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Java Foundations

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Java: A Brief History

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Objectives

- This lesson covers the following objectives:
  - Show examples of how people interact with Java in their daily lives
  - Summarize the history of Java
  - Understand Java technology product groups

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25 Years of Java

- 2020 marks 25 years since the first version of Java was released for public use

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Java Technology

- Java is the global standard for developing and delivering embedded and mobile applications, games, web-based content, and enterprise software
- Java enables you to efficiently develop, deploy, and use exciting applications and services
- From laptops to data centers, game consoles to scientific supercomputers, cell phones to the Internet, Java is everywhere!

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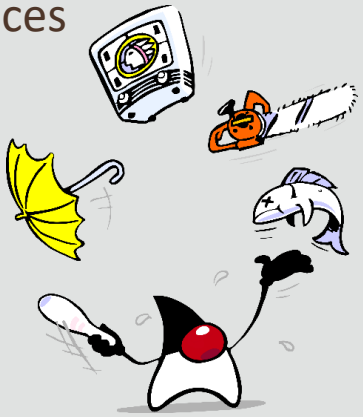
Java's Place in the World

- Java is one of the most widely used development language in the world today
- Over 10 million developers say they spend at least some of their time developing in Java
- Java runs on 56 billion devices



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Reference: https://dev.java/

Java's Place in the World

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Java's Evolution

- Java is not standing still
- Java 8, released in 2014 brought Lambda expressions to the Java platform as well as the Stream API, Optional class, and a host of other great features
- This is one of the reasons why Java 8 became the most popular version in Java's history
- Even today, it remains one of the most widely used versions of Java
- But choosing Java 8 today prevents developers from gaining access to an immense amount of progress in the language, JVM, tooling, and more

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Reference:
https://dev.java/evolution/

Who is in charge?

- Oracle is the steward of the Java Programming language that is now considered open source
- Oracle is not the only source for updates
- The focus for updates is on:
  - Readability
  - Simplicity
  - One language with the same meaning everywhere
- Java has moved to a 6-month, time-based release cadence with a new feature release of Java becoming available like clockwork every March and September

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Reference:

https://www.youtube.com/watch?v=HpbchS5kmio

https://dev.java/evolution/

https://dev.java/future/stewardship/

Java Is Now in the Cloud!

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Now in the Cloud

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The Story of Java

- Once upon a time …

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The Story of Java

- In 1990, Sun Microsystems began a research project to extend the power of network computing to consumer devices, such as video cassette recorders (VCRs) and televisions
- The belief was that the next wave in computing was the union of digital consumer devices and computers
- There were also frustrations with the use of the C/C++ language at Sun

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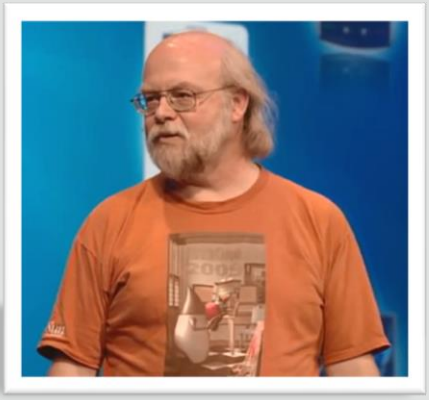
The Story of Java

- The Green Team, a team of highly skilled software developers at Sun under the leadership of James Gosling, developed Java (originally called Oak) as their solution
  - Devices with different central processing units (CPUs) could be connected and share the same software enhancements through a single programming language



James Gosling is considered the "Father of Java"

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The Story of Java

- This initial concept was ahead of its time, as several deals with consumer device companies were unsuccessful
- The Green Team was forced to find another market for their new programming language
- Fortunately, the World Wide Web was becoming popular and the Green Team recognized that the Oak language was perfect for developing web multimedia components to enhance webpages.

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The Story of Java

- Initially, the Oak language was used for small applications, called applets, and programmers using the Internet adopted what eventually became the Java programming language
- The turning point for Java came in 1995, when Netscape incorporated Java into its browser
- Oracle acquired Sun Microsystems in 2010

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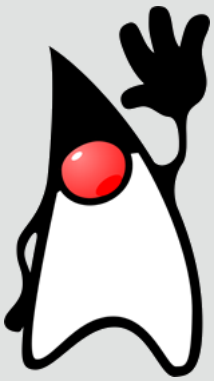
Duke, the Java Mascot

- Duke is Java's official mascot
- The original Duke was created by the Green Team's graphic artist, Joe Palrang



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Java Version History

- JDK Alpha and Beta were released in 1995, followed by JDK 1.0 in 1996. JDK 6.0 was released in 2006
- Oracle acquired Sun Microsystems in 2010, and released JDK 7 in 2011, and JDK 8 in 2014
- Since JDK 11, Oracle release long-term support (LTS) versions of JDKs every 3 years, with JDK 11 in 2018, and JDK 17 in 2022

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Non LTS updates are released every 6 months between LTS versions, and are cumulative set of enhancements over the most recent LTS. JDK 12, 13, 14, 15 and 16 were non-LTS versions of the JDK.

Java Technology Product Groups

- There are four Java technology product groups and their target device types:
  - Java Platform, Standard Edition (Java SE)
  - Jakarta EE, formerly Java Platform, Enterprise Edition (Java EE)
  - Java Platform, Micro Edition (Java ME)
  - Java Card

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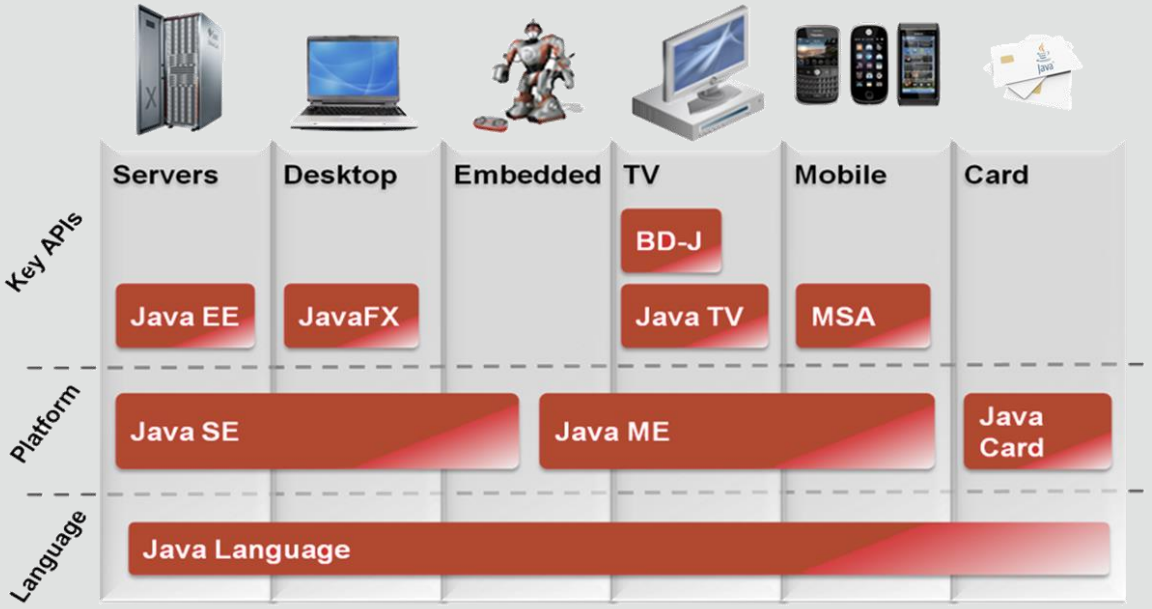
Target Device Types



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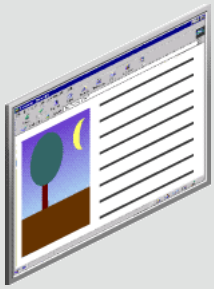
The figure illustrates the Java technology product groups, and their target device types.

Terms:

- Application Programming Interface (API)
- Blu-ray Disc Java. (BD-J)
- Mobile Service Architecture (MSA)

Java SE

- Is used to develop applications that run on desktop computers



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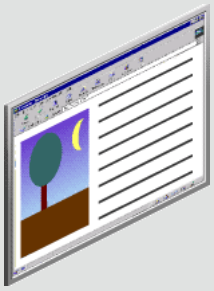
Jakarta EE

- Is used to create large enterprise, server-side, and client-side distributed applications



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Jakarta EE is used to create large enterprise, server-side, and client-side distributed applications. For example, you can use the Jakarta EE JDK to create a web shopping (eCommerce) application for a retail company's website.
Jakarta EE is built on top of the Java SE platform, extending it with additional support for large-scale, high-performance enterprise software.
Some of the kinds of functionality supported include objects, UI, integration, persistence, transactions, and security.

Java ME

- Is used to create applications for devices with limited storage, display, and power capacities
- Is used to develop applications for mobile phones, PDAs, TV set-top boxes, smart cards, Raspberry Pi, and many more

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Java Card

- 5 billion Java Cards are in use
  - It's used to create applications that can run securely on smart cards and similar small-memory devices
- Java Card is typically used in the following areas (and many more):
  - Identity
  - Security
  - Transactions
  - Mobile phone SIMs

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1.4 billion Java Cards are manufactured every year (InStat 2010).

Summary

- In this lesson, you should have learned how to:
  - Show examples of how people interact with Java in their daily lives
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