1005ICT Object Oriented Programming 2015-2
Laboratory 4
School of Information and Communication Technology
Griffith University
August 15, 2015

When Teaching week 5
Goals In this laboratory, the focus is on using class java.util.Scanner.
Marks 3

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 7 of the lecture notes.
- This lab builds on last week’s solution. If you did not complete the relevant parts of last week’s lab, please come to a common time for help to catch up.
- Revise the syntax of Java for and while loops, given in section of the 1001ICT Introduction To Programming lecture notes, titled “Making It Happen – Again”.
- Revise the syntax of Java selections (if statements), given in section of the 1001ICT Introduction To Programming lecture notes, titled “Making It Happen – Or Not”.
- Browse the java.lang.Scanner documentation in the Java API. Reading this for yourself is an important part of the exercise.
- You can experiment and create the programs before your class.

2 Pre-laboratory questions (0.5 marks)

Complete the following sentences in the space provided, before your laboratory class.

1. What package contains class Scanner?

2. A new-to-Java programmer has put this statement in a program.

    Scanner sc = new Scanner(System.in);

This shows the error messages reported by the compiler:

```java
$ javac PreWrong.java
PreWrong.java:4: cannot find symbol
symbol : class Scanner
location: class PreWrong
    Scanner sc = new Scanner(System.in);
  ^
PreWrong.java:4: cannot find symbol
symbol : class Scanner
location: class PreWrong
    Scanner sc = new Scanner(System.in);
```
In your own words, describe what the programmer has forgotten to do.

3. The new-to-Java programmer has fixed the previous problem. Now this statement causes this error.

```java
int i = Scanner.nextInt();
```

In your own words, describe what the programmer has done wrong.

4. What method in class `Scanner` reads a whole line of text? ______________

5. What method in class `Scanner` can look ahead and tell whether there is another line of text to read? ______________

3 Activities

3.1 Program 1 (1 mark)

- Repeat the first program from last week, one that reprints the lesser of two strings (case ignored), with the difference that the two strings to be compared are not to be input as command line arguments, but instead as two lines of text read from standard input, and prompted for with a question mark.

- Example:

```bash
$ java LesserString2
? Jack Sprat could eat no fat
? His wife could eat no lean
Lesser is: His wife could eat no lean
$
```

- Use MaSH Online Judge problem-id: 0503-lesserString2 to check your answer.
3.2 Program 2 (1.5 marks)

Last week, part of Program 2 was a class that represented a rectangle, with a function to return the rectangle’s area.

- Copy the rectangle class, unmodified from last week, and reuse it in this new program.
- Write a new class with a main method that reads a word and then sets of 4 numbers that specify rectangles, \((x, y, w, h)\). When the word is “area”, calculate and print the area. When the word is “perimeter”, calculate and print the perimeter. When the word is “quit”, exit the program, without reading the numbers.
- Prompt for input with a question mark.
- Note that the program loops until “quit” is entered.
- It is not required that the program handle incorrect (for example misspelled) inputs.
- An example run of this program:

```
$ java RectangleTool
? area 1 2 3 4
Area of (1.0, 2.0, 3.0, 4.0) = 12.0
? perimeter 1 2 3 4
Perimeter of (1.0, 2.0, 3.0, 4.0) = 14.0
? area 2 3 4 5
Area of (2.0, 3.0, 4.0, 5.0) = 20.0
? quit
$
```

- Use MaSH Online Judge problem-id: 0507-rectTool to check your answer.

3.3 Program 3 (no marks, just kudos)

- Write a program that reads all of standard input and prints only the lexicographically greatest (ignoring case) line.
- Use MaSH Online Judge problem-id: 0509-greatestLine to check your answer.

3.4 Program 4 (no marks, just kudos)

- Write a program that reads all of standard input and for each line of input prints only the greatest word (ignoring case) on that line. Words are separated by whitespace. All lines in the input will contain at least one word.
- Use MaSH Online Judge problem-id: 0509-greatestWords to check your answer.

4 After the Laboratory

- Organise the work you have done into folders on your network drive.
- Please answer these feedback questions.
  - What was the most difficult aspect of this laboratory?
  - Did you find an error in these lab notes?