Java Bootcamp

Session #1

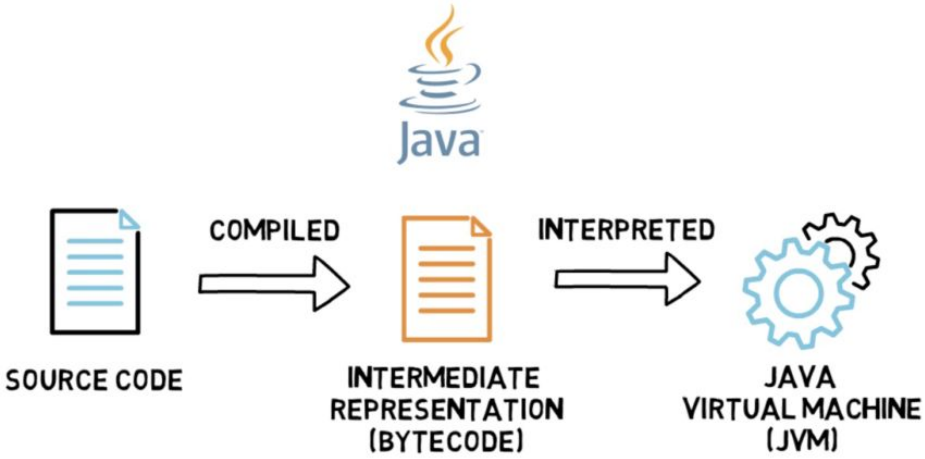
The DA Programming Club

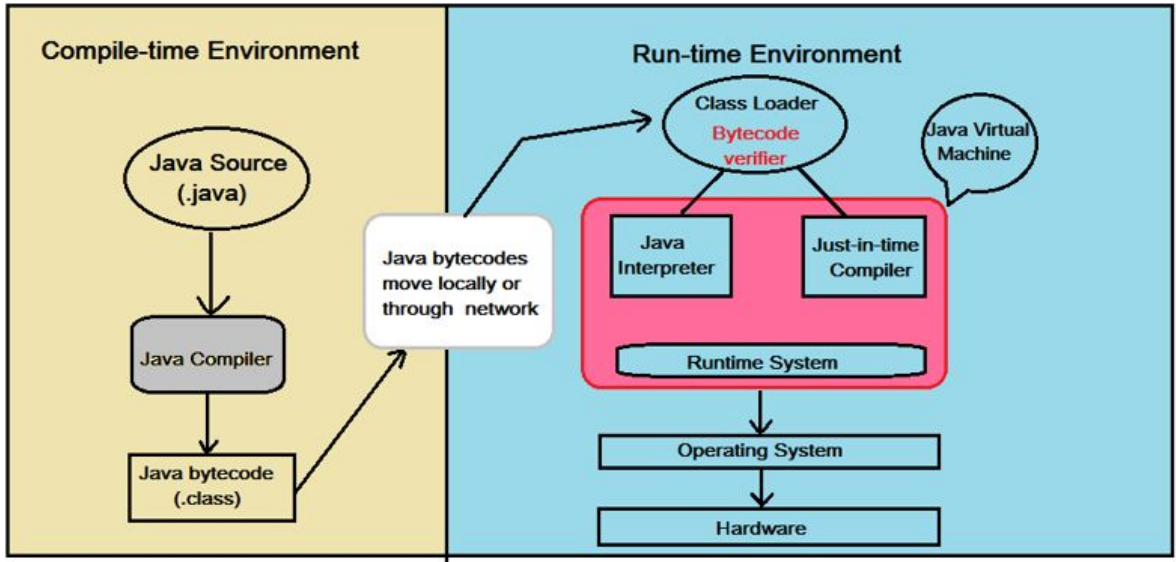
What is Java?

- A programming language first released by Sun Microsystems in 1995, and bought by the tech-giant Oracle in 2009.
- Object-Oriented
- Industry standard
    - It's one of the most useful and popular languages from programming data servers to apps and websites.

What is Java?

- A compiled programming language.





Compiled VS Interpreted Languages

“Imagine you have a hummus recipe that you want to make, but it's written in ancient Greek. There are two ways you, a non-ancient-Greek speaker, could follow its directions.

The first is if someone had already translated it into English for you. You (and anyone else who can speak English) could read the English version of the recipe and make hummus. Think of this translated recipe as the *compiled* version.

The second way is if you have a friend who knows ancient Greek. When you're ready to make hummus, your friend sits next to you and translates the recipe into English as you go, line by line. In this case, your friend is the interpreter for the *interpreted* version of the recipe.”

Source: https://www.freecodecamp.org/news/compiled-versus-interpreted-languages/

“Hello, World”

[Hello, World! - Learn Java - Free Interactive Java Tutorial]

In Java, every line of code that can actually run needs to be inside a class.

```
1  public class Main {
2
3      public static void main(String[] args) {
4
5          System.out.println("Hello, World!");
6
7      }
8
9  }
```

This is the entry point of our Java program. the main method has to have this exact signature in order to be able to run our program.

`public` again means that anyone can access it.

`static` means that you can run this method without creating an instance of `Main`.

`void` means that this method doesn't return any value.

`main` is the name of the method.

Variables

Although Java is object oriented, not all types are objects. It is built on top of basic variable types called primitives.

Here is a list of all primitives in Java:

- `byte` (number, 1 byte)
- `short` (number, 2 bytes)
- `int` (number, 4 bytes)
- `long` (number, 8 bytes)
- `float` (float number, 4 bytes)
- `double` (float number, 8 bytes)
- `char` (a character, 2 bytes)
- `boolean` (true or false, 1 byte)

Java is a strong typed language, which means variables need to be defined before we use them, but since it is compiled, function do not need to be defined before we use them.

Variables: Interactive Lesson

Variables and Types - Learn Java - Free Interactive Java Tutorial

Numbers

To declare and assign a number use the following syntax:

```
int myNumber = 5;
```

To define a double floating point number, use the following syntax:

double d = 4.5;

d = 3.0;

If you want to use float, you will have to cast:

```
float f = 4.5f; //always have semicolon.
```

boolean

Every comparison operator in java will return the type boolean. Unlike other languages, it only accepts two special values: `true` or `false`.

```
boolean b = false;
b = true;
boolean toBe = false;
b = toBe || !toBe;
if (b) {
    System.out.println(toBe);
}
```

Variables Continued

Characters and Strings

In Java, a character is it's own type and it's not simply a number, so it's not common to put an ascii value in it, there is a special syntax for chars:

```
char c = 'g';
```

`String` is not a primitive. It's a real type, but Java has special treatment for String.

Here are some ways to use a string:

```
// Create a string with a constructor
String s1 = new String("Who let the dogs out?");        // String object stored in heap memory
// Just using "" creates a string, so no need to write it the previous way.
String s2 = "Who who who who!";                         // String literal stored in String
pool
// Java defined the operator + on strings to concatenate:
String s3 = s1 + s2;
```

You can also concat string to primitives:

```
int num = 5;
String s = "I have " + num + " cookies"; //Be sure not to use "" with primitives.
```

Downloading an IDE

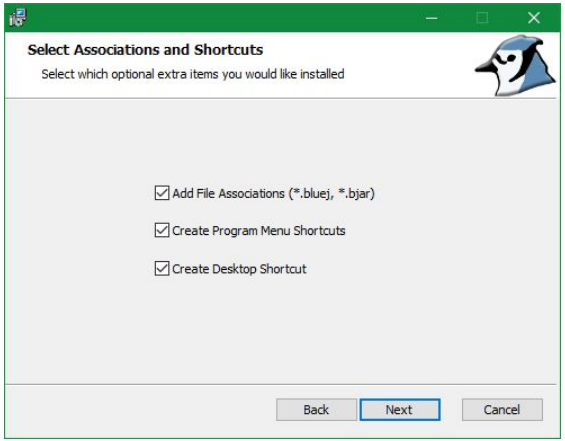
So we've used an online compiler to get started, but we recommend downloading Java and it's compiler/interpreter for faster runtimes.

A good option with minimal setup is BlueJ. To download do the following:

1. Go to https://www.bluej.org/, and download the installer for your OS.
2. Open in the installer in your downloads folder, and click next.
3. Install just for your user.
4. Check all checkboxes, as in picture.
5. Leave path as it is!
6. Then just click install, and BlueJ is installing.

For help using BlueJ, access:

https://bluej.org/doc/video-tutorials.html



Downloading an IDE

An alternative is IntelliJ IDEA. This IDE is a little more complex due to its focus on providing support for database management and other advanced Java topics beyond the scope of our bootcamps.

For more information please see:
https://www.jetbrains.com/idea/download/#section=mac

and for your student license

https://www.jetbrains.com/community/education/#students