CSCI 2010U - Data Structures - Fall 2025

Lab 0 - Java IDE and First Program

**Learning Objectives:**

In this lab, students will:

* explore options for, and select their desired Java development environment;
* demonstrate the correct setup of their development environment via a Hello World program; and
* develop an introductory Java program using the development environment.

**Academic Integrity Reminders:**

* For this first lab, you must work independently - no lab partners for this session as all students must complete the setup of their Java environment. You may discuss with a neighbour about advantages and disadvantages of various environments, errors you experience or other similar topics, but you should be sure to complete your own work.
* The use of generative AI tools to produce any portion of your solution is not permitted.
* You may review tutorials and other sources online for ideas and syntax assistance, but you cannot copy any code from another source. As such, it is recommended that you avoid resources such as Stack Overflow and stick to tutorials and reference sites.
* All code must be written by you on your own computer.
* When in doubt, ask your lab instructor - it’s better to play it safe.

**Part 1 - Java Development Environments**

At this point, you likely have experienced several different development environments for python, C++, and other programming languages, however, they may not all be appropriate for developing Java applications, which is the language we will be using in this course. As such, you should explore the following options and determine which will suit you best for this semester. The following list is not exhaustive, however these are the recommended options, as well as the only options that course staff will support. If you choose another option, and experience difficulties, we will be unable to provide assistance.

1. [**IntelliJ IDEA**](https://www.google.com/url?q=https://www.jetbrains.com/idea/&sa=D&source=editors&ust=1756652948956871&usg=AOvVaw2BBu0T5wXkUo3-6J0C3LEu) - another popular Java IDE used in industry comes with many of the features of VS Code, and is a nice neat development tool. As a student you are able to gain access to the Ultimate edition using your University email, however the free Community Version is also sufficient for the uses in this course.
2. [Download the Ultimate Edition](https://www.google.com/url?q=https://www.jetbrains.com/idea/download/&sa=D&source=editors&ust=1756652948957347&usg=AOvVaw2rkmcD-Eb32MbJqtH9uVLi) - it begins with a free 30-day trial, then you will either need to register as a student, pay for the license (not recommended) or switch to the community edition.
3. [Download the Community Edition](https://www.google.com/url?q=https://www.jetbrains.com/idea/download/other.html&sa=D&source=editors&ust=1756652948957654&usg=AOvVaw323kLPZDrfTFPzXlrZiBP_) - this version is sufficient for this course and you won’t need to worry about signing up or switching versions later after a trial expires. You just need to make sure to download the appropriate version for your computer and operating system.
4. [**Visual Studio Code (VS Code)**](https://www.google.com/url?q=https://code.visualstudio.com/&sa=D&source=editors&ust=1756652948958032&usg=AOvVaw0OqO5S4dQoOXwuSeXh-Jxu) - this is a popular integrated development environment (IDE) used for many different programming languages. You may already have experience with it, and if so it may be the most comfortable for you.
5. If you have not already installed VS Code, you will first need to download and install the IDE: [Download Link](https://www.google.com/url?q=https://code.visualstudio.com/download&sa=D&source=editors&ust=1756652948958431&usg=AOvVaw07LiRkc_L_c8u1DskcCKu7)
6. If you already have VS Code installed, you will only need to install the appropriate Java packages - [Link to Directions](https://www.google.com/url?q=https://code.visualstudio.com/docs/languages/java%23_install-visual-studio-code-for-java&sa=D&source=editors&ust=1756652948958670&usg=AOvVaw03182XDco7SI-r4ROxsRHE)
7. **Command Line and Text Editor** - This option is the simplest editor, but will require more setup on your own, and you will need to run your own Java commands. Many developers still prefer to use this option, and it is a choice for you as well. You will need to follow the instructions specific to your OS, and may need additional tutorials to get things running:
8. [Windows](https://www.google.com/url?q=https://phoenixnap.com/kb/install-java-windows&sa=D&source=editors&ust=1756652948959209&usg=AOvVaw1-e8-88OASRMWlDrQBiB3P) (Popular Text Editor: [Notepad++](https://www.google.com/url?q=https://notepad-plus-plus.org/downloads/v8.6.7/&sa=D&source=editors&ust=1756652948959312&usg=AOvVaw2OdPbh6xH_K9-LdiX0eaxs))
9. [MacOS](https://www.google.com/url?q=https://phoenixnap.com/kb/install-java-macos&sa=D&source=editors&ust=1756652948959413&usg=AOvVaw394t_oTFjGNVPrKUa5g3LX) (Popular Text Editor: [CotEditor](https://www.google.com/url?q=https://coteditor.com/&sa=D&source=editors&ust=1756652948959489&usg=AOvVaw2whXLKcGY1Z1v6TPpOmKRE))
10. [Ubuntu](https://www.google.com/url?q=https://phoenixnap.com/kb/install-java-ubuntu&sa=D&source=editors&ust=1756652948959581&usg=AOvVaw17ySAK-xXntnK3Dqz6utIG)

**Part 2 - Hello World!**

One of the first things anyone does in a new programming language to ensure their environment is properly set up is to run a Hello World Program. You will need to create your first Java program by creating a simple java program that prints out a short message to the console (typically “Hello, World!”, but variants are OK too).

You **must** be sure to name your file the same as your class - so in the above example, the file must be saved as HelloWorld.java in order to correctly run.

Once you have your Java file saved, you will need to use your chosen development environment to run the program. The expected output should be the chosen text printed on the console.

**Part 3 - Write Your Own Java Program**

The final part of this lab is to start experimenting with the Java language to produce a slightly more complex program using your existing C++ knowledge. Java is very similar to C++ in syntax and semantics, so you should be able to complete a program fairly easily using your current skills and knowledge.

The program you create for this portion of the lab has to meet the following criteria:

* have at least one variable of each of the following types: int, boolean, double, and String (note the capital S)
* show the use of an if-else if-else statement to print different results based on the values of your variables
* show the use of two different kinds of loops to manipulate and display your variables