Web Technologies and Applications

Winter 2001

CMPUT 499: Dynamic Pages

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Publishing On the Web

- Writing HTML with a text editor allows to generate web pages. These pages are said static in the sense that they do not change.
- What if we want to personalize pages for particular visitors or events?
- What if we want to have actions on the page?
- What if the content of the page is from a database?
- Etc.

Course Content

• Introduction	• Databases & WWW
• Internet and WWW	• SGML / XML
• Protocols	• Managing servers
• HTML and beyond	• Search Engines
• Animation & WWW	• Web Mining
• Java Script	• CORBA
• **Dynamic Pages**	• Security Issues
• Perl	• Selected Topics
• Java Applets	• Projects

Objectives of Lecture 7

Dynamic Pages

- Introduce some technologies for dynamic insertion and modification of page content
- Discuss the automatic generation of page content
- See a concrete example of DHTML.

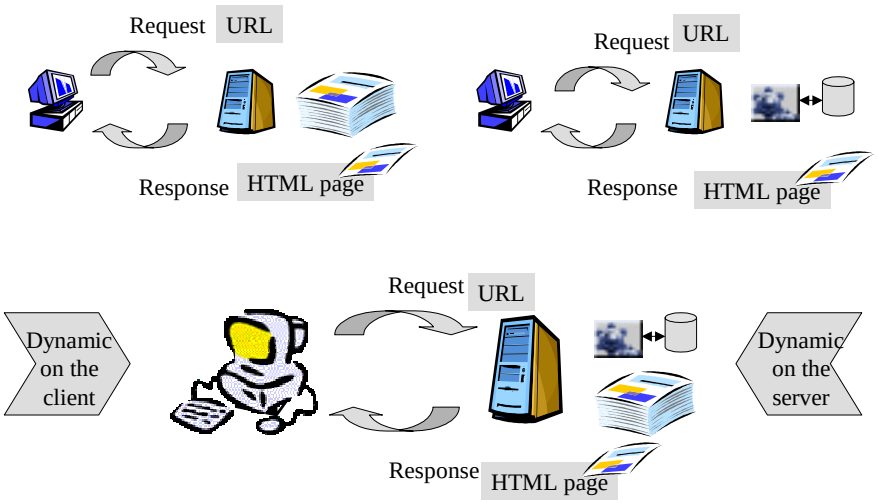
Outline of Lecture 7

- What are Dynamic Pages?
- Server-Side Includes (SSI)
- Conditional SSI (XSSI)
- Generating Pages on the fly
- Dynamic HTML
- DHTML Example (sliding menu)

Dynamic pages

- Dynamic pages are pages that change
- Dynamic pages are not static by definition
- The change can be the fact that the page is never the same when downloaded again
- The change can be that the content of the page is different for different visitors
- The change can be generated by interaction

Static versus Dynamic



Problems with cache

- Browsers cache web pages to avoid fetching them again.
- If a page is meant to be different each time it is visited we should not cache it.
- Force the browser to flush the cache by expiring the page or requesting that the browser does not cache the page
- Some type of pages are by default not cached

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Server Side Includes

- Server side Includes (SSI) are commands that are “included” in HTML documents and are executed on the “server side”
- The server parses the HTML document containing SSI and replaces the commands by the result of their execution
- A web server has to be configured to parse HTML documents and process SSI

Enabling Server-Side Includes

- Web server has to be instructed to parse HTML documents

```
addType text/html .shtml
addHandler sever-parsed .shtml
```

- Parsing HTML documents adds an overhead
- Only files that contain SSI need to be parsed
- Usually HTML files with SSI have .shtml as suffix
- What if a HTML document with SSI is not parsed?

Syntax for SSI

- Server-Side Includes are embedded inside the HTML document as HTML comments

  <!-- server-side include -->
- There are different recognized commands called SSI elements

  <!--#element attribute=value attribute=value … -->
- Values are usually enclosed between double quotes and there is often only one attribute

Allowed SSI Elements

- **config** controls aspects of parsing
  - Valid attributes are:
    - **errmsg** a message that is sent back to the client if an error occurs during parsing
    - **sizefmt** sets the format to be used when displaying the size of files (*bytes/abbrev*)
    - timefmt sets the format to print dates
- **echo** prints an include variable or environment variables
  - There are many available variables

Other SSI Elements

- **exec** executes a given shell command or cgi. The valid attributes are:
  - cgi the server executes the cgi which is given the QUERY_STRING variable
  - cmd the server executes the given string using /bin/sh
- **fsize** prints the size of specified file subject to sizefmt in config
  - file file relative to the current directory
  - virtual file relative to the current document

Other SSI Elements (con't)

- **flastmod** prints the last modification date of specified file. Same attributes as fsize
- **include** inserts the text of a specified document. (no absolute path and no ../)
  - file file relative to the current directory
  - virtual file relative to the current document

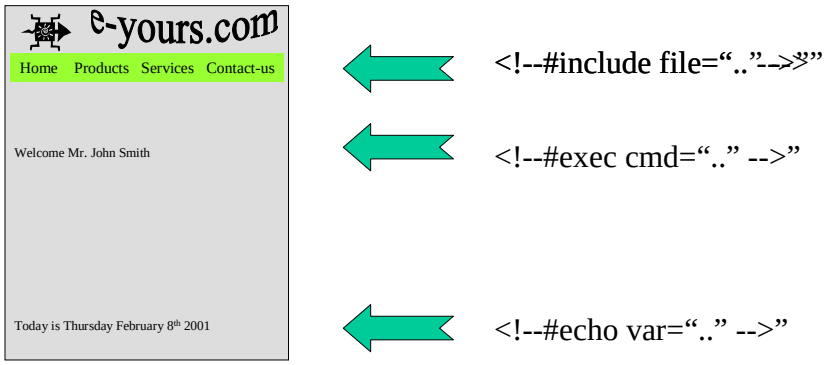
Other SSI Elements (con't)

- **printenv** prints all existing environment variables
- **set** sets values of variables
  - For example:
    - <!--#set var="foo" value="bar" -->
    - <!--#set var="who" value="${REMOTE_HOST}_${REQUEST_METHOD}" -->

Include Variables

- **DATE_GMT**
  - The current date in Greenwich Mean Time
- **DATE_LOCAL**
  - The current date in local time zone
- **DOCUMENT_NAME**
  - The file name of the document requested
- **DOCUMENT_URI**
  - The URL path of the document requested
- **LAST_MODIFICATION**
  - The last modification date of the document requested

Example for SSI



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Adding Code Logic to SSI

- Conditional SSI (XSSI) is a feature supported by Apache servers. IIS and Netscape servers may also support it.
- Allows to execute different commands depending upon environment variables
- There are 4 flow-control statements

```
<!--#if expr="expression" -->
<!--#elif expr="expression" -->
<!--#else -->
<!--#endif -->
```

Test Conditions

- The test condition could be only one of the following:
  - String (true if String not empty)
  - String1 = String2
  - String1 != String2
  - String1 < String2
  - String1 > String2
  - String1 <= String2
  - String1 >= String2

String could be a regular expression with unix egrep syntax /string/

Conjunction and disjunction are && and ||

Examples of XSSI

- Loading a different file depending on browser

```
<!--#if expr= "${HTTP_USER_AGENT} = /Mozilla/" -->
<!--#include file="netscapebar.html" -->
<!--#elif expr="${HTTP_USER_AGENT} = /MSIE/" -->
<!--#include file="iebar.html" -->
<!--#else -->
<!--#include file="defaultbar.html" -->
<!--#endif -->
```


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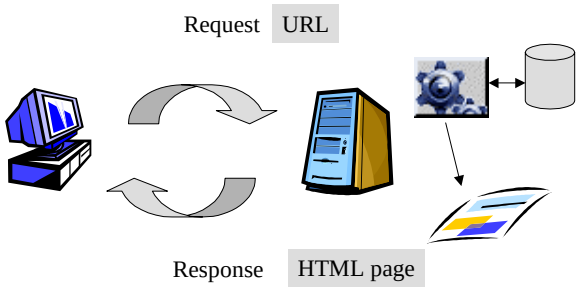
Dynamically Generated Pages



- Initially, the pages don't exist on the server
- Pages are created on the fly when requested

Creation of HTML

- CGIs are program that generate web pages on the fly (written in any language)
- There are many technologies for automatic generationg of HTML on the fly (asp, php, etc.)
- Used when accessing databases after user query
- Used after receiving data from HTML forms
- Progam needs to generate HTML as well as HTTP response header
- Search engine result pages are good examples

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Dynamic HTML

- Dynamic HTML is a combination of positioning in CSS and a scripting language in order to give life to a page, either creating animation or enhancing interaction.
- Dynamic HTML is a term used to describe HTML pages with dynamic content.
- There are three components in dynamic HTML:
  1. HTML
  2. Cascading Style Sheets (CSS)
  3. JavaScript
- The three components are glued together with **DOM**, the Document Object Model.

DHTML

DHTML, or Dynamic HTML, is a new web technology that enables elements inside your web page, such as text, font, color, size, etc., to be dynamic and change after the page is downloaded. See **Lecture 4** for Cascading Style Sheets and Positioning inside web pages.

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```
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">

<HTML>
<HEAD><TITLE>SLIDING MENU</TITLE>
<STYLE>
<!--
.link {
      color : blue;
      font-weight : bold;
      text-decoration : none;
}
A.link:hover {
      color : red;
}
A.link:active {
      color : blue;
      text-decoration : none;
      text-transform : uppercase;
}
//-->
</STYLE>
```



```
<style>
<!--

#slidemenubar, #slidemenubar2{
position:absolute;
left:-160px;
width:170px;
top:180px;
border:1.5px solid black;
background-color:lightyellow;
layer-background-color:lightyellow;
font:bold 16px Verdana;
line-height:20px;
}
-->
</style>
</HEAD>

<body bgcolor="336699" leftmargin="0">
```



```
<p><script language="JavaScript1.2">

if (document.all)
   document.write('<div id="slidemenubar2" style="left:-150"
         onMouseover="pull()" onMouseout="draw()">')
</script>
<layer id="slidemenubar" onMouseover="pull()" onMouseout="draw()">
<script language="JavaScript1.2">
  var sitems=new Array()
  var sitemlinks=new Array()

//extend or shorten this list
  sitems[0]="Home (CMPUT499)"
  sitems[1]="Syllabus"
  sitems[2]="Course Content"
  sitems[3]="Assignments"
  sitems[4]="Project"
  sitems[5]="Grades"
  sitems[6]="Glossary"
  sitems[7]="Student Resourses"
  sitems[8]="Chat"
  sitems[9]="Links"
  sitems[10]="Announcements"
  sitems[11]="Frequently AQ"
  sitems[12]="Your Instructor"
```

```
//These are the links pertaining to the above text.
  sitemlinks[0]="http:/www.cs.ualberta.ca/~zaiane/courses/cmput499/"
  sitemlinks[1]="http:/www.cs.ualberta.ca/~zaiane/courses/cmput499/outline.html"
  sitemlinks[2]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/materials.shtml"
  sitemlinks[3]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/activities.html"
  sitemlinks[4]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/activities.html"
  sitemlinks[5]="http://www.cs.ualberta.ca/~zaiane/courses/Tools/GradeBook/"
  sitemlinks[6]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/glossary.html"
  sitemlinks[7]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/sresource.shtml"
  sitemlinks[8]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/Uchat.html"
  sitemlinks[9]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/links.html"
  sitemlinks[10]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/news.html"
  sitemlinks[11]="http://www.cs.ualberta.ca/~zaiane/courses/cmput499/faq.html"
  sitemlinks[12]="http://www.cs.ualberta.ca/~zaiane/"

  for (i=0;i<=sitems.length-1;i++)
    document.write('<a href='+sitemlinks[i]+'>'+sitems[i]+'</a><br>')
</script>
</layer>
```



```
<script language="JavaScript1.2">
function regenerate(){
 window.location.reload()
}
function regenerate2(){
 if (document.layers)
  setTimeout("window.onresize=regenerate",400)
}
 window.onload=regenerate2
 if (document.all){
  document.write('</div>')
  thememu=document.all.slidemenubar2.style
  rightboundary=0
  leftboundary=-150
 } else{
  thememu=document.layers.slidemenubar
  rightboundary=150
  leftboundary=10
 }
```



```
function pull(){
 if (window.drawit)
  clearInterval(drawit)
 pullit=setInterval("pullengine()",50)
}

function draw(){
 clearInterval(pullit)
 drawit=setInterval("drawengine()",50)
}
```



```
function pullengine(){
 if (document.all&&thememu.pixelLeft<rightboundary)
  thememu.pixelLeft+=5
 else if(document.layers&&thememu.left<rightboundary)
  thememu.left+=5
 else if (window.pullit)
  clearInterval(pullit)
}

function drawengine(){
 if (document.all&&thememu.pixelLeft>leftboundary)
  thememu.pixelLeft-=5
 else if(document.layers&&thememu.left>leftboundary)
  thememu.left-=5
 else if (window.drawit)
  clearInterval(drawit)
}
</script></p>
```

```
<center><font face="arial" color="white">Script originally at:</font></center>
<center><font face="arial">
<a href="http://www.shortysworld.com" class="link">
  www.shortysworld.com</a>
</center><p>
<center><font face="arial" color="white">
   Just put your mouse over the cream border!</font>
</center>
</body>
</html>
```