



Lesson 1: Introduction to Java And the Integrated Development Environment

Pulling the Arrow Back to Hit the Target

Wholeness of the Lesson

- Java is an object-oriented highly portable programming language that arose as an easy alternative to the once dominant, but error-prone, C++ language. IntelliJ is one of many open source, powerful but easy-to-use integrated development environments for use with Java and related technologies. *Transcendental meditation is a highly portable and powerful technique working from deeper levels of intelligence allows one to accomplish more with less effort.*

Outline of Topics

- About Java
- Java API Docs
- Java First Program
- Working with IDE
- Working with JShell
- Viewing Java API Source Code

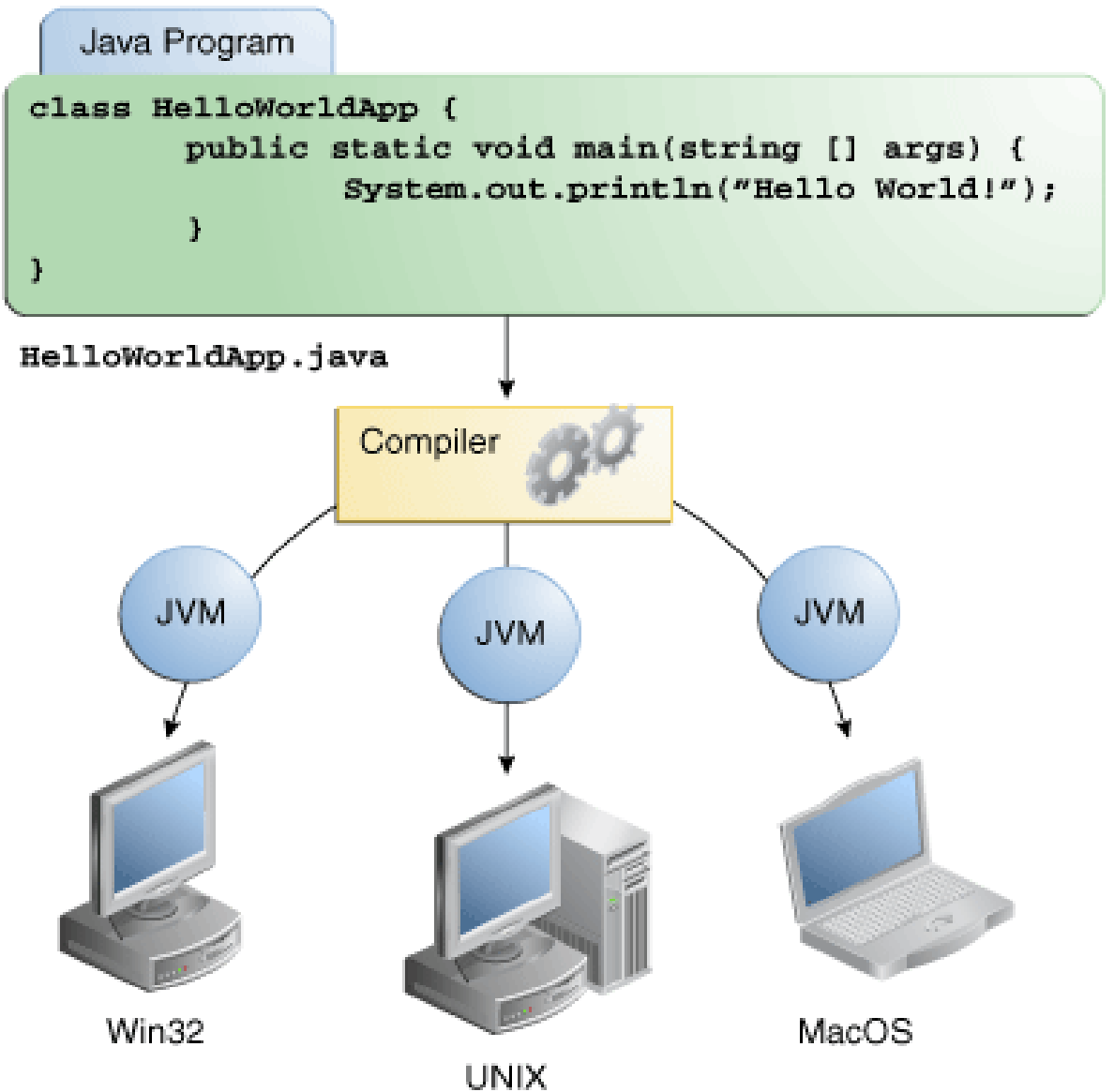
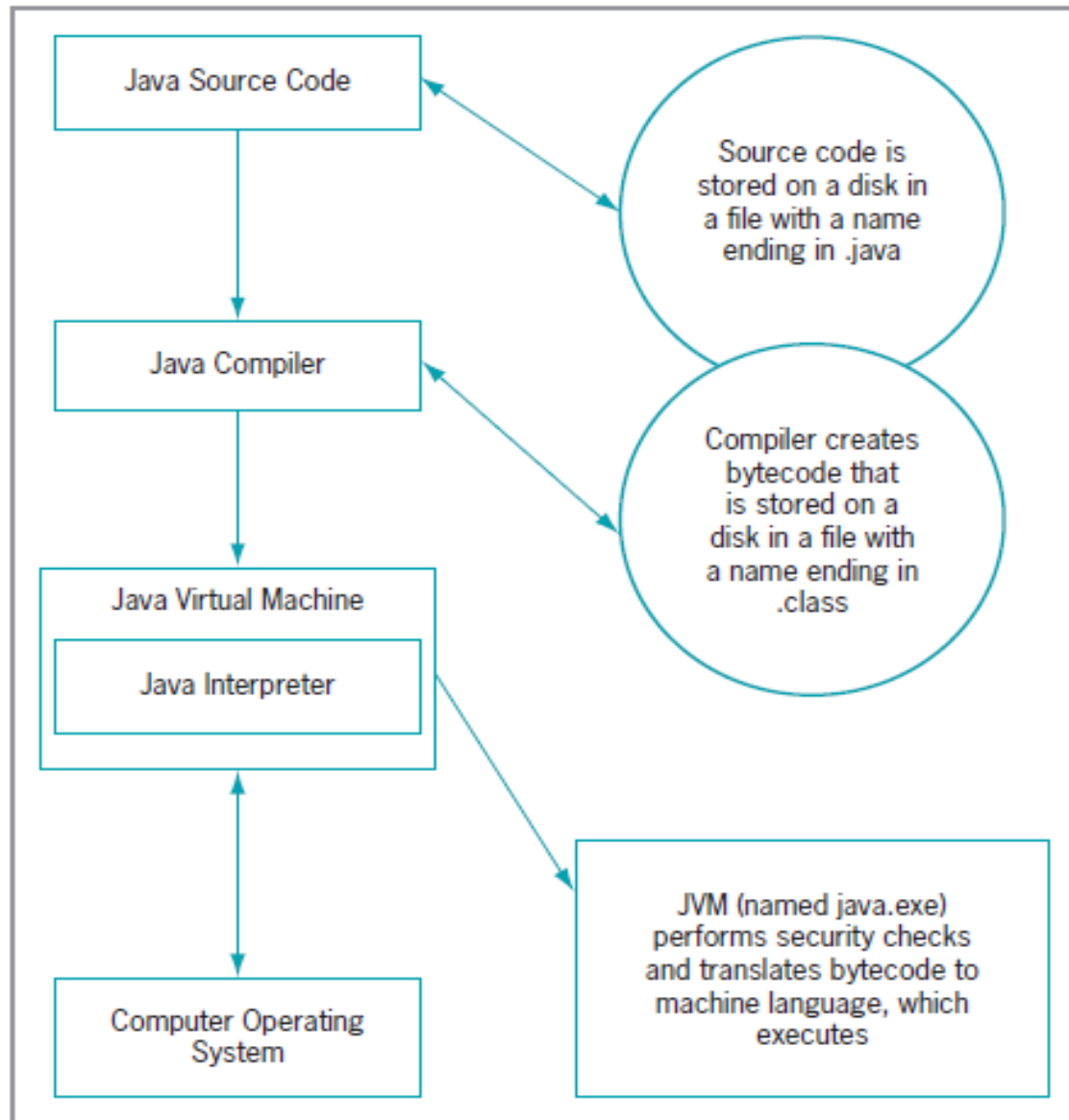
About Java

- ***Brief History.*** The Java language began as a language for programming electronic devices, though the original project was never completed. Its creator was James Gosling, of Sun Microsystems. The language was developed privately starting in 1991 and was made publicly available in 1994. In 2009, Oracle bought the rights to Java from Sun Microsystems.
- ***Java Is an OOP Language.*** Java is an object-oriented programming language and support functional programming. This means that Java programs are designed by defining software objects that interact with each other (mirroring the way things get done in the real world).

About Java

- ***Popular Language.*** For more than 20 years, Java has been the popular programming language in the IT world.
- ***Interpreted Language.*** When you "compile" Java code, the result is not executable binary code, targeted to a particular machine; instead, the result is **bytecode**, having a portable intermediate code format. The bytecode is then executed by running an **interpreter**, called the **Java Virtual Machine (JVM)**. This approach makes Java code highly portable; Java will run on any platform for which a JVM has been created[Write Once and Run Anywhere(WORA)].

Java Environment



The Java API Docs

- Oracle provides online documentation of all the Java library classes. Full documentation of each class in the Java libraries is provided. For latest JDK, the link is

<https://docs.oracle.com/en/java/javase/22/docs/api/index.html>

- Just change the #JDKVersion to the latest JDK number from the given link to get latest documentation.

<https://docs.oracle.com/en/java/javase/#JDKVersion/docs/api/index.html>

- JDK Release Notes

<https://www.oracle.com/java/technologies/javase/jdk-relnotes-index.html>

- Java Language Specification, SE Edition by Java Authors

<https://docs.oracle.com/javase/specs/jls/se22/html/index.html>

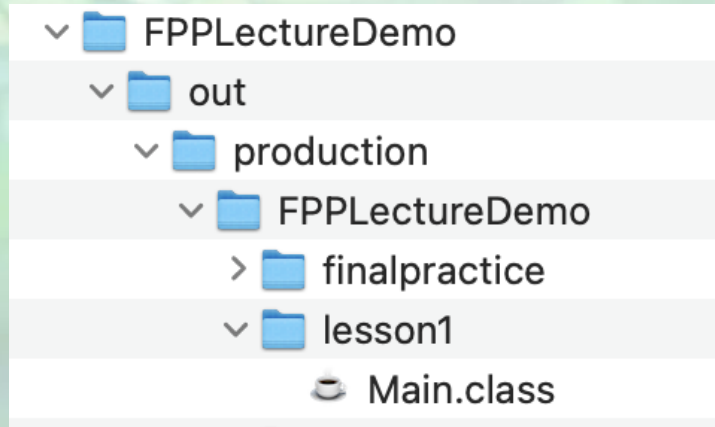
First Program

```
public class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("Hello World");  
    }  
}
```

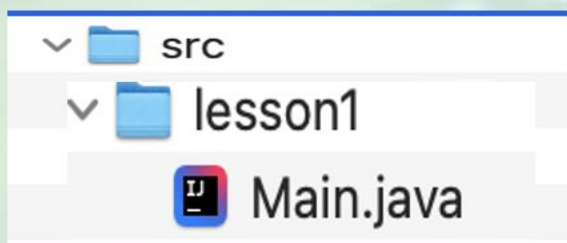
In IntelliJ .class can see it on out directory.

"Hello World" – the class file

In IntelliJ .class file can see it on out directory.



The .class file is an intermediate file consisting of *bytecode*. The bytecode is interpreted by the operating system into native code at runtime.



A .java file is a plain text file that contains source code written in the Java programming language. A simple text file that can be opened in any plain text editor

Introducing Java Things to understand:

- public
- class
- static
- void
- main
- String[]
- System, System.out, System.out.println (vs System.out.print)
 - out is an object of java.io.PrintStream
- delimiters: ;, }, { (“blocks”)
- capitalization conventions

Quiz

`public static void main(String[] a) { }.` This statement is _____

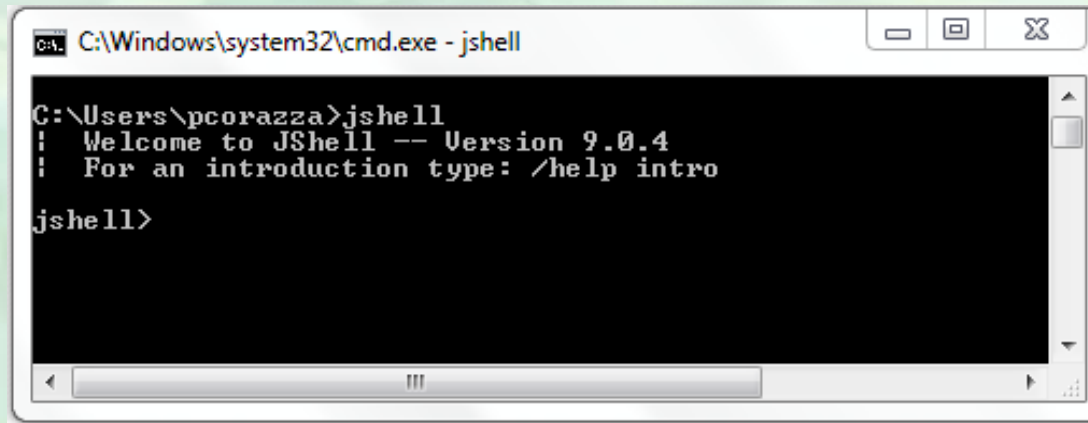
- a. True
- b. False

Byte code is Platform dependent.

- a. True
- b. False

Trying Out Code with JShell

- JShell is a Java 9 feature that lets you try out code interactively at the command line.
- To start JShell, type jshell at the command line(windows).
- Mac users press command + space then type Terminal.app. Type jshell to start.

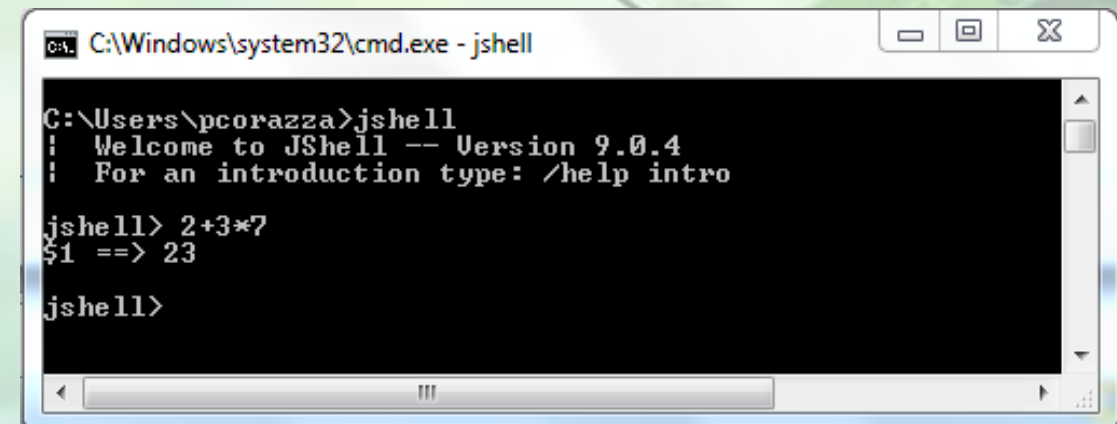


```
C:\Windows\system32\cmd.exe - jshell

C:\Users\pcorazza>jshell
| Welcome to JShell -- Version 9.0.4
| For an introduction type: /help intro

jshell>
```

- You can use JShell to evaluate expressions



```
C:\Windows\system32\cmd.exe - jshell

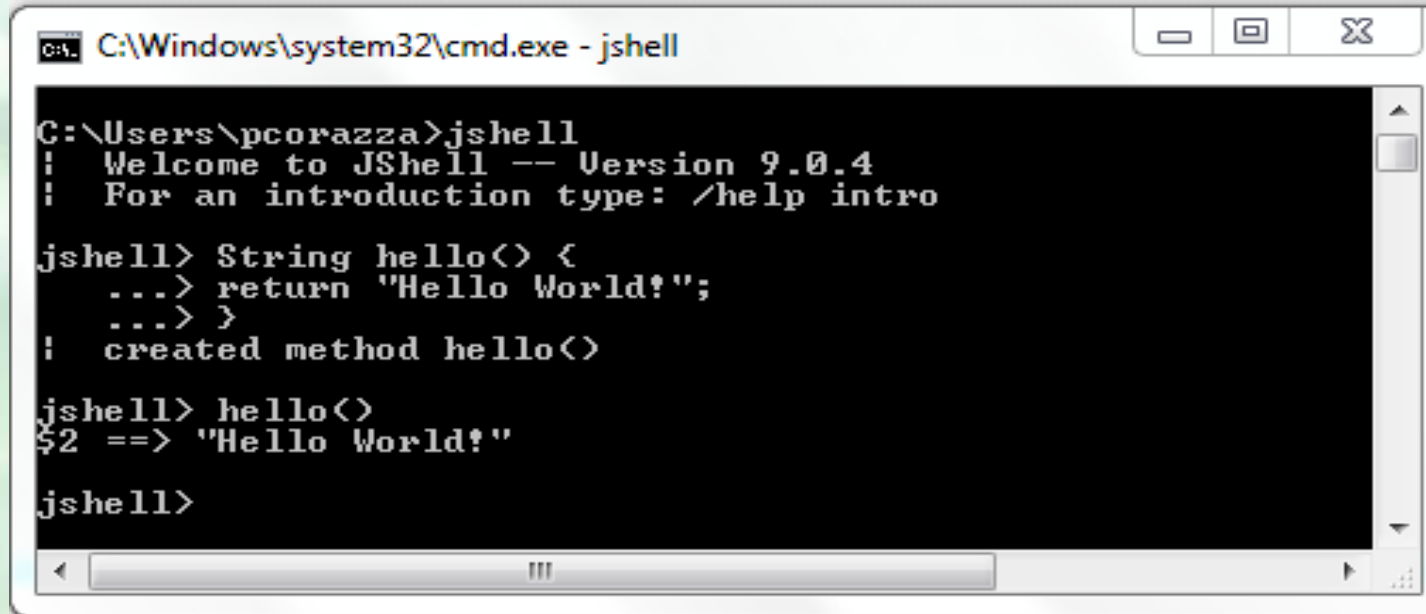
C:\Users\pcorazza>jshell
| Welcome to JShell -- Version 9.0.4
| For an introduction type: /help intro

jshell> 2+3*7
$1 ==> 23

jshell>
```


(continued)

- You can define a Java method in JShell and then run it



```
C:\Windows\system32\cmd.exe - jshell

C:\Users\pcorazza>jshell
! Welcome to JShell -- Version 9.0.4
! For an introduction type: /help intro

jshell> String hello() {
...> return "Hello World!";
...> }
! created method hello()

jshell> hello()
$2 ==> "Hello World!"

jshell>
```

- Exit JShell by typing /exit at the JShell prompt
- To know more about JShell <https://docs.oracle.com/javase/9/jshell/introduction-jshell.htm#JSHEL-GUID-630F27C8-1195-4989-9F6B-2C51D46F52C8>
- **Refer:** Resources/LecturePPT/Lesson-1Setting Java Path Step by Step for Windows.pdf, if JShell does not work you have to setup path to add the bin directory to execute from the command prompt.

Main Point 1

- Java is an object-oriented language that is easier to use, similar to C++, but simplified to eliminate language features that cause common programming errors.
- *Science of Consciousness* :Transcendental Meditation is an easy and effortless technique to make a mind clear and more alert so that we can achieve anything in our life without error.

Integrated Development Environments

- A good IDE supports compiling, running, and debugging code with tools that are integrated and typically easy to use. For a large Java project, an IDE is indispensable.
- Good choices of IDE are JetBrains' IntelliJ NetBeans, Sun Forte, IBM Rational Application Developer (formerly WebSphere Application Developer), Borland's JBuilder.
- IntelliJ also a popular IDE currently used by many people.
- Another excellent choice, which has become an industry standard, is the open-source IDE Eclipse, written entirely in Java.

View Source Code from IntelliJ

You can keep your cursor near the API, you will get the information. To go the respective file press cmd + click on Mac, and in Windows Ctrl + click

```
public class Main {  
    public static void main(String[] args) {  
        System.out.println("Hello and welcome!");  
    }  
}
```

java.lang

public final class System

The `System` class contains several useful class fields and methods. It cannot be instantiated. Among the facilities provided by the `System` class are standard input, standard output, and error output streams; access to externally defined properties and environment variables; a means of loading files and libraries; and a utility method for quickly copying a portion of an array.

Since: 1.0

< 21 >

Main.java System.java x Talking:

```
111 */  
112 public final class System {  
113     /* Register the natives via the static initializer.  
114     *  
115     * The VM will invoke the initPhase1 method to complete the initializa  
116     * of this class separate from <clinit>.  
117     */  
118     private static native void registerNatives();  
119     static {  
120         registerNatives();  
121     }  
122  
123     /** Don't let anyone instantiate this class */  
124     private System() {  
125     }
```


MAIN POINT 2

- IntelliJ is a leading, open-source, 100% Java, integrated development environment, which provides excellent support for editing, compiling, running, and debugging Java applications. *By analogy, to create a good life, we need to handle inner life and at the same time, structure a life-supporting environment – the goal is to live 200% of life.*

UNITY CHART

CONNECTING THE PARTS OF KNOWLEDGE WITH THE WHOLENESS OF KNOWLEDGE

The Usefulness of Java and IDE

- Using Java, highly functional applications can be built more quickly and easily with fewer mistakes than is typically possible using C or C++.
- To optimize the use of Java's features, IDE's such as IntelliJ ease the work of the developer by handling in the background many routine tasks.
- *Transcendental Consciousness* is the source from the field of pure intelligence which is the basis for successful action.
- *Impulses within the Transcendental Field :* At this level of experience, consciousness acting within itself to produce the desired outcome.
- *Wholeness moving within Itself:* In Unity Consciousness, the pure intelligence located in TC is found pervading all of creation, from gross to subtle.

