**Virtual Initio Programming: Ex14 and WS14 Sample Answers**

**WS14**

What is printed out when you run the program? (It takes 1 minute to run)

***Probably 620***

**Exercise:** Modify the program so that it prints out the total distance measured over 10 measurements.

import robohat as initio

import time

initio.init()

count = 0

total\_distance = 0

while (count < 10):

total\_distance = total\_distance + initio.getDistance()

time.sleep(3)

count = count + 1

print("The Total Distance is: " + str(total\_distance))

**Exercise:** Write a program that will take readings from the distance sensor until a total distance of over 1000 has been measured and then prints out the average distance per reading.

import robohat as initio

import time

initio.init()

count = 0

total\_distance = 0

while (total\_distance < 1000):

total\_distance = total\_distance + initio.getDistance()

time.sleep(3)

count = count + 1

print("The Average Distance is: " + str(total\_distance/count))

**Working with Strings**

Try running the following program:

import robohat as initio

name = input(['Please enter your name'])

print("Hello \"" + name + "\"")

What happens?

*It prompts the user to enter their name and then prints* ***Hello*** *followed by their name.*

**Exercise:** Write a program that uses new line and tab to ask someone their first name and then their surname then prints Hello followed by a tab then their first name and then prints their second name on a new line.

import robohat as initio

fname = input(['Please enter your first name'])

sname = input(['Please enter your second name'])

print("Hello \t" + fname + "\n" + sname)

**Ex11-14**

**Exercise 1**:

import robohat as initio

import time

initio.init()

d1 = initio.getDistance()

time.sleep(1)

d2 = initio.getDistance()

if (d1 != d2):

print("The readings were: " + str(d1) + " and " + str(d2))

**Exercise 2:** Note inclusion of sleep at the start to allow time to disconnect the robot.

import robohat as initio

import time

initio.init()

time.sleep(10)

o1 = initio.irLeft()

o2 = initio.irRight()

if (o1 == o2):

initio.reverse(10)

elif (o1):

initio.spinRight(10)

else:

initio.spinLeft(10)

time.sleep(10)

initio.stop()

**Exercise 3**:

import robohat as initio

import time

initio.init()

fb = input(["Please enter forward or backward"])

if (fb == 'forward' or fb == 'backward'):

seconds = input(["How long would you like the robot to move (enter a number under 10)?"])

time.sleep(10)

if (int(seconds) < 10):

if (fb == 'forward'):

initio.forward(10)

else:

initio.reverse(10)

time.sleep(int(seconds))

initio.stop()

**Exercise 4**:

import robohat as initio

import time

initio.init()

fb\_incorrect = True

while(fb\_incorrect):

fb = input(["Please enter forward or backward"])

if (fb == 'forward' or fb == 'backward'):

fb\_incorrect = False

s\_incorrect = True

while(s\_incorrect):

seconds = input(["How long would you like the robot to move (enter a number under 10)?"])

if (int(seconds) < 10):

time.sleep(10)

s\_incorrect = False

if (fb == 'forward'):

initio.forward(10)

else:

initio.reverse(10)

time.sleep(int(seconds))

else:

print('You did not enter a number under 10')

else:

print('You did not enter forward or backward')

initio.stop()

**Exercise 5:**

import robohat as initio

import time

initio.init()

direction = input(["Which way would you like the robot to move? (F, B, L, R)"])

if (direction == "F"):

initio.forward(10)

elif (direction == "B"):

initio.reverse(10)

elif (direction == "L"):

initio.spinLeft(10)

elif (direction == "R"):

initio.spinRight(10)

count = 0

while(count < 10):

print(initio.getDistance())

time.sleep(5)

count = count + 1

initio.stop()

**Exercise 6:**

import robohat as initio

initio.init()

direction = input(["Which way would you like the robot to move? (F, B, L, R)"])

while(direction != "S"):

time.sleep(10)

if (direction == "F"):

initio.forward(10)

elif (direction == "B"):

initio.reverse(10)

elif (direction == "L"):

initio.spinLeft(10)

elif (direction == "R"):

initio.spinRight(10)

time.sleep(10)

initio.stop()

direction = input(["Which way would you like the robot to move next? (F, B, L, R, S)"])

initio.stop()

**Exercise 7:**

import robohat as initio

import time

initio.init()

seconds = input(["Please enter a time in seconds"])

time.sleep(10)

initio.forward(10)

count = 0

d = 0

while (count < int(seconds)):

time.sleep(1)

d = d+initio.getDistance()

count = count + 1

initio.stop()

print("Average Distance was " + str(d/count))



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/)