBtn,INPUT);

pinMode(PowerBtn,INPUT);

pinMode(Flipbtn, INPUT);

digitalWrite(enablePin,LOW);//The motor then initialize it at OFF

digitalWrite(enablePin2,LOW);

pinMode(Trig, OUTPUT);

pinMode(Echo, INPUT);

digitalWrite(Trig, LOW);

pinMode(redled,OUTPUT);

pinMode(greenled,OUTPUT);

pinMode(blueled,OUTPUT);

Serial.begin(9600);

}

void Colour(int Ramt, int Gamt, int Bamt)

{

analogWrite(redled, Ramt); //amt stands for amount

analogWrite(greenled, Gamt);

analogWrite(blueled, Bamt);

}

void loop()

{

long duration;

int distance;

PowerState = digitalRead(PowerBtn);

delay(2);

dSwitchState = digitalRead(dSwitchBtn);

FlipState = digitalRead(Flipbtn);

mSpeed = analogRead(potPin)/4;

if(PowerState != previousPstate){

if(PowerState == HIGH){

mEnabled = !mEnabled;

}}

if(dSwitchState != previousDstate){

if(dSwitchState == HIGH){

mDirection = !mDirection;

}}

if(FlipState != previousFstate){

if(FlipState == HIGH){

mFlipDirection = !mFlipDirection;

}}

if(mDirection == 1){

delay(10);

digitalWrite(cP1, LOW);

digitalWrite(cP2, HIGH);

digitalWrite(SecondCp1, HIGH);

digitalWrite(SecondCp2, LOW);

}

else{

delay(10);

digitalWrite(cP1, HIGH);

digitalWrite(cP2, LOW);

digitalWrite(SecondCp1, LOW);

digitalWrite(SecondCp2, HIGH);

}

if(mEnabled == 1){

//Code for distance Sensor

digitalWrite(Trig, LOW);

delayMicroseconds(2);

digitalWrite(Trig, HIGH);

delayMicroseconds(10);

digitalWrite(Trig, LOW);

duration = pulseIn(Echo, HIGH);

distance = duration/74/2;//formula inches

Serial.print("Distance: ");

Serial.print(distance);

Serial.println(" inches");

//Enables Motor to go forward

analogWrite(enablePin, mSpeed);

analogWrite(enablePin2, mSpeed);

}

else{

analogWrite(enablePin,0); //if the motor is turned off set EN to low

analogWrite(enablePin2,0);

}

//Distance Application Code

if(distance >30){

Colour(255,0,255);//Green

}

//if(distance <20){

//Colour(255,255,0);//Blue

// }

if(mFlipDirection == 1){

Serial.print("FLIP BUTTON ONNNNNNN");

if(distance <9){

//Colour(225,255,0);//Magenta //cannot use because I cant use the Blue anymore

Colour(200,200,0);//Lime

digitalWrite(cP1, HIGH);

digitalWrite(cP2, LOW);

digitalWrite(SecondCp1, HIGH);

digitalWrite(SecondCp2, LOW);

delay(30);

}}

else{

if(distance <9){

Colour(0,255,255);//Red

delay(1);

analogWrite(enablePin,0); //if the distance meets requirements is turned off set EN to low

analogWrite(enablePin2,0);

}

}

previousDstate = dSwitchState;

previousPstate = PowerState;

previousFstate = FlipState;

delay(30);

}