# Programming with Java (1/2)
## ~ Tutorial for Windows and Linux ~

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INFO0062 - Object Oriented Programming

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[1] Greatly inspired by the work of former assistant, Jean-François Grailet.

# Introduction

This document provides key elements to get started with **Java**.

We will see how to *install* Java, and how to *compile* and *run* a Java program whether you have a `Windows` or a `Linux` Operating System (OS).

**Note:** To the best of my knowledge, the tutorial for `Linux`, should also somewhat work for `MacOS`.

# Installing Java (I)

The main goal of this course is to understand the concepts related to object oriented programming. For this, we use the language Java as a support.

No matter how you will program with Java, you will first have to *install* Java.

Indeed, Java programs run in virtual machines:

- They are not directly compiled into executables like C programs.
- Cf. Chapter 2, slides 31-32.

We will now see how to install a compiler (`javac`) and a virtual machine (`java`) all at once.

# Installing Java[3] (II)

What you want to install is the *Java SE Developement Kit*:

- SE = Standard Edition,
- Comes with both `javac` and `java`.

Since we do not focus on the thorough mastery of **Java**, we will not rely on the latest version, but on Java 8:

- Java 8 can be downloaded on Oracle's website, but an account creation is required.
- the latest version[2] of Java is downloadable here without an account.

You can then download the uncompressed installers, and install Java directly. Follow the steps normally, you do not have to do anything special here.

[2] The project will be tested with Java 8 so make sure you only use things supported by Java 8.

[3] If you are using Linux or MacOS, you can skip this slide

# Installing Java (III)

Linux users can also use the following commands to install Java:

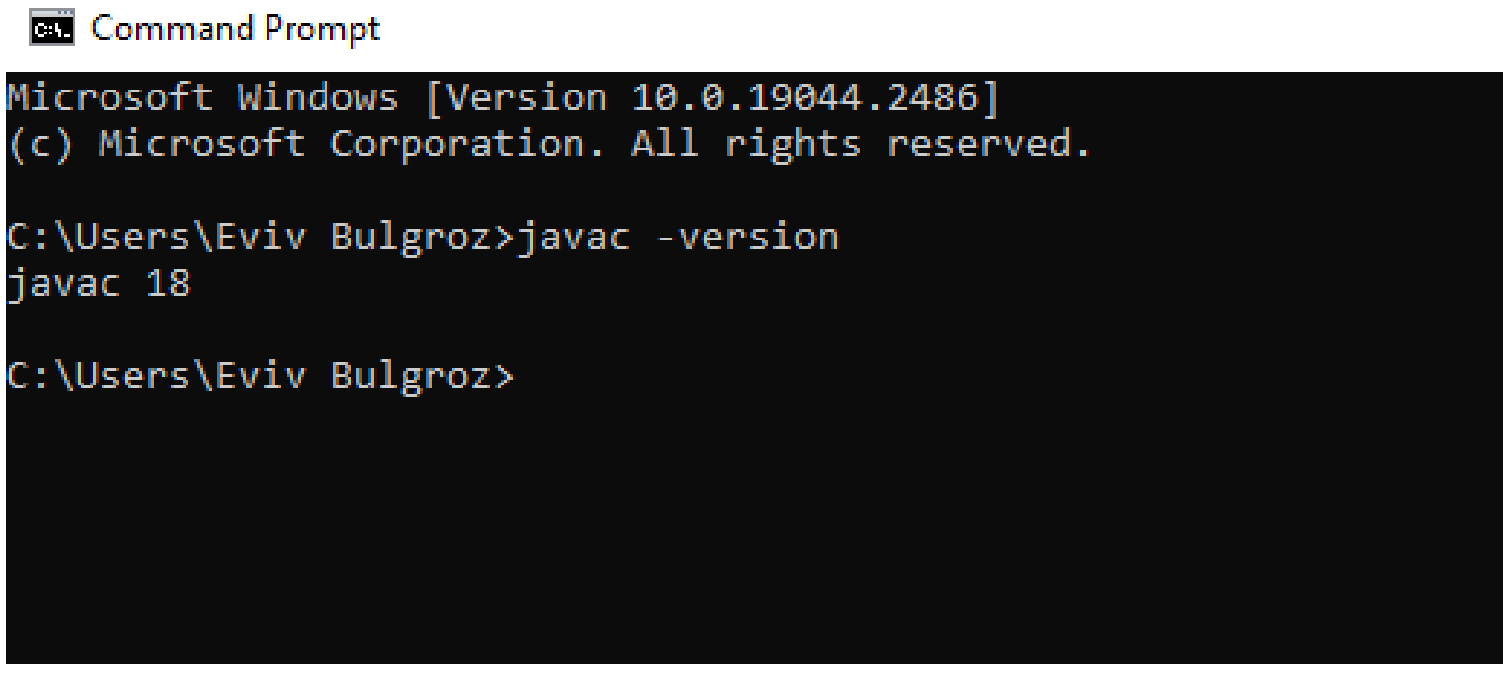
- First check that you do not have Java already installed by issuing the following command: `javac -version`.
  If this command indicates that `Command 'javac' is not found`, proceed as follows
- run the command `sudo apt update`
- then, for Java 8, run the command `sudo apt install openjdk-8-jdk`
- or for the latest release, run `sudo apt install default-jdk`

**Note:** The following steps should work for the most common `Linux` distributions. If for some reason the commands above do not work, make sure to contact a teaching assistant to solve the problem.

# On Windows (I)

Under windows you actually need to perform one additional step:

- Command prompt is not initially aware of both `javac` and `java`,
- to fix this, you need to expand one environment variable of Windows,
- after updating it, both `javac` and `java` will be usable in command prompt.

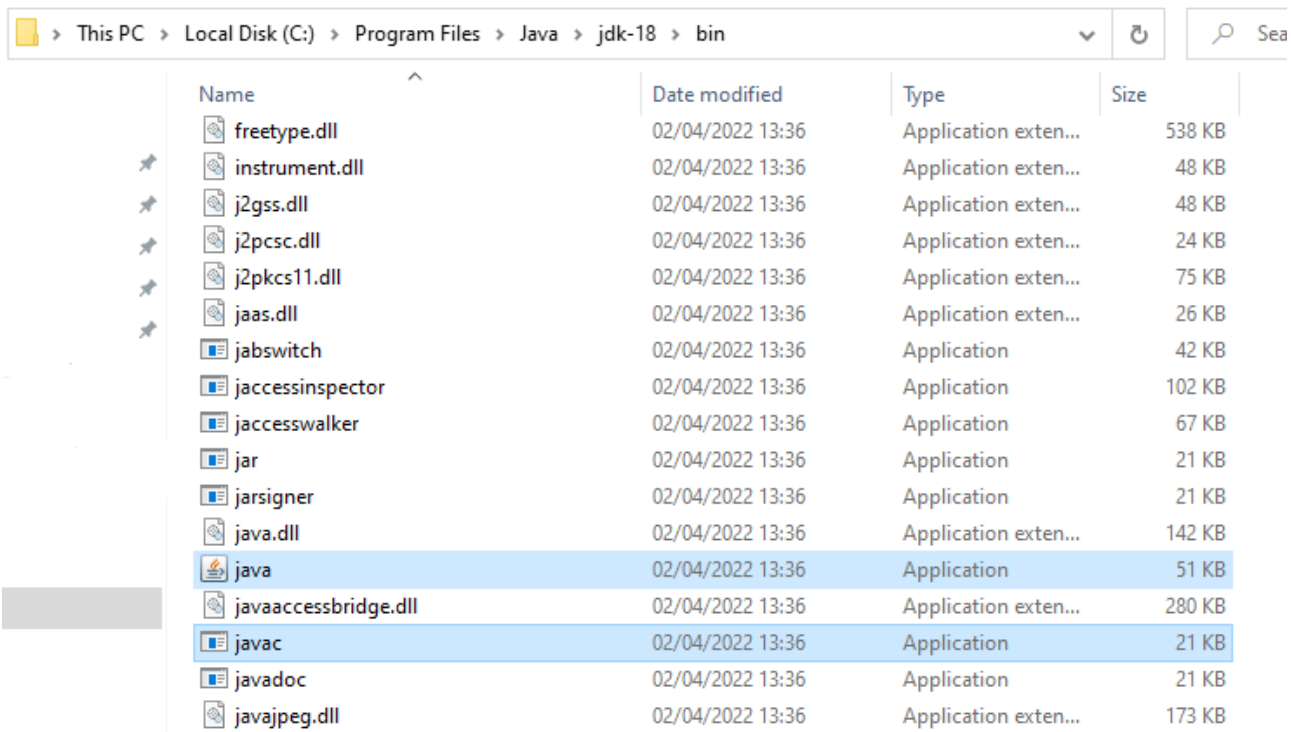


# On Windows (II)

First of all, you need to find the location of the executables needed to use Java:

- in this case, `javac.exe` and `java.exe`.
- it should be `C:\Program Files\Java\jdk-<version>\bin`
- but if not use Windows search function.

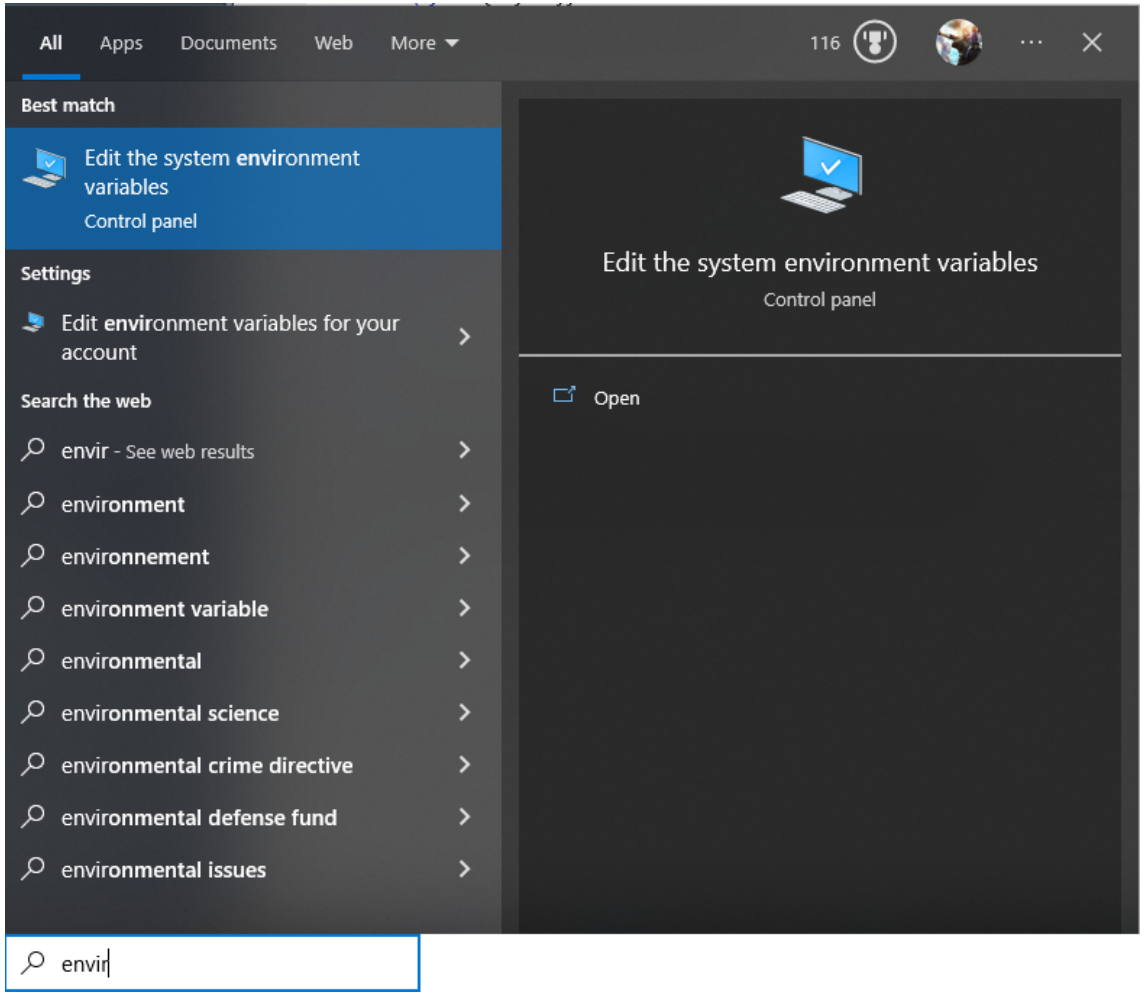
Once found, take note of the location:



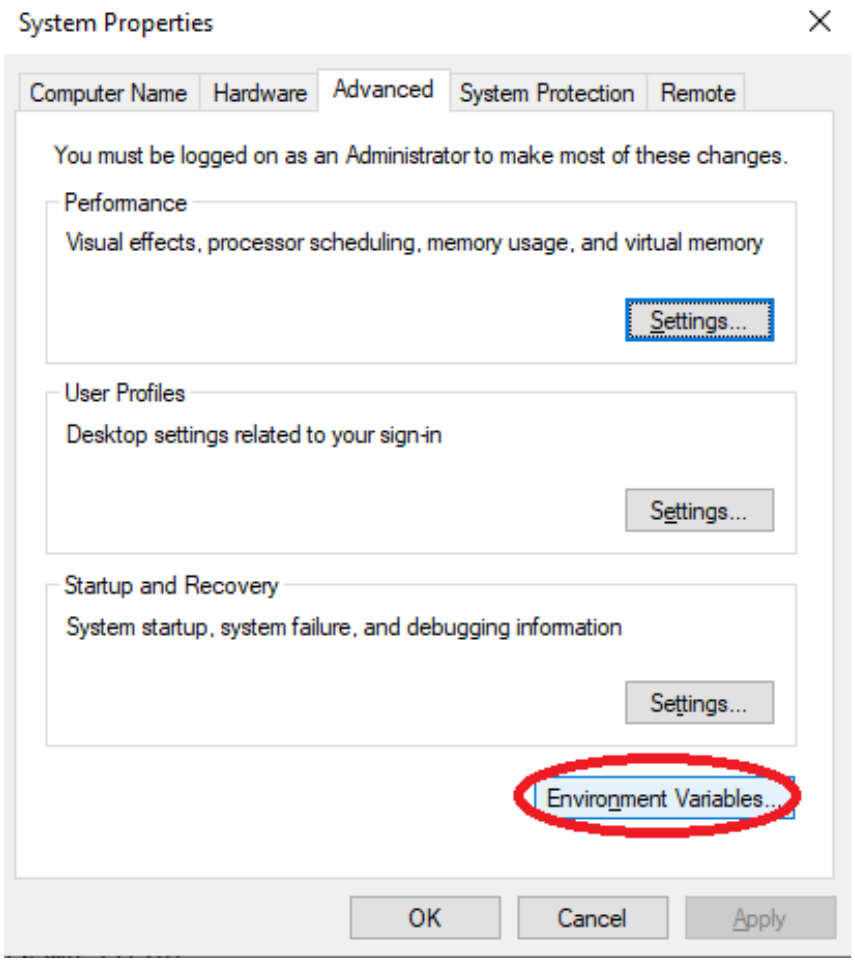
# On Windows (III)

Now, open the Windows utility for modifying environment variables.

Using the search function should work for Windows 7 and onward.

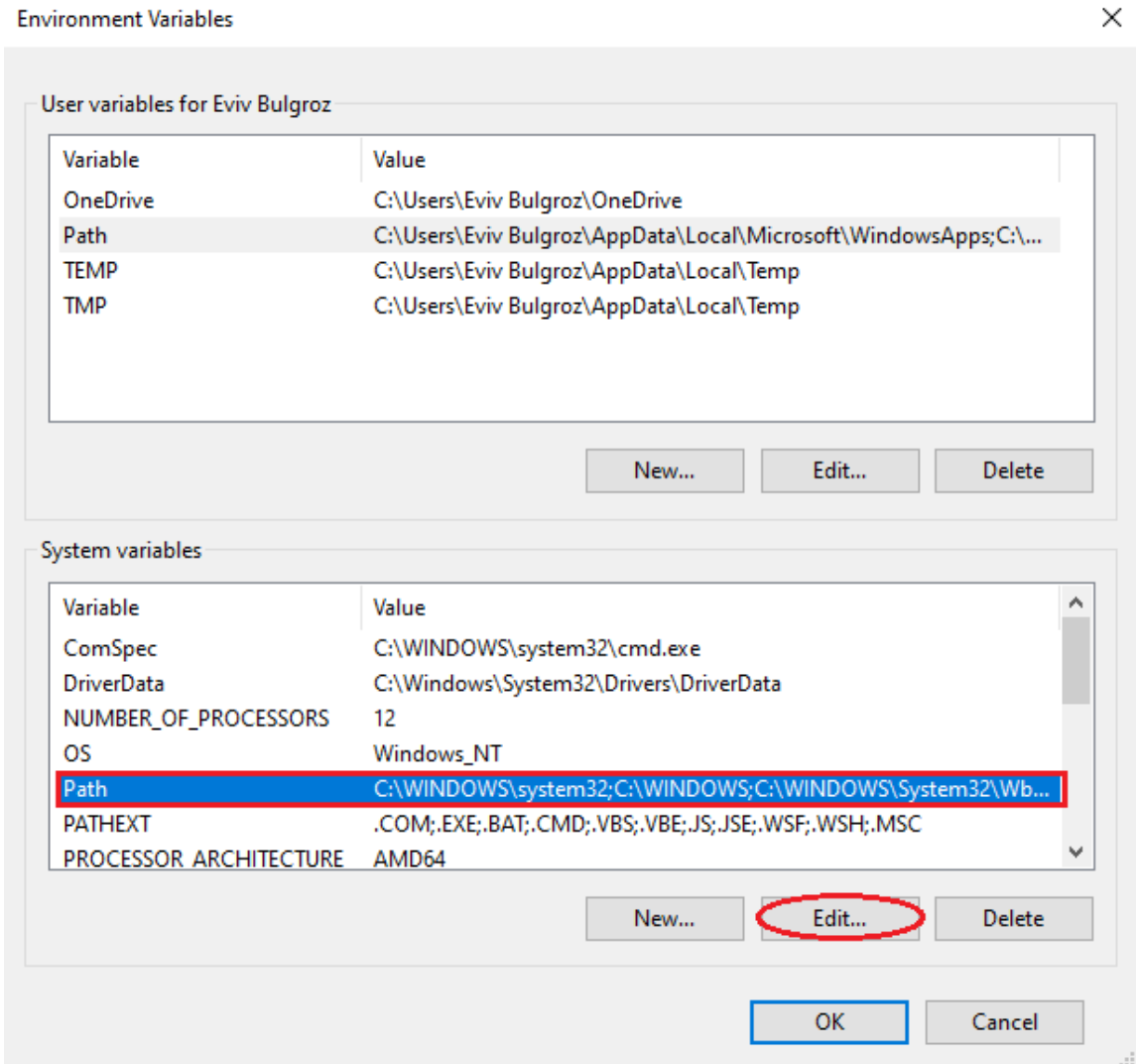


# On Windows (**IV**)



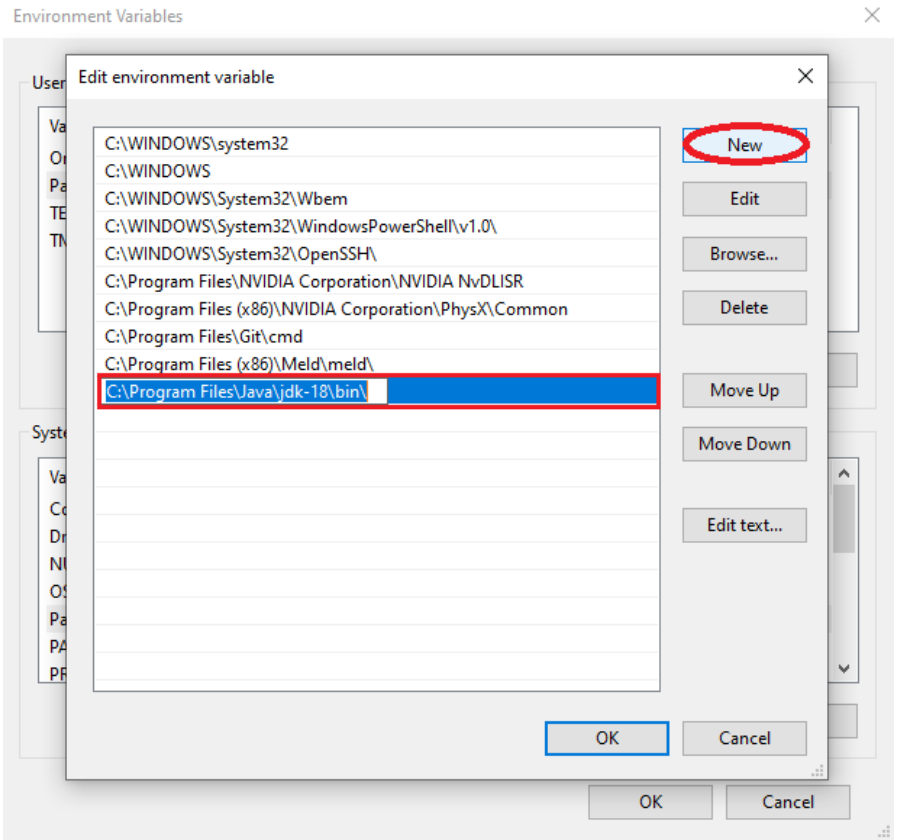
# On Windows (**V**)

Select the variable called **Path** in the list of *System Variables* and click on Edit:



# On Windows (**VI**)

Finally, add a new entry to the variable **Path**, that corresponds to the location where the executables `javac.exe` and `java.exe` are:




Now the *Command Prompt* will also look in this directory, when trying to find an executable that matches the name `javac` or `java`.

# Conclusion

Now, Java should be correctly installed on your device, this ends the first part of the tutorial.

The following tutorial will guide you through compilation and execution of a simple Java program, and will get you ready for the first series of exercises.