**Initio Programming: WS5&6 Sample Answers and Troubleshooting**

**WS5**

**Troubleshooting:** The biggest cause of bugs in the exercises in WS5 are likely to be spelling errors (and possibly spacing errors if the students indent anything for some reason). If they do get errors, they should be encouraged to look at the line number indicated in the error message and check for spelling.

The IDLE IDE is good at highlighting syntax errors and the like. If the program won’t even run, then students should be encouraged to look at the parts of the code highlighted in the IDE.

**Sample Answer 1:** The robot pans its ultrasonic sensor 45 degrees. Bright students may realise that although the program contains initio.forward(10) they don’t see this execute because it is interrupted by initio.stop() soon after.

**Sample Answer 2:**

import robohat as initio

initio.init()

initio.forward(10)

initio.setServo(0, -45)

initio.stop()

initio.setServo(0, 0)

**Potential Problems:** If the ultrasonic servo starts at 0 in the new program (or -45 in the first program) then the program will appear to do nothing at all. Until WS6, there are no commands available to delay the execution of the next command in an Initio program. There is obviously quite a lot of scope for confusion here that may need explaining.

**WS6**

**Troubleshooting:** Students can still type commands into the IDLE window (e.g. initio.stop()) even after running a program from a file.

**Sample Answer 1:** The robot moves forward for 10 seconds and then stops.

**Sample Answer 2:** Changed the input for time.sleep(10) to time.sleep(20)

**Sample Answer 3:**  Note that the wait at the start allows time to unplug the keyboard, mouse and monitor from the robot.

import robohat as initio, time

initio.init()

time.sleep(30)

initio.forward(10)

time.sleep(10)

initio.spinRight(10)

time.sleep(10)

initio.stop()

**Exercises 6: Simple Programs**

**Sample Answer 1:**

import robohat as initio, time

initio.init()

initio.spinRight(10)

time.sleep(2)

print(initio.getDistance())

initio.stop()

**Sample Answer 2:**

import robohat as initio, time

initio.init()

initio.setServo(0, 20)

time.sleep(5)

initio.setServo(0, -20)

time.sleep(5)

initio.setServo(0, 10)

**Sample Answer 3:** Note that the answers may vary depending upon the speed the robot turns.

This answer includes a wait at the start in order to allow the robot to be unplugged and pauses each time readings are taken to help the programmer tell if a quarter circle has been turned. Spin speed and timings will depend on battery power.

import robohat as initio, time

initio.init()

time.sleep(30)

print(initio.irLeft())

print(initio.irRight())

initio.spinLeft(60)

time.sleep(2)

initio.stop()

time.sleep(5)

print(initio.irLeft())

print(initio.irRight())

initio.spinLeft(60)

time.sleep(2)

initio.stop()

time.sleep(5)

print(initio.irLeft())

print(initio.irRight())

initio.spinLeft(60)

time.sleep(2)

initio.stop()

time.sleep(5)

print(initio.irLeft())

print(initio.irRight())

initio.spinLeft(60)

time.sleep(2)

initio.stop()

**Sample Answer 4:** Note speeds may vary!

import robohat as initio, time

initio.init()

time.sleep(20)

initio.forward(10)

time.sleep(10)

initio.forward(20)

time.sleep(10)

initio.forward(30)

time.sleep(10)

initio.stop()

**Sample Answer 5:**

import robohat as initio, time

inito.init()

time.sleep(20)

initio.setServo(0, 20)

time.sleep(5)

initio.setServo(0, -20)

time.sleep(5)

initio.setServo(0, 10)

inito.forward(10)

time.sleep(10)

initio.setServo(0, 20)

time.sleep(5)

initio.setServo(0, -20)

time.sleep(5)

initio.setServo(0, 10)

inito.spinLeft(10)

time.sleep(10)

initio.setServo(0, 20)

time.sleep(5)

initio.setServo(0, -20)

time.sleep(5)

initio.setServo(0, 10)

initio.reverse(10)

time.sleep(10)

pi2go.stop()

**Sample Answer 6:** Note answers will vary depending upon the obstacle course created, and the robot speed.

import robohat as initio, time

initio.init()

time.sleep(20)

initio.spinRight(60)

time.sleep(2)

initio.forward(10)

time.sleep(10)

initio.spinLeft(60)

time.sleep(2)

initio.forward(10)

time.sleep(15)

initio.stop()



University of Liverpool, 2019

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