HTML5 and CSS3 Essential Training v5

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TINFOTECH

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About the Trainer

With more than 10 years of experience teaching at a local polytechnic, Fritz is passionate about imparting knowledge to teens, adults, and children. He believes that an education in technology and in how things work is essential for everyone, so that they can harness and invent the technologies of the future.

He is excited about exploring anything related to computers and IT, with a keen interest in electronics and native cross-platform mobile app development so that our ubiquitous mobile phones can be conveniently used to control and interact with devices wirelessly and over the Internet.

Fritz is ACTA-certified, as well as a registered MOE instructor, and a graduate of the 2018 ConsenSys Blockchain Developer Program, with a Bachelor in Electrical and Electronic Engineering (Computer Specialisation) from Nanyang Technological University.

Let's Know Each Other...

Say a bit about yourself

- Name
- What Industry you are from?
- Do you have any prior knowledge in web design?
- Why do you want to learn HTML and CSS?

Ground Rules

- Set your mobile phone to silent mode
- Actively participate in the class. No question is stupid.
- Respect each other view
- Exit the class silently if you need to step out for phone call, toilet break

Ground Rules for Virtual Training

- Upon entering, mute your mic and turn on the video. Use a headset if you can
- Use the 'raise hand' function to indicate when you want to speak
- Participant actively. Feel free to ask questions on the chat whenever.
- Facilitators can use breakout rooms for private sessions.

Guidelines for Facilitators

1. Once all the participants are in and introduce themselves
2. Goto gallery mode, take a snapshot of the class photo - makes sure capture the date and time
3. Start the video recording (only for WSQ courses)
4. Continue the class
5. Before the class end on that day, take another snapshot of the class photo - makes sure capture the date and time
6. For NRIC verification, facilitator to create breakout room for individual participant to check (only for WSQ courses)
7. Before the assessment start, take another snapshot of the class photo - makes sure capture the date and time (only for WSQ courses)
8. For Oral Questioning assessment, facilitator to create breakout room for individual participant to OQ (only for WSQ courses)
9. End the video recording and upload to cloud (only for WSQ courses)
10. Assessor to send all the assessment records, assessment plan and photo and video to the staff (only for WSQ courses).

Prerequisite

This is a beginner course. No prerequisite is assumed.

Agenda

Topic 1: Create Web Content with HTML5

- HTML5 Web Page Structure
- Basic Tags
- Meta Tags
- Image Tags
- Table Tags
- List Tags
- HTML Attributes

Topic 2: Manage Web Navigation and Form

- HTML Blocks
- HTML Layout
- Manage Web Links
- Manage HTML Forms

Agenda

Topic 3: Manage Multimedia Content

- Embed Image and Video
- Media Tags
- Semantics Tags

Topic 4. Website Styling with CSS3

- CSS3 Syntax
- CSS3 Selectors
- CSS3 Properties
- CSS3 Pseudo Class
- Web Fonts
- CSS Layout
- Media Queries and Responsive Websites

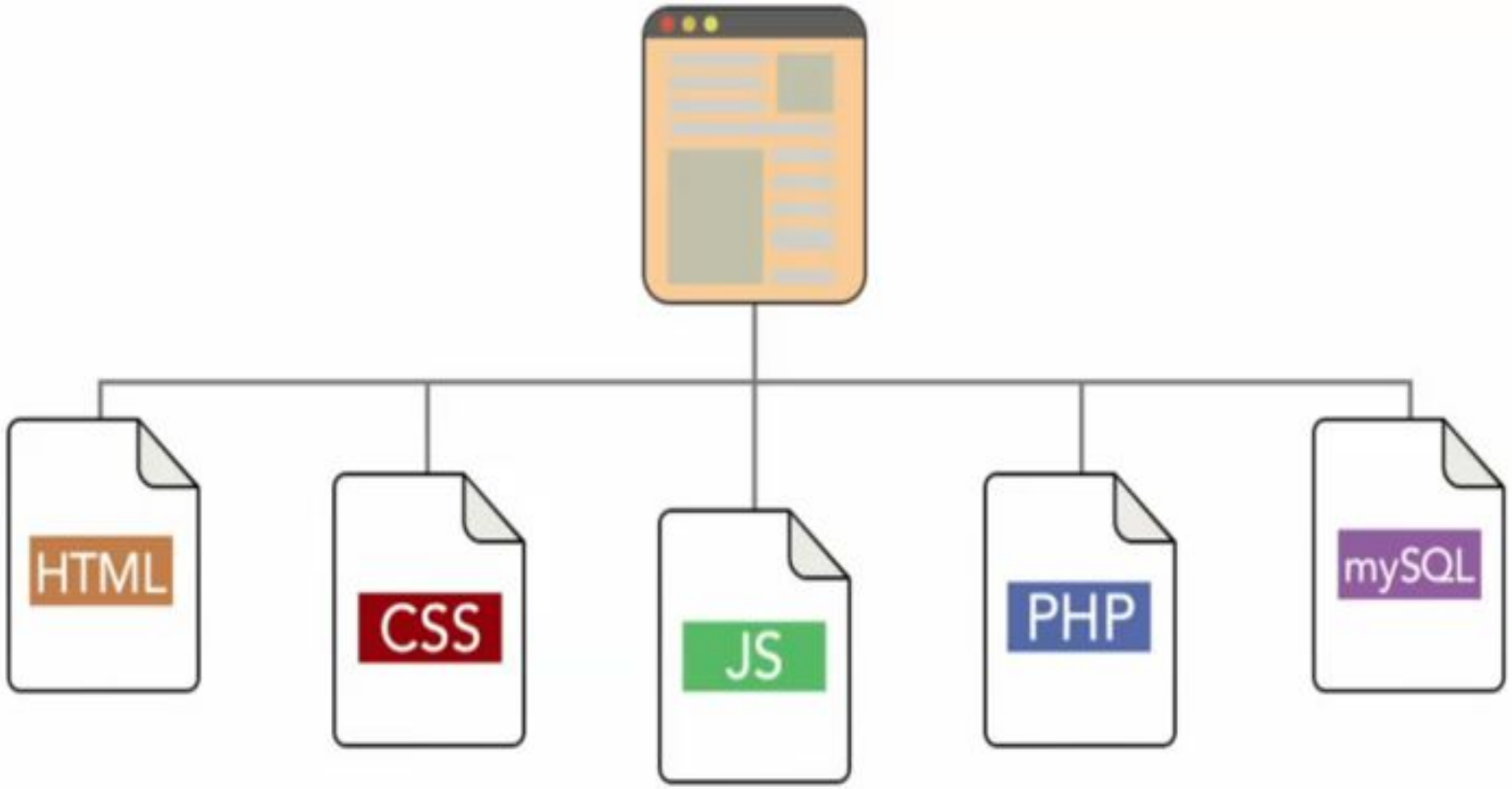
Google Classroom

Goto google classroom https://classroom.google.com and enter the class code below to join the class

3trb4mo

Topic 1
Create Web Content with HTML5

Web Technologies



The Backbone of a Web Page

- HTML - Structure and content
- CSS - How a page look
- Javascript - How a page behave

What is HTML

- HTML stands for Hyper Text Markup Language
- HTML describes the structure of a Web page
- HTML consists of a series of elements
- HTML elements tell the browser how to display the content
- HTML elements are represented by tags
- HTML tags label pieces of content such as "heading", "paragraph", "table", and so on
- Browsers do not display the HTML tags, but use them to render the content of the page

HTML History

Year	Version
1989	Tim Berners-Lee invented www
1991	Tim Berners-Lee invented HTML
1993	Dave Raggett drafted HTML+
1995	HTML Working Group defined HTML 2.0
1997	W3C Recommendation: HTML 3.2
1999	W3C Recommendation: HTML 4.01
2000	W3C Recommendation: XHTML 1.0
2008	WHATWG HTML5 First Public Draft
2012	WHATWG HTML5 Living Standard
2014	W3C Recommendation: HTML5
2016	W3C Candidate Recommendation: HTML 5.1
2017	W3C Recommendation: HTML5.1 2nd Edition
2017	W3C Recommendation: HTML5.2

HTML Editors

- Notepad (PC)
- TextEdit (Mac)
- Sublime Text http://www.sublimetext.com/3
- VS Code https://visualstudio.microsoft.com/

HTML Page Structure

```
<!DOCTYPE html>
<html>
<head>
<title>Page Title</title>
</head>
<body>
  <h1>My First Heading</h1>
  <p>My first paragraph.</p>
</body>
</html>
```

<!DOCTYPE> Declaration

- The <!DOCTYPE> declaration represents the document type, and helps browsers to display web pages correctly.
- It must only appear once, at the top of the page (before any HTML tags).
- The <!DOCTYPE> declaration is not case sensitive.
- The <!DOCTYPE> declaration for HTML5 is:

<!DOCTYPE html>

HTML Tags

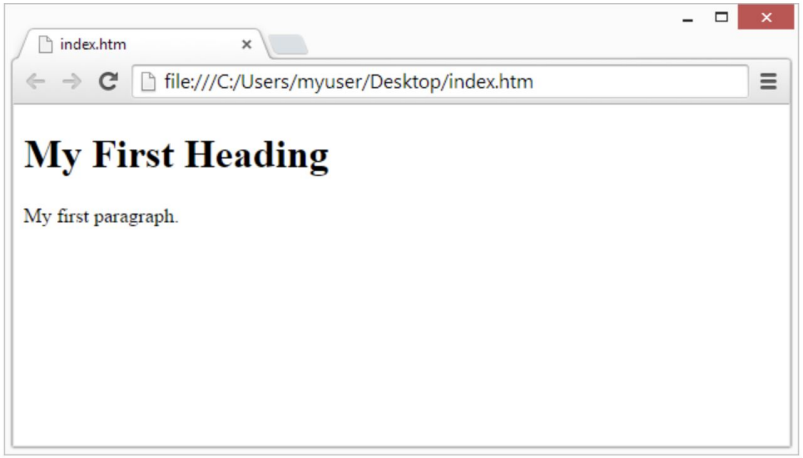
- HTML tags normally come in pairs like and
- The first tag in a pair is the start tag, the second tag is the end tag
- The end tag is written like the start tag, but with a forward slash inserted before the tag name

<tagname>content goes here...</tagname>

Ex: Get Started on HTML

- Write or copy some HTML into Notepad.

```
<!DOCTYPE html>
<html>
<body>
<h1>My First Heading</h1>
<p>My first paragraph.</p>
</body>
</html>
```



- Save the file on your computer. Select File > Save as in the Notepad menu.
- Name the file "index.htm"
- Open the saved HTML file in your favorite browser

HTML Headings

- HTML headings are defined with the <h1> to <h6> tags.
- <h1> defines the most important heading. <h6> defines the least important heading. Eg
  - <h1>Heading 1</h1>
  - <h2>Heading 2</h2>
  - <h3>Heading 3</h3>
  - <h4>Heading 4</h4>
  - <h5>Heading 5</h5>
  - <h6>Heading 6</h6>
- Search engines use the headings to index the structure and content of your web pages.
- Users often skim a page by its headings. It is important to use headings to show the document structure.

HTML Horizontal Rules

- The <hr> tag defines a thematic break in an HTML page, and is most often displayed as a horizontal rule.
- The <hr> element is used to separate content (or define a change) in an HTML page.

Eg

```
<h1>This is heading 1</h1>
<p>This is some text.</p>
<hr>
<h2>This is heading 2</h2>
<p>This is some other text.</p>
<hr>
```

HTML Paragraphs

- The HTML <p> element defines a paragraph.
- HTML paragraphs are defined with the <p> tag
- A paragraph always starts on a new line, and browsers automatically add some white space (a margin) before and after a paragraph

Eg

```
<p>This is a paragraph.</p>
<p>This is another paragraph.</p>
```

HTML Text Formatting

- HTML contains several elements for defining text with a special meaning.
- Formatting elements were designed to display special types of text:
  - - Bold text
  - - Important text
  - <i> - Italic text
  - - Emphasized text
  - <mark> - Marked text
  - <small> - Smaller text
  - <del> - Deleted text
  - <ins> - Inserted text
  - <sub> - Subscript text
  - <sup> - Superscript text
- Eg This text is bold

HTML Line Breaks

- The HTML
 element defines a line break.
- Use
 if you want a line break (a new line) without starting a new paragraph

Eg

This is
a paragraph
with line breaks.

Nonbreaking Spaces

 The movie "12 Angry Men."

Special Characters

< : ⟨

& : &

© : ©

™ : ™

:

> : ⟩

" : "

Preserve Formatting

- The HTML <pre> element defines preformatted text.
- The text inside a <pre> element is displayed in a fixed-width font (usually Courier), and it preserves both spaces and line breaks

```
<pre>
    Line 1
        Line 2
            Line 3
</pre>
```

HTML - The Head Element

- The <head> element is a container for metadata (<title>, <style>, <meta>, <link>, <script>, and <base>)
- It is placed between the <html> tag and <body> tag.
- HTML metadata is data about the HTML document. Metadata is not displayed.
- The <title> element defines the title of the document, and is required in all HTML documents. Eg

```
<!DOCTYPE html>
<html>
    <head>
        <title>Page Title</title>
    </head>
    <body>
    The content of the document.....
    </body>
</html>
```

HTML Meta

- The <meta> tag defines metadata about an HTML document. Metadata is data (information) about data.
- <meta> tags always go inside the <head> element, and are typically used to specify character set, page description, keywords, author of the document, and viewport settings.
- Metadata will not be displayed on the page, but is machine parsable.
- Metadata is used by browsers and other web services.
- There is a method to let web designers take control over the viewport (the user's visible area of a web page), through the <meta> tag Eg

```
<head>
  <meta charset="UTF-8">
  <meta name="description" content="Free Web tutorials">
  <meta name="keywords" content="HTML, CSS, JavaScript">
  <meta name="author" content="John Doe">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
</head>
```

HTML Images

- Images can improve the design and the appearance of a web page.
- HTML images are defined with the <img> tag.
- The <img> tag is empty, it contains attributes only, and does not have a closing tag.
- The src attribute specifies the URL of the image.
- The alt attribute provides an alternate text for an image, if the user for some reason cannot view it
- The value of the alt attribute should describe the image:
- The source file (src), alternative text (alt), width, and height are provided as attributes.

Eg

<img src="pic_trulli.jpg" alt="Italian Trulli" width="104" height="142">

HTML Attributes

- An HTML attribute provides additional information about an HTML element.
- All HTML elements can have attributes
- Attributes are always specified in the start tag
- Attributes usually come in name/value pairs like: name="value"

```
<p align="left">This is left aligned</p>
<img src="img_girl.jpg">
<a href="https://www.w3schools.com">This is a link</a>
```

HTML Tables

- HTML tables allow web authors to arrange data into rows and columns.
- An HTML table is defined with the <table> tag.
- Each table row is defined with the <tr> tag. A table header is defined with the <th> tag. By default, table headings are bold and centered. A table data/cell is defined with the <td> tag.

```
<table style="width:100%">
  <tr>
    <th>Firstname</th>
    <th>Lastname</th>
    <th>Age</th>
  </tr>
  <tr>
    <td>Jill</td>
    <td>Smith</td>
    <td>50</td>
  </tr>
  <tr>
    <td>Eve</td>
    <td>Jackson</td>
    <td>94</td>
  </tr>
</table>
```

Cells that Span Many Columns

- To make a cell span more than one column, use the colspan attribute. Eg

```
<table style="width:100%">
  <tr>
    <th>Name</th>
    <th colspan="2">Telephone</th>
  </tr>
  <tr>
    <td>Bill Gates</td>
    <td>55577854</td>
    <td>55577855</td>
  </tr>
</table>
```

Cells that Span Many Rows

- To make a cell span more than one row, use the rowspan attribute:

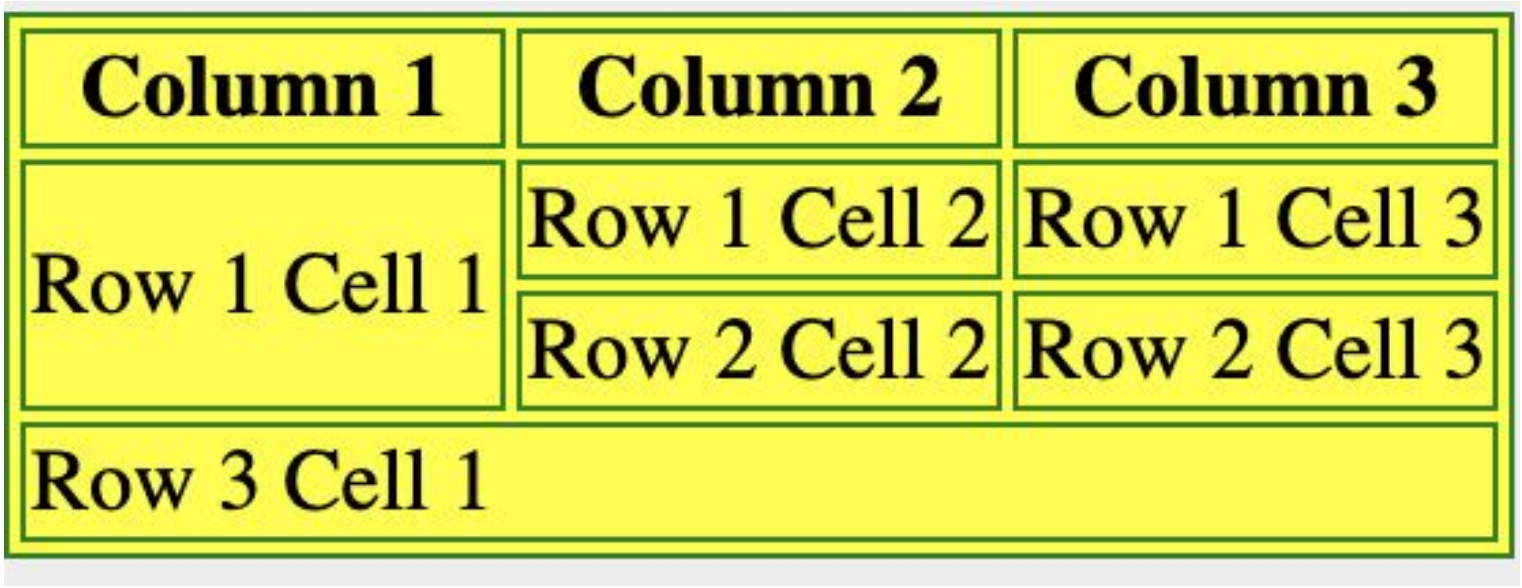
```
<table style="width:100%">
  <tr>
    <th>Name:</th>
    <td>Bill Gates</td>
  </tr>
  <tr>
    <th rowspan="2">Telephone:</th>
    <td>55577854</td>
  </tr>
  <tr>
    <td>55577855</td>
  </tr>
</table>
```

Table Attributes

- You can customize the table with the following attributes:
  - border
  - bordercolor
  - bgcolor
  - cellpadding
  - cellspacing
  - height
  - width
  - background

Ex: HTML Table

- Create a table that look like this



Column 1	Column 2	Column 3
Row 1 Cell 1	Row 1 Cell 2	Row 1 Cell 3
	Row 2 Cell 2	Row 2 Cell 3
Row 3 Cell 1		

HTML Lists

- HTML lists allow web authors to group a set of related items in lists.
- An unordered list starts with the <ul> tag. Each list item starts with the <li> tag.
- The list items will be marked with bullets (small black circles) by default
- An ordered list starts with the <ol> tag. Each list item starts with the <li> tag.

```
<ul>
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
</ul>
```

```
<ol>
  <li>Coffee</li>
  <li>Tea</li>
  <li>Milk</li>
</ol>
```

List Attributes

- You can customize the list with the following attributes:
  - type
  - start

HTML Comments

- HTML comments are not displayed in the browser, but they can help document your HTML source code.
- You can add comments to your HTML source by using the following syntax:

  <!-- Write your comments here -->

Eg

<!-- This is a comment -->

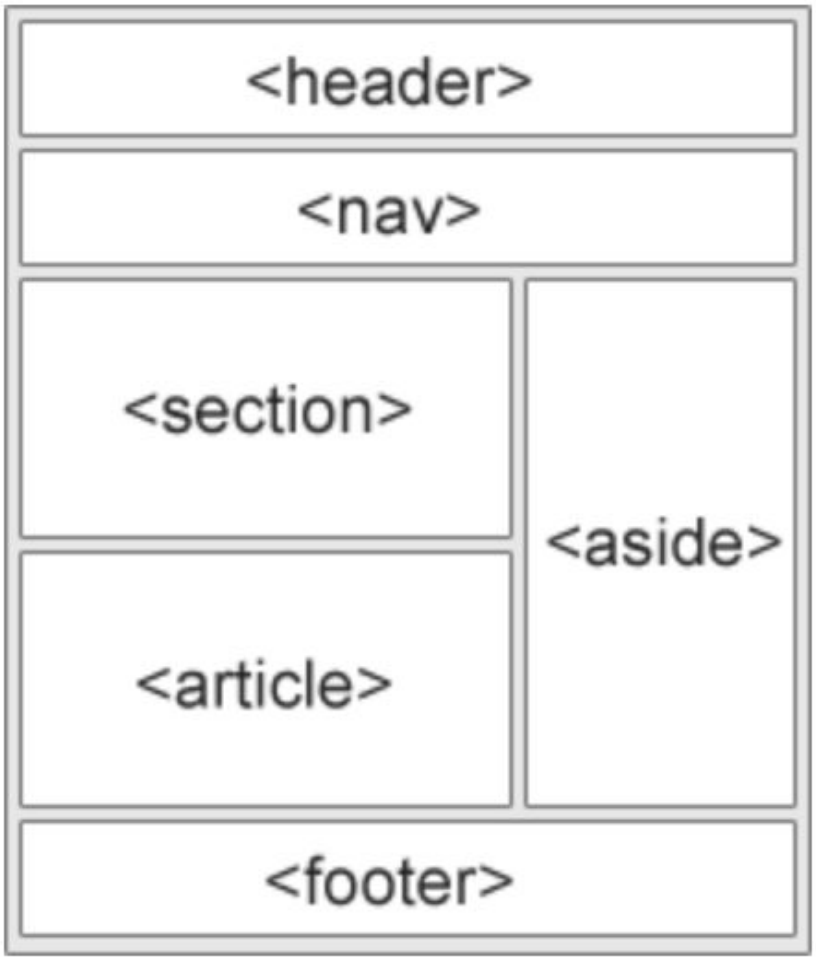
This is a paragraph.

<!-- Remember to add more information here -->

Topic 2
Manage Web Navigation and Form

HTML Semantics Tags

- HTML offers several semantic elements that define the different parts of a web page:



- <article>
- <aside>
- <details>
- <figcaption>
- <figure>
- <footer>
- <header>
- <main>
- <mark>
- <nav>
- <section>
- <summary>
- <time>

HTML Block and Inline Elements

- Every HTML element has a default display value, depending on what type of element it is.
- The two display values are: block and inline.
- A block-level element always starts on a new line and takes up the full width available (stretches out to the left and right as far as it can).
- The element is a block-level element. Eg

  Hello World
- An inline element does not start on a new line and only takes up as much width as necessary.
- The element inside a paragraph is a inline-level element

  Hello World

HTML Grouping Tags

- The element is often used as a container for other HTML elements.
- The element has no required attributes, but style, class and id are common.
- When used together with CSS, the element can be used to style blocks of content
- The element is often used as a container for some text.
- The element has no required attributes, but style, class and id are common.
- When used together with CSS, the element can be used to style parts of the text

HTML Links

- HTML links are hyperlinks. You can click on a link and jump to another document.
- HTML links are defined with the <a> tag:
- The link's destination is specified in the href attribute.
- A local link (link to the same web site) is specified with a relative URL (without https://www....).
- The title attribute specifies extra information about an element. The information is most often shown as a tooltip text when the mouse moves over the element. Eg

```
<a href="https://www.w3schools.com">This is a link</a>

<a href="html_images.asp">HTML Images</a>

<a href="https://www.w3schools.com/html/" title="Go to W3Schools HTML section">Visit our HTML Tutorial</a>
```

Target Attribute

- The target attribute specifies where to open the linked document.
- The target attribute can have one of the following values:
  - _blank - Opens the linked document in a new window or tab
  - _self - Opens the linked document in the same window/tab as it was clicked (this is default)
  - _parent - Opens the linked document in the parent frame
  - _top - Opens the linked document in the full body of the window
  - framename - Opens the linked document in a named frame

Applications of Links

- You can use images as links

- You can use link to download document

  Download PDF File

- You can use link to send email

  Send Email

Create a Bookmark in HTML

- Bookmarks can be useful if a web page is very long.
- To create a bookmark - first create the bookmark, then add a link to it.
- When the link is clicked, the page will scroll down or up to the location with the bookmark.
- First, create a bookmark with the id attribute. Then, add a link to the bookmark from within the same page. Eg

  <h2 id="C4">Chapter 4</h2>

  Jump to Chapter 4

HTML Forms

- An HTML form is used to collect user input. The user input can then be sent to a server for processing.
- The HTML <form> element defines a form that is used to collect user input
- An HTML form contains form elements.
- Form elements are different types of input elements, like: text fields, checkboxes, radio buttons, submit buttons, and more.

Input

- The <input> element is the most important form element.
- The <input> element is displayed in several ways, depending on the type attribute.
- <input type="text"> defines a single-line text input field
- The <label> tag defines a label for many form elements.
- <input type="password"> defines a password field

```
<form>
  <label for="username">Username:</label><br>
  <input type="text" id="username" name="username"><br>
  <label for="pwd">Password:</label><br>
  <input type="password" id="pwd" name="pwd">
</form>
```

Input Types

- Here are the different input types you can use in HTML:

- <input type="button">
- <input type="checkbox">
- <input type="color">
- <input type="date">
- <input type="email">
- <input type="file">
- <input type="hidden">
- <input type="image">
- <input type="month">
- <input type="number">
- <input type="password">
- <input type="radio">
- <input type="range">
- <input type="reset">
- <input type="search">
- <input type="submit">
- <input type="tel">
- <input type="text">
- <input type="time">
- <input type="url">
- <input type="week">

HTML Input Attributes

- The input value attribute specifies an initial value for an input field
- The input readonly attribute specifies that an input field is read-only.
- The input disabled attribute specifies that an input field should be disabled.
- The input size attribute specifies the visible width, in characters, of an input field.
- The input maxlength attribute specifies the maximum number of characters allowed in an input field
- The input min and max attributes specify the minimum and maximum values for an input field.

Radio Buttons

- <input type="radio"> defines a radio button.
- Radio buttons let a user select ONE of a limited number of choices. Eg

```
<form>
  <input type="radio" id="male" name="gender" value="male">
  <label for="male">Male</label><br>
  <input type="radio" id="female" name="gender" value="female">
  <label for="female">Female</label><br>
  <input type="radio" id="other" name="gender" value="other">
  <label for="other">Other</label>
</form>
```

The Submit Button

- <input type="submit"> defines a button for submitting the form data to a form-handler.
- The form-handler is typically a page on the server with a script for processing input data.
- The form-handler is specified in the form's action attribute. Eg

```
<form action="/action_page.php">
  <label for="fname">First name:</label><br>
  <input type="text" id="fname" name="fname" value="John"><br>
  <label for="lname">Last name:</label><br>
  <input type="text" id="lname" name="lname" value="Doe"><br><br>
  <input type="submit" value="Submit">
</form>
```

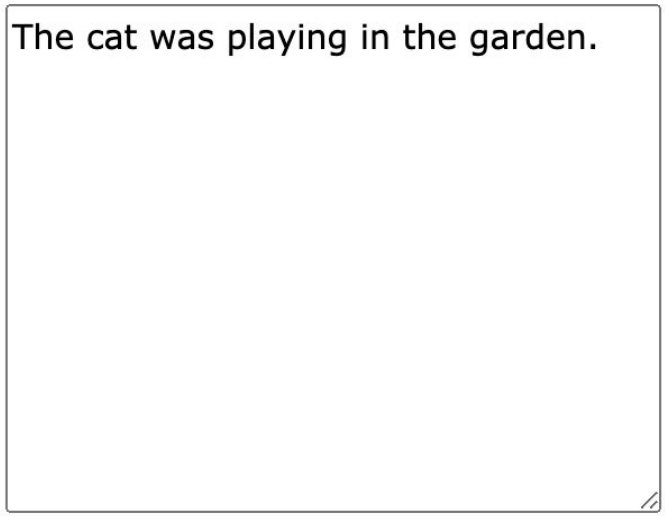
Select Box

- The <select> element defines a drop-down list
- The <option> elements defines an option that can be selected.
- By default, the first item in the drop-down list is selected.
- To define a pre-selected option, add the selected attribute to the option:

```
<select id="cars" name="cars">
  <option value="volvo">Volvo</option>
  <option value="saab">Saab</option>
  <option value="fiat" selected>Fiat</option>
  <option value="audi">Audi</option>
</select>
```

Multiple-Line Text

- The <textarea> element defines a multi-line input field (a text area):
- The rows attribute specifies the visible number of lines in a text area.
- The cols attribute specifies the visible width of a text area.




```
<textarea name="message"
rows="10" cols="30">
The cat was playing in the
garden.
</textarea>
```

Checkbox

- <input type="checkbox"> defines a checkbox.
- Checkboxes let a user select ZERO or MORE options of a limited number of choices.

```
<form>
  <input type="checkbox" id="vehicle1" name="vehicle1" value="Bike">
  <label for="vehicle1"> I have a bike</label><br>
  <input type="checkbox" id="vehicle2" name="vehicle2" value="Car">
  <label for="vehicle2"> I have a car</label><br>
  <input type="checkbox" id="vehicle3" name="vehicle3" value="Boat">
  <label for="vehicle3"> I have a boat</label>
</form>
```

Topic 3
Manage Multimedia Content

HTML Multimedia

- Multimedia comes in many different formats. It can be almost anything you can hear or see, like images, music, sound, videos, records, films, animations, and more.
- Web pages often contain multimedia elements of different types and formats.
- Multimedia elements (like audio or video) are stored in media files.
- The most common way to discover the type of a file, is to look at the file extension.
- Multimedia files have formats and different extensions like: .wav, .mp3, .mp4, .mpg, .wmv, and .avi.

HTML Video

- The HTML <video> element is used to show a video on a web page.
- The controls attribute adds video controls, like play, pause, and volume.
- It is a good idea to always include width and height attributes. If height and width are not set, the page might flicker while the video loads.
- The <source> element allows you to specify alternative video files which the browser may choose from. The browser will use the first recognized format.
- The text between the <video> and </video> tags will only be displayed in browsers that do not support the <video> element.
- To start a video automatically use the autoplay attribute

```
<video width="320" height="240" controls>
  <source src="movie.mp4" type="video/mp4">
  <source src="movie.ogg" type="video/ogg">
Your browser does not support the video tag.
</video>
```

HTML Audio

- The HTML <audio> element is used to play an audio file on a web page.
- To play an audio file in HTML, use the <audio> element:
- he controls attribute adds audio controls, like play, pause, and volume.
- The <source> element allows you to specify alternative audio files which the browser may choose from. The browser will use the first recognized format
- The text between the <audio> and </audio> tags will only be displayed in browsers that do not support the <audio> element.

```
<audio controls>
  <source src="horse.ogg" type="audio/ogg">
  <source src="horse.mp3" type="audio/mpeg">
Your browser does not support the audio element.
</audio>
```

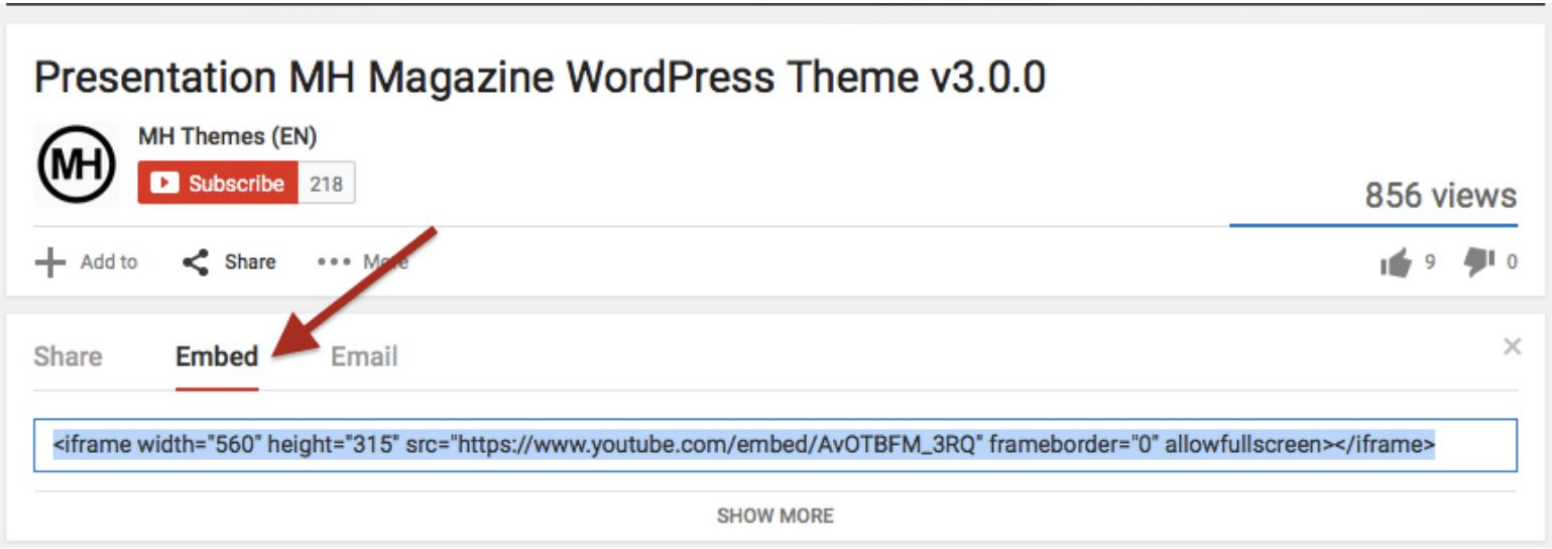
Playing a YouTube Video in HTML

- To play your video on a web page, do the following:
- Upload the video to YouTube
  - Take a note of the video id
  - Define an <iframe> element in your web page
  - Let the src attribute point to the video URL
  - Use the width and height attributes to specify the dimension of the player
  - Add any other parameters to the URL (see below)

```
<iframe width="420" height="315"
    src="https://www.youtube.com/embed/tgbNymZ7vqY">
</iframe>
```

Embed Youtube Video

1. Each YouTube video has a tab underneath the title of the video that says Share, and upon clicking on this tab there is another tab that says Embed.
2. Once you click on Embed, you will be presented with a piece of iframe code that you can directly copy/paste into your posts.



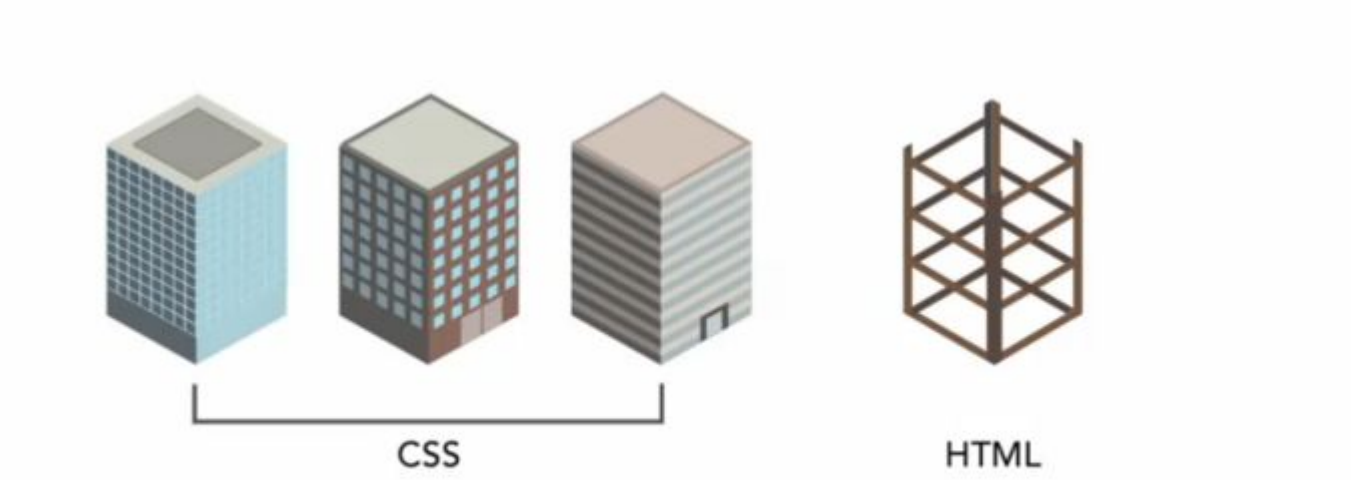
Copyright and IP

- Copyright is a type of property that can be traded just like other types of tangible property. It can be licensed or transferred, either as an entire bundle (i.e. all of the distinct rights under copyright bundle) or as a single right (e.g. only the right to reproduce)
- Under Singapore's Copyright Act, it is a criminal offense for a person or company to conduct willful copyright infringement. The statute of limitations for copyright infringement in Singapore is six years.
- Copyright protects works like literary, computer programs, plays, music and paintings. It is not ideas but their expression that are protected by copyright law. Generally, the author of a copyright work has the right to reproduce, publish, perform, communicate and adapt his work.

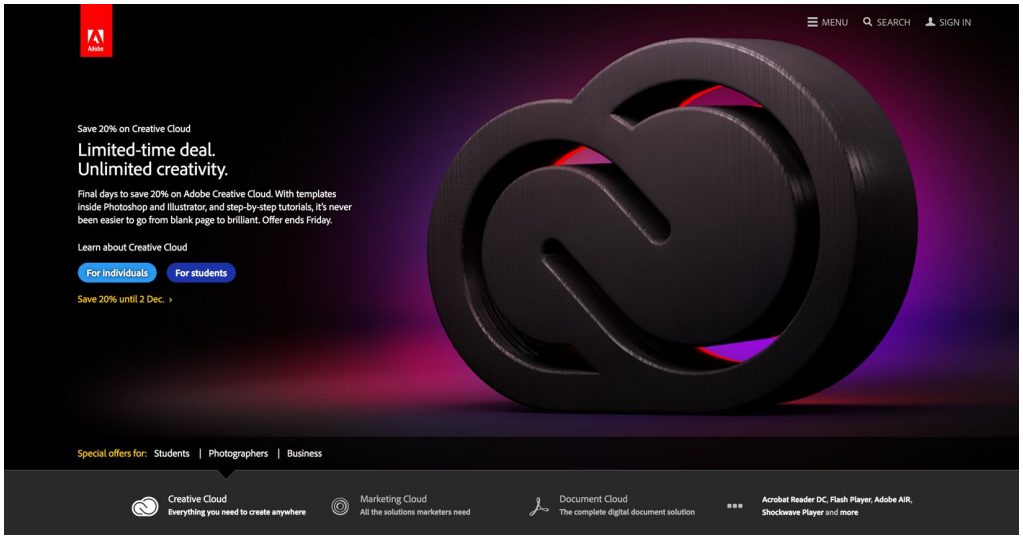
Topic 4
Website Styling with CSS3

What is CSS

- CSS stands for Cascading Style Sheets
- CSS describes how HTML elements are to be displayed on screen, paper, or in other media
- CSS saves a lot of work. It can control the layout of multiple web pages all at once
- External stylesheets are stored in CSS files



Turn Off CSS on Firefox



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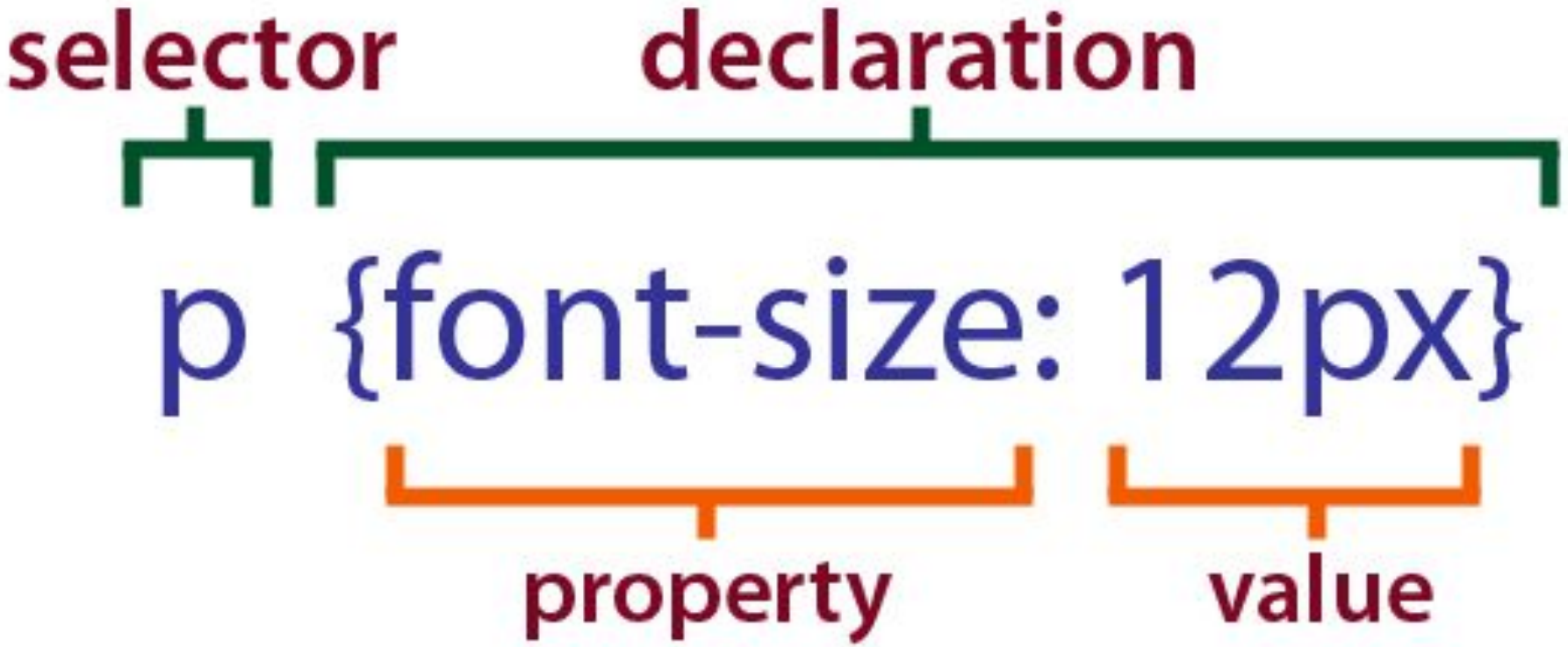
CSS Syntax

- The selector points to the HTML element you want to style.
- The declaration block contains one or more declarations separated by semicolons.
- Each declaration includes a CSS property name and a value, separated by a colon.
- Multiple CSS declarations are separated with semicolons, and declaration blocks are surrounded by curly braces



CSS Selector

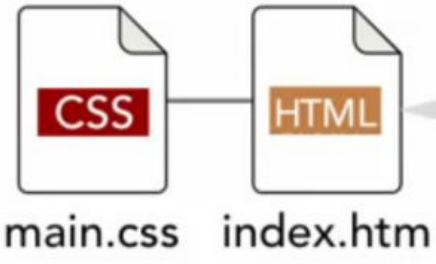
- CSS selectors are used to "find" (or select) the HTML elements you want to style.
- We can divide CSS selectors into five categories:
  - Simple selectors (select elements based on name, id, class)
  - Combinator selectors (select elements based on a specific relationship between them)
  - Pseudo-class selectors (select elements based on a certain state)
  - Pseudo-elements selectors (select and style a part of an element)
  - Attribute selectors (select elements based on an attribute or attribute value)
-

How To Add CSS

- There are three ways of inserting a style sheet:
  - External CSS
  - Internal CSS
  - Inline CSS

External CSS

- With an external style sheet, you can change the look of an entire website by changing just one file!
- Each HTML page must include a reference to the external style sheet file inside the <link> element, inside the head section.




```
<html>
<head>
<link href="main.css" rel="stylesheet"
type="text/css" media="screen, projection">
</head>
<body>
 ...
</body>
</html>
```

Ex: External CSS

Write a external CSS style sheet to change the look of the homepage.

```
body {
  background-color: lightblue;
}

h1 {
  color: navy;
  margin-left: 20px;
}
```

Internal CSS

- An internal style sheet may be used if one single HTML page has a unique style.
- The internal style is defined inside the <style> element, inside the head section.

index.htm

```
<html>
<head>
  <style>
    body {font-family: Arial; font-size: 100%;}
    h1, h1 {font-weight: normal; color: red;}
    p {font-size: .9em; margin-bottom: 1.2em;}
   .pullquote {background: yellow; padding:10px}
  </style>
</head>
<body>
...
</body>
</html>
```

Inline CSS

- An inline style may be used to apply a unique style for a single element.
- To use inline styles, add the style attribute to the relevant element. The style attribute can contain any CSS property.

index.htm

```
<html>
<head>
</head>
<body>
 <div>
 <p style="font-size: .9em; margin-bottom: 1.2em;">
...</p>
 </div>
</body>
</html>
```

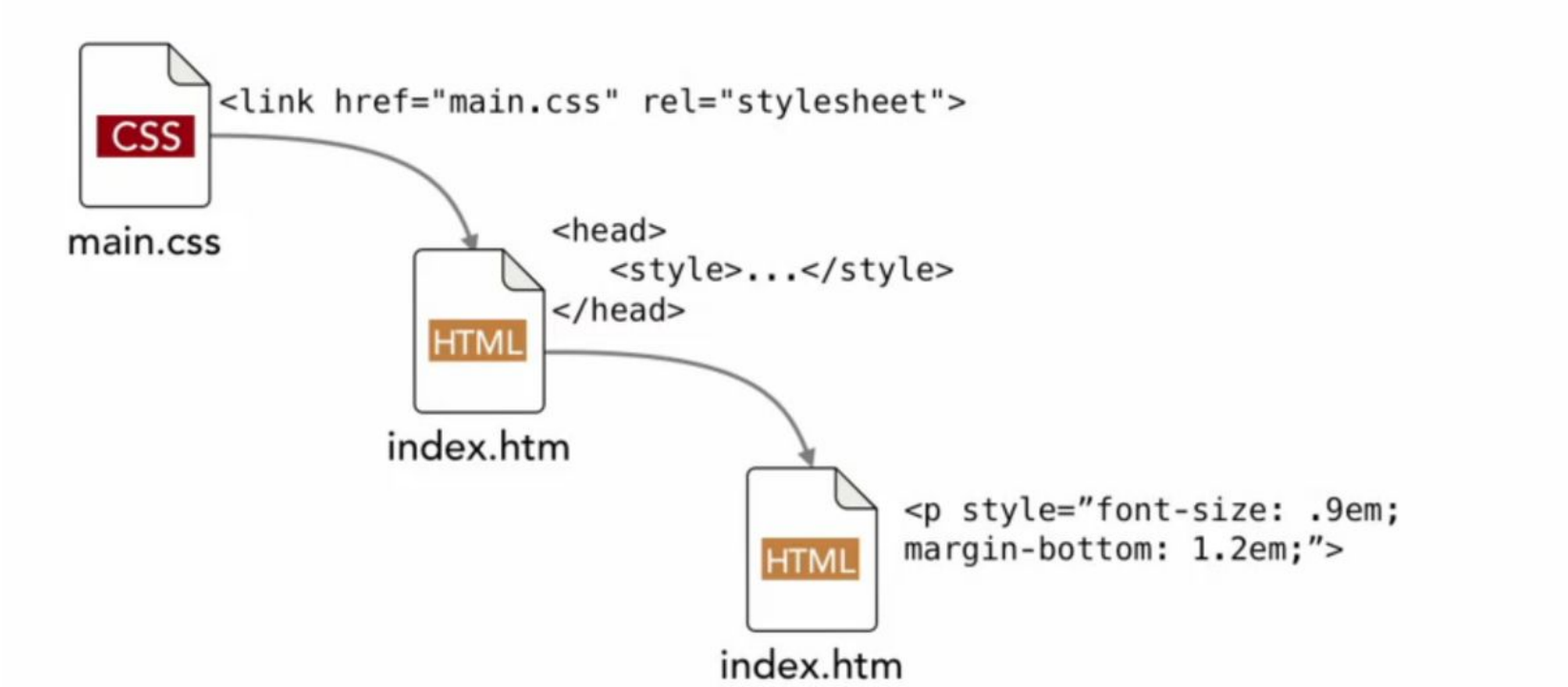
Ex: Inline Style

Write a inline style as follows:

- Change h1 to blue
- Change h1 to center align
- Change p to red

Cascading Order

- What style will be used when there is more than one style specified for an HTML element?
- All the styles in a page will "cascade" into a new "virtual" style sheet by the following rules, where number one has the highest priority:
  - Inline style (inside an HTML element)
  - External and internal style sheets (in the head section)
  - Browser default
- So, an inline style has the highest priority, and will override external and internal styles and browser defaults.



CSS Comments

- Comments are used to explain the code, and may help when you edit the source code at a later date.
- Comments are ignored by browsers.
- A CSS comment is placed inside the <style> element, and starts with /* and ends with */:

```
/* This is a single-line comment */
p {
  color: red;
}
```

CSS Selectors

- CSS selectors are used to "find" (or select) the HTML elements you want to style.
- We can divide CSS selectors into five categories:
  - Simple selectors - select elements based on name, id, class
  - Combinator selectors - select elements based on a specific relationship between them
  - Pseudo-class selectors - select elements based on a certain state
  - Pseudo-elements selectors - select and style a part of an element
  - Attribute selectors - select elements based on an attribute or attribute value
-

CSS Element Selector

- The element selector selects HTML elements based on the element name.

```
<style>

p {
    text-align: center;
    color: red;
}

</style>
```

The CSS Universal Selector

- The universal selector (*) selects all HTML elements on the page.

```
* {
  text-align: center;
  color: blue;
}
```

Ex: Element Selector

Modify the margin of a p tag as follows:

```
p {
    margin-top: 100px;
    margin-bottom: 100px;
    margin-right: 150px;
    margin-left: 80px;
}
```

CSS Class Selector

- The class selector selects HTML elements with a specific class attribute
- To select elements with a specific class, write a period (.) character, followed by the class name.
- You can also specify that only specific HTML elements should be affected by a class.

```
.center {
  text-align: center;
  color: red;
}
```

```
p.center {
  text-align: center;
  color: red;
}
```

Ex: Class Selector

Create a class selector .alert and apply to p and h1 tags

```
.alert {
    color: red;
    font-weight: normal;
}
```

CSS ID Selector

- The id selector uses the id attribute of an HTML element to select a specific element.
- The id of an element is unique within a page, so the id selector is used to select one unique element!
- To select an element with a specific id, write a hash (#) character, followed by the id of the element

```
#strategy {
    color: red;
}

<h4 id="strategy">Using ID selectors</h4>
```

Ex: ID Selector

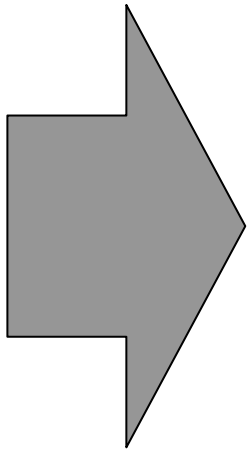
Create a class selector #para1 and apply to paragraph

```
#para1 {
    text-align: center;
    color: red;
}
```

The CSS Grouping Selector

- The grouping selector selects all the HTML elements with the same style definitions to minimize the code.
- To group selectors, separate each selector with a comma.

```
h1 {
    text-align: center;
    color: red;}
h2 {
    text-align: center;
    color: red;}
p {
    text-align: center;
    color: red;}
```



```
h1, h2, p {
    text-align: center;
    color: red;
}
```

CSS Combinators

- A CSS selector can contain more than one simple selector. Between the simple selectors, we can include a combinator.
- There are four different combinators in CSS:
  - descendant selector (space)
  - child selector (>)
  - adjacent sibling selector (+)
  - general sibling selector (~)

Descendent Selector

- The descendant selector matches all elements that are descendants of a specified element.
- Descendent selectors allow you to target an element based on where it's found within another element.
- Descendent selects are achieved by chaining the selectors together, separating them with whitespace.
- The parent selectors are added first, followed by each successive nested selector.
- The following example selects all <p> elements inside elements:

```
div p {
    background-color: yellow;
}
```

Child Selector

- The child selector selects all elements that are the children of a specified element.
- The following example selects all <p> elements that are children of a element

```
div > p {
  background-color: yellow;
}
```

Adjacent Sibling Selector

- The adjacent sibling selector selects all elements that are the adjacent siblings of a specified element.
- Sibling elements must have the same parent element, and "adjacent" means "immediately following".
- The following example selects all <p> elements that are placed immediately after elements:

```
div + p {
  background-color: yellow;
}
```

General Sibling Selector

- The general sibling selector selects all elements that are siblings of a specified element.
- The following example selects all <p> elements that are siblings of elements:

```
div ~ p {
  background-color: yellow;
}
```

CSS Attribute Selectors

- The [attribute] selector is used to select elements with a specified attribute.
- The [attribute="value"] selector is used to select elements with a specified attribute and value.
- The [attribute~="value"] selector is used to select elements with an attribute value containing a specified word.
- The [attribute^="value"] selector is used to select elements whose attribute value begins with a specified value.

```
a[target] {
  background-color: yellow;
}
```

```
[title~="flower"] {
  border: 5px solid yellow;
}
```

```
a[target="_blank"] {
  background-color: yellow;
}
```

```
[class^="top"] {
  background: yellow;
}
```

CSS Attribute Selectors

- A CSS pseudo-element is used to style specified parts of an element.
- The ::first-line pseudo-element is used to add a special style to the first line of a text.
- The ::first-letter pseudo-element is used to add a special style to the first letter of a text

```
p::first-line {
  color: #ff0000;
  font-variant:
small-caps;
}
```

```
p::first-letter {
  color: #ff0000;
  font-size: xx-large;
}
```

CSS Colors

- Colors are specified using predefined color names, or RGB, HEX, HSL, RGBA, HSLA values.
- In CSS, a color can be specified as follows:
  - color: green;
  - color: #ffee22;
  - color: rgb(44, 45, 140);

```
<h1 style="background-color:DodgerBlue;">Hello World</h1>
<h1 style="background-color:rgb(255, 99, 71);">...</h1>
<h1 style="background-color:#ff6347;">...</h1>
```

CSS Backgrounds

- The CSS background properties are used to define the background effects for elements.
- The background properties are:
  - background-color
  - background-image
  - background-repeat
  - background-attachment
  - background-position
- The background-color property specifies the background color of an element.

```
body {
    background-color: lightblue;
    opacity: 0.3;
}
```

CSS Background Image

- The background-image property specifies an image to use as the background of an element.
- By default, the image is repeated so it covers the entire element.

```
body {
    background-image: url("header.jpg");
    background-size: 100%;
}
```

Background Repeat

- By default, the background-image property repeats an image both horizontally and vertically.
- Some images should be repeated only horizontally or vertically, or they will look strange, like this:

```
body {
  background-image: url("gradient_bg.png");
  background-repeat: repeat-x;
}
```

CSS Background Attachment

- The background-attachment property specifies whether the background image should scroll or be fixed (will not scroll with the rest of the page)

```
body {
  background-image: url("img_tree.png");
  background-repeat: no-repeat;
  background-position: right top;
  background-attachment: fixed;
}
```

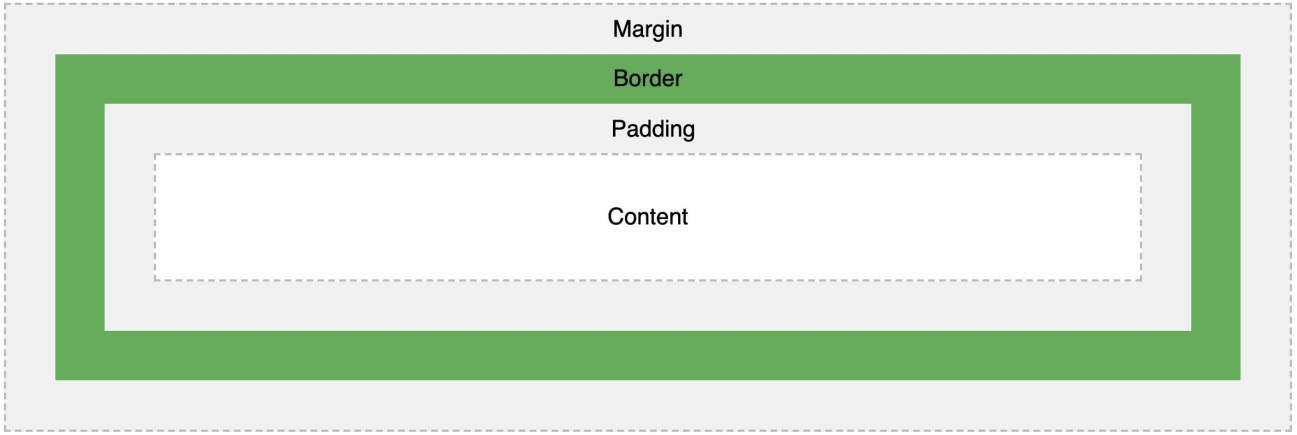
CSS Background Shorthand

- To shorten the code, it is also possible to specify all the background properties in one single property.
- This is called a shorthand property.

```
body {
    background: #ffffff url("img_tree.png") no-repeat
right top;
}
```

CSS Box Model

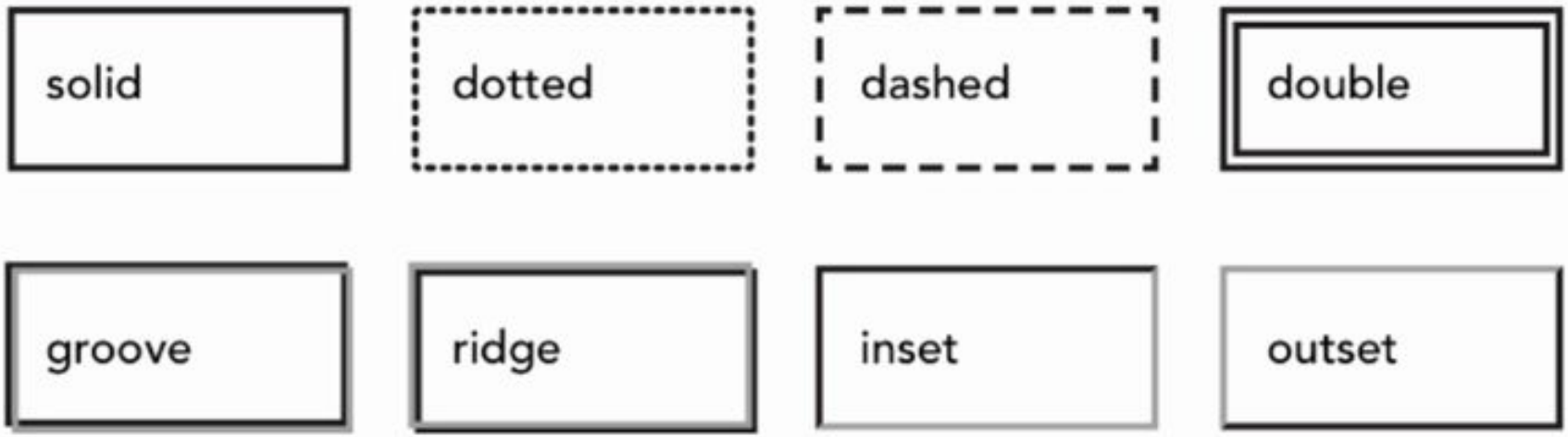
- All HTML elements can be considered as boxes. In CSS, the term "box model" is used when talking about design and layout.
- The CSS box model is essentially a box that wraps around every HTML element. It consists of: margins, borders, padding, and the actual content. The image below illustrates the box mode
- Explanation of the different parts:
  - Content - The content of the box, where text and images appear
  - Padding - Clears an area around the content. The padding is transparent
  - Border - A border that goes around the padding and content
  - Margin - Clears an area outside the border. The margin is transparent



CSS Borders

- The CSS border properties allow you to specify the style, width, and color of an element's border.
- The border-style property specifies what kind of border to display.
  - dotted - Defines a dotted border
  - dashed - Defines a dashed border
  - solid - Defines a solid border
  - double - Defines a double border
  - groove - Defines a 3D grooved border. The effect depends on the border-color value
  - ridge - Defines a 3D ridged border. The effect depends on the border-color value
  - inset - Defines a 3D inset border. The effect depends on the border-color value
  - outset - Defines a 3D outset border. The effect depends on the border-color value
  - none - Defines no border
  - hidden - Defines a hidden border

CSS Border Style



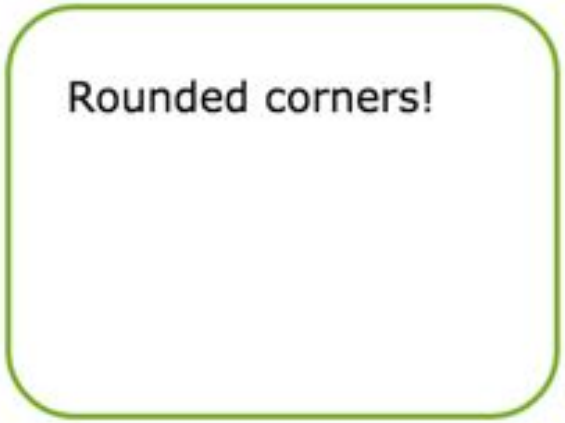
CSS Border Width

- The border-width property specifies the width of the four borders.
- The width can be set as a specific size (in px, pt, cm, em, etc) or by using one of the three pre-defined values: thin, medium, or thick:

```
p.one {
  border-style: solid;
  border-width: 5px;
}
p.two {
  border-style: solid;
  border-width: medium;
}
```

Rounded Border


```
#rcorners1 {
    border-radius: 25px;
    background: #73AD21;
    padding: 20px;
    width: 200px;
    height: 150px;
}
```




```
#rcorners2 {
    border-radius: 25px;
    border: 2px solid #73AD21;
    padding: 20px;
    width: 200px;
    height: 150px;
}
```

CSS Margins

- The CSS margin properties are used to create space around elements, outside of any defined borders.
- With CSS, you have full control over the margins. There are properties for setting the margin for each side of an element (top, right, bottom, and left).
- CSS has properties for specifying the margin for each side of an element:
  - margin-top
  - margin-right
  - margin-bottom
  - margin-left

```
p {
  margin-top: 100px;
  margin-bottom: 100px;
  margin-right: 150px;
  margin-left: 80px;
}
```

CSS Margin Collapse

- Top and bottom margins of elements are sometimes collapsed into a single margin that is equal to the largest of the two margins.
- This does not happen on left and right margins! Only top and bottom margins!
- In the example below, the <h1> element has a bottom margin of 50px and the <h2> element has a top margin set to 20px.
- Common sense would seem to suggest that the vertical margin between the <h1> and the <h2> would be a total of 70px (50px + 20px). But due to margin collapse, the actual margin ends up being 50px.

```
h1 {
  margin: 0 0 50px 0;
}

h2 {
  margin: 20px 0 0 0;
}
```

CSS Padding

- The CSS padding properties are used to generate space around an element's content, inside of any defined borders.
- With CSS, you have full control over the padding. There are properties for setting the padding for each side of an element (top, right, bottom, and left)
- CSS has properties for specifying the padding for each side of an element:
  - padding-top
  - padding-right
  - padding-bottom
  - padding-left

CSS Height and Width

- The height and width properties are used to set the height and width of an element.
- The height and width properties do not include padding, borders, or margins. It sets the height/width of the area inside the padding, border, and margin of the element.
- The height and width properties may have the following values:
  - auto - This is default. The browser calculates the height and width
  - length - Defines the height/width in px, cm etc.
  - % - Defines the height/width in percent of the containing block
  - initial - Sets the height/width to its default value
  - inherit - The height/width will be inherited from its parent value

```
div {
  height: 200px;
  width: 50%;
  background-color: powderblue;
}
```

CSS Text

- The color property is used to set the color of the text.
- The text-align property is used to set the horizontal alignment of a text.
- The text-decoration property is used to set or remove decorations from text.
- The text-transform property is used to specify uppercase and lowercase letters in a text.
- The text-indent property is used to specify the indentation of the first line of a text:
- The text-shadow property adds shadow to text.

```
h1 {
    color: blue;
    text-align: center;
    text-decoration: none;
    text-transform: uppercase;
    text-indent: 50px;
}
```

CSS Fonts

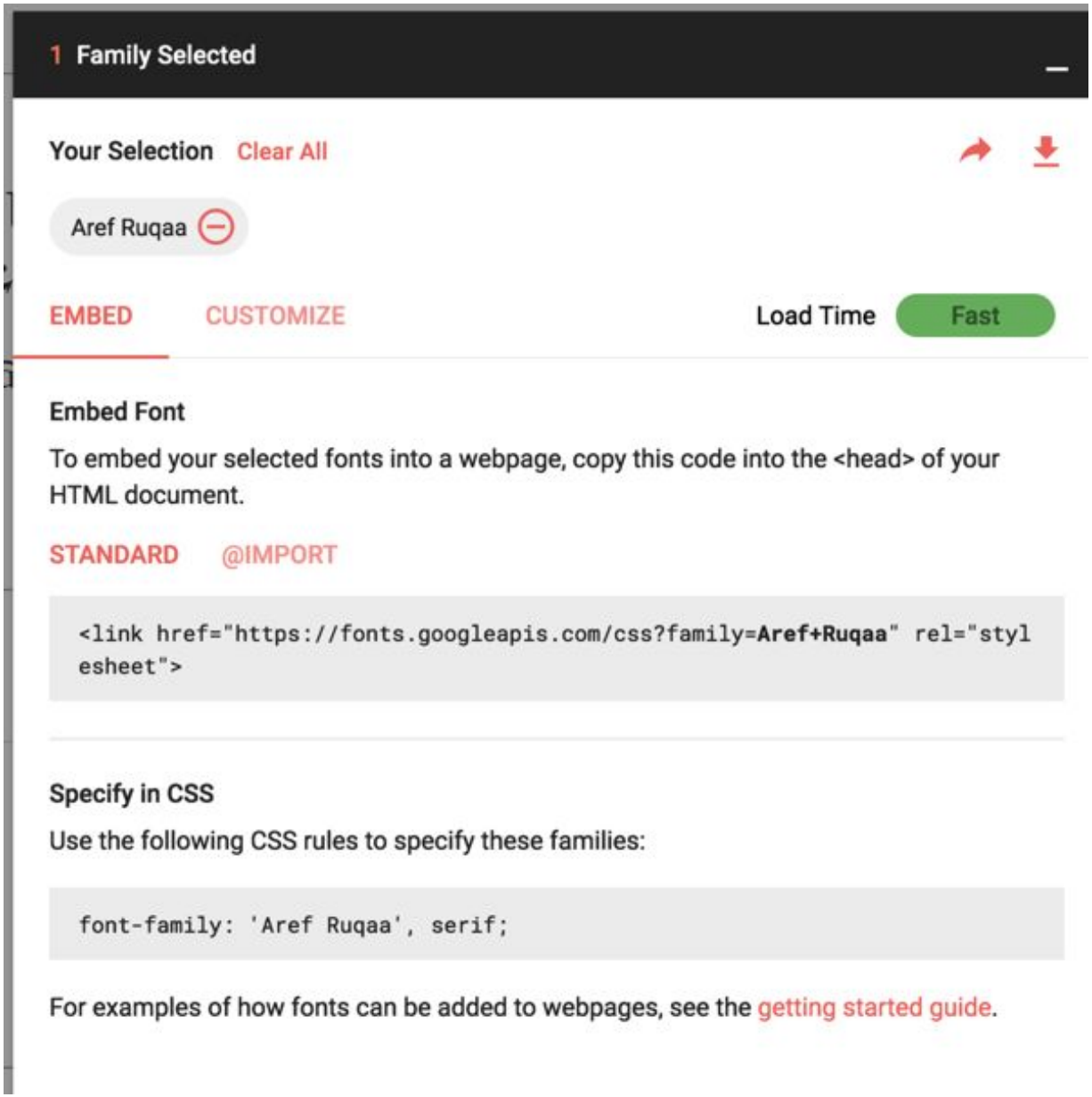
- The CSS font properties define the font family, boldness, size, and the style of a text.
- In CSS, there are two types of font family names:
  - generic family - a group of font families with a similar look (like "Serif" or "Monospace")
  - font family - a specific font family (like "Times New Roman" or "Arial")
- The font-style property is mostly used to specify italic text. This property has three values:
  - normal - The text is shown normally
  - italic - The text is shown in italics
  - oblique - The text is "leaning"
- The font-size property sets the size of the text.

CSS Google Fonts

- If you do not want to use any of the standard fonts in HTML, you can use the Google Fonts API (https://www.google.com/fonts) to add hundreds of other fonts to your page.
- Just add a stylesheet link and refer to a font family of your choice:

  <link rel="stylesheet" href="https://fonts.googleapis.com/css?family=Sofia">

Import Google Font



Ex: Font & Text

- Try different font and text properties such as color and weight for a paragraph
- Try out different Google font

CSS Links

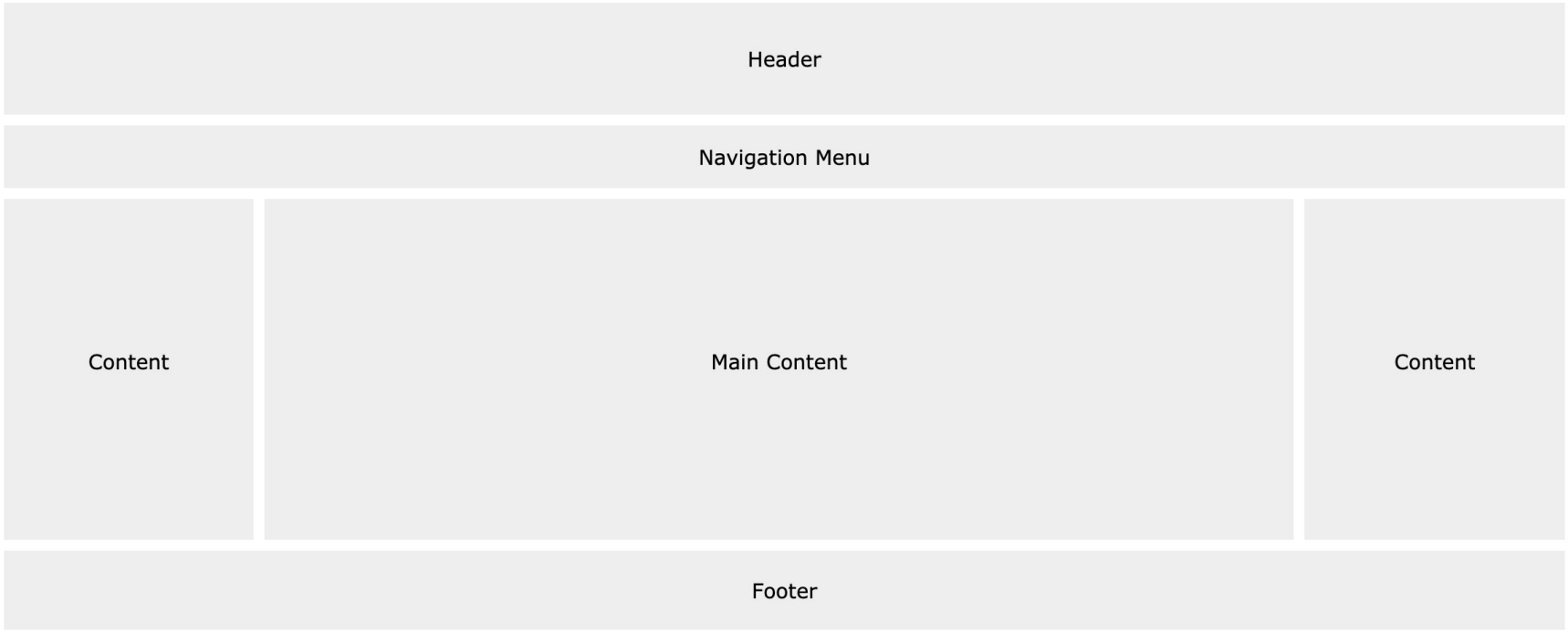
- Links can be styled with any CSS property
- In addition, links can be styled differently depending on what state they are in.
- The four links states are:
  - a:link - a normal, unvisited link
  - a:visited - a link the user has visited
  - a:hover - a link when the user mouses over it
  - a:active - a link the moment it is clicked

```
/* unvisited link */
a:link {
  color: red;
}
/* visited link */
a:visited {
  color: green;
}
```

```
/* mouse over link */
a:hover {
  color: hotpink;
}
/* selected link */
a:active {
  color: blue;
}
```

CSS Website Layout

- A website is often divided into headers, menus, content and a footer:
- There are tons of different layout designs to choose from. However, the structure below is one of the most common



CSS Website Layout

- A header is usually located at the top of the website (or right below a top navigation menu). It often contains a logo or the website name
- A navigation bar contains a list of links to help visitors navigating through your website:

```
.header {
  background-color: #F1F1F1;
  text-align: center;
  padding: 20px;
}
```

```
/* The navbar container */
.topnav {
  overflow: hidden;
  background-color: #333;
}

/* Navbar links */
.topnav a {
  float: left;
  display: block;
  color: #f2f2f2;
  text-align: center;
  padding: 14px 16px;
  text-decoration: none;
}

/* Links - change color on hover */
.topnav a:hover {
  background-color: #ddd;
  color: black;
}
```

Layout Position

- The position property specifies the type of positioning method used for an element.
- There are five different position values:
  - static
  - relative
  - fixed
  - absolute
  - stick
- HTML elements are positioned static by default.
- Static positioned elements are not affected by the top, bottom, left, and right properties.
- An element with position: static; is not positioned in any special way; it is always positioned according to the normal flow of the page:
- An element with position: relative; is positioned relative to its normal position.

```
div.static {
  position: static;
  border: 3px solid #73AD21;
}
```

```
div.relative {
  position: relative;
  left: 30px;
  border: 3px solid #73AD21;
}
```

Layout Flow

- The float property is used for positioning and formatting content e.g. let an image float left to the text in a container.
- The float property can have one of the following values:
  - left - The element floats to the left of its container
  - right - The element floats to the right of its container
  - none - The element does not float (will be displayed just where it occurs in the text). This is default
  - inherit - The element inherits the float value of its parent

```
img {
  float: right;
}
```

Lorem ipsum dolor sit amet, consectetur adipis
odio, vitae scelerisque enim ligula venenatis dc
luctus vestibulum augue ut aliquet. Mauris ant
interdum ut hendrerit risus congue. Nunc sagit

Layout Overflow

- The overflow property specifies whether to clip the content or to add scrollbars when the content of an element is too big to fit in the specified area.
- The overflow property has the following values:
  - visible - Default. The overflow is not clipped. The content renders outside the element's box
  - hidden - The overflow is clipped, and the rest of the content will be invisible
  - scroll - The overflow is clipped, and a scrollbar is added to see the rest of the content
  - auto - Similar to scroll, but it adds scrollbars only when necessary
- By default, the overflow is visible, meaning that it is not clipped and it renders outside the element's box:

```
div {
  width: 200px;
  height: 50px;
  background-color: #eee;
  overflow: visible;
}
```

```
div {
  overflow: hidden;
}
```

CSS Media Queries

- Media queries can be used to check many things, such as:
  - width and height of the viewport
  - width and height of the device
  - orientation (is the tablet/phone in landscape or portrait mode?)
  - resolution
- Using media queries are a popular technique for delivering a tailored style sheet to desktops, laptops, tablets, and mobile phones (such as iPhone and Android phones).
- One way to use media queries is to have an alternate CSS section right inside your style sheet.
- The following example changes the background-color to lightgreen if the viewport is 480 pixels wide or wider

```
@media screen and (min-width: 480px) {
    body {
        background-color: lightgreen;
    }
}
```

Summary Q&A

Feedback

https://goo.gl/R2eumq

TINFOTECH

CERTIFICATE

of ACCOMPLISHMENT

You will receive a digital certificate in your email
after the completion of the class
If you did not receive the digital certificate,
please send your request to
enquiry@tertiaryinfotech.com

Thank You!

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