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// Three LED lights, one DIY aluminium "button" that acts as a sensor to measure when two
aluminium parts are connected,
// and one DC-motor connected to a potentiometer
// that can adjust the speed of the car that is going around.

// constants won't change. They're used to set pin numbers, these are the numbers on the arduino
uno:

const int led1 = 11;
const int led2 = 12;
const int led3 = 13;

//the motor driver is used to connect the DC motor to arduino: pin numbers:
const int standBy = 6;
const int PWMA = 3;
const int AIN1 = 4;
const int AIN2 = 5;

//The aluminium DIY button is defined as "buttonPin"
const int buttonPin = 8; // the number of the pushbutton pin

// variables (int instead of const int) will change throughout, but stil need to be defined:
int buttonState = 0; // variable for reading the aluminium "buttonPin" status

const int potPin = A2; // "potPin" is the potentiometer. A2 is located on the arduino.
int potValue = 0; //defining the variable for the potetiometer
int motorValue = 0; //defining the variable for the motor

void setup() {
  //void setup for leds
  pinMode(led1, OUTPUT); // Declare LED1 as an output
  pinMode(led2, OUTPUT); // Declare LED2 as an output
  pinMode(led3, OUTPUT); // Declare LED3 as an output

```

```
//void setup for potentiometer
pinMode(potPin, INPUT);

// initialize the alu DIY button pin as an input:
pinMode(buttonPin, INPUT);

//void setup for motor
pinMode(standBy, OUTPUT);
pinMode(PWMA, OUTPUT);
pinMode(AIN1, OUTPUT);
pinMode(AIN2, OUTPUT);

Serial.begin(9600); //needed to start the process of the loop
}

void loop() {

// order to read the state of the aluminium DIY button value:
buttonState = digitalRead(buttonPin);

// checks if the aluminium is connected. If it is, the buttonState is HIGH:
if (buttonState == HIGH) {
// STOP motor from driving
Serial.println("MOTOR OFF");
stop();
} else if (buttonState == LOW) {
Serial.println("MOTOR ON");

potValue = analogRead(potValue);
```

```

Serial.print("potValue = ");
Serial.println(potValue);

motorValue = map(potValue, 280, 1023, 0, 255);

motorValue = constrain(motorValue, 0, 100); //max speed is 255, but to prevent the car from going
around too fast, the speed is adjusted to a constrain of max 150
forward(motorValue); //the order "forward" is defined below
delay(20);
}

//streetlights (3LEDS), turn on when the potentiometer is turned on:
if (potValue > 350) { //the potvalue can be tweeked to the sensetivity of your potentiometer and
your own wishes.
digitalWrite(led1, HIGH); // Turn LED1 on
digitalWrite(led2, HIGH); // Turn LED2 on
digitalWrite(led3, HIGH); // Turn LED3 on

}

//streetlights off when potentiometer is turned off:
else {
digitalWrite(led1, LOW); // Turn LED1 on
digitalWrite(led2, LOW); // Turn LED2 on
digitalWrite(led3, LOW); // Turn LED3 on
}
}

//declare what "forward" means
void forward(int spd) {
runMotor(spd, 0);
}

//declare what "back" means

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```
void back(int spd) {  
    runMotor(spd, 1);  
}
```

```
//declare what runMotor means
```

```
void runMotor(int spd, int dir) {  
    digitalWrite(standBy, HIGH);
```

```
    boolean dirPin1 = LOW;
```

```
    boolean dirPin2 = HIGH;
```

```
    if (dir == 1) {
```

```
        dirPin1 = HIGH;
```

```
        dirPin2 = LOW;
```

```
    }
```

```
    digitalWrite(AIN1, dirPin1);
```

```
    digitalWrite(AIN2, dirPin2);
```

```
    analogWrite(PWMA, spd);
```

```
}
```

```
//declare what "stop" means
```

```
void stop() {
```

```
    digitalWrite(standBy, LOW);
```

```
}
```