

# Introduction To Full-Stack Web Development

**CS 386**

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# Class 5

- 5.1 Select Elements
- 5.2 HTML5 Elements
- 5.3 Button Elements
- 5.4 Form Processing

# 5.1 Select Elements

- Select element
  - ❑ <select> HTML element represents control that provides menu of options
  - ❑ Each menu option is defined by <option> element nested inside <select>
  - ❑ <select> element has some unique attributes to control behavior of it:
    - Multiple (Boolean) to specify whether multiple options can be selected
    - Size to specify how many options should be shown at once:
      - If greater than 1, morphs into list box
      - If number of options is greater than size → vertical scrollbar

## Syntax:

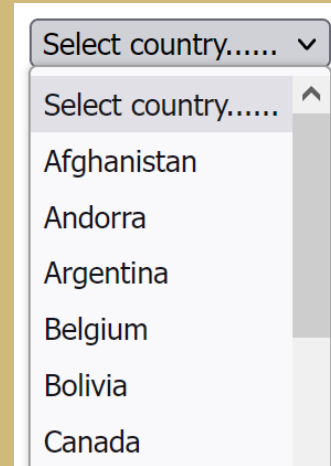
```
<select id= "id_value" name="name" size = "number" multiple>  
  <option value= "value" selected>text 1</option>  
  <option value= "value" >text 2</option>  
  .....  
  <option value= "value" >text n</option>  
</select>
```

# 5.1 Select Elements

## ➤ Select element

### ❑ Drop-down list:

- Only one value is shown
- Click arrow to open list of multiple values
- Size attribute is set to one (default)
- Can only select one value at a time



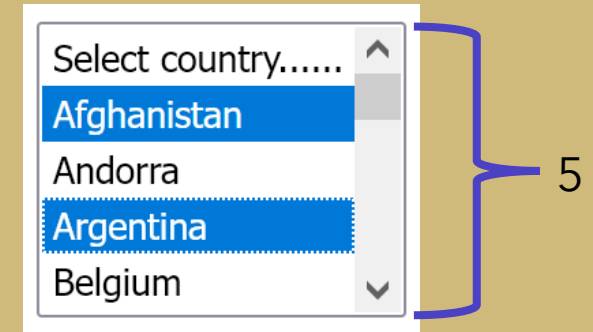
### ❑ Single-select list box:

- Multiple values shown
- Size attribute set to number of initial values shown
- Scroll list to access more values
- Can only select one value at a time



### ❑ Multiple-select list box:

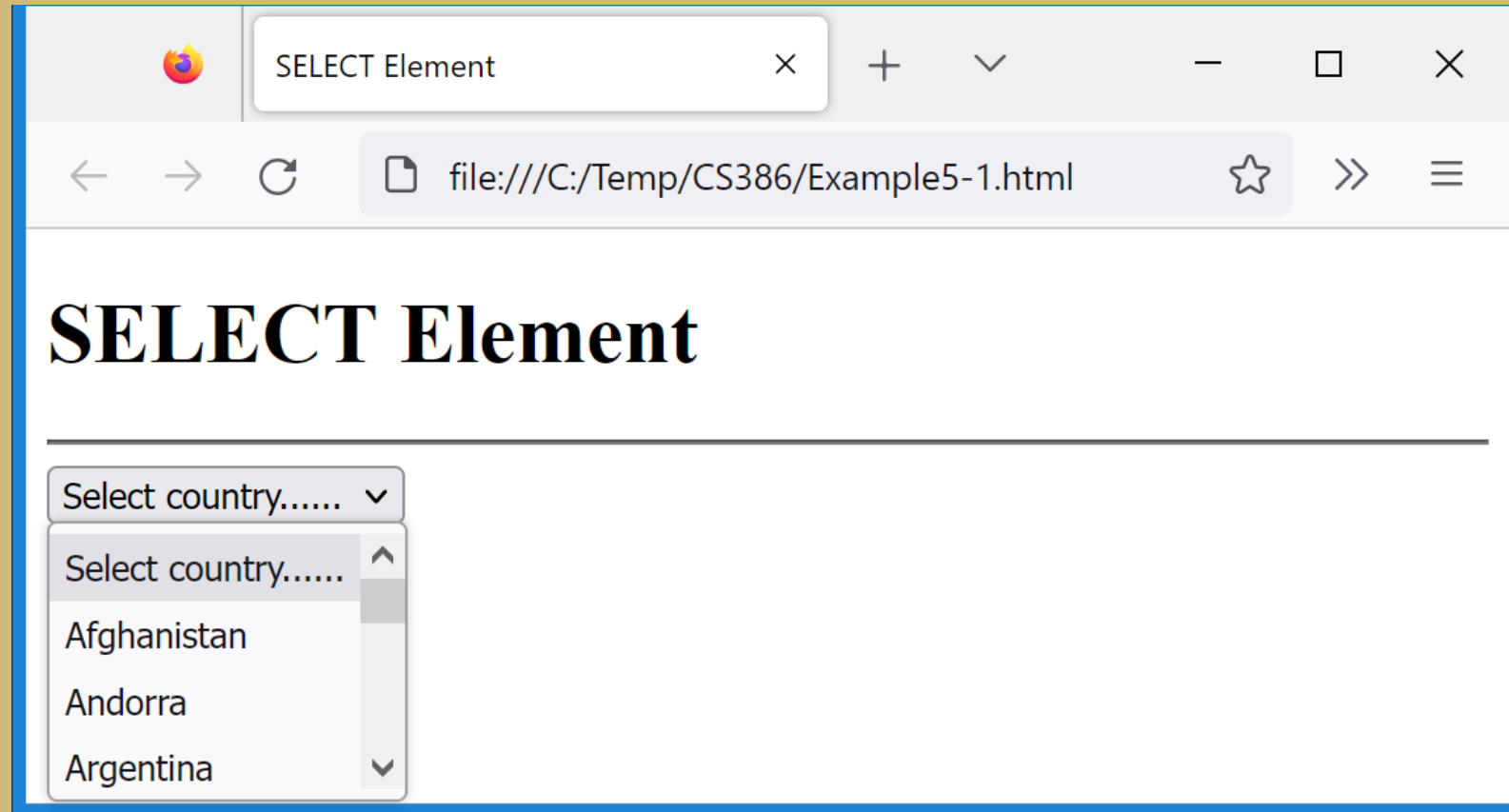
- Add multiple attribute
- Use Ctrl key to select multiple values



```
<select id="country" name="country" size = "5" multiple >
```

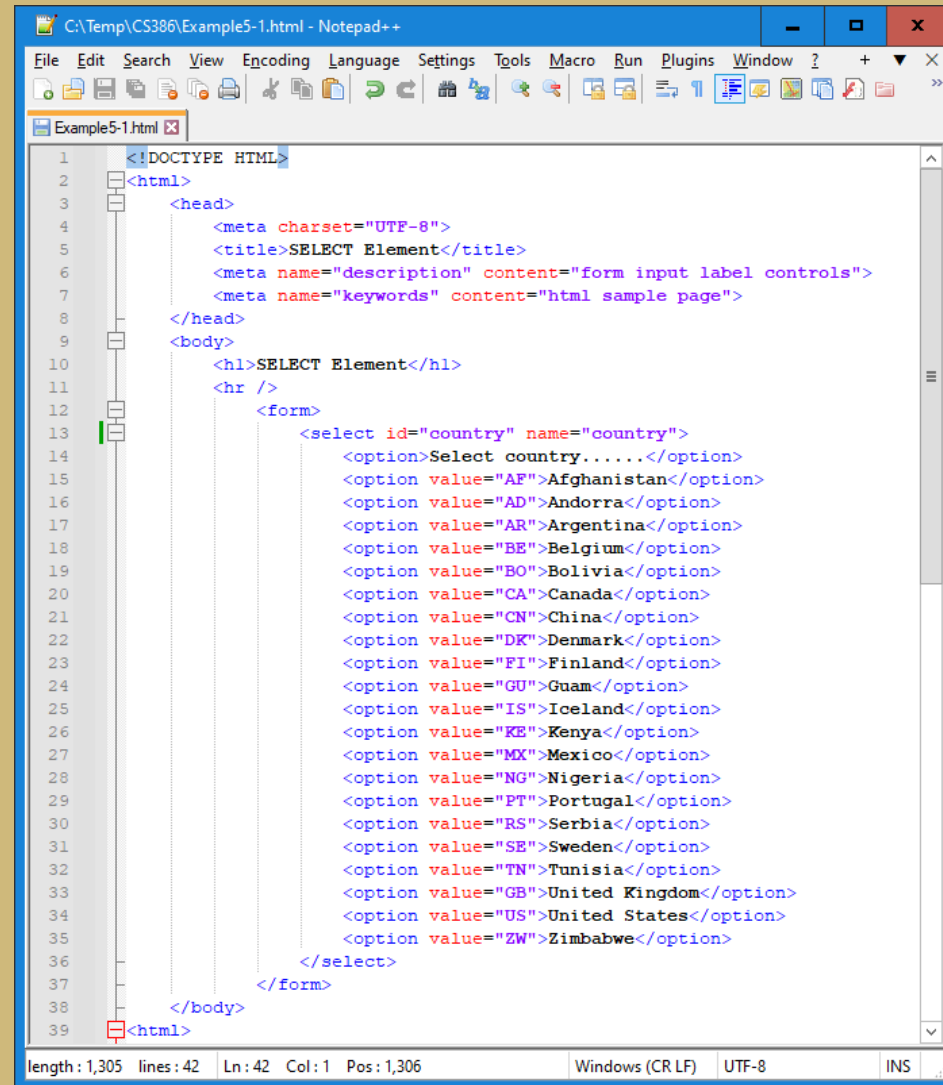
# 5.1 Select Elements

- **Example 5-1:**
- Wrap select element inside form element
- Use only 6 different countries of your choice
- Use short value and long displayed value:
  - ❑ Value = US
  - ❑ Displayed = United States
- First option:
  - ❑ Select country...
  - ❑ No value attribute



# 5.1 Select Elements

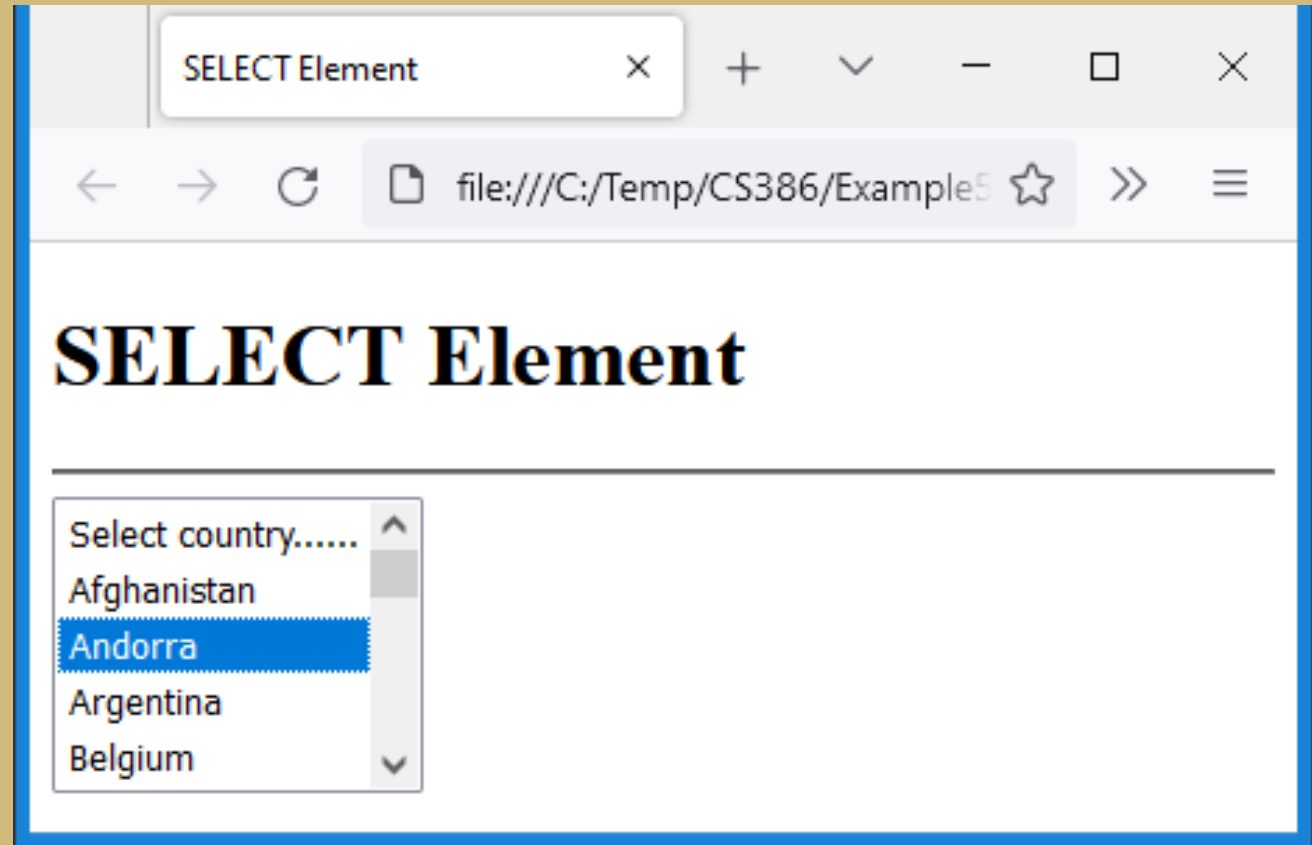
## ➤ Example 5-1:



```
1 <!DOCTYPE HTML>
2 <html>
3   <head>
4     <meta charset="UTF-8">
5     <title>SELECT Element</title>
6     <meta name="description" content="form input label controls">
7     <meta name="keywords" content="html sample page">
8   </head>
9   <body>
10    <h1>SELECT Element</h1>
11    <hr />
12    <form>
13      <select id="country" name="country">
14        <option>Select country.....</option>
15        <option value="AF">Afghanistan</option>
16        <option value="AD">Andorra</option>
17        <option value="AR">Argentina</option>
18        <option value="BE">Belgium</option>
19        <option value="BO">Bolivia</option>
20        <option value="CA">Canada</option>
21        <option value="CN">China</option>
22        <option value="DK">Denmark</option>
23        <option value="FI">Finland</option>
24        <option value="GU">Guam</option>
25        <option value="IS">Iceland</option>
26        <option value="KE">Kenya</option>
27        <option value="MX">Mexico</option>
28        <option value="NG">Nigeria</option>
29        <option value="PT">Portugal</option>
30        <option value="RS">Serbia</option>
31        <option value="SE">Sweden</option>
32        <option value="TN">Tunisia</option>
33        <option value="GB">United Kingdom</option>
34        <option value="US">United States</option>
35        <option value="ZW">Zimbabwe</option>
36      </select>
37    </form>
38  </body>
39 </html>
```

# 5.1 Select Elements

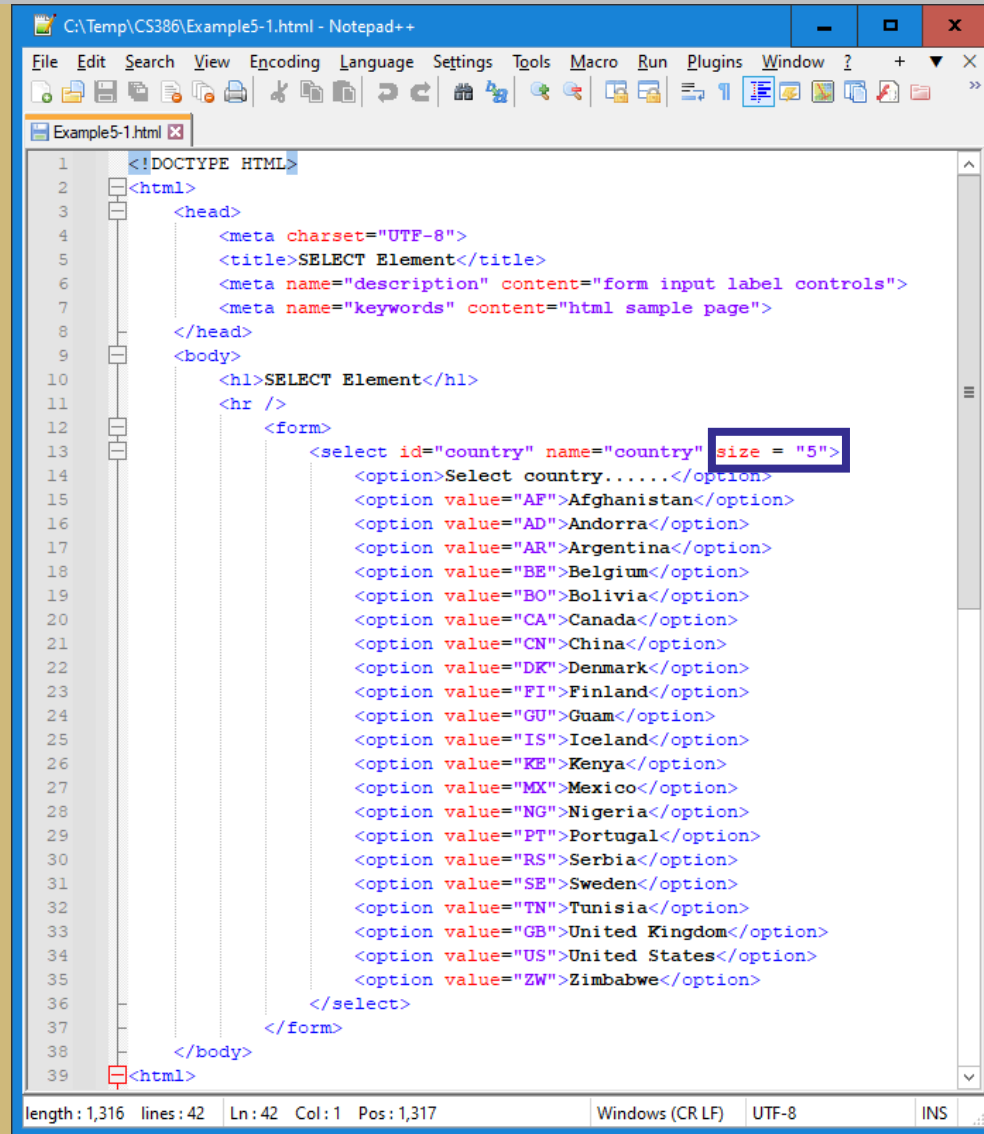
- Example 5-1 (continued):
- Convert drop-down list to listbox
- Use 5 rows





# 5.1 Select Elements

- Example 5-1 (continued):
- Add size attribute



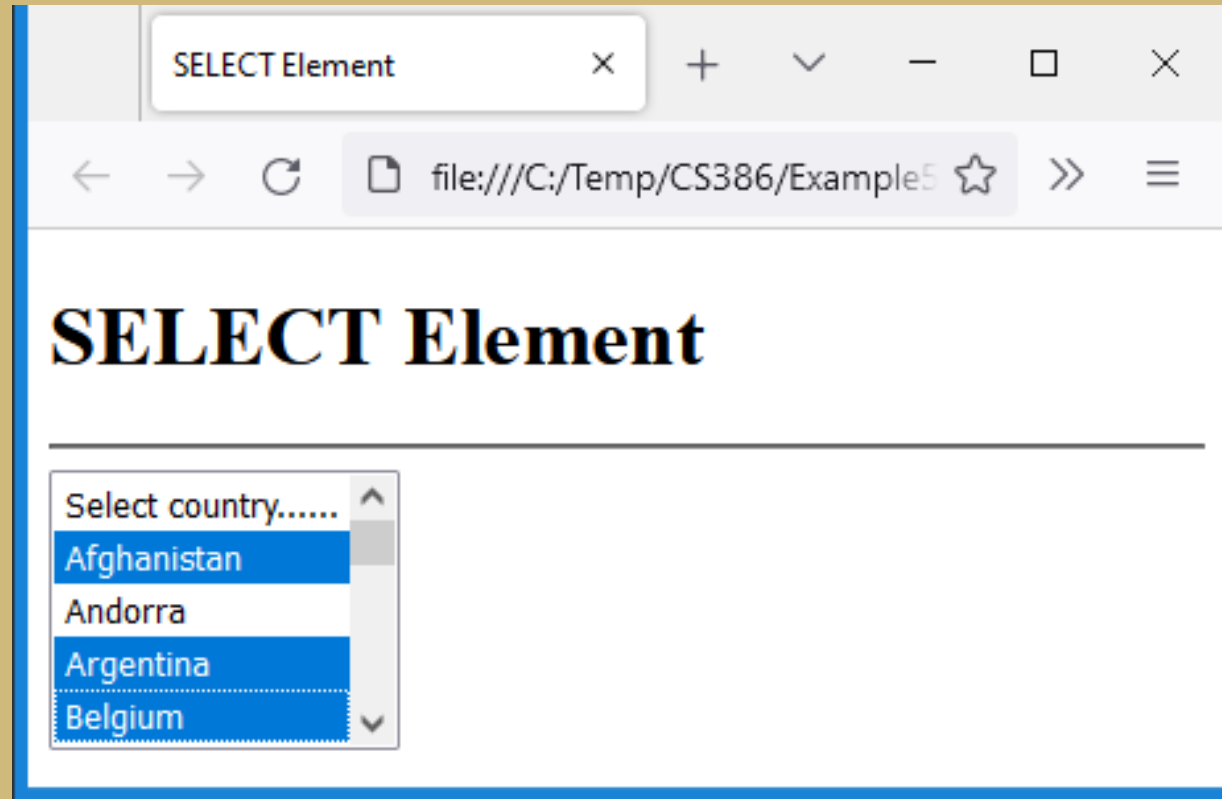
```
1 <!DOCTYPE HTML>
2 <html>
3   <head>
4     <meta charset="UTF-8">
5     <title>SELECT Element</title>
6     <meta name="description" content="form input label controls">
7     <meta name="keywords" content="html sample page">
8   </head>
9   <body>
10    <h1>SELECT Element</h1>
11    <hr />
12    <form>
13      <select id="country" name="country" size = "5">
14        <option>Select country.....</option>
15        <option value="AF">Afghanistan</option>
16        <option value="AD">Andorra</option>
17        <option value="AR">Argentina</option>
18        <option value="BE">Belgium</option>
19        <option value="BO">Bolivia</option>
20        <option value="CA">Canada</option>
21        <option value="CN">China</option>
22        <option value="DK">Denmark</option>
23        <option value="FI">Finland</option>
24        <option value="GU">Guam</option>
25        <option value="IS">Iceland</option>
26        <option value="KE">Kenya</option>
27        <option value="MX">Mexico</option>
28        <option value="NG">Nigeria</option>
29        <option value="PT">Portugal</option>
30        <option value="RS">Serbia</option>
31        <option value="SE">Sweden</option>
32        <option value="TN">Tunisia</option>
33        <option value="GB">United Kingdom</option>
34        <option value="US">United States</option>
35        <option value="ZW">Zimbabwe</option>
36      </select>
37    </form>
38  </body>
39 </html>
```

length: 1,316 lines: 42 Ln: 42 Col: 1 Pos: 1,317 Windows (CR LF) UTF-8 INS



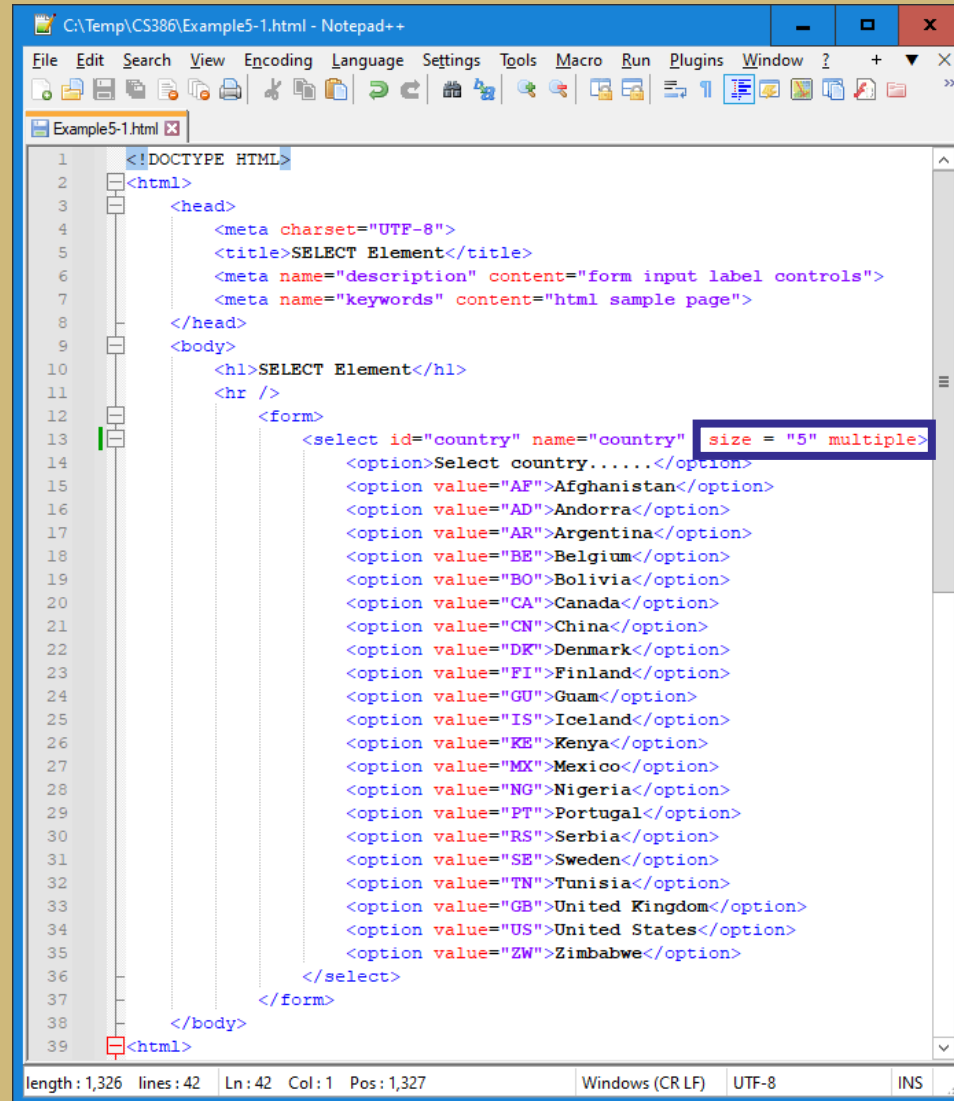
# 5.1 Select Elements

- Example 5-1 (continued):
- Add multi-select capability



# 5.1 Select Elements

## ➤ Example 5-1 (continued):



```
1 <!DOCTYPE HTML>
2 <html>
3   <head>
4     <meta charset="UTF-8">
5     <title>SELECT Element</title>
6     <meta name="description" content="form input label controls">
7     <meta name="keywords" content="html sample page">
8   </head>
9   <body>
10    <h1>SELECT Element</h1>
11    <hr />
12    <form>
13      <select id="country" name="country" size = "5" multiple>
14        <option>Select country.....</option>
15        <option value="AF">Afghanistan</option>
16        <option value="AD">Andorra</option>
17        <option value="AR">Argentina</option>
18        <option value="BE">Belgium</option>
19        <option value="BO">Bolivia</option>
20        <option value="CA">Canada</option>
21        <option value="CN">China</option>
22        <option value="DK">Denmark</option>
23        <option value="FI">Finland</option>
24        <option value="GU">Guam</option>
25        <option value="IS">Iceland</option>
26        <option value="KE">Kenya</option>
27        <option value="MX">Mexico</option>
28        <option value="NG">Nigeria</option>
29        <option value="PT">Portugal</option>
30        <option value="RS">Serbia</option>
31        <option value="SE">Sweden</option>
32        <option value="TN">Tunisia</option>
33        <option value="GB">United Kingdom</option>
34        <option value="US">United States</option>
35        <option value="ZW">Zimbabwe</option>
36      </select>
37    </form>
38  </body>
39 </html>
```

length: 1,326 lines: 42 Ln: 42 Col: 1 Pos: 1,327 Windows (CR LF) UTF-8 INS

# 5.2 HTML5 Elements

- HTML5 is latest version of HyperText Markup Language
- Supports multimedia, tags and elements, improved document markups and new APIs
- Many elements were removed or modified in HTML5 (compared to previous versions)
- HTML5 is more mobile friendly

# 5.2 HTML5 Elements

## ➤ Features of HTML5:

- ❑ Browser support: HTML5 has browser support → Even if some browsers are not supporting HTML5 will be able to load webpage on that browser
- ❑ Geolocation: HTML5 provides geolocation feature (With help of geolocation feature, can insert or implement maps on web pages for example world maps, etc.)
- ❑ Web storage: HTML provides two types of storage → session storage (only available within browser tab or window session ) and local storage (localStorage is kept even between browser sessions)
- ❑ Sectioning elements: HTML5 provides new semantic elements to structure web page, such as header, footer, aside, etc.
- ❑ New Application Programming Interface (API):
  - HTML5 features like 2D drawing on web page
  - Drag and Drop
  - Timed media playback (audio, video elements)
  - Browser history management

# 5.2 HTML5 Elements

## ➤ New HTML5 Input Elements

INPUT TYPE	DESCRIPTION	HTML MARKUP
<b>date</b>	Control for entering the date.	<code>&lt;input type="date"&gt;</code>
<b>datetime</b>	Date and time using UTC date and time format	<code>&lt;input type="datetime"&gt;</code>
<b>datetime-local</b>	Date and time according to your local time	<code>&lt;input type="datetime-local"&gt;</code>
<b>month</b>	Month and year	<code>&lt;input type="month"&gt;</code>
<b>time</b>	The time of day	<code>&lt;input type="time"&gt;</code>
<b>week</b>	Allows you to pick the week and year.	<code>&lt;input type="week"&gt;</code>
<b>color</b>	Allows you to enter a simple color value (which is in hexadecimal color notation)	<code>&lt;input type="color"&gt;</code>
<b>email</b>	Validates the input using the standard email format	<code>&lt;input type="email"&gt;</code>
<b>tel</b>	Gives you the ability to validate telephone numbers format against a pattern	<code>&lt;input type="tel"&gt;</code>
<b>search</b>	Searches a data set (like a <code>&lt;datalist&gt;</code> HTML element)	<code>&lt;input type="search"&gt;</code>
<b>range</b>	A slider control for picking a number in between two numbers	<code>&lt;input type="range"&gt;</code>
<b>number</b>	Accepts numbers only	<code>&lt;input type="number"&gt;</code>
<b>url</b>	Accepts URLs only	<code>&lt;input type="url"&gt;</code>

# 5.2 HTML5 Elements

➤ Along with new input elements comes also new attributes

➤ Example:

❑ range (slider) element



➤ Default range is 0 to 100

➤ However, can set restrictions on what numbers are accepted with attributes below:

❑ max: Specifies the maximum value allowed

❑ min: Specifies the minimum value allowed

❑ step: Specifies the legal number intervals

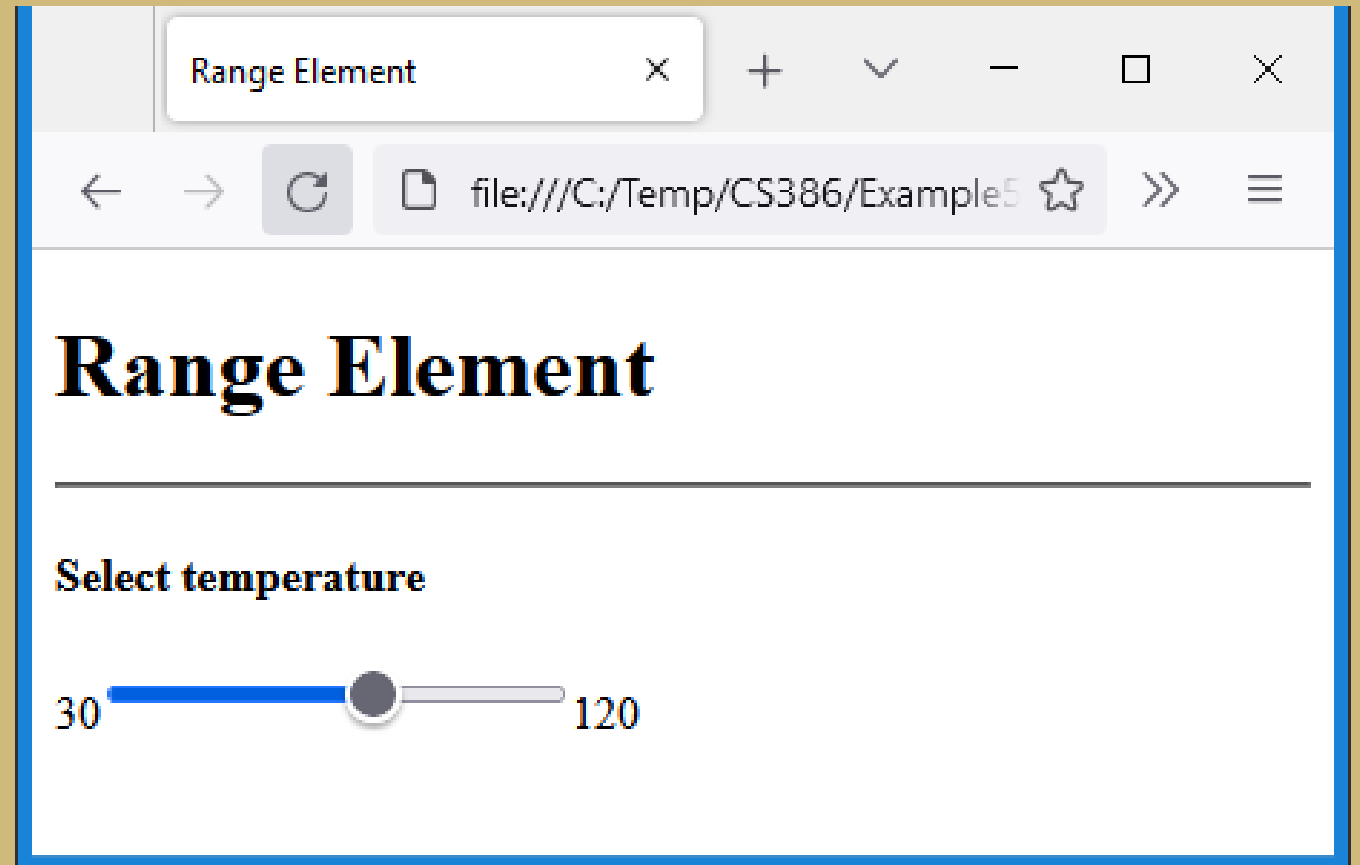
❑ value: Specifies the default value

## Syntax:

```
<input type="range" min="value" max="value" step="value" value="value" >
```

# 5.2 HTML5 Elements

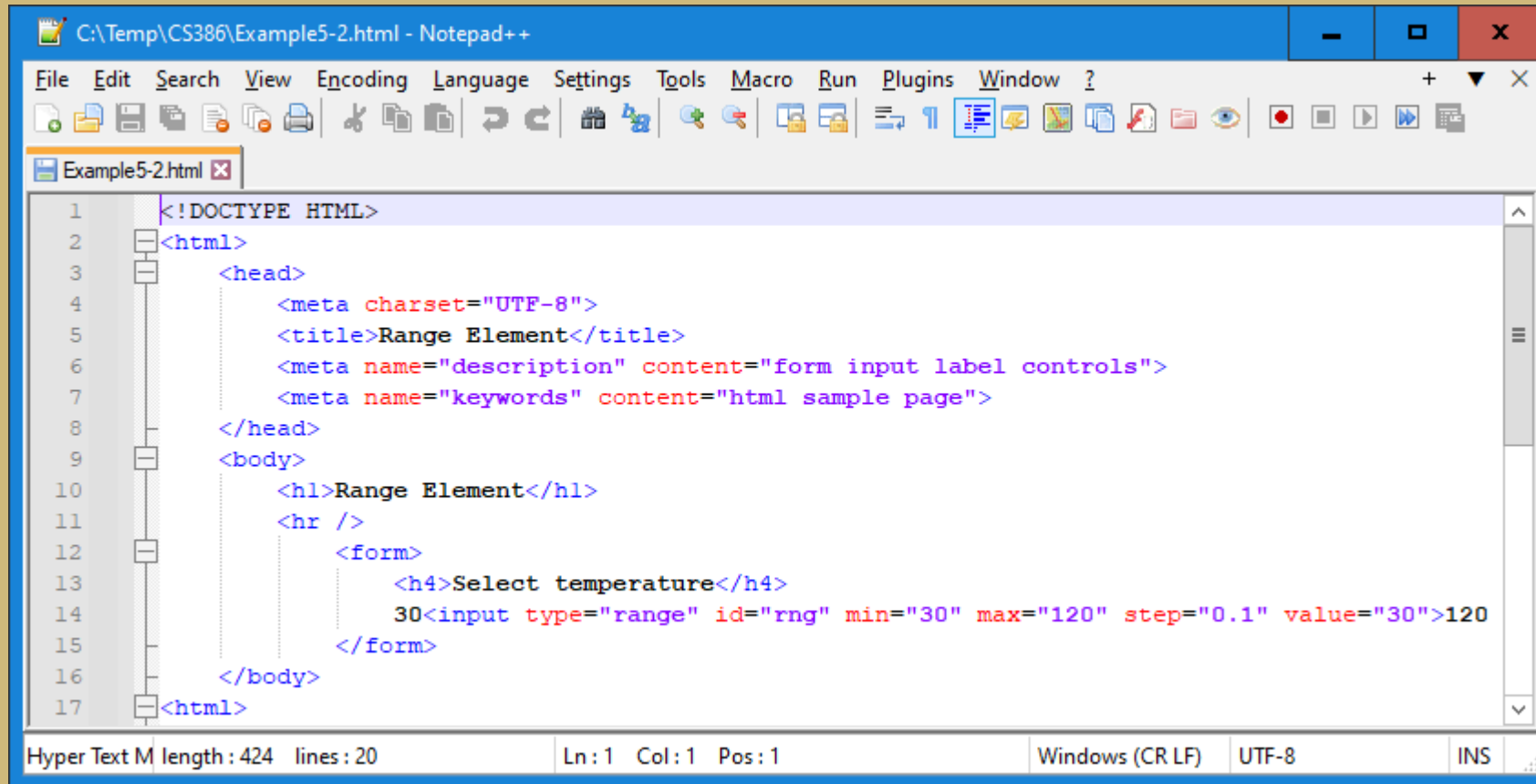
- **Example 5-2:**
- Range element to set temperature between 30 and 120 grad Fahrenheit
- Set step to 0.1
- Set default value to 30





# 5.2 HTML5 Elements

## ➤ Example 5-2:



```
1 <!DOCTYPE HTML>
2 <html>
3   <head>
4     <meta charset="UTF-8">
5     <title>Range Element</title>
6     <meta name="description" content="form input label controls">
7     <meta name="keywords" content="html sample page">
8   </head>
9   <body>
10    <h1>Range Element</h1>
11    <hr />
12    <form>
13      <h4>Select temperature</h4>
14      30<input type="range" id="rng" min="30" max="120" step="0.1" value="30">120
15    </form>
16  </body>
17 </html>
```

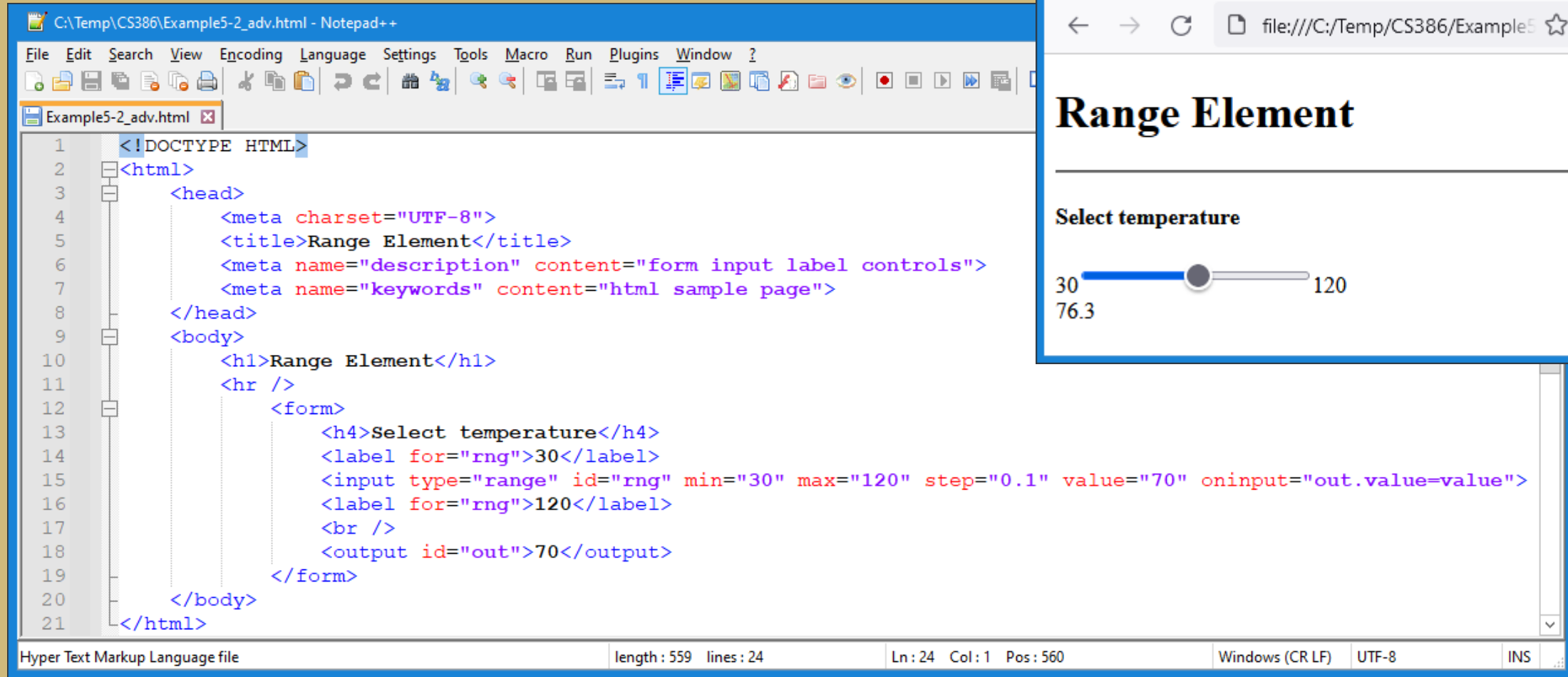
Hyper Text M length : 424 lines : 20      Ln : 1 Col : 1 Pos : 1      Windows (CR LF)    UTF-8    INS

## 5.2 HTML5 Elements

- **Example 5-2 (continued):**
- Display selected value
- No built-in method to display value selected in range element
- Create output element (purely semantic), specify id value of "out"
- Use JavaScript and oninput event to display selected value in output element
- Also use label controls to activate slider control

# 5.2 HTML5 Elements

## ➤ Example 5-2 (continued):




The image displays the Notepad++ editor with an HTML file named 'Example5-2\_adv.html'. The code defines a form with a range input for temperature. The browser preview shows the rendered output with a slider control.

```
1 <!DOCTYPE HTML>
2 <html>
3 <head>
4   <meta charset="UTF-8">
5   <title>Range Element</title>
6   <meta name="description" content="form input label controls">
7   <meta name="keywords" content="html sample page">
8 </head>
9 <body>
10  <h1>Range Element</h1>
11  <hr />
12  <form>
13    <h4>Select temperature</h4>
14    <label for="rng">30</label>
15    <input type="range" id="rng" min="30" max="120" step="0.1" value="70" oninput="out.value=value">
16    <label for="rng">120</label>
17    <br />
18    <output id="out">70</output>
19  </form>
20 </body>
21 </html>
```

Hyper Text Markup Language file      length : 559   lines : 24      Ln : 24   Col : 1   Pos : 560      Windows (CR LF)   UTF-8   INS

**Range Element**

Select temperature

30  120  
76.3

# 5.2 HTML5 Elements

- Example of various new HTML5 input elements
- Arranged in table format

```
C:\Temp\CS386\Example5-3.html - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
Example5-3.html
1 <!DOCTYPE HTML>
2 <html>
3   <head>
4     <meta charset="UTF-8">
5     <title>HTML5 Input Controls</title>
6     <meta name="description" content="form select controls">
7     <meta name="keywords" content="html sample page">
8   </head>
9   <body>
10    <h1>Using new HTML5 controls</h1>
11    <hr />
12    <form>
13      <table>
14        <tr><th>Element</th><th>Apperance</th></tr>
15        <tr><td><label for="type-text">Text (text)</label></td><td><input type="text" name="type-text" id="type-text"></td></tr>
16        <tr><td><label for="type-search">Search (search)</label></td><td><input type="search" name="type-search" id="type-search"></td></tr>
17        <tr><td><label for="type-tel">Telephone (tel)</label></td><td><input type="tel" name="type-tel" id="type-tel"></td></tr>
18        <tr><td><label for="type-url">URL (url)</label></td><td><input type="url" name="type-url" id="type-url"></td></tr>
19        <tr><td><label for="type-email">E-mail (email)</label></td><td><input type="email" name="type-email" id="type-email"></td></tr>
20        <tr><td><label for="type-datetime">Date and Time (datetime)</label></td><td><input type="datetime" name="type-datetime" id="type-datetime"></td></tr>
21        <tr><td><label for="type-date">Date (date)</label></td><td><input type="date" name="type-date" id="type-date"></td></tr>
22        <tr><td><label for="type-month">Month (month)</label></td><td><input type="month" name="type-month" id="type-month"></td></tr>
23        <tr><td><label for="type-week">Week (week)</label></td><td><input type="week" name="type-week" id="type-week"></td></tr>
24        <tr><td><label for="type-time">Time (time)</label></td><td><input type="time" name="type-time" id="type-time"></td></tr>
25        <tr><td><label for="type-dt-local">Local Date and Time (datetime-local)</label></td><td><input type="datetime-local" name="type-dt-local" id="type-dt-local"></td></tr>
26        <tr><td><label for="type-number">Number (number)</label></td><td><input type="number" name="type-number" id="type-number" min="0" max="20"></td></tr>
27        <tr><td><label for="type-range">Range (range)</label></td><td><input type="range" name="type-range" id="type-range" min="0" max="100"></td></tr>
28        <tr><td><label for="type-color">Color (color)</label></td><td><input type="color" name="type-color" id="type-color"></td></tr>
29      </table>
30    </form>
31  </body>
32 </html>
Hyper Text Markup Language file length: 2,313 lines: 35 Ln: 1 Col: 1 Pos: 1 Windows (CR LF) UTF-8 INS
```

# 5.2 HTML5 Elements

- Example of various new HTML5 input elements
- Notice that not all elements are fully supported yet
- Firefox

The screenshot shows a Firefox browser window with the title "HTML5 Input Controls". The address bar shows the file path "file:///C:/Temp/CS386/Example5-3.html". The page content is titled "Using new HTML5 controls". Below the title is a table with two columns: "Element" and "Apperance" (sic). The table lists various HTML5 input types and their corresponding visual representations in Firefox. The "Date (date)" and "Month (month)" rows are highlighted with a blue border.

Element	Apperance
Text (text)	<input type="text"/>
Search (search)	<input type="search"/>
Telephone (tel)	<input type="tel"/>
URL (url)	<input type="url"/>
E-mail (email)	<input type="email"/>
Date and Time (datetime)	<input type="datetime"/>
Date (date)	<input type="date"/>
Month (month)	<input type="month"/>
Week (week)	<input type="week"/>
Time (time)	<input type="time"/>
Local Date and Time (datetime-local)	<input type="datetime-local"/>
Number (number)	<input type="number"/>
Range (range)	<input type="range"/>
Color (color)	<input type="color"/>

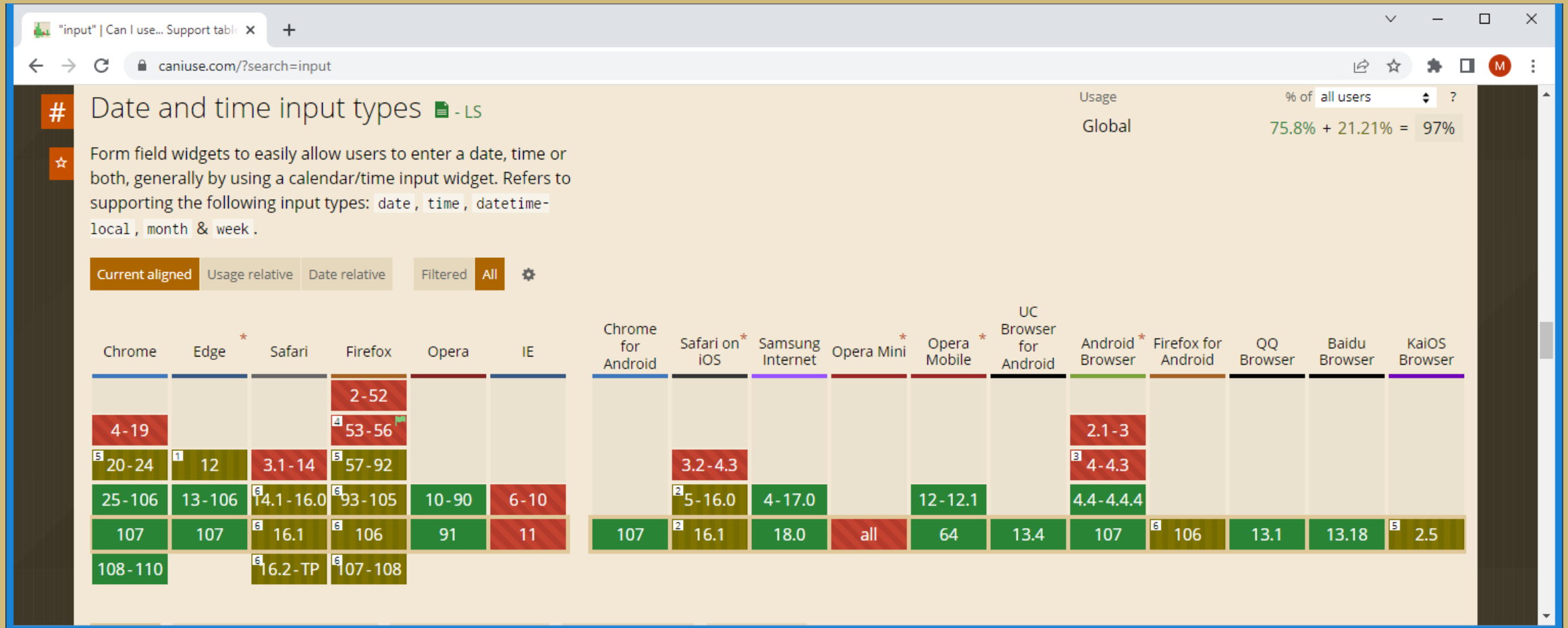
Chrome

The screenshot shows a Chrome browser window with the title "HTML5 Input Controls". The address bar shows the file path "C:/Temp/CS386/...". The page content is titled "Using new HTML5 controls". Below the title is a table with two columns: "Element" and "Apperance" (sic). The table lists various HTML5 input types and their corresponding visual representations in Chrome. The "Date (date)" and "Month (month)" rows are highlighted with a blue border.

Element	Apperance
Text (text)	<input type="text"/>
Search (search)	<input type="search"/>
Telephone (tel)	<input type="tel"/>
URL (url)	<input type="url"/>
E-mail (email)	<input type="email"/>
Date and Time (datetime)	<input type="datetime"/>
Date (date)	<input type="date"/>
Month (month)	<input type="month"/>
Week (week)	<input type="week"/>
Time (time)	<input type="time"/>
Local Date and Time (datetime-local)	<input type="datetime-local"/>
Number (number)	<input type="number"/>
Range (range)	<input type="range"/>
Color (color)	<input type="color"/>

# 5.2 HTML5 Elements

- Use web site caniuse.com (can I use) to verify browser compatibility



# 5.3 Button Elements

## ➤ Form buttons

- ❑ Built-in functionality for following input types:
  - submit
  - reset
- ❑ Regular type button does not do anything
- ❑ Need JavaScript to add functionality
- ❑ Use value attribute to change default button caption
- ❑ Submit type default caption shows 'Submit query'
- ❑ Reset type default caption shows 'Reset'
- ❑ Button type does not show any caption, use value attribute

### Syntax:

**<input type="button" value="Click here">**

### Syntax:

**<input type="submit" >**

### Syntax:

**<input type="reset" >**

### Syntax:

**<input type="button" >**



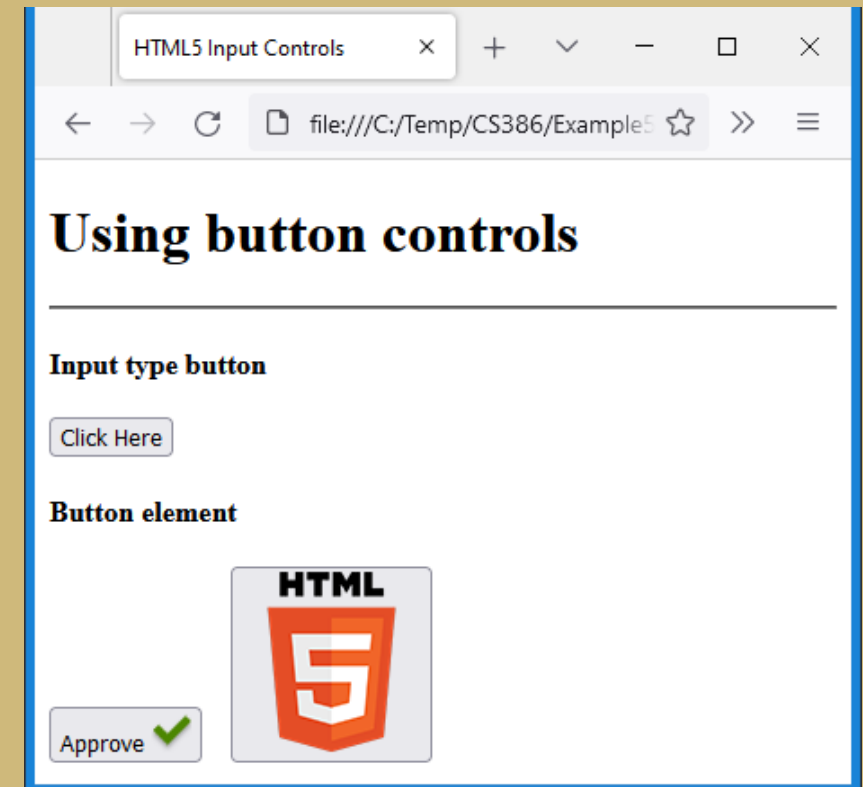
# 5.3 Button Elements

## ➤ Form buttons

- ❑ Also separate button tag
- ❑ Allows for more formatting options including image on button
- ❑ `<input>` is void element, whereas `<button>` is not
- ❑ Place text or image between opening and closing tag
- ❑ **WARNING:** Without type attribute, button element is submit button by default!

### **Syntax:**

```
<button type="button" >  
text or image  
</button>
```



## 5.3 Button Elements

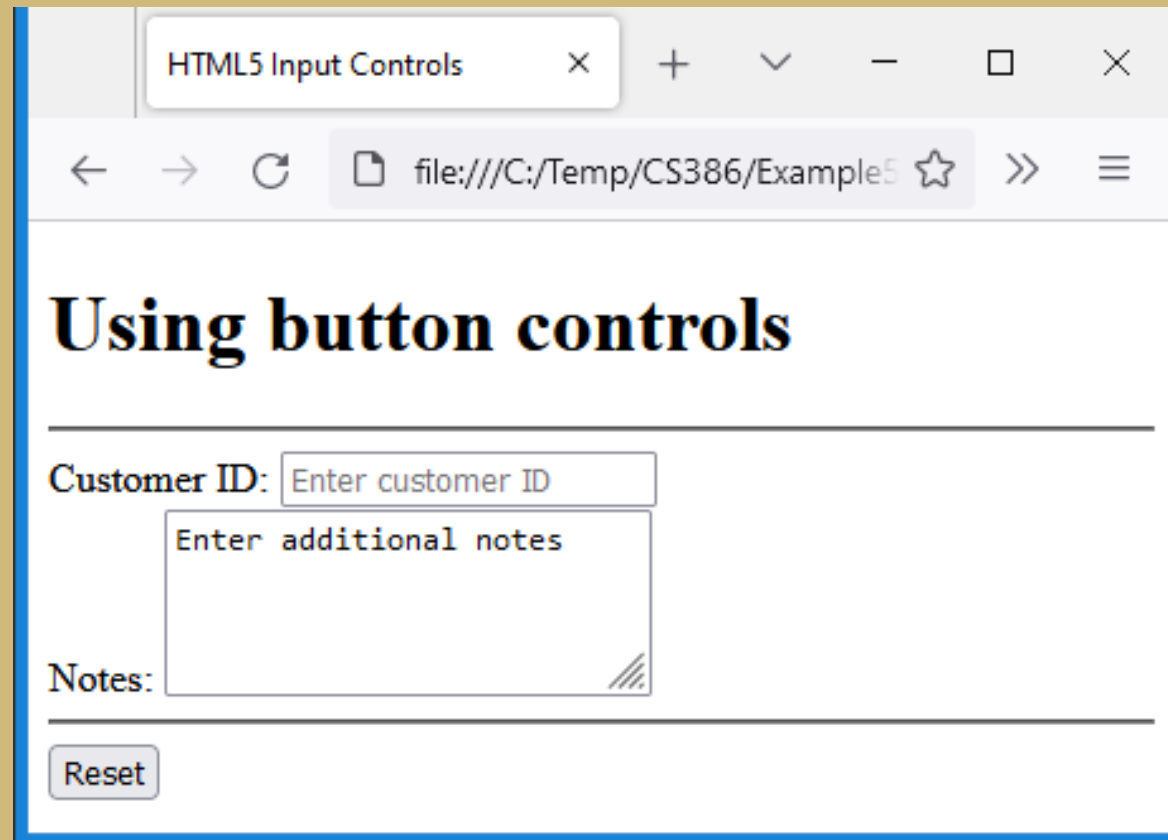
- Submit button
  - ❑ `<input>` elements of type submit are rendered as buttons
  - ❑ When click event occurs (typically because user clicked button) → browser attempts to submit form to server
  - ❑ Value attribute contains string which is displayed as button's label
  - ❑ Submit button works with action and method attribute of form (next chapter)

## 5.3 Button Elements

- Reset button
  - ❑ Clicking reset button restores form to its original state (the default value)
  - ❑ Wiping out values user entered into fields, selecting radio buttons, checkboxes, etc.
  - ❑ No code needed, built-in functionality

# 5.3 Button Elements

- **Example 5-4:**
- Create form with input type text and textarea element with default value
- Add reset button

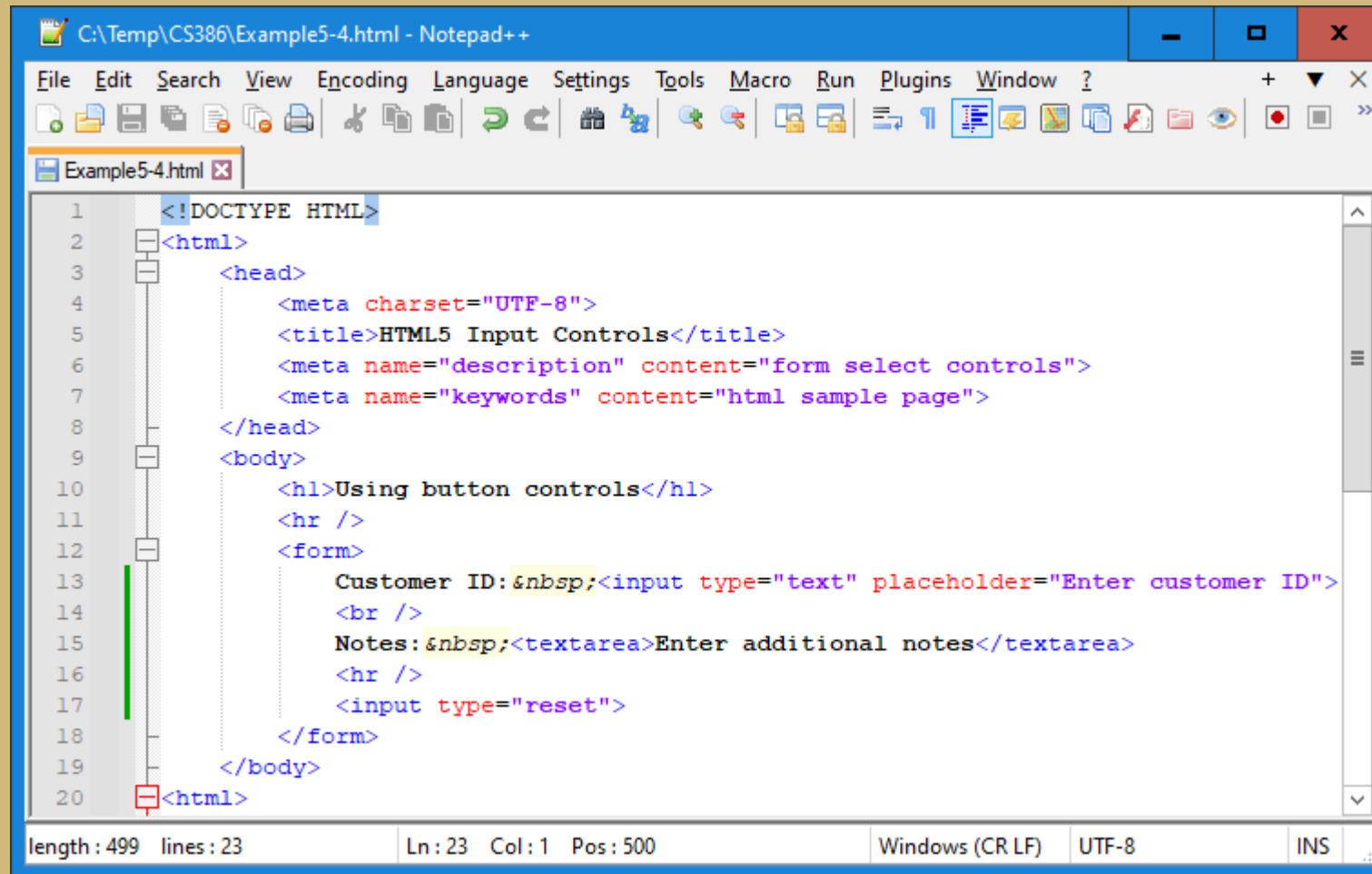


The screenshot shows a web browser window with the title 'HTML5 Input Controls'. The address bar displays 'file:///C:/Temp/CS386/Example5'. The main content area has a heading 'Using button controls' followed by a horizontal line. Below the line is a form with the following elements:

- A label 'Customer ID:' followed by a text input field containing the placeholder text 'Enter customer ID'.
- A label 'Notes:' followed by a text area containing the placeholder text 'Enter additional notes'.
- A 'Reset' button located at the bottom left of the form.

# 5.3 Button Elements

## ➤ Example 5-4:



```
1  <!DOCTYPE HTML>
2  <html>
3  <head>
4      <meta charset="UTF-8">
5      <title>HTML5 Input Controls</title>
6      <meta name="description" content="form select controls">
7      <meta name="keywords" content="html sample page">
8  </head>
9  <body>
10     <h1>Using button controls</h1>
11     <hr />
12     <form>
13         Customer ID: &nbsp;<input type="text" placeholder="Enter customer ID">
14         <br />
15         Notes: &nbsp;<textarea>Enter additional notes</textarea>
16         <hr />
17         <input type="reset">
18     </form>
19 </body>
20 </html>
```

length : 499 lines : 23 Ln : 23 Col : 1 Pos : 500 Windows (CR LF) UTF-8 INS

# 5.4 Form Processing

- Data entered in HTML form can be sent to server:
  - ❑ Submit button works with action and method attribute of form
  - ❑ action:
    - Defines location (URL) where form's collected data should be sent when it is submitted
    - Specifies form-handler that will process the submitted form data
    - Form data is submitted to server-side handler or script
    - To post back to same page, use:
      - Empty string
      - Question mark (action="?")
      - Actual file name of current page
  - ❑ method:
    - Two possible methods are GET or POST
  - ❑ required attribute
    - Form input elements can be set with required attribute to force users to enter value
    - When submit is pressed will display message if no value is present in form input elements

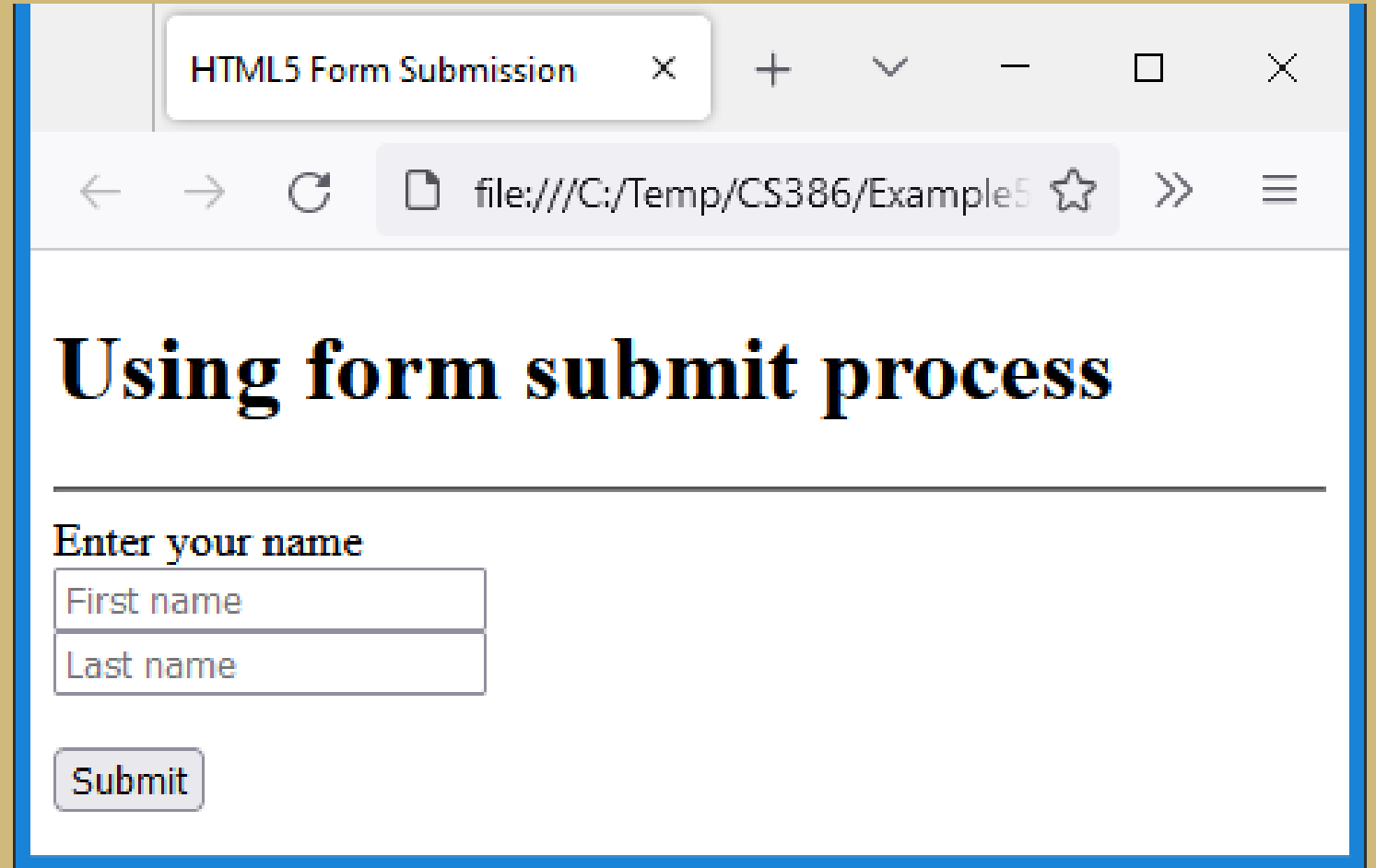
# 5.4 Form Processing

- Form methods:
  - ❑ get method:
    - method="get" attribute value specifies that form data will be submitted as name/value pairs on query string
    - It is sent using HTTP GET method
  - ❑ post method:
    - method="post" attribute value specifies that form data will be sent to server by storing it in an HTTP request body
    - This method is used to transfer data "securely" using HTTP headers
  - ❑ Name attribute of form controls is important for form submission
  - ❑ Name attribute will be used to identify control to send data
  - ❑ Value in control is sent together with name of control as name/value pair



# 5.4 Form Processing

- **Example 5-5:**
- Use action attribute to point to same html page
- Use method attribute get

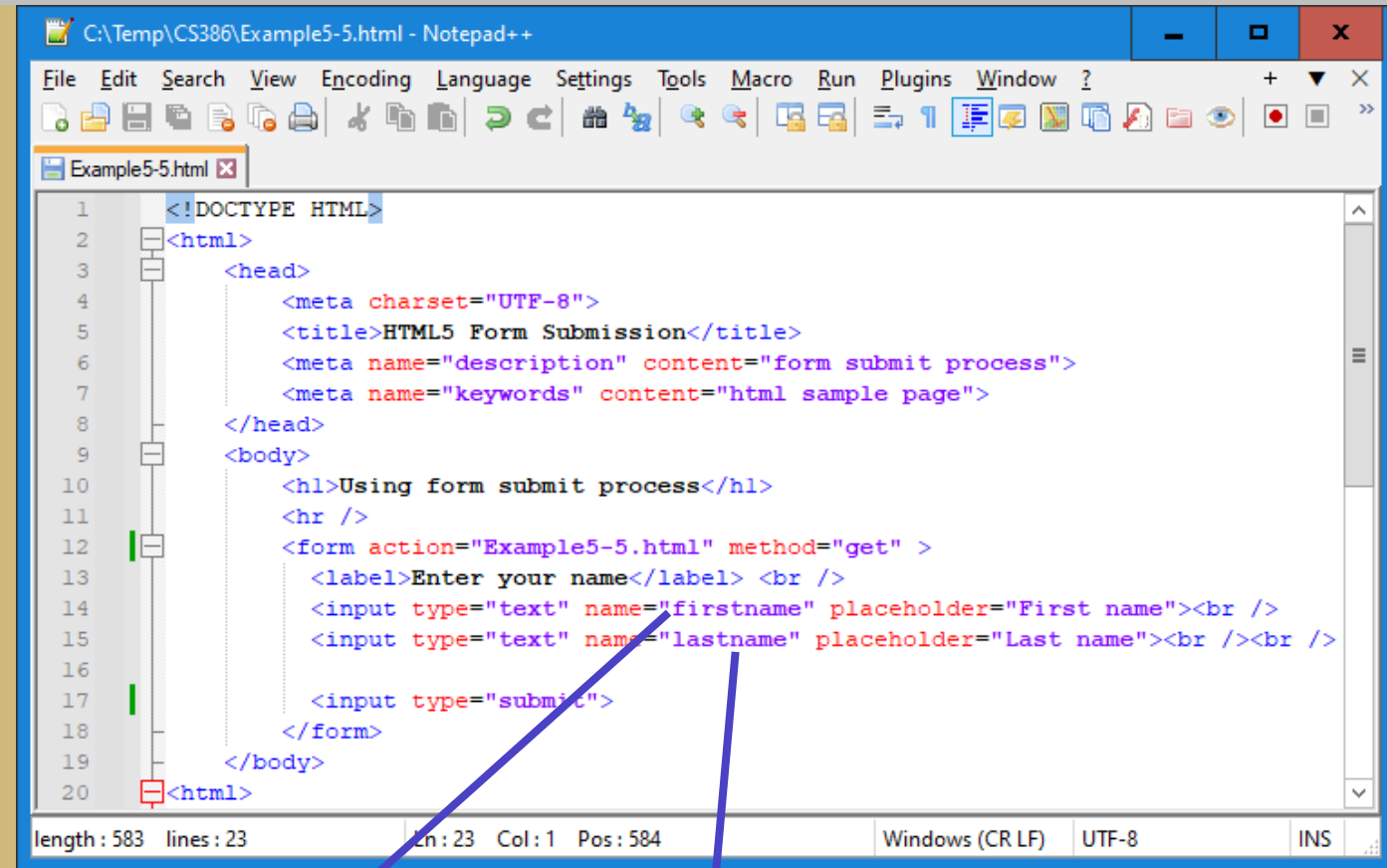


The screenshot shows a web browser window with the title "HTML5 Form Submission". The address bar displays the file path "file:///C:/Temp/CS386/Example5". The main content area features a heading "Using form submit process" followed by a horizontal line. Below the line, the text "Enter your name" is displayed. There are two input fields: "First name" and "Last name". A "Submit" button is located at the bottom of the form.

# 5.4 Form Processing

## ➤ Example 5-5:

- ❑ Enter some data
- ❑ Click on submit data
- ❑ Inspect URL
- ❑ Notice appended form data!



```
1 <!DOCTYPE HTML>
2 <html>
3   <head>
4     <meta charset="UTF-8">
5     <title>HTML5 Form Submission</title>
6     <meta name="description" content="form submit process">
7     <meta name="keywords" content="html sample page">
8   </head>
9   <body>
10    <h1>Using form submit process</h1>
11    <hr />
12    <form action="Example5-5.html" method="get" >
13      <label>Enter your name</label> <br />
14      <input type="text" name="firstname" placeholder="First name"><br />
15      <input type="text" name="lastname" placeholder="Last name"><br /><br />
16
17      <input type="submit">
18    </form>
19  </body>
20 </html>
```

file:///C:/Temp/CS386/Example5-5.html?firstname=John&lastname=Doe

# 5.4 Form Processing

## ➤ Example 5-5 (continued):

- ❑ Add required attribute to both input elements
- ❑ Click on submit button
- ❑ Notice the message at first control having no value
- ❑ Change method to post
- ❑ Notice that URL does not contain any additional data
- ❑ Data is in HTTP header

**Using form submit process**

---

Enter your name

Please fill out this field.

Submit

```
<form action="Example5-5.html" method="post" >
  <label>Enter your name</label> <br />
  <input type="text" name="firstname" placeholder="First name" required><br />
  <input type="text" name="lastname" placeholder="Last name" required><br /><br />
```