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);

}