**Initio Programming: Python Statements and Initio Commands**



**AIM:** After completing this worksheet you should be able to control your Initio robot using simple statements issued at the Python Command Line and be able to explain what a statement in a programming language is.

**You Need:** To complete this worksheet you need to have an Initio that is connected to a keyboard, mouse and monitor (see WS1) and to understand how to start and stop IDLE from the Linux Command Line (see WS2).

**Set up your robot and start IDLE.**

**Remember: You can scroll back through commands in IDLE by typing *ctrl-p***

In order to control your robot you need to *initialise it properly.* To initialise your robot type the following at the Python Command Line

>> import robohat as initio

>> initio.init()

Now you can use simple commands to control your robot. Try typing the following:

>> initio.forward(20)

>> initio.stop()



**Question 1:** What happens?

Each of these commands initio.init(), initio.forward(20), initio.stop() is a *python statement.* Statements are the basic commands that are used to build up programs. You have several commands available to you for operating the Initio robot.

These commands are described in the box on the next page. Not that parts in *italics* are inputs to the commands which you have to select. So for **initio.spinLeft(***speed***)** you have to replace *speed* with a number between 0 and 100.

**initio.stop()**

**initio.forward(***speed***)** where *speed* is a number and 0 <= *speed* <= 100

**initio.reverse(***speed***)** where *speed* is a number and 0 <= *speed* <= 100

**initio.spinLeft(***speed***)** where *speed* is a number and 0 <= *speed* <= 100

**initio.spinRight(***speed***)** where *speed* is a number and 0 <= *speed* <= 100

**initio.turnForward(***leftSpeed, rightSpeed***)** where *leftSpeed* and *rightSpeed* are numbers and 0 <= *leftSpeed, rightSpeed* <= 100

**initio.turnReverse(***leftSpeed, rightSpeed***)** where *leftSpeed* and *rightSpeed* are numbers and 0 <= *leftSpeed, rightSpeed* <= 100

**initio.setServo(***servo, angle***):** where *servo* is either 0 or 1 and -90 <= *angle* <= 90

Try typing the following:

>> initio.setServo(0, 20)



**Question 2:** What happens?

initio.setServo controls two *servo motors* that move the sensor at the front of the robot (you will learn about the sensor in worksheet 4)*.* It takes two inputs: the number for the servo (0 is for *tilt* which moves the sensor up and down. 1 is for *pan* which moves the sensor from side to side), followed by the angle in degrees you want to move it to (where 0 means it is pointing forwards dead centre). So the command you just typed gets the servo to pan 45 degrees from the centre point.

Try typing the following:

>> initio.setServo(1, -45)



**Question 3:** What happens?

**Question 4:** Try four commands from the table. What do they do?

**Command Result**

**Remember:** When you have finished working with the robot type initio.cleanup() at the command, exit IDLE, and select Shutdown from the Raspberry Pi menu item. Once the robot has shut down, switch it off.



 University of Liverpool, 2019

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