

File: C:\Users\M4rc05\Documents\Vex\Starstruck\2223-G\3-29-2017\PID test.c

```
#pragma config(Sensor, dgtl1, RightEncoder, sensorQuadEncoder)
#pragma config(Sensor, dgtl3, LeftEncoder, sensorQuadEncoder)
#pragma config(Motor, port1, LeftMotor, tmotorVex393_HBridge, openLoop, encoderPort, dgtl3)
#pragma config(Motor, port10, RightMotor, tmotorVex393_HBridge, openLoop, reversed, encoderPort, dgtl1)
/*!!Code automatically generated by 'ROBOTC' configuration wizard !!*/

int errorLeft = 0, errorRight = 0;
int priorErrorLeft = 0, priorErrorRight = 0;
int integralLeft = 0, integralRight = 0;
int derivativeLeft = 0, derivativeRight = 0;

float KP = 1.75, KI = .001, KD = 10, bias = 0;

int iterationTime = 1;
int outputLeft = 0, outputRight = 0;
int pulses = 360, maxSpeed = 50;

task main() {
    clearDebugStream();
    for(int c=1; -(SensorValue[RightEncoder])<= pulses && SensorValue[LeftEncoder]<=pulses; c++){ //loop to run until encoders are equal or greater t
        //(run until one revolution completed)
        errorLeft = pulses + SensorValue[LeftEncoder];
        errorRight = pulses - SensorValue[RightEncoder];
        integralLeft += (errorLeft * iterationTime);
        integralRight += (errorRight * iterationTime);
        derivativeLeft = (errorLeft - priorErrorLeft)/iterationTime;
        derivativeRight = (errorRight - priorErrorRight)/iterationTime;
        outputLeft = KP*errorLeft + KI*integralLeft + KD*derivativeLeft;
        outputRight = KP*errorRight + KI*integralRight + KD*derivativeRight + bias;
        priorErrorLeft = errorLeft;
        priorErrorRight = errorRight;
        if(outputLeft > maxSpeed) outputLeft = 50;
        if(outputRight > maxSpeed) outputRight = 50;
        motor[LeftMotor] = outputLeft; //move the left motor forward at a power of 50
        motor[RightMotor] = outputRight; //move the right motor forward at a power of 50
        writeDebugStreamLine("%i\t%i",-(SensorValue[LeftEncoder])/(.001*c),SensorValue[RightEncoder]/(.001*c));
        wait1Msec(iterationTime);
    }
}
```

