THE UNIVERSITY OF SYDNEY

INFO1113 Week 1 Tutorial

Compiling, Types and Variables

Introduction

Introduce yourself to the rest of the class, what degree you are in, why you are interested in programming and what you did over the break. Make sure you know your tutor's name by the end of the tutorial.

Edstem

We use EdStem for our forum, challenges and assignments. please get familiar with Edstem as it will be used heavily through out the semester and is typically the place where announcements are made. Please make sure you can login and reply to Masa's welcome post. If you cannot login, please notify your tutor so they can address this issue.

Linux

It is recommended that you get familiar with linux and have access to a unix or unix-like operating system (Linux or macOS). For this tutorial and through out the semester we will like if you could reboot into linux on the lab machines.

To reboot into Red Hat Linux or Fedora Linux on the lab machines, please reboot the computer and you will be presented with a boot screen asking you to choose between Windows and Linux, Please select Linux, login and please move onto the next section.

Terminal and filesystem

Before we learn any Java code we will get familiar with the terminal and unix command line environment.

cd	Change directory
mkdir	Make directories
ls	List directory contents
rmdir	Remove directory
rm	Remove
mv	Move (also used to rename files)
cp	Copy
pwd	Print Working Directory

Directory symbols

..	Parent Directory	cd ..
.	Current Directory	./program
-	Previous directory	cd -
~	Home directory	cd
/	Root directory	cd /

Question 1: Create and navigate your home drive

Firstly, please ensure that you have logged into linux on the lab machines.

Create a new directory

```
> mkdir INFO1113
```

Navigate to the directory

```
> cd INFO1113
```

Create simple `.java` file.

```
> touch HelloWorld.java
```

Question 2: Java Version

Find out what version of Java is installed on your current machine. Do this by typing `java -version` and `javac -version`

Question 3: Hello World!

Now to write a simple Hello World program!

Write out the "Hello, World!" program in a text editor of your choice (Gedit, Atom, Vim, Emacs, or whatever you prefer).

```
public class HelloWorld {

        public static void main(String[] args) {
                System.out.println("Hello, World!");
        }

}
```

You *must* name your file `"HelloWorld.java"` (same as the class name). Save it in your own directory that you have created. You are now able to compile it using the `javac` command.

```
javac HelloWorld.java
```

You may notice that a `.class` file has been created. This file contains the bytecode that the `jvm` can execute.

Run the program by entering

```
java HelloWorld
```

Your program should output:

```
Hello, World!
```

Input and Output

Input and output differ with Java in comparison to other languages. Java has a large `Reader` and `Writer` library that can be used for a variety of different usecases.

Focusing on just standard input and output, you should have observed from the previous question the method used to output characters to the terminal.

Input is a little different. We will have to wrap `System.in` object with a Scanner object to read in standard input data into our program.

```
Scanner scan = new Scanner(System.in);

String line = scan.nextLine(); //Reads the next line
int number = scan.nextInt();
```

Please refer to the Java documentation

Question 4: Meet and greet!

You are tasked with writing a program that will ask for the user's name and greet them with "Hello <name>!"

```
Hi, What's your name? Trent
Hello Trent!
```

`boolean` type and `if` statements

Like other languages, Java allows code to branch through if-else statements. This is expressed with the following:

`if(`*expression*`)`

The *expression* must be a boolean expression that evaluate to `true` or `false`. Unlike other language Java is strict in the type that is evaluated within the if statement and the type must be `boolean`. Languages such as C will check if expression is non-zero to evaluate to `true`.

```
int x = 5;
boolean exp = x < 6;
if(exp) {
        System.out.println("x is less than 6");
}
```

Or

```
int x = 5;
if(x < 6) {
        System.out.println("x is less than 6");
}
```

Question 5: Sort 3 integers

Write a program that will rank the 3 integers from largest to smallest. Using only if statements, output the integers in the correct order.

```
public class Sort3 {

        public static void main(String[] args) {
                int x = 0;
                int y = 5;
                int z = 3;

                //Your code here
        }
}
```

Question 6: Grade Program

Write a program that will output the grade a student will be awarded based on the mark given as a command line argument.

Your program should output:

- if the grade is >= 85, the student will be awarded a "High Distinction"
- if the grade is >= 75 and < 85, the student will be awarded a "Distinction"
- if the grade is >= 65 and < 75, the student will be awarded a "Credit"
- if the grade is >= 50 and < 65, the student will be awarded a "Pass"
- if the grade is >= 0 and < 50, the student will be awarded a "Fail"

Note: Command line arguments in java are provided through `args` parameter in the main function. Unlike other programming languages, args does not contain the program name as the first argument.

Question 7: Die roll

You are to write a program that simulate a die roll. Your program should output the roll. You can either `import java.util.Random` or use `Math.random()` for this task.

Remember: A common die has 6 sides and is numbered 1 to 6.

```
> java DieRoll
5
```

Question 8: Assessed Task: Online Task 0 (Practice)

Remember you are required to complete a Online Task within the due date. Go to EdStem for this unit and click on Assessment to find out the task and the due date. This will be a practice task to familiarise yourself with the procedure.