

Adopting Java



Sander Mak

Java Champion

@sander_mak

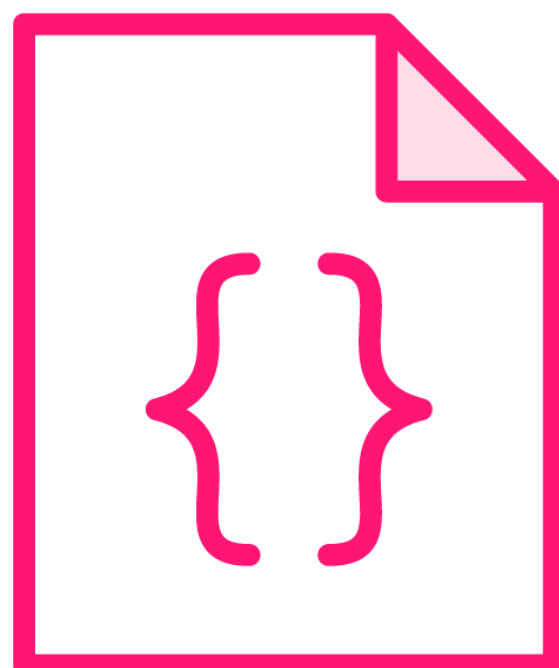


When and Why to Adopt Java?

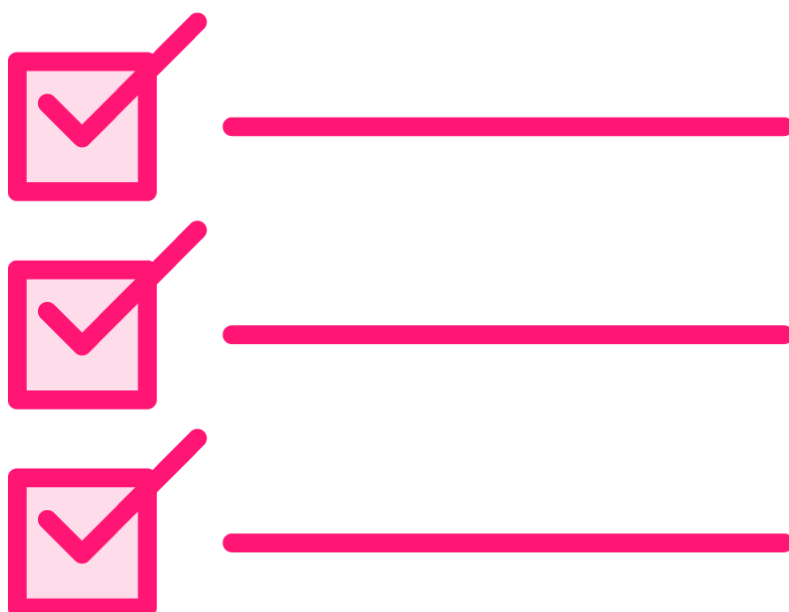
Philosophy



Java's characteristics



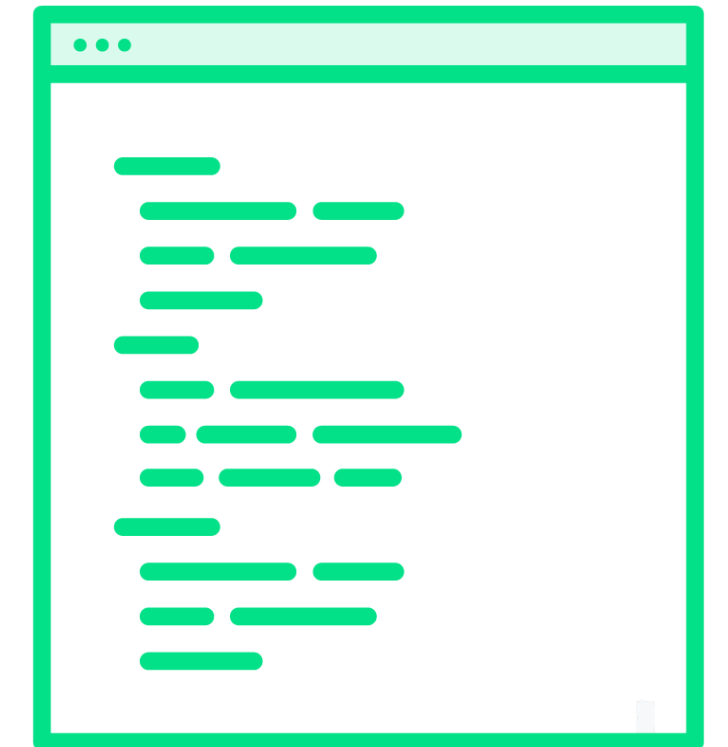
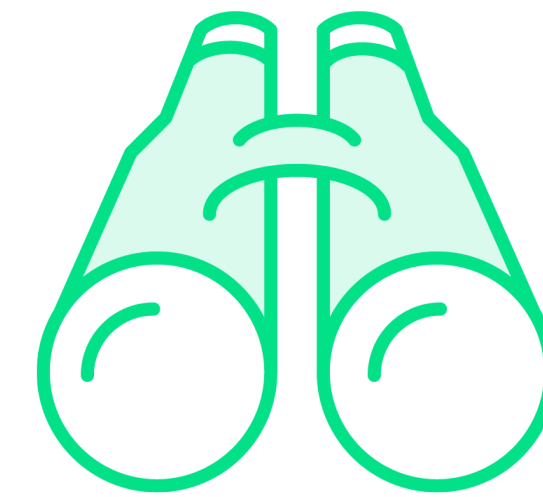
Comparison



The Philosophy of Java: Readability

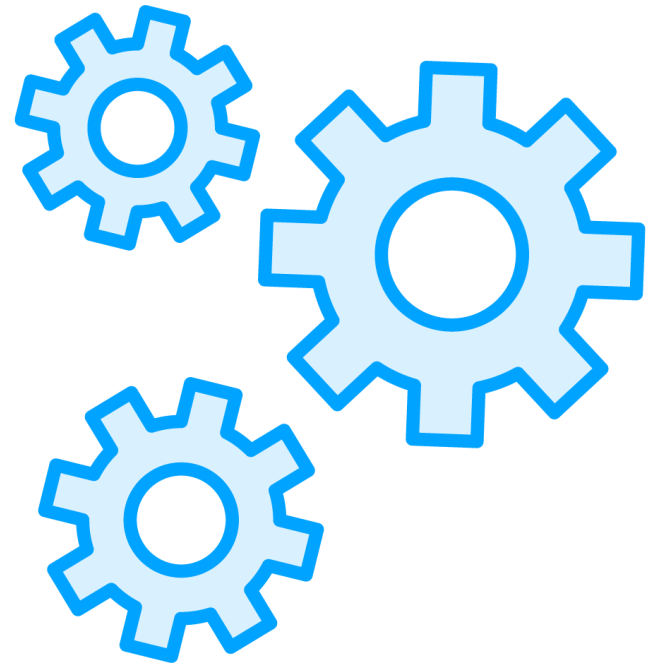
More than **10 million** Java developers

Reading code is more important
than **writing** code



Understandable code over **short** and
clever code

The Philosophy of Java: Stability



Conservative in adding new features

First, do no harm

Productivity

Java 1.0

1996

Java 12



Preview
Features

Java 17

2021

Java 21

2023

2040?

Backward Compatibility



Backward Compatibility

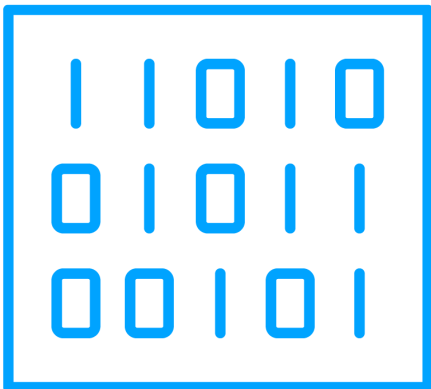
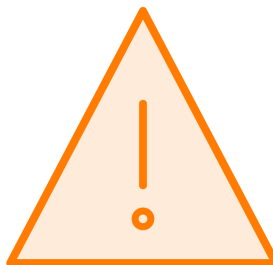
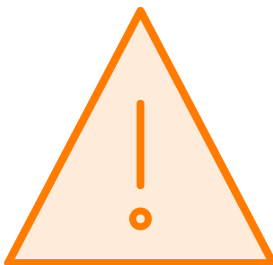
Java 8

Java 17

Java N



Source code



Byte code



Philosophy of Java: Openness & Community

Rigorous specification



<https://jcp.org>

Multiple vendors & community leaders

IBM, Red Hat, Azul, Microsoft, Amazon, ...

The Java® Virtual
Machine Specification
Java SE 17 Edition

The Java® Language
Specification
Java SE 17 Edition

James Gosling
Bill Joy
Guy Steele
Gilad Bracha
Alex Buckley
Daniel Smith
Gavin Bierman

2021-08-09

OpenJDK

Java enhancement proposals (JEPs)

OpenJDK FAQ

Installing

Contributing

Sponsoring

Developers' Guide

Vulnerabilities

JDK GA/EA Builds

Mailing lists

Wiki · IRC

Bylaws · Census

Legal

JEP Process

Source code

Mercurial

GitHub

Tools

Mercurial

Git

jtreg harness

Groups

(overview)

Adoption

Build

Client Libraries

Compatibility & Specification Review

Compiler

Conformance

Core Libraries

Governing Board

HotSpot

IDE Tooling & Support

Internationalization

JMX

Members

Networking

Porters

Quality

Security

Serviceability

Vulnerability

Web

Projects

(overview)

Amber

Annotations Pipeline

2.0

Audio Engine

Build Infrastructure

CRaC

Caciocavallo

Closures

Code Tools

Coin

Common VM Interface


Compiler Grammar

Detroit


Developers' Guide

Device I/O


OpenJDK



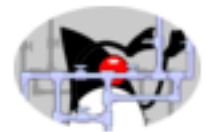
What is this? The place to collaborate on an open-source implementation of the [Java Platform, Standard Edition](#), and related projects. ([Learn more.](#))



Download and install the [latest open-source JDK](#). Oracle's free, GPL-licensed, production-ready OpenJDK JDK 17 binaries for Linux, macOS, and Windows are available at [jdk.java.net/17](#); Oracle's commercially-licensed JDK 17 binaries, based on the same code, are [here](#).



Learn about the key active Projects in the Community including [Amber](#) (high-productivity language features), [Loom](#) (lightweight concurrency), [Panama](#) (foreign functions and foreign data), [Valhalla](#) (primitive types and specialized generics), and, of course, the [next version of Java and the JDK](#).
If you want to learn how to [contribute](#) to the project, or if you want to [report a bug](#), head over to [jdk.java.net](#).



Hack on the JDK itself, right here on GitHub. The [OpenJDK Community](#): [Browse the code repository](#) to make a local copy, [fork](#) to fix a bug, enhance an existing feature, or [create a new feature](#).

openjdk.net

Why GitHub? Team Enterprise Explore Marketplace Pricing

Search / Sign in Sign up

openjdk / jdk Public

Notifications Fork 3.2k Star 12.2k

<> Code Pull requests 180 Security Insights

master 154 branches 769 tags Go to file Code

mrserb 8274939: Incorrect size of the pixel storage is used by the ro... 1 eff5daf 17 hours ago 67,850 commits

.github/workflows

8279379: GHA: Print tests that are in error last month

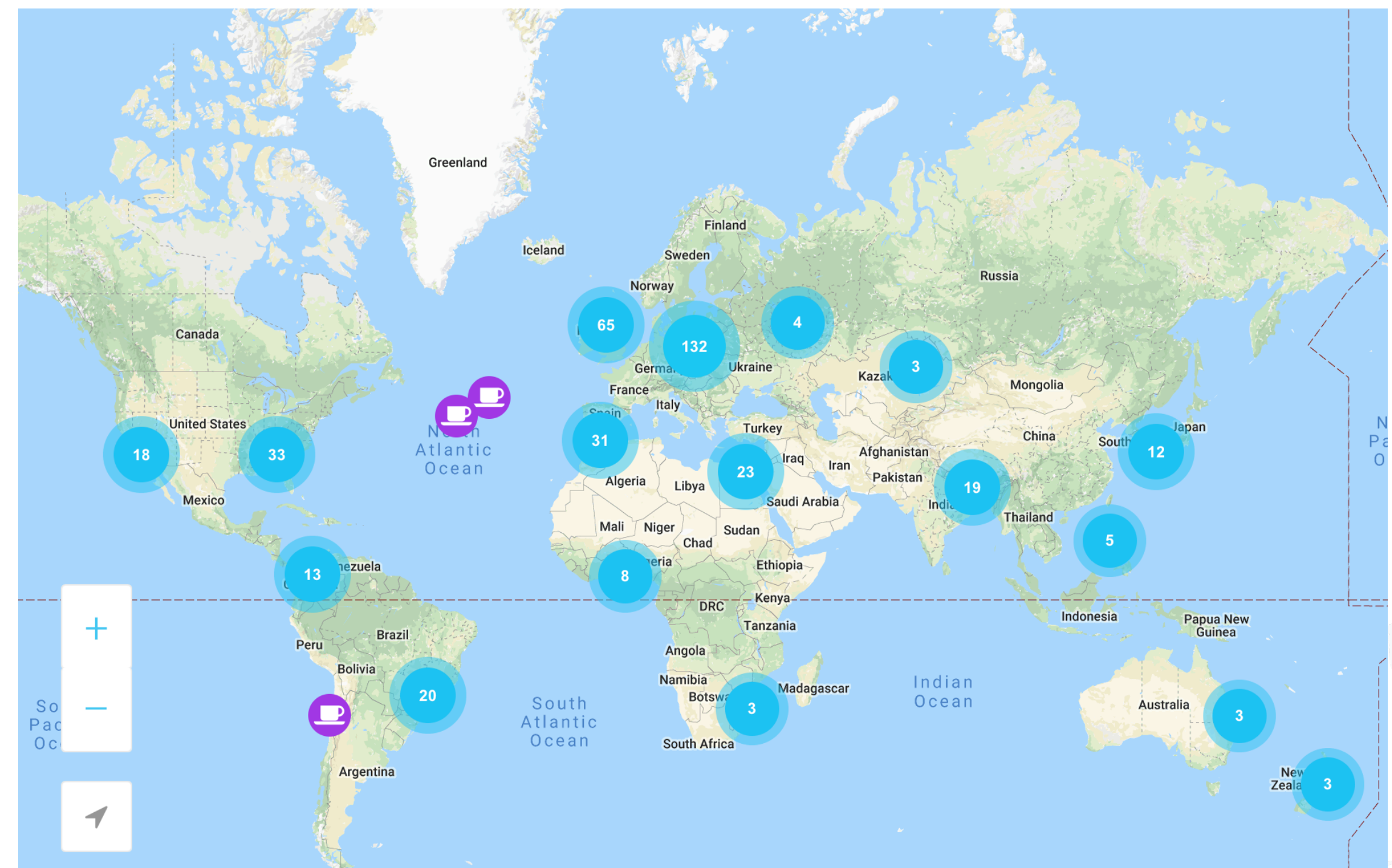
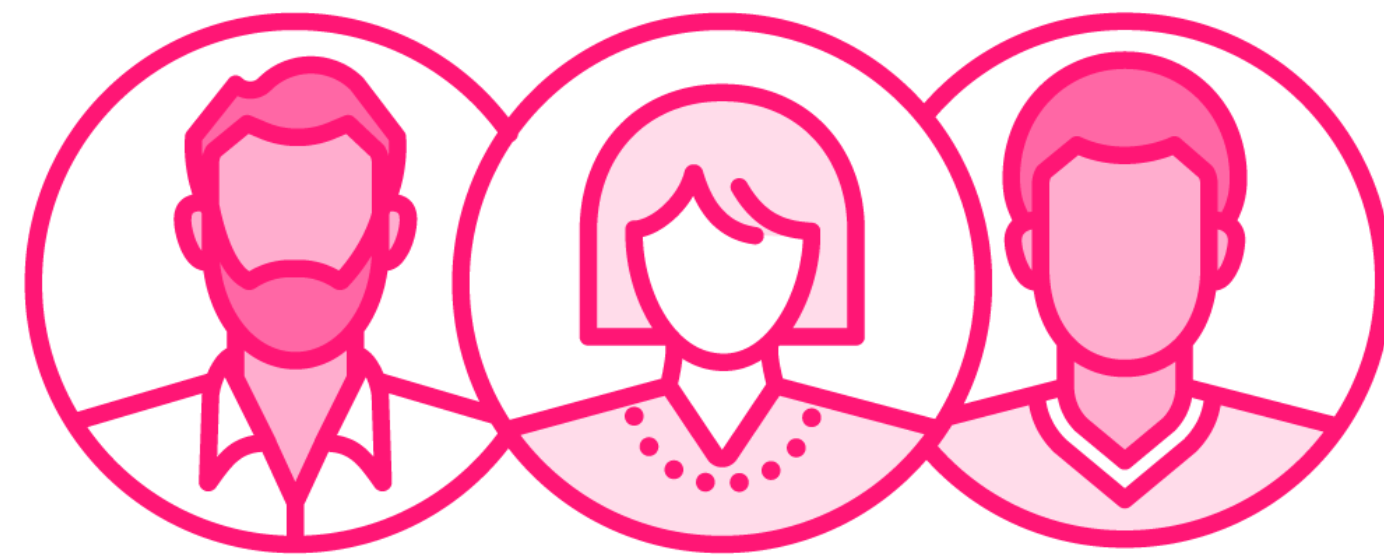
About

JDK main-line development

[openjdk.java.net/projects/jdk/](#)

java jvm openjdk

Java Community



Java User Groups, meetups, conferences

The Java Language

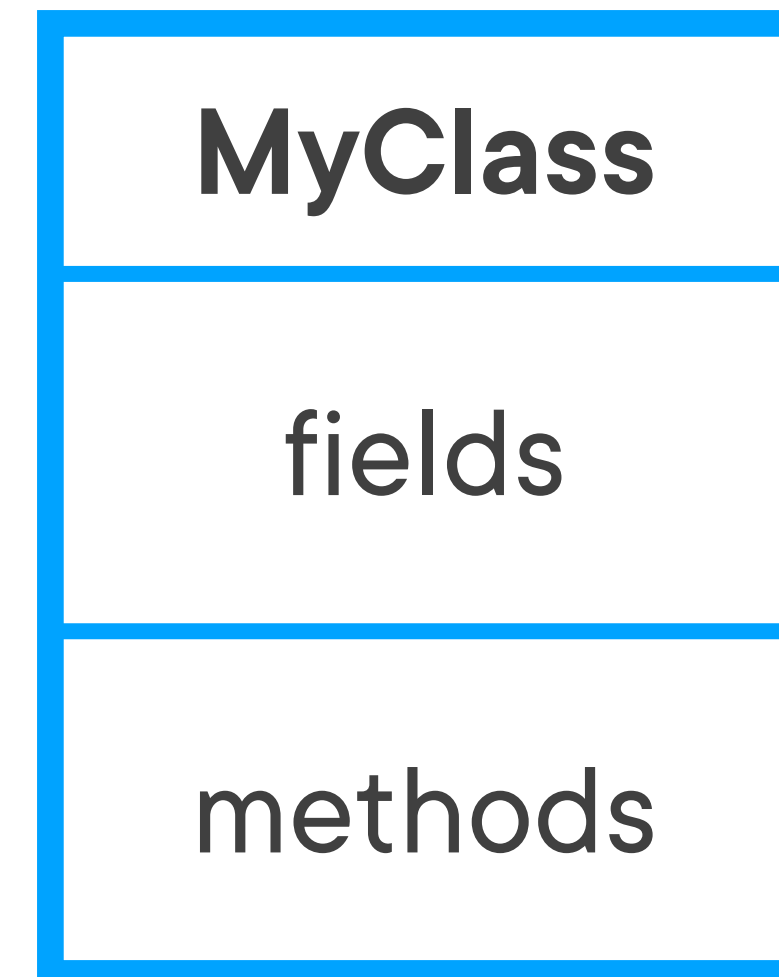
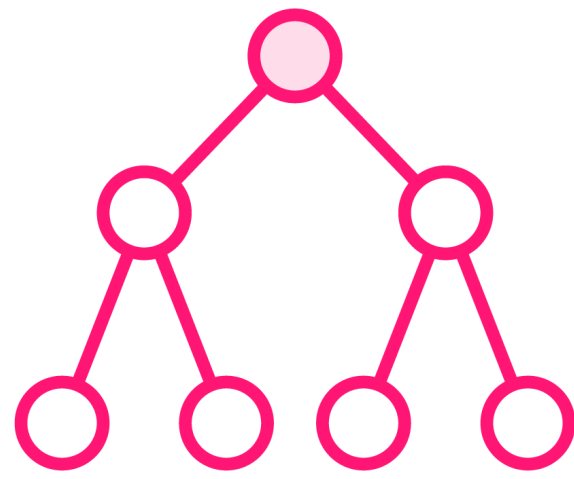
Familiar syntax



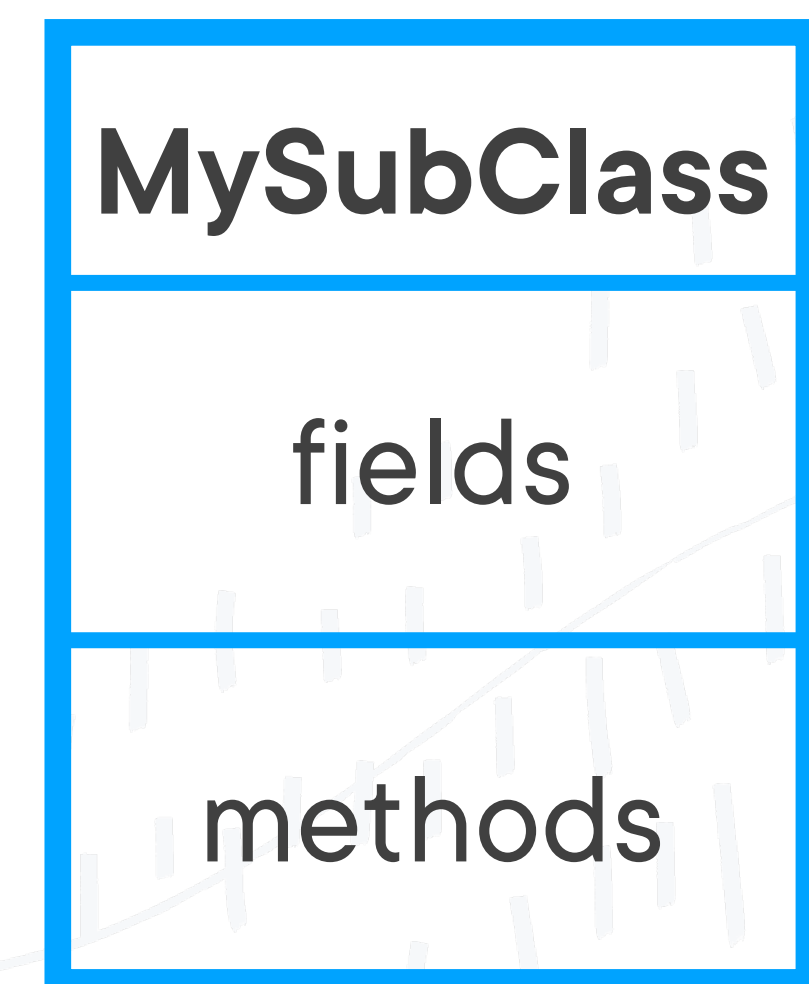
```
public class MyClass {  
    public void aMethod(boolean choice) {  
        if(choice) {  
            //..  
        } else {  
            // ..  
        }  
    }  
  
    private void anotherMethod() {  
        for(int i = 1; i < 10; i++) {  
            // ..  
        }  
    }  
}
```

The Java Language

Object Oriented



extends

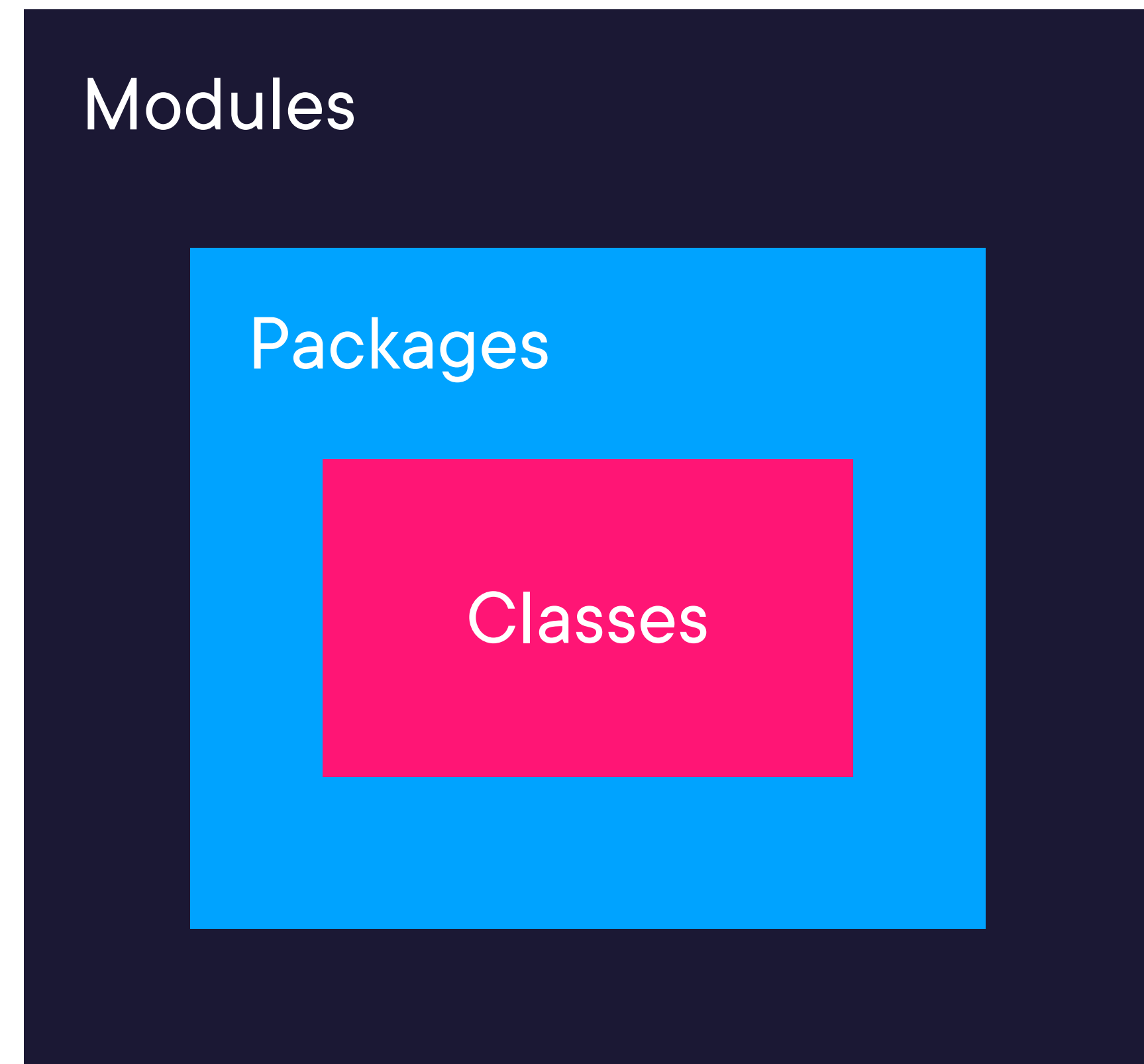


Scalable Development

Hierarchical & structured codebases

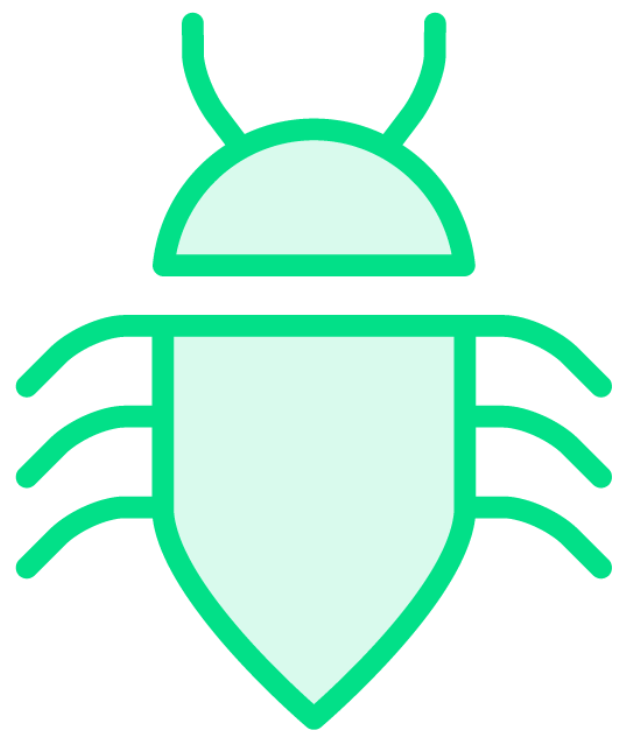


Working with the Java
Module System



Productivity: Type System

Catch bugs early



```
public class Hello {  
    public static void main(String[] args) {  
        int message = "Hello Pluralsight!";  
        System.out.println(message);  
    }  
}
```

```
Hello.java:4: error: incompatible types:  
String cannot be converted to int  
    int message = "Hello Pluralsight!";  
                  ^  
1 error
```


Java's Runtime

Portability

Managed
Runtime

Performance

Java's Runtime: Portability

**Write
Once
Run
Anywhere**

Application Bytecode

Java Standard Edition (SE) APIs

Java Virtual Machine (Linux)

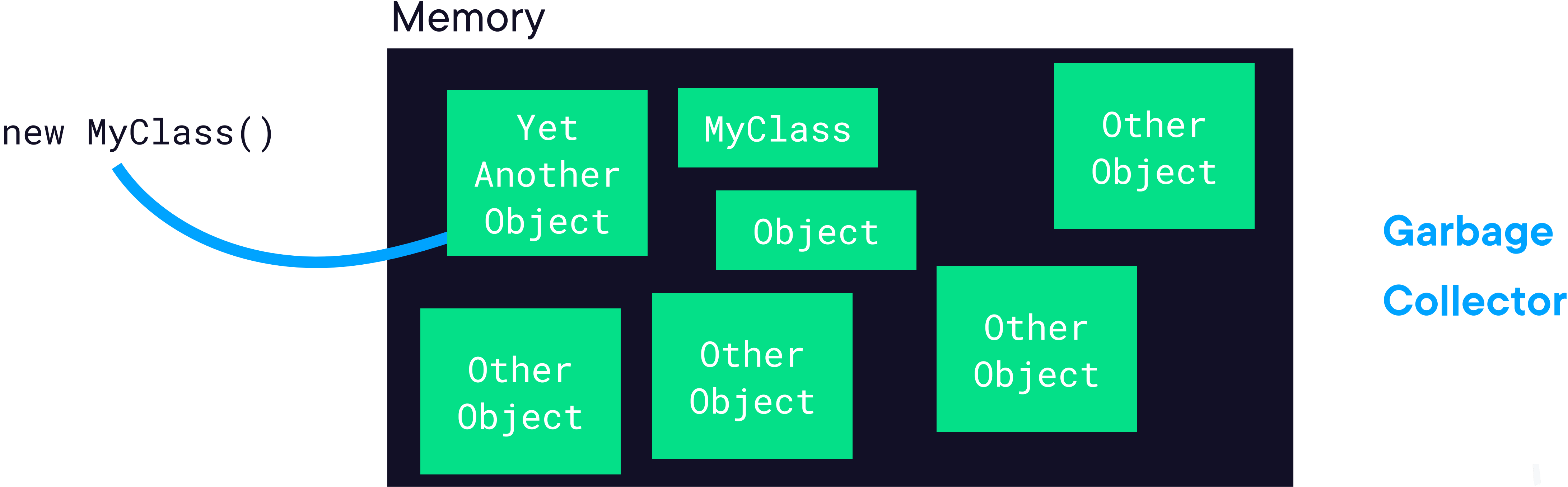
JVM for each OS/architecture

Ubuntu Linux

Platform-agnostic APIs

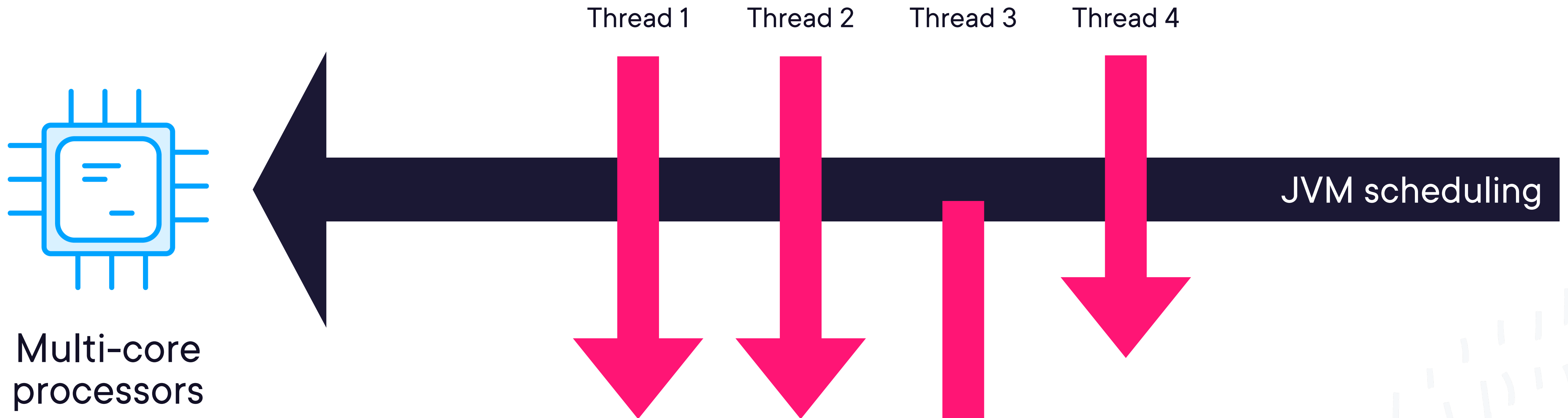
arm64

Managed Runtime



Automatic Memory Management
Garbage collection

Managed Runtime: Multi-threading

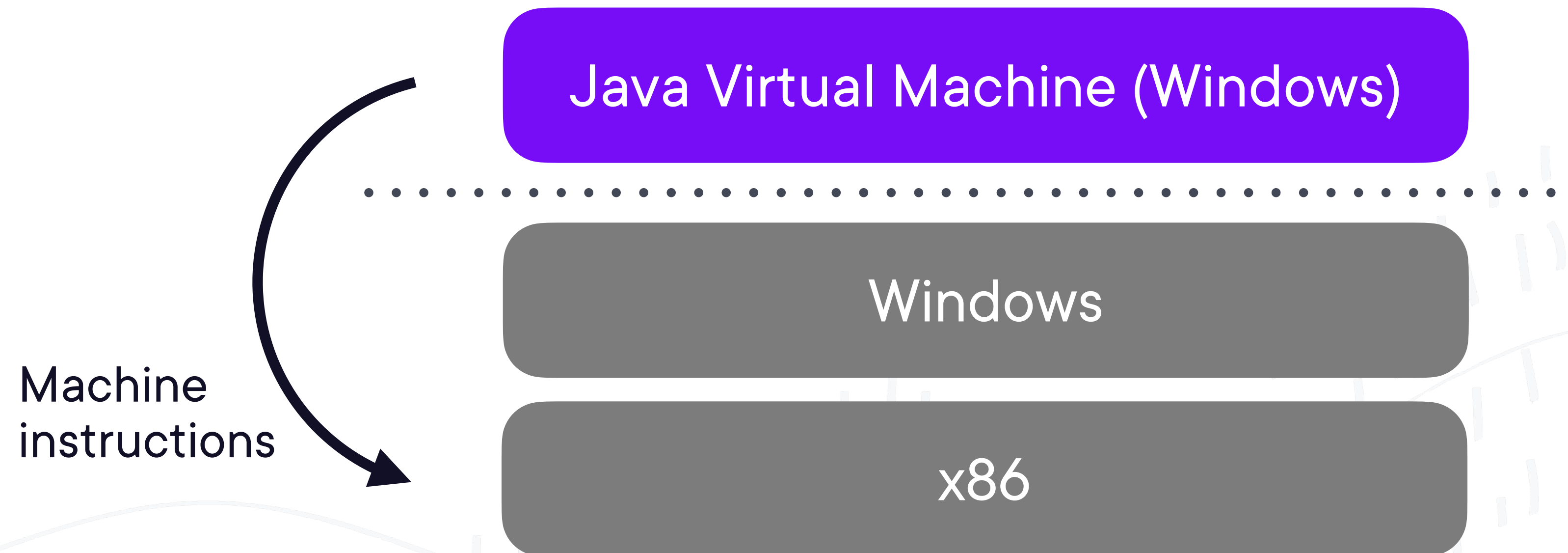
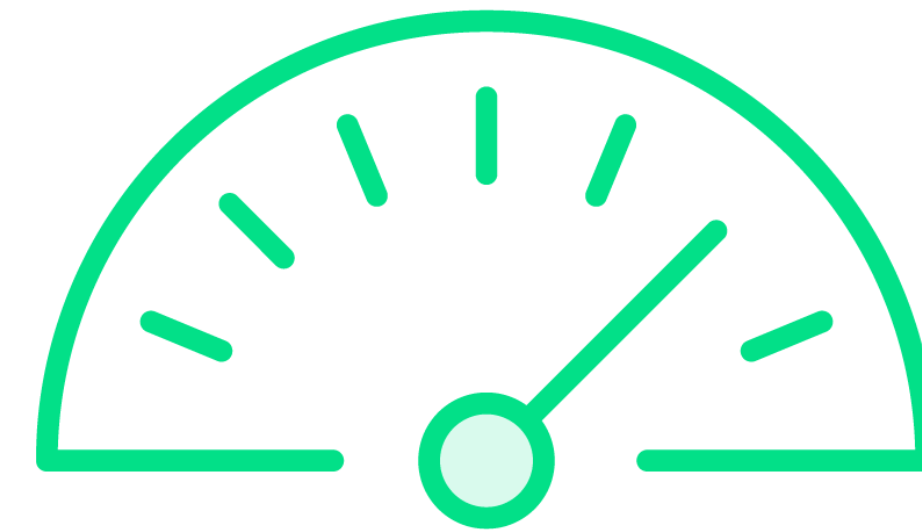


Managed Runtime: Performance

Just-in-time compilation

Specialized to executing processor

Based on actual execution of code



“When web companies grow up, they turn into Java shops.”

— James Governor, RedMonk analyst & co-founder

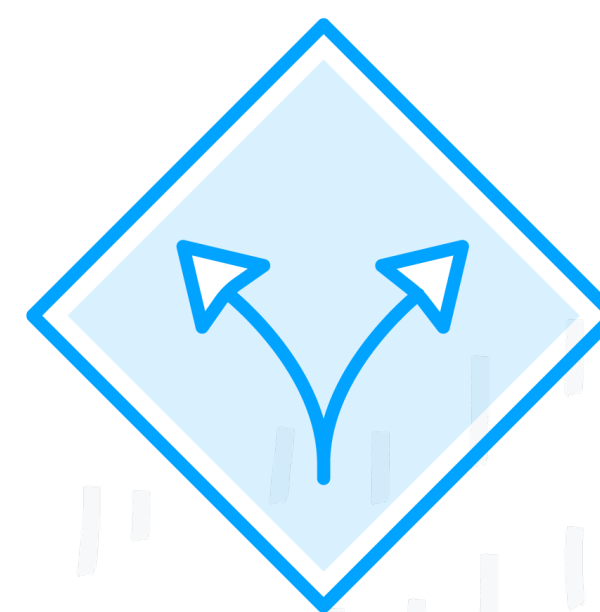


Comparing Java to Other Languages

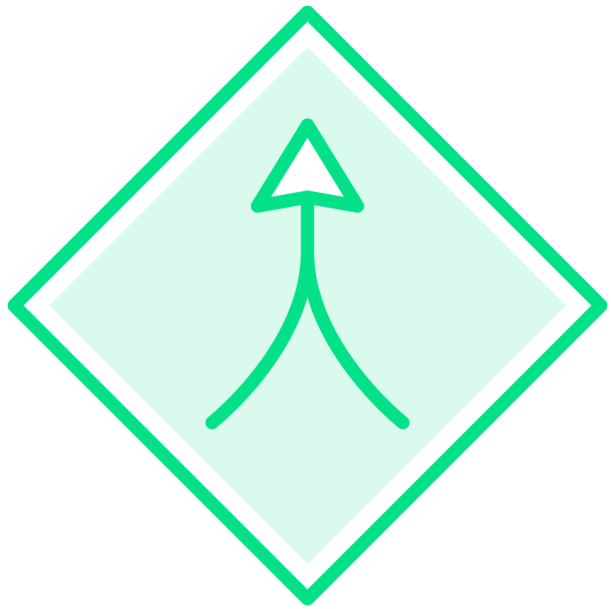
C# / .Net

C / C++

JavaScript

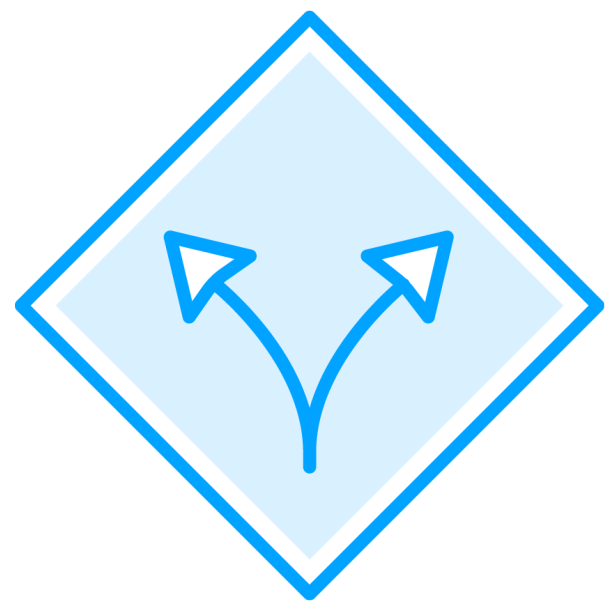


C# / .Net



Common Language Runtime (CLR): a managed runtime

Intermediate Language (IL): like Java bytecode

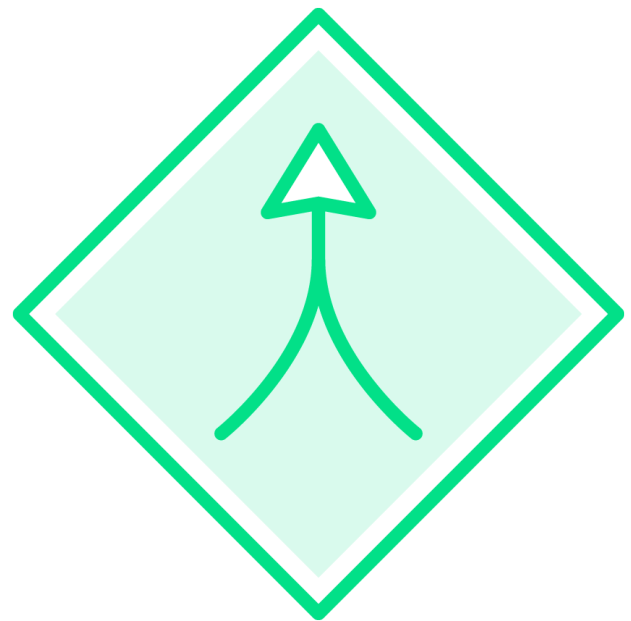


Wider range of language features

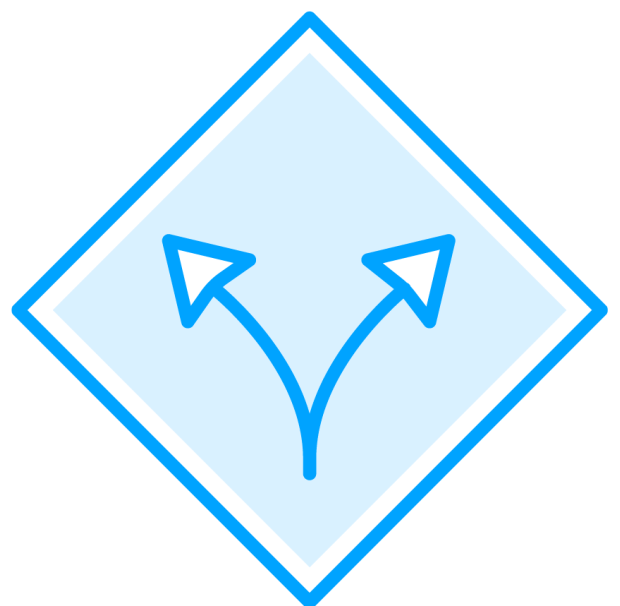
More liberal in breaking backward compatibility

Not originally cross-platform

C / C++



Similar syntax

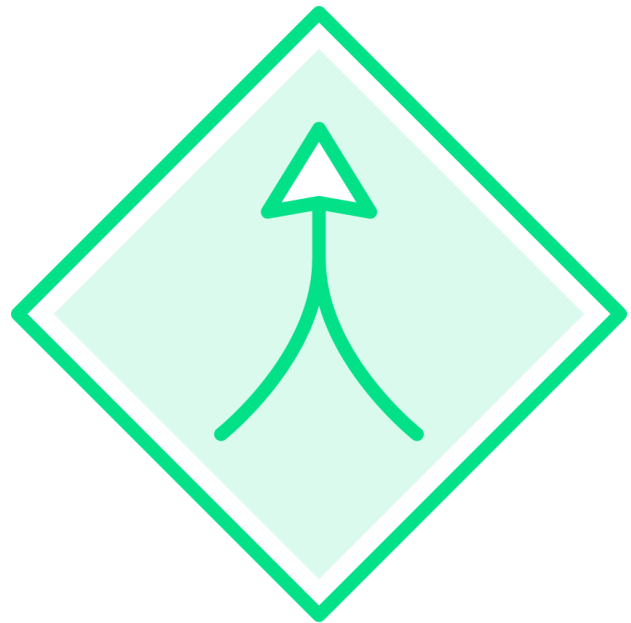


Unmanaged languages

Low-level: more freedom, also more error prone

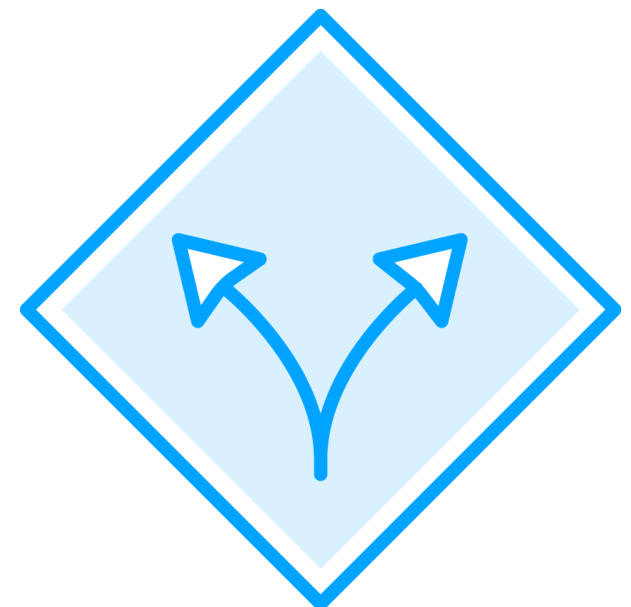
Separately compile for each target platform

JavaScript



JavaScript with Node.js: managed runtime

High-level code



Interpreted language: no compilation

No static type system (TypeScript!)

Single-threaded



Summary

Readability & stability

Open community, open-source

Object-oriented on managed runtime