

CS120 The Information Era

TOPICS: HTML Form Review,
More JavaScript, Introduction to
Unix and CGI-Scripts

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Javascript

- Before we talk about CGI scripts, let's play around a little with javascript
- The sites below provide some free online javascripts. Create some web pages that use different javascripts
- <http://www.javafire.com/>
- <http://www.24fun.com/>

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Review of Form Elements

- Last lecture we learned how to create the following elements in a form:
 - Simple forms
 - Multiple lines of input
 - Password forms
 - Multiple elements
 - Check boxes
 - Radio button
 - Pop up list
 - Reset values
- We'll learn how to process forms on the server a little later.

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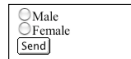
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Review of Forms: Example

- In order to process forms on the server we need to understand each piece of the syntax within the FORM tag

```
<FORM METHOD=GET ACTION="URL">  
<INPUT TYPE="radio" NAME="sex" VALUE="M">Male<BR>  
<INPUT TYPE="radio" NAME="sex" VALUE="W">Female<BR>  
<INPUT TYPE="submit" NAME="button" VALUE="Send">  
</FORM>
```

- Some important things to remember:
 - NAME is a variable that holds the VALUE corresponding to the user's choice
 - METHOD can either be GET or POST, depending on how we want to send the information to the server (we'll discuss these today)
 - URL is the URL of the CGI script that will process the form



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METHOD=GET vs. POST

- METHOD=GET
 - This is the default
 - Sends information to the server in the URL (after appending a ? to the form URL)
 - Visible to the user (and the world!)
 - Used primarily for RETRIEVING information
- METHOD=POST
 - Sends information to the server in a hidden environmental variable
 - Used primarily for PROCESSING information (including writing to databases, sending email, etc.)
- BOTH send the information using
 - NAME=VALUE&NAME=VALUE&
 - EXAMPLE: sex=M&use=C++&age=b

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Question and Example

- QUESTION:
 - Can you think of an instance in which you will probably always use METHOD=POST?
- TRY IT OUT: www.autotrader.com
 - Does this site use POST or GET?
 - Why is this the appropriate choice for this application?
 - What variables does it use to send the information?
- TRY IT OUT: www.google.com
 - Does this site use POST or GET?

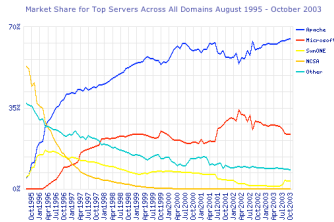
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Webservers

- Your webpage resides on an Apache webserver running a UNIX operating system (MAC OS X SERVER). Apache under UNIX the most common webserver configuration:



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Protocols

- In the beginning of the course, we discussed protocols, which are guidelines/rules for the way the CLIENT and SERVER communicate. Some protocols are:
 - FTP: Used by the program Fetch
 - HTTP: Used by Web Browsers (although most can also use the FTP protocol)
 - TELNET: Used by text based client programs (generally) to connect to most UNIX systems
 - SSH: A more secure TELNET protocol: Use by text based client programs to connect to the MAC OS X UNIX server

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SSH Client: Download MacSSH

- If you are on a Mac running OS X, follow these steps:
 - Open a terminal window
 - Type `ssh euler.math.pacificu.edu -l login` where login is your euler login name
- You can also connect to the server via a Windows machine, but you will need to use an SSH Windows client. One free client SSH Windows program is Putty and it is available at:
 - <http://www.chiark.greenend.org.uk/~sgtatham/putty/>

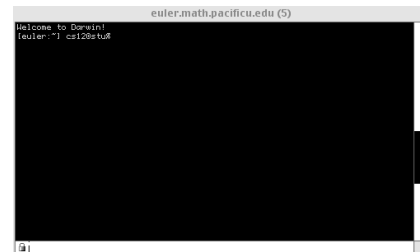
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MacSSH: Connecting to euler

- You should see a window similar to the following:



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UNIX Shells

- UNIX Shells:
 - Collection of commands (and the means to execute them) that are available upon login
 - Your default login shell is tcsh, but there are many other shells available including csh, sh, zsh, and bash
 - Commands in the tcsh shell that we may use include ls, cd, mkdir, rm, rmdir, chmod, cp, mv, and pwd. We'll explain the most important of these in the next few slides

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tcsh shell commands

- ls This lists the contents of the current directory
- ls -l This lists the content of the current directory
- cd This changes the directory to you home directory
- cd .. This changes the directory to the "parent" directory of your present directory.
 - For example, if the present directory is your "Sites" directory, the command `cd ..` will change the directory to your home directory
- pwd This gives the path on the server of your present directory

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tcsh shell commands: your turn

- Type ls -l and press return
- Type pwd and press return

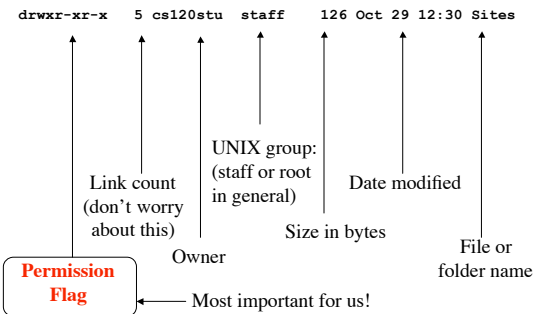
```
euler.math.pacificu.edu (6)
Welcome to Darwin!
euler:~1 cs128stu % ls -l
total 88
-rw-rw-rw- 1 cs128stu  staff  4450 Feb 27  2003 «PLEASE_READ».pdf
drwxr-xr-x 3 cs128stu  staff   204 Sep  2  2001 Desktop
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Documents
drwxr-xr-x 2 cs128stu  staff   204 Feb 27  2003 Library
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Movies
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Music
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Pictures
drwxr-xr-x 4 cs128stu  staff   204 Feb 27  2003 Public
drwxr-xr-x 3 cs128stu  staff   204 Oct 29 12:38 Sites
euler:~1 cs128stu % pwd
/Users/euler/~/Desktop/~/Desktop/~/Desktop/cs128stu
euler:~1 cs128stu %
```

tcsh shell commands: your turn

- NOW:
 - Type cd Sites and press return
 - Type ls -l and press return
 - Type pwd and press return
 - Type cd .. and press return to go back to your home directory
 - Type ls -l and press return

```
euler.math.pacificu.edu (6)
Welcome to Darwin!
euler:~1 cs128stu % cd Sites
euler:~/Sites % ls -l
total 8
drwxr-xr-x 2 euler  staff  204 Oct 29 12:38 cs128stu
-rw-rw-rw- 1 cs128stu  staff  204 Aug 21  2001 README
-rw-rw-rw- 1 cs128stu  staff  204 Sep  8  2003 README.txt
euler:~/Sites % cd ..
euler:~1 cs128stu % ls -l
total 88
-rw-rw-rw- 1 cs128stu  staff  4450 Feb 27  2003 «PLEASE_READ».pdf
drwxr-xr-x 3 cs128stu  staff   204 Sep  2  2001 Desktop
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Documents
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Library
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Movies
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Music
drwxr-xr-x 2 cs128stu  staff   204 Aug 21  2001 Pictures
drwxr-xr-x 4 cs128stu  staff   204 Feb 27  2003 Public
drwxr-xr-x 3 cs128stu  staff   204 Oct 29 12:38 Sites
euler:~1 cs128stu %
```

ls -l: One line in detail



Permission Flag:

- EXAMPLE PERMISSION FLAG: **drwxr-xr-x**
- The permission flags are read as follows (left to right)
 - 1 directory flag, 'd' if a directory, '-' if a normal file
 - 2,3,4 read, write, execute permission for User (Owner) of file
 - 5,6,7 read, write, execute permission for Group
 - 8,9,10 read, write, execute permission for Other
- The values and meanings of the flags are:
 - in any position means that flag is not set
 - r file is readable by owner, group or other
 - w file is writeable. On a directory, write access means you can add or delete files
 - x file is executable (only for programs and shell scripts - not useful for data files). Execute permission on a directory means you can list the files in that directory

Permissions: Your turn

- What are the permissions of files in your Sites directory? Do these permissions make sense?
- What are the permissions of files in your Documents directory? Do these permissions make sense?

Changing Permissions: chmod

- In order to execute CGI scripts, we need change the default permissions using the command **chmod**

- The syntax is

chmod num1num2num3 filename

where num1, num2, num3 are numbers that indicate the permissions of the owner, the group, and everyone else in accordance with:

- 1: execute only 5: read and execute
- 2: write only 6: read and write
- 3: write and execute 7: read, write, & execute
- 4: read only

chmod examples

- **chmod 555 filename** changes the permissions so that the owner, group, and world can only read and execute the file
- **chmod 777 filename** gives everyone read, write, and execute permissions
- **chmod 755 filename** gives the own read, write, and execute permission but the group and world only read and execute permissions
- NOTE: Our CGI scripts must have the permission tag set to 755

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A few more UNIX tips

- Command Completion: Hit <TAB> to automatically complete files names
 - From your home directory try **cd S** then <TAB>
- The up and down arrow keys can be used to view the commands previously entered
- The UNIX help pages are accessible for any command by typing **man** followed by the command (so for example, type `man ls`)

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Simple CGI script

- Change your directory to your Sites folder
- Type **pico helloperl.cgi**
- Enter the following text in the window exactly as it appears:

```
#!/usr/bin/perl
print "Content-type: text/html\n\n";
print "Hello Perl!";
```
- Write this file by pressing control and O, then enter, then exit by pressing control and X
- Change the permissions on this file to 755 (chmod)
- Type the following URL into a browser
 - <http://euler.math.pacificu.edu/cgi-bin/helloperl.cgi>

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