



JAVA INTRODUCTION



WHY JAVA?



RELEVANCE/DEMAND

The fifteen most popular languages on GitHub

by opened pull request



PYPL Popularity of Programming Language

Worldwide, Jan 2018 compared to a year ago:

Rank	Change	Language	Share	Trend
1		Java	21.2 %	-1.4 %
2		Python	19.3 %	+4.9 %
3		PHP		
4	↑	Javascript		
5	↓	C#		
6	↑	C++		
7	↓	C		
8	↑	R		
9	↓	Objective-C		
10		Swift		
11		Matlab		
12		Ruby		
13	↑	VBA		
14	↑	TypeScript		
15	↑	Scala		
16	↓↓↓	Visual Basic		
17	↑↑↑↑↑	Kotlin		
18	↓	Perl		

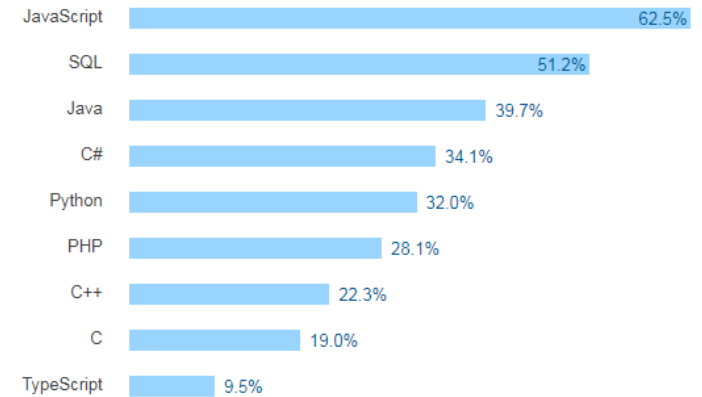


Most Popular Technologies



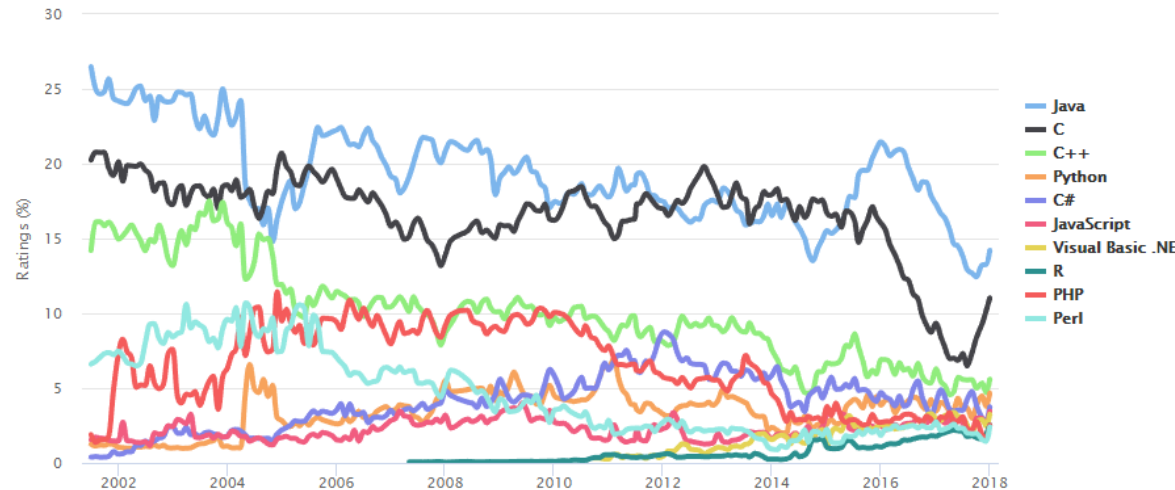
stackoverflow

Programming Languages



TIOBE Programming Community Index

Source: www.tiobe.com



WHO'S ON BOARD?



FORTUNE

GLOBAL



2017



FORTUNE
GLOBAL

500

2017

Alphabet

Google*

Google
ventures



Google [x]

Google fiber

Google
capital

Google
CALICO

*[



YouTube



Google
AdWords



]

FORTUNE

GLOBAL

500

2017



AT&T



Mobile

Alphabet

Google*

Google
ventures



Google [x]

Google fiber

Google
capital

Google
CALICO

*[



YouTube



Google
AdWords



]

ebay

FORTUNE

GLOBAL

500

2017

verizon



AT&T

T

Mobile

amazon



Alphabet



AT&T

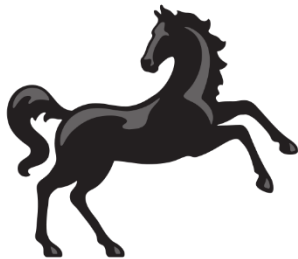


Mobile

FORTUNE
GLOBAL



LLOYDS
BANKING
GROUP



2017



SOCIETE
GENERALE



JPMorganChase

Bank of America



HSBC



Goldman Sachs

citigroup



WELLS
FARGO

FORTUNE
GLOBAL

CREDIT SUISSE

LLOYDS
BANKING
GROUP



500



Deutsche Bank

SOCIETE
GENERALE



BNP PARIBAS

Morgan Stanley



JPMorgan Chase

Bank of America

man

H



ISSE

LLO
BAN
GRO

SBERBANK

TE
RALE

Morgan

JPMorgan Chase

IBAS



THIRD-PARTY

JAVA ECOSYSTEM



Pivotal™



Apache

Google



redhat®



THIRD-PARTY



eclipse

Pivotal™



Apache



Google

redhat®

JAVA LANGUAGES



Clojure



Scala



Kotlin



Java

THIRD-PARTY



eclipse

Pivotal™



Apache

Google



redhat



Java

JAVA LANGUAGES



Clojure



Scala



Kotlin

DEV TOOLS



NetBeans

Maven™



gradle



FindBugs™

sonar

THIRD-PARTY



eclipse

Pivotal™



Apache

Google



redhat



JAVA LANGUAGES



Clojure



Scala



Kotlin

DEV TOOLS



NetBeans

Maven™



gradle



FindBugs™

sonar



COMMUNITY



twitter

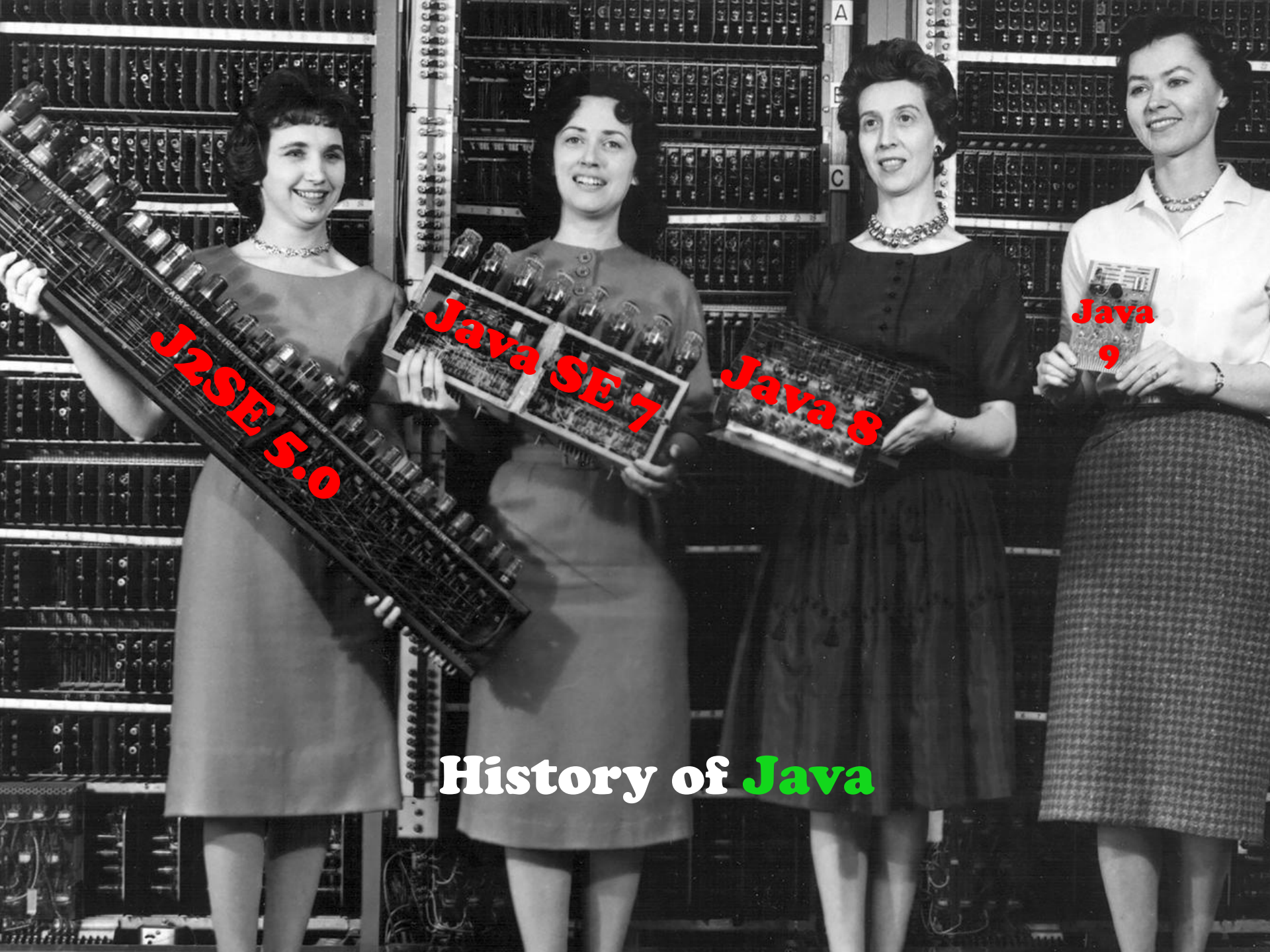
InfoQ^{new}



DZone



stackoverflow



J2SE 5.0

Java SE 7

Java 8

Java 9

History of Java

1990



1992 – Oak based set-top prototype

**1994 – Oak repurposed for the Web,
name changed to **Java****

1995 – Java 1.0a2: first public release



James Gosling



1992 – Oak based set-top prototype

**1994 – Oak repurposed for the Web,
name changed to **Java****

1995 – Java 1.0a2: first public release

JDK 1.0 - 1996

JDK 1.1 - 1997

J2SE 1.2 - 1998

J2SE 1.3 - 2000

J2SE 1.4 - 2002

J2SE 5.0 - 2004

Java SE 6 - 2006



James Gosling



1992 – Oak based set-top prototype

**1994 – Oak repurposed for the Web,
name changed to **Java****

1995 – Java 1.0a2: first public release

JDK 1.0 - 1996

JDK 1.1 - 1997

J2SE 1.2 - 1998

J2SE 1.3 - 2000

J2SE 1.4 - 2002

J2SE 5.0 - 2004

Java SE 6 - 2006



ORACLE®

Mark Reinhold



1992 – Oak based set-top prototype

**1994 – Oak repurposed for the Web,
name changed to **Java****

1995 – Java 1.0a2: first public release

JDK 1.0 - 1996

JDK 1.1 - 1997

J2SE 1.2 - 1998

J2SE 1.3 - 2000

J2SE 1.4 - 2002

J2SE 5.0 - 2004

Java SE 6 - 2006

Java SE 7 - 2011

Java SE 8 – 2014

Java SE 9 – 2017



ORACLE®

Mark Reinhold





Java 10 (aka 18.3)

March 2018

Java 11 (18.9)

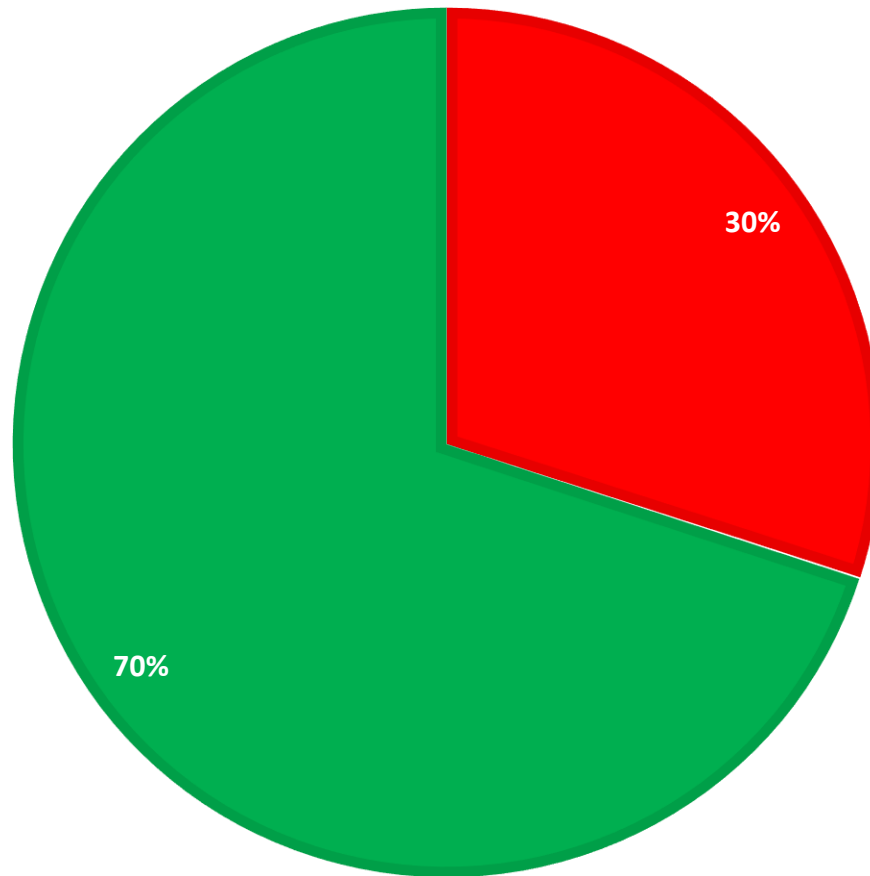
LTS

SEPTEMBER

2018

JAVA VERSIONS

■ Java 7 or older ■ Java 8 and up









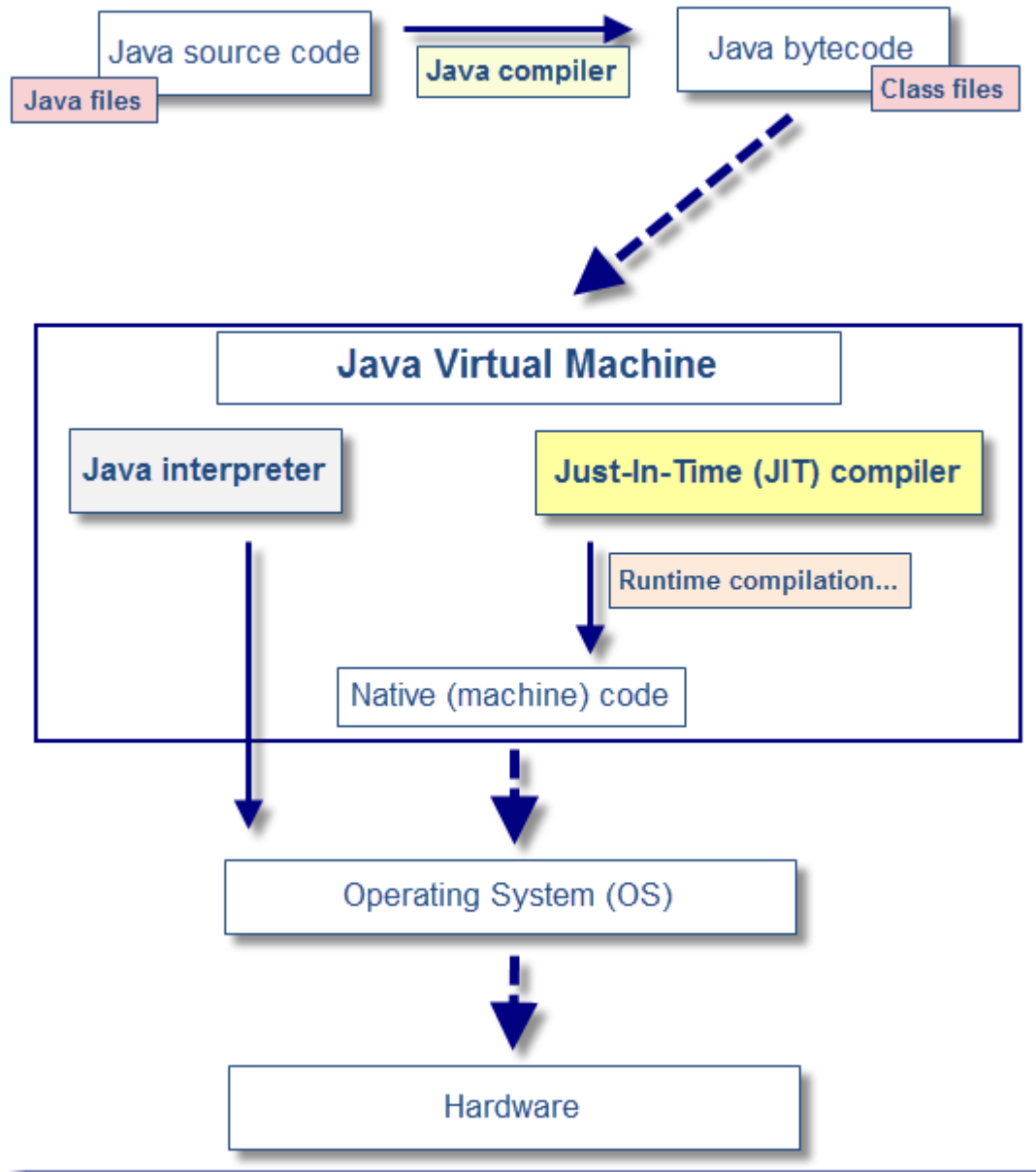
What makes **Java** great?



WORA

“Write once, run anywhere”

Java code lifecycle



JVM

- **Specification**
- **Implementation**
- **Instance**

JVM

- **Specification**
- **Implementation**
- **Instance**



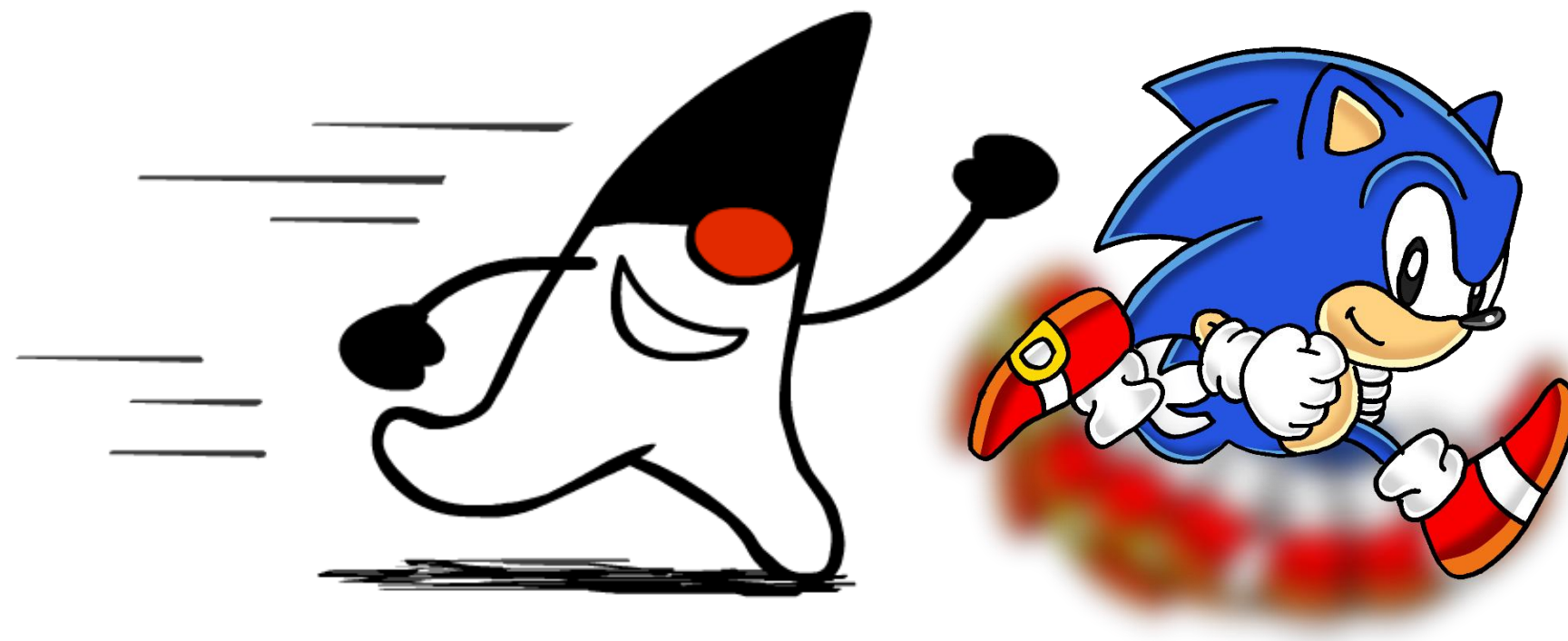
HotSpot JVM

- **Add-on in J2SE 1.2**
- **Default JVM since J2SE 1.3**

Features:

- **~250.000 lines of C++ w/ Assembly mixed in**
- ***Client and Server VMs***
- **Garbage collectors**
- **JIT-compilation for “*hot spots*”**

JAVA IS FAST



The Computer Language Benchmarks Game

Java programs versus C++ g++
all other Java programs & measurements

by benchmark task performance

k-nucleotide

source	secs	mem	gz	cpu
<u>Java</u>	8.70	375,568	1812	27.17
<u>C++ g++</u>	7.75	165,180	1276	26.02

pidigits

source	secs	mem	gz	cpu
<u>Java</u>	3.12	36,788	938	3.31
<u>C++ g++</u>	1.88	4,276	513	1.88

mandelbrot

source	secs	mem	gz	cpu
<u>Java</u>	6.04	76,528	796	23.34
<u>C++ g++</u>	1.64	27,636	1002	6.51

n-body

source	secs	mem	gz	cpu
<u>Java</u>	22.10	33,136	1429	22.20
<u>C++ g++</u>	8.23	1,856	1763	8.23

The Computer Language Benchmarks Game

Java programs versus C++ g++
all other Java programs & measurements

by benchmark task performance

k-nucleotide

source	secs	mem	gz	cpu
<u>Java</u>	<u>8.70</u>	375,568	1812	27.17
<u>C++ g++</u>	7.75	165,180	1276	26.02

pidigits

source	secs	mem	gz	cpu
<u>Java</u>	<u>3.12</u>	36,788	938	3.31
<u>C++ g++</u>	1.88	4,276	513	1.88

mandelbrot

source	secs	mem	gz	cpu
<u>Java</u>	6.04	76,528	796	23.34
<u>C++ g++</u>	1.64	27,636	1002	6.51

n-body

source	secs	mem	gz	cpu
<u>Java</u>	<u>22.10</u>	33,136	1429	22.20
<u>C++ g++</u>	8.23	1,856	1763	8.23

Python 3 programs versus Java
all other Python 3 programs & measurements

by benchmark task performance

k-nucleotide

source	secs	mem	gz	cpu
<u>Python 3</u>	77.65	182,700	1967	302.86
<u>Java</u>	8.70	375,568	1812	27.17

pidigits

source	secs	mem	gz	cpu
<u>Python 3</u>	<u>3.43</u>	12,716	386	3.43
<u>Java</u>	3.12	36,788	938	3.31

mandelbrot

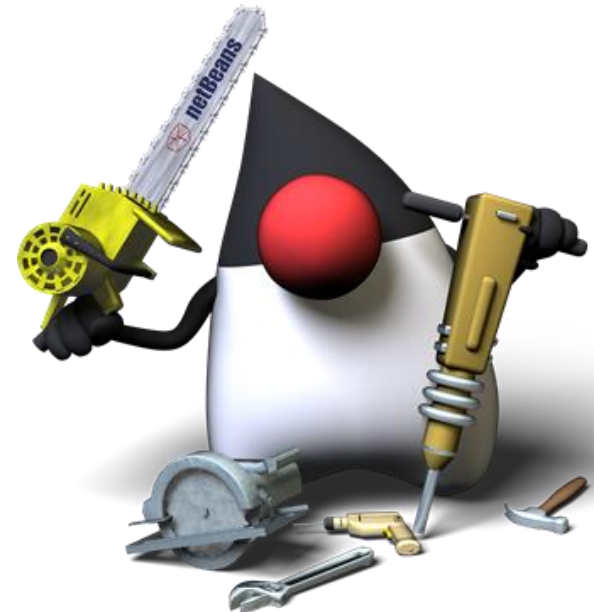
source	secs	mem	gz	cpu
<u>Python 3</u>	<u>225.24</u>	15,736	688	899.25
<u>Java</u>	6.04	76,528	796	23.34

n-body

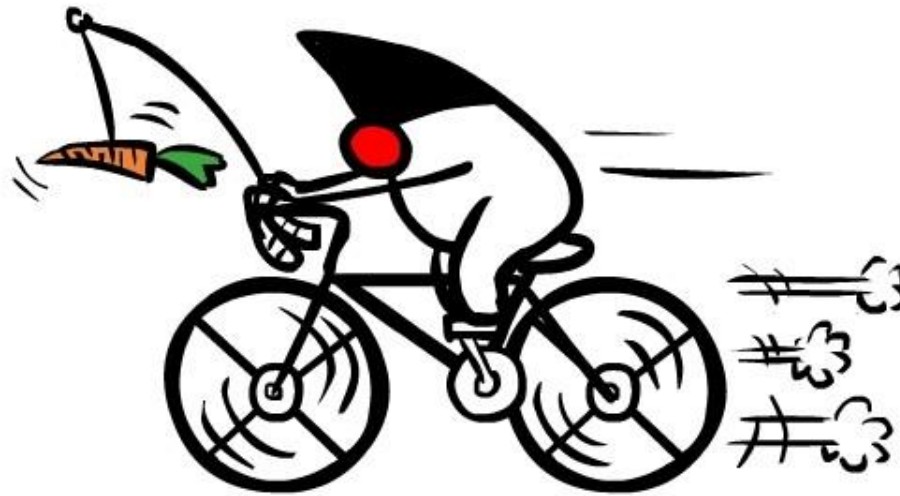
source	secs	mem	gz	cpu
<u>Python 3</u>	<u>838.39</u>	10,324	1196	838.20
<u>Java</u>	22.10	33,136	1429	22.20

JAVA IS MAINTAINABLE

- **Static typing**
- **Code clarity (aka verbosity)**
- **Proven conventions**



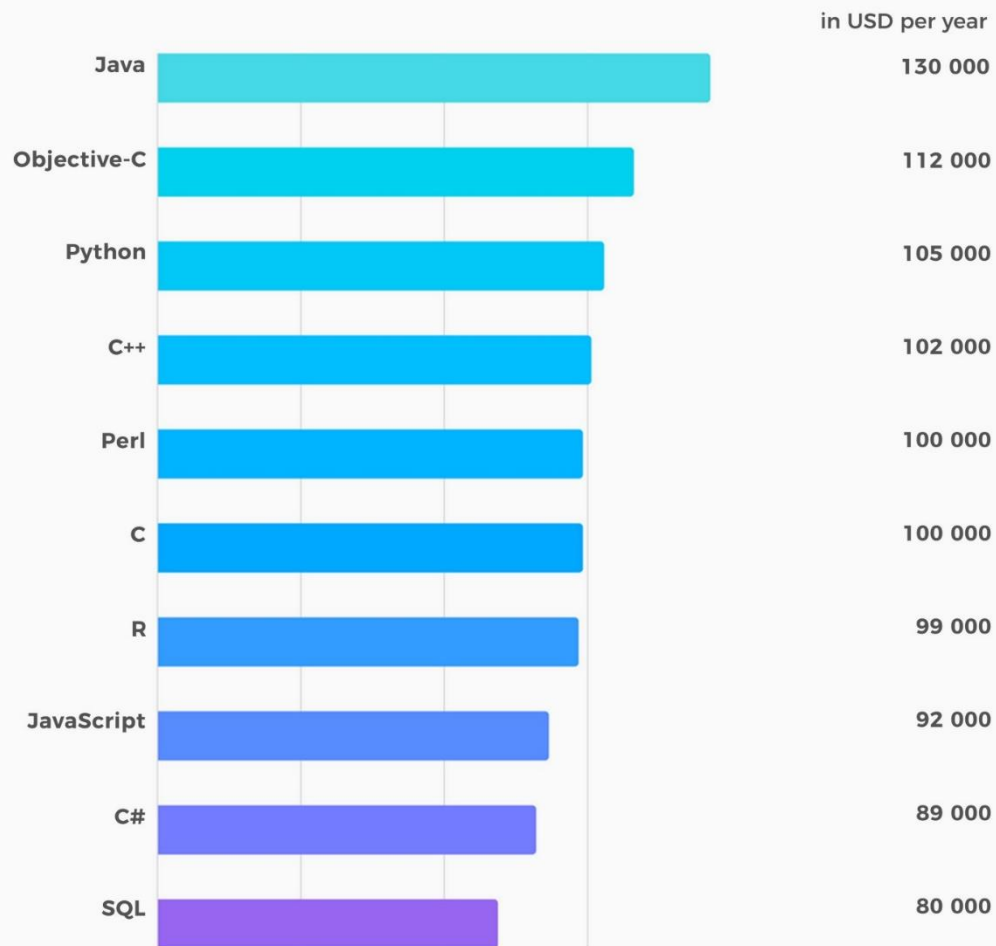
CAREER OPPORTUNITIES



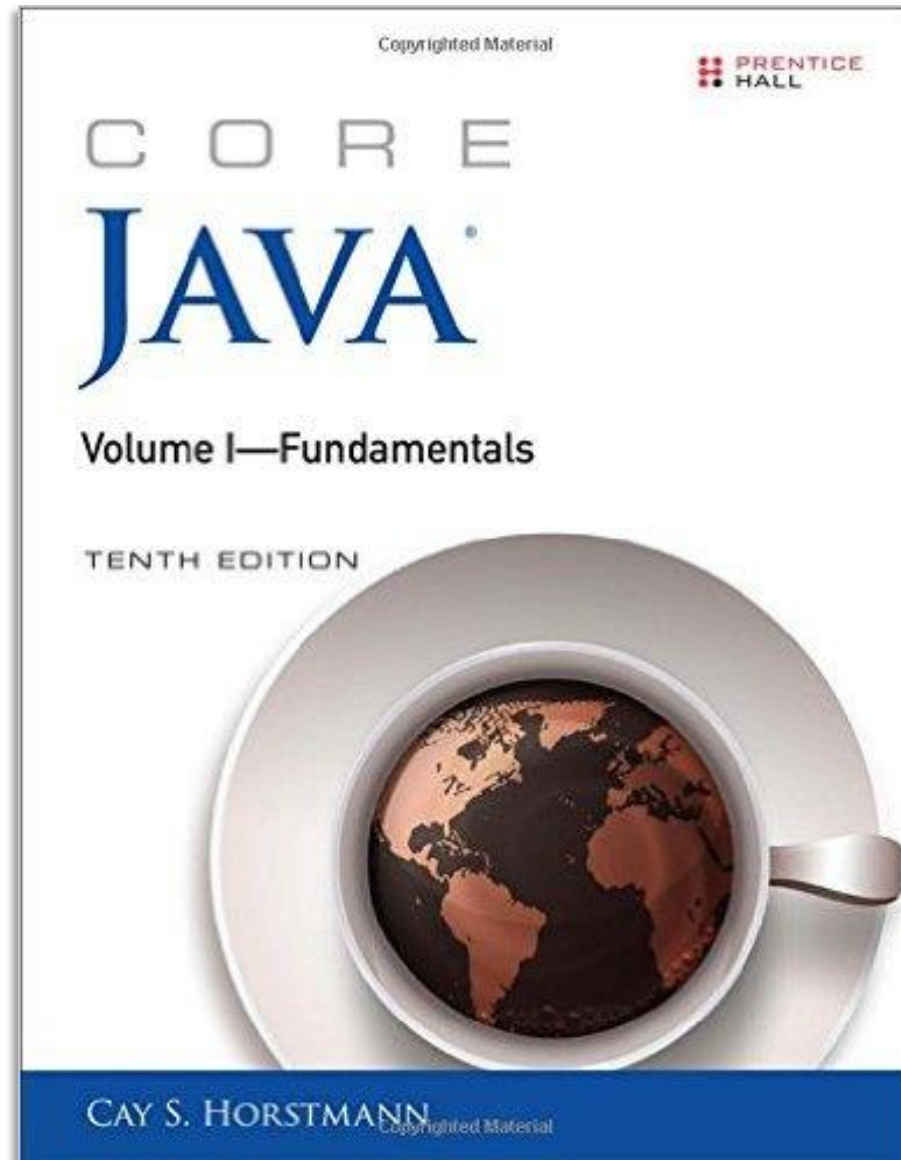
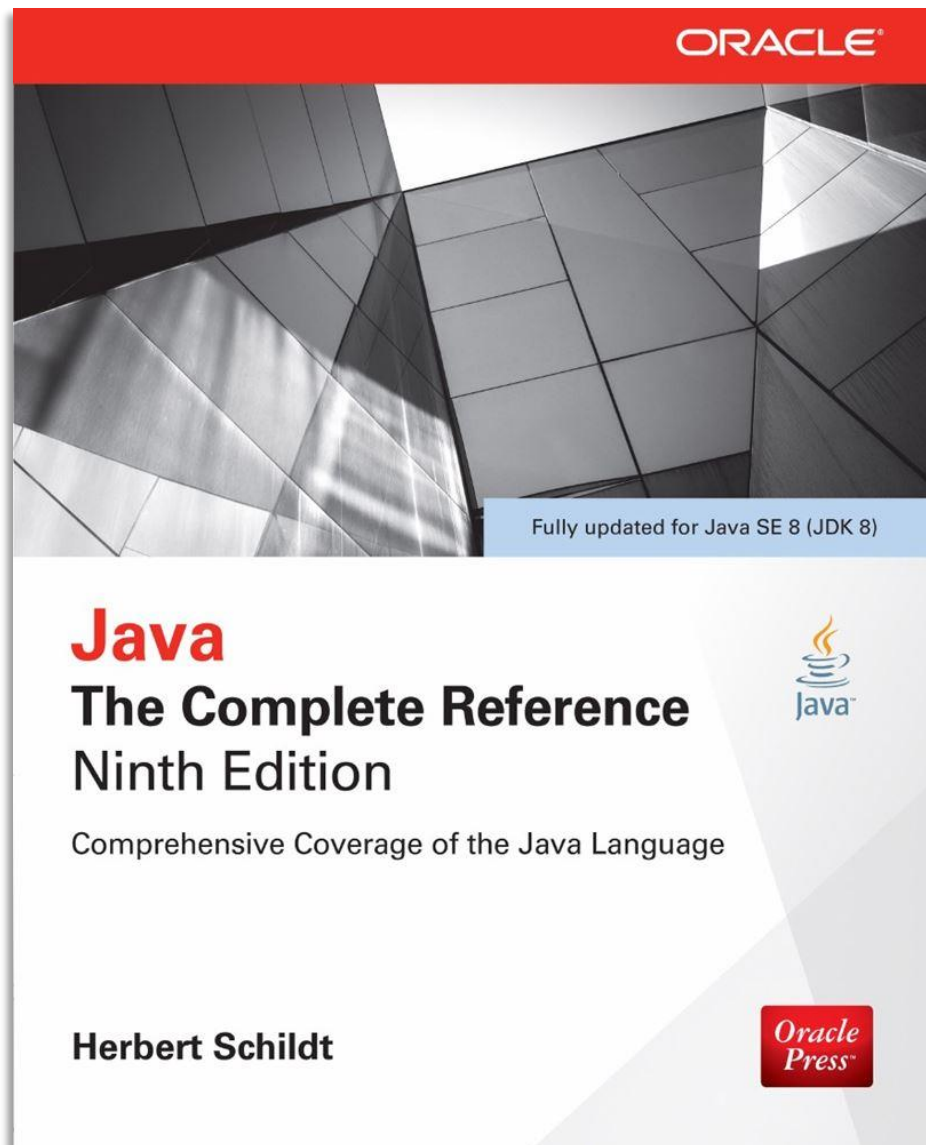
TOP 10

CHALLENGEROCKET.COM RANKING

OF PROJECTED EARNINGS IN 2017 BY A PROGRAMMING LANGUAGE



LANGUAGE REFERENCES



LANGUAGE REFERENCES

ORACLE®

Fully updated for Java SE 8 (JDK 8)

Java The Complete Reference Ninth Edition

Comprehensive Coverage of the Java Language

Herbert Schildt



Oracle
Press

Core Java® SE 9 for the Impatient

Second Edition

Cay S. Horstmann



Joshua Bloch

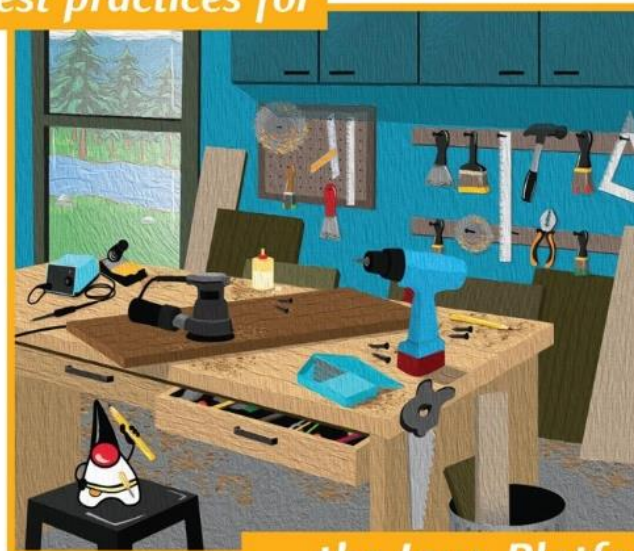
Updated
for
Java 9



Effective Java

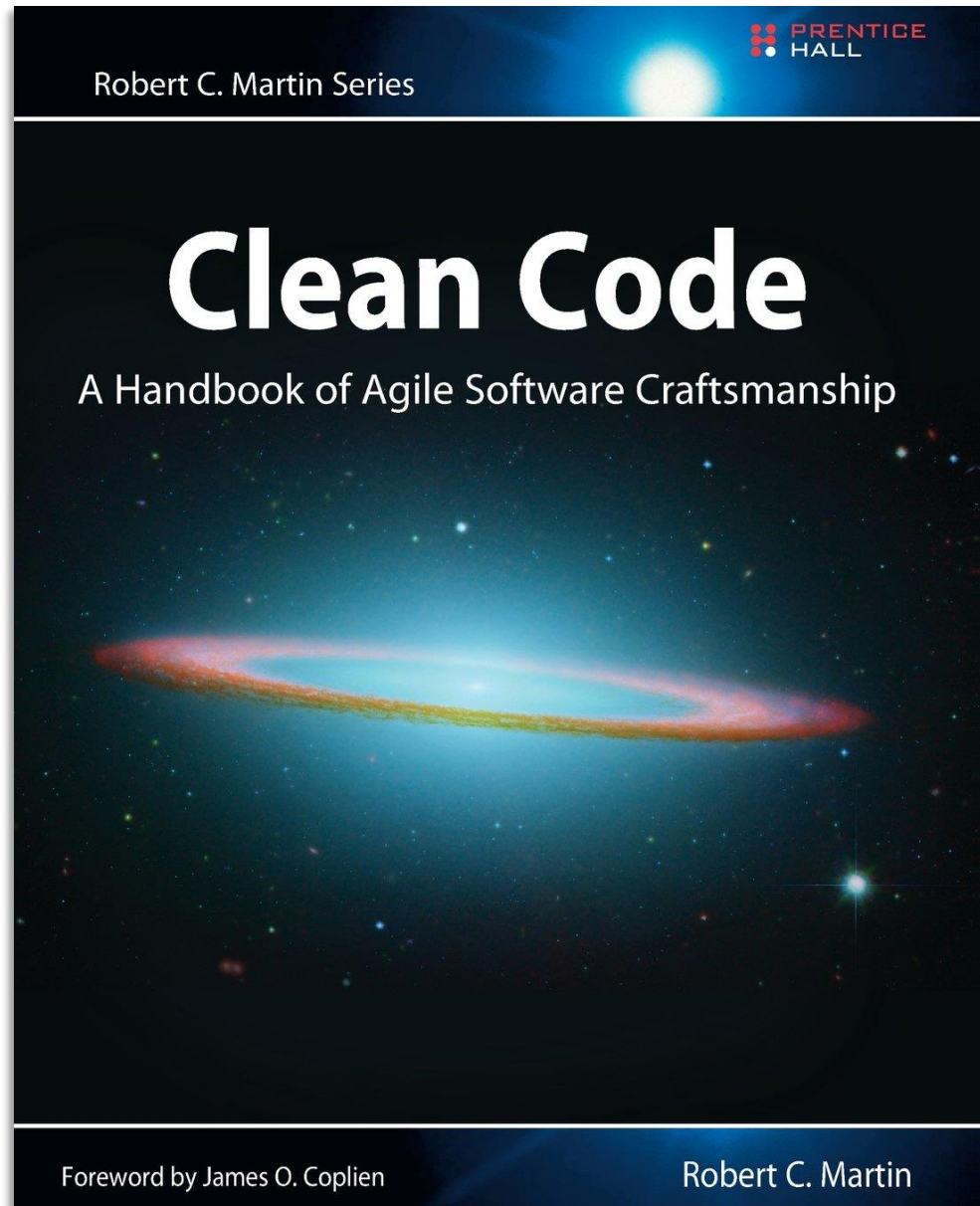
Third Edition

Best practices for



...the Java Platform





JDK

`javac, jar, debugging tools,
javap`

JRE

`java, javaw, libraries,
rt.jar`

JVM

Just In Time
Compiler (JIT)