Beyond Java 8

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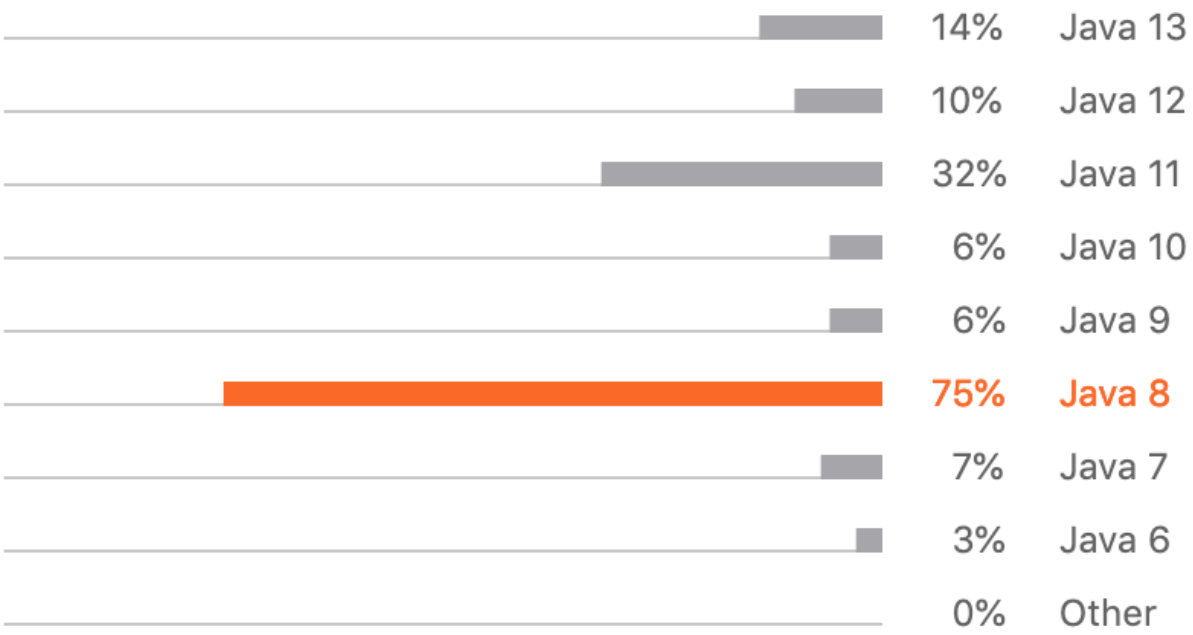
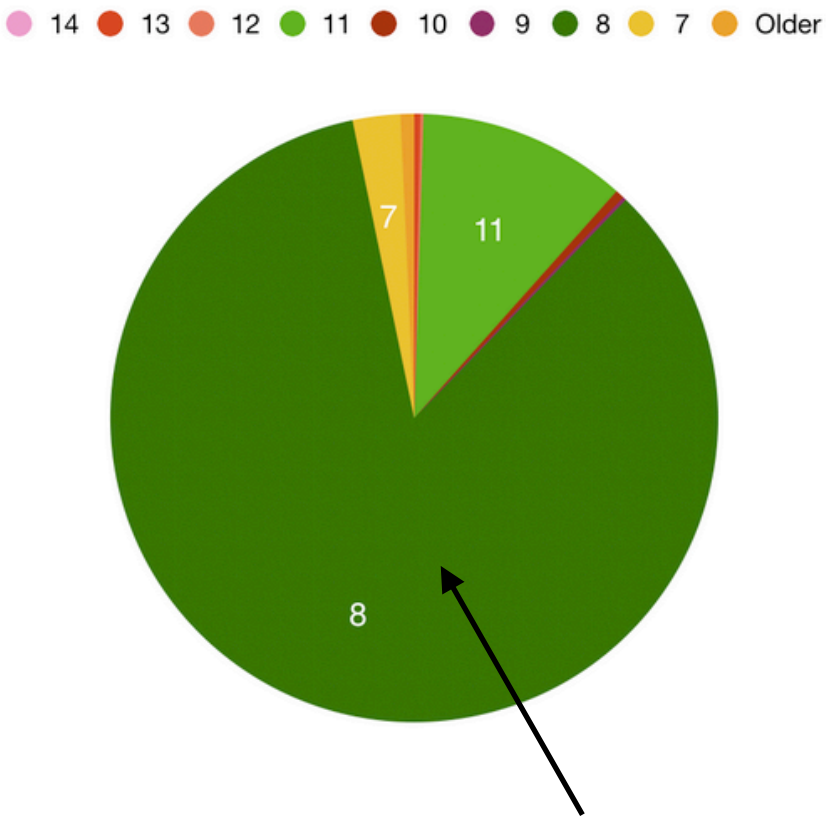
Which versions of Java do you regularly use?



Despite the emergence of newer versions, Java 8 is still most beloved. It is used by 3/4 of Java developers. Java 11 is growing more popular. Compared to last year, its usage has increased by 10 percentage points.

https://www.jetbrains.com/lp/devecosystem-2020/java/



"The majority of JVMs (over 85%) are running on Java 8"

Java 8 is still the standard—for now

Let's start with the one question Java developers are always curious about: Which versions are most used in production environments? Consider the following table:

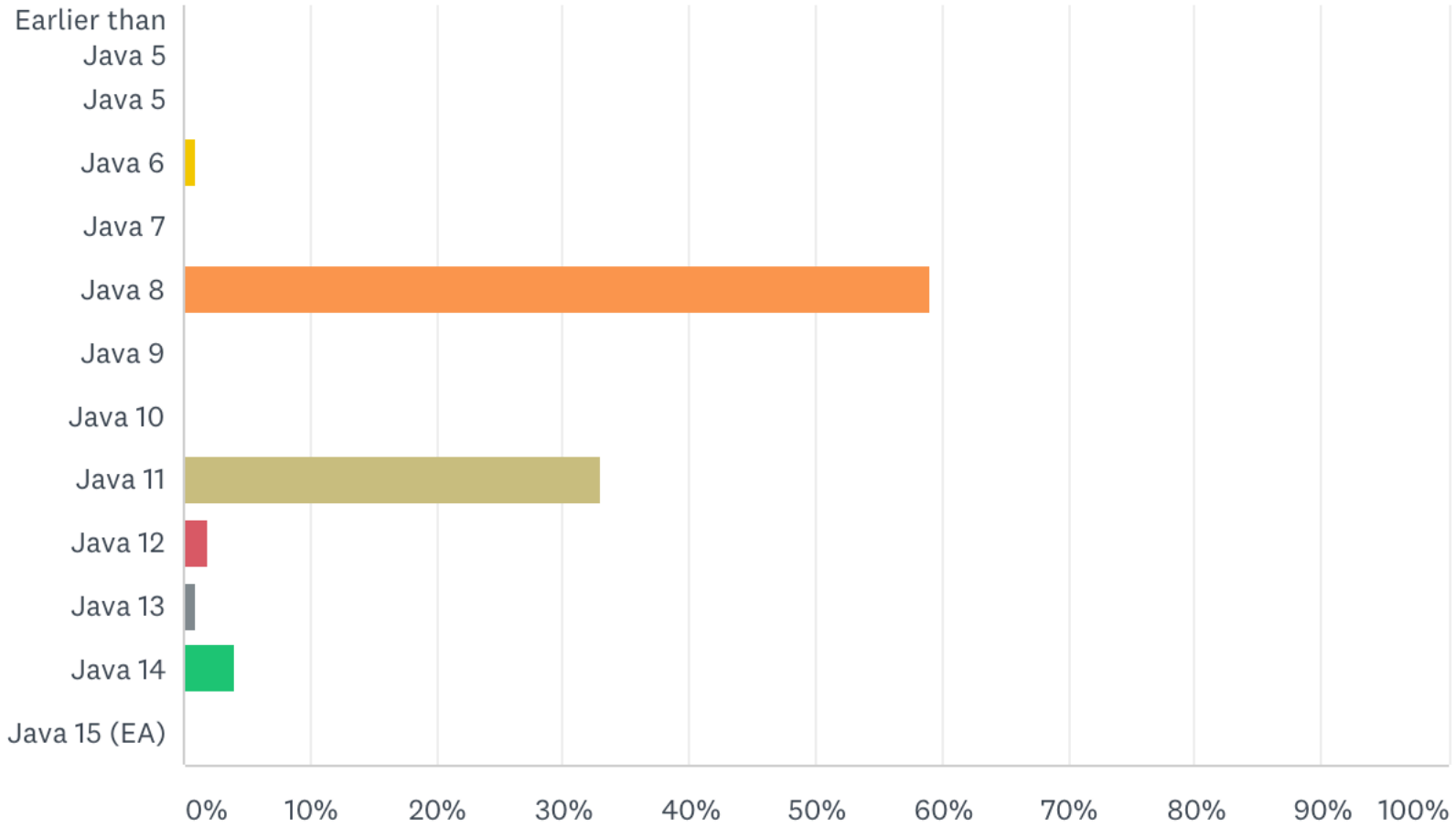
Java version	% in use
14	0.00
13	0.32
12	0.17
11	11.11
10	0.48
9	0.18
8 Current	42.02
8 Lagging	38.63
8 Vulnerable	3.83
7	2.54
pre-7	0.73
Non-LTS	1.14

https://www.infoq.com/news/2020/03/new-relic-jvm-report/

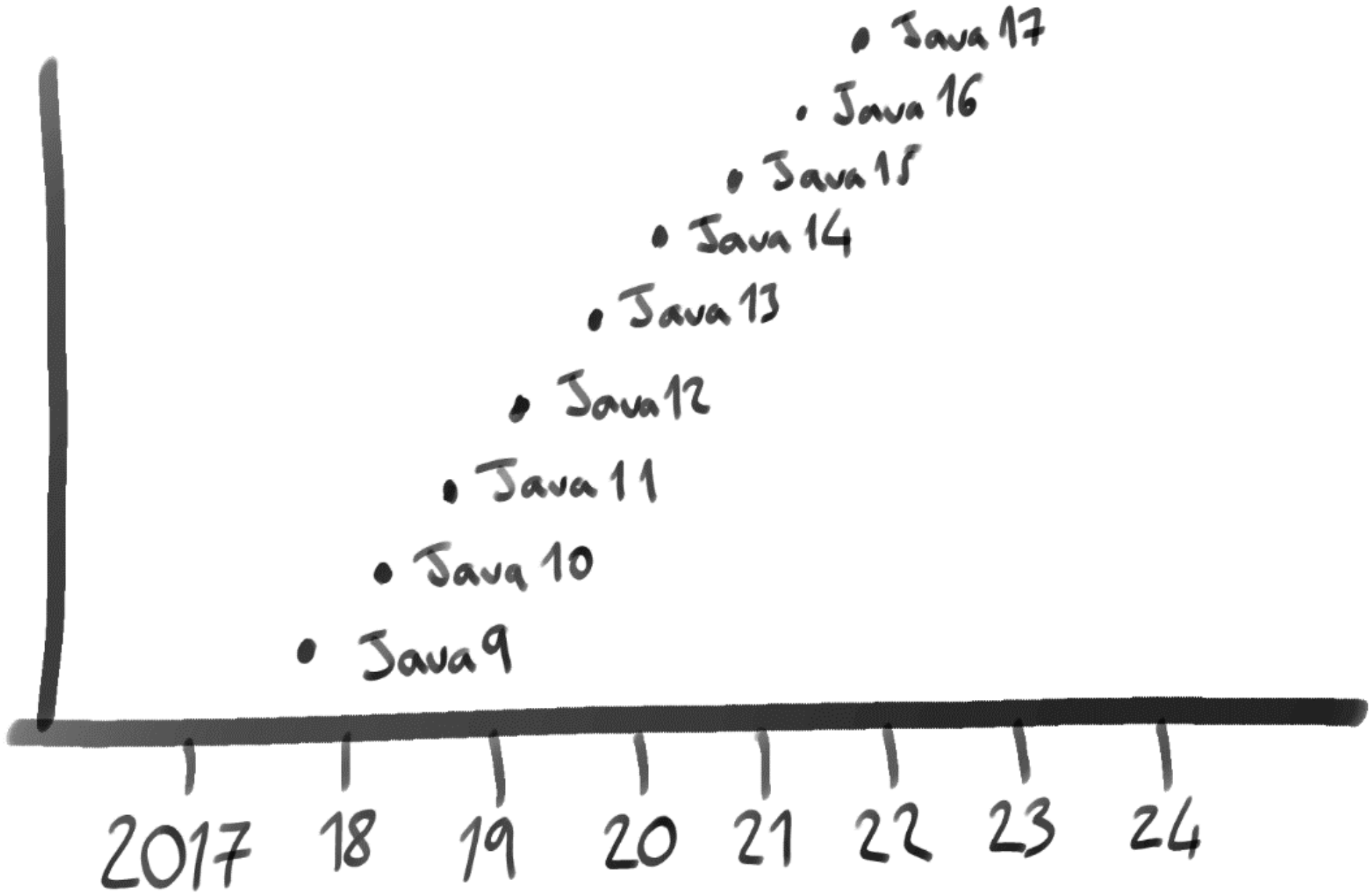
https://blog.newrelic.com/technology/state-of-java/

Which version of Java are you mainly using in production?

Answered: 100 Skipped: 0

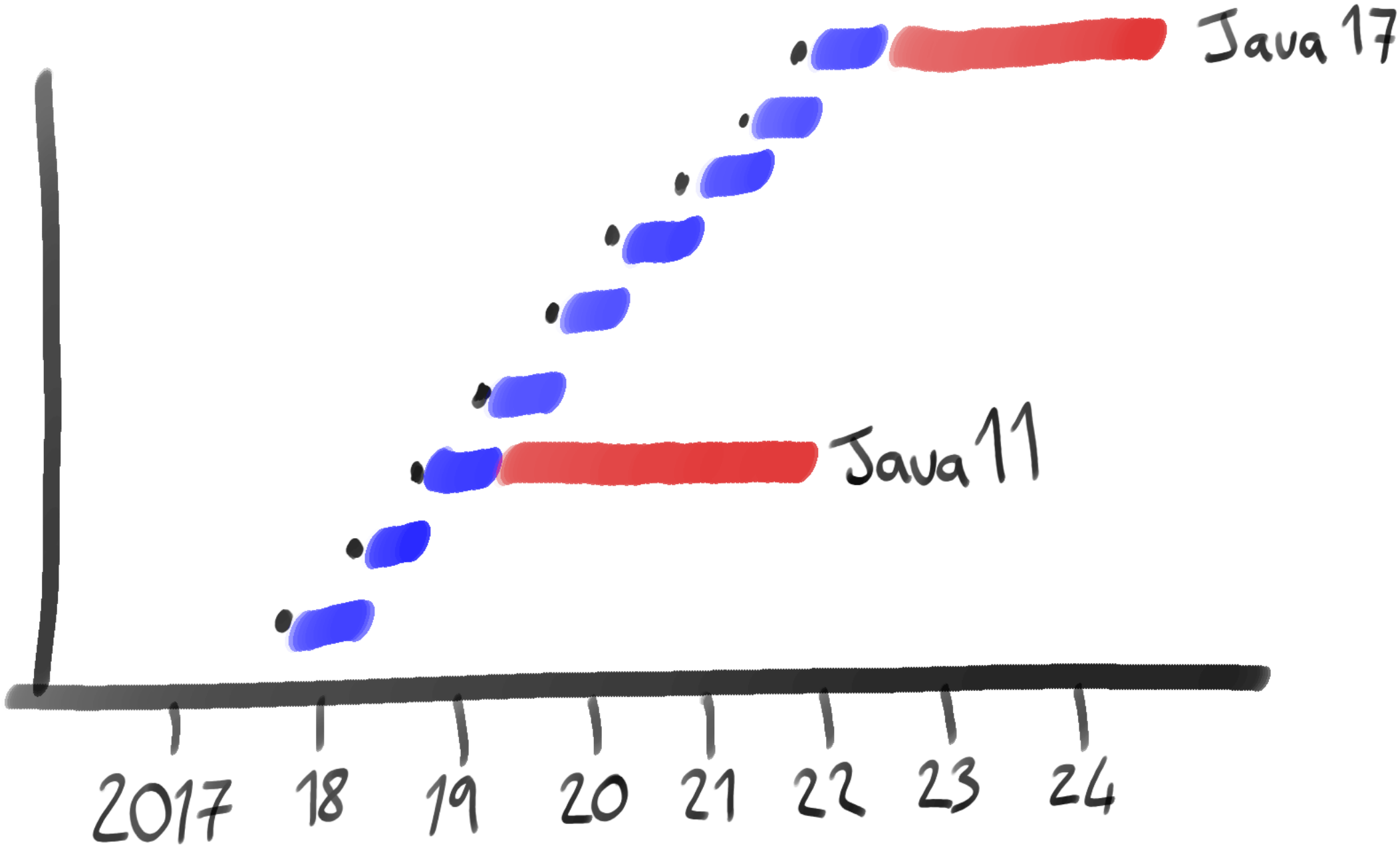


Releases, Updates, Licensing & Support


Java 17
Java 16
Java 15
Java 14
Java 13
Java 12
Java 11
Java 10
Java 9
2017
18
19
20
21
22
23
24

We have two types of releases

Releases and LTS (Long Term Support) releases


Java 17
Java 11
2017
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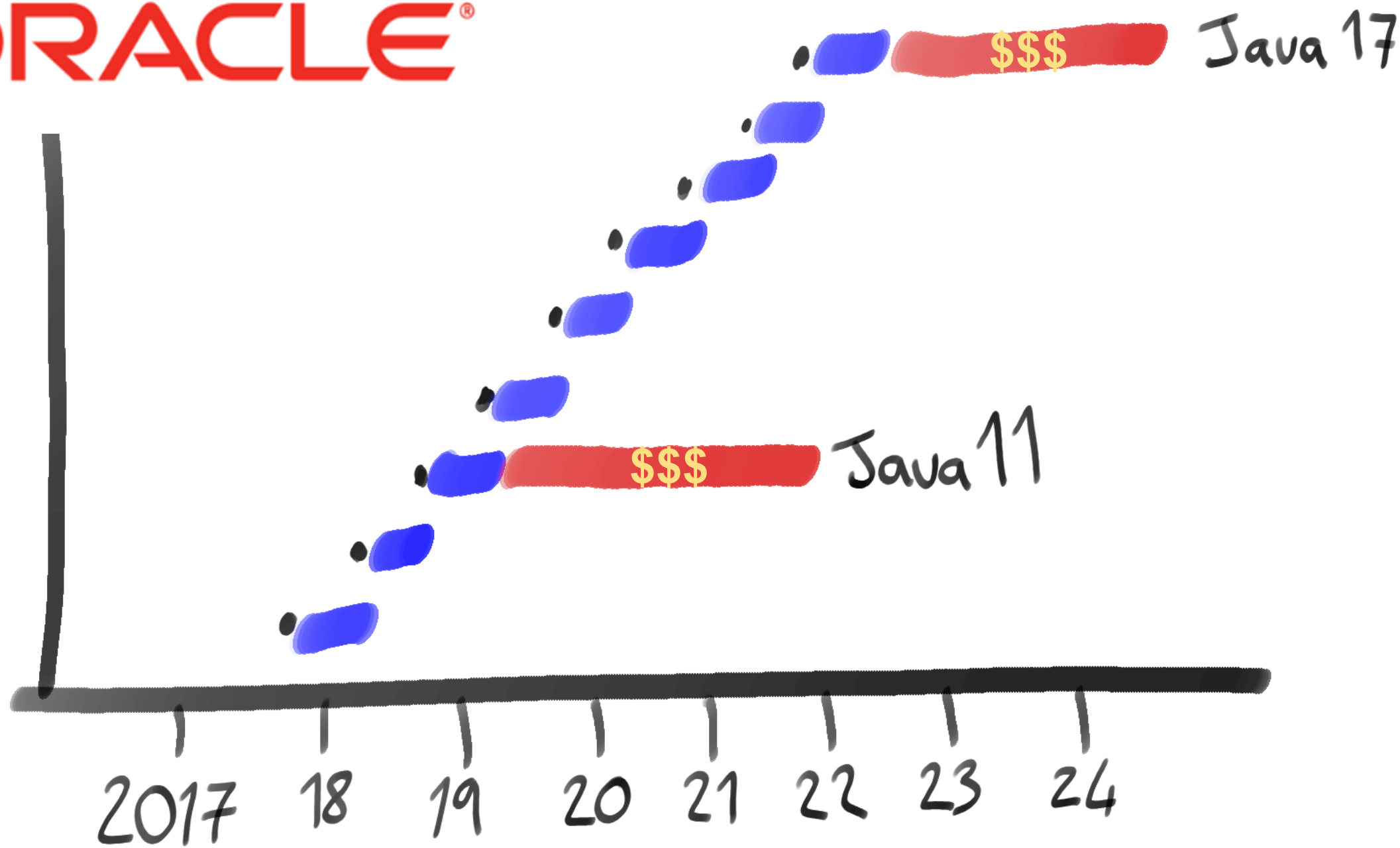
24

ORACLE



https://flic.kr/p/8xhk74

Use $free Oracle OpenJDK

But upgrade 6 months

Java 14

Use an LTS version

But you may have to pay to use it in production

Java 11

https://jdk.dev

redhat.

ORACLE

aws

IBM

AdoptOpenJDK

AdoptOpenJDK to join the Eclipse Foundation

June 19, 2020 – posted by Technical Steering Committee 


```
var newProjectName = "Eclipse Adoptium";
```

Why bother?

Language features in Java 11

(The current Long Term Support release)

JShell

var

Convenience Factory Methods for Collections

Collecting to Unmodifable Collections

```
items.stream()
    .filter(Objects::nonNull)
    .map(Object::toString)
    .collect(Collectors.toUnmodifiableList());
```

New Methods on Stream API

```
items.stream()
    .takeWhile(user -> user.count() < maxCount)
    .forEach(user -> position.incrementAndGet());
```

Predicate.not()

New Methods on Optional

Built in Http Client

Multi Release Jar Files

- https://blog.jetbrains.com/idea/2017/10/creating-multi-release-jar-files-in-intellij-idea/

Jigsaw

Java Module System

JLink

Language features in Java 14

(The latest version of Java)

Switch Expressions

https://blog.jetbrains.com/idea/2019/02/java-12-and-intellij-idea/

Text Blocks (Preview)

https://blog.jetbrains.com/idea/2019/11/java-13-and-intellij-idea

Records (Preview)

https://blog.jetbrains.com/idea/2020/03/java-14-and-intellij-idea

Pattern Matching for instanceof (Preview)

https://blog.jetbrains.com/idea/2020/03/java-14-and-intellij-idea/

Beyond Java 14

Java 15

- JEP 378: Text Blocks (Standard)
- JEP 375: Pattern Matching for instanceof (Second Preview)
- JEP 384: Records (Second Preview)
- JEP 360: Sealed Types (Preview)
- JEP 371: Hidden Classes
- JEP 377: ZGC: A Scalable Low-Latency Garbage Collector (Production)
- https://openjdk.java.net/projects/jdk/15/

And in the future?

- Project Amber
- Valhalla
- Loom
- More Garbage Collection improvements
- Proposed New Project: Leyden

The Business Doesn’t Care About Language Features

Performance

Use of Memory

Garbage Collection (Java 11)

- Java 9: JEP 248: G1 the Default GC
- Java 10: JEP 307: Parallel Full GC for G1
- Java 11: JEP 318: Epsilon (Experimental)
- Java 11: JEP 333: ZGC (Experimental)

Garbage Collection (Java 14)

- Java 12: Shenandoah (Experimental)
- Java 12: More Updates to G1
- Java 12: More Improvements to ZGC
- Java 13: ZGC: Uncommit Unused Memory
- Java 14: ZGC on macOS and Windows
- Java 14: Deprecate the ParallelScavenge + SerialOld GC Combination

Cost

£$€

Tips for Migration

Run on updated JDK

It might “just work”

Address compiler warnings

…they are there for a reason

Update your dependencies

And add new ones

Update your build tool

Updated Maven and Gradle required

Compile against updated JDK

…and start using the shiny new features

https://www.infoq.com/articles/upgrading-java-8-to-12/

In Summary

Java Is Changing

…fast

Modern Java Can Help You

Performance, cost, maintenance…

There are two upgrade options

To Java 11 (LTS) or to Java 14 (upgrade every 6 months)

Upgrade Now And Reduce Future Pain

…and keep upgrading, at least in CI

http://bit.ly/beyond-j8

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