

today: client side web technology: JavaScript

course: Web Technology

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previous lecture

HyperText Markup Language (HTML)
meant for *markup*, not for *programming*

HTML is used for

- structuring documents
- layout (not meant to, but OK), images, links, ...
- presenting information on the web

previous lecture

HTML forms provide interactivity between web-user and web application

using a GET or POST method HTTP request, data from an HTML form is sent to a web server
after processing the data, the server responds with a resulting document

HTML itself lacks possibility for interactivity, or instant feedback
processing of the data happen on the server side

adding dynamics: JavaScript

programming language
commonly used within browsers to enhance HTML documents with interaction, dynamic content, and instant feedback

JavaScript code can be embedded within an HTML document and interpreted within the web-browser

client side

"... *within HTML doc ... interpreted within the web-browser.*"
therefore, *client side* technology!

reduces server and traffic overhead
not for every small change in a webpage, or user action, a new page must be requested from the server

JavaScript language is not limited to web-browsers

- it may run on servers
- it may run from command line interpreters
- it may run everywhere in principle...
- just as Cantonese may be spoken on the South Pole

JavaScript

(scripting) programming language
1995 by Netscape and Sun corporations

popular, because:

- its code can be embedded into HTML
- it can change or add stuff to HTML documents
- it can control the web-browser
- it can interact with the user (react on what the user does)
- it is built into (*understood by, interpreted by*) common browsers

JavaScript

most commonly used in HTML documents to

- open pop-up windows with specific size, location and other settings
- change images when the mouse rolls over them
- validate the content that a user typed into an HTML form; for example checking required fields, acceptable values, e-mail address format, ...

but much more possible

intermezzo

interpreted versus compiled

code written in an **interpreted** programming language (often called "script") may be executed from source form, by an **interpreter**. Any language may, in theory, be compiled or interpreted; therefore, it refers to languages' implementations rather than designs.

an interpreted program can not be as efficient as a **compiled** program, which has been processed by a language **compiler**. A language compiler converts source statements into something close to the strings of 0's and 1's that a processor ultimately is given to work on. Because this work is already done before a compiled program is run, it runs much more quickly.

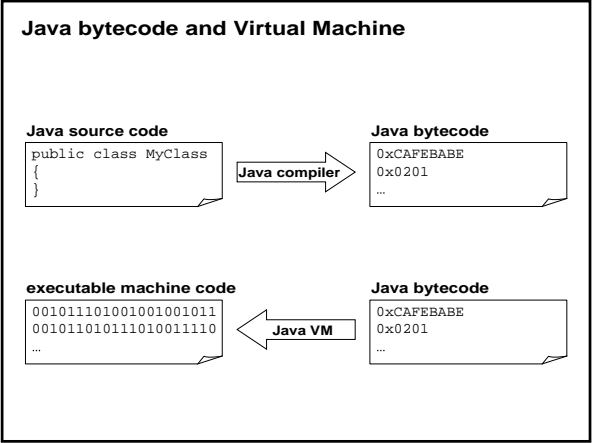
(source: wikipedia.org, and whatis.com)

what about Java?

Java is also a programming language
allows development of programs called *applets*
applets can be included in web-pages

applets are platform independent!
they are compiled to *bytecode*, which can be run on any machine using a *Java Virtual Machine*
write once, run anywhere
efficient, since (semi-)compiled

features include graphics, networking, file I/O, ...
example: the Visible Human Viewer
<http://www.dhpc.adelaide.edu.au/projects/vishuman2/>



JavaScript versus Java

JavaScript != Java;

their syntax is similar: both based on C programming language just as the Processing language

Java is compiled (to machine independent bytecode)
JavaScript is interpreted (hence the name *script*)

when part of the web:

- in Java you write *applets*, small portable applications that can be part of a web page
- JavaScript is tied into an HTML document and can control the document and browser

Document Object Model (DOM)

an object-oriented description of an HTML document used by programs to access and change the document's content, structure and style

from the programming point-of-view, the HTML document is hierarchically made up of many objects that can be accessed and changed
for example, page object (document), browser window object (window), image object (image), button object (button), ...

JavaScript interacts with the DOM to add dynamics and interactivity to HTML documents

assignment 1: JavaScript

write a simple game in JavaScript
either a new or existing game

turn-in date: Tuesday, March 7th, before 17:00h
all details are in the assignment itself, which is on the course
webpage

www.maartenlamers.com/WT2006/

reminder

lab assistance is on Tuesdays 14:00 - 17:00h
lab assistant is Amalia Kallergi (webtech2006@hotmail.com)