

1001ICT Introduction To Programming 1 2013-2

Laboratory 5

School of Information and Communication Technology
Griffith University

August 20, 2013

<i>When</i>	Teaching week 6
<i>Goals</i>	In this laboratory you will write programs that use loops.
<i>Marks</i>	4
<i>Robots</i>	Cyclops-NXT
<i>Props</i>	Bollard
<i>Tracks</i>	Stripe Track WhiteBlack Track

1 Preparation

Before your lab class:

- Print these lab notes. You need to refer to them *a lot* before the lab class and during it.
- Read up to section 15 of the lecture notes.
- Browse the `console` and `nxt` environment documentation available at <http://www.ict.griffith.edu.au/arock/itp/students/mash/>.
- You can start work before your lab class. If you can't write the complete programs, you could at least create the program files, with header comments and imports.

2 Pre-laboratory questions (1 mark)

Answer the following in the spaces provided, *before your laboratory class*.

1. For each of the programs you are to write this week:

MaSH console program 1

(a) Is the loop going to be definite or indefinite? _____

(b) Which loop statement will be required? _____

MaSH NXT program 1

(a) Is the loop going to be definite or indefinite? _____

(b) Which loop statement will be required? _____

MaSH console program 2

(a) Is the loop going to be definite or indefinite? _____

(b) Which loop statement will be required? _____

2. (a) What method is used to turn on a lamp? _____

(b) Is it a procedure or a function? _____

(c) How can you tell?

3. (a) What method is used to determine whether a touch sensor is currently pushed or not?

(b) Is it a procedure or a function? _____

(c) How can you tell?

4. (a) What method is obtain the current light level being observed by a light sensor?

(b) Is it a procedure or a function? _____

(c) How can you tell?

5. What is the Java operator meaning “not”? _____

3 Activities

All programs must:

- have header comments showing the name of the file, the author’s name, and the purpose of the program;
- use constants for motor and sensor ports; and
- be neatly indented.

3.1 MaSH console program 1 (1 mark)

- Write a program that reads a number and prints that many hash characters (#) and then a newline. Example:

```
$ java Line
Enter the size: 50
#####
$
```

3.2 MaSH NXT program 1 (1 mark)

- Write a program that makes the robot drive across 5 black stripes on the stripe track.

3.3 MaSH NXT program 2 (1 mark)

- This problem will be revealed during the laboratory class.

3.4 MaSH console program 2 (no marks, just kudos)

- Write a program that counts the number of lines in a text file.
- Use **input redirection** to read from a file instead of the keyboard.

4 After the Laboratory

- Organize the work you have done into folders on your network drive.