

CSCU9A2

Programming and User Interface Design

Web Design 1

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Lecture WWW 1/Slide 1

Overview of User Interfaces lectures

- In the Java lectures you will learn to write programs with GUIs. These lectures cover two other aspects of user interfaces:
 - **Web interfaces** (2 lectures, 5 practicals)
 - Web design basics (hypertext, HTML5, CSS)
 - Web technologies (JavaScript, cookies)
 - **Usability and accessibility** (5 lectures)
 - Design principles for websites and software
 - Usability of web pages and applications, usability testing
 - Accessibility of web pages and applications

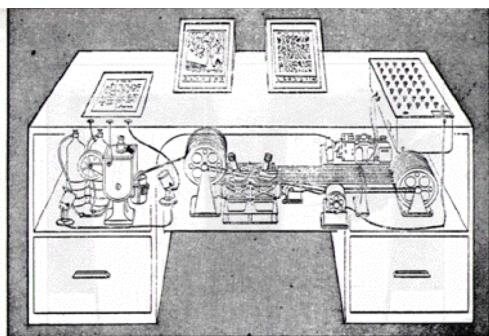
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Lecture WWW 1/Slide 2

A short history of hypertext

- The visionary: Vannevar Bush: "As We May Think", 1945: The MEMEX machine ("memory extender") - linked information, "trails", browsing



Memex in the form of a desk would instantly bring files and material on any subject to the operator's fingertips. Slanting translucent viewing screens magnify supermicrofilm filed by code numbers. At left is a mechanism which automatically photographs longhand notes, pictures and letters, then files them in the desk for future reference (LIFE 19(11), p. 123).

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Lecture WWW 1/Slide 3

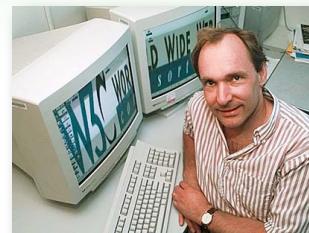
Important Dates and People

- Ted Nelson
 - "As We Will Think", 1972
 - Did what?



From his website: <http://ted.hyperland.com/>

- Tim Berners-Lee, 1989, proposed the World Wide Web
 - Based on the concept of hypertext
 - Why?



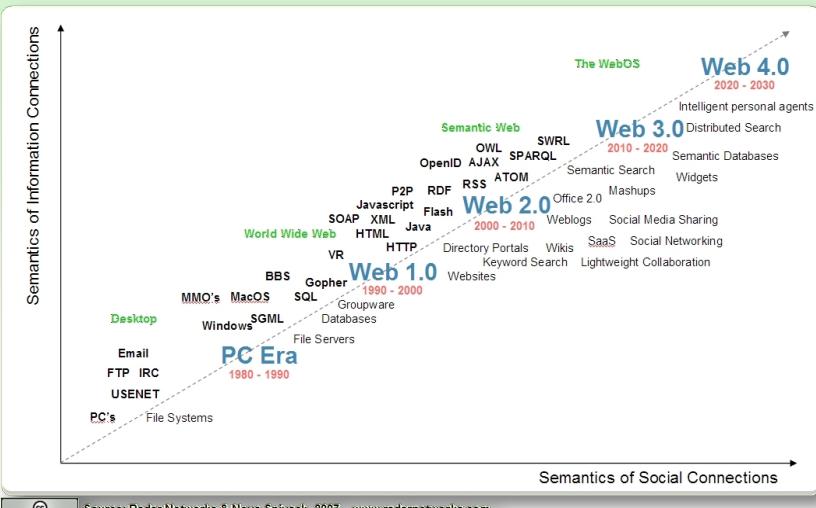
From The Telegraph, 26/6/2008

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Lecture WWW 1/Slide 4

The future (and the past)



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Lecture WWW 1/Slide 5

Information representation and hypertext

- Hypertext is normally non-linear
 - Simple linear text logically still hypertext, but only in a technical sense
- Why is non-linearity important?
- Hot text
 - (Letters, words, longer pieces of text, pictures, or parts of pictures)
- Different hypertext systems may differ in
 - How the user interacts with the system
 - whether many forms of link are supported
 - how the data is displayed

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Lecture WWW 1/Slide 6

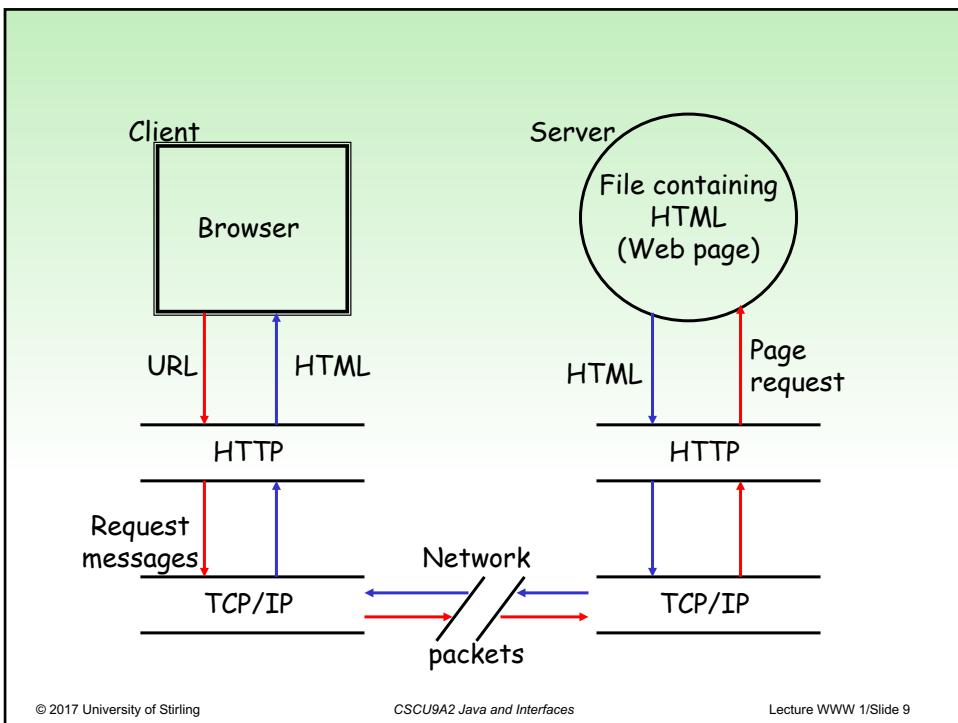
HTML and the WWW

- HTML stands for [Hyper Text Markup Language](#)
- This is the basic language used to define WWW pages. It specifies:
 - The text, images and other items to be displayed
 - *Links* to other documents or elements of documents
 - Some information about the intended appearance



How does it get to your machine?

- **HyperTextTransfer Protocol (HTTP)** is used to ensure correct transmission of:
 - The request for a page from browser (CLIENT) to Web SERVER(where the document is located)
 - The contents of the page (HTML) from Web SERVER back to the browser
 - So that the browser (CLIENT) receives a *copy* of the requested document



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Lecture WWW 1/Slide 9

HTML: a simple WWW page

```
<!DOCTYPE html>
<html>
<head>
  <title> A Simple HTML Page </title>
</head>
<body>
  <p> A short paragraph </p>
</body>
</html>
```

A screenshot of a web browser window titled "A Simple HTML Page". The address bar shows the URL: <http://192.168.1.71/~David/A2/simple.htm>. The page content area displays the text: "A short paragraph".

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Lecture WWW 1/Slide 10

Why does the WWW use markup?

- The output device is not known in advance
 - Large screen, small section of large screen, laptop screen, iPhone or advanced mobile phone?
 - The browser on the device should render it appropriately
- So WYSIWYG systems are inappropriate - why?

HTML itself

- Two parts: **head** and **body**
- HTML is **free-format**
- HTML markup consists of tag, end-tag pairs
 - A tag: <something>
 - An end-tag: </something> (note the /)

```
<html>
<head>
    <title> A Simple HTML Page </title>
</head>
<body>
    <p> A short paragraph </p>
</body>
</html>
```

Headers

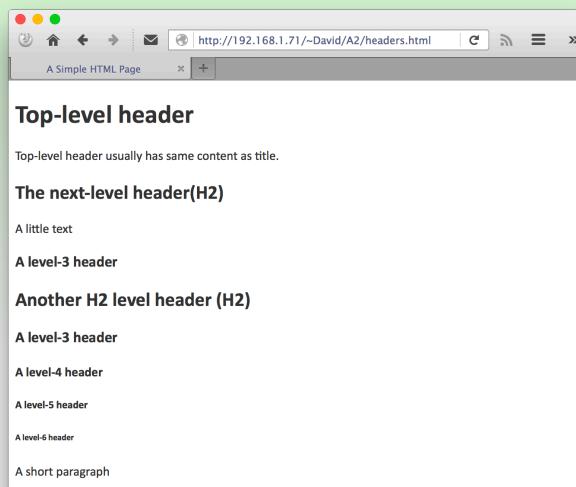
```
<!DOCTYPE html>
<html>
<head>
    <title> A Simple HTML Page </title>
</head>
<body>
    <h1> Top-level header </h1>
        <p> Top-level header usually
            has same content as title. </p>
    <h2> The next-level header(H2)
        </h2>
            <p> A little text </p>
    <h3> A level-3 header </h3>
    <h2> Another H2 level header (H2)
        </h2>
            <h3> A level-3 header </h3>
            <h4> A level-4 header </h4>
            <h5> A level-5 header </h5>
            <h6> A level-6 header </h6>
                <p> A short paragraph </p>
    </body>
</html>
```

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Lecture WWW 1/Slide 13

Headers



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Lecture WWW 1/Slide 14

Preparing HTML documents

- There are WYSIWYG editors for HTML are on the market.
 - Adobe Dreamweaver
 - Word can save its documents in HTML, for example
- We will use the simple text-editor TextPad
 - TextPad is better than NotePad, e.g., colour coded keywords

Syntax Highlighting

```
<HTML>
<HEAD>
<TITLE> 3141 Test 1: EHM </TITLE>
</HEAD>

<BODY BGCOLOR=aqua>
<UL TYPE=circle>
<LI> <A HREF="#my-details"> My details </A> </LI>
<LI> <A HREF="#my-marbles"> My marbles </A> </LI>
<LI> <A HREF="#my-table"> My table</A> </LI>
</UL>

<HR> <A NAME="my-details"> 3141 Test 1: EHM </A> </HR>
<UL TYPE=circle>
<LI> 123456 </LI>
<OL>
<LI> 3141 </LI>
<LI> 5711 </LI>
<LI> 8713 </LI>
</OL>
<LI> <A HREF="http://www.cs.stir.ac.uk/courses/3141"> 3141 </A> </LI>
</UL>
<HR SIZE=4 WIDTH="100%" NOSHADe>
<HR> Exercises <HR>
<P> <A NAME="my-marbles">
This is a red marble,
<IMG SRC="http://www.cs.stir.ac.uk/~lss/3141test/red-marble.gif" ALT="A red marble">
and this is a green marble,
<IMG SRC="http://www.cs.stir.ac.uk/~lss/3141test/green-marble.gif" ALT="A green marble">
and this is a blue marble,
<IMG SRC="http://www.cs.stir.ac.uk/~lss/3141test/blue-marble.gif" ALT="A blue marble">
</A>
<P>
<HR SIZE=6 WIDTH="50%" NOSHADe>

<A NAME="my-table">
<TABLE BORDER=2 CELLPADDING=4 ALIGN=center>
<TR>
<TH> Red Marble</TH>
<TH> Green Marble</TH>
<TH> Blue Marble</TH>
</TR>
<TR ALIGN=center>
<TD> <A HREF="http://www.cs.stir.ac.uk/~lss/3141test/red-marbletext.html">
<IMG SRC="http://www.cs.stir.ac.uk/~lss/3141test/red-marble.gif" ALT="A red marble">
</A>
</TD>
<TD> <A HREF="http://www.cs.stir.ac.uk/~lss/3141test/green-marbletext.html">
<IMG SRC="http://www.cs.stir.ac.uk/~lss/3141test/green-marble.gif" ALT="A green marble">
</A>
</TD>
```

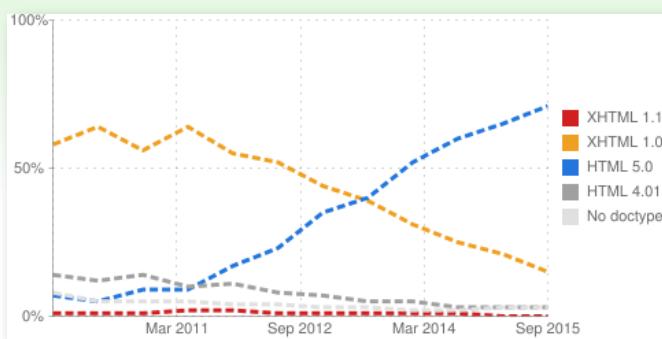
Make your life easy ...

- Remember that it is an *effect* you are trying to achieve - through the embedded markup tags...
- This produces exactly the same as the earlier HTML.....

```
<html><head><title> A Simple HTML Page </title>
</head><body><h1> Top-level header </h1><p> Top-level
header usually has same content as title. </p><h2> The
next-level header(H2) </h2><p> A little text </p>
<h3> A level-3 header </h3><h2> Another H2 level header
(H2) </h2><h3> A level-3 header </h3><h4> A level-4
header </h4><h5> A level-5 header </h5><h6> A level-6
header </h6><p> A short paragraph </p></body></html>
```

Versions of HTML

- HTML is an evolving language:
 - HTML standards are managed by the World Wide Web Consortium (W3C)
 - Until recently, HTML 4.01 and XHTML 1.0 were widely used
 - HTML5 is the current standard and is now the most popular



Percentage of sampled webpages using the DOCTYPE shown.

Source: <http://try.powermapper.com/Stats/HtmVersions>, 10/02/2016

HTML5

- The next step in the evolution of HTML.
 - Combines many features of other technologies:
 - HTML + CSS + Javascript
 - Blurs the distinction between internet application and desktop application



- See code examples and more at
 - <http://html5demos.com/>
 - <http://www.html5rocks.com/>
 - <http://craftymind.com/factory/html5video/CanvasVideo.html>
 - <http://diveintohtml5.info/>
 - The history section here is fascinating in a very geeky way.

Tolerance and Intolerance

- Most browsers are quite tolerant of “incorrect” HTML:
 - Missing </...> tags
 - Missing (/)html, (/)title and (/)body tags
- One result is that incorrect HTML can be displayed differently by different browsers
 - (Is this good or bad?)
- What about correct HTML?
 - There is an HTML validation service offered by the World Wide Web Consortium (W3C) at <http://validator.w3.org/>

Step 1: Make it look nice

- HTML should be about content.
- What do you know about the display here:

```
<h1>This is a Level 1 heading</h1>
<p>The first paragraph.</p>
<h3>This is a level 3 heading</h3>
<p>Some more text in a paragraph</p>
```
- CSS (Cascading Style Sheets)
 - provide ways of styling a page
 - separate the form from content
 - can be
 - inline
 - internal
 - external



Cascade
runs this
way

CSS Example

- An example rule:

```
body {  
    color: navy;  
    background-color: #ffffe0;  
    font-family: arial, sans-serif;  
    font-size: 75%;  
}
```

- General format:

```
selector {  
    property: argument(s);  
    another-property: argument(s);  
    a-third-property: argument(s);  
    fourth-property: argument(s);  
}
```

The CSS Zen Garden



<http://www.csszengarden.com/>

[Go there](#)

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Lecture WWW 1/Slide 23

Web Design Practicals

- A chance to create Hypertext documents using HTML
- Mainly writing HTML, CSS, JavaScript directly in a text editor
 - while viewing the result on a web browser
 - experiment for yourself – don't be scared to try things out

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Lecture WWW 1/Slide 24

End of WWW 1 Lecture

- **Additional resources:**

- Creating a website: the missing manual [[e-book available from library](#)]
 - Chapter 1: Preparing for the Web
 - Chapter 2: Creating your First Page
 - Chapter 7: Adding Graphics
 - Chapter 8: Linking Pages
- Explore HTML at: <http://www.w3schools.com/html/>
- Explore CSS at: <http://www.w3schools.com/css/>
- Explore HTML5 at: http://www.w3schools.com/html/html5_intro.asp