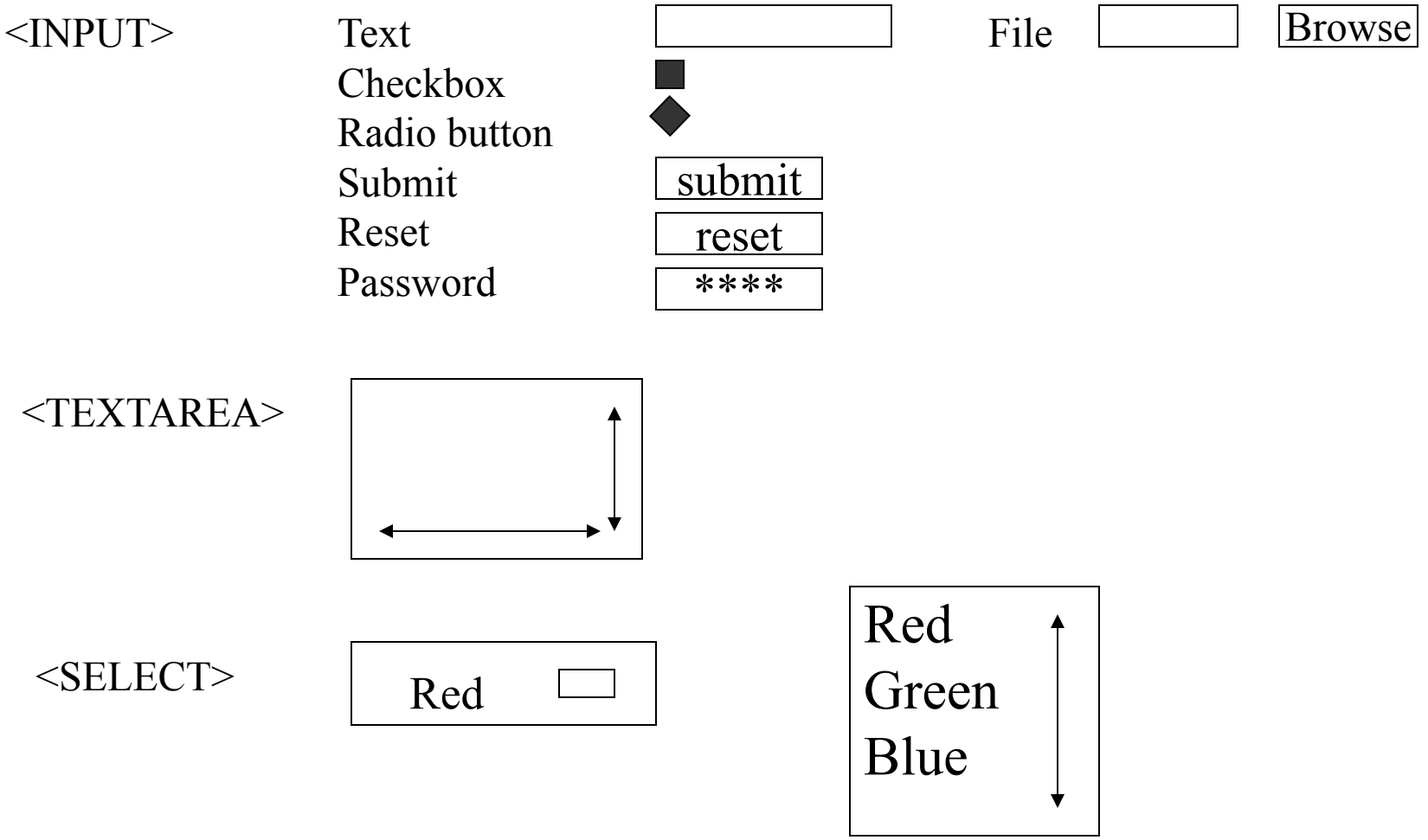
Lecture

Forms and Common Gateway Interface Mechanism

Forms

- Used to create a set of pages that contain fields in which the viewer can select and supply information
  - Introduced very early in HTML 2.0
  - Allows WWW users to perform data entry
  - Permit direct interaction with customers for inquiries, registration, sales of products, and services
  - To create a capability requires two steps:
    - Use HTML form elements to create the pages that contain the form
    - Write a server-side script to process form data; this program must be placed so the WWW server can execute it

The Original Set of User Interface Elements



FORM Element and Some Attributes

- **Syntax <FORM>...</FORM>**
- **Attribute Specifications**
  - ACTION=*URI* (form handler)
  - METHOD=[*get* | post] (HTTP method for submitting form)
    - GET is the default; form contents are appended to the URL
    - POST causes the fill-out form contents to be sent in a data body as standard input
  - ENCTYPE=*ContentType* (content type to submit form as)
    - **Defaults** to application/x-www-urlencoded which returns name/value pairs, separated by &, spaces replaced by + and reserved characters (like #) replaced by %HH, H a hex digit
  - ACCEPT-CHARSET=*Charsets* (supported character encodings)
  - TARGET=*FrameTarget* (frame to render form result in, in HTML4)
    (a browsing context name or keyword, in HTML5, such as _self, _blank, _parent, _top, iframename)
  - ONSUBMIT=*Script* (form was submitted)
  - ONRESET=*Script* (form was reset)

https://developer.mozilla.org/en-US/docs/Web/HTML/Element/form

<INPUT> Tag

- Used inside <FORM> tag to specify a data-entry object
- Has 19 attributes, here are a few
  - TYPE: User input type (default is TEXT)
  - NAME: Name of data entry object whose value the user will supply
  - VALUE: Required for radio and checkboxes
  - CHECKED: For radio buttons and checkboxes
  - SIZE: Specific to each type of field
  - MAXLENGTH: Limit on accepted characters
  - SRC: Image file used as a graphical submit button when TYPE=IMAGE
  - DISABLED unavailable in this context
  - READONLY for text and passwords
- **HTML5 adds several new attributes for validation**
- E.g. see http://www.w3schools.com/tags/tag_input.asp

<INPUT> Element, Type Options(cont'd)

- TYPE:[CHECKBOX|FILE|HIDDEN|IMAGE|PASSWORD|RADIO|RESET|SUBMIT|TEXT]

[HTML5 adds 13 new input types. See later slides]

- CHECKBOX: A single value, on/off; each generates name/value pair

```
<INPUT TYPE=CHECKBOX CHECKED NAME="MARRIED"
VALUE="yes">
```

- FILE: Users attach a file to the form contents; a text field holds the file name and a button permits browsing

```
<INPUT TYPE=FILE NAME="fname">
```

- HIDDEN: The field is not rendered, so servers can maintain state information

```
<INPUT TYPE=HIDDEN NAME="BANKACCT" VALUE="A057-23-
789">
```

<INPUT> Element, Type Options(cont'd)

- RESET: Defines a button that users click to reset fields to their initial state

```
<INPUT TYPE=RESET VALUE="CLEAR">
```

- SUBMIT: Defines a button that users click to submit the form's contents to the server

```
<INPUT TYPE=SUBMIT VALUE="submit data">
```

- TEXT: An input field of a single line where users can enter data

```
<INPUT TYPE=TEXT SIZE=20 NAME="lastname"
VALUE="type your last name">
```

<INPUT> Element, Type Options(cont'd)

- **IMAGE:** Used for graphical submit buttons

```
<INPUT TYPE=IMAGE SRC="banner.gif“ VALUE="gohome">
```

- **PASSWORD:** Just like TYPE=TEXT, but the input is echoed with *

```
<INPUT TYPE=PASSWORD SIZE=10 NAME="pw">
```

- **RADIO:** Used for attributes that take a single value from a set of alternatives; all buttons have same name and explicit value

```
<INPUT TYPE=RADIO NAME="AGE" VALUE="0-20">
<INPUT TYPE=RADIO NAME="AGE" VALUE="21-50">
<INPUT TYPE=RADIO NAME="AGE" VALUE="51-100"
  CHECKED>
```

<INPUT> Element, Type Options

- TYPE:[COLOR|DATE|DATETIME|DATETIME-LOCAL|EMAIL|MONTH|NUMBER|RANGE|SEARCH|TEL|TIME|URL|WEEK]
  - **COLOR:** Used for input fields that should contain a color

    Select color: <INPUT TYPE="COLOR" name=”favcolor">
  - **DATE:** Allows the user to select a date

    Birthday: <INPUT TYPE="DATE" NAME="bday">
  - **DATETIME:** Allows the user to select a date and time (with time zone)

    Birthday: <INPUT TYPE="DATETIME" NAME="BDAYTIME”
  - **EMAIL:** Allows the user to enter an e-mail address

    E-Mail: <INPUT TYPE="EMAIL" NAME="email”
  - **MONTH:** Allows the user to select month/year

    Birthday (M/Y): <INPUT TYPE="MONTH" NAME="bdaymonth"

<INPUT> Element, Type Options (cont'd)

- **NUMBER:** Used to enter a numeric value

```
Quantity (1-5): <INPUT TYPE="NUMBER"
name="quantity" min="1" max="5">
```

- **RANGE:** Used to enter a value from a range of numbers

```
<INPUT TYPE="RANGE" NAME="points">
```

- **SEARCH:** Used for search fields (behaves like regular TEXT)

```
Search Google: <INPUT TYPE="SEARCH"
NAME="GOOGLESEARCH”>
```

- **TEL:** Allows the user to enter a telephone num.

```
Telephone: <INPUT TYPE="TEL" NAME="ustel"
```

- **TIME:** Allows the user to select a time

```
Time: <INPUT TYPE="TIME" NAME="ustime"
```

<INPUT> Element, Type Options (cont'd)

- **URL:** Used to enter a URL address

```
Add Homepage: <INPUT TYPE="URL" name="homepage"
```

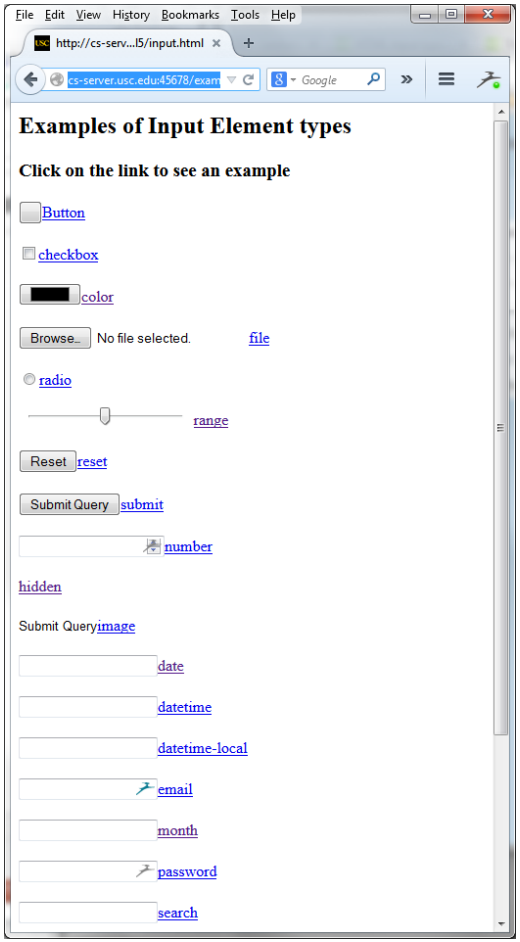
- **WEEK:** Used to select a week and year

```
Select a week: <INPUT TYPE="WEEK" NAME="week_YR">
```

- **DATETIME-LOCAL:** Used selct date and time(no time zone)

```
Birthday: <INPUT TYPE="DATETIME-LOCAL"
NAME="bday">
```

<INPUT> Element, Type Options (cont'd)



Examples of all of the <input> element types, including the most recent in HTML5
provided by w3schools

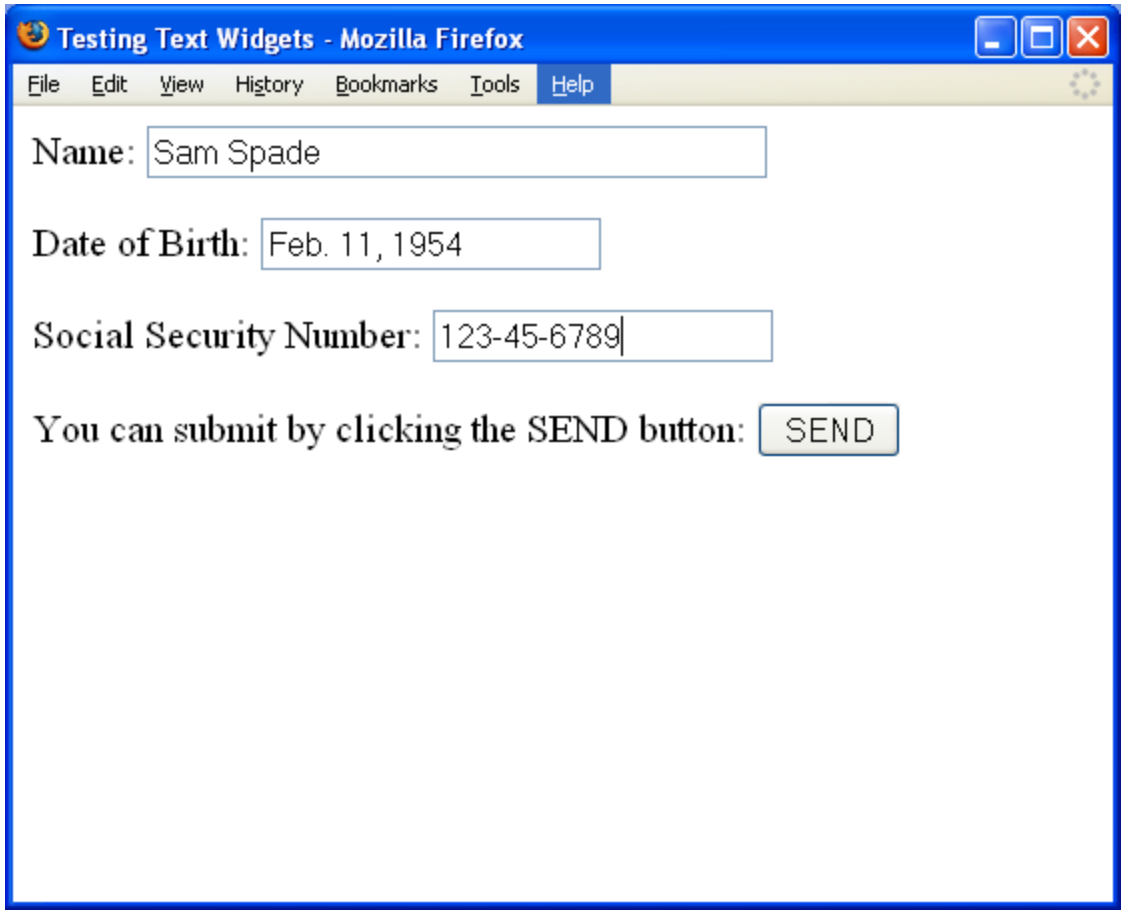
http://cs-server.usc.edu:45678/examples/html5/input.html

Example of <FORM> With Text Widgets

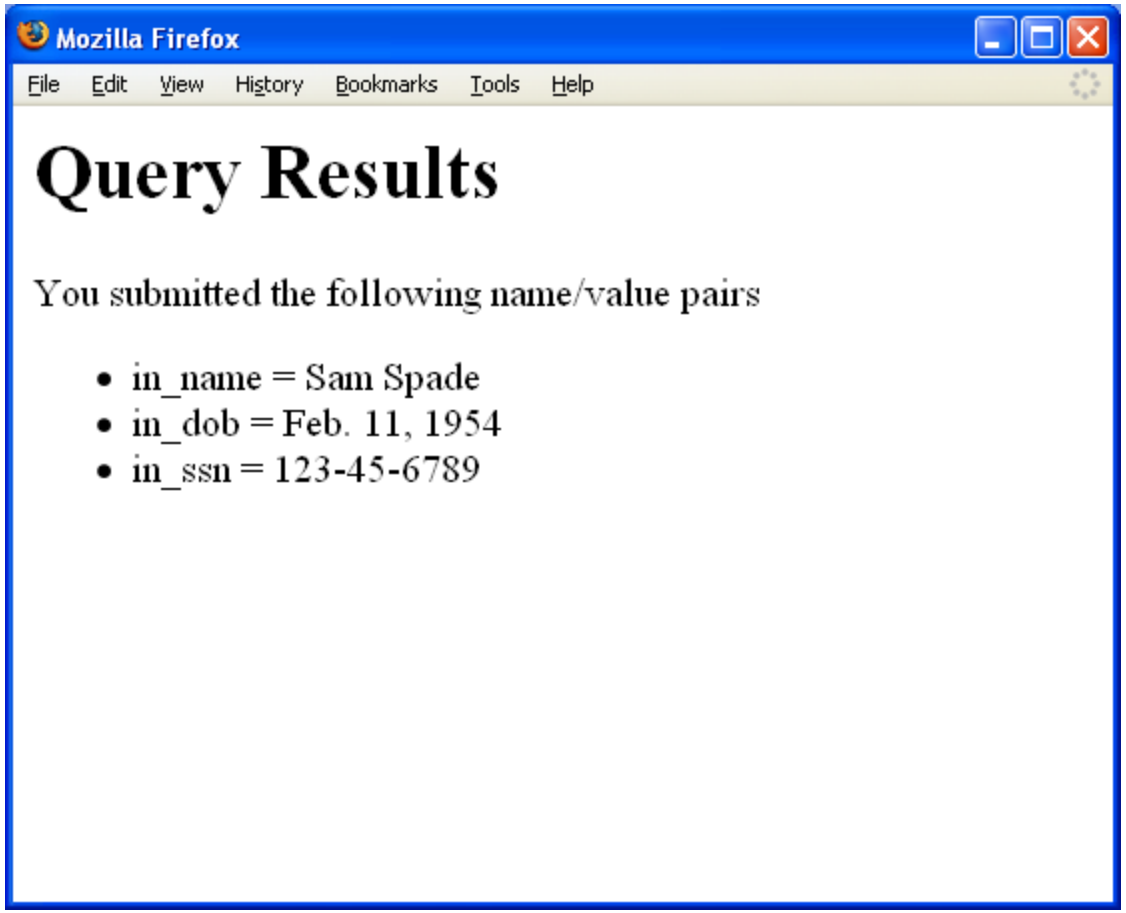
```
<HTML><HEAD><TITLE>Testing Text Widgets</TITLE>
  </HEAD>
<BODY>
<FORM METHOD="POST"
ACTION="/cgi-bin/post-query">
Name: <INPUT NAME="in_name" TYPE="text" SIZE=40><P>
Date of Birth: <INPUT TYPE="text" NAME="in_dob"><P>
Social Security Number: <INPUT TYPE="text"
  NAME="in_ssn"><P>
You can submit by clicking the SEND button:
  <INPUT TYPE="submit" VALUE="SEND">
</FORM></BODY></HTML>
```

*Note:**post-query** is a standard Apache CGI program distributed by web servers and used to check that form elements are being properly sent to the server*

Browser Output of Text Widgets Example



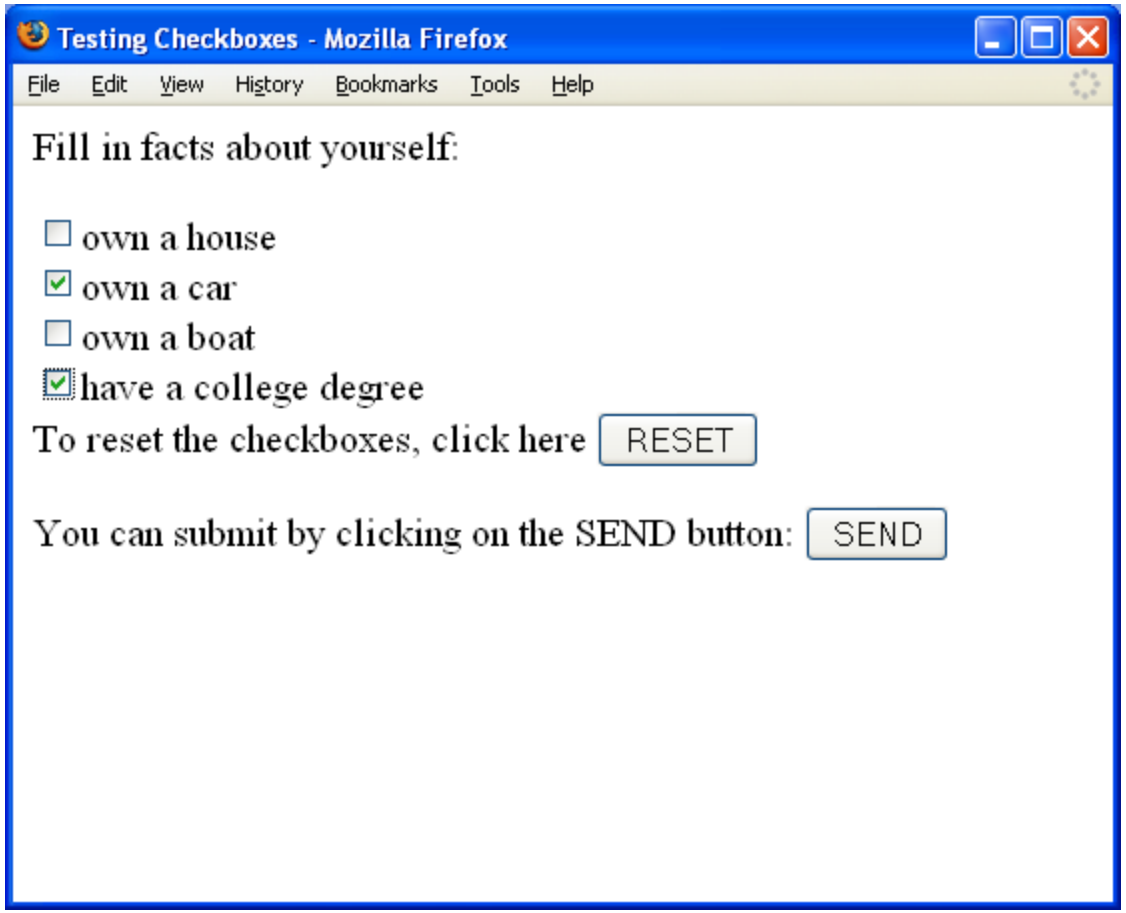
Query Results for Text Widget Example



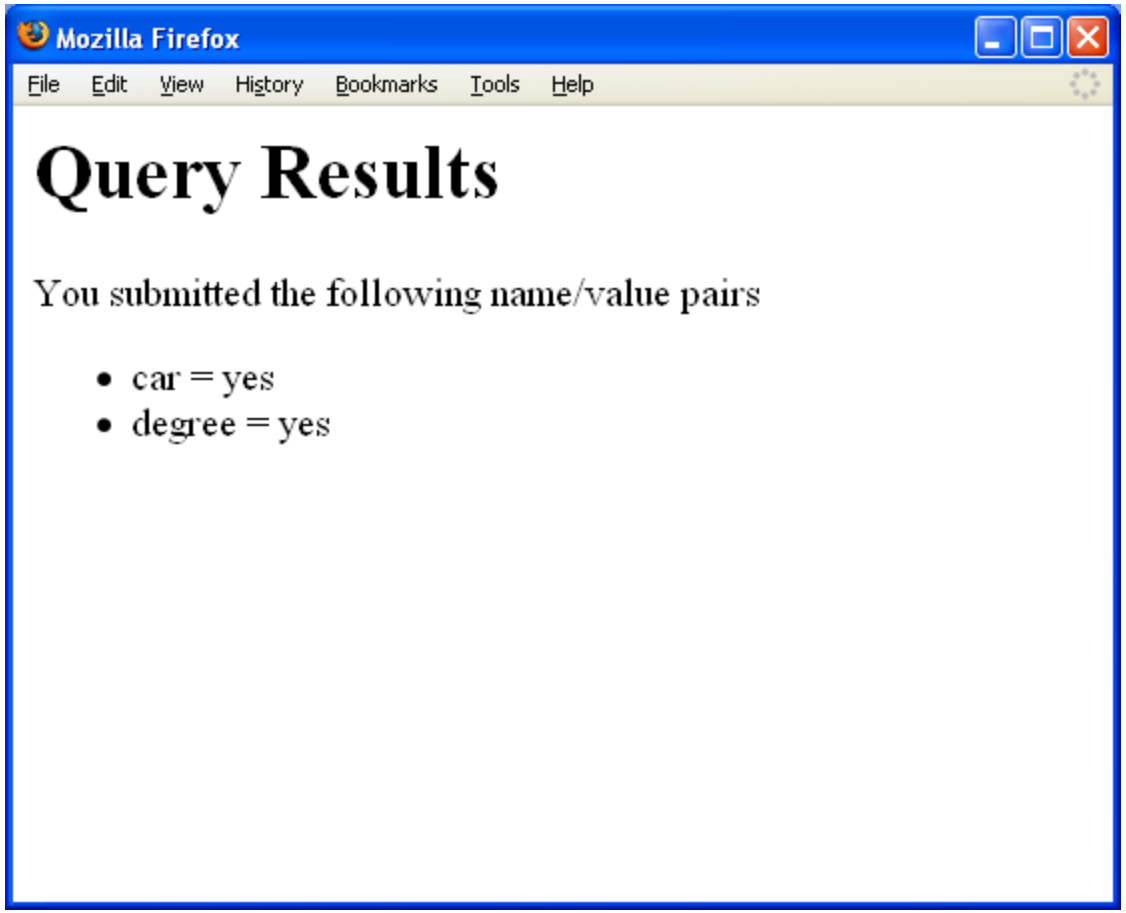
Example of <FORM> With Checkboxes

```
<HTML><HEAD><TITLE>Testing Checkboxes</TITLE></HEAD>
<BODY>
<FORM METHOD="POST" ACTION="/cgi-bin/post-query">
Fill in facts about yourself:<P>
<INPUT TYPE="checkbox" NAME="house" VALUE="yes">own a
house<BR>
<INPUT TYPE="checkbox" NAME="car" VALUE="yes">own a
car<BR>
<INPUT TYPE="checkbox" NAME="boat" VALUE="yes">own a
boat<BR>
<INPUT TYPE="checkbox" NAME="degree" VALUE="yes">have a
college degree<BR>
To reset the checkboxes, click here
<INPUT TYPE=reset VALUE="RESET"><P>
You can submit by clicking on the SEND button:
<INPUT TYPE=submit VALUE="SEND"><P>
</FORM></BODY></HTML>
```

Browser Output of Checkbox Example



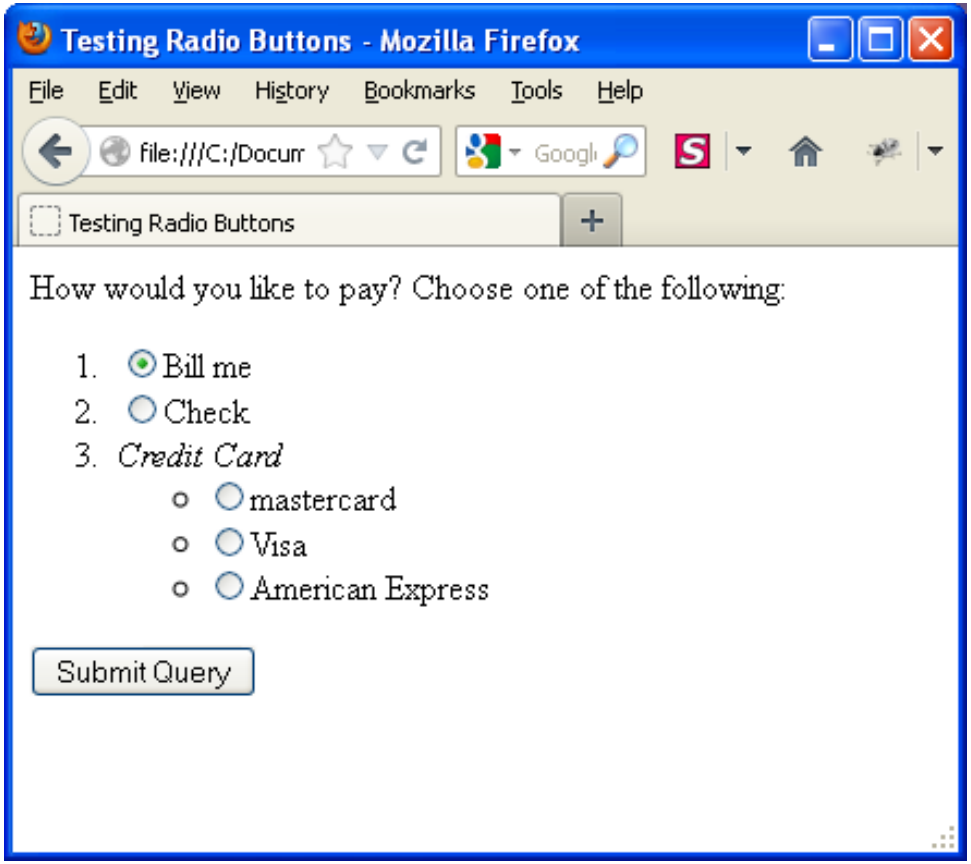
Query Results of Checkbox Example



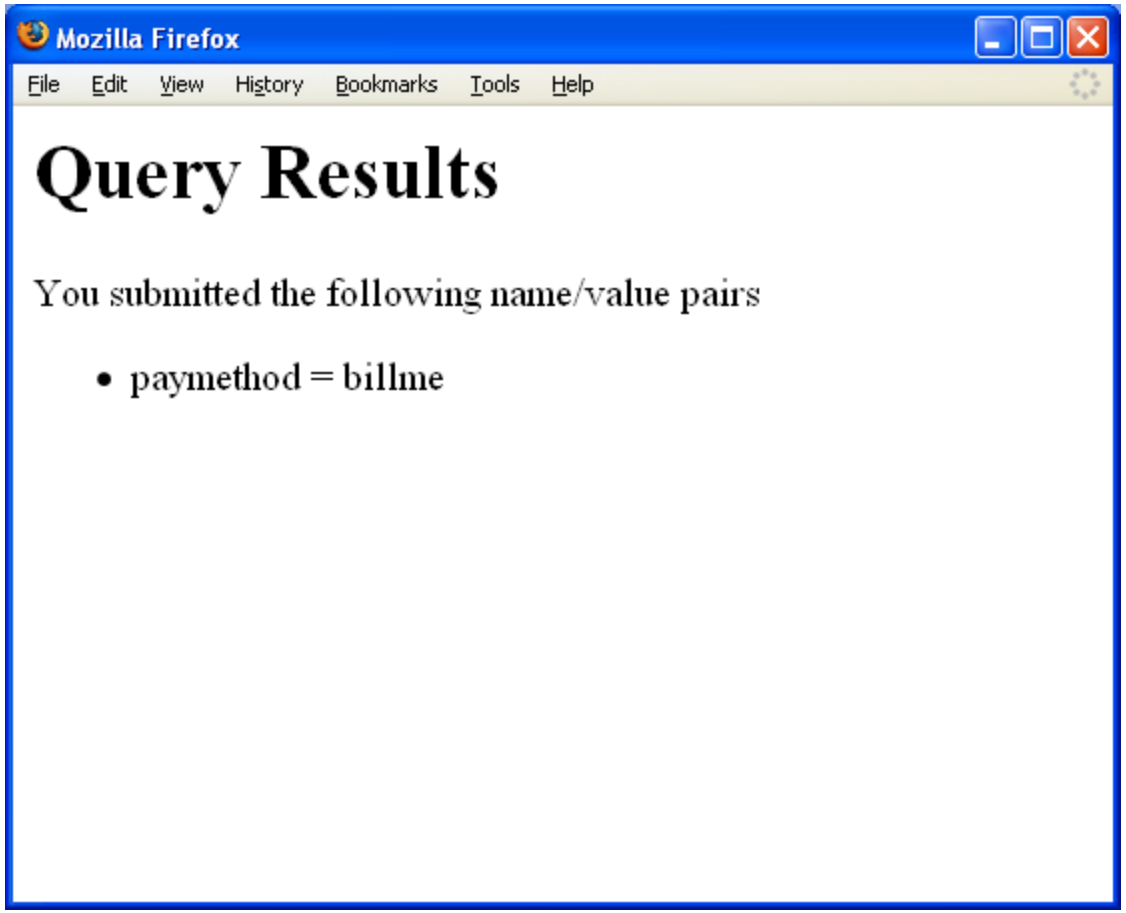
Example of <FORM> With Radio Buttons

```
<HTML><HEAD><TITLE>Testing Radio Buttons</TITLE></HEAD>
<BODY><FORM METHOD="POST" ACTION="/cgi-bin/post-query">
How would you like to pay? Choose one of the following:<P>
<OL><LI><INPUT TYPE="radio" Name="paymethod" VALUE="billme"
CHECKED>Bill me<BR>
<LI><INPUT TYPE="radio" Name="paymethod"
VALUE="check">Check<BR>
<LI><I> Credit Card </I>
<UL><LI><INPUT TYPE="radio" Name="paymethod"
VALUE="mastercard">mastercard<BR>
<LI><INPUT TYPE="radio" Name="paymethod"
VALUE="visa">Visa<BR>
<LI><INPUT TYPE="radio" Name="paymethod"
VALUE="amer">American Express<BR>
</UL></OL><INPUT TYPE="submit" VALUE="Submit Query">
</FORM></BODY></HTML>
```

Browser Output of Radio Buttons



Query Results for Radio Buttons Example



<TEXTAREA> Tag

- specifies a large rectangular text-entry object with multi-line input and scroll bars
- Attributes:

  NAME=name specifies a name for the data entry object to be sent to the server-side script

  COLS=num

  - Width (in characters) of a text-entry region on the screen
  - If user types more than COLS characters, field is scrolled

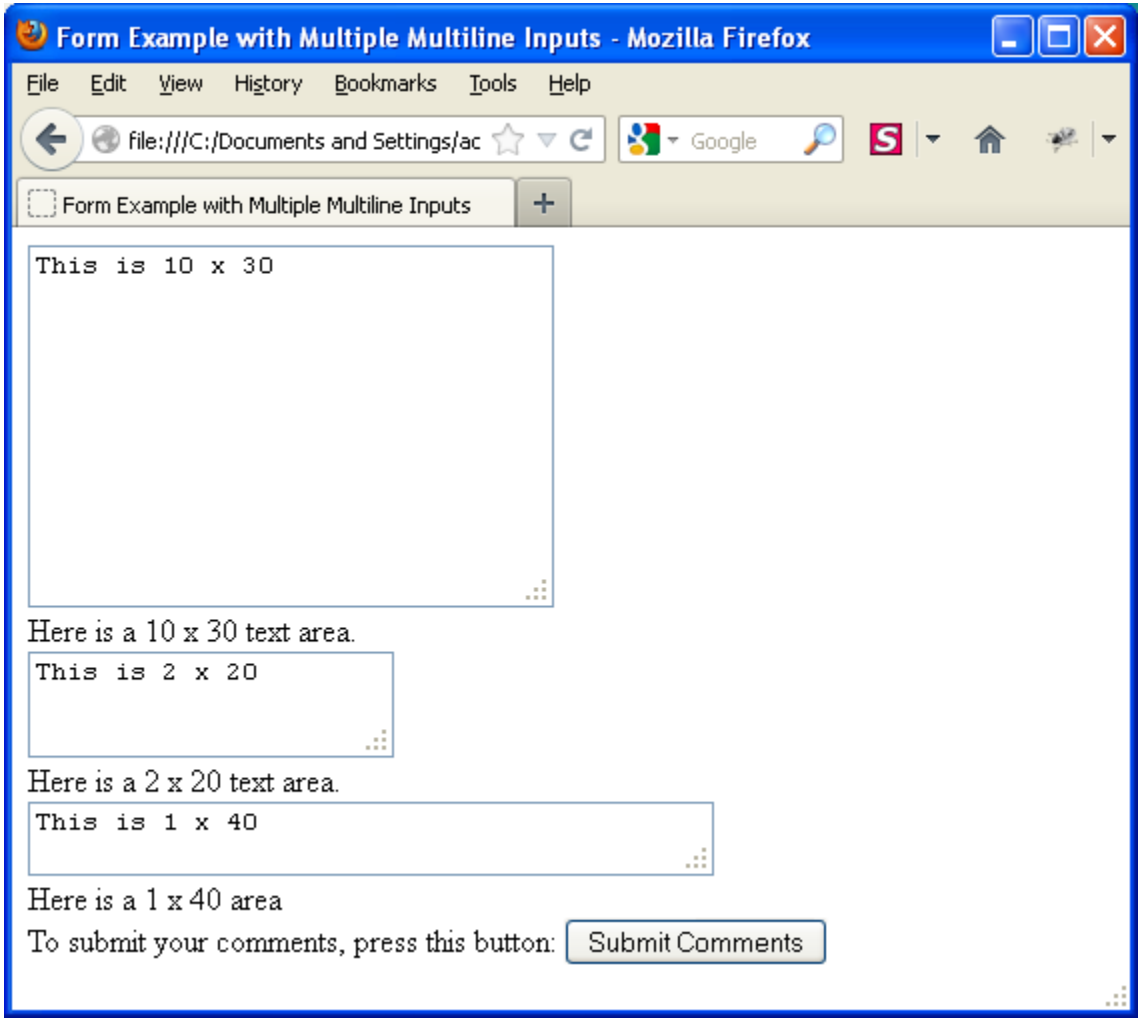
  ROWS=num

  - Height (in characters) of a text-entry region on the screen
  - If user types more than ROWS lines, field is scrolled

Example of Multiline Input Areas

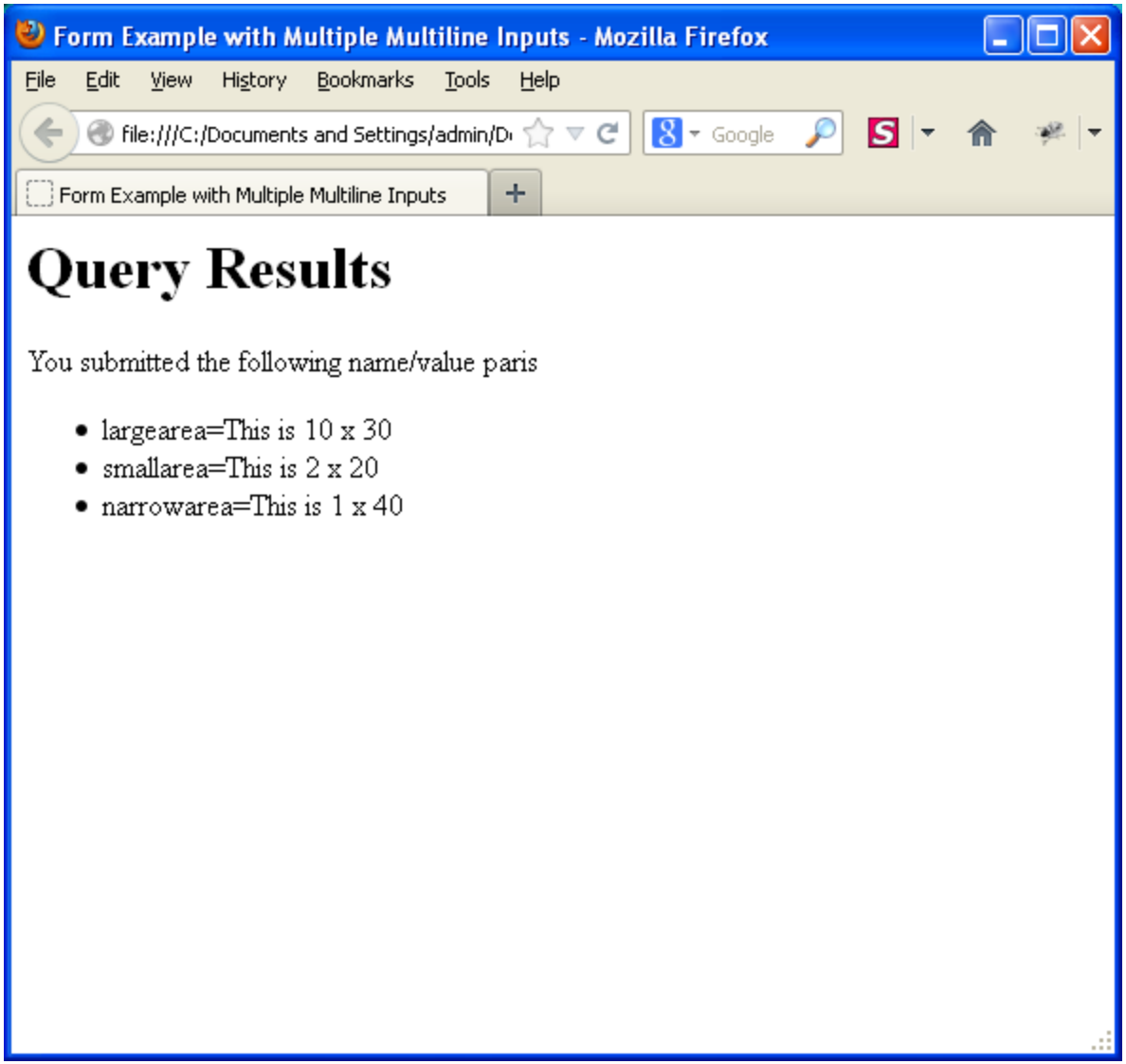
```
<HTML><HEAD><TITLE>Form Example with Multiple
Multiline Inputs</TITLE></HEAD> <body>
<form method="POST" action="/cgi-bin/postquery">
<TEXTAREA NAME="largearea" ROWS=10 COLS=30>This is
10 x 30</TEXTAREA><BR>
Here is a 10 x 30 text area.<BR>
<TEXTAREA NAME="smallarea" ROWS=2 COLS=20>This is 2
x 20</TEXTAREA><BR>
Here is a 2 x 20 text area.<BR>
<TEXTAREA NAME="narrowarea" ROWS=1 COLS=40>This is 1
x 40</TEXTAREA><BR>
Here is a 1 x 40 area <BR>
To submit your comments, press this button:
<INPUT TYPE="submit" VALUE="Submit Comments"><BR>
</FORM></BODY></HTML>
```

Browser Output of Multiline Input Areas



Initial Screen

Query Results of Textarea Example



<SELECT> Tag

- Used inside the <FORM> element to specify a selection list object (a list of items or a pop-down menu that the user can select from)
- Attributes:
  - NAME=name
    - Specifies a name for the data entry object to be passed to the server-side script
  - SIZE=num
    - Number of lines of the list to display at a time
    - If SIZE is 1 or unspecified, browser will display as a drop-down list box
    - If SIZE is greater than 1, browser will display as a scrollable list with only SIZE options visible at a time

<SELECT> Tag Attributes

- MULTIPLE
  - Specifies that multiple list items may be selected (whereas normally only 1 item can be selected)
  - All selected values are sent to server-side script as separate name/value pairs
- HTML5 adds more attributes:
  - **AUTOFOCUS:** drop-down list should automatically get focus
  - **FORM:** defines one of more forms the select fields belongs to
  - **REQUIRED:** user is required to select a value before submitting the form

<OPTION> Tag

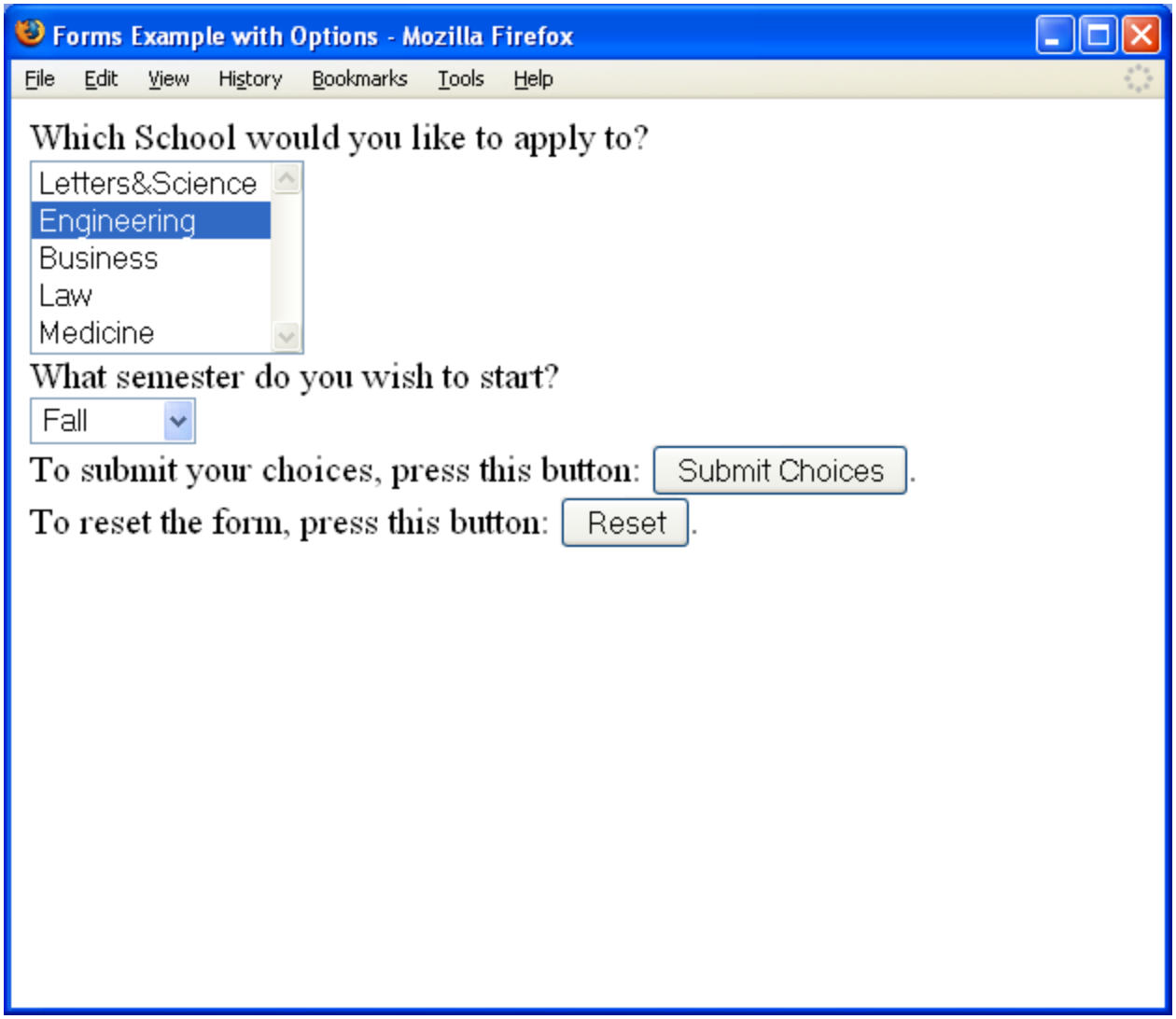
- Used inside the <SELECT> tag to specify the start of a new menu item in the selection list
- Syntax as follows:

  <OPTION attributes> Text
- Attributes:
  - SELECTED
    - Menu item is pre-selected in the list
  - VALUE="text"
    - Text specifies the value to be sent to the script if the option is selected
    - By default, the text following the OPTION element is sent
  - DISABLED
    - Specifies a "grayed", non-selectable item
  - **HTML5 adds the REQUIRED attribute**

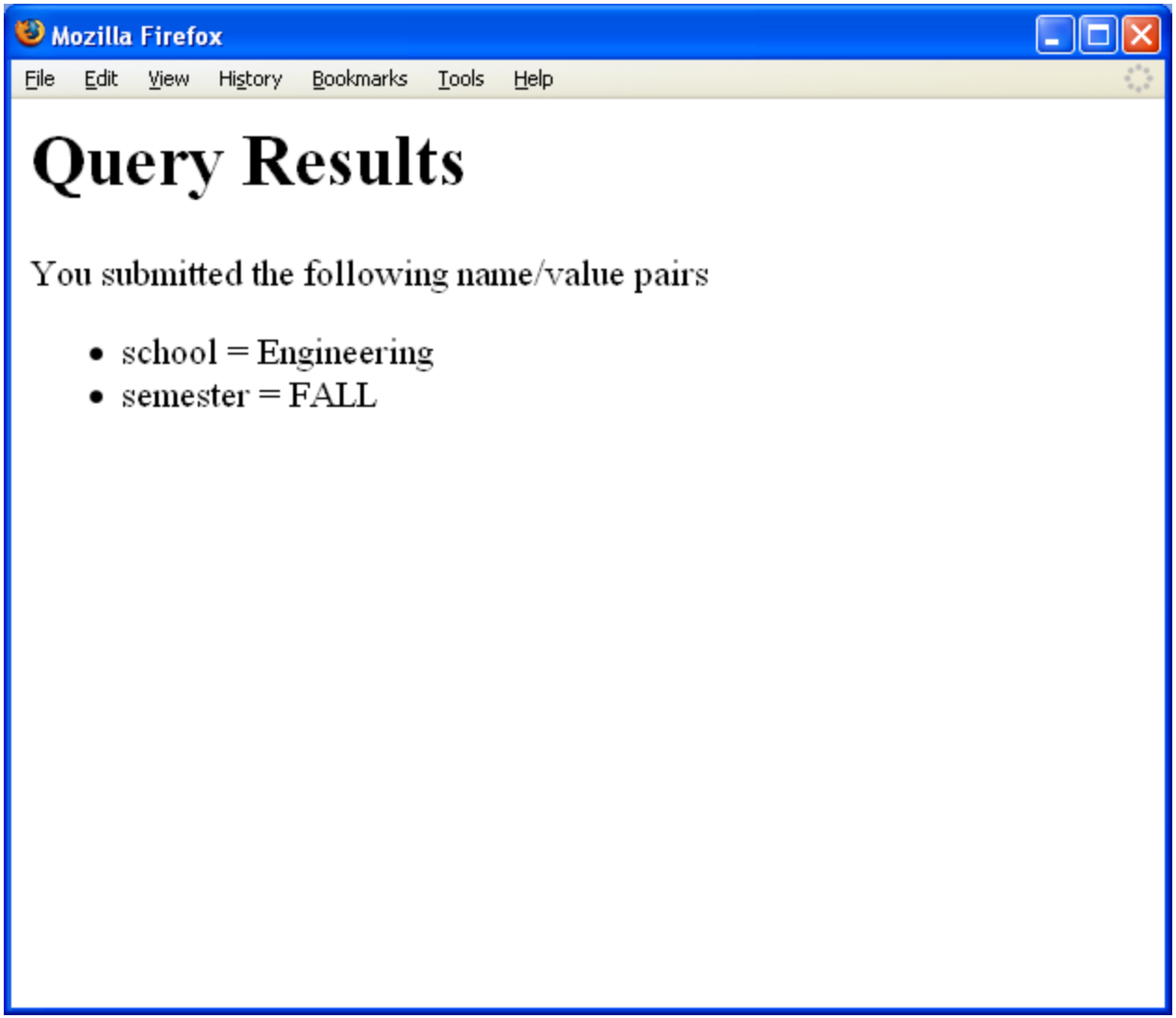
Example of <SELECT>, <OPTION> Tags

```
<HTML><HEAD><TITLE>Forms Example with
Options</TITLE></HEAD><BODY>
<FORM METHOD="POST“ ACTION="/cgi-bin/post-query">
Which School would you like to apply to? <BR>
<SELECT NAME="school" SIZE=5>
  <OPTION> Letters&Science</OPTION>
  <OPTION SELECTED> Engineering</OPTION>
  <OPTION> Business</OPTION>
<OPTION>Law</OPTION><OPTION> Medicine</OPTION></SELECT><BR>
What semester do you wish to start? <BR>
<SELECT NAME="semester">
  <OPTION SELECTED> Fall</OPTION>
  <OPTION> Spring</OPTION>
  <OPTION>Summer</OPTION></SELECT><BR>
To submit your choices, press this button: <INPUT
TYPE="submit" VALUE="Submit Choices">. <BR >
To reset the form, press this button: <INPUT TYPE="reset"
VALUE="Reset">.
</FORM></BODY></HTML>
```

Browser Output of <SELECT>, <OPTION> Example



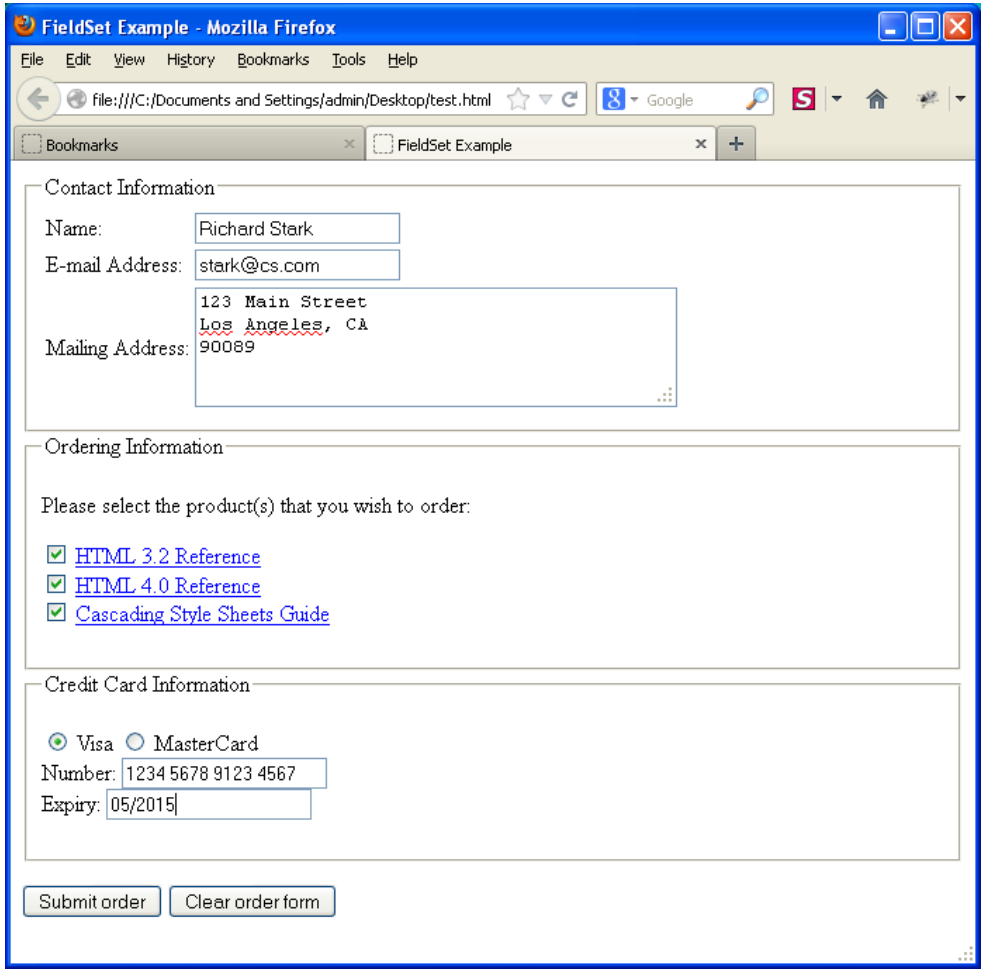
Query Results for <SELECT> Example



FIELDSET – Form Control Group

- The **FIELDSET** element defines a *form control group*.
  - By grouping related form controls, authors can divide a form into smaller, more manageable parts, improving the usability problem that can strike when confronting users with too many form controls.
  - The grouping provided by **FIELDSET** also helps the accessibility of forms to those using aural browsers by allowing these users to more easily orient themselves when filling in a large form.
- The content of a **FIELDSET** element must begin with a **LEGEND** to provide a caption for the group of controls. Following the **LEGEND**, **FIELDSET** may contain any HTML element, including another **FIELDSET**.

Browser Output
3 Fieldsets Grouping form elements



Run through Tab order:
Name
E-mail
Mailing Address
HTML 3.2
HTML 4.0
.
.
Etc

To test ACCESSKEY in Chrome use
ALT + ACCESSKEY (I, O, C)
To test ACCESSKEY in Firefox use
ALT + SHIFT + ACCESSKEY

http://cs-server.usc.edu:45678/examples/html5/fieldsettest.html

Fieldset Example (see next slide)

```
<FORM METHOD=post ACTION="/cgi-bin/order.cgi">

<FIELDSET> <LEGEND ACCESSKEY=I>Contact Information</LEGEND>
<TABLE> <TR> <TD> <LABEL FOR=name ACCESSKEY=N>Name:</LABEL> </TD>
            <TD> <INPUT TYPE=text NAME=name ID=name> </TD> </TR>
<TR> <TD> <LABEL FOR=email ACCESSKEY=E>E-mail Address:</LABEL> </TD>
<TD> <INPUT TYPE=text NAME=email ID=email> </TD> </TR>
<TR> <TD> <LABEL FOR=addr ACCESSKEY=A>Mailing Address:</LABEL> </TD>
<TD> <TEXTAREA NAME=address ID=addr ROWS=4 COLS=40></TEXTAREA> </TD> </TR> </TABLE> </FIELDSET>

<FIELDSET> <LEGEND ACCESSKEY=O>Ordering Information</LEGEND>
<P>Please select the product(s) that you wish to order:</P>
<P> <LABEL ACCESSKEY=3>
<INPUT TYPE=checkbox NAME=products VALUE="HTML 3.2 Reference">
<A HREF="/reference/wilbur/">HTML 3.2 Reference</A> </LABEL> <BR> <LABEL ACCESSKEY=4> <INPUT TYPE=checkbox
NAME=products VALUE="HTML 4.0 Reference">
<A HREF="/reference/html40/">HTML 4.0 Reference</A> </LABEL> <BR> <LABEL ACCESSKEY=S> <INPUT TYPE=checkbox
NAME=products VALUE="CSS Guide"> <A HREF="/reference/css/">Cascading Style Sheets Guide</A> </LABEL> </P>
</FIELDSET>

<FIELDSET> <LEGEND ACCESSKEY=C>Credit Card Information</LEGEND> <P> <LABEL ACCESSKEY=V> <INPUT TYPE=radio
NAME=card VALUE=visa> Visa </LABEL> <LABEL ACCESSKEY=M>
<INPUT TYPE=radio NAME=card VALUE=mc> MasterCard </LABEL> <BR>
<LABEL ACCESSKEY=u> Number: <INPUT TYPE=text NAME=number> </LABEL> <BR>
<LABEL ACCESSKEY=E> Expiry: <INPUT TYPE=text NAME=expiry> </LABEL> </P> </FIELDSET>

<P> <INPUT TYPE=submit VALUE="Submit order"> <INPUT TYPE=reset VALUE="Clear order form">
</P> </FORM>
```

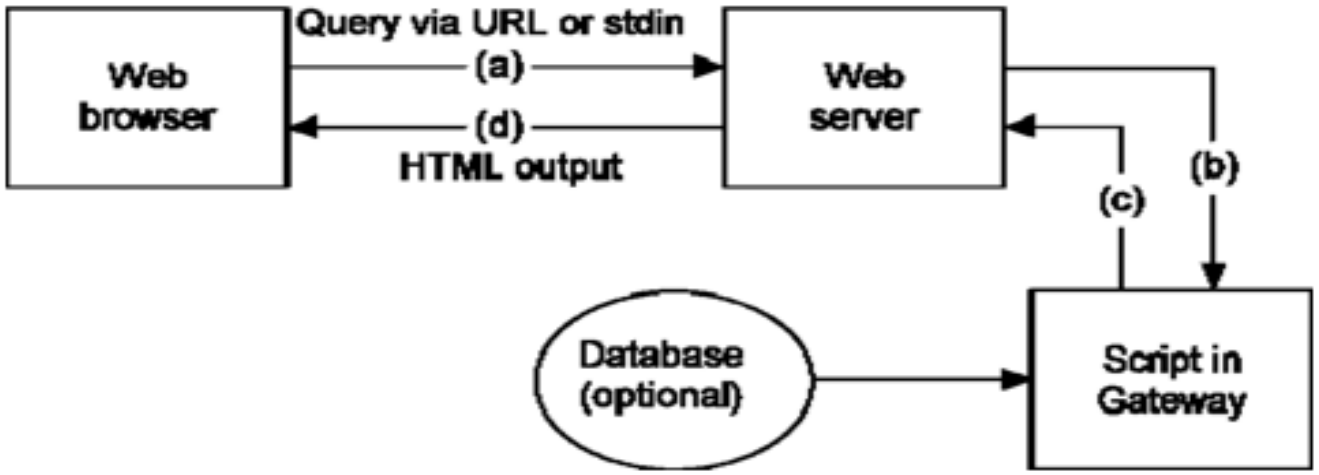
3 fieldsets with legends *ACCESSKEY* specifies a single character for giving focus

Purpose of the CGI

- Common Gateway Interface (CGI) is a mechanism by which programs, called *scripts*, can be used to create dynamic Web documents
  - Scripts are placed in a server directory often named cgi-bin
  - Scripts can deliver information that is not directly readable by clients
  - Scripts dynamically convert data from a non-Web source (e.g. DBMS) into a Web-compatible document
- Current version of CGI is 1.1
- The reason for the term "common gateway" is these programs act as gateways between the WWW and any other type of data or service
- See http://www.w3.org/CGI/

Basic Operation

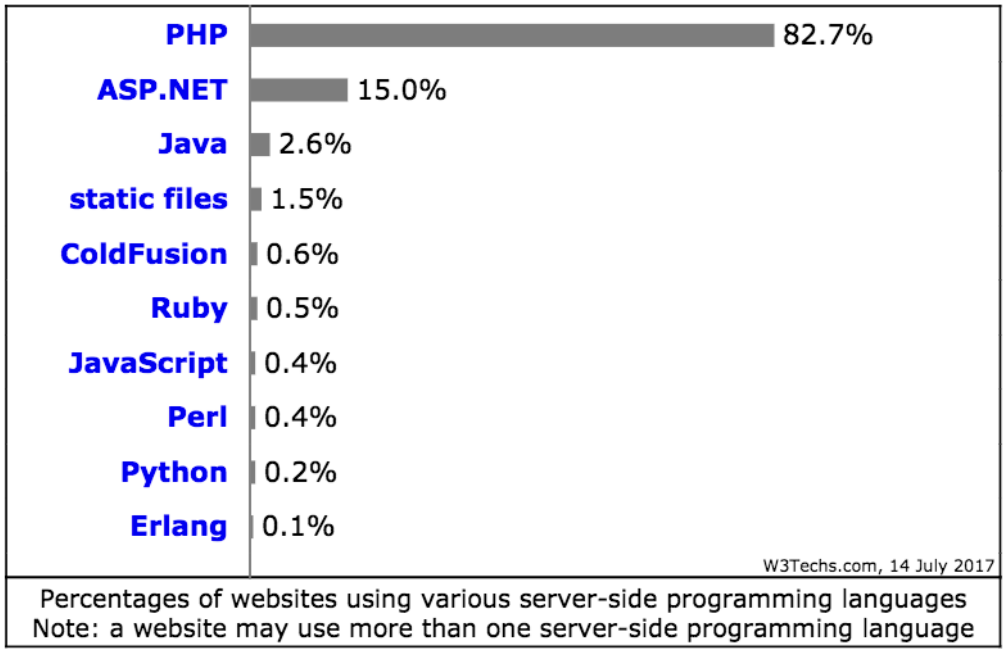
- An executable program that can be run without being directly invoked by users



The browser issues a query, (a), which is sent to the server; the server interprets it and invokes the proper CGI script, passing it the input data, (b); output from the script is returned, (c), via the server, to the browser, (d); output may be HTML, but it may instead be a URL, which is fetched by the server

Languages to Write Gateway Programs

- Any language that can produce an executable file
- Some typical ones are:
  - Traditional compiled languages such as C/C++
  - Or interpreted languages such as:
    - PHP, JavaScript or Java
- Interpreted languages are often preferred as they are
  - Easy to write and portable, and speed is usually not a factor



http://w3techs.com/technologies/overview/programming_language/all

Anchors Are Used to Invoke CGI Scripts

- A hypertext reference can refer to:
  - A remote file

```
<A HREF="http://domain_name/path/myfile.html">
```

  - An executable script in the cgi-bin directory

```
<A HREF="http://domain_name/cgi-bin/scriptname">
```

  - An executable script with arguments

```
<A HREF="http://domain_name/cgi-bin/scriptname?arg1+arg2">
```

- URLs produced by the query "bicycle tours":

```
http://search.yahoo.com/bin/search?p=bicycle+tours
http://search.msn.com/results.asp?RS=CHECKED&FORM=M
SNH&v=1&q=bicycle+tours&zip=90211
```

the current versions are somewhat different

CGI Script Environment Variables

- Environment variables
  - are a set of pre-defined dynamic values that can affect a running program
  - they are generally part of the operating environment in which a program runs;
  - UNIX (its variants) and Windows all use these as a means of passing information about the environment of a process
  - CGI environment variables are created by the web server and set immediately before the web server executes a gateway script
  - the CGI script can retrieve the values and use the data they send
  - CGI environment variables are defined in

    http://tools.ietf.org/html/rfc3875

CGI Environment Variables

- Can be classified into two major categories:
  - 1. Non-request specific
  - 2. Request specific
- Non-request-specific environment variables are the same for all requests:
  - SERVER_SOFTWARE, the name and version of the information server software answering the request

    e.g. SERVER_SOFTWARE = Apache/1.3.15
  - SERVER_NAME, server's hostname, DNS alias, or IP address
  - e.g. SERVER_NAME = nunki.usc.edu
  - GATEWAY_INTERFACE, the revision of the CGI specification with which this server complies
  - SERVER_PROTOCOL, the name and revision of the information protocol with which this request came in

    e.g. SERVER_PROTOCOL = HTTP/1.0
  - SERVER_PORT, the port number to which the request was sent

    e.g. SERVER_PORT = 8088

CGI Environment Variables (cont'd)

- Request-specific environment variables
  - These variables are set depending on each request
    - REQUEST_METHOD, the method with which the request was made; e.g., (GET, POST)
    - PATH_INFO, the extra path information as given by the client; e.g.,

      given http://nunki.usc.edu:8080/cgi-bin/test.cgi/extra/path

      then PATH_INFO = /extra/path
    - PATH_TRANSLATED, the PATH_INFO path translated into an absolute document path on the local system

      PATH_TRANSLATED = /auto/home-scf-03/csci571/WebServer/apache_1.2.5/htdocs/extra/path
    - SCRIPT_NAME, the path and name of the script being accessed as referenced in the URL

      SCRIPT_NAME = /cgi-bin/test.cgi
    - QUERY_STRING, the information that follows the ? in the URL that referenced this script

CGI Environment Variables (cont'd)

- REMOTE_HOST, Internet domain name of the host making the request
- REMOTE_ADDR, the IP address of the remote host making the request
- AUTH_TYPE, the authentication method required to authenticate a user who wants access
- REMOTE_USER, user name that server and script have authenticated
- REMOTE_IDENT, the remote user name retrieved by the server using inetd identification (RFC 1413)
- CONTENT_TYPE, for queries that have attached information, such as POST method, this is the MIME content type of the data
- CONTENT_LENGTH, the length of the content as given by the client

CGI Environment Variables (cont'd)

- Also, every item of information in an HTTP request header is stored in an environment variable
  - Capitalize the name in the request header field
  - Convert dashes to underscores
  - Add the prefix HTTP_
- For example:
  - HTTP_USER_AGENT contains the request header User_Agent field data

  e.g. HTTP_USER_AGENT = Mozilla/4.7 [en]C-DIAL (WinNT; U)
  - HTTP_ACCEPT contains the request header Accept field, of the form type/subtype
  - HTTP_REFERER contains the URL of the document that generated this request

CGI Script Output

- The script sends its output to stdout; the server adds appropriate headers and returns this output to the client
- Output from a script to the server could be:
  - A document generated by a script
  - The type of document could be: HTML, plain text, image, video or audio clip, and many other types
  - Instructions to the server for retrieving the desired output elsewhere
  - an error indicator

Server Directives

- The output of scripts begins with a small header consisting of text lines containing server directives
  - This must be followed by a blank line
- Any headers that are not server directives are sent directly back to the client
- Server directives are used by CGI scripts to inform the server about the type of output
- The current CGI specification defines three server directives:
  - Content-type
  - Location
  - Status

Server Directives (cont'd)

- 1. **Content-type: type/subtype**
  - The MIME type of the document being returned
  - For example,

  content-type: text/html (HTML document)

  content-type: text/plain (plain-text document)
- 2. **Location**
  - Alerts the server that the script is returning a reference to a document, not an actual document
  - If the argument is a URL, the server will issue a redirect to the client; for example,

  location: http://www.ncsa.uiuc.edu/
  - If the argument is a path, the document specified will be retrieved by the server, starting at the document root; for example,

  location: /path/doc.txt

Server Directives (cont'd)

- 3. **Status**
  - This is used to give the server an HTTP/1.1 status line to send to the client
  - The format is nnn xxxx, where
    - nnn is the three-digit status code
    - xxxx is the informative message

  E.g., 403 Forbidden

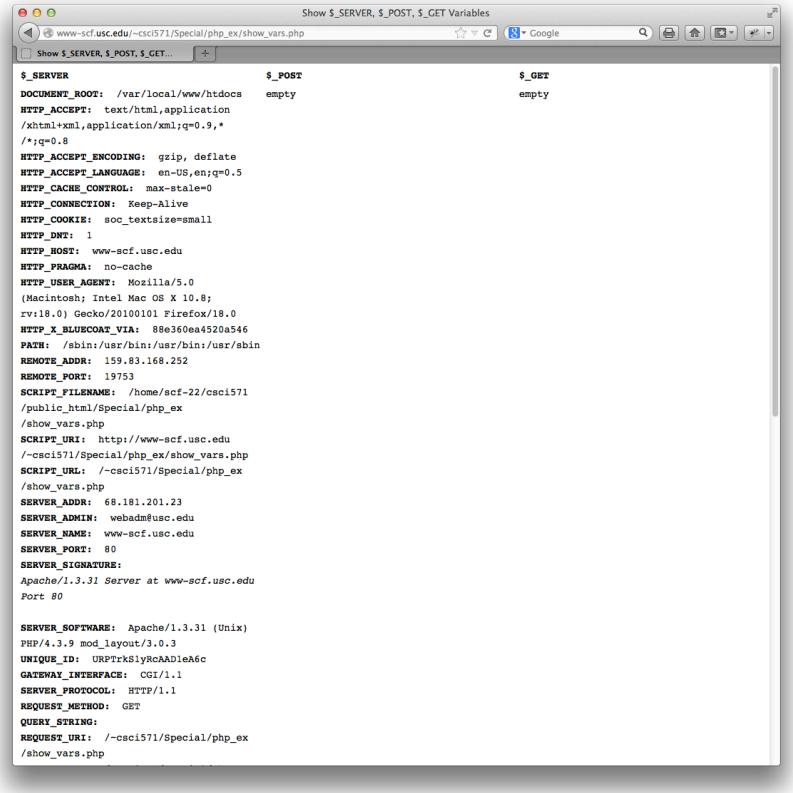
Things to Check Before Running CGI Scripts

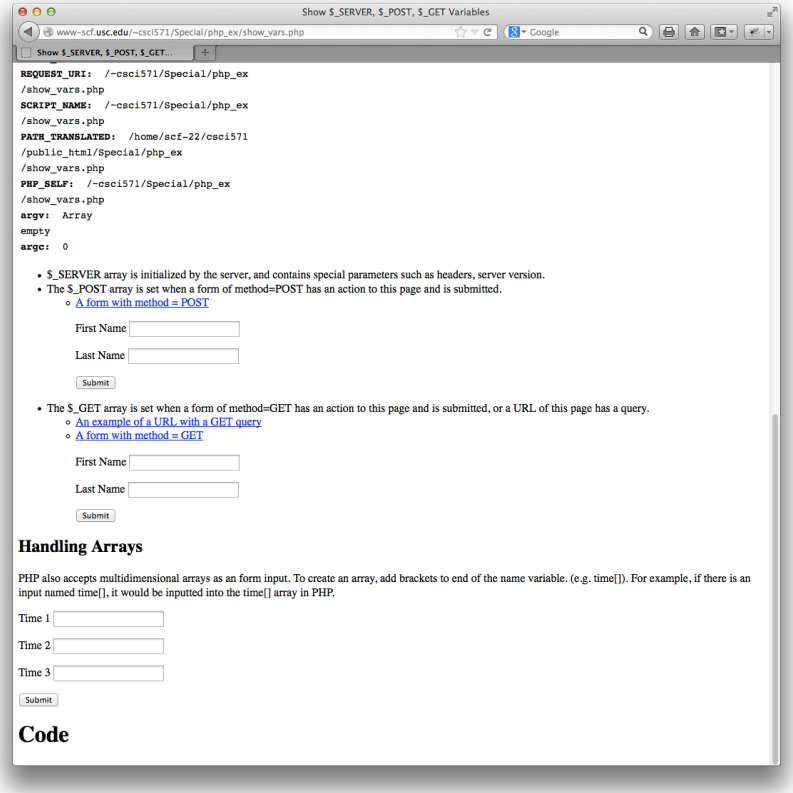
- The following need to be readable and executable by the server
  - CGI scripts
  - Other programs that the scripts call
  - The directory in which the scripts reside
- In UNIX, check the read/write/execute permissions of the files and directories
- In Windows, check the web server settings of the script directories

show_vars.php

- PHP is a language with built-in ability to access environment variables
- show_vars.php is a program that prints environment variables
- The code is available at:

  http://cs-server.usc.edu:45678/examples/php/show_vars.php
- Below is some sample output





show_vars.php – output tabs & arrays

```
<!doctype html><html>
<head><title>Show $_SERVER, $_POST, $_GET Variables</title></head>
<body>
<?php
   function print_tabs($tabs) {
        for($i = 0; $i < $tabs; $i++) {
                echo "     ";
        }   }
   function print_array($arr, $tabs = 0) {
        if(!empty($arr)) {
                foreach($arr as $k=> $v) {
                        print_tabs($tabs);
                        echo "<b>" . $k . "</b>:  " . $v .
   "<br/>";
                        if(is_array($v)) {
                                print_array($v, $tabs+1);
                        }
                }
        } else {
                echo "empty<br/>";
        }   }
?>
```

show_vars.php – $_SERVER, $_POST, $_GET

```
<table>
   <tr><th width="33%">$_SERVER</th><th
   width="34%">$_POST</th><th
   width="33%">$_GET</th></tr>
   <tr>
<td valign="top">
<?php print_array($_SERVER); ?>
</td>
<td valign="top">
<?php print_array($_POST); ?>
</td>
<td valign="top">
<?php print_array($_GET); ?>
</td>
   </tr>
</table>
```

show_vars.php – POST

```
<ul>
   <li>$_SERVER array is initialized by the server, and contains
   special parameters such as headers, server version.</li>
   <li>The $_POST array is set when a form of method=POST has an
   action to this page and is submitted.
        <ul>
        <li>
<a href="?fname=Hello&lname=World">A form with method = POST</a>
                <div>
                <form method="POST" action="">
                <p>
                <label for="fname">First Name</label>
                <input type="text" value="" name="fname"></p>
                <p>
                <label for="lname">Last Name</label>
                <input type="text" value="" name="lname"></p>
                       <p>
       <input type="submit" value="Submit" name="submit"></p>
                </form></div></li></ul>
```

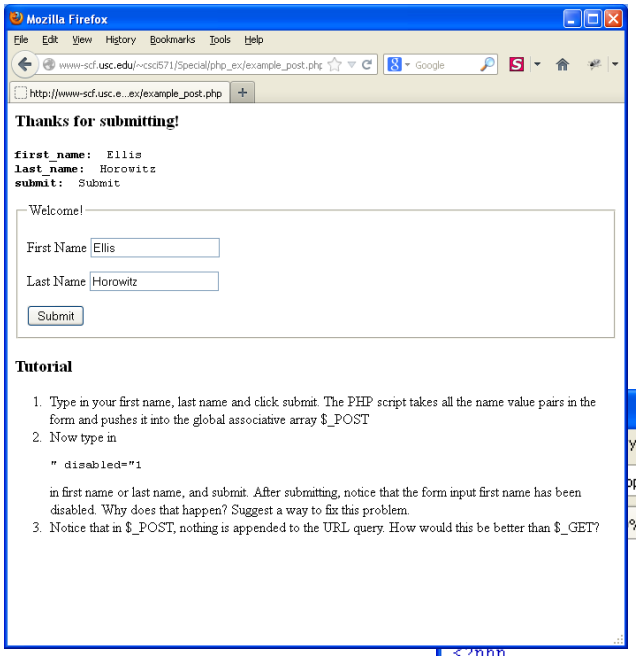
Another PHP Example

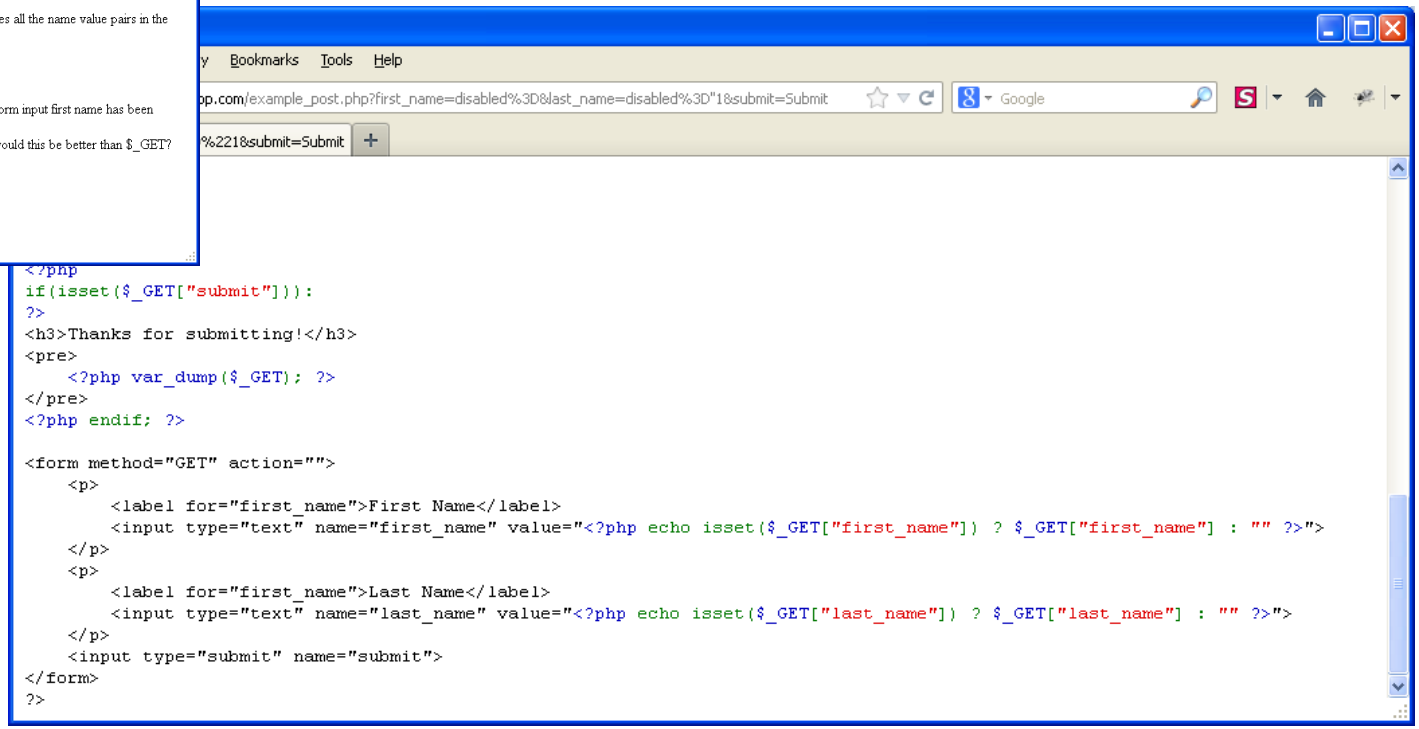
http://cs-server.usc.edu:45678/examples.html#php
click on Simple Example of a Counter in PHP

Another PHP Example

http://cs-server.usc.edu:45678/examples.html#php

Click on Simple Example Handling Form Data in PHP





Discussion session

- Firebug and Firefox developer Tools
  - Firebug
    - Install Firebug at: https://getfirebug.com/
    - Firefox extension not maintained any more
    - Firebug lecture available on class website at:

    http://cs-server.usc.edu:45678/slides/firebug-571SHORTFORM.ppt
  - Firefox Developer Tools
    - Built-in, no download required
    - Similar tools as Firebug, but sometimes named differently
    - Provides additional tools not available in Firebug

Firebug vs. Firefox Developer Tools

- Migration Guide available at: https://developer.mozilla.org/en-US/docs/Tools/Migrating_from_Firebug

Tool	Firebug	Firefox Developer Tools
Activation	based on same origin	ab based
Open Tools	F12	F12 + more shortcuts
Web Console	Console Panel	Web Console
Filter Log Messages	Options menu + filter buttons	Filter buttons inside toolbar
Console API	Console API (console.*)	Console API (same)
Persist Logs	Persist button in toolbar	Enable Persistent Logs (Toolbox Options panel)
Command History	Command Line	↑/↓ within command line
Inspect Object Properties	Click on object – inspect in DOM panel	Show Properties / Methods in Web Console side panel
Show Network Request	AJAX Request in Console Panel	Net>XHR in Web Console
View JSON/XML	Special Tabs expanding Console Panel	Response Tab in Web Console
Multi-line command	Command Editor	Scratchpad separate Tool

Firebug vs. Firefox Developer Tools

Tool	Firebug	Firefox Developer Tools
Response Preview	Preview Tab in expanded network request, logged to the Console	Response Tab in Web Console (missing HTML, XML & SVG)
Inspector	HTML Panel (edit HTML/XML/SVH/CSS)	Page Inspector
Edit HTML	Edit tag attributes and content incline	Same
Copy HTML	Copy inner and outer HTML/CSS/XPath	Same, but no XPath
Edit CSS	View/Edit CSS rule by Style side panel	Same with Rule side panel
CSS auto-complete	CSS property names. values in Rules view	NA (requested)
Copy& Paste CSS	Style side panel	Rules side panel
Only show applied styles	Option in Style side panel	NA (requested)
Inspect box model	Layout side panel	Computed side panel
Inspect computed styles	Computed side panel	Computed side panel
Inspect events	Events side panel	Click ‘ev’ icon beside element

Firebug vs. Firefox Developer Tools

Tool	Firebug	Firefox Developer Tools
Debugger	Script panel	Debugger panel
Switch between sources	Script Location Menu	Sources side panel (left side)
Managing breakpoints	Breakpoints side panel	Sources side panel (below script source)
Step through code	Continue, Step Over, Step Into, Step Out	Same
Examine call stack	Stack side panel	Call Stack side panel
Examine variables	Watch side panel	Variables side panel
Style Editor	CSS panel	Style Editor
Switch between sources	CSS Location Menu in CSS panel	Style editor sidebar
Edit style sheet	CSS panel (inline, source and live edit)	Live Edit mode only
Validate CSS selectors	Selectors panel	NA (requested)
Performance Tool	Profile button in Console panel	Performance Tool

Firebug vs. Firefox Developer Tools

Tool	Firebug	Firefox Developer Tools
View JS call performance	Profiler output	Call Tree view in Performance panel
Jump to function declaration	Profiler output: right side of Console panel	Call Tree view right side
Network Monitor	Net panel	Network Monitor
Inspect request info	Click request	Click request
View request timings	Hover Timeline column in Net panel	Timings side panel of request
View remote address	Remote IP column	Remote Address in Headers tab
Storage Inspector	Cookie panel	Storage Inspector
Inspect cookies	Cookies panel	Storage Inspector Cookies section
Edit cookies	Right-click cookie, choose Edit	Double-click and inline edit
Delete Cookies	Menu Cookie > Remove Cookies	Right-click & Delete All
Display error count	Start button	Developer Toolbar