Java Bootcamp

BRIGHT NETWORK

About Me

Nelson
Software Engineer

Java Bootcamp Curriculum

- Intro Java
- Basics
- Object Oriented Programming - OOP
- Data structures
- Testing
- SQL
- Spring Boot
- Connecting to Databases
- Full Stack with React.js

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What is Java

- Object Oriented Programming Language
- Created by James Gosling in 1995
- 3 billion devices run Java programs
- Similar to C++ but easier
- Very popular

Versions

Version	Release date	End of Free Public Updates[1][6][7][8]	Extended Support Until
JDK Beta	1995	?	?
JDK 1.0	January 1996	?	?
JDK 1.1	February 1997	?	?
J2SE 1.2	December 1998	?	?
J2SE 1.3	May 2000	?	?
J2SE 1.4	February 2002	October 2008	February 2013
J2SE 5.0	September 2004	November 2009	April 2015
Java SE 6	December 2006	April 2013	December 2018 December 2026, paid support for Azul Platform Core[9]
Java SE 7	July 2011	April 2015	July 2022
Java SE 8 (LTS)	March 2014	**January 2019 for Oracle (commercial)** December 2030 for Oracle (non-commercial) December 2030 for Azul At least May 2026 for AdoptOpenJDK At least May 2026 for Amazon Corretto	December 2030
Java SE 9	September 2017	March 2018 for OpenJDK	N/A
Java SE 10	March 2018	September 2018 for OpenJDK	N/A
Java SE 11 (LTS)	September 2018	September 2026 for Azul At least October 2024 for AdoptOpenJDK At least September 2027 for Amazon Corretto At least October 2024 for Microsoft[10][11]	September 2026 September 2028 for Azul[9]
Java SE 12	March 2019	September 2019 for OpenJDK	N/A
Java SE 13	September 2019	March 2020 for OpenJDK	N/A
Java SE 14	March 2020	September 2020 for OpenJDK	N/A
Java SE 15	September 2020	March 2021 for OpenJDK March 2023 for Azul[9]	N/A
Java SE 16	March 2021	September 2021 for OpenJDK	N/A
Java SE 17 (LTS)	September 2021	September 2029 for Azul At least September 2027 for Microsoft	September 2029 or later September 2031 for Azul Platform Prime
Java SE 18	March 2022	September 2022 for OpenJDK	N/A

Legend: Old version | Older version, still maintained | **Latest version** | Future release

https://en.wikipedia.org/wiki/Java_version_history

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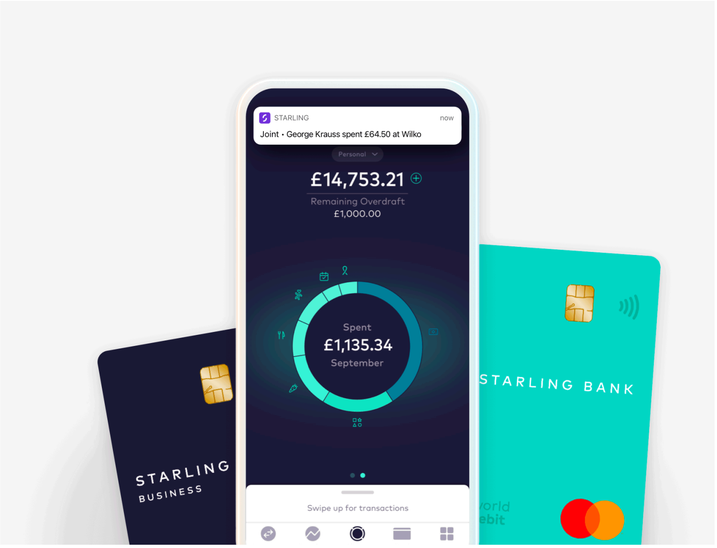
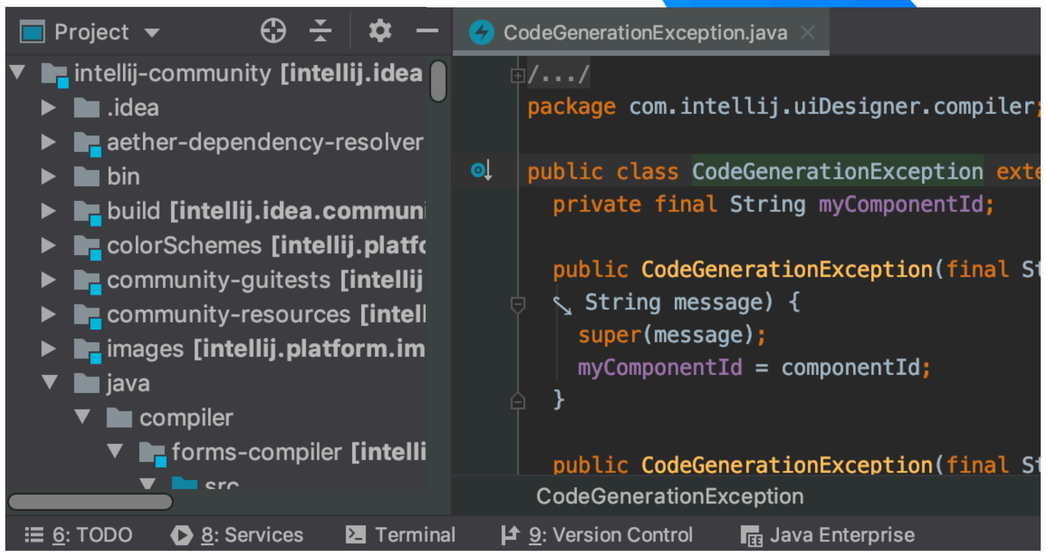
What can you build with Java

- Mobile apps for Android
- Desktop App using Java Swing, JavaFX
- Entreprise Applications
- Games such as **Minecraft**
- Cloud based applications
- Web Applications
- and much more

Who uses Java

- Big and Small companies
- Very popular amongst start ups





IntelliJ IDEA
Capable and Ergonomic
Java IDE
JET BRAINS

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Java is Not Javascript

- **Java** is a compiled/interpreted language
- Backend

- **Javascript** is an interpreted language
- Mostly used on web browsers and some backend with NodeJS

Compiler

- A compiler is a special program that processes statements written in a particular programming language and turns them into machine language or "code" that a computer's processor uses.

```
4 if (!isAdult) {
5     console.log("is not an adult :( ")
6 } else {
7     console.log("is adult :)")
8 }
```

Interpreter

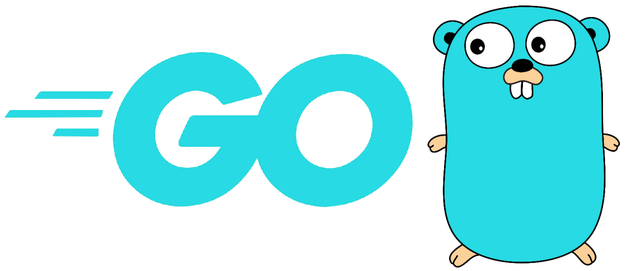
- The interpreter reads each statement of code and then converts or executes it directly

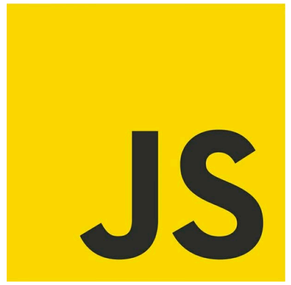
```
4 if (!isAdult) {
5     console.log("is not an adult :( ")
6 } else {
7     console.log("is adult :)")
8 }
```

Compiled vs Interpreted

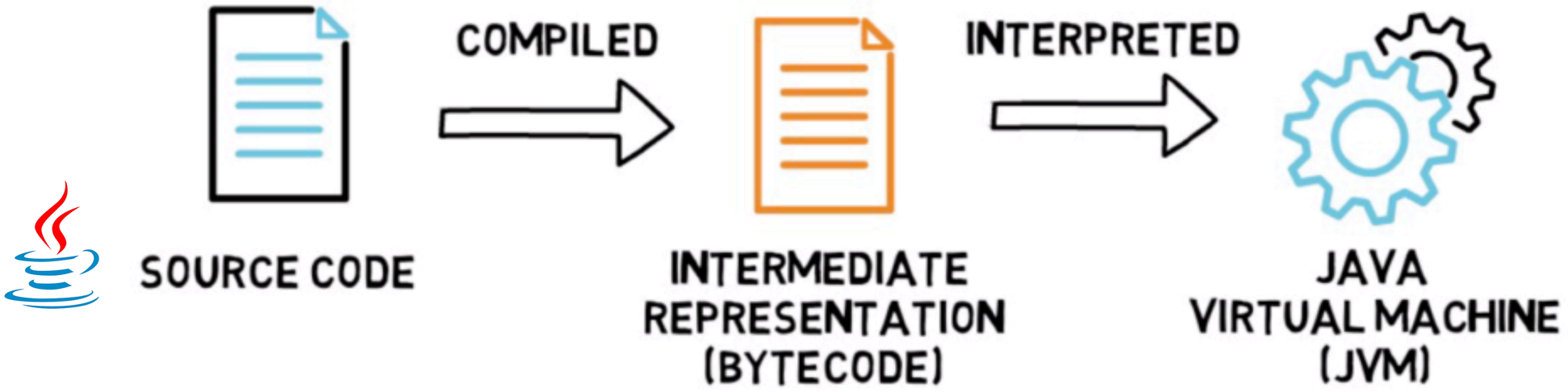
Compiled	Interpreted
Code can be executed directed by computer’s cpu	Another program executes code
Code must be transformed into machine readable instructions	No transformation needed
Runs faster	Slower
Better Performance	Faster for Development

Compiled vs Interpreted

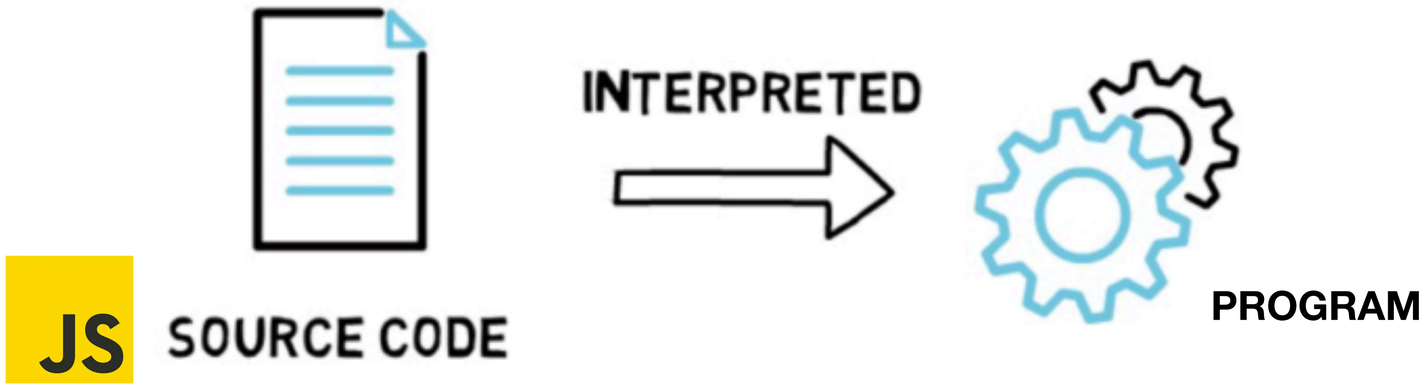




JAVA and JVM



JS and Interpeter



Static vs Dynamic Type checking

- Type - AKA data type, is a classification identifying one of various **types of data.** Strings, Integers, Objects, Arrays, Maps …

- The process of verifying and enforcing the constraints of types—*type checking*—may occur either at compile time (a static check) or at run-time (dynamic check).

Static Type checking

- A language is statically-typed if the type of a variable is known at **compile time** instead of at runtime
- Allows many type errors to be caught early in the development cycle.

Dynamic Type checking

- is the process of verifying the type safety of a program at **runtime**. Common dynamically-typed languages include Groovy, JavaScript, Lisp, Lua, Objective-C, PHP, Prolog, Python, Ruby, Smalltalk and Tcl.

How do we write Java code

- With any text editor

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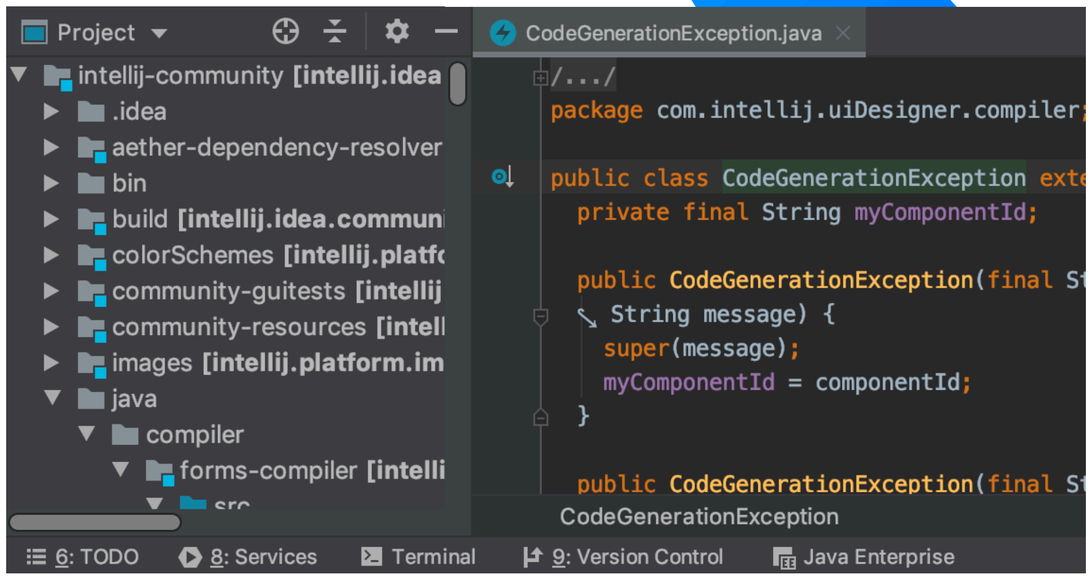
Most popular Java IDE

- By JetBrains

2 Versions Available

- Community Edition
- Ultimate



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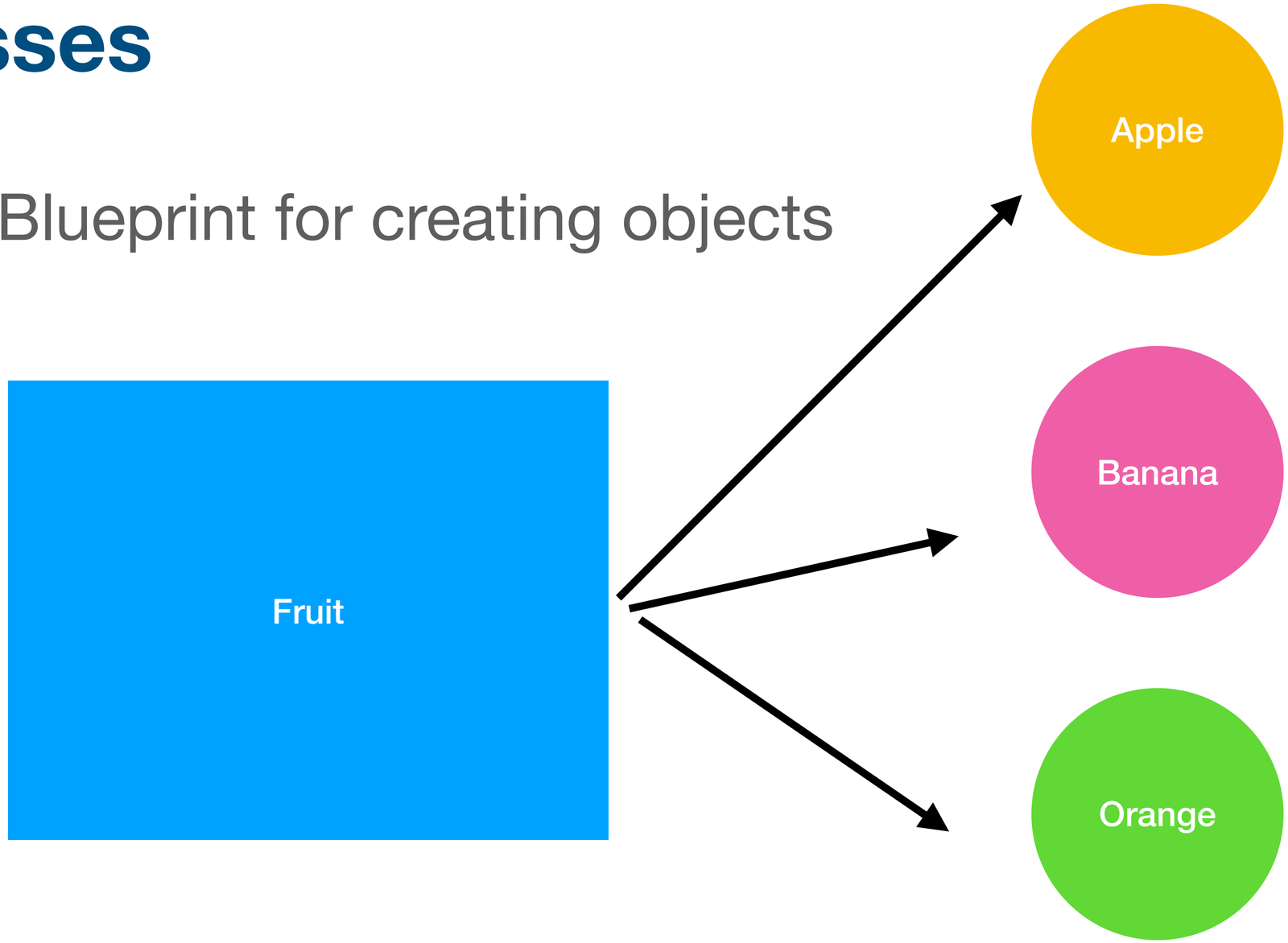
OOP

- is about creating objects that contain both data and methods

  - OOP is faster and easier to execute
  - OOP provides a clear structure for the programs
  - OOP helps to keep the Java code DRY "Don't Repeat Yourself", and makes the code easier to maintain, modify and debug
  - OOP makes it possible to create full reusable applications with less code and shorter development time

Classes

- Blueprint for creating objects

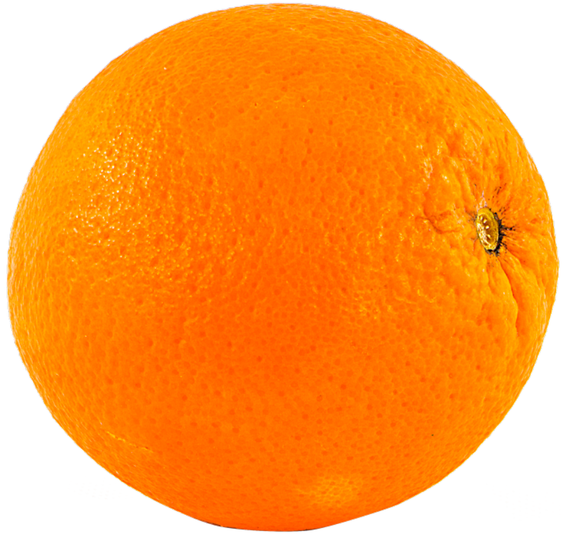


Classes

- Properties and behaviours

Objects

- The real thing



Day 1 - Getting Started

- Get IntelliJ and our first Java code
- Javac and bytecode
- Understanding the syntax & Reserved Keywords
- Comments
- Variables
- Primitive and Reference Types
- Data Types
- String class
- Arrays
- ++ & - -
- Loops
- Break and Continue
- Packages and Import Statement
- Comparison Operators
- Logical Operators
- If statement & Ternary
- Switch Statement
- Take user input

Day 2 - Basics of Java

- The Java Syntax
- Access Modifiers
- Methods
- Enums
- Working with Dates
- Handling Error
- Working with Files
- Optionals

Day 3 - OOP Object Oriented Programming

- Classes and Objects
- ToString
- Equals vs ==
- Equals and HashCode
- Static
- Pass by Value vs Reference
- Inheritance
- Polymorphism
- Interfaces

Day 4 - Data Structures and Streams

- Lists
- Maps
- Stacks
- Queues
- Imperative vs Declarative Approach
- Streams

Day 5 - Team Project

- Git and Github
- Implement a database management system for a car rental company

Day 6 - Testing

- What is testing
- JUnit
- AssertJ
- Mocking
- Test Driven Development

Day 7 - Databases and SQL

- Getting Started with DB
- Relational Databases
- Queries
- Joins
- Aggregate Functions

Day 8 Spring Boot

- Getting Started with Spring
- Restful APIs

Day 9 Spring Boot and DB

- Connect Spring Boot backend to database

Day 10 Getting Started with React

- Create react app
- Build a simple app to connect to backend