

COMS/SE 319: Construction of User Interface Fall 2022

LAB Activity 03 – HTML and CSS basics

This lab activity is a brief introduction to HTML and CSS. It is by no means comprehensive. For a more complete tutorial, we highly recommend starting with the HTML and CSS tutorials provided by w3schools.com.

- HTML elements
 - head, body
 - div, headings, paragraph, img, a, b
- CSS
 - Adding style scripts
 - Applying styles
 - CSS selectors
- Chrome inspection
 - Inspect elements and their styles

Prerequisites:

- Chrome Browser
- Text editor (eg. **VSCode**, Sublime, Notepad...)
 - We recommend using VSCode

Additional tutorials:

- <https://www.w3schools.com/html/>
- <https://www.w3schools.com/css/>

Task 1: HTML elements

Hyper-Text Markup Language, is a markup language (using tags) used to generate web pages. An important point to note about html is it's hierarchical structure.

Task 1.1: Head, body

- Create an "index.html" file with <head> and <body> tags
- An html file contains 3 major container tags.
 - <html> - contains the whole page
 - <head> - contains links to scripts to be loaded before the <body> tag
 - <body> - contains the html elements viewed in the browser
- It is important to note that HTML is hierarchical.
 - Elements are placed inside other elements.
- Lets create an empty html document "index.html" with the following tags:

```
<html>
  <head>

  </head>
  <body>

  </body>
</html>
```

- This should show up as an empty page in the browser.
- Now let's add elements to our html page.

Task 1.2: HTML Elements

- <div> tags are container elements. They are used to group and organize other elements on your page. As you might remember from the Bootstrap Lab, you were able to layout your page using the <div> tags.
- There are six headings elements you can use as heading.
 - <h1>, <h2>, <h3>, <h4>, <h5>, <h6>
 - The headings progressively decrease in font size.
- Paragraph <p> tags allow you to organize your text into a paragraph.
- tags allow you to add an image to your page.
- Surround a text with to bolden it.

- Anchor tags <a> allow you to specify a url to navigate to.
 - URLs could point to external or even remote files.
 - They could point to sections on the same page (Especially when the page is long).
 - We set the “href” property to point the tag to the required destination
 - We use the id ‘#’ symbol to point to locations on the same page. (Eg. href=“#wiki”)
- Let’s create a simple page containing the elements with an image surrounded by a text.

```
<html>
<head>

</head>
<body>

  <div>
    <h2> Sparrow </h2>
    <p>
       <b>Lorem Ipsum</b> is simply dummy text of the printing and typesetting ind
      the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of ty
      type specimen book. It has survived not only five centuries, but also the leap into electronic types
      unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsu
      with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.
    </p>

    <p> Here's the wiki page for "sparrow" <a href="https://en.wikipedia.org/wiki/Sparrow">Wiki</a> </p>

  </div>

</body>
</html>
```

- This should look like the image shown below:

Sparrow



Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem l
unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into e
with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker inc

Here's the wiki page for "sparrow" [Wiki](#)

- Let's now add some style to our page.

Task 2: CSS

Cascading Style Sheets is a styling language used to style web pages. It is used by most web sites and on most web pages. Without it web pages would hardly look any different than a word document. CSS is a vast topic. We present just a few points here.

Task 1.2: Adding CSS styles to your page

- There are several ways to add styles to your page.
 - Linking external stylesheets.
 - Using the <style> tag and adding it in the same web page.
 - Using the “style” property on a particular html element, and setting its value.
- Lets see how we can style our page using all methods.

- **Task 1.2.1**

- Create a “style.css” file and add the following styles.

```
div {
  width: 314px;
  height: 500px;
  margin: 0 auto;
  border: solid;
  overflow-y: auto;
  overflow-x: hidden;
}

h2{
  color: #f09b0a;
}

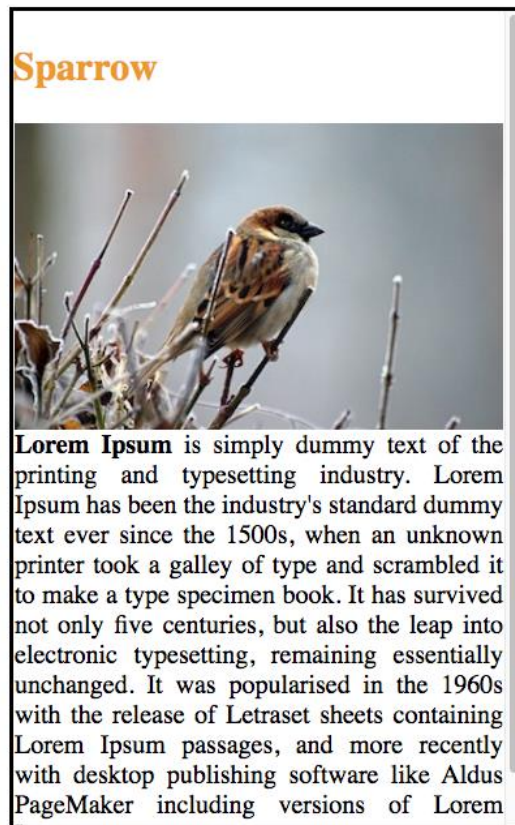
img {
  max-width: 300px;
  object-fit: cover;
  overflow: hidden;
  margin: 0 auto;
}

p {
  width: 300px;
  text-align: justify;
  margin: 0 auto;
}
```

- Now link the style script to your webpage using the <link> tag in your <head> element.

```
<html>
<head>
  <link rel="stylesheet" type="text/css" href="style.css"/>
</head>
<body>
  <div>
    <h2> Sparrow </h2>
    <p>
       <b>Lorem Ipsum</b> is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.
    </p>
    <p> Here's the wiki page for "sparrow" <a href="https://en.wikipedia.org/wiki/Sparrow">Wiki</a> </p>
  </div>
</body>
</html>
```

- You should be able to see.



- Checkout the effect of each CSS property by commenting the lines using “//”.
- Now let's use the <style> tag to add styles to our page.
 - We can add it anywhere but <head> is a convenient tag to place it in.

```

<html>
<head>
  <link rel="stylesheet" type="text/css" href="style.css"/>
  <style>
    h2{
      color: red;
    }
  </style>
</head>
<body>
  <div>
    <h2> Sparrow </h2>
    <p>
       <b>Lorem Ipsum</b> is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been
      the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a
      type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially
      unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently
      with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.
    </p>
    <p> Here's the wiki page for "sparrow" <a href="https://en.wikipedia.org/wiki/Sparrow">Wiki</a> </p>
  </div>
</body>
</html>

```

- Notice how the heading <h2> changes color to “red”. If you were to swap the positions of the <link> and <style> tags, the <h2> color would have remained “Orangish”. I.e The ordering of styles matters when targeting elements.
- Now lets add inline CSS using the “style” property in the <h2> tag.

```

<html>
<head>
  <link rel="stylesheet" type="text/css" href="style.css"/>
  <style>
    h2{
      color: red;
    }
  </style>
</head>
<body>
  <div>
    <h2 style="color:green"> Sparrow </h2>
    <p>
       <b>Lorem Ipsum</b> is simply dummy text of the printing and typesetting industry.
      the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and
      type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting,
      unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passa
      with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.
    </p>
    <p> Here's the wiki page for "sparrow" <a href="https://en.wikipedia.org/wiki/Sparrow">Wiki</a> </p>
  </div>
</body>
</html>

```

- You see that the heading <h2> is now green. This shows that inline CSS has precedence over external and internal style scripts.

Task 1.2.2

- Let’s see how to filter elements in order to apply a style.
- CSS selectors are powerful and easy to use targeting tools used to select a particular element or sets of elements in our web page.
- **Element selector:**

- So far we have been using element selectors without knowing it. For instance when we typed “div {...}” in our style.css, we were selecting all <div>’s in our html page. This way we exclude all other elements in our page and apply the style only to the selected <div> elements.
- **Class selector:**
 - We can further narrow down the selection of elements using the class “.” selector. This allows us to style a class of elements as opposed to all elements of the given type. For example lets add one more <p> in our html and assign a new class to the last two <p>’s.

```
<html>
<head>

<link rel="stylesheet" type="text/css" href="style.css"/>
<style>
  h2{
    color: red;
  }
</style>
</head>
<body>

<div>
  <h2 style="color:green"> Sparrow </h2>
  <p>
     <b>Lorem Ipsum</b> is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been
    the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a
    type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially
    unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently
    with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.
  </p>

  <p class="extra"> Here's the Wiki page for "sparrow" </p>
  <p class="extra"> Here a google search for "sparrow" <a href="https://www.google.com/search?q=sparrow">Google</a> </p>
</div>
</body>
</html>
```

- Now set a style for the “extra” class.

```
div {
  width: 314px;
  height: 500px;
  margin: 0 auto;
  border: solid;
  overflow-y: auto;
  overflow-x: hidden;
}

h2{
  color: #f09b0a;
}

img {
  max-width: 300px;
  object-fit: cover;
  overflow: hidden;
  margin: 0 auto;
}

p {
  width: 300px;
  text-align: justify;
  margin: 0 auto;
}

.extra{
  font-family: "Lucida Console", "Courier New", monospace;
}
```

- The result should look like this. Yes, a weird font choice! But you get the idea.



Lorem Ipsum is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.

Here's the wiki page for "sparrow" [Wiki](#)
Here a google search for "sparrow" [Google](#)

○ Id selector:

- If we want to be more specific in our selection, we can set the “id” property of an element to give it a unique identifier.
- This way we can pinpoint a single element. Lets add an id property to the wiki paragraph.

```
<html>
<head>
  <link rel="stylesheet" type="text/css" href="style.css"/>
  <style>
    h2{
      color: red;
    }
  </style>
</head>
<body>
  <div>
    <h2 style="color:green"> Sparrow </h2>
    <p>
       <b>Lorem Ipsum</b> is simply dummy text of the printing and typesetting industry. Lorem Ipsum has been
      the industry's standard dummy text ever since the 1500s, when an unknown printer took a galley of type and scrambled it to make a
      type specimen book. It has survived not only five centuries, but also the leap into electronic typesetting, remaining essentially
      unchanged. It was popularised in the 1960s with the release of Letraset sheets containing Lorem Ipsum passages, and more recently
      with desktop publishing software like Aldus PageMaker including versions of Lorem Ipsum.
    </p>
    <p class="extra" id="wiki"> Here's the wiki page for "sparrow" <a href="https://en.wikipedia.org/wiki/Sparrow">Wiki</a> </p>
    <p class="extra"> Here a google search for "sparrow" <a href="https://www.google.com/search?q=sparrow">Google</a> </p>
  </div>
</body>
</html>
```

- Now lets add a specific style for this id.

```
div {
  width: 314px;
  height: 500px;
  margin: 0 auto;
  border: solid;
  overflow-y: auto;
  overflow-x: hidden;
}

h2{
  color: #f09b0a;
}

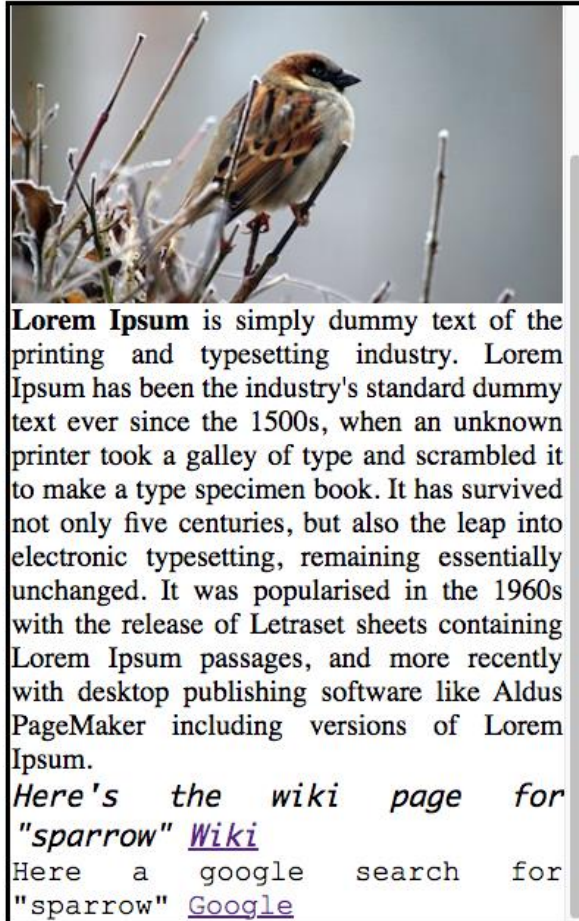
img {
  max-width: 300px;
  object-fit: cover;
  overflow: hidden;
  margin: 0 auto;
}

p {
  width: 300px;
  text-align: justify;
  margin: 0 auto;
}

.extra{
  font-family: "Lucida Console", "Courier New", monospace;
}

#wiki{
  font-family: "Monaco", monospace;
  font-style: italic;
}
```

- It should look like this.



- Notice the hierarchy of selectors. Similar to html elements, css selectors are hierarchical too. Element selectors are shadowed by class selectors. And class selectors have less priority compared to id selectors.
- Remember this whenever your pages fail to show the style you expected. Perhaps your expected style was overridden by a higher priority selection. Or perhaps your external css was overridden by internal or inline css.
- Checkout https://www.w3schools.com/cssref/css_selectors.asp for a comprehensive list of CSS selectors. Please note that CSS selectors provide a powerful means of targeting our html elements. This not only allows us to style our elements, but also manipulate them using JavaScript. Thus, it is imperative to understand how they work and where to refer to them when embarking on your projects.

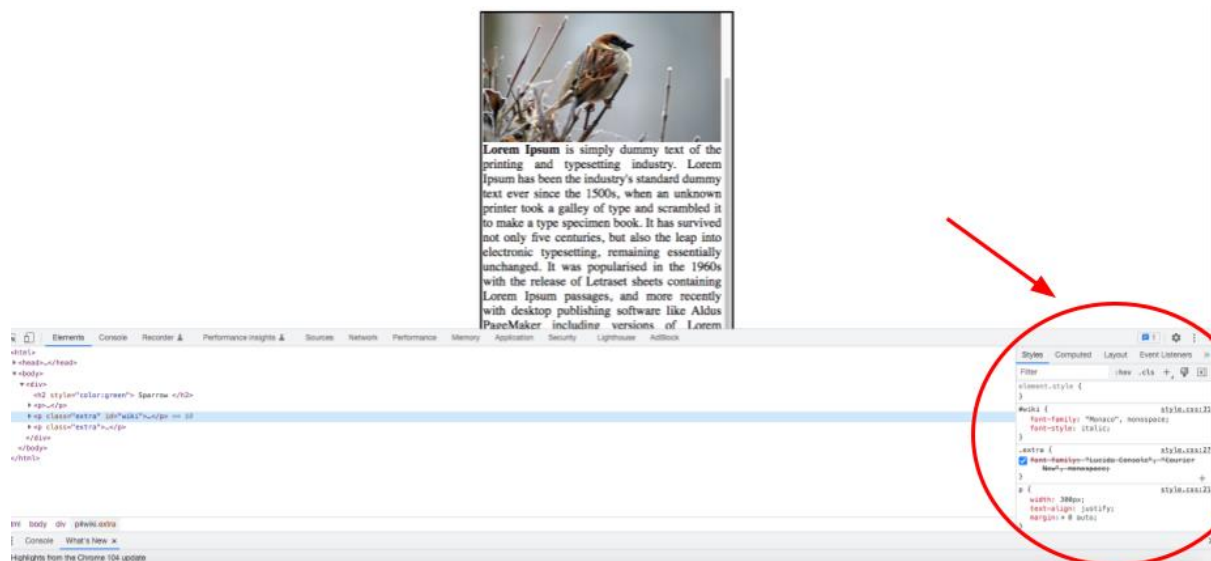
Task 3: Chrome inspection tool

Let's see how to inspect our html elements using the chrome inspection tool.

- Assuming you're using the Chrome browser, right click on the "wiki paragraph" and checkout the "element" tab.



- You should see the inspection window. Select the "Element" and checkout the subwindow on the right.



- When you select the `<p id="wiki">` element, you should notice several styles applied to it.

- You also see that the “font” style added to the “.extra” class was ignored since it was supplanted by the “font” style used for the “#wiki” selector.
- On the contrary, other styles applied using the “p” element selector were still applied. This is because there was no conflict of styles along the hierarchy. If there was a “font” style applied to the “p” selector however, it too would have been ignored.
- One cool feature of the chrome inspection tool is the ability to toggle styles in real-time. Check and uncheck the checkboxes next to “#wiki” and see what happens. You can even edit the styles by double clicking the style properties.
- You can further explore the tool to see what other features it has.