



```
void main() {  
    IO.println("Hello, world!");  
}
```

Introduction to Java

Java Fundamentals

Agenda

Java Background

What Is Java?

Compilation

History

Design Principles

Java Design

Language Type

Why Static Types?

Java Project Structure



Java Background

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- Compiled code is typically not human-readable

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- System independent, and code can be analyzed and changed at runtime

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Variables have fixed data types which must be known at compile-time

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- Imperative programming
- Some functional-programming features

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- The virtual machine used to execute Java applications is known as the *Java virtual machine (JVM)*

Java Compilation

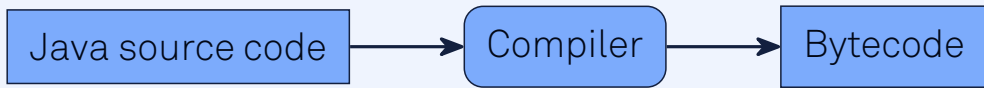
Java Compilation

Java source code

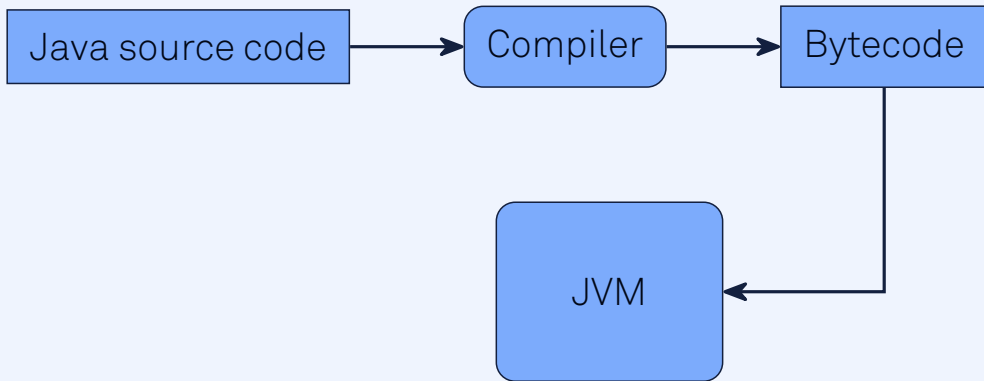
Java Compilation



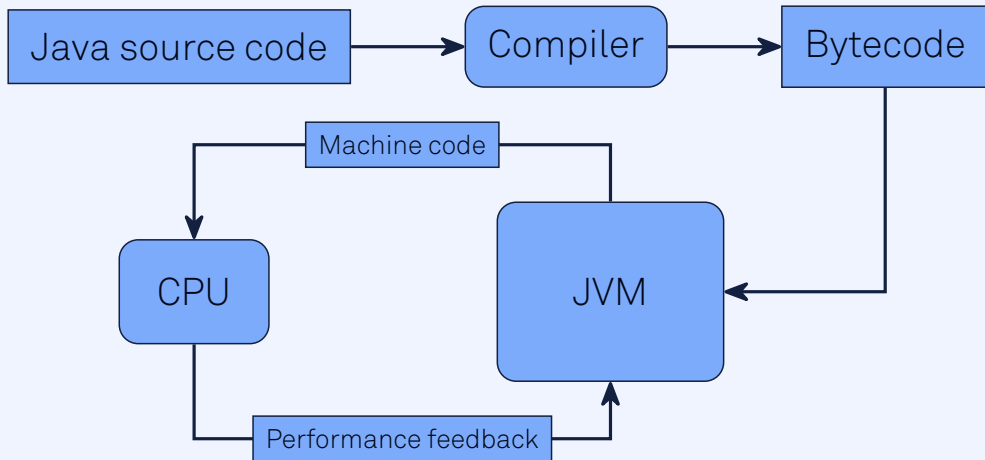
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- C# (Microsoft) was heavily based on Java, but it is now significantly different

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- It must be interpreted, threaded, and dynamic



Java Design

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 - Desktop and mobile apps (Swing, JavaFX, Android)
- It's a *high-level* language compared to C and a very *high-level* language compared to Assembly language

Language-level Breakdown

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 - Remove details about hardware control

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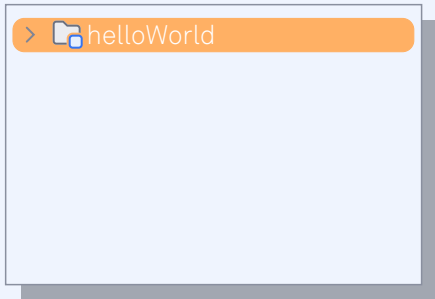
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- What do Python and JavaScript do?
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 - TypeScript/JSDoc comments

Java Project Structure

Project Structure

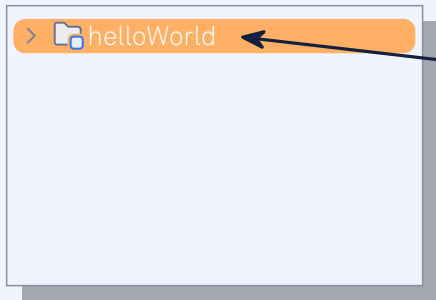


Project Structure



Java project directory

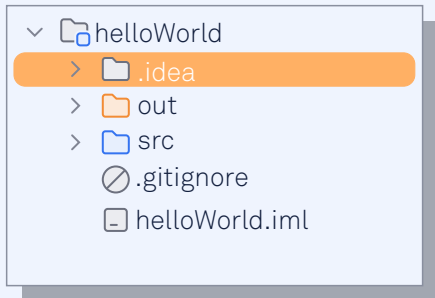
Project Structure



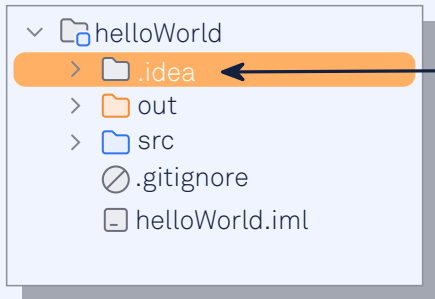
Java project directory

- This directory holds everything for a Java project

Project Structure

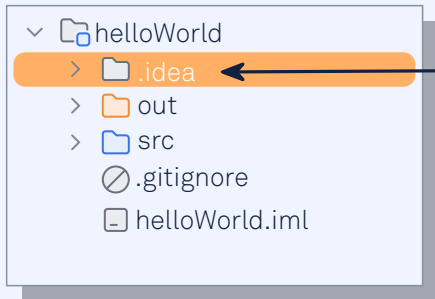


Project Structure



IntelliJ settings directory


Project Structure



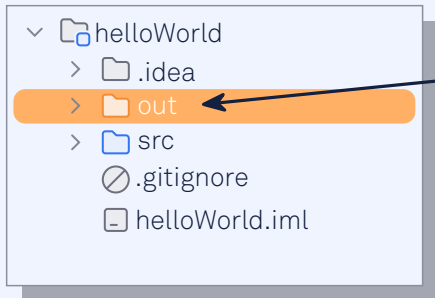
IntelliJ settings directory

- This directory holds IDE settings.

Project Structure

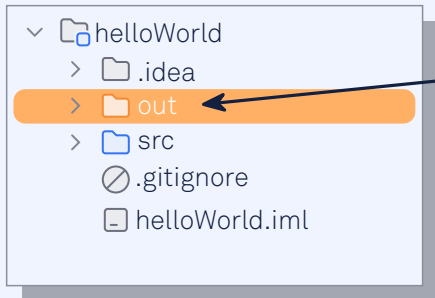
- 
- A diagram showing the project structure of a Java application. It is a tree view where the 'out' folder is highlighted with an orange bar. The structure includes a root folder 'helloWorld' which contains subfolders '.idea', 'out', and 'src', and files '.gitignore' and 'helloWorld.iml'.
- ▼ helloWorld
 - > .idea
 - > out
 - > src
 - ⊗ .gitignore
 - helloWorld.iml

Project Structure



Output directory

Project Structure



Output directory

- This is where the bytecode generated by the compiler goes

Project Structure



Project Structure



Source directory

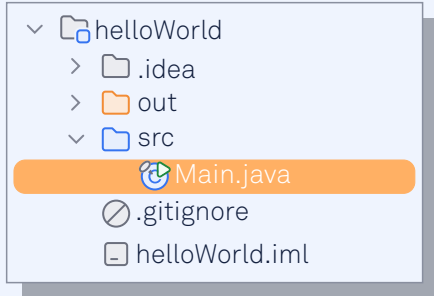
Project Structure



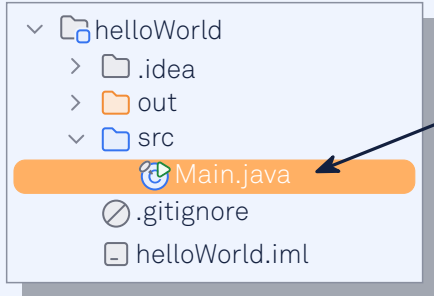
Source directory

- This is where the Java code goes

Project Structure

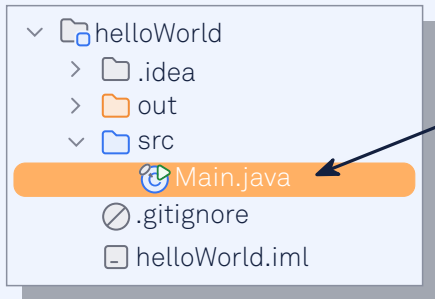


Project Structure



Java **Main** class

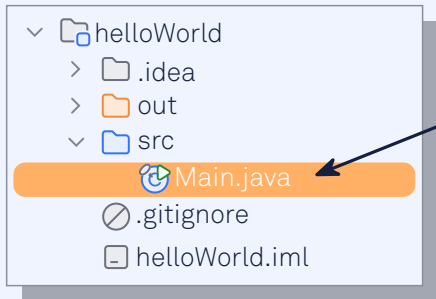
Project Structure



Java **Main** class

- This is the main class for a basic console application

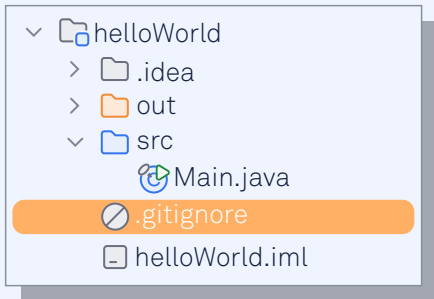
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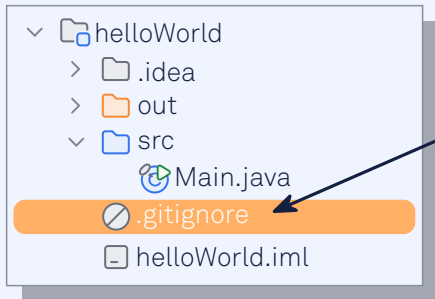
Java **Main** class

- This is the main class for a basic console application
- This is where the code from the title slide goes

Project Structure

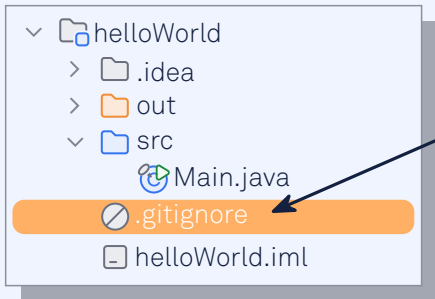


Project Structure



Git ignore file

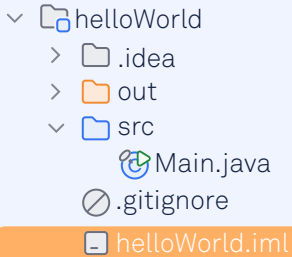
Project Structure



Git ignore file

- This file is used when uploading to a remote repository

Project Structure

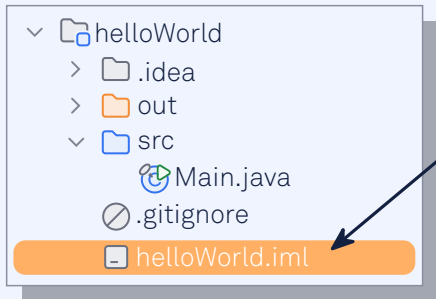


Project Structure



Idea module file

Project Structure



Idea module file

- This file manages more IDE settings

Any Questions?