Seminar 1. Basic Interaction with Java

ECE 318 Programming Principles for Engineers

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Seminar overview - guide

This practical guide aims to help you understand the basics of Java and get some exposure to simple use of arrays and basic print statements.

Before proceeding and doing something in practice:

1) Go through all the slides in Topic 1 and then the first 10 slides in Topic 2_1
2) Ensure that you go through the guides provided in the next slide

For the Wednesday seminar:

1. ***Try the drills on your own device and your own pace*** – **use the seminar to ask the TA for any issues** – *feel free to try the drills during the seminar*

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Useful

Useful and vital

IntelliJ and the Java environment installation guide:
https://www.jetbrains.com/help/idea/installation-guide.html

Useful and optional

1) How to navigate the MS DOS filesystem on your Windows machine / simple operations: https://blogs.umass.edu/Techbytes/2014/11/14/file-navigation-with-windows-command-prompt/
2) How to navigate your MacOS terminal: https://tutorials.codebar.io/command-line/introduction/tutorial.html
3) How to navigate your GNU/Linux terminal: https://ubuntu.com/tutorials/command-line-for-beginners#1-overview

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IntelliJ and Debugging

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JAVA Development Kit

1) ## Java Runtime Environment (JRE)

   - Includes the code behind all variable types and built-in functions (e.g. println)
   - Also includes the Java Virtual Machine (JVM) which allows Java code to run on any platform!

1) ## A Java Compiler (javac)

   - A compiler that translates java code into code that a computer can execute

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Verify that you have the JAVA compiler

Change directory to the sdk folder:

cd C:\Program Files\Java\jdk1.8.0_161\bin

run the compiler with argument -version to find the version:

javac -version

```
C:\Program Files\Java\jdk1.8.0_161\bin>javac -version
javac 1.8.0_161
```

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Some useful terminal/cmd commands

Change directory/folder: **cd**

Example: "cd C:\"   - changes our current terminal to the directory C:\

List contents of a directory: **ls** (for unix), **dir** (for windows)

Example: "ls C:\"   - lists/prints all the files and folders in the directory C:\

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Anatomy of a Java program

- Documentation Section (vital – for good practice)
- Package Declaration (optional)
- Import Statements (vital)
- Interface Section (optional)
- Class Definition (vital)
- Class Variables and Constants (vital)
- Main method Class (vital)
- Methods & Behaviours (vital)

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Example of a program

- Open the MyCalculator.java file (provided in the Labs folder in the Teams channel Folder Seminars/Seminar1-2/) in Notepad or a text editor (ideally not MS word!) and navigate through the code and the comments – identify the structure of the code.

- After that, discuss with your tutor if questions rise.
  - Proceed to the next step!

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Hello JAVA

```java
// Java code for printing Hello world!

public class HelloWorld {


    public static void main(String[] args) {

    //write code in here that you want to execute


        System.out.println("Hello world!");

    }


}
```


The name of the class should be the same with the name of the FILE !!

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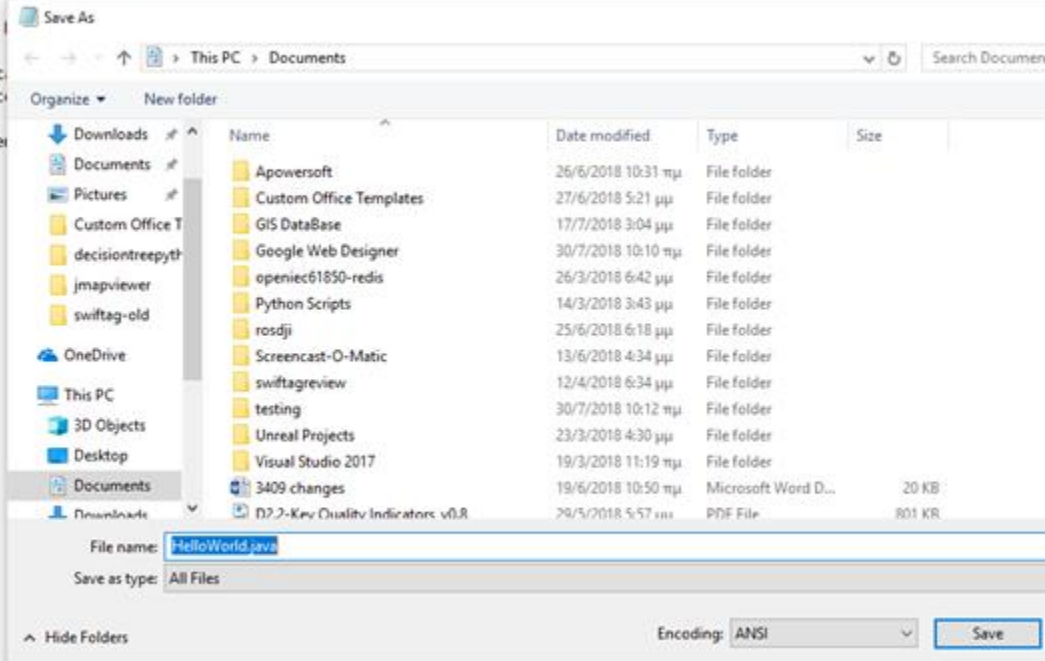
Compiling

To compile use **javac <complete path to file.java>**

```
C:\Program Files\Java\jdk1.8.0_161\bin>javac "C:\Users\mterzi01\Documents\HelloWorld.java"

C:\Program Files\Java\jdk1.8.0_161\bin>
```

If the compiling was successful, a file.class will be created

```
C:\Program Files\Java\jdk1.8.0_161\bin>cd "C:\Users\mterzi01\Documents"\

C:\Users\mterzi01\Documents>dir
 Volume in drive C is OSDisk
 Volume Serial Number is F80E-7910

 Directory of C:\Users\mterzi01\Documents

06/09/2018  04:38 μμ    <DIR>          .
06/09/2018  04:38 μμ    <DIR>          ..
19/06/2018  10:50 πμ            19.460 3409 changes.docx
26/06/2018  10:31 πμ    <DIR>          Apowersoft
27/06/2018  05:21 μμ    <DIR>          Custom Office Templates
29/05/2018  05:57 μμ           819.913 D2.2-Key Quality Indicators_v0.8.pdf
17/07/2018  03:04 μμ    <DIR>          GIS DataBase
19/03/2018  01:57 μμ               236 gitignore_global.txt
30/07/2018  10:10 πμ    <DIR>          Google Web Designer
06/09/2018  04:40 μμ               426 HelloWorld.class
06/09/2018  04:34 μμ               225 helloworld.java
19/03/2018  01:57 μμ               173 hgignore_global.txt
```

Running

cd to the directory where you saved the HelloWorld.java file

To run the program:

java HelloWorld

```
c:\Program Files\Java\jdk1.8.0_161>

c:\Program Files\Java\jdk1.8.0_161>cd "C:\Users\mterzi01\Documents"\

C:\Users\mterzi01\Documents>java HelloWorld
Hello world!
```

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IntelliJ IDEA

Developed by

first version released in January 2001

Available for Windows, macOS, Linux

https://www.jetbrains.com/idea/documentation/

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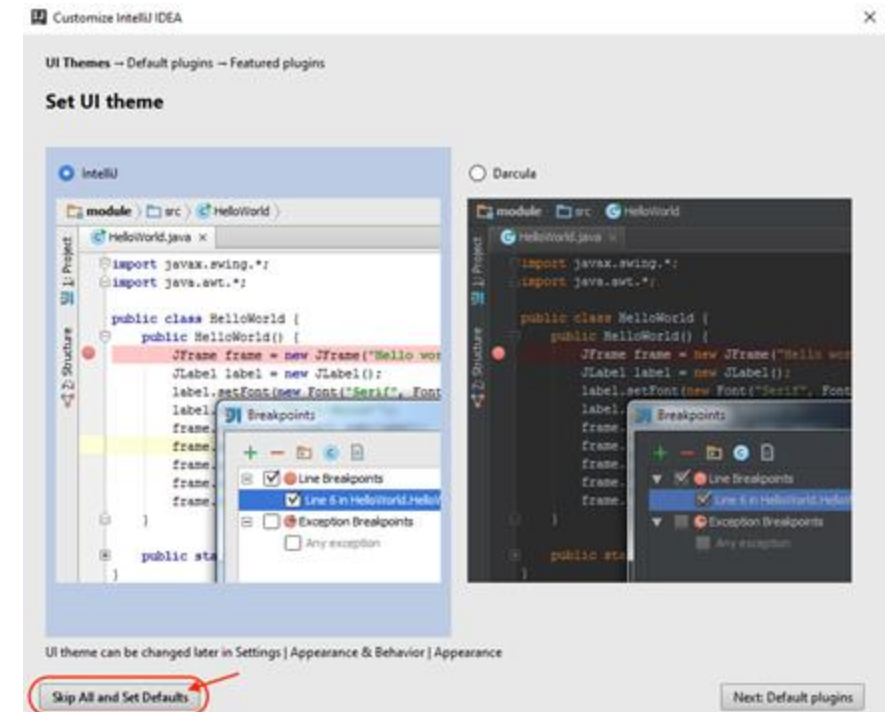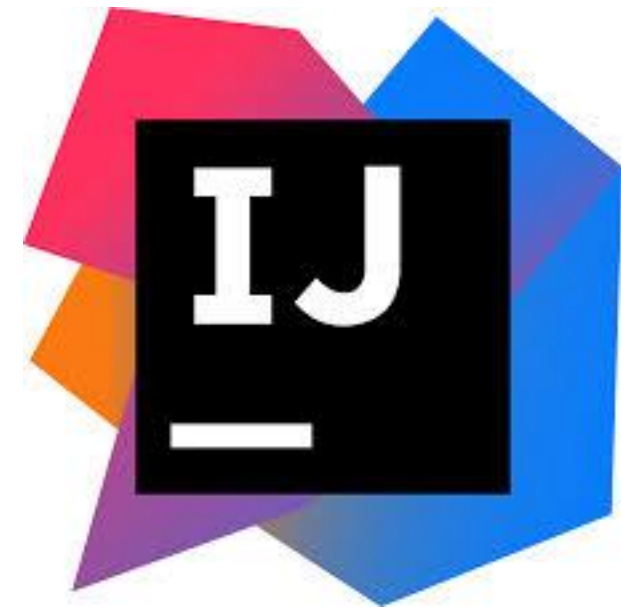
"Hello World" with IntelliJ IDEA

Create a new project

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Select the Java SDK

The sdk is at

C:/ProgramFiles/Java/

choose jdk 1.8

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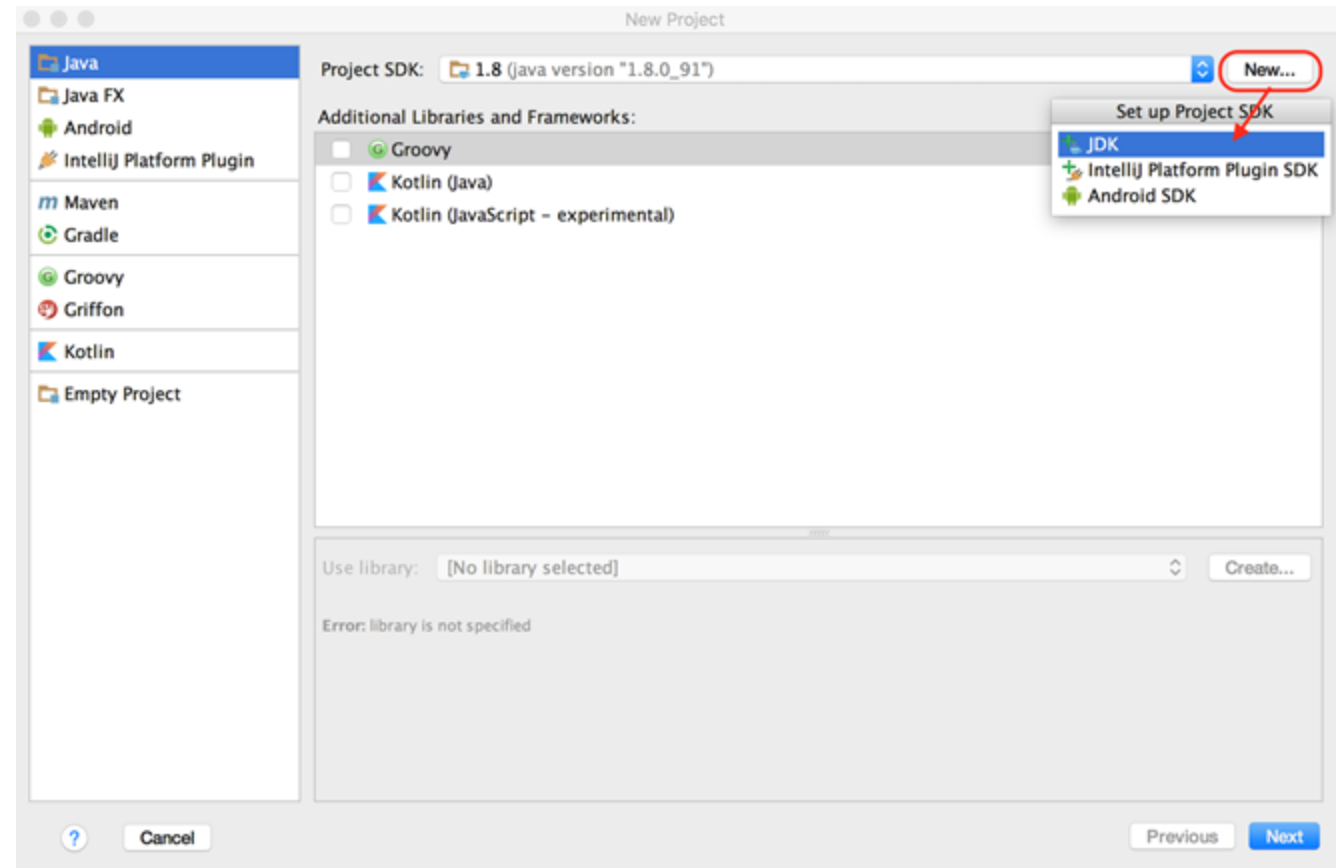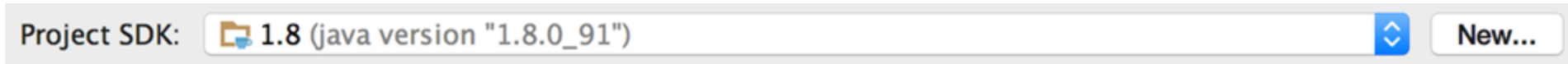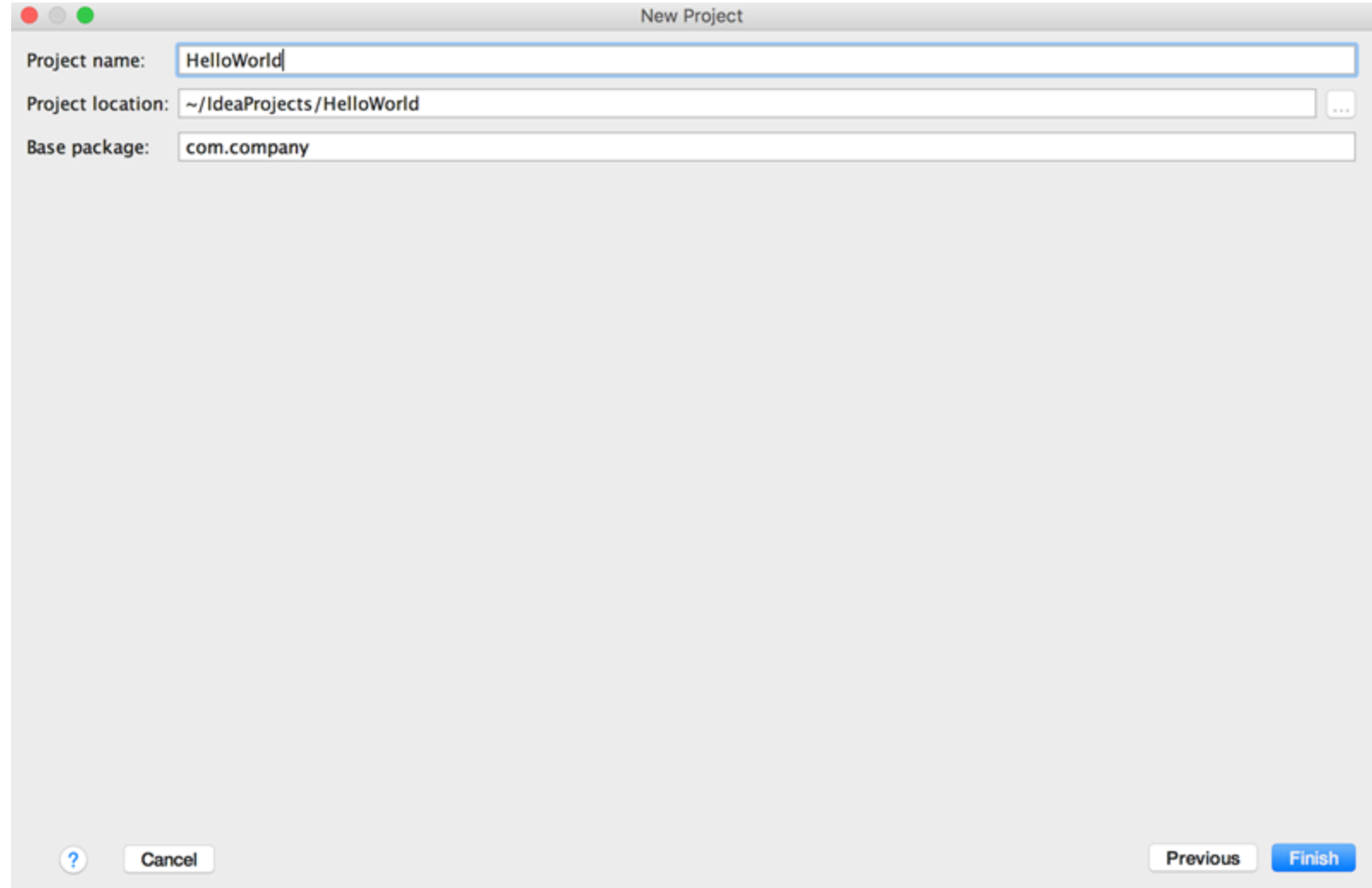
Select Command Line App Template
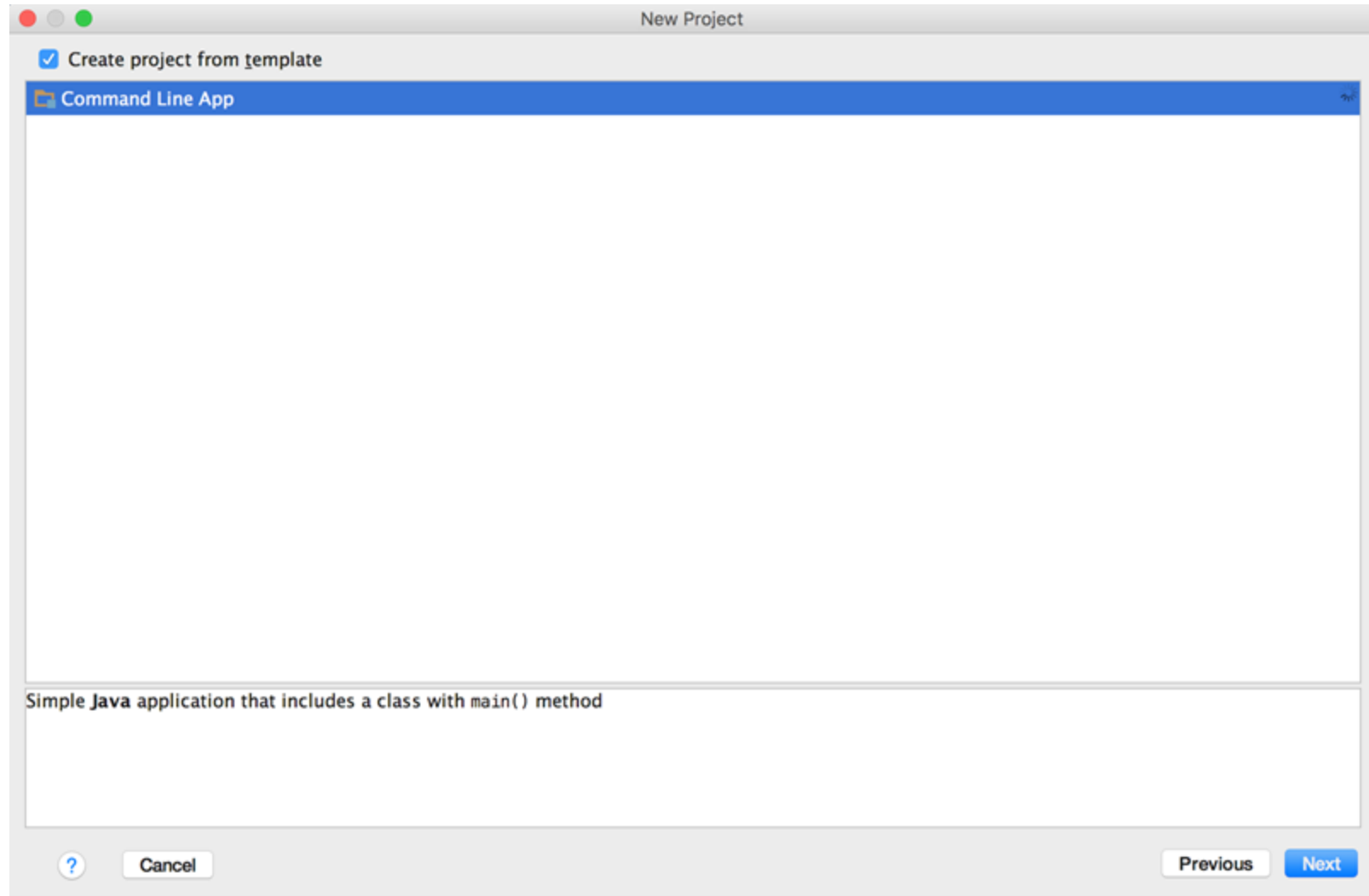
Name Your Project

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The IntelliJ Environment

The package
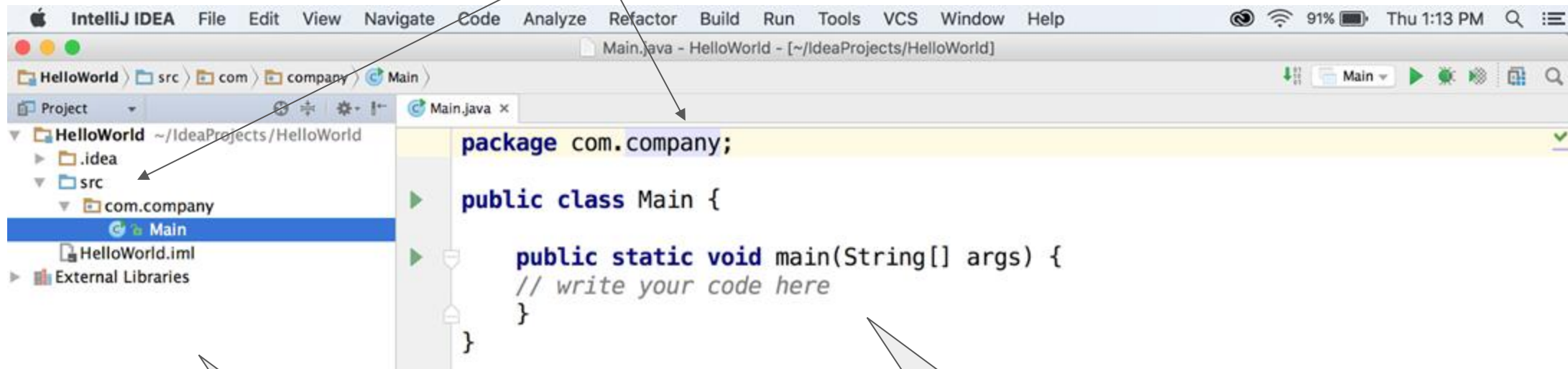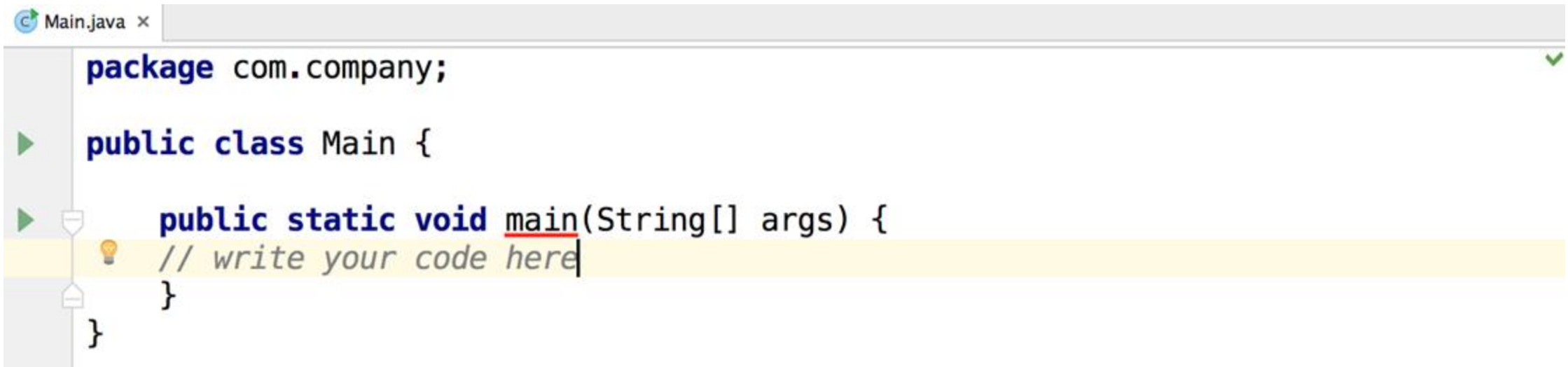
The project structure

The actual code

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Main class, main function
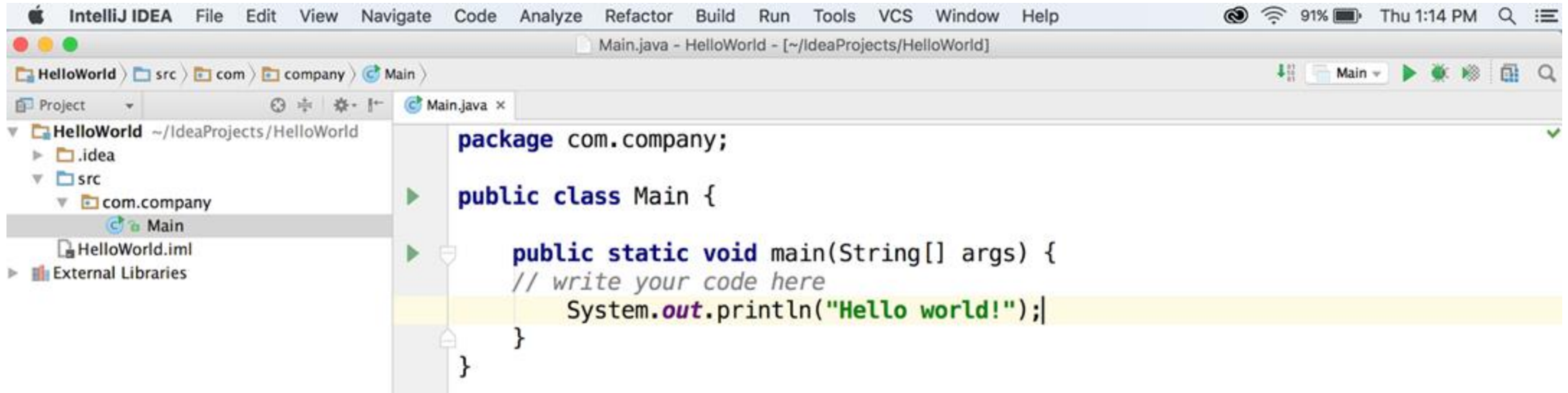
```java
Main.java ×

package com.company;

public class Main {

    public static void main(String[] args) {
        // write your code here
    }
}
```

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Hello World!

And once you write new code, it's always good practice to **save it** (File > Save or cmd/ctrl + s).

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Edit Configurations

Run!

Task:

1. Run the MyCalculator.java and interact with the output.

2. Create a program with the name MyRecord.java that will print your information.

3. Should print out using System.out.prinln(); :
   - Name and Surname next to each other (i.e., Angelos Marnerides)
   - Date of birth (i.e., 01/05/1980)
   - Town (e.g., Larnaca)
   - Sex (e.g., M or F)
   - Course codes taken for this semester next to each other (e.g., ECE318, ECE311)

Tip: you should consider the corresponding information to be stored in within an array(s) and then printing the array (s).

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