**Virtual Initio Programming: WS9, WS10 and Ex10 Sample Answers and Troubleshooting**

**WS9**

**Sample Answer 1:** The program prints “Waiting” until the switch is pressed. Then it “waves its head”.

**Sample Answer 2:** Notice that three while loops are needed - wait for the distance to be less than 50, wait for the distance to be greater than 50 and then wait for the distance to be less than 50 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 initio

initio.init()

initio.forward(10)

while True:

 if (initio.irLeft()):

 break

initio.stop()

**Sample Answer Exercise 2:**

import simclient.simrobot as initio

import time

initio.init()

while True:

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

 break

 if (initio.irLeft()):

 initio.spinRight(10)

 elif (initio.irRight()):

 initio.spinLeft(10)

 else:

 initio.forward(10)

 continue

 print("Spinning to find a clear route")

**Ex10**

**Sample Answer Exercise 1:**

**Program:**

import simclient.simrobot as initio

initio.init()

if (initio.irLeft()):

 initio.setServo(1, 20)

if (initio.irRight()):

 initio.setServo(1, -20)

**Sample Answer Exercise 2:**

import simclient.simrobot as initio

import time

initio.init()

while not (initio.irLeft()):

 continue

time.sleep(2)

while not (initio.irRight()):

 print(initio.getDistance())

**Sample Answer Exercise 3:**

import simclient.simrobot as initio

initio.init()

while True:

 if (initio.irLeft()):

 initio.setServo(1, 20)

 if (initio.irRight()):

 initio.setServo(1, -20)

**Sample Answer Exercise 4:**

import simclient.simrobot as initio

initio.init()

while (initio.irLeft() and initio.irRight()):

 initio.reverse(10)

initio.stop()

**Sample Answer Exercise 5:**

import simclient.simrobot as initio

initio.init()

while not (initio.irLeft() or initio.irRight() or initio.getDistance() < 50):

 initio.forward(10)

initio.stop()

**Sample Answer Exercise 6:**

import simclient.simrobot as initio

initio.init()

while True:

 while not (initio.irLeft() or initio.irRight() or initio.getDistance() < 50):

 initio.forward(10)

 while (initio.irLeft() or initio.irRight() or initio.getDistance() < 50):

 initio.reverse(10)



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