

JAVA A TUTORIAL

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INTRODUCTION Java was developed by Sun as a special purpose language for embedded systems. As many became interested in programming applets to support more active and animated Internet Browsers, Sun modified Java to meet this need. Java applets are secure, multithreaded, and machine independent.

Java is an object-oriented language and Java packages provide the same type of support for Java that class libraries do for C++. The Abstract Window Toolkit is a very important package for Java as it provides a complete graphics user interface system for Java that works on all windows systems, including: Microsoft, Macintosh, Motif, and OS/2. The Java Interface is a set of functions that can be implemented either locally or remotely, and, thus, Java programs can work with objects independently of their location on a network. Java supports references rather than pointers and uses garbage collection for its memory management. This allows programs in Java to be more reliable and simpler than those of C++.

Sun thinks that Java just might be good enough as an object-oriented programming language to compete with C++ and continues to improve on the Java environment. While it remains to be seen if Java will really compete with C++ in the commercial market, many of those who teach Computer Science consider it to be a prime candidate to become the language for CS 1. With Java, a first course in Computer Science could be object-oriented and use a graphical user interface programming environment, without sacrificing any of the usual algorithm emphasis of today's CS 1 courses.

PART 1 The first part of the Java tutorial will consist of a "Hello World" program. It then considers the standard language constructs: data types (primitive and structured), variables, references, control structures, classes (methods) and i/o.

PART 2 The second part of the tutorial takes a detailed look at object-oriented programming in Java. A short description of the standard packages of Java and an example of how a user adds a package to the system will be given. A brief discussion of the Java interface will also be included. This part of the tutorial will include a short program in Java.

PART 3 The third part of the tutorial takes a look at the applet development process in Java. This will include a look at the HTML extensions needed for applets and an introduction to the Abstract Window Toolkit for graphical applications. A small applet will be developed in this part of the tutorial.

PART 4 The fourth part of the tutorial consists of an overview of Java resources and a discussion of the role of Java as a programming language. The topics will include:

1. A comparison of J++ and Cafe.
2. A list of good books and internet sites.
3. A discussion of "Java versus C++" and "Is Java the language for CS 1?"