

What in the World is the World Wide Web?

Learning Objectives

1. Learn about the concepts which underlies the World Wide Web (WWW).
2. Define what the WWW is.

Lecture Outline

- Brief History of the World Wide Web
- The Browser Wars
- Definition of the World Wide Web.

A Little History - The beginning the Web

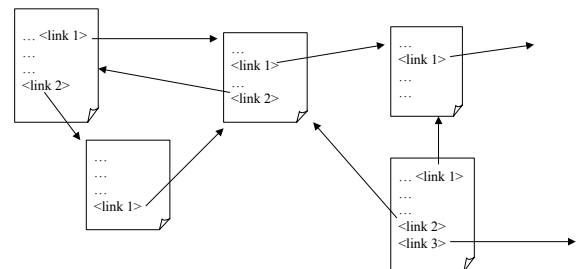
- The World Wide Web was originally conceived as a tool to link information kept by different researchers in CERN, the European Research Center for Nuclear Physics.
- In 1989, the original proposal for this system was put forward by Tim Berners-Lee.

The Original Vision

- Tim Berners-Lee original intention was to:
 - Access to information for all
 - The use of hypertext
 - Facilitate Collaborations
- He described the web as a "*distributed heterogeneous collaborative multimedia information system*".

Hypertext

- Using links to tie together documents:



History - Graphical Browsers

- The original “browsers” Berners-Lee wrote in 1989 to view these hyperlinked documents was all text-based. He later wrote a graphical one called “worldwideweb”.
- In 1993, the graphical browser Mosaic was released by Marc Andreessen of NCSA (National Center for Supercomputing Applications).
- In 1994, Andreessen left NCSA and together with Jim Clark formed Netscape Communications. The development of the Netscape’s browser, Navigator, drove the popularity of the WWW.

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History - W3C and Microsoft Internet Explorer

- Also in 1994, CERN and MIT (Massachusetts Institute of Technology), with Berners-Lee leading, formed the World-Wide-Web Consortium W3C, to
 - develop web protocols
 - encourage inter-operability between web sites
- In 1995, Microsoft finally recognised the potential of the Internet and the Web, and shifted its business focus to large scale penetration of the Web.

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History - Microsoft, Netscape and W3C

- The developments of Microsoft’s Internet Explorer, in competition with Netscape’s Navigator/Communicator, plus the activities of the W3C, have largely led us to the WWW scene going into the late 1990s.
 - A lot of what we associate with web activities today are defined at that time. Eg. the operations of web browsers, the use of HTML tables for image positioning, the widespread adoption of JavaScript, etc.
- It is the WWW, by its nature a lot more user friendly than the applications that have existed on the Internet before it, which led to the world-wide adoption of the Internet as a tool for everyone to use.

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WWW – The Concept

- Universal Readership
- The use of hypertext
- Allows searching for information
- Based on the client-server model
- Communication by *format negotiation*
 - that is, two parties involved in communication can negotiate between themselves what format they want to communicate in.
 - HTTP supports this.

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WWW – The Original Protocols

- Addressing using:
 - Universal Resource Locators (URL)
- Information Exchange using:
 - Hypertext Transfer Protocol (HTTP)
- Formatting using:
 - The Hypertext Markup Language (HTML)

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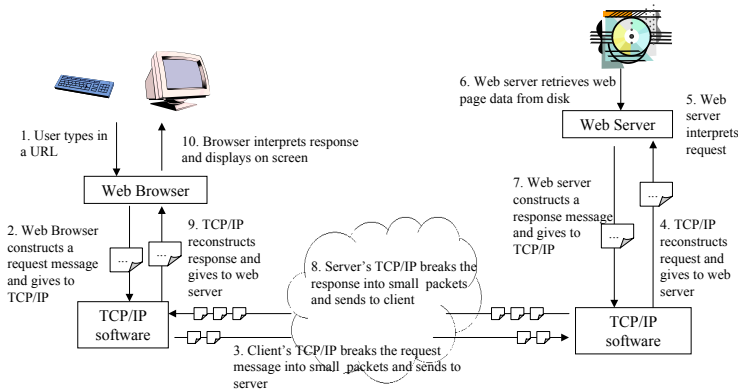
WWW – The Protocols (cont’d)

- Today, there are a lot more protocols that have been developed which people consider to be a part of the WWW.
- Eg
 - XML (eXtensible Mark-up Language)
 - CSS (Cascading Style Sheets)
 - DOM (Document Object Model)
 - etc.

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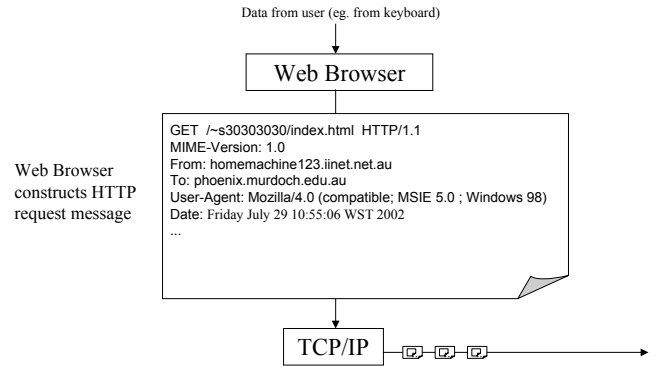
Web Page Access, from week 1:



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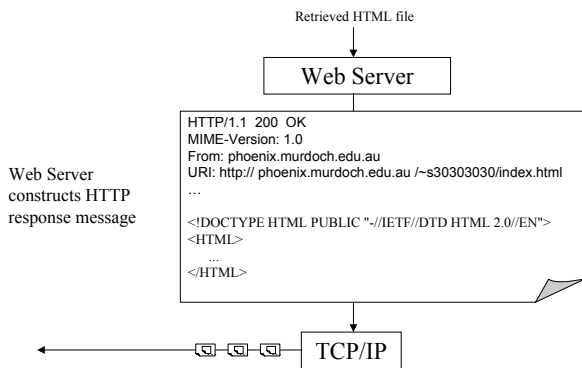
What happens in Step 2:



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What happens in Step 7:



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The Workings of the Web Client/Server

- We will at the details of the operations of HTTP, and the format of MIME, etc, in the next lecture on *"The Internals Web Clients and Servers"*.

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What is the WWW?

- The World Wide Web Consortium (W3C) describes the web as:
 - The World Wide Web (known as "WWW", "Web" or "W3") is the universe of network-accessible information, the embodiment of human knowledge.
 - The Web has a body of software, and a set of protocols and conventions.
- This description basically includes the web in anything W3C chooses to work on.

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What is the WWW? (cont'd)

- We can use the following as a "definition" for the World Wide Web:
 - The World Wide Web (WWW) is a global information system where
 - resources are addressed using URLs, or its subsequent extensions/follow-ons;
 - Communication occurs using HTTP or its subsequent extensions/follow-ons;

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What is the WWW? (cont'd)

3) Information is linked using hypertext based on HTML, or its subsequent extensions/follow-ons;

- Keep in mind that like all other definitions, not all people may agree with it.

Difference with “*the Internet*”

- Note the difference between how we have defined the WWW and the Internet.
 - The Internet is defined using TCP/IP which deals with how to transport packets. It doesn't mention specific protocols for applications.
 - The WWW defines protocols for applications.
 - So WWW can be considered an application of the Internet.
- Then again, we could conceivably implement the WWW over a non-TCP/IP network, which would make non-Internet based.