**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))



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