

# Exercises module 2

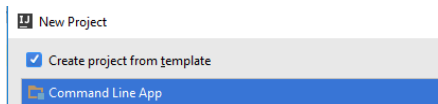
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## Exercise 2

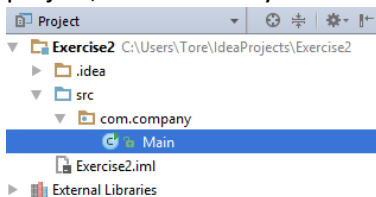
In this exercise, you'll get a chance to familiarise yourself with IntelliJ IDEA. There's no real programming involved here, since the goal is to explore the IDE.

### Main Task

1. Begin by starting IntelliJ IDEA. If you're starting it for the first time, you'll be presented with a welcome screen.
2. If you have the welcome screen, choose **Create New Project**. If you don't see the welcome screen, choose **File -> New Project**.
3. To your left, you will have a **Project Type** pane, where you can choose the type of project. Make sure that **Java** is selected and that **Groovy** is not ticked.
4. Click **Next**.
5. Click the checkbox for **Create Project from Template**, and make sure **Command Line App** is selected.



6. Templates are a way of generating the needed code for the type of application you want to write.
7. Click **Next**.
8. Give the project a name. This could be **Exercise2**.
9. Click **Finish**.
10. IntelliJ IDEA will generate a project containing one source code file, **Main.java**. You can browse the entire project through the **Project tool window** to the left. If it's not visible, select **View -> Tool Windows -> Project**.
11. The file **Main.java** is found in the Project tool window, and is opened by the editor as well. You can find this file by expanding the **src** folder. When adding more files and source code to your project, this is where you'll be able to browse it. Folders can also be added.



12. Expand the other nodes in the Project tool window (**.idea** and **External Libraries**).
13. The **External Libraries** node contains other modules, such as the jar files your program is dependent on.
14. The **.idea** node contains the IntelliJ IDEA settings for your project.
15. Take a few minutes to familiarise yourself with the menus and the overall look and feel.

## Stretch Task

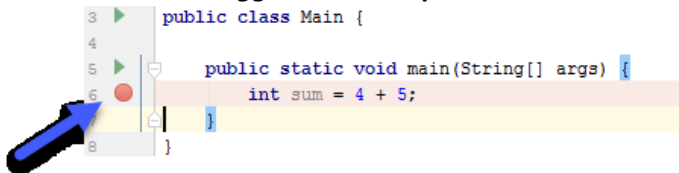
1. Add a line of code to your main method, so that your code has the following appearance:

```
package com.company;

public class Main {

    public static void main(String[] args) {
        int sum = 4 + 5;
    }
}
```

2. Add a breakpoint to the line `int sum = 4 + 5;`. You can toggle breakpoints with **Ctrl+F8** or through the menu: **Run -> Toggle Line Breakpoint**.



(you can also click in the grey area next to the line number to toggle the break-point)

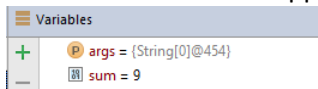
3. Build and run your program by pressing either:
  - a. **Shift+Alt+F9**
  - b. Through the menu: **Run -> Debug 'Main'**.
  - c. Clicking on the debug icon:



4. Your program will halt at the breakpoint. It will bring up a window showing the variables available.
5. Press F8 or the **Step Over** icon in the debug window to move to the next line:



Now the sum variable appears in the variables window. The value (9) of **sum** is shown here.



Throughout this course and when you are programming, this window will be *very* helpful in debugging scenarios.

6. If you have time, review these additional debugging resources:

- IntelliJ debugging  
<https://www.jetbrains.com/help/idea/2016.3/debugging.html>
- Debugging in IntelliJ IDEA 2016.1 (Video)  
<https://www.youtube.com/watch?v=VdBsUv4Inm4>
- IntelliJ IDEA Tips and Tricks  
<https://blog.jetbrains.com/idea/2015/10/intellij-idea-tips-and-tricks/>

Questions and concepts to study further on your own:

- IntelliJ vs Eclipse vs Netbeans vs Android Studio
- Java project structure
  - Introduction to the Standard Directory Layout  
<http://maven.apache.org/guides/introduction/introduction-to-the-standard-directory-layout.html>
  - Package structure for a Java project?  
<https://stackoverflow.com/questions/210567>
- History of Java, Sun vs Oracle
- What editions of Java exists? What are the differences?
- What is a Java Applet and what is the main problem with Java applets?
- What is the difference between JRE and JDK?
- What is a sandbox? And why is it important?  
[https://en.wikipedia.org/wiki/Sandbox\\_\(computer\\_security\)](https://en.wikipedia.org/wiki/Sandbox_(computer_security))
- What is the difference between a client and a server?
- What is a pointer?