**Client/Server Programming
for Internet Applications**

TCSS460

Summer 2020

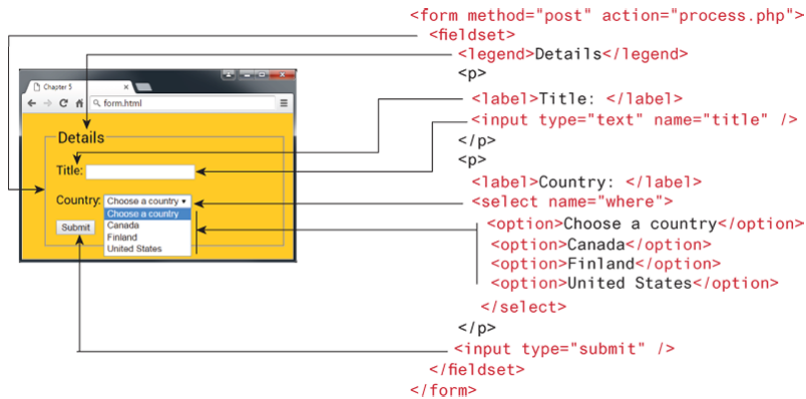Additional Notes
Form Handling in
HTML

W
TACOMA

Forms

- **forms** provide the user with an alternative way to interact with a web server
  - clicking hyperlinks provides a mechanism available to the user for communicating with the server
  - forms provide a much richer mechanism
    - user can enter text,
    - choose items from lists, and
    - click buttons
  - typically, programs running on the server will take the input from HTML forms and do something with it
    - save it in a database
    - interact with an external web service
    - customize subsequent HTML based on that input
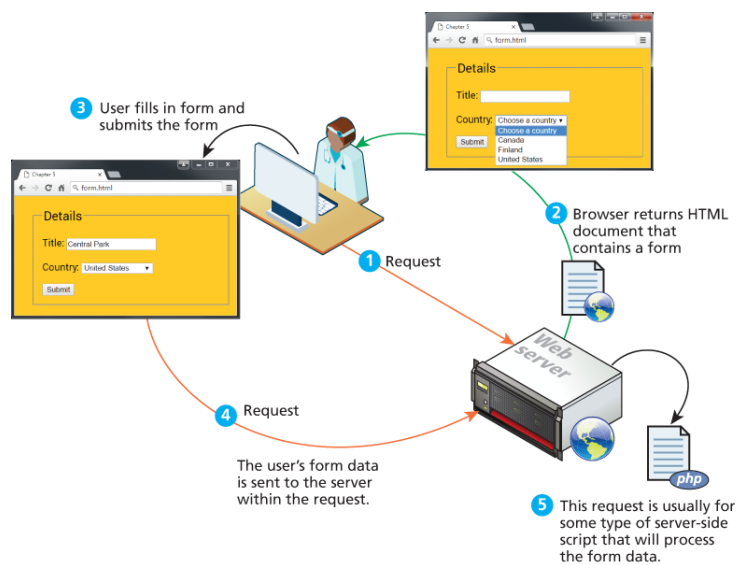
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Forms
→ form structure

```
<form method="post" action="process.php">
  <fieldset>
    <legend>Details</legend>
    <p>
      <label>Title: </label>
      <input type="text" name="title" />
    </p>
    <p>
      <label>Country: </label>
      <select name="where">
        <option>Choose a country</option>
        <option>Canada</option>
        <option>Finland</option>
        <option>United States</option>
      </select>
    </p>
    <input type="submit" />
  </fieldset>
</form>
```

• a form is defined by a **`<form>`** element

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Forms
→ how forms work?

3 User fills in form and submits the form

1 Request

2 Browser returns HTML document that contains a form

4 Request

The user's form data is sent to the server within the request.

5 This request is usually for some type of server-side script that will process the form data.
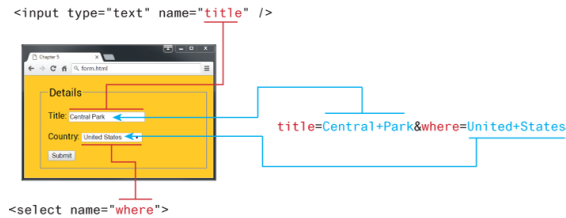
Web server

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Forms
→ recall: query strings

- query strings have certain rules defined by the HTTP protocol

```
<input type="text" name="title" />
```

Details

Title: Central Park

Country: United States

Submit

```
title=Central+Park&where=United+States
```

```
<select name="where">
```

Browser

Artist: Pablo José Picasso

Submit

Notice how the spaces and the accented é are URL encoded (in red).

```
artist=Pablo+Jos%E9+Picasso
```

URL encoding

- certain characters such as spaces, punctuation symbols, and foreign characters cannot be part of a query string.
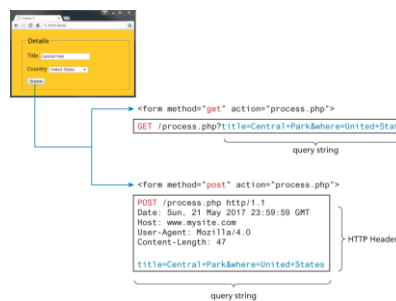- such special symbols must be **URL encoded**

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Forms
→ actions and methods

- there are two important **attributes** that are essential features of any form

  - **action** attribute specifies the URL of the server-side resource that will process the form data

  - **method** attribute specifies how the query string data will be transmitted from the browser to the server.

Details

Title: Central Park

Country: United States

Submit

```
<form method="get" action="process.php">
GET /process.php?title=Central+Park&where=United+States http/1.1
```
query string

```
<form method="post" action="process.php">
POST /process.php http/1.1
Date: Sun, 21 May 2017 23:59:59 GMT
Host: www.mysite.com
User-Agent: Mozilla/4.0
Content-Length: 47

title=Central+Park&where=United+States
```
HTTP Header

query string

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Forms
→ actions and methods (cont'd)

GET versus POST

Type	Advantages and Disadvantages
GET	Data can be clearly seen in the address bar. This may be an advantage during development but a disadvantage in production.
	Data remains in browser history and cache. Again this may be beneficial to some users, but a security risk on public computers.
	Data can be bookmarked (also an advantage and a disadvantage).
	Limit on the number of characters in the form data returned.
POST	Data can contain binary data.
	Data is hidden from user.
	Submitted data is not stored in cache, history, or bookmarks.

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Forms
→ form control elements

Type	Description
text	Creates a single-line text entry box. `<input type="text" name="title" />`
textarea	Creates a multiline text entry box. You can add content text or if using an HTML5 browser, placeholder text (hint text that disappears once user begins typing into the field). `<textarea rows="3" … />`
password	Creates a single-line text entry box for a password (which masks the user entry as bullets or some other character) `<input type="password" … />`
search	Creates a single-line text entry box suitable for a search string. This is an HTML5 element. Some browsers on some platforms will style search elements differently or will provide a clear field icon within the text box. `<input type="search" … />`
email	Creates a single-line text entry box suitable for entering an email address. This is an HTML5 element. Some devices (such as the iPhone) will provide a specialized keyboard for this element. Some browsers will perform validation when form is submitted. `<input type="email" … />`
tel	Creates a single-line text entry box suitable for entering a telephone. This is an HTML5 element. Since telephone numbers have different formats in different parts of the world, current browsers do not perform any special formatting or validation. Some devices may, however, provide a specialized keyboard for this element. `<input type="tel" … />`
url	Creates a single-line text entry box suitable for entering a URL. This is an HTML5 element. Some devices may provide a specialized keyboard for this element. Some browsers also perform validation on submission. `<input type="url" … />`

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Forms
→ form control elements (cont'd)

text input controls

```
<input type="text" ... />
Text: _____
```

```
<textarea>                 <textarea placeholder="enter some text">
  enter some text          </textarea>
</textarea>
```

```
         enter some text              enter some text
TextArea: _____        TextArea: _____
```

```
<input type="password" ... />
Password: _____        Password: ____
```

```
<input type="search" placeholder="enter search text" ... />
Search: [enter search text]        Search: [HTML]        x
```

```
<input type="email" ... />
Email: [xyz@]          In Opera
[Please enter a valid email address]
Email: [xyz@]          In Chrome
[! Please enter an email address.]
```

```
<input type="url" ... />
url: [abcd]
[! Please enter a URL.]
```

```
<input type="tel" ... />
Tel: _____
```

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Forms
→ form control elements (cont'd)

New in HTML5 – pattern and datalist

```
<input type="text" ... placeholder="L#L #L#" pattern="[a-z][0-9][a-z] [0-9][a-z][0-9]"  />
```

```
Postal: [L#L #L#]          Postal: [abcd]
                           [! Please match the requested format.]
```

```
Search City: [P]
             Paris
             Prague
```

```
<input type="text" name="city" list="cities"  />

<datalist id="cities">
    <option>Calcutta</option>
    <option>Calgary</option>
    <option>London</option>
    <option>Los Angeles</option>
    <option>Paris</option>
    <option>Prague</option>
</datalist>
```
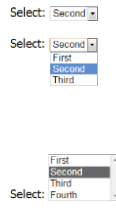
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Forms
→ form control elements (cont'd)

Choice Controls (<select>)

```
<select name="choices">
   <option>First</option>
   <option selected>Second</option>
   <option>Third</option>
</select>
```

```
<select size="3" ... >
```

```
<select ... >
  <optgroup label="North America">
     <option>Calgary</option>
     <option>Los Angeles</option>
  </optgroup>
  <optgroup label="Europe">
     <option>London</option>
     <option>Paris</option>
     <option>Prague</option>
  </optgroup>
</select>
```
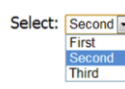
Randy Connolly, Ricardo Hoar, Fundamentals of Web Development (2nd Edition), 2017   11

Forms
→ form control elements (cont'd)
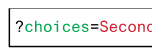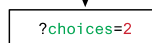
Choice Controls <select> using value attribute

```
?choices=Second
```

```
<select name="choices">
  <option>First</option>
  <option>Second</option>
  <option>Third</option>
</select>
```

```
<select name="choices">
  <option value="1">First</option>
  <option value="2">Second</option>
  <option value="3">Third</option>
</select>
```

```
?choices=2
```

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Forms
→ form control elements (cont'd)

Button Controls (radio & checkbox)

radio

Continent:
○ North America
● South America
○ Asia

```
<input type="radio" name="where" value="1">North America<br/>
<input type="radio" name="where" value="2" checked>South America<br/>
<input type="radio" name="where" value="3">Asia
```

checkbox

I accept the software license ☑

```
<label>I accept the software license</label>
<input type="checkbox" name="accept" >
```

Where would you like to visit?
☑ Canada
☐ France
☑ Germany

```
<label>Where would you like to visit? </label><br/>
<input type="checkbox" name="visit" value="canada">Canada<br/>
<input type="checkbox" name="visit" value="france">France<br/>
<input type="checkbox" name="visit" value="germany">Germany
```

```
?accept=on&visit=canada&visit=germany
```

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Forms
→ form control elements (cont'd)

Button Controls (submit & file upload)

```
<input type="submit"  />
```
[Submit] [Reset]
```
<input type="reset"  />
```
```
<input type="button" value="Click Me" />
```
[Click Me]
```
<input type="image" src="appointment.png" />
```

[Edit]   [Email]
```
<button>
    <a href="email.html">
        <img src="images/email.png" alt="..."/>
        Email
    </a>
</button>
```

```
<button type="submit"  >
    <img src="images/edit.png" alt="..."/>
    Edit
</button>
```

Upload a travel photo
[Choose File] No file chosen
```
<form method="post" enctype="multipart/form-data" ... >
    ...
    <label>Upload a travel photo</label>
    <input type="file" name="photo" />
    ...
</form>
```

Upload a travel photo
[Choose File] IMG_0020.JPG

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Forms
→ form control elements (cont'd)

number and range controls

Rate this photo:
2

```
<label>Rate this photo: <br/>
<input type="number" min="1" max="5" name="rate" />
```

Grumpy ——————0—— Ecstatic

```
Grumpy
<input type="range" min="0" max="10" step="1" name="happiness" />
Ecstatic
```

Rate this photo:

Grumpy   Ecstatic

Controls as they appear in browser
that doesn't support these input types

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Forms
→ form control elements (cont'd)

Specialized Controls (color)

Date:

Mon	Tue	Wed	Thu	Fri	Sat	Sun
25	26	27	28	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
1	2	3	4	5	6	7

Today

```
<label>Date: <br/>
<input type="date" ... />
```

```
<input type="month" ... />
```
Month:
March, 2013

This month   Clear

Time:
02:02 AM

```
<input type="time" ... />
```

```
<input type="week" ... />
```
Week:
2013-W10

DateTime:
2013-03-08 ▾ 05:46 UTC

```
<input type="datetime" ... />
```

DateTime Local:
2013-03-13 ▾ 12:02

```
<input type="datetime-local" ... />
```

Today

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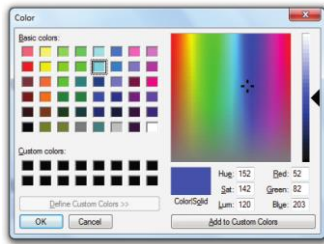# Forms
→ form control elements (cont'd)

Date and Time Controls

Background Color:

```
<label>Background Color: <br/>
<input type="color" name="back" />
```

Background Color:

Control as it appears in browser that doesn't support this input type

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