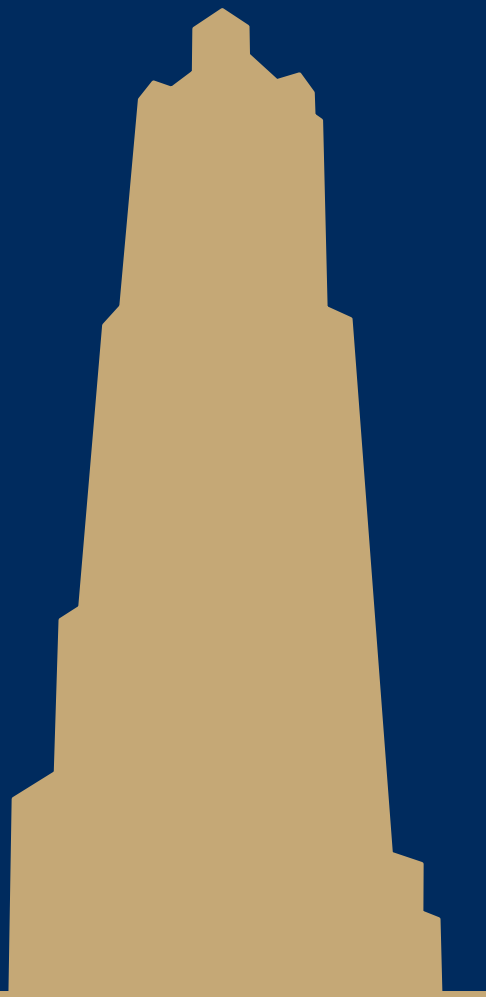
CS/COE 1520

pitt.edu/~ach54/cs1520

Introduction



Meta-notes

- These notes are intended for use by students in CS1520 at the University of Pittsburgh. They are provided free of charge and may not be sold in any shape or form.
- These notes are NOT a substitute for material covered during course lectures. If you miss a lecture, you should definitely obtain both these notes and notes written by a student who attended the lecture.

Instructor Info

- Adam Hobaugh (A.C.Hobaugh@pitt.edu)
  Office: 6211 Sennott Square

- All other info appears on the class website
  - E.g., office hours, TA contact info/office hours

A note about email

- Prefix all email subjects with [CS1520]
- **There are two people named Adam Hobaugh at Pitt**
  - If emailing me from Outlook/Office365, make sure to choose “Hobaugh, Adam Christopher” in the To field

Course Info

- Website:
  - pitt.edu/~ach54/cs1520/

- **Review the Course Information and Policies**

Programming languages for web applications

- Goals for the course:
  - Examine the functionality of several different programming languages to gain a better understanding of the study of programming languages, themselves
  - Learn the basics of and current practices for developing web applications

The World Wide Web

"a part of the Internet that contains documents often connected by hyperlinks and called the Web"

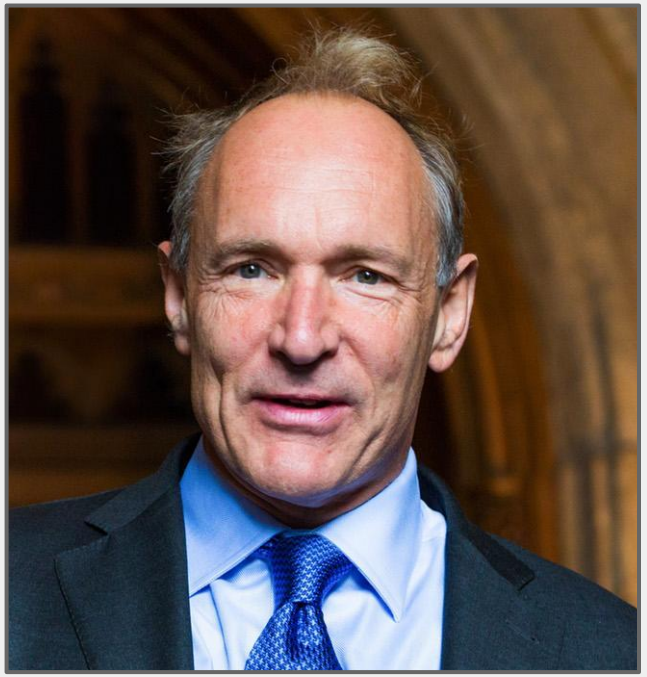
TERRIBLE DEFINITION

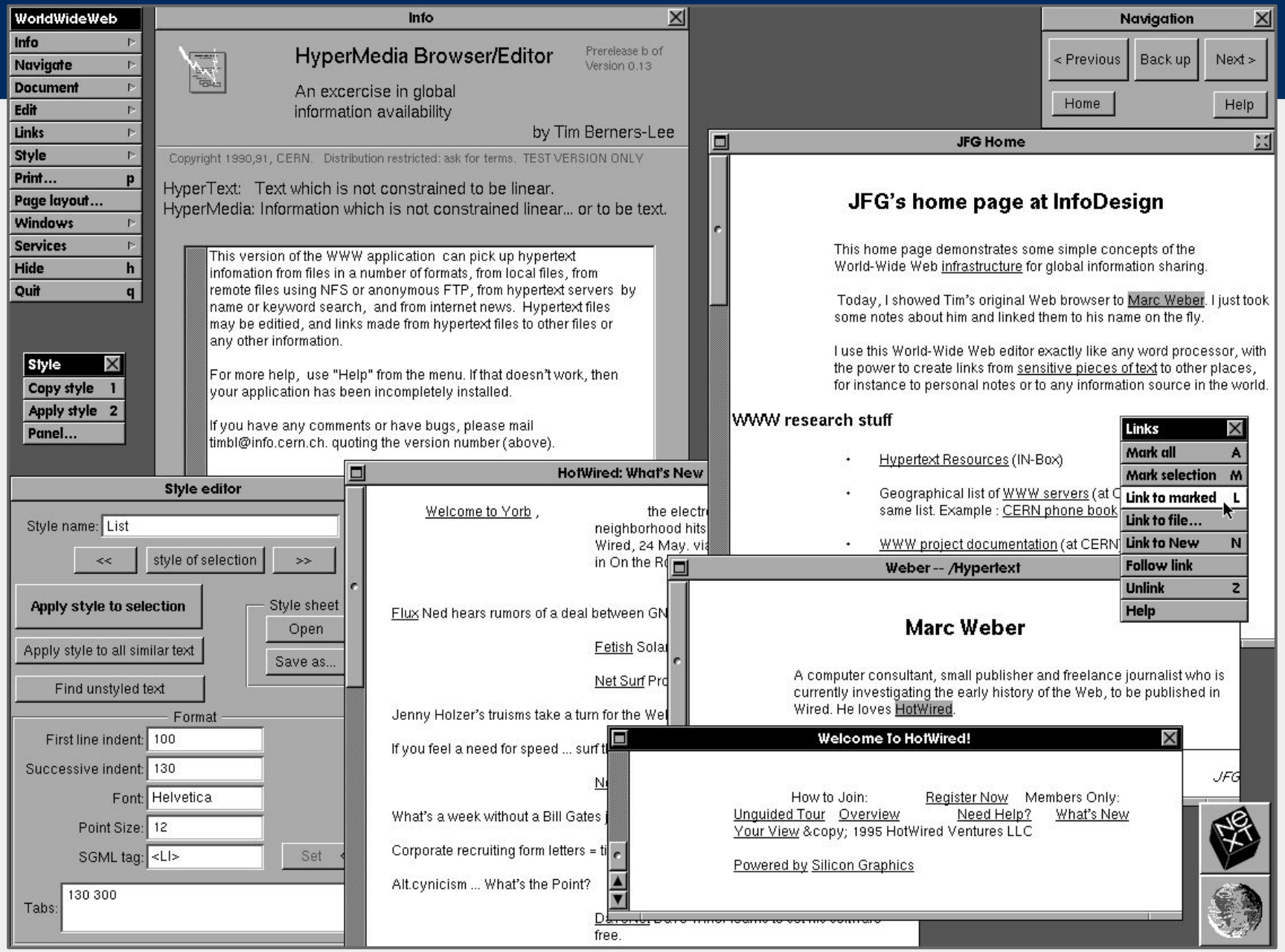
The World Wide Web

"The World Wide Web (WWW) is an information space where documents and other web resources are identified by URLs, interlinked by hypertext links, and can be accessed via the Internet"

History of the web

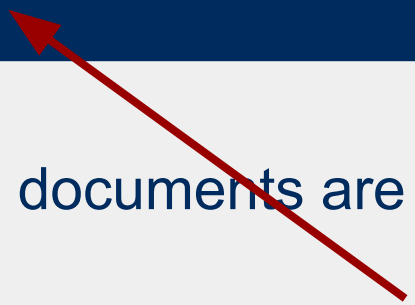
- 1945: Vannevar Bush proposed the "memex", a device for storing and linking information stored on mircrofilm
- 1963: Ted Nelson coined the term "hypertext" as a text approach breaking away from traditional linear limitations
- Sir Tim Berners-Lee
  - 1980: proposed ENQUIRE as a hypertext documentation system for CERN in Switzerland
  - 1989: proposed implementing a hypermedia system on top of the Internet, inventing the Web
  - 1990: wrote the first web browser (called WorldWideWeb)




WorldWideWeb
Info
Navigate
Document
Edit
Links
Style
Print... p
Page layout...
Windows
Services
Hide h
Quit q
Info
HyperMedia Browser/Editor
Prerelease b of Version 0.13
An excercise in global information availability
by Tim Berners-Lee
Copyright 1990,91, CERN. Distribution restricted: ask for terms. TEST VERSION ONLY
HyperText: Text which is not constrained to be linear.
HyperMedia: Information which is not constrained linear... or to be text.
This version of the WWW application can pick up hypertext infomation from files in a number of formats, from local files, from remote files using NFS or anonymous FTP, from hypertext servers by name or keyword search, and from internet news. Hypertext files may be editied, and links made from hypertext files to other files or any other information.
For more help, use "Help" from the menu. If that doesn't work, then your application has been incompletely installed.
If you have any comments or have bugs, please mail timbl@info.cern.ch. quoting the version number (above).
Navigation
< Previous
Back up
Next >
Home
Help
JFG Home
JFG's home page at InfoDesign
This home page demonstrates some simple concepts of the World-Wide Web infrastructure for global information sharing.
Today, I showed Tim's original Web browser to Marc Weber. I just took some notes about him and linked them to his name on the fly.
I use this World-Wide Web editor exactly like any word processor, with the power to create links from sensitive pieces of text to other places, for instance to personal notes or to any information source in the world.
WWW research stuff
Hypertext Resources (IN-Box)
Geographical list of WWW servers (at C
same list. Example : CERN phone book
WWW project documentation (at CERN
Style
Copy style 1
Apply style 2
Panel...
Links
Mark all A
Mark selection M
Link to marked L
Link to file...
Link to New N
Follow link
Unlink Z
Help
Style editor
Style name: List
<<
style of selection
>>
Apply style to selection
Apply style to all similar text
Find unstyled text
Style sheet
Open
Save as...
Format
First line indent: 100
Successive indent: 130
Font: Helvetica
Point Size: 12
SGML tag: <LI>
Set
Tabs: 130 300
HotWired: What's New
Welcome to Yorb ,
Flux Ned hears rumors of a deal between GN
Fetish Sola
Net Surf Pro
Jenny Holzer's truisms take a turn for the Wel
If you feel a need for speed ... surf t
What's a week without a Bill Gates
Corporate recruiting form letters = ti
Alt.cynicism ... What's the Point?
free.
Weber -- /Hypertext
Marc Weber
A computer consultant, small publisher and freelance journalist who is currently investigating the early history of the Web, to be published in Wired. He loves HotWired.
Welcome To HotWired!
How to Join: Register Now Members Only:
Unguided Tour Overview Need Help? What's New
Your View © 1995 HotWired Ventures LLC
Powered by Silicon Graphics

Hypertext

HTML



- Web documents are commonly formatted and annotated using the HyperText Markup Language
  - First references to HTML made by Sir Tim in 1991
  - First real standard proposed in 1995 with HTML 2.0
  - Current version is HTML5
- HTML documents are built out of HTML *elements*
  - Elements are delineated by *tags*

Intro to HTML

- HTML5 documents have the following basic shell:

```
<!DOCTYPE html>
<html>
   <head> </head>
   <body> </body>
</html>
```

HTML tag basics

- Most tags are pairs, start and end tags:
  - ```

      This text would be considered a paragraph

    ```
  - `<em> This text would be emphasized </em>`
- Comments have their own start and end tags:
  - `<!-- This is an HTML comment -->`
  - ```
    <!--
    Multiline comment
    -->
    ```
- There are also self closing tags
  - `<br> <!-- The br tag inputs a line break -->`
- Tags also have attributes
  - `<a href="http://example.com">click here!</a>`

`id` and `class` attributes

- `id` allows you to target a specific instance of an element
  - ```
    <!-- ids should be unique on a page -->

    ```
- `class` allows you to target a group of elements
  - ```
    <!-- classes can repeat -->
    <span id="A" class="custom"></span>
    <span id="B" class="custom"></span>
    <div class="custom"></div>
    ```

Modern use of HTML

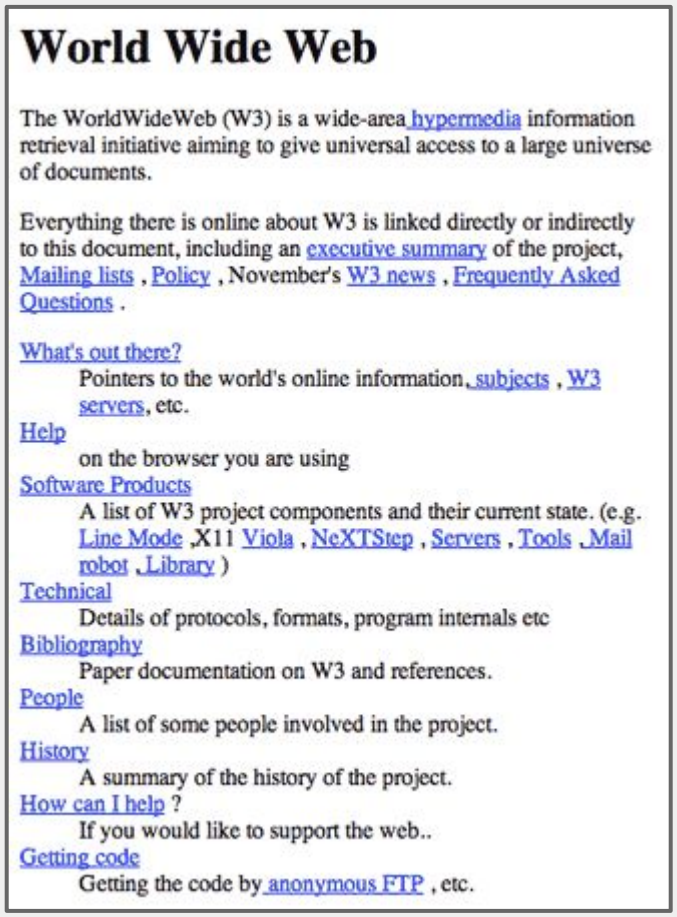
- HTML is used to present the *structure* of a document
  - What text that should be displayed
  - What images or other media that should be displayed
- It is often used in conjunction with Cascading Style Sheets (CSS), which describe the *presentation* of the document
  - Colors, fonts, positioning, etc.

- Italics example:
  - `<span class="italics">this will be italicized</span>`
  - `span.italics {font-style: italic;}`

- … Emphasis tag (`<em></em>`) normally displays in italics
  - Difference?

Italicized emphasis isn't the only default style

- Browsers have default stylings for many elements that can be overridden

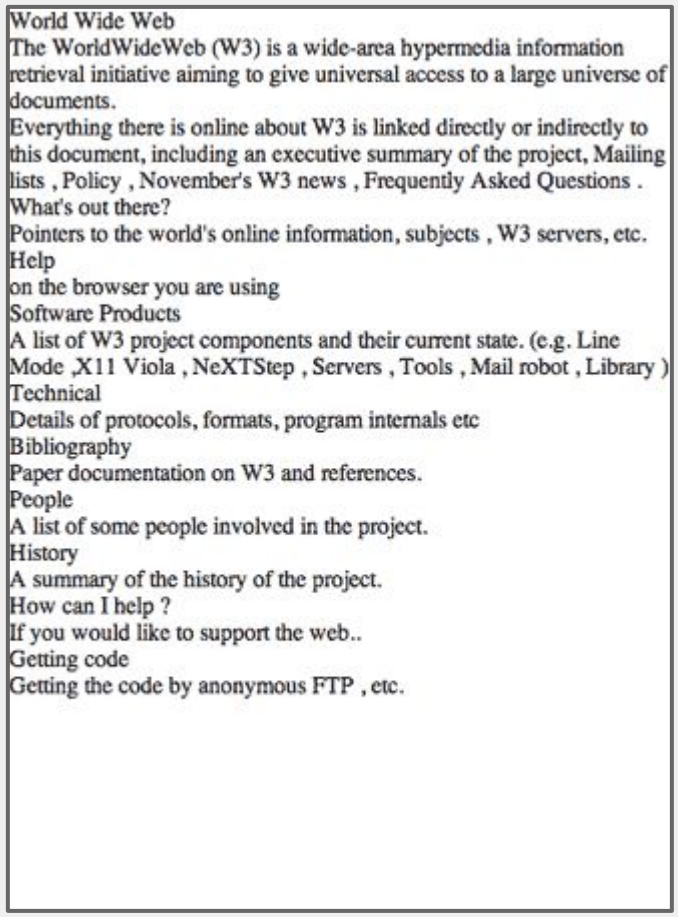


World Wide Web

The WorldWideWeb (W3) is a wide-area hypermedia information retrieval initiative aiming to give universal access to a large universe of documents.

Everything there is online about W3 is linked directly or indirectly to this document, including an executive summary of the project, Mailing lists , Policy , November's W3 news , Frequently Asked Questions .

What's out there?
Pointers to the world's online information, subjects , W3 servers, etc.
Help
on the browser you are using
Software Products
A list of W3 project components and their current state. (e.g. Line Mode ,X11 Viola , NeXTStep , Servers , Tools , Mail robot , Library)
Technical
Details of protocols, formats, program internals etc
Bibliography
Paper documentation on W3 and references.
People
A list of some people involved in the project.
History
A summary of the history of the project.
How can I help ?
If you would like to support the web..
Getting code
Getting the code by anonymous FTP , etc.



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CSS Selectors

- CSS target examples:
  - HTML elements
    - ```
      span {
          color: red;
      }
      ```
  - Specific ids
    - ```
      #unique {
          color: blue;
      }
      ```
  - Specific classes
    - ```
      .custom {
          color: green;
      }
      ```
  - Combinations
    - ```
      span#unique {
          color: yellow;
      }
      ```

Tentative Syllabus

- Responsive Design
- Interpreted languages
- The DOM
- Web Storage
- Regular Expressions
- Networking Overview
- Python
- The Flask Microframework
- AJAX
- REST
- Functional Programming
- ECMAScript
- Web Security

JavaScript

Python