

English for IT



Java ...

and its use on the WWW

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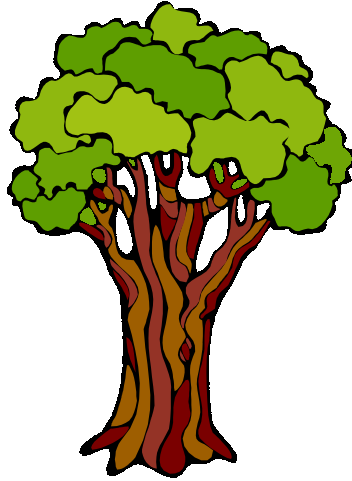
About this presentation:

- No programming details of Java
- Brief history of Java
- What is Java actually?
- What can you do with Java?
- What can you do with Java in the WWW?
- How can this be done?
- Java and Javascript

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The history of Java



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The history of Java



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Brief history of Java

Sun:

- famous for high-end computer hardware

Chief characteristics:

- easy implementation
- stable applications
- independent from a certain platform

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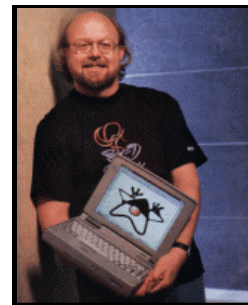
Brief history of Java

1990:

- Green project
- needs and expectations of customers

James Gosling:

- programming language Oak
- stable applications even in undefined cases!



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Brief history of Java

- First Oak application: Duke
- Supported the user
e.g.: programming a VCR



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Brief history of Java

1995:

- Bill Joy (cofounder of Sun) recognized potential for Oak
- suggested names:
Neon, Lyric, Pepper or Silk



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Brief history of Java

New Name:

- Java
- synonym for coffee
- island (Indian ocean)



Noboru Komine/Photo Researchers, Inc.

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What can you do with Java?

EVERYTHING!

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What can you do with Java?

Crucial point:

- Independence:
developed once ...
... runs everywhere!

What can you do with Java?

Two kinds of Java programs:

- | | |
|------------------------------|---------------------------------|
| ■ Java applications: | ■ Java applets: |
| ■ standalone programs | ■ included on webpages |
| ■ full access to your system | ■ run in a "sandbox" |
| | ■ limited access to your system |

What can Java do on the WWW?

■ Examples:

- Firework
- Ambient Reality
- Tetris
- Panorama
- BodyIndex

What can Java do on the WWW?

■ More complex applets:

- chemical molecules

What can Java do on the WWW?

Reference example:

- CDA (Course decision agent):
 - supports students with selection of courses
 - access to various information like:
 - explanation of the course
 - the requirements of the course
 - average work-load

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What can Java do on the WWW?

The screenshot shows the Raptor Course Browser application. On the left is a search and filter panel with the following sections:

- Update List** and **Advanced Search** buttons.
- Semester:** Radio buttons for **Fall**, **Spring**, and **Either**.
- Offered:** Radio buttons for **Offered**, **[Bracketed]**, and **Any**.
- Department:** A dropdown menu currently showing **Computer Science**.
- When:** Radio buttons for **Whenever**, **Fits my current schedule** (selected), and **on:**. Below **on:** are two dropdown menus for **Any day(s)** and **at Any time**.
- Exams:** A checkbox for **Fits my current exam schedule**.
- Keywords:** A text input field.

The main window displays a list of courses in a scrollable area:

- Computer Science 254r. Programming Methodologies**
Catalog Number: 2767
Thomas E. Cheatham, Jr.
Spring term. Tu., Th., 1-2:30. EXAM GROUP: XV, XVI
- [Computer Science 262. Introduction to Distributed Computing]**
Catalog Number: 7949
James H. Waldo
Spring term. Tu., Th., 2:30-4. EXAM GROUP: VII, VIII, IX
- Computer Science 276r. Computer Graphi**
Catalog Number: 8097
Steven J. Gorlier
Spring term. M., W., 2:30-4. EXAM GROUP: VII, VIII
- Computer Science 281r. Artificial Intelligence: Reasoning and Planning Systems**
Catalog Number: 0707
Barbara J. Grosz
Spring term. Tu., Th., 2:30-4. EXAM GROUP: XVI, XVII
- [Computer Science 287r. Natural Language Processing]**
Catalog Number: 3306
Stuart M. Shieber

A context menu is open over the second course entry, showing options: **Show Courses Catalog Listing...**, **Show CUE Guide Listing...**, and **Add Course to Shopping Cart** (highlighted).

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What can Java do on the WWW?

The screenshot shows the Raptor application interface. On the left, there are statistics for various metrics, each with a progress bar:

- Avg. CUE Overall: 4.0
- Avg. CUE Instructor: 4.1
- Avg. CUE Workload: 3.3
- Avg. CUE Difficulty: 3.4
- Avg. CUE Reading: 2.5
- Avg. CUE Effort Level: 3.3

The main window displays a "SPRING SCHEDULE" grid with columns for days (M, Tu, W, Th, F) and rows for time slots (8:00, 9:00, 10:00, 11:00, 12:00, 1:00, 2:00, 3:00, 4:00). Courses are listed in the grid cells:

- 8:00: P144 (M), P1353 (Tu), P144 (W), P1353 (Th), P144 (F)
- 10:00: P144 (M), P1353 (Tu), P144 (W), P1353 (Th), P144 (F)
- 12:00: MR40 (Tu), MR40 (Th)
- 1:00: M101 (Tu), M101 (Th)

Below the grid is a table with the following data:

Code	Course Name	Sem.	Exams	Cat. #
MR40	Moral Reasoning 40: Confucian Humanism: Self-Cultivation and Moral Co...	Spring	XIV	0466
P144	Philosophy 144: Logic and Philosophy	Spring	III	1111
P1353	Psychology 1353: Laboratory in Human Cognition	Spring		8207
CS91r	Computer Science 91r: Supervised Reading and Research	Both		0361
M101	Mathematics 101: Sets, Maps, and Symmetry Groups	Both	III	8066

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What can Java do on the WWW?

Reasons for the decision:

- possible to run on Mac, Unix, Windows

Once again:

- *Java has saved time and money!*

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... and how can I do it?

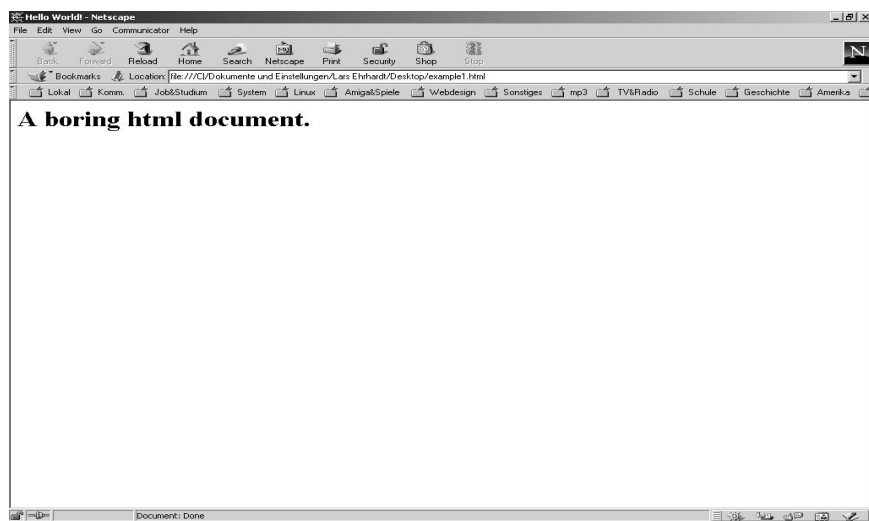
■ Example of a webpage:

```
<HTML>
<HEAD>
<TITLE>Hello World!</TITLE>
</HEAD>
<BODY>
<H1>A boring html document.</H1>
<P>
</BODY>
</HTML>
```

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... and how can I do it?



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... and how can I do it?

■ Example of a webpage with an applet:

```
<HTML>
<HEAD>
<TITLE>Hello World!</TITLE>
</HEAD>
<BODY>
<H1>An exciting html document.</H1>

</BODY>
</HTML>
```

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... and how can I do it?

■ Example of a webpage with an applet:

```
<HTML>
<HEAD>
<TITLE>Hello World!</TITLE>
</HEAD>
<BODY>
<H1>An exciting html document.</H1>
<P>And here it is: the applet-element:
<APPLET CODE="HelloWorld" height="100" width="100"></APPLET>
</BODY>
</HTML>
```

Bytecode

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... and how can I do it?

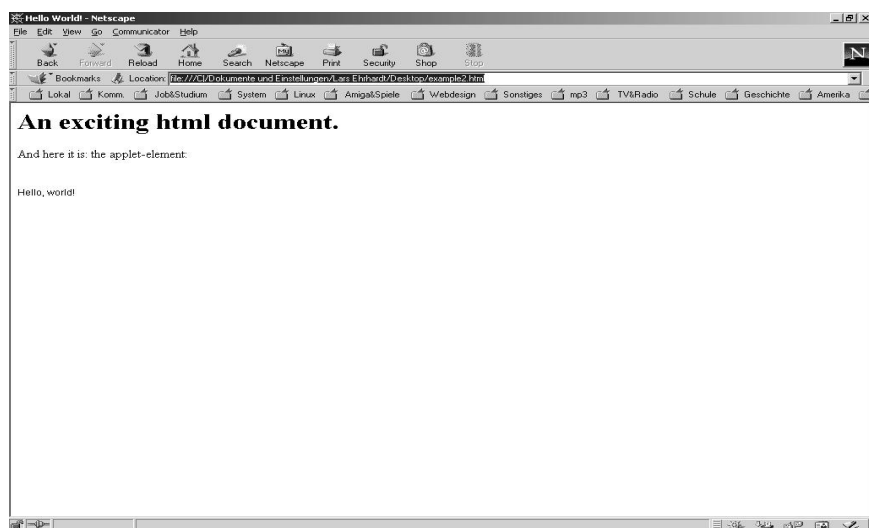
■ Sourcecode

```
/* This is the first hello to the world */
import java.awt.Graphics;
import java.net.*;
public class HelloWorld extends java.applet.Applet {
    public void init() {
        resize(600, 300);
    }
    public void paint(Graphics context) {
        context.drawString("Hello, world!", 0, 50);
    }
}
```

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... and how can I do it?



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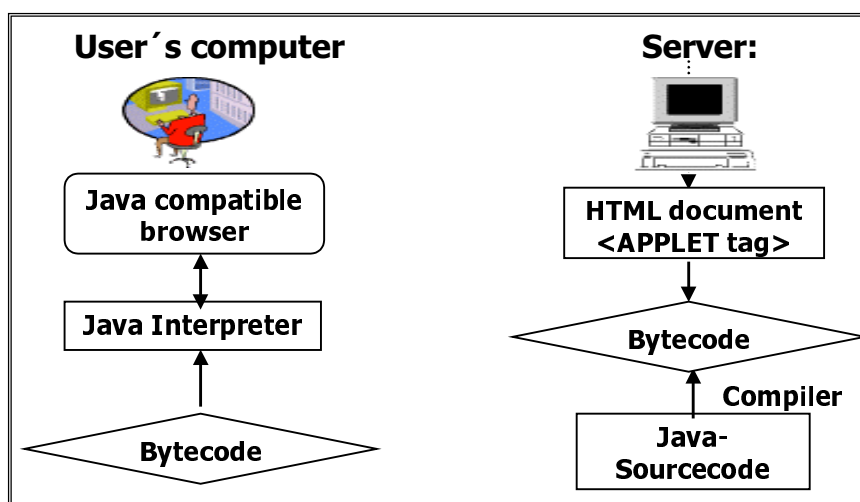
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... and how can I do it?

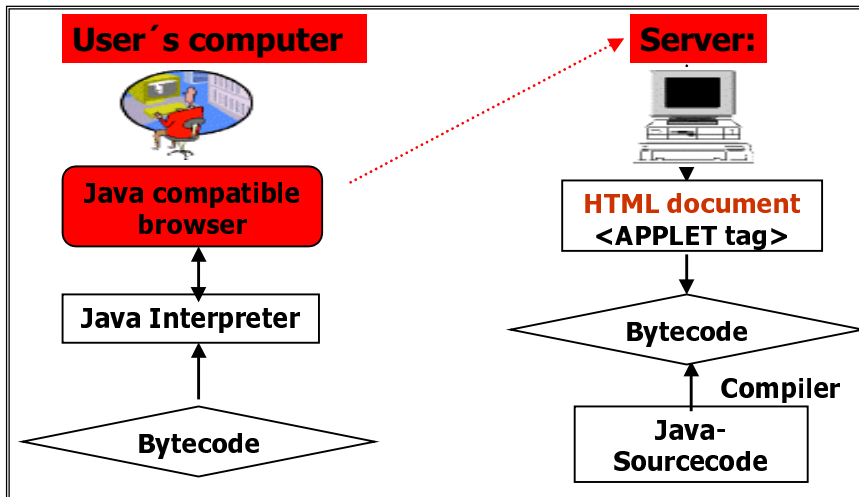
Summary of the steps:

- source code is created
- source code is compiled
Java bytecode is created
- HTML-tag "Applet" refers to this bytecode

action... transmission of Java



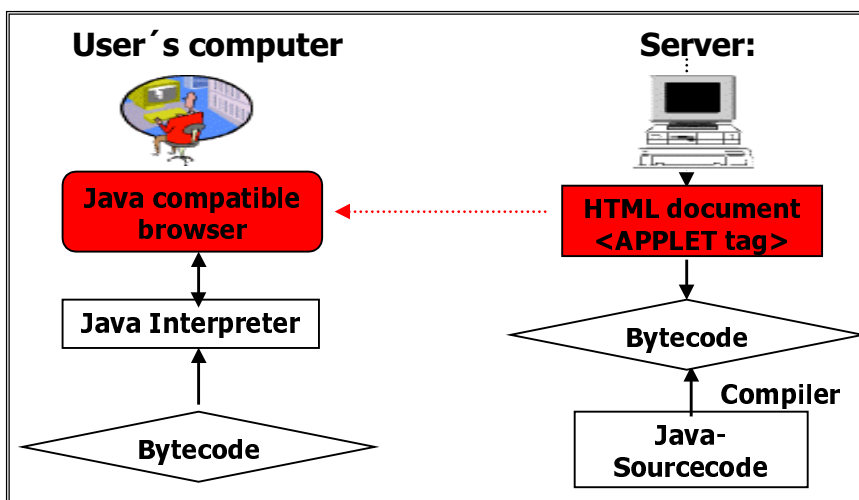
action... transmission of Java



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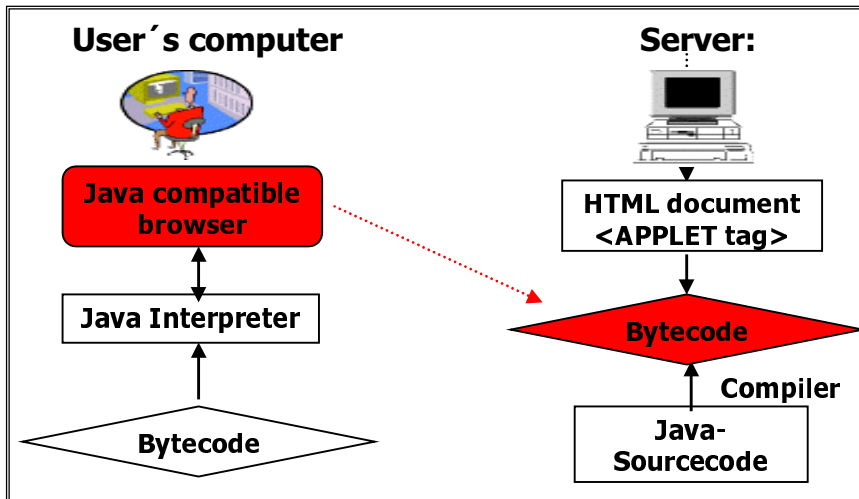
action... transmission of Java



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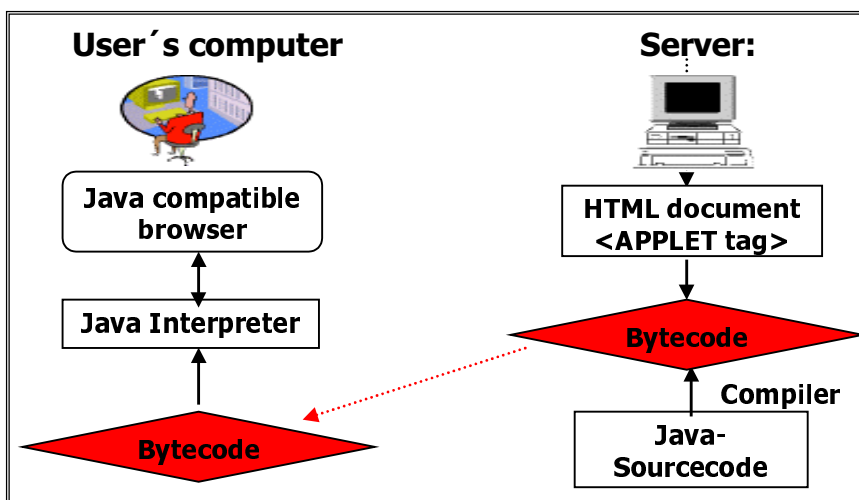
action... transmission of Java



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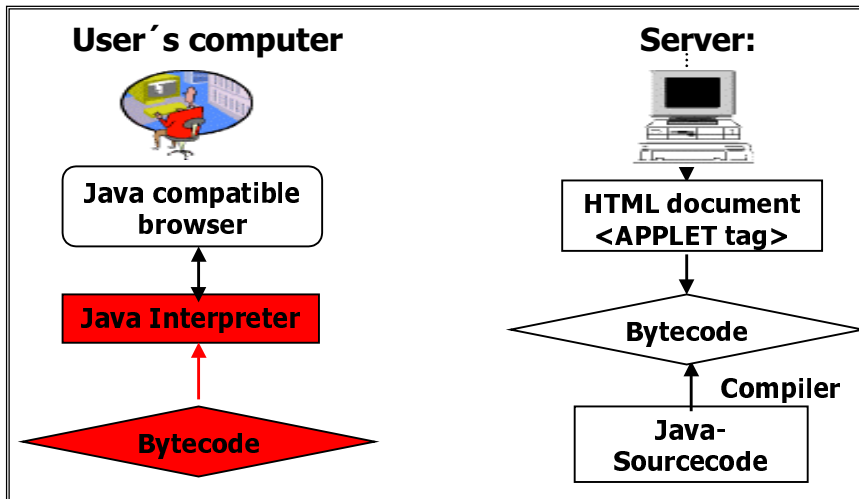
action... transmission of Java



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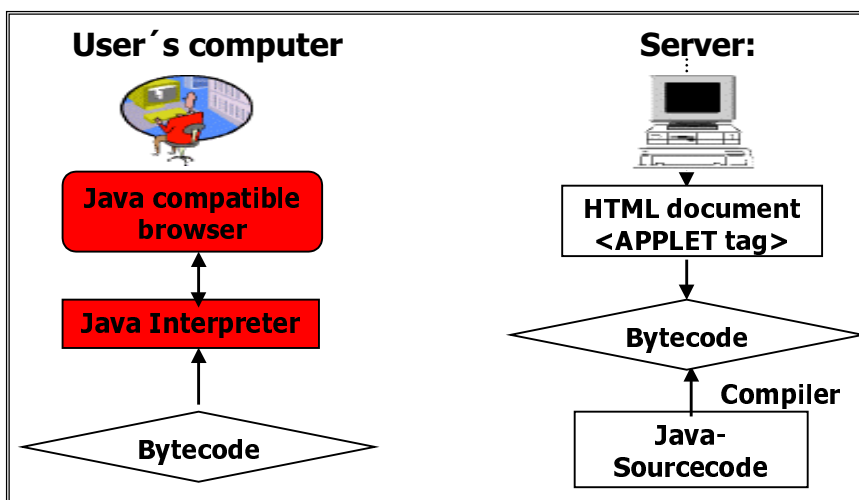
action... transmission of Java



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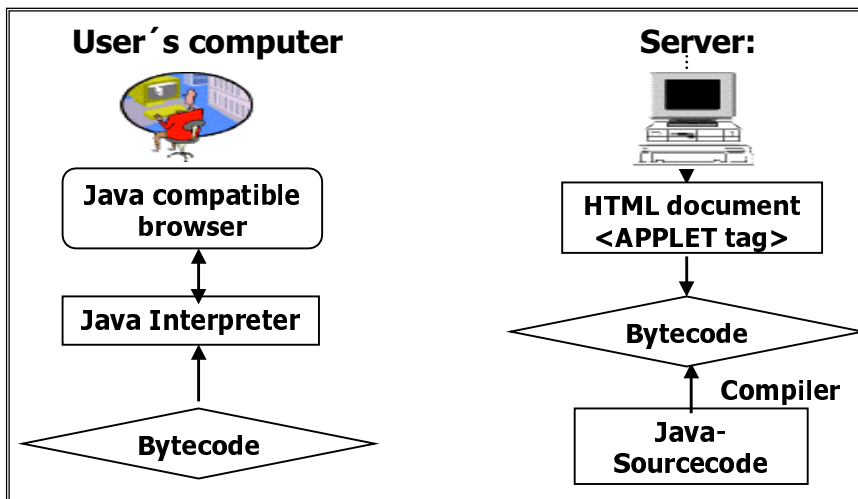
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action... transmission of Java



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What can you do with Java?

Java != Javascript

■ Java:

- true programming language
- compiled version on server
- object-oriented: code consists of object classes with inheritance
- code is compiled and in binary form
- cannot automatically write to hard disk

■ Javascript:

- Script language
- interpreted by client
- object-based: code uses built-in objects, but no classes or inheritance
- code is visible for everyone
- cannot automatically write to hard disk

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conclusions

Java is truly amazing:

- One sourcecode for multiple platforms
- Java applets enrich the web interactively and dynamically
- Java is an exciting subject in our computer world that you should care about!

Famous last words

- And the references were... :
- Books:
 - Java 2, L. Lemay, R. Cadenhead - ISBN: 3-8272-5578-3
- WWW-References:
 - <http://java.sun.com>
 - <http://java.sun.com/features/1998/03/harvard.html>
 - <http://www.digitas.harvard.edu/cda/>
 - <http://www.jsr.communitech.net/difference.htm>
 - <http://www.jars.com>