

Programming Language

Programming Language

- A programming language is an **artificial language** that can be used to **control** the **behavior** of a machine, particularly a computer.
- PLs should support
 - **Data type**, **Sequence control**, **Object**, **Class**, ...
- Java is an OOPL.

Interpret vs. Compile

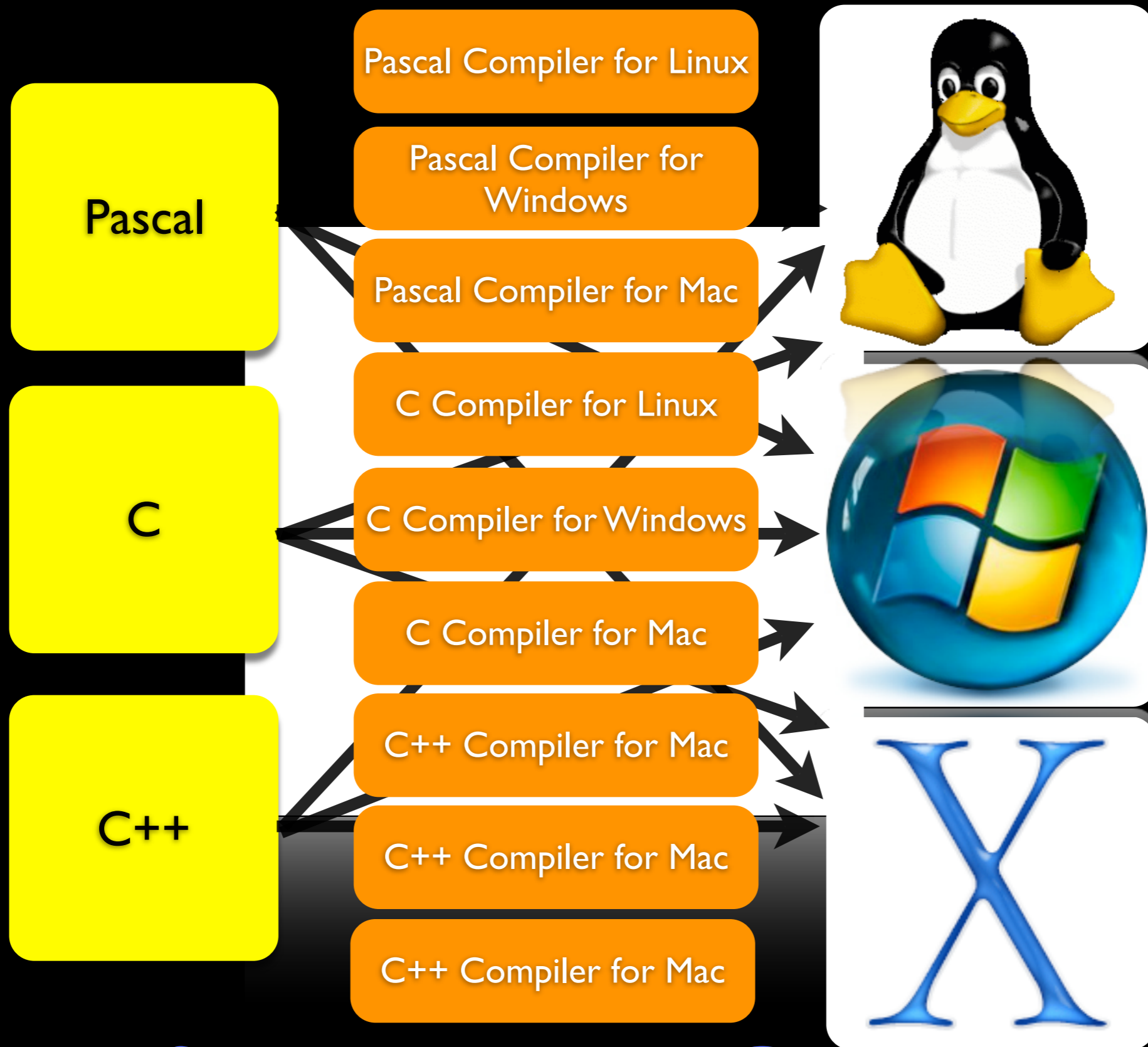
Interpret vs. Compile

- **Compile**

- The program written in a language is **translated** to another language by another program named **compiler**.

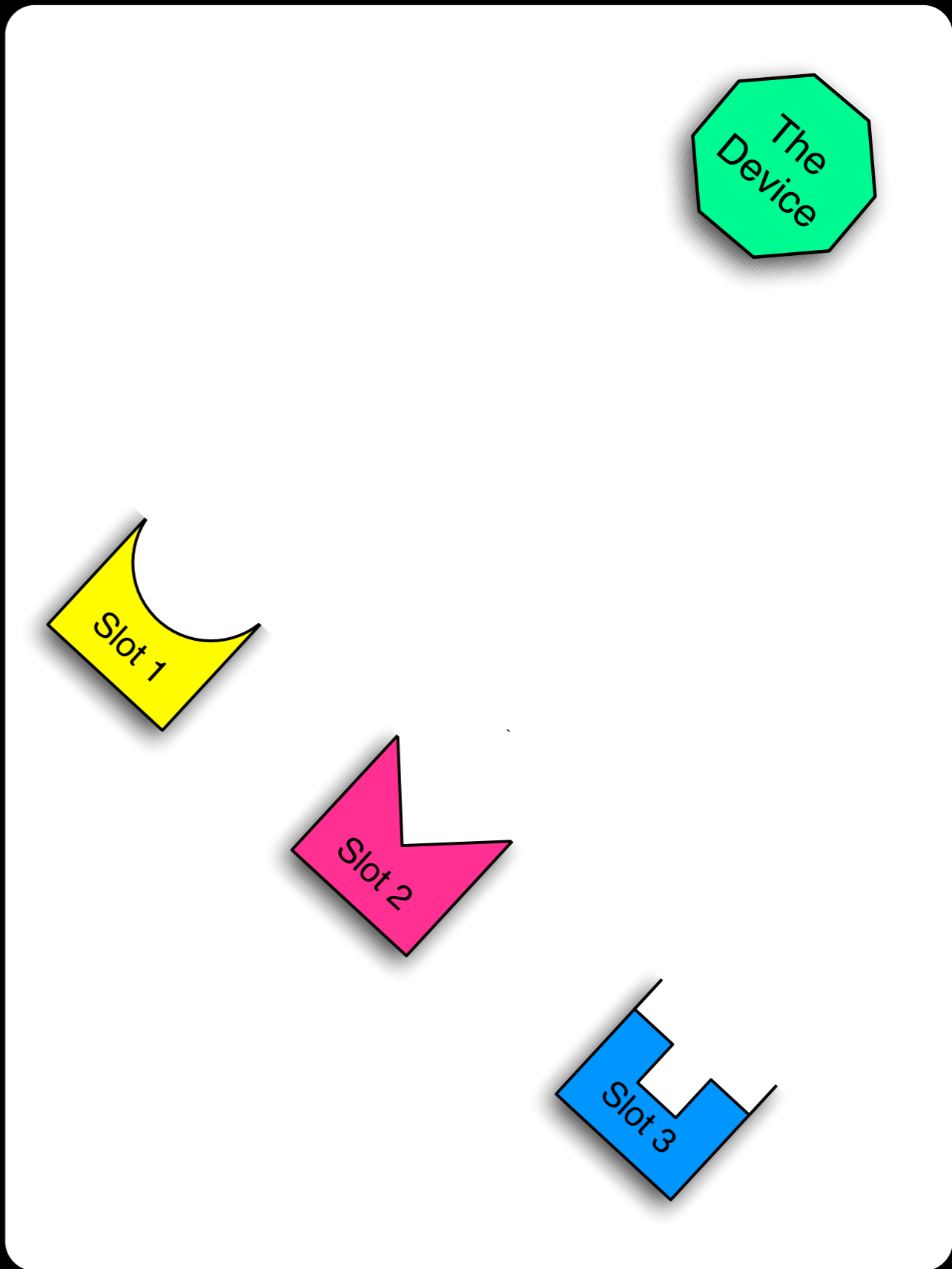
- **Interpret**

- The program written in a language is **executed** statement by statement by another program named **interpreter**.



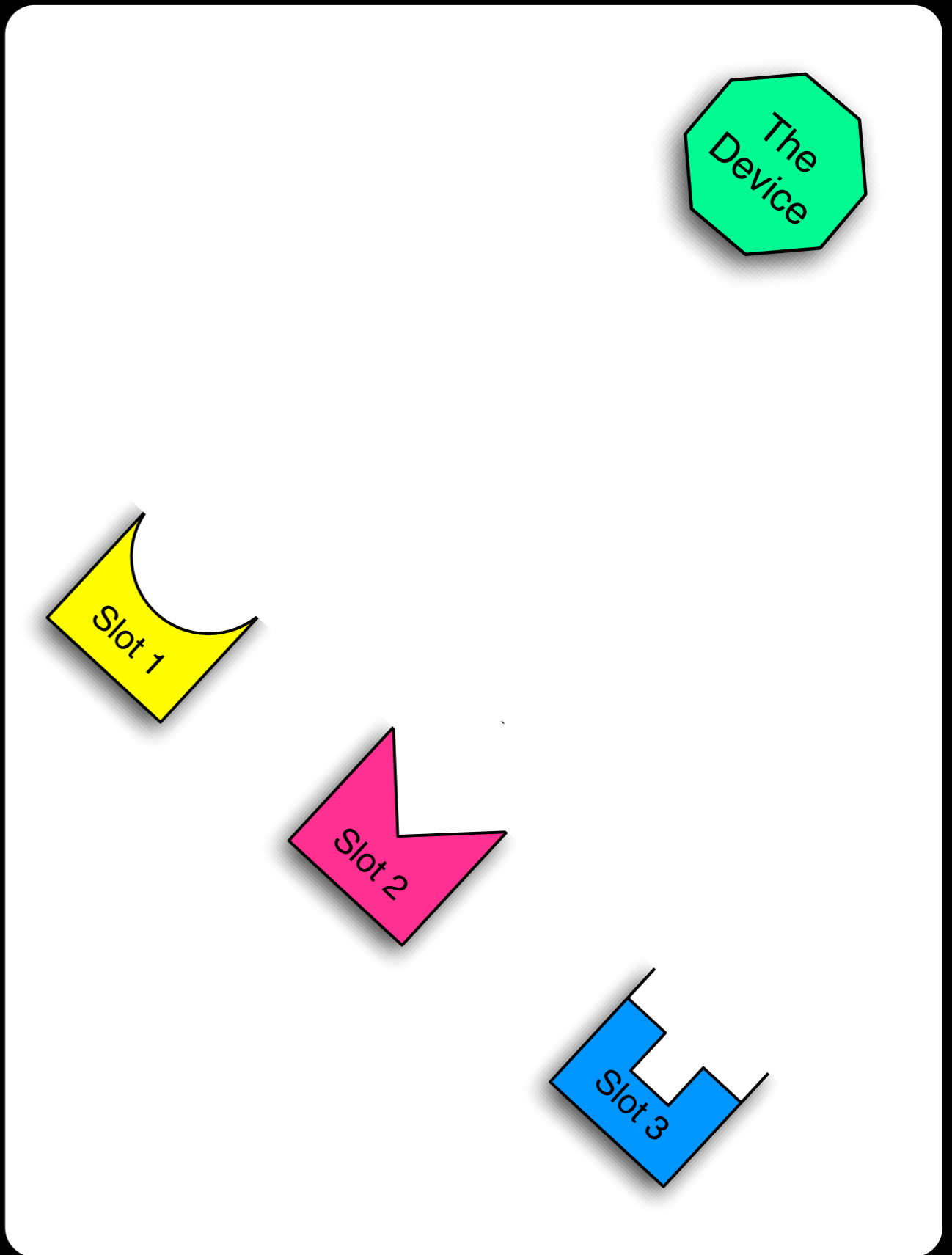
Platform and Compiler

Platform Independency



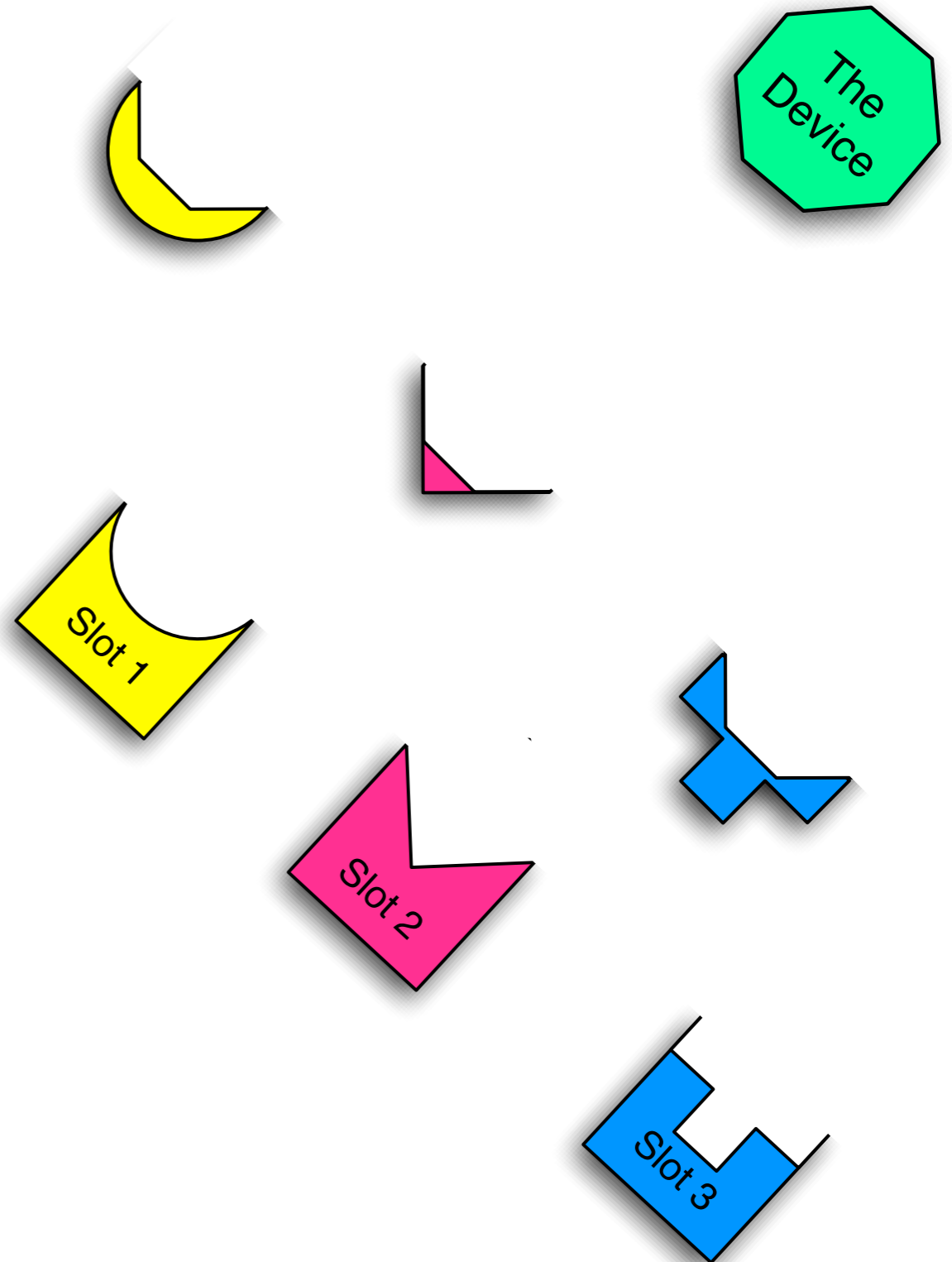
Platform Independency

When we have different
platforms and a single device,
what can we do to support this
device on all platforms?

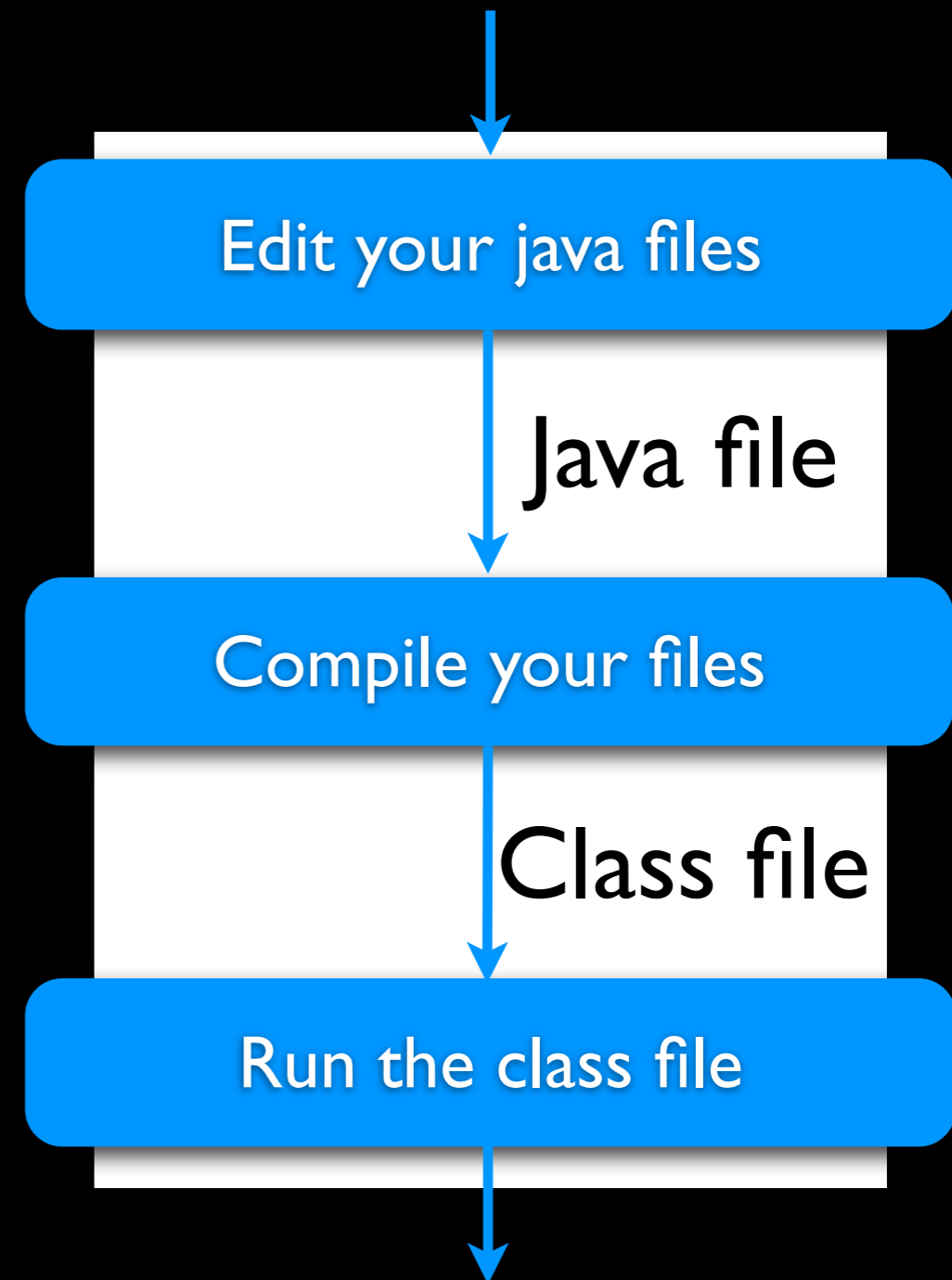


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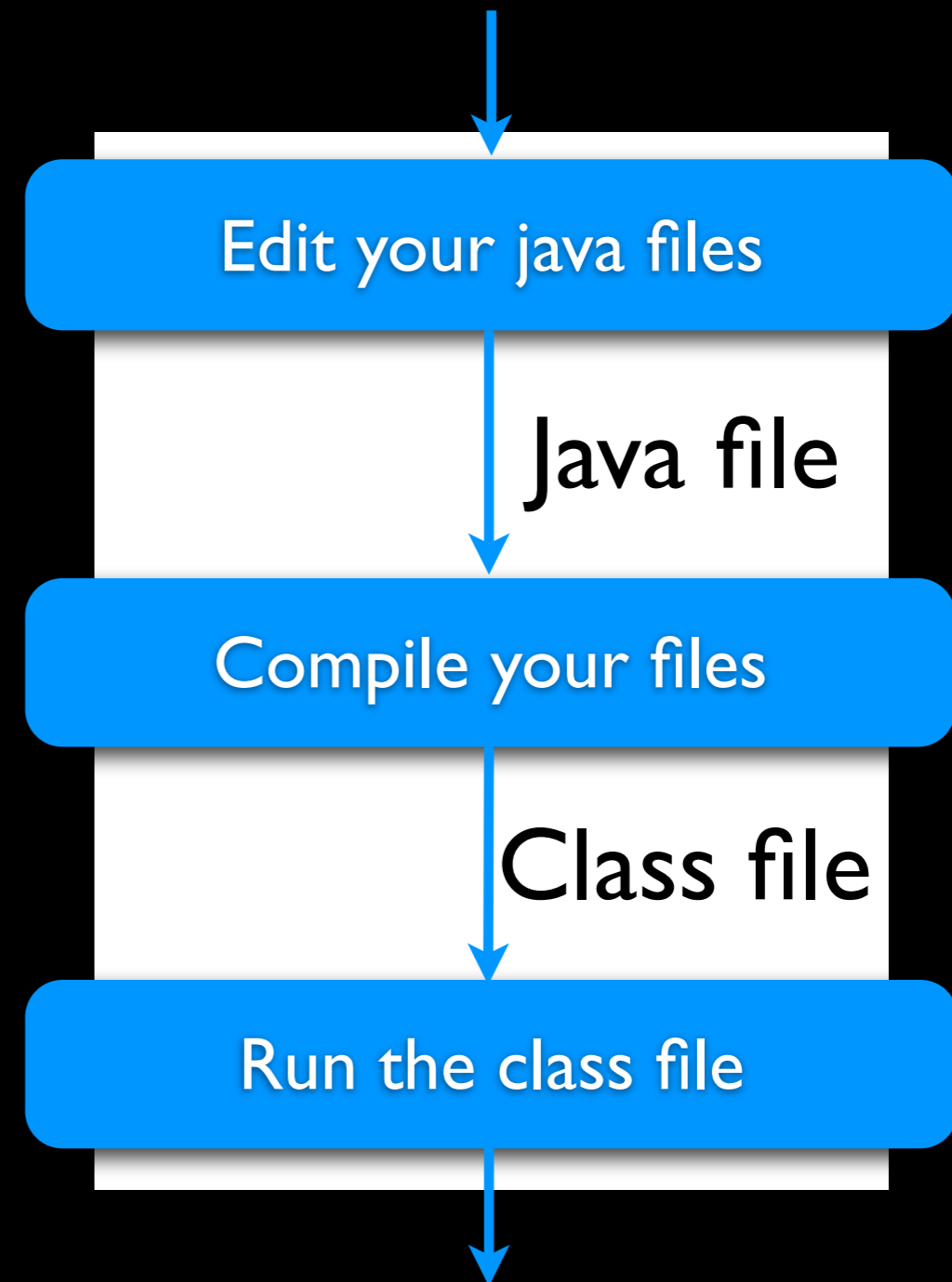


Entering the Java world!



Entering the Java world!

- A Java file contains a **class**.
- A **class** contains a **main** function.
- Java file compiled to **byte code** file (class file)
- You can **run** your class.



```
/*  
 * This is your first java program.  
 */  
  
class HelloWorld{  
    public static void main(String[] args){  
        System.out.println("Hello World!");  
    }  
}
```

1st Exercise

Edit your java file

Edit your java file

- Any **editor** can be used
 - VIM, Gedit, Textpad, Kedit, Textedit, Notepad, ...
- It's much more simpler if you use an IDE
- Eclipse, IDEA, Forte, NetBeans, ...
- Java files have .java extension.

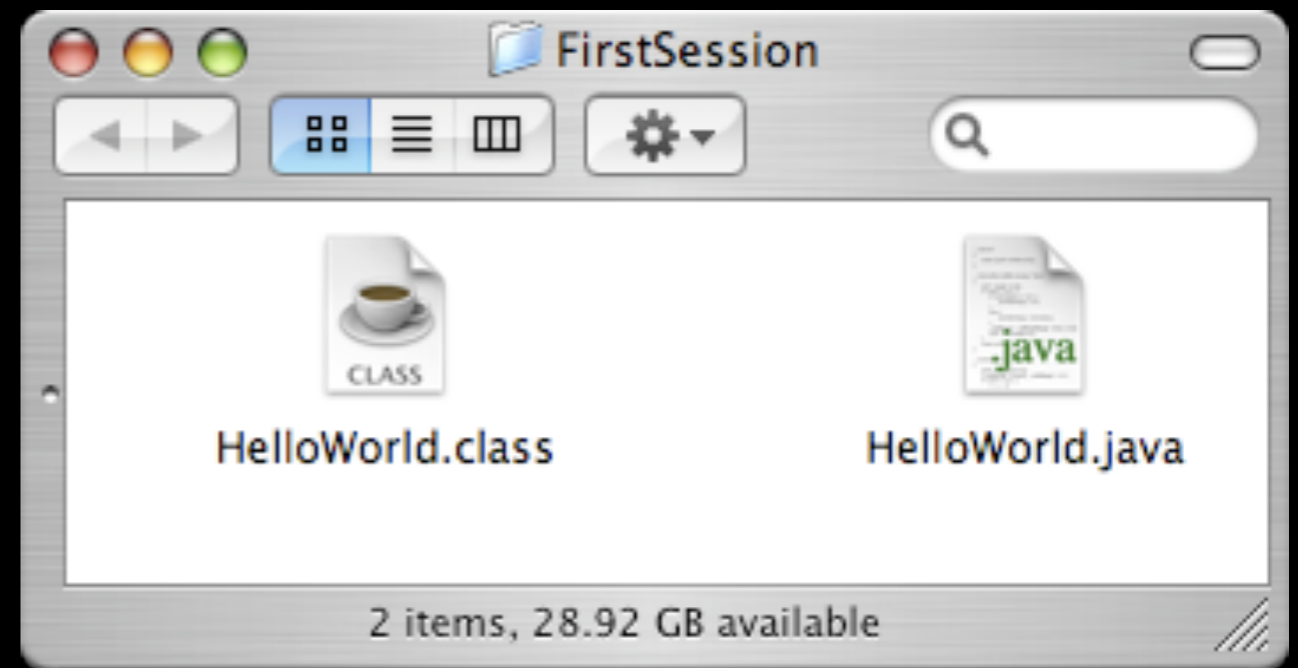
Java Compilation

Java Compilation

- The Java Compiler (`javac`) is used to compile Java sources into `byte code` files.
- `javac` is just available in the Java SDK not JRE.
- `Byte code` files have `.class` extension.
- `Byte code` is the `assembly language` for the Java Virtual Machine (JVM).

Compile HelloWorld

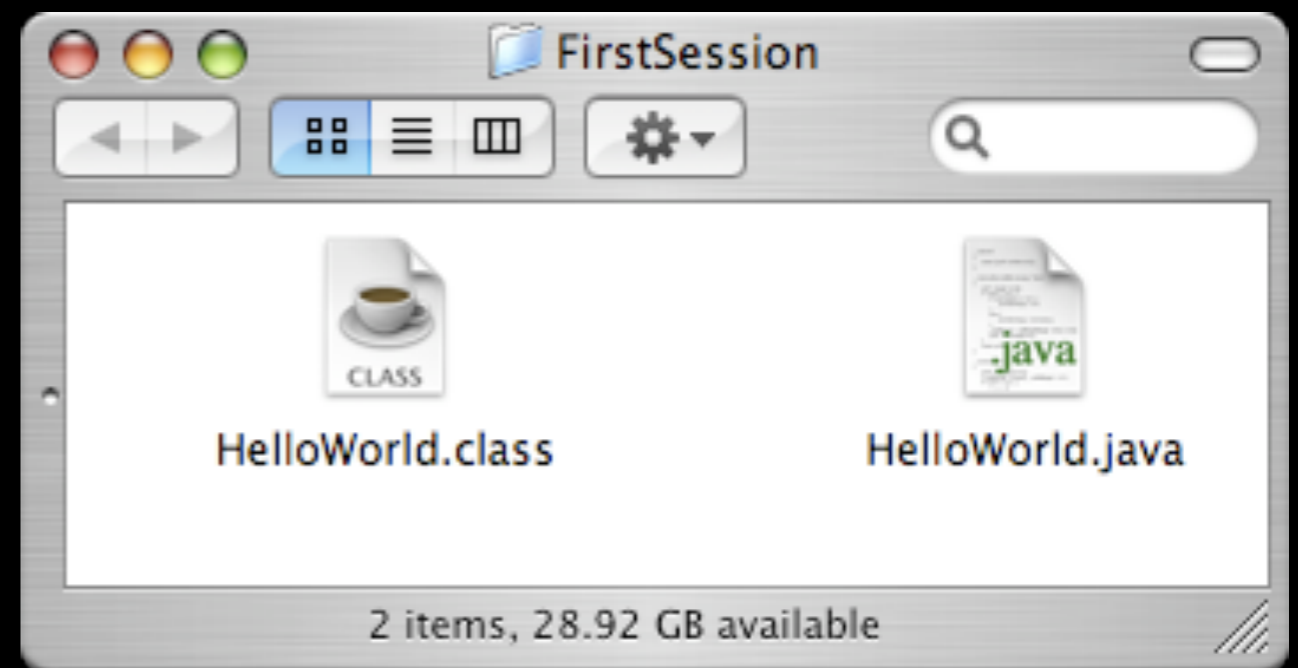
```
$javac HelloWorld.java
```



Compile HelloWorld

```
$javac HelloWorld.java
```

- Java files can be **compiled with javac** (Java Compiler)
- Now a file named HelloWorld.class is generated.



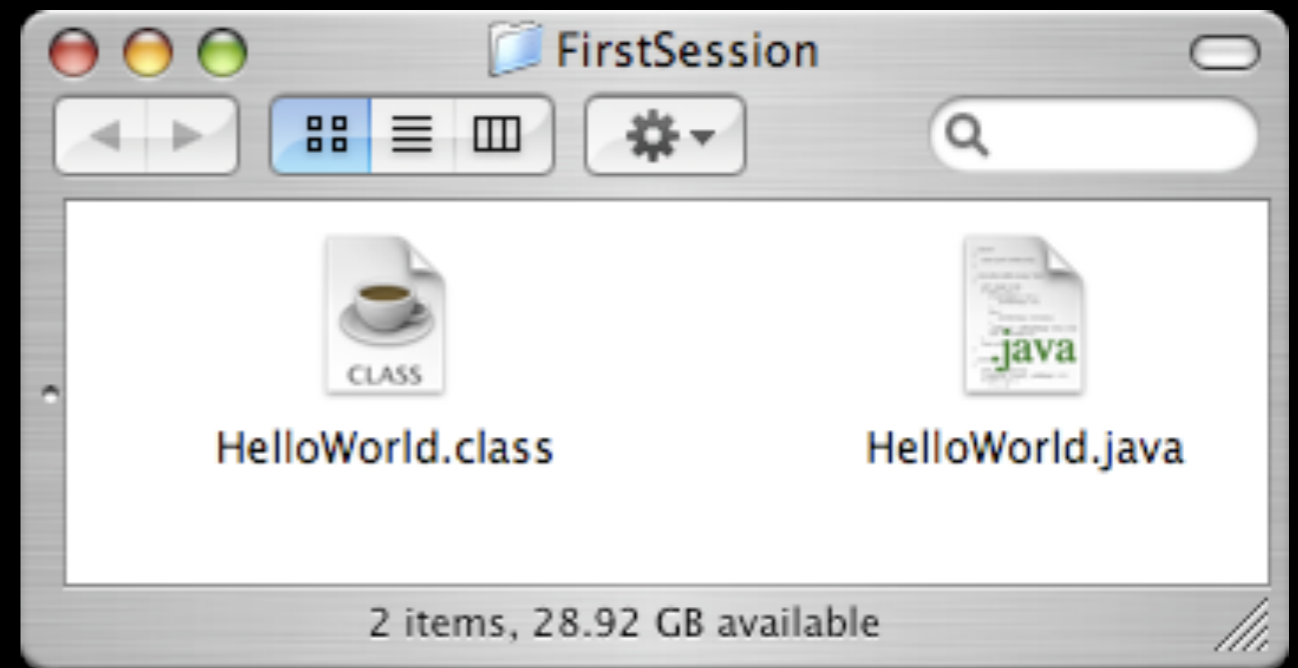
Running Java Classes

Running Java Classes

- **Java Virtual Machine (JVM)** is used for running class files.
- JVM can run class files.
- Now, there are officially supported JVMs for **Linux, Windows, Mac OS X** and **Solaris**.
- JVM is also available for **FreeBSD, AIX, Darwin, ...**

Run HelloWorld

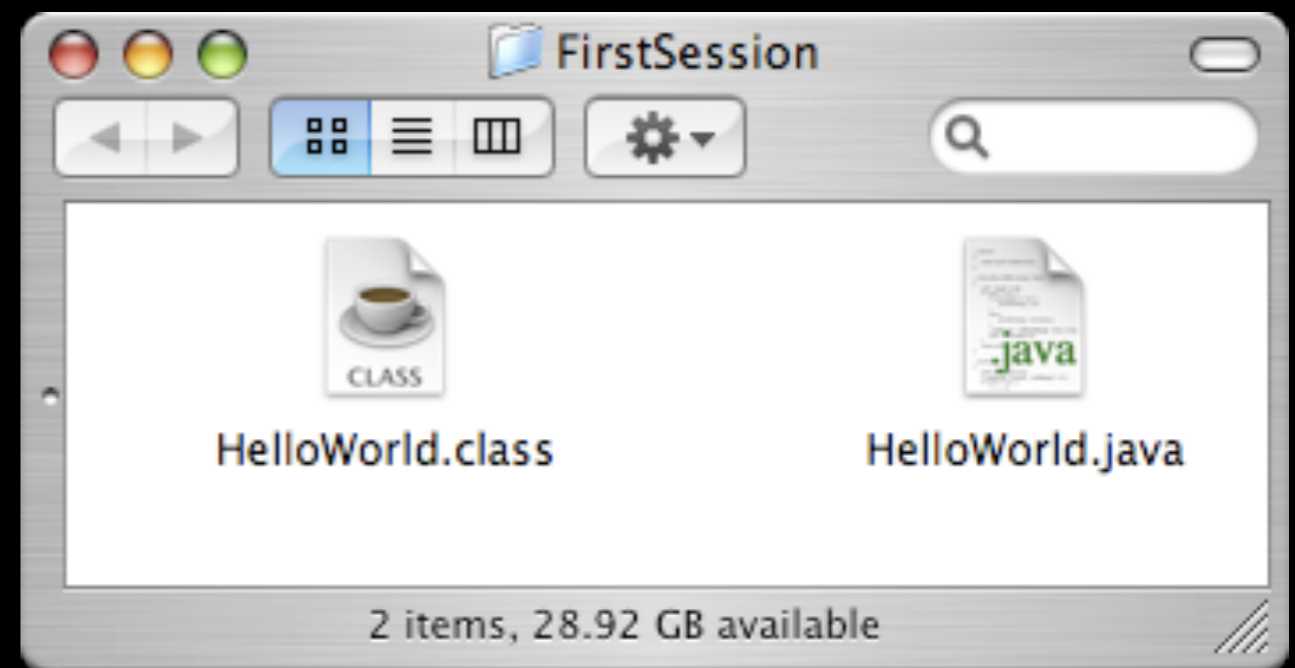
```
$java HelloWorld
```



Run HelloWorld

```
$java HelloWorld
```

- Use `java` to run the class file.



Any Questions?