Introduction to HTML5

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Introduction

- HTML5 (HyperText Markup Language 5)
  - Markup language (NOT a programming language)
  - Specifies the ***structure*** and ***content*** of documents that are displayed in web browsers

Editing HTML5

- You can use a text editor (such as Notepad, TextEdit, vi, emacs) to create HTML5 documents
  - Make sure to save the file with the **.html** filename extension

- Recommedation:
  - Sublime text:
    - Highlights HTML syntax

Creating a Basic Web Page

First HTML5 Example

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.1: main.html -->
4  <!-- First HTML5 example. -->
5  <html>
6     <head>
7        <meta charset = "utf-8">
8        <title>Welcome</title>
9     </head>
10
11    <body>
12       <p>Welcome to HTML5!</p>
13    </body>
14 </html>
```

Fig. 2.1 | First HTML5 example.

Let’s explain the code

First HTML5 Example

Document Type Declaration

- The **document type declaration** (**DOCTYPE**) is required in HTML5 documents so that browsers render the page in standards mode.
- We will include it in all of our HTML5 pages

First HTML5 Example

Comments

- Improve readability and describe the content of a document.
- The browser ignores comments when your document is rendered.

- Comments start with <!-- and end with -->.

First HTML5 Example

- ***html, head and body* Elements**
  - The html element *encloses* the head section (represented by the head element) and the body section (represented by the body element).
  - The **head section** contains information about the HTML5 document, such as the character set (UTF-8, the most popular character-encoding scheme for the web) that the page use—which helps the browser determine how to render the content—and the **title**.
  - The **body section** contains the page's content, which the browser displays when the user visits the web page.

First HTML5 Example (cont.)

Start Tags and End Tags

HTML5 documents *delimit* most **elements**

with a ***start tag*** and ***end tag***.

A **start tag** consists of the element name in angle brackets

- For example, <html>

An **end tag** consists of the element name preceded by a forward slash (/) in angle brackets

- For example, </html>

First HTML5 Example (Cont.)

Title Element

- Describes the web page.
  - Usually appears in the title bar, in the browser tab, and as the text that appears in the list of Favorites or Bookmarks
  - Search engines use the title for indexing purposes and when displaying results

First HTML5 Example (Cont.)

Paragraph Element (...)

- All text placed between the and tags forms one paragraph.
  - Browser places extra space below and above the paragraph

Tags and attributes

- The syntax of the usage of the tags is

<tagname attribute>

</tagname>

- Ex:

<a>

Headings

- HTML5 provides six heading elements (h1 through h6) for specifying the *relative importance* of information
  - Heading element h1 is considered the most significant heading and is rendered in the largest font.
  - Each successive heading element (i.e., h2, h3, etc.) is rendered in a progressively smaller font.

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.2: heading.html -->
4  <!-- Heading elements h1 through h6. -->
5  <html>
6     <head>
7        <meta charset = "utf-8">
8        <title>Headings</title>
9     </head>
10
11    <body>
12       <h1>Level 1 Heading</h1>
13       <h2>Level 2 heading</h2>
14       <h3>Level 3 heading</h3>
15       <h4>Level 4 heading</h4>
16       <h5>Level 5 heading</h5>
17       <h6>Level 6 heading</h6>
18    </body>
19 </html>
```

Fig. 2.2 | Heading elements h1 through h6. (Part 1 of 2.)

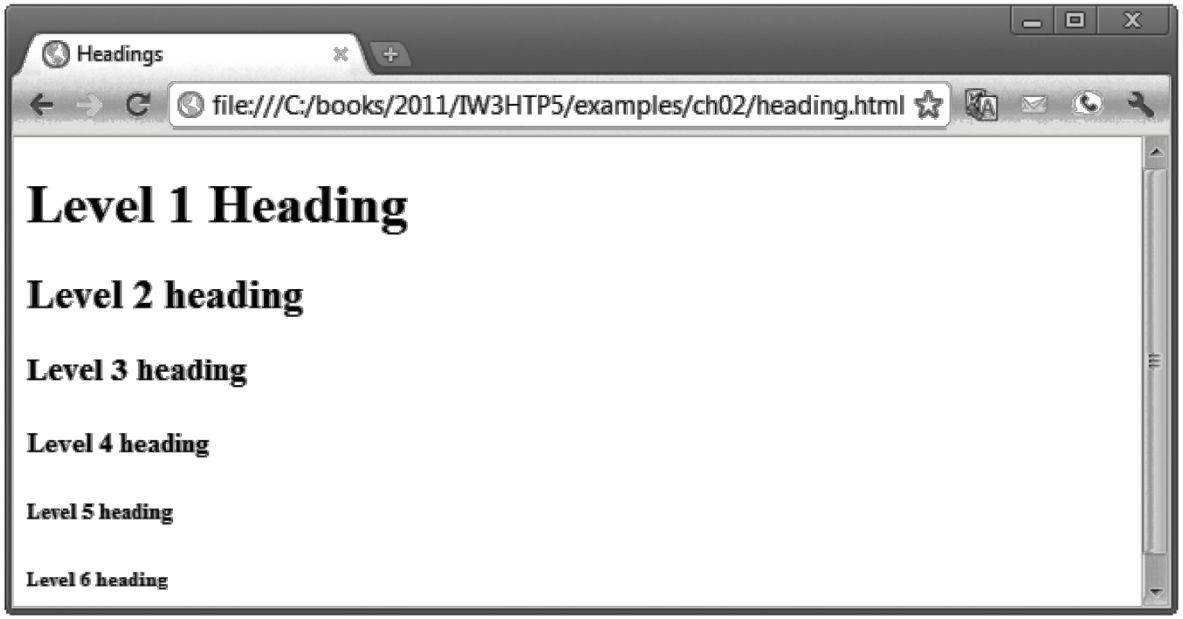


Fig. 2.2 | Heading elements h1 through h6. (Part 2 of 2.)

Linking

- A hyperlink references or links to other resources, such as HTML5 documents and images.
- Web browsers typically *underline* text hyperlinks and color them *blue* by default.

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.3: links.html -->
4  <!-- Linking to other web pages. -->
5  <html>
6     <head>
7        <meta charset = "utf-8">
8        <title>Links</title>
9     </head>
10
11    <body>
12       <h1>Here are my favorite sites:</h1>
13       <p><strong>Click a name to visit that site.</strong></p>
14
15       <!-- create four text hyperlinks -->
16       <p><a href = "http://www.facebook.com">Facebook</a></p>
17       <p><a href = "http://www.twitter.com">Twitter</a></p>
18       <p><a href = "http://www.foursquare.com">Foursquare</a></p>
19       <p><a href = "http://www.google.com">Google</a></p>
20    </body>
21 </html>
```

Fig. 2.3 | Linking to other web pages. (Part 1 of 2.)

Fig. 2.3 | Linking to other web pages. (Part 2 of 2.)

Attributes

Many start tags have attributes that provide additional information about an element, which browsers use to determine how to process the element.

Each **attribute** has a **name** and a **value** separated by an equals sign (=).

Attribute **href (hypertext reference)** specifies a resource's location, such as

- a web page or location within a web page
- a file

Linking (Cont.)

- When a URL does not indicate a specific document on the website, the web server returns a default web page. This page is often called index.html, but most web servers can be configured to use any file as the default web page for the site.
- If the web server cannot locate a requested document, it returns an error indication to the web browser (known as a 404 error), and the browser displays a web page containing an error message.

Linking (Cont.)

Hyperlinking to an E-Mail Address

- Anchors can link to an e-mail address using a mailto: URL
  - When a user clicks this type of anchored link, most browsers launch the default e-mail program (e.g., Mozilla Thunderbird, Microsoft Outlook or Apple Mail) to enable the user to write an e-mail message to the linked address.

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.4: contact.html -->
4  <!-- Linking to an e-mail address. -->
5  <html>
6     <head>
7        <meta charset = "utf-8">
8        <title>Contact Page</title>
9     </head>
10
11    <body>
12       <p>
13          To write to <a href = "mailto:deitel@deitel.com">
14          Deitel & Associates, Inc.</a>, click the link and your default
15          email client will open an email message and address it to us.
16       </p>
17    </body>
18 </html>
```

Fig. 2.4 | Linking to an e-mail address. (Part 1 of 3.)

Fig. 2.4 | Linking to an e-mail address. (Part 2 of 3.)

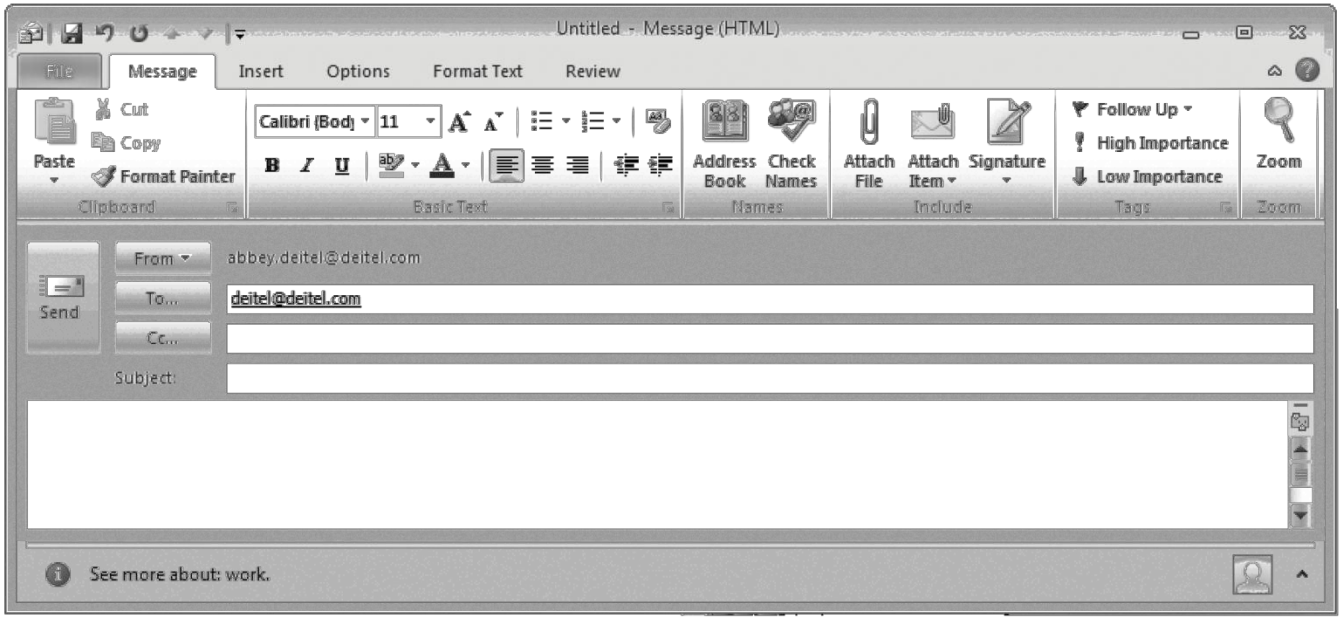


Fig. 2.4 | Linking to an e-mail address. (Part 3 of 3.)

Images

The most popular image formats used by web developers today are PNG (Portable Network Graphics) and JPEG (Joint Photographic Experts Group).

Users can create images using specialized software, such as Adobe Photoshop Express (www.photoshop.com), G.I.M.P. (www.gimp.org), Inkscape (www.inkscape.org) and many more.

Images may also be acquired from various websites, many of which offer royalty-free images.

```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.6: picture.html -->
4  <!-- Including images in HTML5 files. -->
5  <html>
6     <head>
7        <meta charset = "utf-8">
8        <title>Images</title>
9     </head>
10
11    <body>
12       <p>
13          <img src = "cpphtp.png" width = "92" height = "120"
14             alt = "C++ How to Program book cover">
15          <img src = "jhtp.png" width = "92" height = "120"
16             alt = "Java How to Program book cover">
17       </p>
18    </body>
19 </html>
```

Fig. 2.6 | Including images in HTML5 files. (Part 1 of 2.)

Lists

- Unordered list element ul
  - creates a list in which each item in the list begins with a bullet symbol (typically a disc)
  - Each entry is an li (list item) element. Most web browsers render these elements with a line break and a bullet symbol at the beginning of the line.

List example

```
<ul>

    <li>First list element</li>
    <li>Second list element</li>
    <li>Third list element</li>

</ul>

<ol>

    <li>First list element</li>
    <li>Second list element</li>
    <li>Third list element</li>

</ol>
```


```
1  <!DOCTYPE html>
2
3  <!-- Fig. 2.10: links2.html -->
4  <!-- Unordered list containing hyperlinks. -->
5  <html>
6     <head>
7        <meta charset = "utf-8">
8        <title>Links</title>
9     </head>
10
11    <body>
12       <h1>Here are my favorite sites</h1>
13       <p><strong>Click on a name to go to that page</strong></p>
14
15       <!-- create an unordered list -->
16       <ul>
17          <!-- the list contains four list items -->
18          <li><a href = "http://www.youtube.com">YouTube</a></li>
19          <li><a href = "http://www.wikipedia.org">Wikipedia</a></li>
20          <li><a href = "http://www.amazon.com">Amazon</a></li>
21          <li><a href = "http://www.linkedin.com">LinkedIn</a></li>
22       </ul>
23    </body>
24 </html>
```

Fig. 2.10 | Unordered list containing hyperlinks. (Part 1 of 2.)

Fig. 2.10 | Unordered list containing hyperlinks. (Part 2 of 2.)

Lists (Cont.)

Nested Lists

- Lists may be *nested* to represent *hierarchical* relationships, as in a multi-level outline.
- The ordered-list element **ol** creates a list in which each item begins with a number.

```
<body>
    <h3>List of subjects for CSE</h3>
  <ol>

    <li>Semester 1</li>
    <ul>
        <li>Physics</li>
        <li>Graphics</li>
    </ul>

    <li>Semester 2</li>
    <ul>
        <li>Fundamentals of computing</li>
        <li>Object oriented programming</li>
    </ul>

  </ol>
</body>
```

List of subjects for CSE

1. Semester 1
    - Physics
    - Graphics
2. Semester 2
    - Fundamentals of computing
    - Object oriented programming

Tables

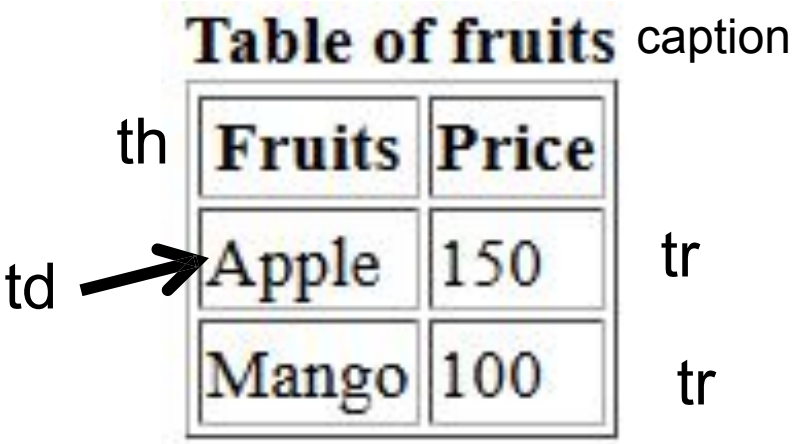
- Tables are frequently used to organize data into *rows* and *columns*.
- The **table** element defines an HTML5 table
- The caption element specifies a table's title.

Tables (Cont.)

- A table can be split into three distinct sections:
  - Head (thead element)
    - Table titles
    - Column headers
  - Body (tbody element)
    - Primary table data
  - Table Foot (tfoot element)
    - Calculation results
    - Footnotes

Tables (Cont.)

- tr Element
  - Defines individual table rows
- Element th
    - Defines a header cell
- td Element
  - Contains table data elements



Table

```
<body>
    <h2>Tables</h2>
    <table border="1">
        <caption><strong>Table of fruits</strong>
        </caption>
        <!--Insert headings-->
        <tr>
            <th>Fruits</th>
            <th>Price</th>

        </tr>
        <!--First row-->
        <tr>
            <td>Apple</td>
            <td>150</td>
        </tr>
        <!--Second row -->
        <tr>
            <td>Mango</td>
            <td>100</td>
        </tr>
    </table>
</body>
```

Tables

Table of fruits

Fruits	Price
Apple	150
Mango	100

Tables (Cont.)

Using rowspan and colspan with Tables

You can merge data cells with the rowspan and colspan attributes.

- The values of these attributes specify the number of rows or columns occupied by the cell.
- Can be placed inside any data cell or table header cell.

Nested table (Example)

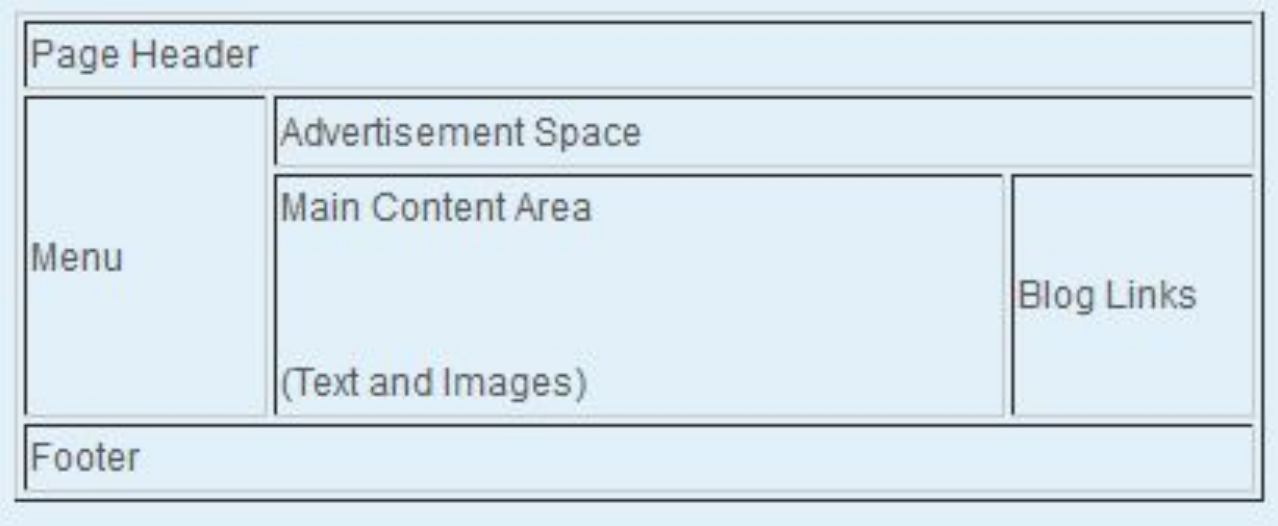
```
<table border="1">
    <caption>Phones</caption>
    <thead>
        <!--First table headings-->
        <th>Phone</th>
        <th colspan="4">Specification</th>
    </thead>
    <tbody>
      <tr>

            <!--Second table headings-->
            <td>
               <th>Price</th>
               <th>Ram</th>
               <th>Processor</th>

            </td>
      </tr>
      <!--Inser the phone data-->
      <tr>
        <td>Samsung</td>
        <td>25000</td>
        <td>1GB</td>
        <td>Snapdragon 801</td>
      </tr>

      <tr>
        <td>Nexus</td>
        <td>25000</td>
        <td>1GB</td>
        <td>Snapdragon 801</td>
      </tr>
    </tbody>
</table>
```

Phones

Phone	Specification		
	Price	Ram	Processor
Samsung	25000	1GB	Snapdragon 801
Nexus	25000	1GB	Snapdragon 801

Exercise

- Create a table as shown below.
- Hint : take colspan=3 and rowspan=3 wherever necessary.



Introduction HTML5 forms

- **Form**: a group of UI controls that accepts information from the user and sends the information to a web server.

```
<form>
.
form elements
.
</form>
```

Input elements for form

- HTML5 has some new form `input` types.
  - Text
  - Radio
  - submit
  - date
  - datetime
  - email
  - month
  - number
  - range
  - tel
  - time
  - url
  - week

```
<form>
  First name:<br>
  <input type="text" name="firstname">
```

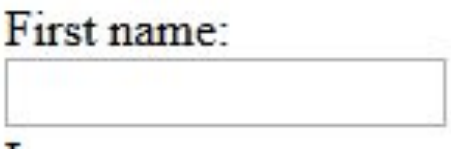
Label

First name:

<input>-- Name and value

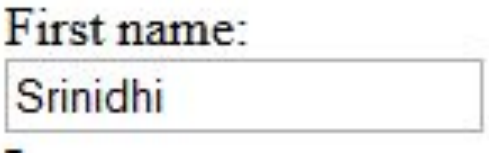
- Text
  - Name

```
<form>
  First name:<br>
  <input type="text" name="firstname">
```



  - Value

```
First name:<br>
<input type="text" name="firstname" value="Srinidhi">
```



<input> Radio and Checkboxes

- Radio

```
<input type="radio" name="gender">Male
<input type="radio" name="gender">Female
```

Gender:
◉ Male ○ Female

- Checkbox

```
<br>Travel by:
<input type="checkbox" name="bike">Bike<br>
<input type="checkbox" name="car">Car<br>
```

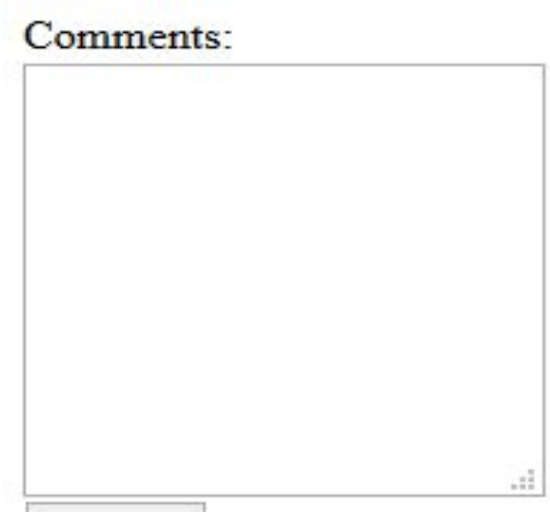
Travel by: ☑ Bike
☑ Car

- Any value to be default checked use checked="checked"

Text area

- The **<textarea>** element defines a multi-line input field.

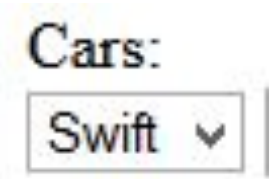
```
<textarea name="comments" rows="10" cols="20">
</textarea>
```



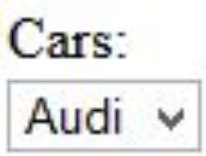
Drop down list- <select>

- The **<select>** element defines a **drop-down** list:
- The **<option>** elements defines the options to select.
- The list will normally show the first item as selected.

```
<select name="cars">
      <option value="swift">Swift</option>
      <option value="Alto">alto</option>
      <option value="fiat">Fiat</option>
      <option value="audi">Audi</option>
</select>
```



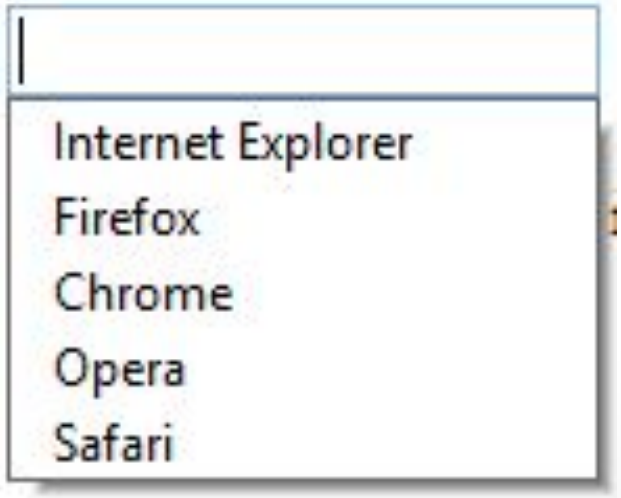

```
<option value="audi" selected>Audi</option>
```



Data list

- The **<datalist>** element specifies a list of pre-defined options for an <input> element.
- Users will see a drop-down list of pre-defined options as they input data.
- The **list** attribute of the <input> element, must refer to the **id** attribute of the <datalist> element.

```
<input list="browsers">
<datalist id="browsers">
  <option>Chrome</option>
  <option>Safari</option>
  <option>Firefox</option>
  <option>IE</option>
</datalist>
```



Number

- In order to specify the quantity input type of number can be used.
- This should be associated with min and max value of number in the field.
- You can also control the intervals of increasing and decreasing values using **step** attribute.

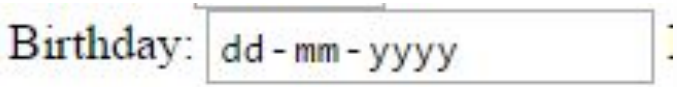
```
    Quantity
<input type="number" name="quantity" value="1"min="1" max="5">
```

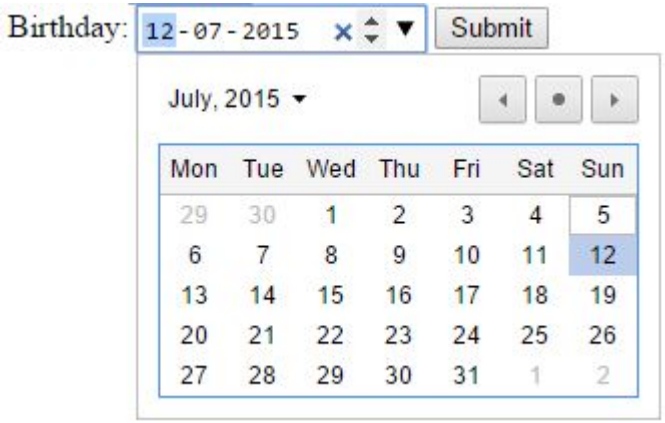

```
<input type="number" name="quantity" value="1" step="5"
min="1" max="10">
```

Date and date picker

- The **<input type="date">** is used for input fields that should contain a date.
- Date picker is supported in **chrome** and others but **not in firefox**.
- You can control the min and max dates to be allowed using min and max attributes.

```
Birthday:
<input type="date" name="bday">
```

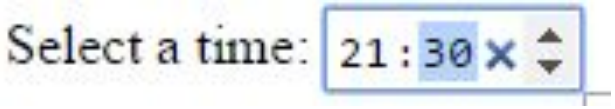




Time and Date-time-local

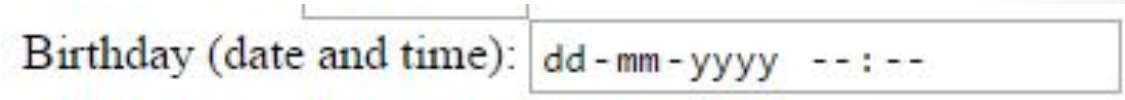
- The **<input type="time">** allows the user to select a time (no time zone).

```
Select a time:
  <input type="time" name="usr_time">
```



- The **<input type="datetime-local">** allows the user to select a date and time (no time zone).

```
  Birthday (date and time):
<input type="datetime-local" name="bdaytime">
```

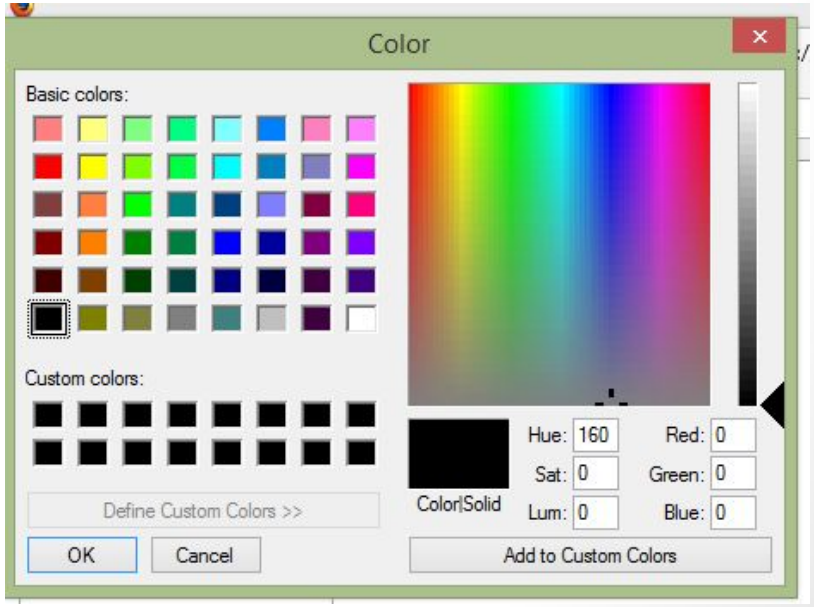


Color

- The **<input type="color">** is used for input fields that should contain a color.

```
Select your favorite color:
<input type="color" name="favcolor">

<br>
```

Select your favorite color:



Range

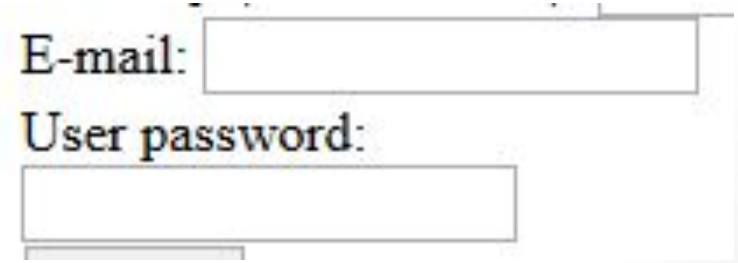
- The **<input type="range">** is used for input fields that should contain a value within a range.

```
Points:
<input type="range" name="points" min="0" max="10">
```

Email and Password

- The **<input type="email">** is used for input fields that should contain an e-mail address.
- **<input type="password">** defines a **password field**

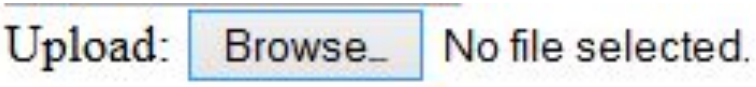
```
    E-mail:
  <input type="email" name="email"> <br>
  User password:<br>
<input type="password" name="psw"><br>
```



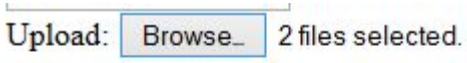
File

- To upload any images or files we use input type as file.
- To upload multiple files we must **multiple** as attribute with input type file.

```
Upload:
<input type="file" name="img">
```



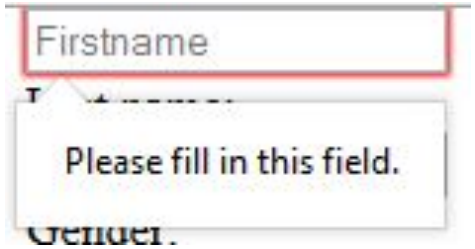

```
Upload:
<input type="file" name="img" multiple>
```



Required and placeholder

- The placeholder attribute specifies a hint that describes the expected value of an input field (a sample value or a short description of the format).
- The required attribute is a boolean attribute.
- When present, it specifies that an input field must be filled out before submitting the form.

```
First name:<br>
<input type="text" name="firstname" placeholder="Firstname"
required>
```



Pattern

- The pattern attribute specifies a regular expression that the <input> element's value is checked against.
- **Note:** The pattern attribute works with the following input types: text, search, url, tel, email, and password.
- <input pattern="*regexp*">
- *regexp* -Specifies a regular expression that the <input> element's value is checked against

Pattern examples

- To check for a postal code of six numbers.

```
Postal code:
 <input type="text" name="code" pattern="[0-9]{6}"
 title="6 numbers should be present">
```

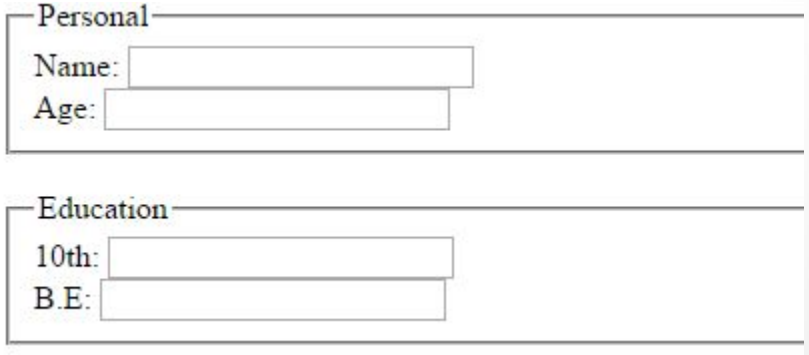
- To check for a password with one number, one lowercase and one upper case character with minimum 8 characters length

```
<input type="password" name="pswde"
pattern="(?=.*\d)(?=.*[a-z])(?=.*[A-Z]).{8,}">
```

Fieldset

- The <fieldset> tag is used to group related elements in a form.
- The <fieldset> tag draws a box around the related elements.
- With the <fieldset>we use **<legend>** to denote the group of elements of the form they belong.

```
<fieldset>
    <legend>Personal</legend>
    Name:
    <input type="text" name="name"><br>
    Age:
    <input type="text" name="age"><br>
</fieldset>
<br>
<fieldset>
   <legend>Education</legend>
   10th:
   <input type="text" name="name"><br>
   B.E:
   <input type="text" name="age">
</fieldset>
```



Button

- The <button> tag defines a clickable button.
- Inside a <button> element you can put content, like text or images. This is the difference between this element and buttons created with the <input> element.

```
<button>
  <img src="signup.jpeg" width="70"
  onclick="alert('Login success')">
</button>
```

Exercises

- Please refer to the URI for carrying out exercises for the class.