




Web-centric Computing:

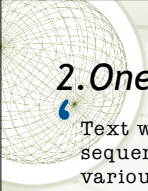
Computing, Hypertext,
& the WWW



1. What is 'computing'?

- ⊕ Use of computers
 - ⊕ Computers interact with memory & devices (e.g. displays)
 - ⊕ Computers follow instructions to manipulate data in order to:
 - ✗ make calculations,
 - ✗ process input, and
 - ✗ produce output
- ⊕ Data & Instructions together

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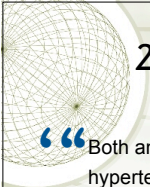
2. One definition of Hypertext

Text which does not form a single sequence and which may be read in various orders;

specially text and graphics ... which are interconnected in such a way that a reader of the material ... can discontinue reading one document at certain points in order to consult other related matter.

Simpson & Weiner (eds.)
Oxford English Dictionary
Additions Series (vol. 2,
1993)


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2.1 Another definition of Hypertext

“Both an author’s tool and a reader’s medium, a hypertext document system allows authors or groups of authors to link information together, create paths through a corpus of related material, annotate existing texts, and create notes that point readers to either bibliographic data or the body of the referenced text... Readers can browse through linked, cross-referenced, annotated texts in an orderly but non-linear manner.”


Designs of Intermedia hypertext system
quoted by George F. Landow in *Hypertext 3.0* (2006), p.9



3. What is the WWW?

- ✦ A distributed document delivery service implemented using application-level protocols on the Internet
- ✦ A tool for collaborative writing and community building
- ✦ A framework of protocols that support e-commerce
- ✦ A network of co-operating computers interoperating using HTTP and related protocols to form a sub-net of the Internet
- ✦ A large cyclical directed graph made up of webpages and links


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3. What is the WWW?

It is *all* that
and a hypertext system, too!

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***Computing, Hypertext,
& the WWW***


How those parts fit
together in CSCI 3172



***What do the applications
have in common?***

- ⊕ E-commerce
- ⊕ Collaborative writing
- ⊕ Collaborative community building
- ⊕ Distributed document delivery service

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***What do the applications
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- ⊕ E-commerce
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- ⊕ They all use the WWW as scaffolding
 - ⊕ It is the framework that enables them

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In Web-Centric Computing...

We do computing *on* the WWW

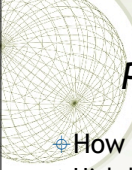
- ⊕ Putting the WWW under a microscope
- ⊕ Using it as a programming platform

Not programming *of* the WWW

- ⊕ Writing protocols, and applications

⊕ However it is important to understand how everything works at a deep level

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Perspectives on the WWW

⊕ How we will examine the WWW


⊕ High-level overviews:

- ⊕ Document delivery system
- ⊕ Distributed hypertext system
- ⊕ Mathematical models of the WWW

⊕ Details of some elements:

- ⊕ Web services
- ⊕ Web browsers as software platforms
- ⊕ Hypertext-in-general and Web 2.0

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The WWW as a Document Delivery System

⊕ Concepts of:

- ⊕ access, availability, and accessibility

⊕ Basic technologies:


- ⊕ client/server architectures, search engines, session and state

⊕ Issues:

- ⊕ Ownership, control, authority, and power

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High Level Overview




The WWW as a Hypertext System

- ◆ Distributed over the Internet
 - Status codes (404, etc.)
- ◆ Document formatting
 - Mark-up languages
- ◆ Dynamic documents
 - CGI protocol
- ◆ Interactivity and agency
 - Web 2.0
- ◆ Beyond the basics
 - Linkbases, Open Hypermedia, multi-links

High Level Overview

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The WWW as a Mathematical Abstraction

- ◆ The ‘web graph’
 - Structure of the links on the WWW
- ◆ Power laws
 - Link distribution
 - User habits
- ◆ Practical and theoretical applications

High Level Overview

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What are Web Services?

- ◆ Distributed computing
- ◆ Services are used by programs for remote execution of programs
- ◆ A significant evolution from old style middleware
- ◆ Of particular interest:
 - Asynchronous message-based protocols
 - N-tier architectures

An Element of the WWW

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Web Browsers as Software Platforms

- ◆ Scripting languages
- ◆ Cascading Style Sheet language
- ◆ The DOM as a standard API (not just data)
- ◆ Of particular interest:
 - ◆ Gain programming experience
 - ◆ Comparing cascading and inheritance
 - ◆ Errors and Opportunities:
 - ⊗ Graceful degradation
 - ⊗ Progressive enhancement

An Element of the WWW

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Hypertext & Web 2.0

- ◆ What is Web 2.0?
 - ◆ Interactive! Collaborative? Social?
- ◆ Is it Hypertext? Is it good?
 - ◆ Interactivity and true agency
 - ◆ How to assess it and what's left to do in HT
- ◆ How does it work?
 - ◆ Blogs and blog trackbacks (RSS)
 - ◆ Ajax
 - ◆ Mash-ups (*interactive* assemblage, and how you can make them)

An Element of the WWW

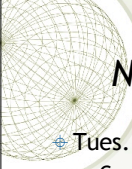
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Some upcoming assignments


- ◆ Install personal Apache WWW server
- ◆ Create a Javascript-based multiplication table
- ◆ Use `script.aculo.us` (or other code depository) to make a small website enhanced with Ajax
- ◆ Create a database-driven website
- ◆ *Perhaps* build a WWW-crawler/search engine
- ◆ Rework a complex webpage or small site to make it meet level AAA of WAI guidelines
- ◆ *Perhaps* assess quality of websites using `usability.gov` guidelines

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Next Week (11 & 13 Sept.)

⊕ Tues. 11th



Guest lecture by Marc Comeau (FCS webmaster) about the WWW and configuring the Apache server

⊕ Thur. 13th

Tutorial by Learning Centre staff about Javascript and using the DOM

Dr. Vlado Keselj will supervise both classes

