**Pi2Go Simulator Programming: Work Sheets and Exercises 18 Sample Answers and Trouble Shooting**

**WS18**

**Challenge Problem Sample Answer:**

**import** simclient.simrobot **as** pi2go

**import** time

pi2go.init()

**def** drive\_to\_wall():

**while** (**not** pi2go.irCentre() **and** **not** pi2go.irLeft() **and** **not** pi2go.irRight()):

pi2go.forward(10)

pi2go.stop()

**def** spin(direction):

**if** (direction == 'right'):

pi2go.spinRight(10)

**else**:

pi2go.spinLeft(10)

**def** obstacle\_to(direction):

**if** (direction == 'right'):

**return** pi2go.irRight()

**else**:

**return** pi2go.irLeft()

**def** opposite\_direction(direction):

**if** (direction == 'right'):

**return** 'left'

**else**:

**return** 'right'

**def** follow\_wall(direction):

**if** (pi2go.irCentre()):

**while**(pi2go.irCentre() **or** obstacle\_to(direction)):

spin(opposite\_direction(direction))

**elif** (obstacle\_to(direction)):

pi2go.forward(10)

time.sleep(2)

**elif** (**not** obstacle\_to(direction)):

spin(direction)

time.sleep(1)

drive\_to\_wall()

**while** (**not** pi2go.irLeftLine()):

follow\_wall('right')

pi2go.forward(10)

time.sleep(3)

pi2go.reverse(10)

time.sleep(10)

pi2go.spinLeft(10)

time.sleep(5)

**while** (**not** pi2go.irLeftLine()):

follow\_wall('left')

pi2go.stop()

**Troubleshooting:** It may take some experimentation to get sleep times correct. This above version of wall following often ends up “bouncing along” the side of the wall since the robot becomes angled slightly towards it. Some fine tuning of timings might help with this, as might using the ultra-sonic sensor as well as the irCentre sensor – but, to be honest, these steps make the program a lot more fiddly and don’t necessarily improve performance. Really the robot needs more sensors at the side in order to help it determine the angle it is at with respect to the wall. So the above is probably as good as can reasonably be expected.



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