Souce code with detailed comments(1)

```
def setMotor():
    motor.set_default_speed(100)
    motorS.set_default_speed(100)

def run(pw):
    motor.start(pw)

def stop():
    motor.stop()
    motorS.stop()
```

Necessary for robot operation.forward, stop, etc.lograms

Souce code with detailed comments(2)

```
def corner():
    motorS.run_to_position(-15, blocking=False)
    time.sleep(0.2)
    motor.run_for_degrees(300,-pw)
    motorS.run_to_position(15, blocking=False)
    time.sleep(0.2)
    motor.run_for_degrees(100,pw)
    motorS.run_to_position(15, blocking=False)
    time.sleep(0.2)
    motor.run_for_degrees(1000,pw)

def cornerB():
    motorS.run_to_position(15, blocking=False)
    time.sleep(0.2)
    motor.run_for_degrees(300,-pw)
    motorS.run_to_position(-15, blocking=False)
    time.sleep(0.2)
    motor.run_for_degrees(100,pw)
    motorS.run_to_position(-15, blocking=False)
    time.sleep(0.2)
    motor.run_for_degrees(1000,pw)
```

90-degree bend along an interior wallProgram for

Souce code with detailed comments(3)

```
def correct_value(n):
    if n < 150:
        return 150
    elif n > 450:
        return 450
    else:
```

Program to limit ultrasonic sensor values to a minimum of 150 and a maximum of 450

```
setMotor()
cornerOn=False
x=0
segment_p = 0
dis = -1
count = 0
countB = 0
countC = 0
non = 0
CC = 0
CCC = 0
```

Set initial values of variables necessary for executing the main program

Souce code with detailed comments(4)

```
while True:
    if x == 0:
        stop()
        print('setup')
        GPIO.wait_for_edge(18, GPIO.FALLING)

        if 0 <= motorS.get_aposition():
            shukai = 1
        else:
            shukai = 0

        if shukai ==1:
            dis_p = dist.get_distance()
        else:
            dis_p = distB.get_distance()

        motorS.run_to_position(0, blocking=False)
        #GPIO.wait_for_edge(18, GPIO.FALLING)
        time.sleep(0.5)
        run(pw)
        x = 1

    if count >=12:
        CCC += 1
        print (CCC)
        if CCC == 100 :#150
            stop()
            break
```

Main program

Program to start the robot with a switch

A program that counts the number of bends and stops the robot above a certain value

Souce code with detailed comments(5)

```
if shukai ==1:
        dis = dist.get_distance()
    else:
        dis = distB.get_distance()

    countB += 1
    if dis == -1 or dis >1100 :
        non += 1

        if non >= 10 and countB >=180 or non > 15:
            if non > 10:
                if shukai == 1:
                    cornerC()
                else:
                    cornerD()
            else:
                if shukai == 1:
                    corner()
                else:
                    cornerB()
            if countB >= 120 or count == 0 and countB <= 119:
                count +=1

            countC = 0
            countB = 0
            run(pw)
```

Program measures distance to wall and moves forward while maintaining distance.When the distance becomes much larger than the measured value Or when it becomes unmeasurable,The program turns 90 degrees.

Souce code with detailed comments(6)

```
count +=1

        countC = 0
        countB = 0
        run(pw)

        while not 0 < dis < 340 and not countC > 60:
            if shukai == 1:
                dis = dist.get_distance()
                print(dis)
                countC += 1
                print(countC)
            else:
                dis = distB.get_distance()
                print(dis)
                countC += 1
                print(countC)

        countC = 0
        countD = 0

        motorS.run_to_position(0, blocking=False)
        motor.run_for_degrees(100,pw)
```

If the distance between the robot and the inner wall is too far after a 90-degree turn, program the robot to turn until a certain distance is reached.

Souce code with detailed comments(7)

```
if dis == -1:
        if shukai == 1:
            segment = 10
        else:
            segment = -10

    elif dis <= 200:
        if shukai == 1:
            segment = -10
        else:
            segment = 10

    elif dis <= 100:
        if shukai == 1:
            segment = -15
        else:
            segment = 15

elif dis >1000:
        segment = 0

    elif -10 <= dis_p - dis <= 25:
        segment = 0

    elif 25 < dis_p - dis:
        if shukai == 1:
            segment = -5
        else:
            segment = 5

    elif dis_p - dis < 30:
        if shukai == 1:
            segment = 10
        else:
            segment = -10
```

Program to change steering depending on distance from wall

Pseudo code

Obstacle Challenge

Determine the color of the obstacle with the greatest width in the camera's view.

↓

When the width of the obstacle reaches the standard value, start evasive action.

↓

If the obstacle is red, avoid it to the right. If the obstacle is green, avoid it to the left.

Frow diagrams