DC motor controller using arduino

```
define motorout A0
define finalout1 6
define finalout2 7
int out, feedback, timer, T = 100;
float error, perr, derr, ierr, kp, kd, ki, setpoint, lasterr = 0,cou
nt =0;
void setup() {
Serial.begin(9600);
pinMode(motorout,INPUT);
pinMode(finalout1,OUTPUT);
pinMode(finalout2,OUTPUT);

kp=100;
kd=10;
ki=0.0001;
}
void loop() {
feedback = analogRead(motorout);
if(count==0){
    setpoint=2.4 + feedback * 5.0 / 1024;
    if (setpoint &gt;5 )
        setpoint -= 5;
    count++;
}

error = setpoint - feedback * 5.0 / 1024;
perr = kp * error;
derr = kd * (error - lasterr);
ierr += ki * error;
```

```
lasterr=error;
out = perr + derr + ierr;

timer = millis();
Serial.print(timer);
Serial.print(&#34;    &#34;);
Serial.println(out);

if(out&gt;0) {
    digitalWrite(finalout1 , HIGH);
    digitalWrite(finalout2 , LOW);

    if(out&lt;T) {
        delay(out);
        digitalWrite(finalout1 , LOW);
        digitalWrite(finalout2 , LOW);
        delay(T-out);
    }
    else
        delay(T);

}

else
if(out &lt;0 ) {
    digitalWrite(finalout1 , LOW);
    digitalWrite(finalout2 , HIGH);

    if(out &gt; -T) {
        delay(-out);
        digitalWrite(finalout1 , LOW);
        digitalWrite(finalout2 , LOW);
```

```
61          delay(T+out);
62      }
63      else
64          delay(T);
65
66  }
67  }
```