WHY JAVA?

Review for Beginners
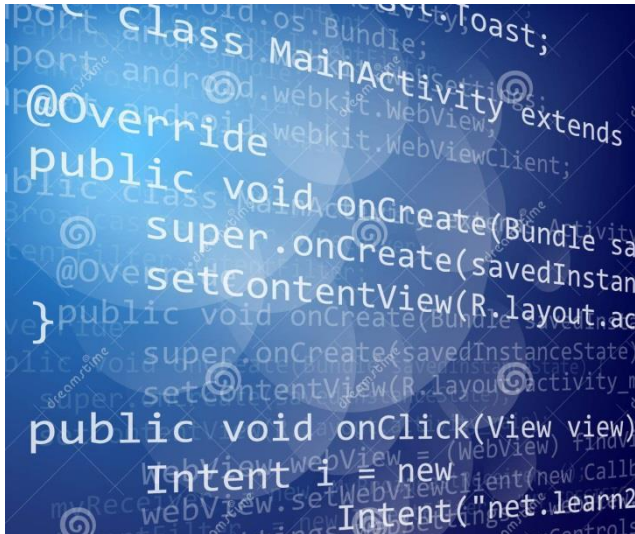
Speaker :
Hennadii Pavlovich Kolomoiets

Zaporizhzhia, 2022
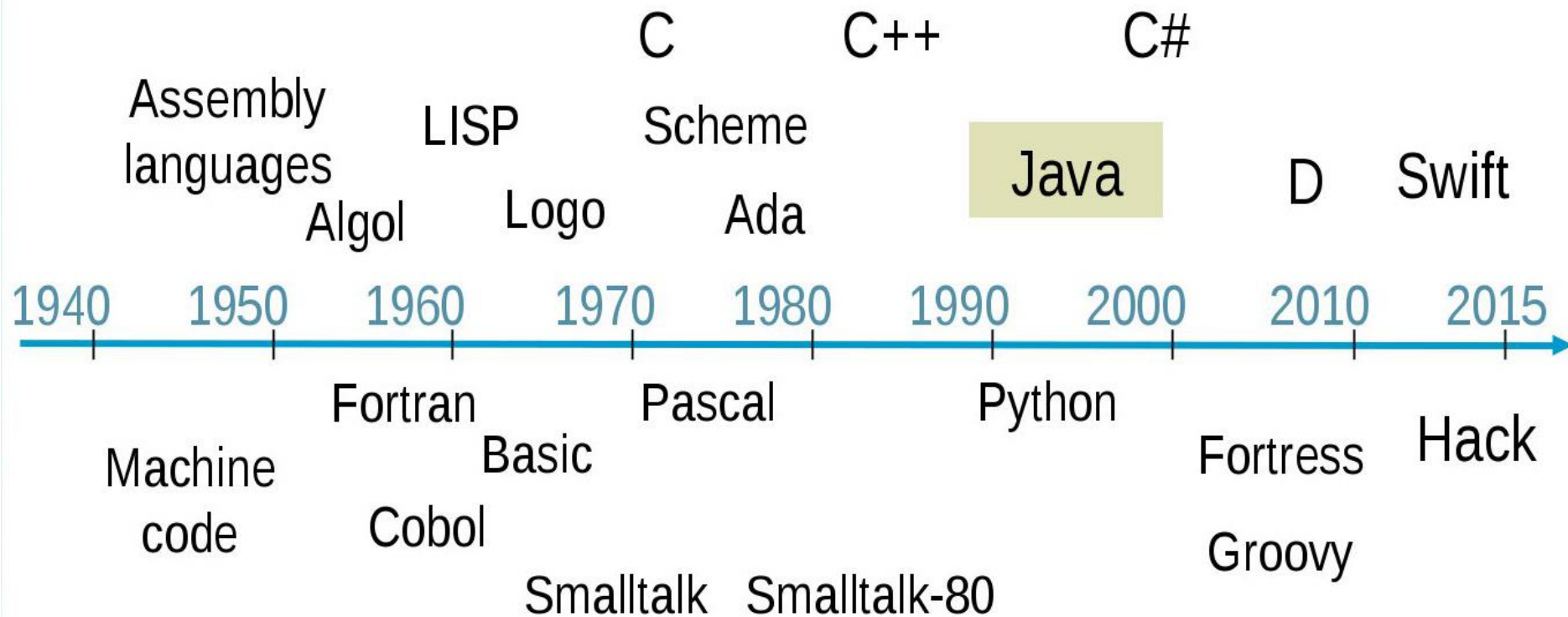
Java is a modern programming language

- simple, with standard de-facto syntax

- object-oriented, with inheritance and polymorphism support

- secure, with strict typing and exception hierarchy

- architecturally neutral, portable between operating systems

- multithreaded and distributed

- compiled and interpreted

- expandable and productive

Java is a mature programming language that includes the advantages of earlier languages

C   C++   C#

Assembly
languages   LISP   Scheme
          Algol   Logo   Ada   Java   D   Swift

1940   1950   1960   1970   1980   1990   2000   2010   2015

          Fortran   Pascal   Python

Machine   Basic   Fortress   Hack
code   Cobol   Groovy
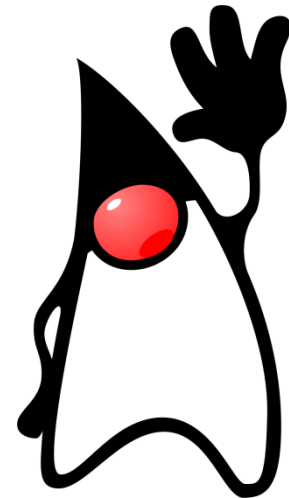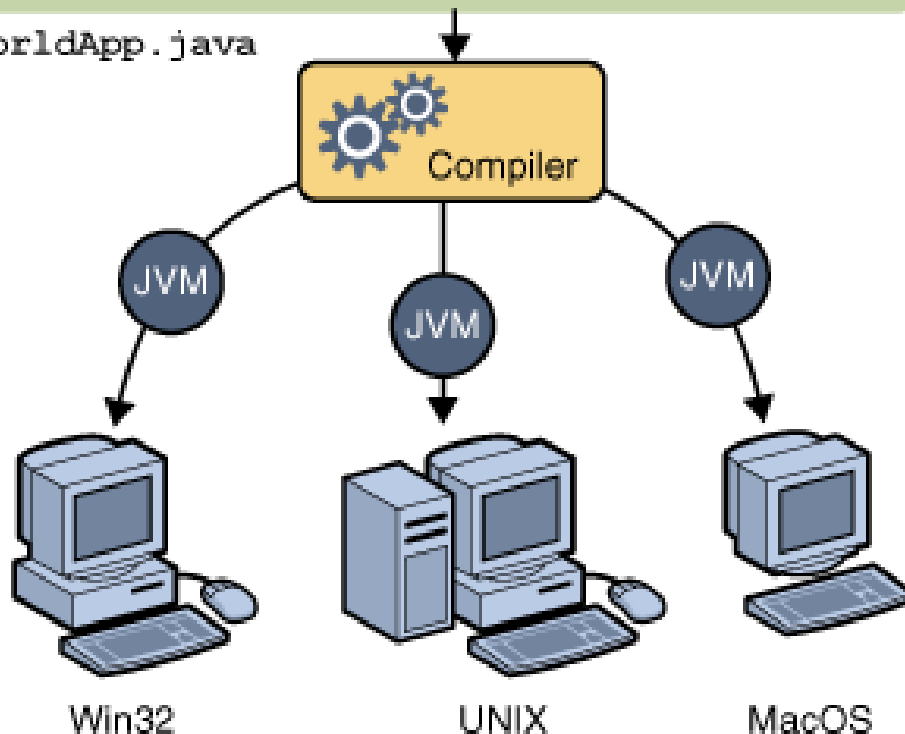
          Smalltalk   Smalltalk-80

The official release date for Java is May 23, 1995 (Wikipedia)

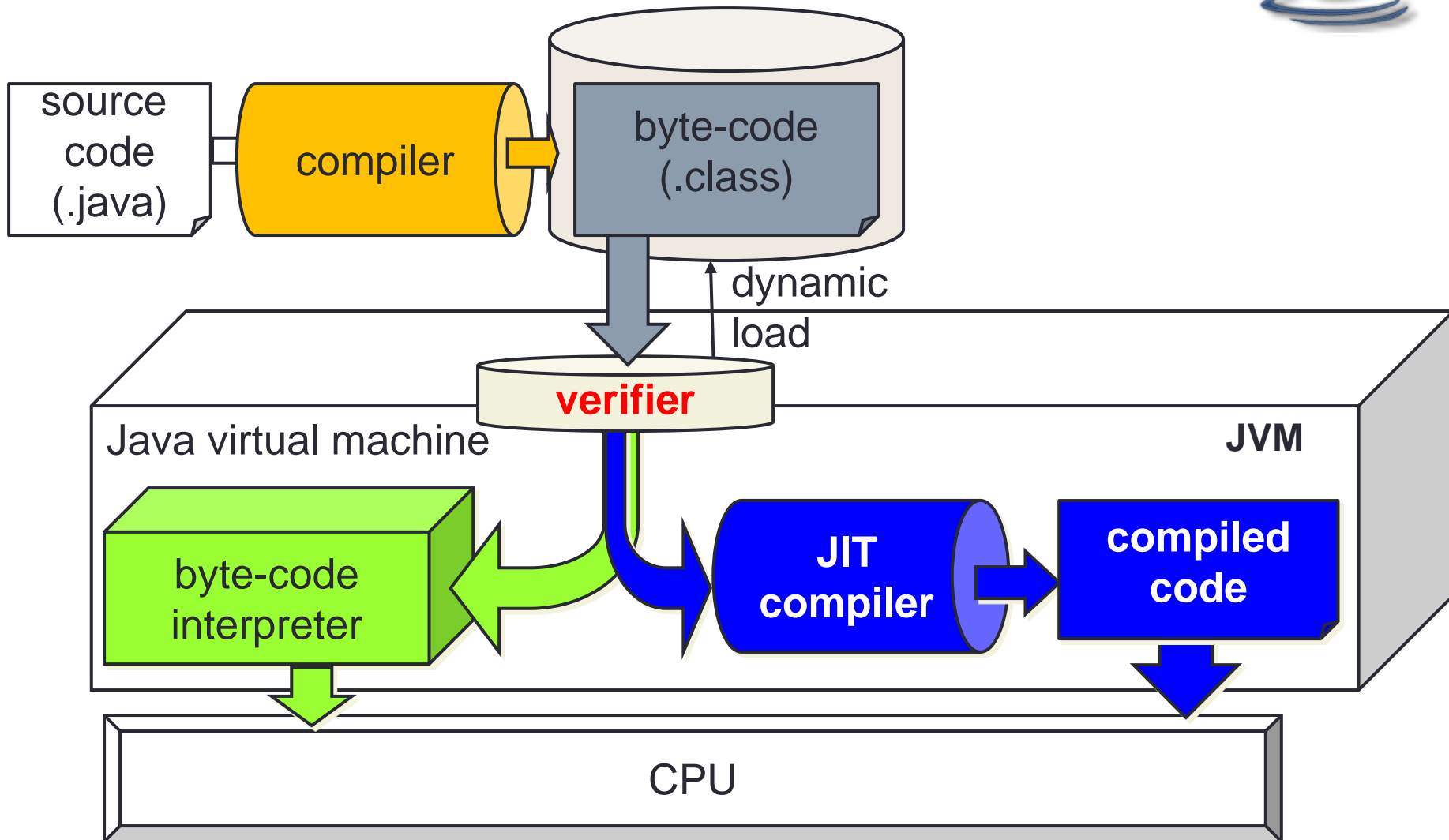# Java is a universal program execution platform

Java Program

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

HelloWorldApp.java

Compiler

JVM   JVM   JVM

Win32   UNIX   MacOS

Write

Once

Run

Anywhere

Java Execution Model

Java is the diversity of the software market segments

Popular Technologies Comparison

Desktop applications

Web applications

Mobile applications

Commercial

Free

Java is a rich library of classes and interfaces

Java Language	Java Language						
Tools & Tool APIs	java	javac	javadoc	jar	javap	JPDA	
	JConsole	Java VisualVM	JMC	JFR	Java DB	Int'l	JVM TI
	IDL	Deploy	Security	Troubleshoot	Scripting	Web Services	RMI
Deployment	Java Web Start			Applet / Java Plug-in			
	JavaFX						
User Interface Toolkits	Swing		Java 2D		AWT	Accessibility	
	Drag and Drop		Input Methods		Image I/O	Print Service	Sound
Integration Libraries	IDL	JDBC		JNDI	RMI	RMI-IIOP	Scripting
Other Base Libraries	Beans	Int'l Support		Input/Output		JMX	
	JNI	Math		Networking		Override Mechanism	
	Security	Serialization		Extension Mechanism		XML JAXP	
lang and util Base Libraries	lang and util	Collections		Concurrency Utilities		JAR	
	Logging	Management		Preferences API		Ref Objects	
	Reflection	Regular Expressions		Versioning		Zip	Instrumentation
Java Virtual Machine	Java HotSpot VM						

JDK · JRE · Java SE API

Java is the most comprehensive set of development tools

spring Struts JSF

HIBERNATE IDEA NetBeans

GlassFish JBoss Servlet

JPA jbehave JUnit GWT

JDBC AXIS2 mockito Neo4j the world's leading graph database

APACHE WICKET hadoop JAVA RHINO

EJB eclipse JSP JMS

Rapid
Application
Development

Java is the world's largest developer community

Java is one of the most popular programming language

Sep 2022	Sep 2021	Change		Programming Language	Ratings	Change
1	2	^		Python	15.74%	+4.07%
2	1	v		C	13.96%	+2.13%
3	3			Java	11.72%	+0.60%
4	4			C++	9.76%	+2.63%
5	5			C#	4.88%	-0.89%
6	6			Visual Basic	4.39%	-0.22%
7	7			JavaScript	2.82%	+0.27%
8	8			Assembly language	2.49%	+0.07%
9	10	^		SQL	2.01%	+0.21%
10	9	v		PHP	1.68%	-0.17%

TIOBE programming community index

https://www.tiobe.com/

Java is the most used platform

- Java is used on 97% of corporate desktop PCs
- Java is used on 89% of desktops in the US
- 9 million Java developers in the world
- Tool number 1 among developers
- Program number 1 among developers
- Java is used in 3 billion mobile phones
- Java comes with 100% of all Blu-ray Disc players
- Used 5 million Java Card
- Java is used in 125 million TV devices
- 5 of the 5 major original equipment manufacturers include the Java ME package

https://www.java.com/ru/about/

Types of programs in Java: Desktop applications

Types of Java programs: Web applications

Java program types: Mobile applications

Java creates applications for the popular mobile platform Android

Types of Java programs: Applications for embedded systems
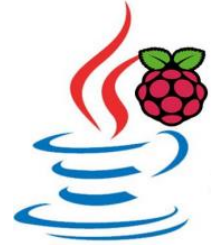
Types of Java programs: Applications for embedded systems

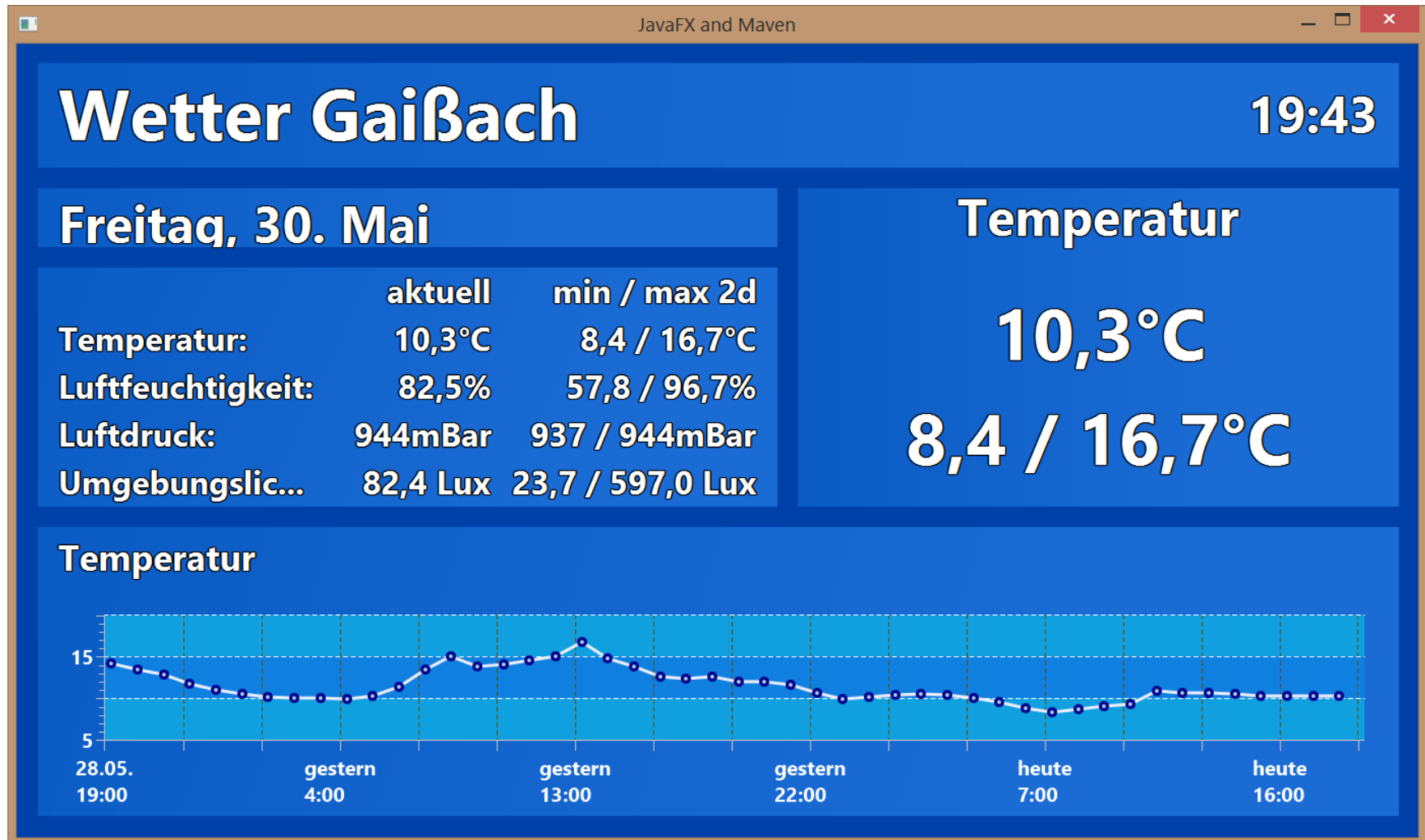**Raspberry Pi**
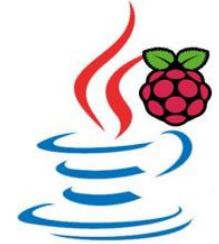
Java is one of the most paid languages

Software Engineer Salary in the USA by Programming Language 2021

Tech stack	Salary 2017	Salary 2018	Salary 2019	Salary 2020	Salary 2021
Java	$102,059	$102,985	$102,424	$104,838	$103,476
C#	$92,378	$94,567	$95,052	$72,921	$82,490
C++	$115,619	$115,430	$117,293	$107,845	$104,681
.NET	$92,378	$88,919	$91,785	$96,182	$96,937
JavaScript	$110,057	$110,514	$111,373	$115,261	$112,550
PHP	$86,353	$86,335	$89,149	$81,582	$90,707

https://www.daxx.com/blog/development-trends/it-salaries-software-developer-trends

Popular applications that use Java

mostly use Java

use Java together with other languages

https://www.quora.com/What-are-some-famous-websites-written-in-Java

History of Java (SE)

Version	Date	New features
1.0	jan. 1996	Language release
1.1	feb. 1997	Inner classes, AWT events, JDBC, RMI,JavaBeans
1.2	dec. 1998	JIT-copiler, Swing, collections, Java 2D
1.3	may 2000	-
1.4	feb. 2002	Assertions, NIO, RegExp
5.0	sep. 2004	Generics, for each, autoboxing-unboxing, varargs, enums, import static
6	dec. 2006	-
7	jul. 2011	switch for String cases, diamond operator, binary literals, improved exception processing, Java NIO.2, Java FX - LTS to jul. 2022
8	mar 2014	Lambda-expressions, Optional, Stream API, Date/Time API, interfaces default methods, Nashhorn - LTS to dec 2030

History of Java (SE)

Version	Date	New features
9	sep. 2017	Modularity (Jigsaw), jshell, var, collections fabric methods, Stream API improvements, interfaces private methods, new HttpClient API, Multi-release JARs, Flow API (reactive programming), rocessHandle, javadoc search
10	mar 2018	Open JDK, var for local variables, GC API
11	sep. 2018	LTS to sep 2026, API extension
12	mar 2019	switch Improvement, JVM Constants API, GC improvements
13	sep 2019	Text blocks, NioSocketImpl
14	mar 2020	Pattern Matching for instanceof, Records, Text Blocks, Packaging Tool, Switch Expressions
15	sep 2020	Hidden classes, Sealed classes and interfaces, remove the Nashorn JavaScript Engine

History of Java (SE)

Version	Date	New features
16	mar. 2021	Pattern Matching for instanceof, Records, Sealed classes, Stream.toList(), Stream.mapMulti()
17	sep. 2021	LTS to sep 2029, API extension
18	mar. 2022	switch pattern-matcher (2nd preview), @snippet JavaDoc tag, UTF-8 is now default coding
19	sep. 2022	structured concurrency, virtual threads, record patterns, pattern matching for switch expressions

The next LTS release is JDK 21

Welcome to the world of Java!