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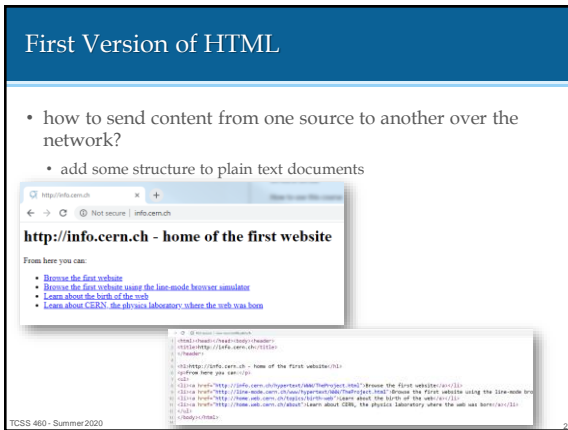
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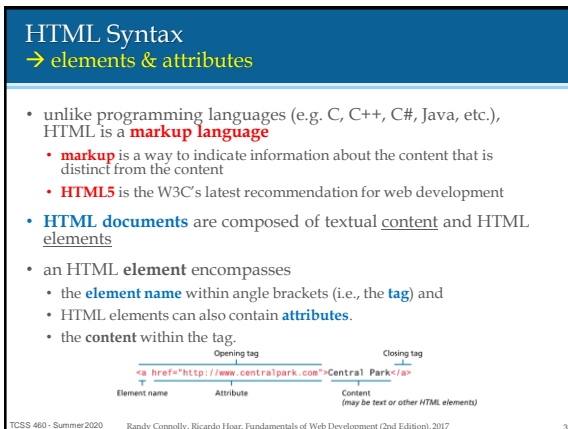
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## HTML Syntax

### → elements & attributes (cont'd) & nesting elements

- an **empty element** does not contain any text content; instead, it is an instruction to the browser to do something.
  - in XHTML, empty elements had to be terminated by a trailing slash.
  - in HTML5, the trailing slash in empty elements is optional.

Example empty element: ``  
Element name                      Trailing slash (optional)

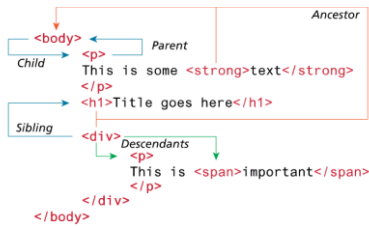
### • nesting HTML Elements



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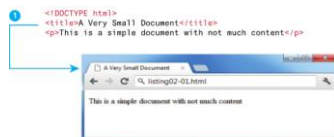
## HTML Syntax

### → nesting elements (cont'd)



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## Structure of HTML Documents



### Document Type Declaration (DTD)

- DOCTYPE Short for **Document Type Definition** tells the browser what type of document it is about to process

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## Quick Tour of HTML Elements (cont'd)

### Comments

• `<!-- ... -->`

- is used for comments

```
<!-- this document need to be updated every 1 week -->
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="utf-8">
```

- comments can span across multiple lines (and you can comment HTML code as well)

```
<body>
  <!--
  <!-- Seattle City weather -->
  <!--
  -->
  <p>
    Tacoma's weather today is clear with a
    Humidity: 67%, Wind 3 km/h
  </p>
  <div>
    Forecast: Tomorrow's temperature:
    high: 96, low 65
  </div>
</body>
```

Tacoma's weather today is clear with a high of 96 degrees.  
Humidity: 67%, Wind 3 km/h  
Forecast: Tomorrow's temperature:  
high: 96, low 65

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3

## Structure of HTML Documents

→ a slightly more complex document



### html elements...

- `<html>` contains all the other HTML elements in the document (Item 2)
- `<head>` contains descriptive elements (title, stylesheets, JavaScript, etc.) (Item 3)
- `<body>` contains content to be displayed by the browser (Item 4)
- `<meta>` element (Item 5) declares that the character encoding for the document is UTF-8
- Item 6 specifies an external CSS style sheet file with `<link>` that is used in this document
- Item 7 references an external JavaScript file using `<script>`

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4

## Quick Tour of HTML Elements

### HTML document

```
<body>
  <h1>Share Your Travels</h1>
  <h2>New York - Central Park</h2>
  <p>Photo by Randy Connolly</p>
  <p>This photo of Conservatory Pond in
  New York City was taken on October 22, 2016 with a
  <strong>Canon EOS 30D</strong> camera.
  </p>
  
  <hr>
  <h3>Reviews</h3>
  <div>
    <p>By Ricardo on <time>2016-05-23</time></p>
    <p>Easy on the HDR buddy.</p>
  </div>
  <div>
    <p>By Susan on <time>2016-11-18</time></p>
    <p>I love Central Park.</p>
  </div>
  <p><small>Copyright, 2017 Share Your Travels</small></p>
</body>
```

### how it appears in browser



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5

## Quick Tour of HTML Elements (cont'd)



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10

## Quick Tour of HTML Elements (cont'd)

### Headings, Paragraphs and Divisions

- HTML provides six levels of **heading** (h1 - h6)
  - headings are also used by the browser to create a document outline for the page
- `<p>` tag is a container for text and other HTML elements
- `<div>` also a container element and is used to create a logical grouping of content

```

1  <body>
    <h1>Share Your Travels</h1>
    <h2>New York - Central Park</h2>
    ...
2  <p>Photo by Randy Connolly</p>
    <p>This photo of Conservatory Pond in
      <a href="http://www.centralpark.com/">Cen
        New York City was taken on October 22, 20
        <strong>Canon EOS 300</strong> camera.
    </p>

```

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11

## Quick Tour of HTML Elements (cont'd)

### Links

#### links

- links are an essential feature of all web pages
- links use the `<a>` element (the "a" stands for anchor)

```

Link to external site
<a href="http://www.centralpark.com">Central Park</a>

Link to resource on external site
<a href="http://www.centralpark.com/logo.gif">Central Park</a>

Link to another page on same site as this page
<a href="index.html">Home</a>

Link to another place on the same page
<a href="#top">Go to Top of Document</a>
<name="top">

Define anchor for a link to another place on same page
<a href="#top">Go to Top of Document</a>

```

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12

## Quick Tour of HTML Elements (cont'd)

### Images

Specifies the URL of the image to display (note: uses standard relative referencing).

Text in title attribute will be displayed in a pop-up tool tip when user moves mouse over image.

```

```

Text in alt attribute provides a brief description of image's content for users who are unable to see it.

Specifies the width and height of image in pixels

#### images

- **img** element includes an image in the document (void element)
- image file's location is specified with the **src** (source) attribute
  - relative path
- optional attributes width and height specify the image's dimensions
- every **img** element in an HTML5 document must have an **alt** attribute
  - alt attribute is also important for accessibility – **speech synthesizer**

image hyperlink...

```
<a href = "links.html">
  <img src = "resources/links.jpg" width = "85"
  height = "35" alt = "links" />
</a>
```

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13

## Quick Tour of HTML Elements (cont'd)

### Character Entities

#### character entities

- these are special characters for symbols for which
  - there is either no easy way to type them via a keyboard
  - or which have a reserved meaning in HTML (like "<")

Entity	Description
&nbsp;	Nonbreakable space
&lt;	<
&gt;	>
&copy;	©
&trade;	™

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14

## Quick Tour of HTML Elements (cont'd)

### Lists

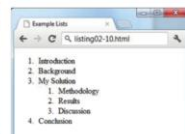
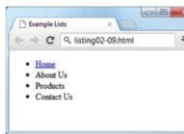
#### lists

- unordered lists <ul>
- ordered lists <ol>
- description lists <dl>

Notice that the list item element can contain other HTML elements.

```
<ul>
  <li><a href="index.html">Home</a></li>
  <li>About Us</li>
  <li>Products</li>
  <li>Contact Us</li>
</ul>
```

```
<ol>
  <li><Introduction</li>
  <li><Background</li>
  <li><My Solution</li>
  <li></li>
  <li><Methodology</li>
  <li><Results</li>
  <li><Discussion</li>
  <li><Conclusion</li>
</ol>
```



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15


## Quick Tour of HTML Elements (cont'd)

### Basic Table Structure (cont'd)

```

<table>
<tr>
  <td>The Death of Marat</td>
  <td>Jacques-Louis David</td>
  <td>1793</td>
  <td>162cm</td>
  <td>128cm</td>
</tr>
<tr>
  <td>Burial at Ornans</td>
  <td>Gustave Courbet</td>
  <td>1849</td>
  <td>314cm</td>
  <td>663cm</td>
</tr>
</table>

```



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16


## Quick Tour of HTML Elements (cont'd)

### Basic Table Structure → Adding Headings

```

<table>
<tr>
  <th>Title</th>
  <th>Artist</th>
  <th>Year</th>
  <th>Width</th>
  <th>Height</th>
</tr>
<tr>
  <td>The Death of Marat</td>
  <td>Jacques-Louis David</td>
  <td>1793</td>
  <td>162cm</td>
  <td>128cm</td>
</tr>
<tr>
  <td>Burial at Ornans</td>
  <td>Gustave Courbet</td>
  <td>1849</td>
  <td>314cm</td>
  <td>663cm</td>
</tr>
</table>

```



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17

## Quick Tour of HTML Elements (cont'd)

### Basic Table Structure → Spanning Columns

```

<table>
<tr>
  <th>Title</th>
  <th>Artist</th>
  <th>Year</th>
  <th>Size (width x height)</th>
</tr>
<tr>
  <td>The Death of Marat</td>
  <td>Jacques-Louis David</td>
  <td>1793</td>
  <td>162cm 128cm</td>
</tr>
<tr>
  <td>Burial at Ornans</td>
  <td>Gustave Courbet</td>
  <td>1849</td>
  <td>314cm 663cm</td>
</tr>
</table>

```

Notice that this row now only has four cell elements.

colspan defines how many columns a cell should span

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18

## Quick Tour of HTML Elements (cont'd)

### Basic Table Structure → Spanning Rows

Artist	Title	Year
Jacques-Louis David	The Death of Marat	1793
	The Intervention of the Sabine Women	1799
	Napoleon Crossing the Alps	1800

rowspan defines how many rows a cell should span

Notice that these two rows now only have two cell elements.

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19

## Quick Tour of HTML Elements (cont'd)

### Styling Tables → Boxes

```
caption {
  font-weight: bold;
  padding: 0.25em 0 0.25em 0;
  text-align: left;
  text-transform: uppercase;
  border-top: 1px solid #DCA806;
}

table {
  font-size: 0.8em;
  font-family: Arial, sans-serif;
  border-collapse: collapse;
  border-top: 4px solid #DCA806;
  border-bottom: 1px solid white;
  text-align: left;
}
```

```
thead tr {
  background-color: #CACA06;
}

tbody tr {
  padding: 0.75em;
}
```

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20

## Quick Tour of HTML Elements (cont'd)

### Styling Tables → Boxes (cont'd)

```
tbody tr {
  background-color: #F1F1F1;
  border-bottom: 1px solid white;
  color: #6E6E6E;
}

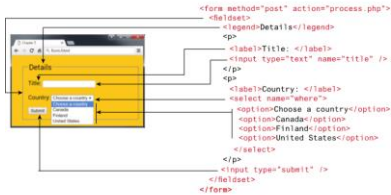
tbody td {
  padding: 0.75em;
}
```

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21

## Quick Tour of HTML Elements (cont'd)

### Forms



*more details on form handling later*

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22

## Quick Tour of HTML Elements (cont'd)

### Q element

- `<q>` element is used for quoted text

```

<p>In this paper, we investigate the use of
sensors nodes in Fog environments to be
able to properly <q>offload computationally
intensive operations from edge to cloud
infrastructures.</q>
</p>

```

In this paper, we investigate the use of sensors nodes in Fog environments to be able to properly "offload computationally intensive operations from edge to cloud infrastructures."

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23

## Quick Tour of HTML Elements (cont'd)

### strong, em, b, u and i elements

- `<strong>` element is give strong importance to enclosed text (typically displayed in boldface font)
- `<em>` element is used to display text with italics
  - `<b>` element is used for bold
  - `<u>` element is used for underline
  - `<i>` element is used for italic
  - `<li>` element is used for italic
- HTML5: more emphasis on using CSS to control how to display text (separate presentation from content)

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24



## Quick Tour of HTML Elements (cont'd)

## sub, sup, s, mark and small elements

- `<sub>` used for subscripts
- `<sup>` used for superscripts
- `<s>` used for stricken text
- `<mark>` used for highlighting text
- `<small>` used for displaying in smaller font

```
<p>
  Some formula:  $y_i = x_i^2 + b$ 
  <mark>where  $100 < i < 200$ </mark><br>
  <small>You can define additional constraints.</small>
</p>
```

Some formula:  $y_i = x_i^2 + b$   
 where  $100 < i < 200$   
 You can define additional constraints.

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25

## Quick Tour of HTML Elements (cont'd)

## span element

- `<span>` is a generic element for phrasing content (does not have an inherent representation)
- similar to `<div>`, `<span>` can be used to group elements for styling
- **difference between `<div>` and `<span>`**
  - `<span>` is an inline element (does not begin on separate line, the are embedded inside an existing line → inline)
  - `<div>` is a block-level element begins on a new line (or block of lines)

```
<p>An example of the <span style="font-size: 20px; font-family: 'Trebuchet MS'";>span </span> element.
It is an inline element.</p>
```

An example of the `span` element. It is an inline element.

```
<div style="font-size: 20px; font-family: 'Trebuchet MS'">
  An example of the div element. It is an inline element.
</div>
```

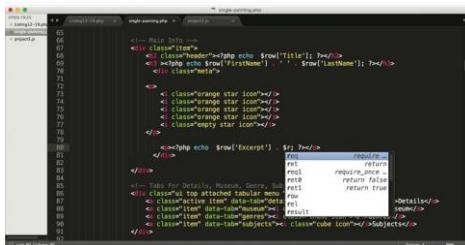
An example of the `div` element. It is a block-level element.

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26

## Tools Insight (cont'd)

## Code Editors

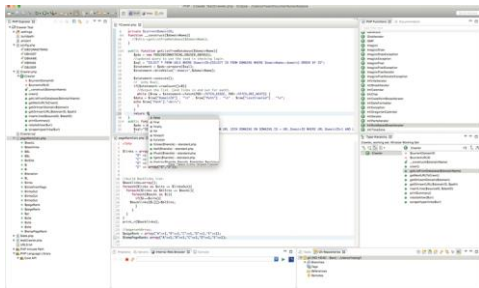


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27

## Tools Insight (cont'd)

### Integrated Development Environments

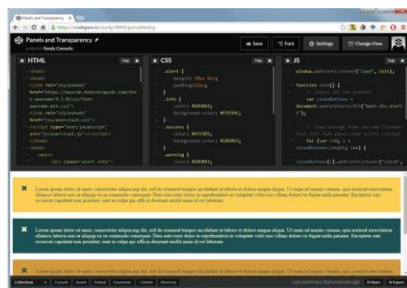


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28

## Tools Insight (cont'd)

### Code Playgrounds

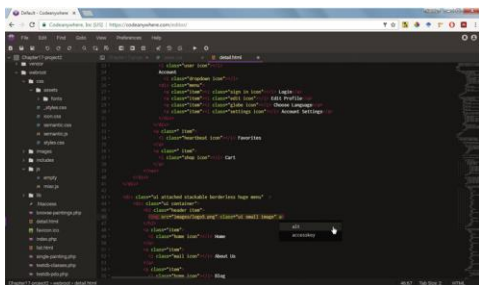


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29

## Tools Insight (cont'd)

### Cloud-Based Environments



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30

## 31

[illegible]

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## HTML5 and Older Versions

- **W3C** is the governing body of HTML
- HTML5 is the current version of HTML
- Some differences:
  - HTML5 no longer required to specify a value for attributes
    - can be by itself and values do not necessarily need quotation marks
    - standard coding conventions suggest to always include quotation marks
    - no requirements to have an ending tag for every container
  - Older versions of HTML contain elements that are outdated (may no longer be supported by browsers)

```
<font>
<center>
```

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34

## HTML5: What's new?

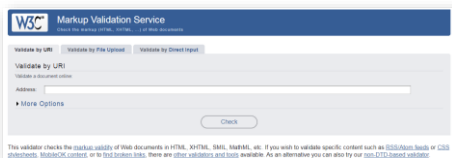
- HTML5 new or enhanced features
  - **structural organization:** `<header>` and `<footer>`
  - **audio and video:** play audio and video elements
  - **canvas:** enable users to provide a drawing area
  - **drag and drop:** allows users to drag elements within a web page
  - **web storage:** can store data on the browser's computer
  - **geolocation:** enable the location of browser's computer

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35

## How Can I Check My HTML Code?

- **HTML Validation**
  - you can validate your HTML code or syntax using HTML editors
- it is also a good idea to check your work by running the W3C's HTML validation service



<https://validator.w3.org/>

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36

## Goals of This Lecture

- You should be comfortable with the basic HTML elements, structural elements (html, head and body)
- You should be able to know how to author/create HTML files
- You should be comfortable with understanding the differences between empty, nested and container elements
- You should be comfortable with understanding the meta elements and their purpose
- You should be able to know how to apply style to HTML web pages
- You should know what HTML5 offers compared to earlier versions
- You should know how to validate HTML web pages/files

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32

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## Module Topics → next topic



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33

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