

# Introducing the Java Technology



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David Hurtado (davidh900@gmail.com) has a non-transferable license to use this Student Guide.

# Java's Place in the World



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To put things in perspective, Java is the single most widely used development language in the world today, with over 9 million developers saying they spend at least some of their time developing in Java, according to a recent Evans Data study. That's out of a world population of about 14 million developers.

# Java Desktops



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- 1.1 billion desktops run Java (Nielsen Online, Gartner 2010).
- 930 million JRE downloads a year (August 2009–2010): The Java Runtime Environment (JRE) is used by end users.
- 9.5 million JDK downloads a year (August 2009–2010): The Java Development Kit (JDK) is used by Java developers.

# Java Mobile Phones

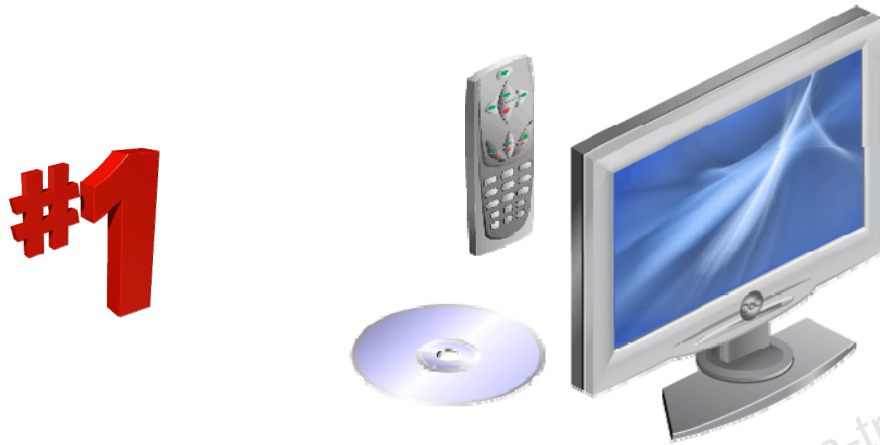


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All non-smart phones (“feature phones”) run Java.

# Java TV and Card



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- 100% of Blu-ray players run Java.
- 71.2 million people connect to the web on Java-powered devices (InStat 2010).
- 1.4 billion Java Cards are manufactured every year (InStat 2010).

# The Story of Java

Once upon a time...



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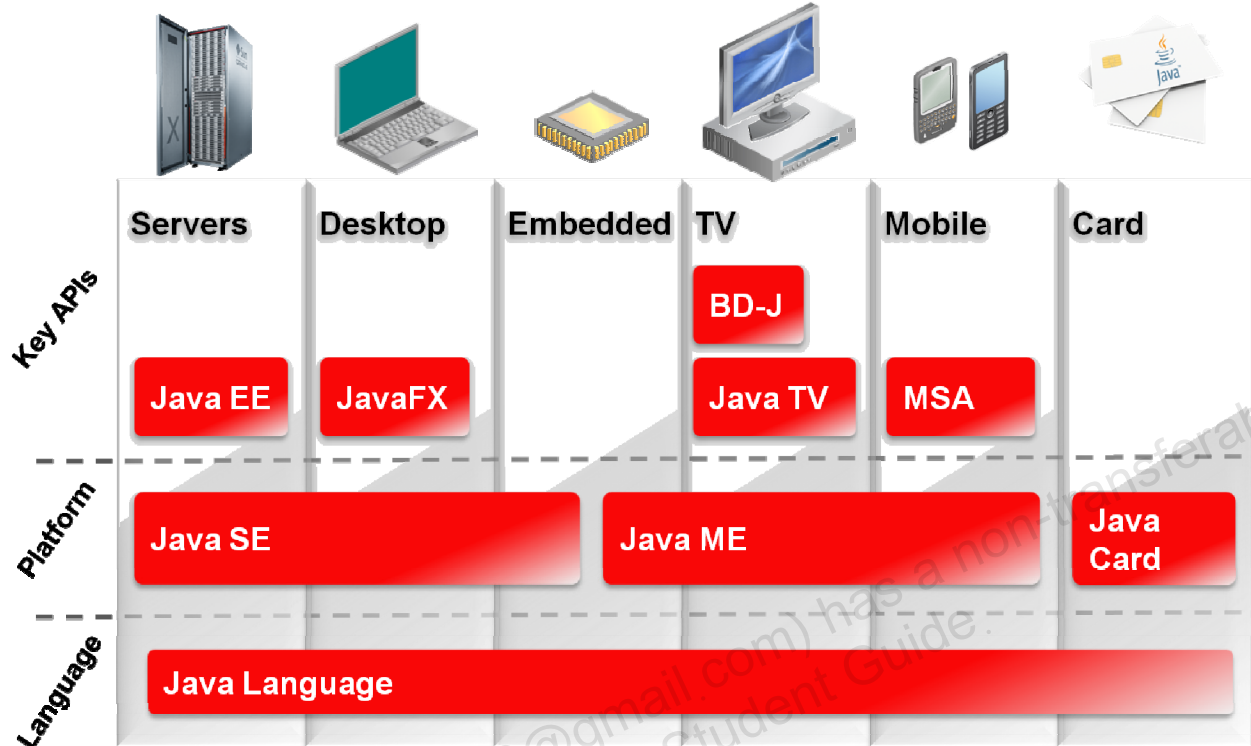
The Java programming language (formerly Oak) originated in 1991 as part of a research project to develop a programming language that would bridge the communication gap between many consumer devices, such as video cassette recorders (VCRs) and televisions. Specifically, a team of highly skilled software developers at Sun (the Green team, under the leadership of James Gosling) wanted to create a programming language that enabled consumer devices with different central processing units (CPUs) to share the same software enhancements.

This initial concept failed after 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. These small applications, called applets, became the initial use of the Oak language, and programmers using the Internet adopted what became the Java programming language.

The turning point for Java came in 1995, when Netscape incorporated Java into its browser.

**Did You Know?** The character in the slide is Duke, Java's mascot. The original Duke was created by the Green team's graphic artist, Joe Palrang.

# Identifying Java Technology Product Groups



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Oracle provides a complete line of Java technology products, ranging from kits that create Java technology programs to emulation (testing) environments for consumer devices such as cellular phones. As indicated in the graphic, all Java technology products share the foundation of the Java language. Java technologies, such as the Java Virtual Machine, are included (in different forms) in three different groups of products, each designed to fulfill the needs of a particular target market. The figure illustrates the three Java technology product groups and their target device types. Each edition includes a Java Development Kit (JDK) (also known as a Software Development Kit [SDK]) that allows programmers to create, compile, and execute Java technology programs on a particular platform.

**Note:** The JavaFX API is a rich client for creating user interfaces for your Java program. The MSA API is the mobile software application used to create user interfaces on portable devices.

# Java SE

Is used to develop applets that run within web browsers and applications that run on desktop computers



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Java Platform, Standard Edition (Java SE) is used to develop applets and applications that run within web browsers and on desktop computers. For example, you can use the Java SE JDK to create a word processing program for a personal computer.

You use a Java desktop application in this course. It is an Integrated Development Environment (IDE) called NetBeans.

**Note:** Applets and applications differ in several ways. Primarily, applets are launched inside a web browser, whereas applications are launched within an operating system. Although this course focuses mainly on application development, most of the information in this course can be applied to applet development.



# Java EE

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



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Java Platform, Enterprise Edition (Java EE) is used to create large enterprise, server-side, and client-side distributed applications. For example, you can use the Java EE JDK to create a web shopping (eCommerce) application for a retail company's website.

Java EE is built on top of the Java SE Platform, extending it with additional APIs supporting the needs of large-scale, high-performance enterprise software. The APIs are packaged and grouped to support different kinds of containers, such as a web container for web-based applications, a client container for thick clients, and the EJB container to run workhorse Java components. Some of the kinds of functionality supported by the different APIs include objects, UI, integration, persistence, transactions, and security.

# Java ME

Is used to create applications for resource-constrained consumer devices



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Java Platform, Micro Edition (Java ME) is used to create applications for resource-constrained consumer devices. For example, you can use the Java ME JDK to create a game that runs on a cellular phone. Blu-ray Disc Java applications and Java TV use the same SDK as Java ME.

# Java Card

Java Card is typically used in the following areas (and many more):

- Identity
- Security
- Transactions
- Mobile phone SIMs



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# Product Life Cycle (PLC) Stages

1. Analysis
2. Design
3. Development
4. Testing
5. Implementation
6. Maintenance
7. End-of-Life (EOL)



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The product life cycle is an iterative process used to develop new products by solving problems.

- **Analysis:** The process of investigating a problem that you want to solve with your product. Among other tasks, analysis consists of:
  - Clearly defining the problem you want to solve, the market niche you want to fill, or the system you want to create. The boundary of a problem is also known as the *scope* of the project.
  - Identifying the key subcomponents of your overall product

**Note:** Good analysis of the problem leads to a good design of the solution and to decreased development and testing time.

- **Design:** The process of applying the findings you made during the analysis stage to the actual design of your product. The primary task during the design stage is to develop blueprints or specifications for the products or components in your system.
- **Development:** Using the blueprints created during the design stage to create actual components
- **Testing:** Ensuring that the individual components, or the product as a whole, meet the requirements of the specification created during the design stage

**Note:** Testing is usually performed by a team of people other than those who actually developed the product. Such a team ensures that the product is tested without any bias on behalf of the developer.