**Virtual Initio Programming: WS9 Sample Answers and Troubleshooting**

**WS9**

**Sample Answer 1:** The program prints “Waiting” until something comes closer than 5cm. Then it “waves its head”.

**Sample Answer 2:** Notice that three while loops are needed - wait for the switch to be switched on, wait for the switch to be switched off and then wait for the switch to be switched on again. Students may need some help thinking through this.

import simclient.simrobot as initio, time

initio.init()

while (initio.getDistance() > 50):

print(“Waiting”)

initio.setServo(1, 20)

while not (initio.getDistance() > 50):

print(“Waiting for Obstacle to Move”)

while (initio.getDistance() > 50):

print(“Still Waiting”)

initio.setServo(1, 0)

**Sample Answer 3:** not (initio.getDistance() > 5)

**Program:**

import simclient.simrobot as initio, time

initio.init()

if not (initio.getDistance() > 50):

initio.forward(10)

while (initio.getDistance() > 50):

print(“Waiting for Obstacle”)

initio.stop()

**Sample Answer 4:** not (initio.irLeft() or initio.irRight())

or alternatively (not (initio.irLeft()) and not (initio.irRight())

**Program:**

import simclient.simrobot as initio, time

initio.init()

if (not (initio.irLeft() or initio.irRight())):

initio.forward(10)

while (not (initio.irLeft() or initio.irRight())):

print(“Still Advancing”)

initio.stop()

**WS10**

**Sample Answer 1:** While neither infra-red sensor detects an obstacle it moves forward and then sleeps for 10 seconds. If either sensor detects an obstacle then it stops.

**Sample Answer 2:** It does nothing until the left infra-red sensor detects something. Then it moves forward until the right infra-red sensor detects something. Then it stops.

**Sample Answer Exercise 1:**

import simclient.simrobot as pi2go

pi2go.init()

pi2go.forward(10)

while True:

if (pi2go.irLeft()):

break

pi2go.stop()

**Sample Answer Exercise 2:**

import simclient.simrobot as pi2go

import time

pi2go.init()

while True:

if (pi2go.irLeft() and pi2go.irRight()):

break

if (pi2go.irLeft()):

pi2go.spinRight(10)

elif (pi2go.irRight()):

pi2go.spinLeft(10)

else:

pi2go.forward(10)

continue

print("Spinning to find a clear route")

pi2go.stop()

**Ex10**

**Sample Answer Exercise 1:**

**Program:**

import simclient.simrobot as pi2go

pi2go.init()

if (pi2go.irCentre()):

pi2go.setLED(0, 1000, 1000, 1000)

if (pi2go.irLeft()):

pi2go.setLED(3, 1000, 1000, 1000)

if (pi2go.irRight()):

pi2go.setLED(1, 1000, 1000, 1000)

**Sample Answer Exercise 2:**

import simclient.simrobot as pi2go

import time

pi2go.init()

while not (pi2go.getSwitch()):

continue

time.sleep(2)

while not (pi2go.getSwitch()):

print(pi2go.getDistance())

**Sample Answer Exercise 3:**

import simclient.simrobot as pi2go

pi2go.init()

while not (pi2go.getSwitch()):

if (pi2go.irCentre()):

pi2go.setLED(0, 1000, 1000, 1000)

else:

pi2go.setLED(0, 0, 0, 0)

if (pi2go.irLeft()):

pi2go.setLED(3, 1000, 1000, 1000)

else:

pi2go.setLED(3, 0, 0, 0)

if (pi2go.irRight()):

pi2go.setLED(1, 1000, 1000, 1000)

else:

pi2go.setLED(1, 0, 0, 0)

**Sample Answer Exercise 4:**

import simclient.simrobot as pi2go

pi2go.init()

if (pi2go.getSwitch()):

while (pi2go.irCentre()):

pi2go.reverse(10)

pi2go.stop()

**Sample Answer Exercise 5:**

import simclient.simrobot as pi2go

pi2go.init()

if (pi2go.getSwitch()):

while not (pi2go.irCentre()):

pi2go.forward(10)

pi2go.stop()

**Sample Answer Exercise 6:**

import simclient.simrobot as pi2go

pi2go.init()

while (pi2go.getSwitch()):

if not (pi2go.irCentre()):

pi2go.forward(10)

else:

pi2go.reverse(10)

pi2go.stop()



University of Liverpool, 2019

This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).