

<LESSON 01>

HTML

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<Last Revised> September 12, 2021

Objectives

- Learn basic HTML terminology.
- Learn the basic structure of an HTML document.
- Learn some basic HTML elements and their most important attributes.
- Learn how and where to find more information about HTML.

What is HTML?

- HTML stands for Hyper Text Markup Language.
- Web pages are HTML documents.
- HTML documents are made of HTML elements.
- HTML elements are represented by HTML tags.

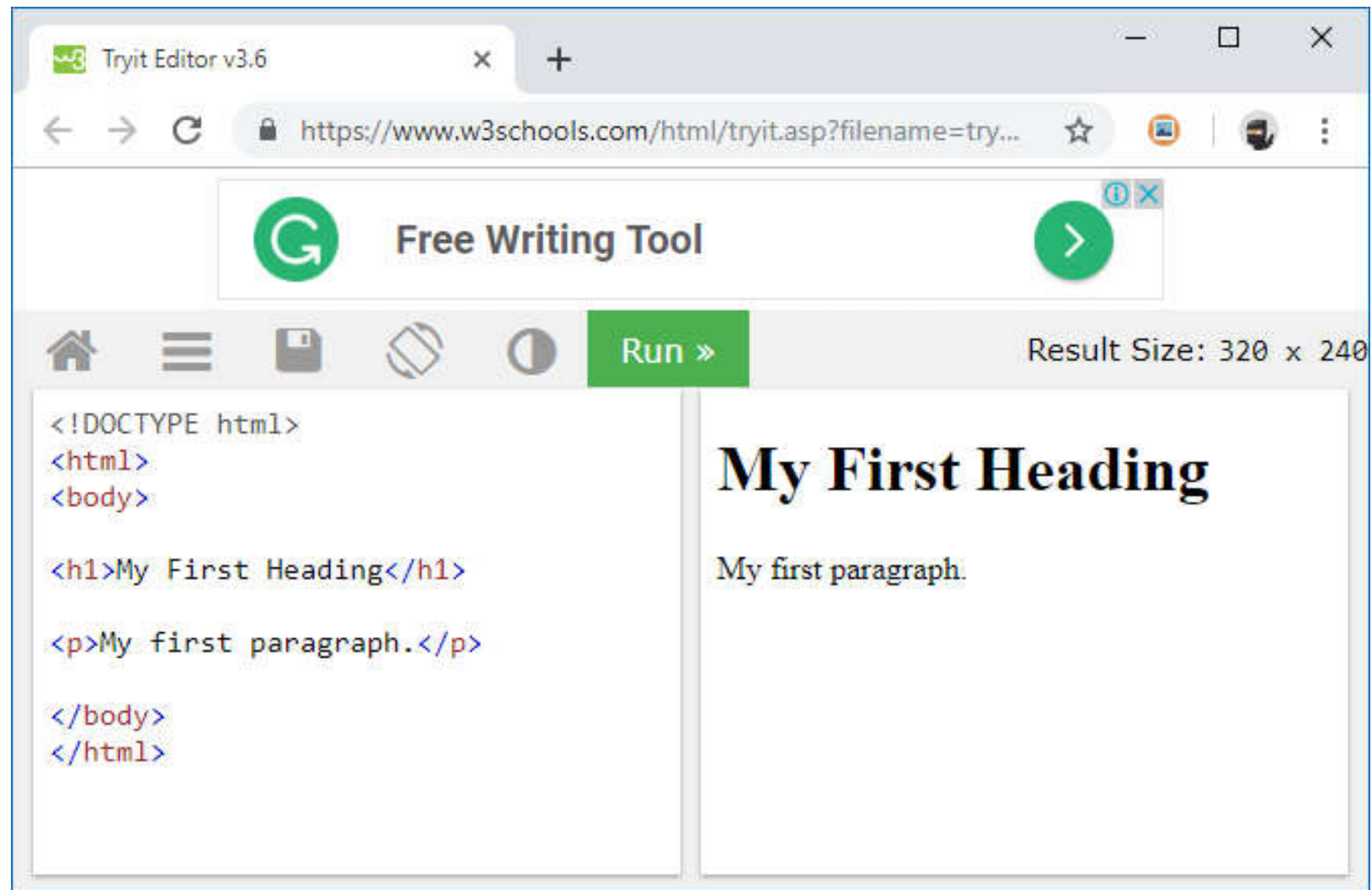
What is HTML?

- HTML tags are names surrounded by angle brackets (<>).
- HTML tags normally come in pairs like <p> and </p>.
- The first tag in a pair is the start tag (or opening tag), the second tag is the end tag (or closing tag).

Web Browsers

- The purpose of a web browser (e.g., Chrome, Internet Explorer, Edge, Opera, Konqueror, Firefox, Safari) is to read HTML documents and display them.
- The browser does not display the HTML tags. Rather, it uses them to determine how to display the document.

Example

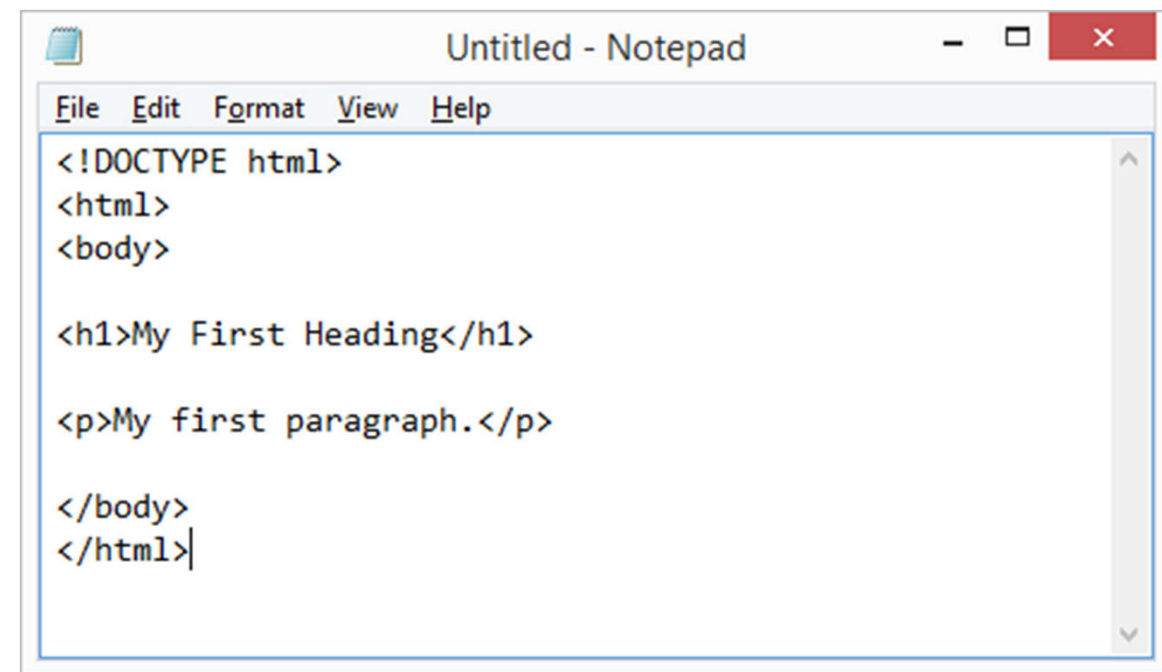


HTML Editors

- Web pages can be created and modified by using professional HTML editors.
- However, for learning HTML we recommend a ~~simple~~ text editor like ~~Notepad (Windows OS)~~ or ~~TextEdit (Mac OS)~~ with syntax highlighting, auto-format, and auto-complete like Visual Studio Code or Netbeans.
- We believe using a ~~simple~~ text editor is a good way to learn HTML.

Write or Copy Some HTML

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



The screenshot shows a standard Windows Notepad application window. The title bar reads 'Untitled - Notepad'. The menu bar includes 'File', 'Edit', 'Format', 'View', and 'Help'. The text area contains the following HTML code, which matches the code block on the left:

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


Spaces Do Not Matter! But They Do!

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

- To the web browser, the number of spaces (or lines) between element tags do not matter!
- But for human readability purposes they do matter!

Spaces Do Not Matter! But They Do!

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

- So, you should ALWAYS indent (and format) your source code consistently.
- You can either use spaces or tabs to indent your code.

Spaces Do Not Matter! But They Do!

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

- Select the text and press:

TAB
to indent

and

SHIFT + TAB
to unindent.

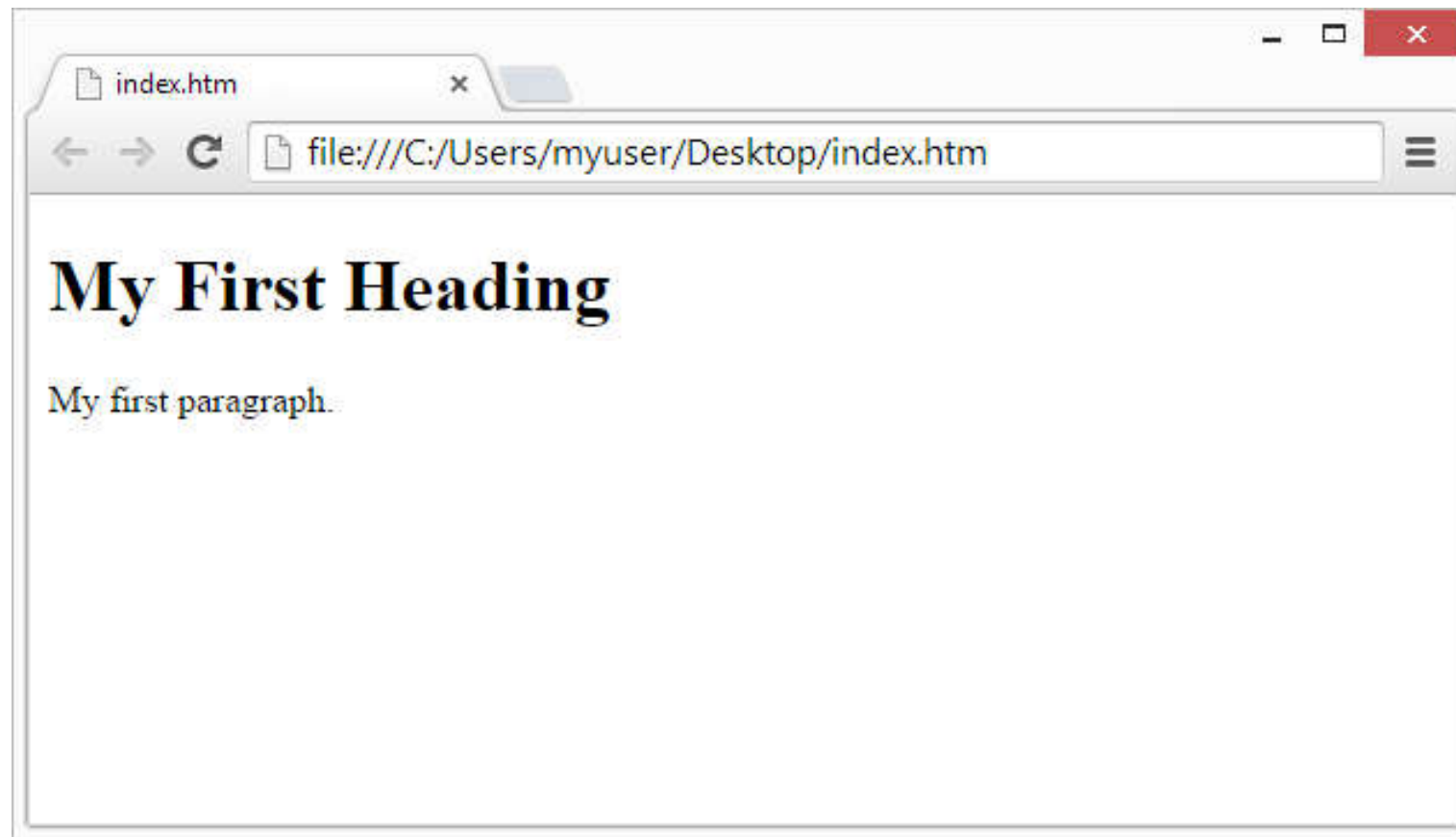
or

ALT + SHIFT + F

Save the HTML Page

- Write the file name in-between double quotes (").
- Include the *.htm or *.html extension to the file name.
- Use only letters ([a-z][A-Z]), digits ([0-9]) and underscores (_). No spaces!
- Set the encoding to UTF-8 (which is the preferred encoding for HTML files).
- Examples:
 - "index.htm"
 - "index.html"
 - "support.html"
 - "contact_us.html"
 - "page42.html"
 - "page_42.html"

Example

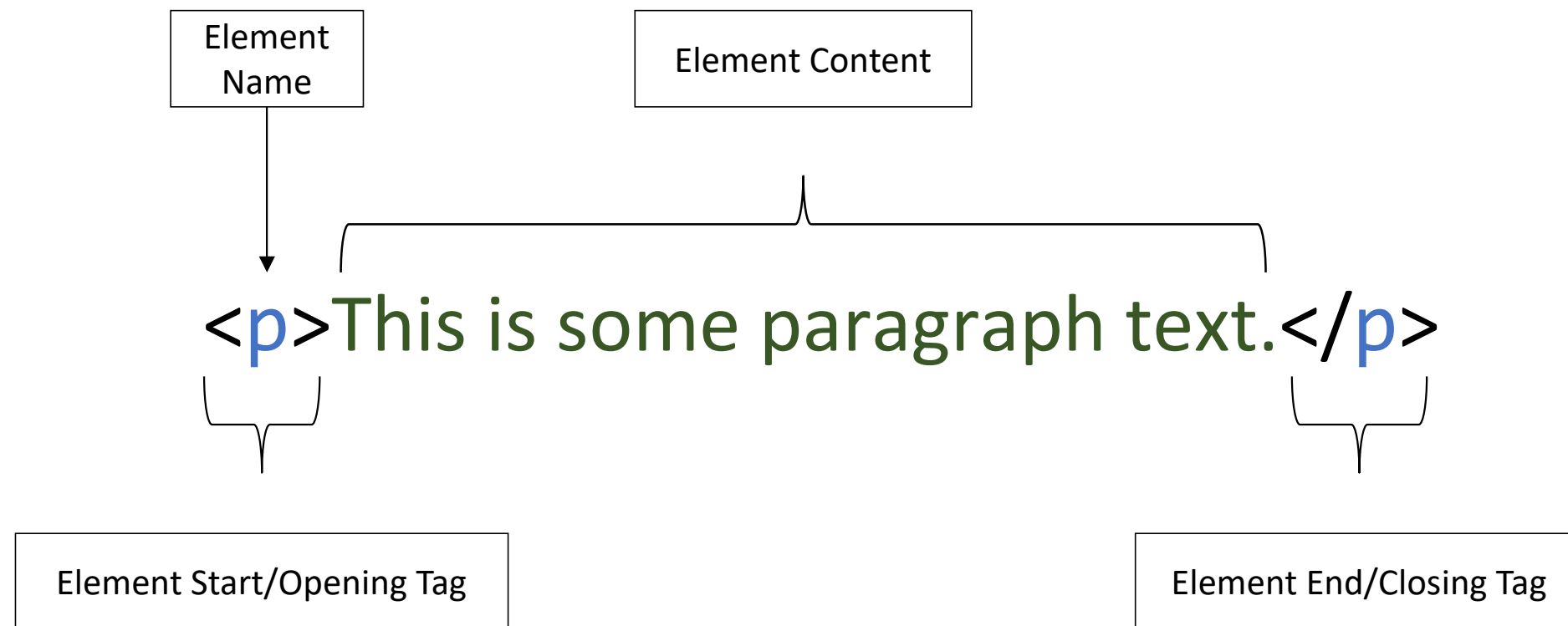


HTML Elements

- An HTML element usually consists of a start tag and end tag, with the content inserted in between.
- The HTML element is everything from the start tag to the end tag.
- Example:

`<p>My first paragraph.</p>`

HTML Elements



HTML Elements

- Some elements do not have an end tag, or the end tag is optional (e.g., `` or `
` or `` or `<hr>` tags)
- Some HTML elements will display correctly, even if you forget the end tag.
- **NOTE**: Never rely on this. It might produce unexpected results and/or errors if you forget the end tag.

HTML Elements

- HTML elements with no content are called empty elements.
- Empty elements can be "closed" in the opening tag like this: `
`.
- **NOTE:** HTML5 does not require empty elements to be closed. But if you want stricter validation, or if you need to make your document readable by XML parsers, you must close all HTML elements properly.

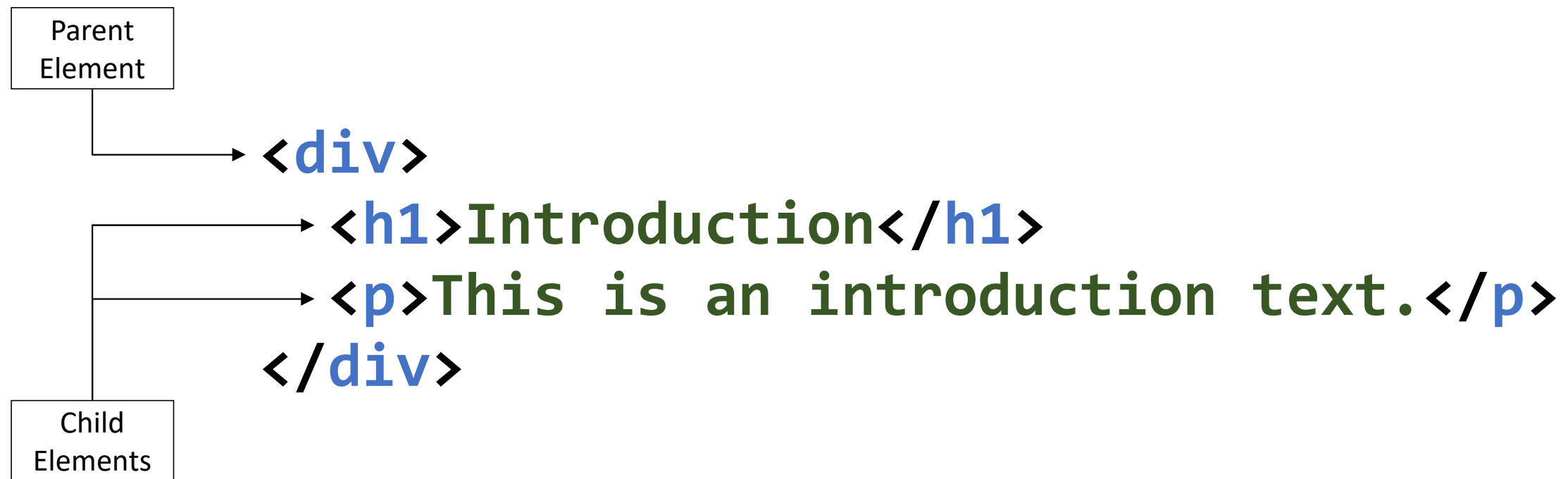
HTML Elements

- HTML elements can be nested, that is:
 - HTML elements can contain other HTML elements
 - HTML elements can be composed of other HTML elements.
- All HTML documents consist of nested HTML elements.
 - All HTML elements are nested inside the `<html>` element.

HTML Elements

- HTML elements contained within an HTML element are called *children*.
- HTML elements that contain other HTML elements are called *parents*.
- HTML elements that share the same parent element are called *siblings*.
- Child elements of child elements are called *descendants*.
- Parent elements of parent elements are called *ancestors*.
 - The `<html>` element is ancestor of all HTML elements in a HTML document.

HTML Elements



HTML Elements

- HTML tags are not case sensitive:

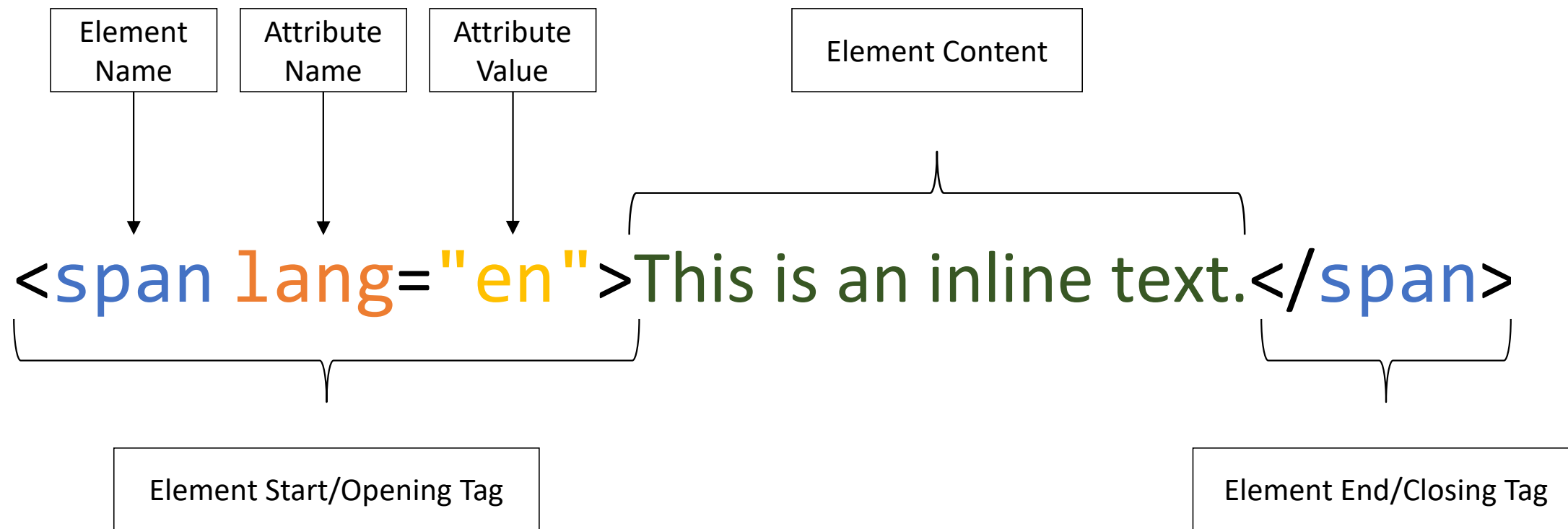
`<P>` means the same as `<p>`

- The HTML5 standard does not require lowercase tags.
 - W3C **recommends** lowercase for HTML.
 - W3C **demand**s lowercase for XHTML.

HTML Attributes

- All HTML elements can have **attributes**.
- Attributes provide **additional information** about an HTML element.
- Attributes are always specified in the **start tag**.
- Attributes usually come in name/value pairs (e.g., **name="value"**).

HTML Elements



HTML Attributes

- HTML attributes are not case sensitive:

HREF means the same as **href**

- The HTML5 standard does not require lowercase attributes.
 - W3C **recommends** lowercase for HTML.
 - W3C **demands** lowercase for XHTML.

HTML Attributes

- Some HTML attributes are special and only work for certain HTML elements (e.g., **href**, **src**, **alt**, **colspan**, **type**)
- Some other HTML attributes work for all HTML elements:
 - **id** is used to assign a unique name to the element.
 - **class** is used to assign a classification to the element.
 - **style** is used to set the CSS format of the element inline.
 - **title** is used to show a tooltip text on over the element.

HTML Global Attributes

Attribute	Description
<u>accesskey</u>	Specifies a shortcut key to activate/focus an element
<u>class</u>	Specifies one or more class names for an element
<u>contenteditable</u>	Specifies whether the content of an element is editable or not
<u>data-*</u>	Used to store custom data private to the page or application
<u>dir</u>	Specifies the text direction for the content in an element
<u>draggable</u>	Specifies whether an element is draggable or not
<u>dropzone</u>	Specifies if the dragged data is going to copied, moved, or linked
<u>hidden</u>	Specifies that an element is not yet, or is no longer, relevant

HTML Global Attributes

Attribute	Description
<u>id</u>	Specifies a unique id for an element
<u>lang</u>	Specifies the language of the element's content (*for screen readers)
<u>spellcheck</u>	Specifies whether the element is to have its spelling checked or not
<u>style</u>	Specifies an inline CSS style for an element
<u>tabindex</u>	Specifies the tabbing order of an element
<u>title</u>	Specifies extra information about an element as a tooltip
<u>translate</u>	Specifies whether the content of an element should be translated or not

HTML Attributes Values

- The HTML5 standard does not require quotes around attribute values, unless the values have spaces.

```
<a href=https://www.w3schools.com>
```

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

```
<img src=cake.jpg alt="A delicious cake." width=320>
```

```

```

HTML Attributes Values

- Double quotes around attribute values are the most common in HTML, but single quotes can also be used.

```
<img src='cake.jpg' alt='A delicious cake.' width='320'>
```

- When the attribute value itself contains double quotes, it is necessary to use single quotes or vice versa:

```
<p title='John "ShotGun" Nelson'>
```

```
<p title="John 'ShotGun' Nelson">
```

HTML Attributes Values

- **NOTE**: Omitting quotes can produce errors.
- The HTML5 standard does not require quotes around attribute values.
 - W3C **recommends** quotes for HTML.
 - W3C **demand**s quotes for XHTML.

HTML Documents

- All HTML documents must start with a document type declaration: `<!DOCTYPE html>`.
- The HTML document itself begins with `<html>` and ends with `</html>`.
- The visible part of the HTML document is between `<body>` and `</body>`.

Example

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


The <!DOCTYPE> Declaration

- Represents the document type.
- Helps browsers to display web pages correctly.
- It must only appear once, at the top of the page (before any HTML tags).
- It is not case sensitive.

The <!DOCTYPE> Declaration

- **DOCTYPEs** are required for legacy reasons. When omitted, browsers tend to use a different rendering mode that is incompatible with some specifications.
- Including the **DOCTYPE** in a document ensures that the browser makes a best-effort attempt at following the relevant specifications.
- Example:

```
<!DOCTYPE html>
```

HTML Tag

- All HTML elements must be contained (nested) within the `<html>` and `</html>` tags.
- The `<html>` element represents the root of an HTML document.
- Authors are encouraged to specify a `lang` attribute on the root `<html>` element, giving the document's language (e.g., `"en"` for English, `"es"` for Spanish). This aids speech synthesis tools to determine what pronunciations to use, translation tools to determine what rules to use, and so forth.
- May contain a `<head>` element followed by a `<body>` element.

ISO 639-1 Language Codes

Language	ISO Code	Language	ISO Code	Language	ISO Code	Language	ISO Code
Abkhazian	ab	Basque	eu	Chinese (Simplified)	zh-Hans	Estonian	et
Afar	aa	Belarusian	be	Chinese (Traditional)	zh-Hant	Ewe	ee
Afrikaans	af	Bengali (Bangla)	bn	Chuvash	cv	Faroese	fo
Akan	ak	Bihari	bh	Cornish	kw	Fijian	fj
Albanian	sq	Bislama	bi	Corsican	co	Finnish	fi
Amharic	am	Bosnian	bs	Cree	cr	French	fr
Arabic	ar	Breton	br	Croatian	hr	Fula	ff
Aragonese	an	Bulgarian	bg	Czech	cs	Fulah	ff
Armenian	hy	Burmese	my	Danish	da	Pulaar	ff
Assamese	as	Catalan	ca	Divehi	dv	Pular	ff
Avaric	av	Chamorro	ch	Dhivehi	dv	Galician	gl
Avestan	ae	Chechen	ce	Maldivian	dv	Gaelic (Scottish)	gd
Aymara	ay	Chichewa	ny	Dutch	nl	Gaelic (Manx)	gv
Azerbaijani	az	Chewa	ny	Dzongkha	dz	Georgian	ka
Bambara	bm	Nyanja	ny	English	en	German	de
Bashkir	ba	Chinese	zh	Esperanto	eo	Greek	el

ISO 639-1 Language Codes

Language	ISO Code	Language	ISO Code	Language	ISO Code	Language	ISO Code
Greenlandic	kl	Inuktitut	iu	Kyrgyz	ky	Macedonian	mk
Guarani	gn	Inupiak	ik	Komi	kv	Malagasy	mg
Gujarati	gu	Irish	ga	Kongo	kg	Malay	ms
Haitian Creole	ht	Italian	it	Korean	ko	Malayalam	ml
Hausa	ha	Japanese	ja	Kurdish	ku	Maltese	mt
Hebrew	he	Javanese	jv	Kwanyama	kj	Maori	mi
Herero	hz	Kalaallisut	kl	Lao	lo	Marathi	mr
Hindi	hi	Greenlandic	kl	Latin	la	Marshallese	mh
Hiri Motu	ho	Kannada	kn	Latvian (Lettish)	lv	Moldavian	mo
Hungarian	hu	Kanuri	kr	Limburgish (Limburger)	li	Mongolian	mn
Icelandic	is	Kashmiri	ks	Lingala	ln	Nauru	na
Ido	io	Kazakh	kk	Lithuanian	lt	Navajo	nv
Igbo	ig	Khmer	km	Luga-Katanga	lu	Ndonga	ng
Indonesian	id, in	Kikuyu	ki	Luganda, Ganda	lg	Northern Ndebele	nd
Interlingua	ia	Kinyarwanda (Rwanda)	rw	Luxembourgish	lb	Nepali	ne
Interlingue	ie	Kirundi	rn	Manx	gv	Norwegian	no

ISO 639-1 Language Codes

Language	ISO Code	Language	ISO Code	Language	ISO Code	Language	ISO Code
Norwegian bokmål	nb	Quechua	qu	Siswati	ss	Thai	th
Norwegian nynorsk	nn	Romansh	rm	Slovak	sk	Tibetan	bo
Nuosu	ii	Romanian	ro	Slovenian	sl	Tigrinya	ti
Occitan	oc	Russian	ru	Somali	so	Tonga	to
Ojibwe	oj	Sami	se	Southern Ndebele	nr	Tsonga	ts
Old Church Slavonic	cu	Samoan	sm	Spanish	es	Turkish	tr
Old Bulgarian	cu	Sango	sg	Sundanese	su	Turkmen	tk
Oriya	or	Sanskrit	sa	Swahili (Kiswahili)	sw	Twi	tw
Oromo (Afaan Oromo)	om	Serbian	sr	Swati	ss	Uyghur	ug
Ossetian	os	Serbo-Croatian	sh	Swedish	sv	Ukrainian	uk
Pāli	pi	Sesotho	st	Tagalog	tl	Urdu	ur
Pashto, Pushto	ps	Setswana	tn	Tahitian	ty	Uzbek	uz
Persian (Farsi)	fa	Shona	sn	Tajik	tg	Venda	ve
Polish	pl	Sichuan Yi	ii	Tamil	ta	Vietnamese	vi
Portuguese	pt	Sindhi	sd	Tatar	tt	Volapük	vo
Punjabi (Eastern)	pa	Sinhalese	si	Telugu	te	Wallon	wa

ISO 639-1 Language Codes

[illegible]

Example

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Swapping Songs</title>
  </head>
  <body>
    <h1>Swapping Songs</h1>
    <p>Tonight I swapped some of the songs I wrote with some <span lang="es">
      amigos</span>, who gave me some of the songs they wrote. I love sharing my
      music.</p>
  </body>
</html>
```


HTML Head

- Contained in: `<html>`
- May contain: *Metadata Content* (except `<template>`)

Metadata Content

- **Metadata content** is content that sets up the presentation or behavior of the rest of the content, or that sets up the relationship of the document with other documents, or that conveys other "out of band" information.
- Elements from other namespaces whose semantics are primarily metadata-related (e.g., RDF) are also metadata content.

<base>, <link>, <meta>, <noscript>, <script>, <style>, <template>, <title>

HTML Body

- Contained in: `<html>`
- Contains: *Flow Content*

Flow Content

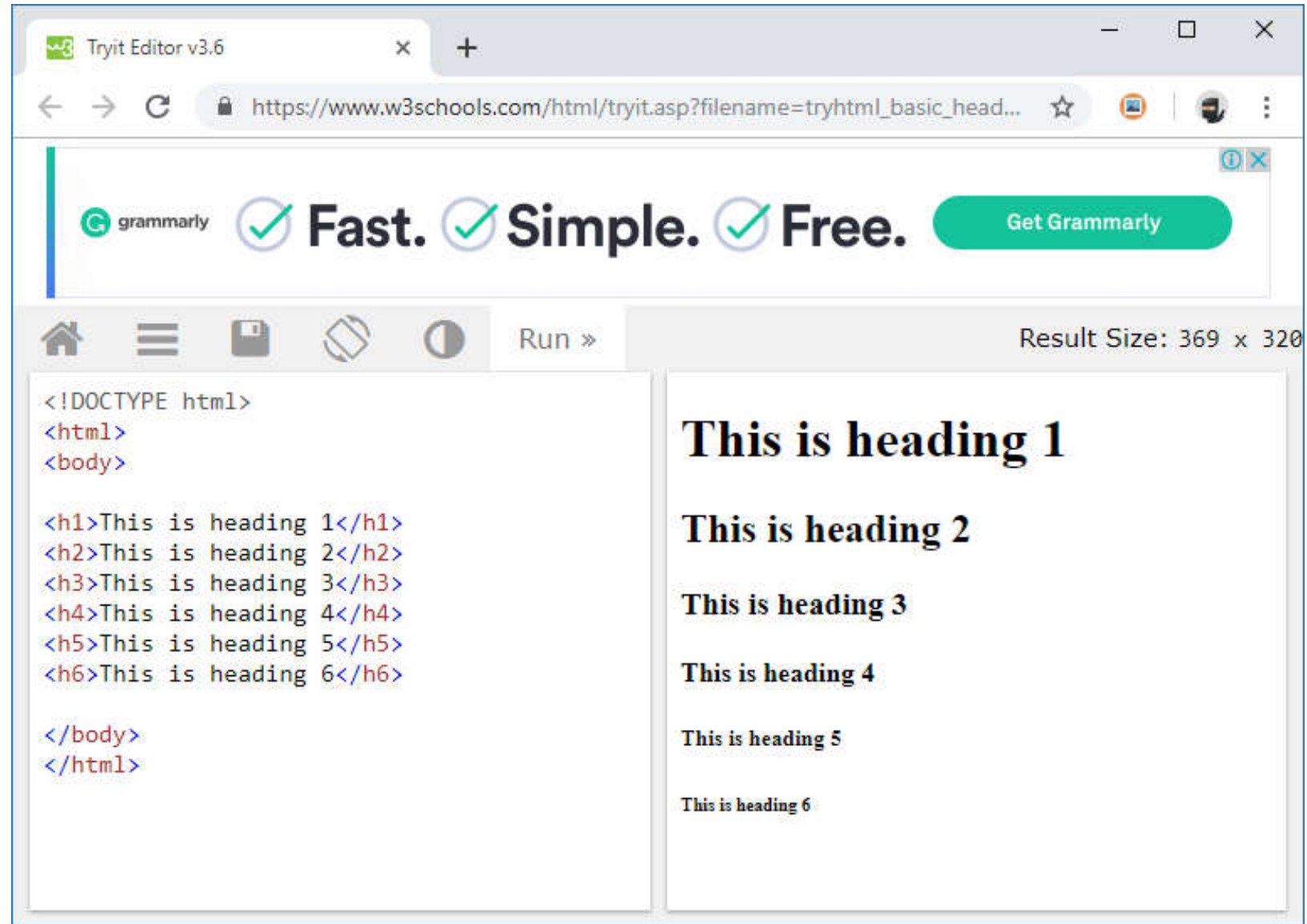
- `<a>`, `<abbr>`, `<address>`, `<area>` (if it is a descendant of a `<map>` element), `<article>`, `<aside>`, `<audio>`, ``, `<bdi>`, `<bdo>`, `<blockquote>`, `
`, `<button>`, `<canvas>`, `<cite>`, `<code>`, `<data>`, `<datalist>`, ``, `<details>`, `<dfn>`, `<dialog>`, `<div>`, `<dl>`, ``, `<embed>`, `<fieldset>`, `<figure>`, `<footer>`, `<form>`, `<h1>`, `<h2>`, `<h3>`, `<h4>`, `<h5>`, `<h6>`, `<header>`, `<hr>`, `<i>`, `<iframe>`, ``, `<input>`, `<ins>`, `<kbd>`, `<label>`, `<link>` (if it is allowed in the `<body>`), `<main>`, `<map>`, `<mark>`, `<math>`, `<meter>`, `<nav>`, `<noscript>`, `<object>`, ``, `<output>`, `<p>`, `<picture>`, `<pre>`, `<progress>`, `<q>`, `<ruby>`, `<s>`, `<samp>`, `<script>`, `<section>`, `<select>`, `<small>`, ``, ``, `<style>`, `<sub>`, `<sup>`, `<svg>`, `<table>`, `<template>`, `<textarea>`, `<time>`, `<u>`, ``, `<var>`, `<video>`, `<wbr>`, `text`

HTML Headings

- HTML headings are defined with the `<h1>` to `<h6>` tags.
- `<h1>` defines the most important heading.
- `<h6>` defines the least important heading.
- Examples:

```
<h1>This is heading 1</h1>  
<h2>This is heading 2</h2>  
<h3>This is heading 3</h3>
```

Example



HTML Paragraphs

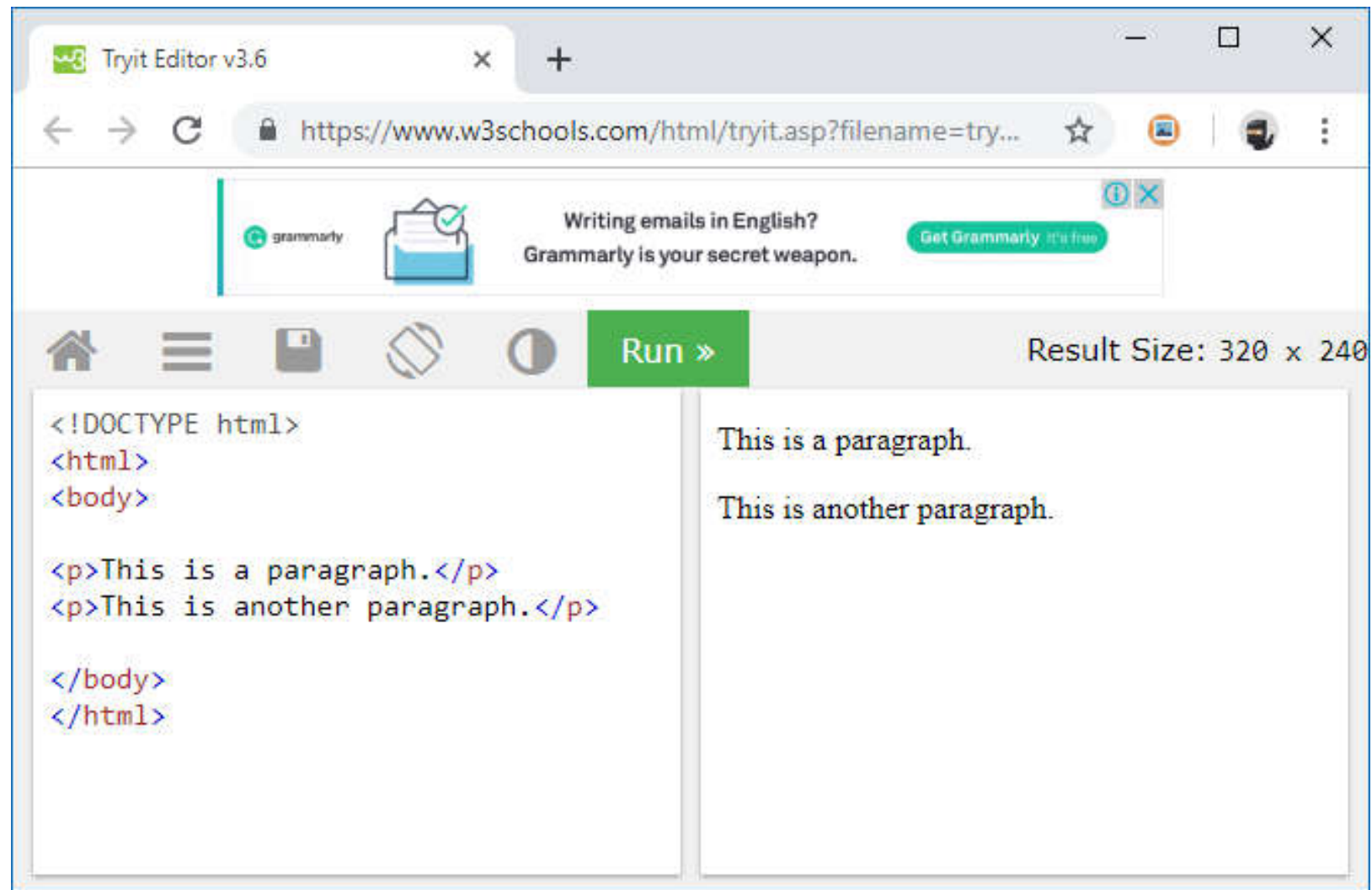
- HTML paragraphs are defined with the `<p>` tag.

- Examples:

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

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

Example

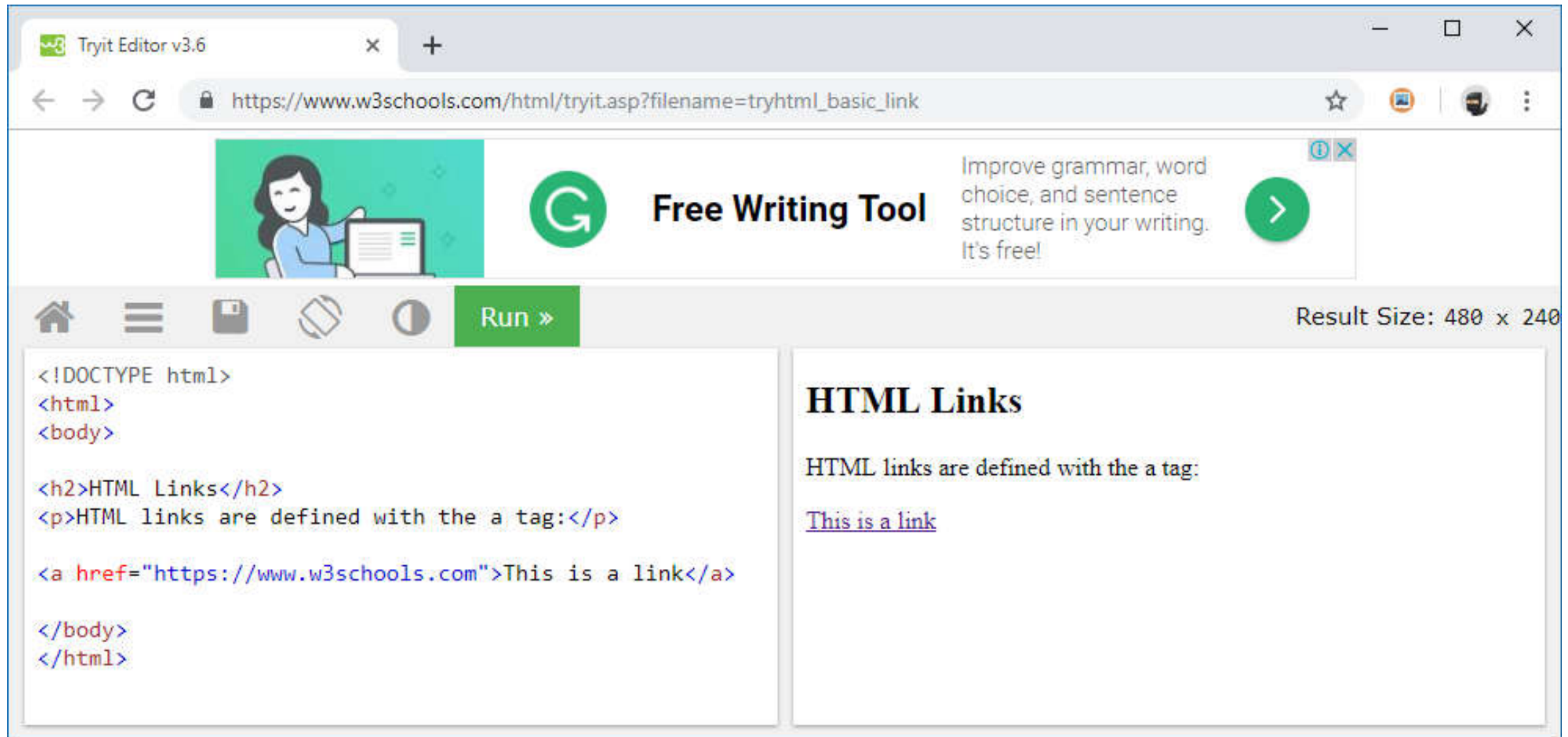


HTML Links

- HTML links are defined with the `<a>` tag.
- The **link's destination** is specified in the `href` attribute.
- Examples:

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

Example



The screenshot shows the W3Schools Tryit Editor interface. At the top, there's a browser window with the URL `https://www.w3schools.com/html/tryit.asp?filename=tryhtml_basic_link`. Below the browser, there's a banner for a "Free Writing Tool" with a green circular logo and a right arrow. The editor itself has a toolbar with icons for home, menu, save, undo, redo, and a "Run" button. The code area on the left contains the following HTML code:

```
<!DOCTYPE html>
<html>
<body>

<h2>HTML Links</h2>
<p>HTML links are defined with the a tag:</p>

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

</body>
</html>
```

The result area on the right shows the rendered output:

HTML Links

HTML links are defined with the a tag:

[This is a link](https://www.w3schools.com)

The result size is indicated as 480 x 240.

HTML Links

- The value of **href** attribute can be the URL of a website, a webpage, or a file within a website:
- Examples:
 - **`https://awebsite.com`**
 - **`https://awebsite.com/about.html`**
 - **`https://awebsite.com/files/bundle.zip`**
- The value of **href** (as well as with **src** attribute) can also be an *absolute* or *relative* file path.

HTML Links

- To use an **absolute file path**, you need to include the URL of the website and the file path. Absolute file paths are typically used to link to external websites or files in other websites.

- Examples:

```
<a href="https://exsite.com">ExSite.Com</a>
```

```
<a href="https://exsite.com/info.html">ExSite Info</a>
```

```
<a href="https://exsite.com/pics/logo.jpg">ExSite</a>
```

HTML Links

- To use a **relative file path**, you need to include only the file path. Relative file paths are typically used to link to pages and files within the same website.

- Examples:

```
<a href="about.html">About</a>
```

```
<a href="pics/photo.jpg">Photo</a>
```

```
<a href="sounds/sfx/beep.wav">Beep</a>
```

HTML Links

- Relative file paths may include the following short hands:

- `./` = current directory (redundant)
- `../` = parent directory

- Examples:

```
<a href="./about.html">About</a>
```

```
<a href="../pics/photo.jpg">Photo</a>
```

```
<a href="../../sounds/sfx/beep.wav">Beep</a>
```

HTML Links

- To understand how the short hands work follow the examples in the next slides.
- Imagine that the file structure of your website is as shown in the right panel.

```
• mysite.com/  
  • images/  
    • icons/  
      • favicon.ico  
      • logo24.png  
      • logo48.png  
    • photos/  
      • profilepic01.jpg  
      • profilepic02.jpg  
  • pages/  
    • about.html  
    • products.html  
  • sounds/  
    • music/  
      • bgm.html  
      • rock.mp3  
      • classic.mp3  
  • index.html
```

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **products.html** from **index.html** you may write in **href** any of the following values:

- Using an absolute file path:

`http://mysite.com/pages/products.html`

- Using a relative file path:

`pages/products.html`

`./pages/products.html`

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - logo24.png
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - about.html
 - **products.html**
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - classic.mp3
 - **index.html**

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **logo24.png** from **index.html** you may write in **href** any of the following values:

- Using an absolute file path:

`http://mysite.com/images/icons/logo24.png`

- Using a relative file path:

`images/icons/logo24.png`

`./images/icons/logo24.png`

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - **logo24.png**
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - about.html
 - products.html
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - classic.mp3
 - **index.html**

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **classic.mp3** from **index.html** you may write in **href** any of the following values:

- Using an absolute file path:

`http://mysite.com/sounds/music/classic.mp3`

- Using a relative file path:

`sounds/music/classic.mp3`

`./sounds/music/classic.mp3`

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - logo24.png
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - about.html
 - products.html
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - **classic.mp3**
 - **index.html**

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **index.html** from **about.html** you may write in **href** any of the following values:

- Using an absolute file path:

`http://mysite.com/index.html`

- Using a relative file path:

`../index.html`

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - logo24.png
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - **about.html**
 - products.html
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - classic.mp3
 - **index.html**

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **products.html** from **about.html** you may write in **href** any of the following values:

- Using an absolute file path:

`http://mysite.com/pages/products.html`

- Using a relative file path:

`products.html`

`./products.html`

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - logo24.png
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - **about.html**
 - **products.html**
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - classic.mp3
 - index.html

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **logo24.png** from **about.html** you may write in **href** any of the following values:

- Using an absolute file path:

<http://mysite.com/images/icons/logo24.png>

- Using a relative file path:

[../images/icons/logo24.png](../../images/icons/logo24.png)

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - **logo24.png**
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - **about.html**
 - products.html
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - classic.mp3
 - index.html

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **classic.mp3** from **about.html** you may write in **href** any of the following values:

- Using an absolute file path:

`http://mysite.com/sounds/music/classic.mp3`

- Using a relative file path:

`../sounds/music/classic.mp3`

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - logo24.png
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - **about.html**
 - products.html
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - **classic.mp3**
 - index.html

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **index.html** from **bgm.html** you may write in **href** any of the following values:

- Using an absolute file path:

`http://mysite.com/index.html`

- Using a relative file path:

`../../index.html`

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - logo24.png
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - about.html
 - products.html
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - classic.mp3
 - index.html

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **products.html** from **bgm.html** you may write in **href** any of the following values:

- Using an absolute file path:

<http://mysite.com/pages/products.html>

- Using a relative file path:

<../../pages/products.html>

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - logo24.png
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - about.html
 - **products.html**
 - sounds/
 - music/
 - **bgm.html**
 - rock.mp3
 - classic.mp3
 - index.html

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **logo24.png** from **bgm.html** you may write in **href** any of the following values:

- Using an absolute file path:

<http://mysite.com/images/icons/logo24.png>

- Using a relative file path:

<../../images/icons/logo24.png>

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - **logo24.png**
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - about.html
 - products.html
 - sounds/
 - music/
 - **bgm.html**
 - rock.mp3
 - classic.mp3
 - index.html

HTML Links

- The way the short hands work is as follows. Imagine that the file structure of your website is as shown in the right panel.
- To access **classic.mp3** from **bgm.html** you may write in **href** any of the following values:

- Using an absolute file path:

`http://mysite.com/sounds/music/classic.mp3`

- Using a relative file path:

`classic.mp3`

`./classic.mp3`

- mysite.com/
 - images/
 - icons/
 - favicon.ico
 - logo24.png
 - logo48.png
 - photos/
 - profilepic01.jpg
 - profilepic02.jpg
 - pages/
 - about.html
 - products.html
 - sounds/
 - music/
 - bgm.html
 - rock.mp3
 - **classic.mp3**
 - index.html

HTML Links

- You may use the **target** attribute to specify where do you want the link to open:
 - **"_blank"**: in a new window or tab
 - **"_self"**: in the place it was clicked (this is default)
 - **"_parent"**: in the parent frame
 - **"_top"**: as the new content of the current window or tab
 - **"fname"**: in the frame or internal frame of name fname
- Examples:

```
<a href="support.html" target="_top">Click here.</a>
```

HTML Images

- HTML images are defined with the `` tag.
- The **source file** is specified by the `src` attribute.
 - The `src` attribute behaves in the same way as `href`. That is, you can use an absolute or relative path to the image file, it may be an internal file (within the current website) or an external file (from another website).
- The **alternative text** for when the image cannot be loaded and for accessibility is specified by the `alt` attribute.

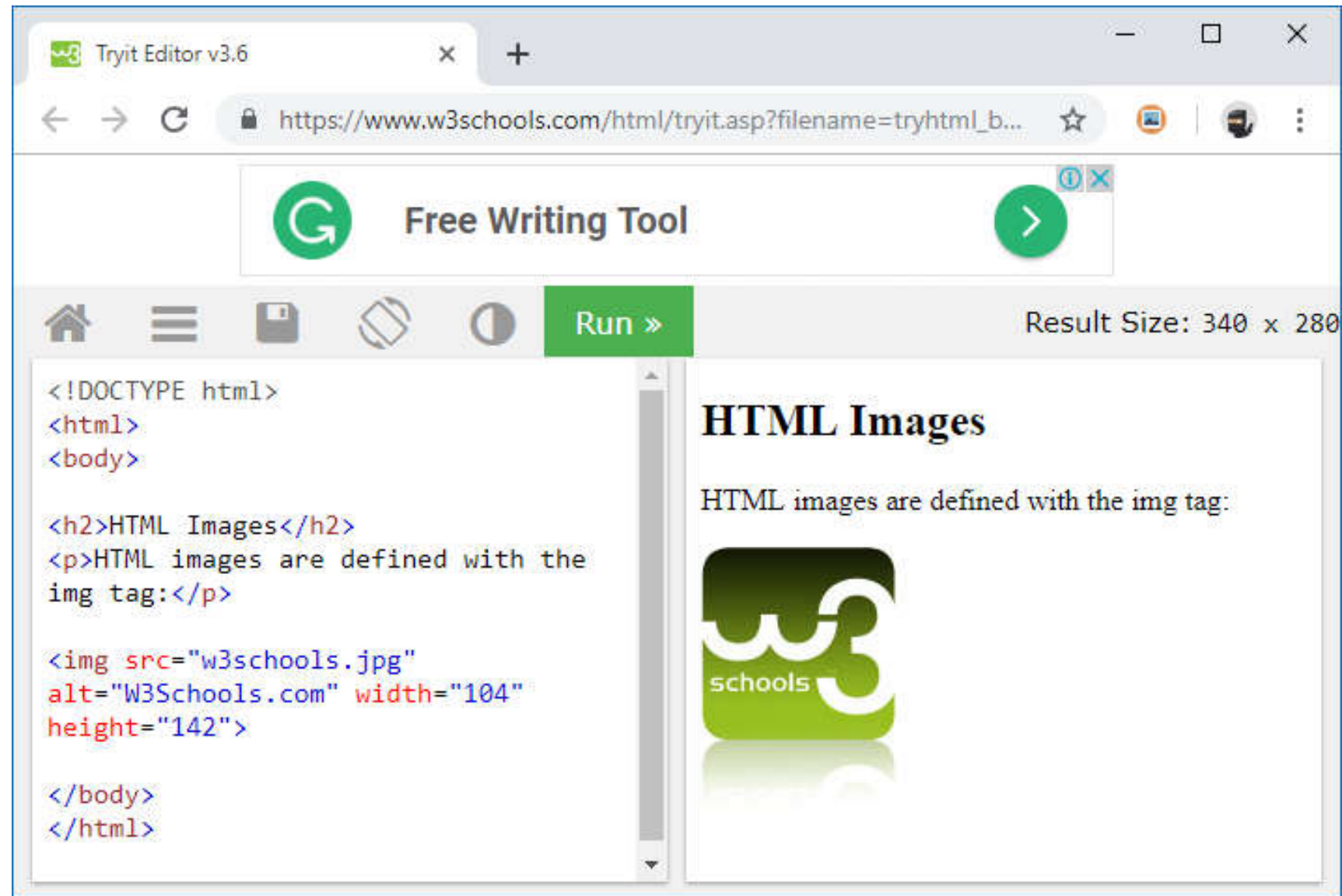
HTML Images

- The **preferred dimensions** for the image are specified by the **width** and **height** attributes.
- If you specify only the preferred width (or the preferred height) the image will conserve the aspect ratio.
- If you specify both, then it may distort the image unless the values are precise multiples of the aspect ratio of the image.
- Example:

```

```

Example



HTML Lists

- HTML list are defined with the `` or `` tags.
- The `` tag is used for ordered lists (or *numbered lists*).
- The `` tag is used for unordered lists (or *bulleted lists*).
- The list items themselves are contained within `` tags or within nested `` or ``.

HTML Lists

- Ordered lists `` may have the **type** attribute with the following values:
 - **"1"**: for numbers (default for all levels)
 - **"A"**: for uppercase letters
 - **"a"**: for lowercase letters
 - **"I"**: for uppercase roman numbers
 - **"i"**: for lowercase roman numbers
- **NOTE**: The CSS **list-style-type** property provides more options for enumerations and decorations.

CSS List-Style-Type Values

Value	Description
disc	Default value. The marker is a filled circle
armenian	The marker is traditional Armenian numbering
circle	The marker is a circle
cjk-ideographic	The marker is plain ideographic numbers
decimal	The marker is a number
decimal-leading-zero	The marker is a number with leading zeros (01, 02, 03, etc.)
georgian	The marker is traditional Georgian numbering
hebrew	The marker is traditional Hebrew numbering

CSS List-Style-Type Values

Value	Description
hiragana	The marker is traditional Hiragana numbering
hiragana-iroha	The marker is traditional Hiragana iroha numbering
katakana	The marker is traditional Katakana numbering
katakana-iroha	The marker is traditional Katakana iroha numbering
lower-alpha	The marker is lower-alpha (a, b, c, d, e, etc.)
lower-greek	The marker is lower-greek
lower-latin	The marker is lower-latin (a, b, c, d, e, etc.)
lower-roman	The marker is lower-roman (i, ii, iii, iv, v, etc.)

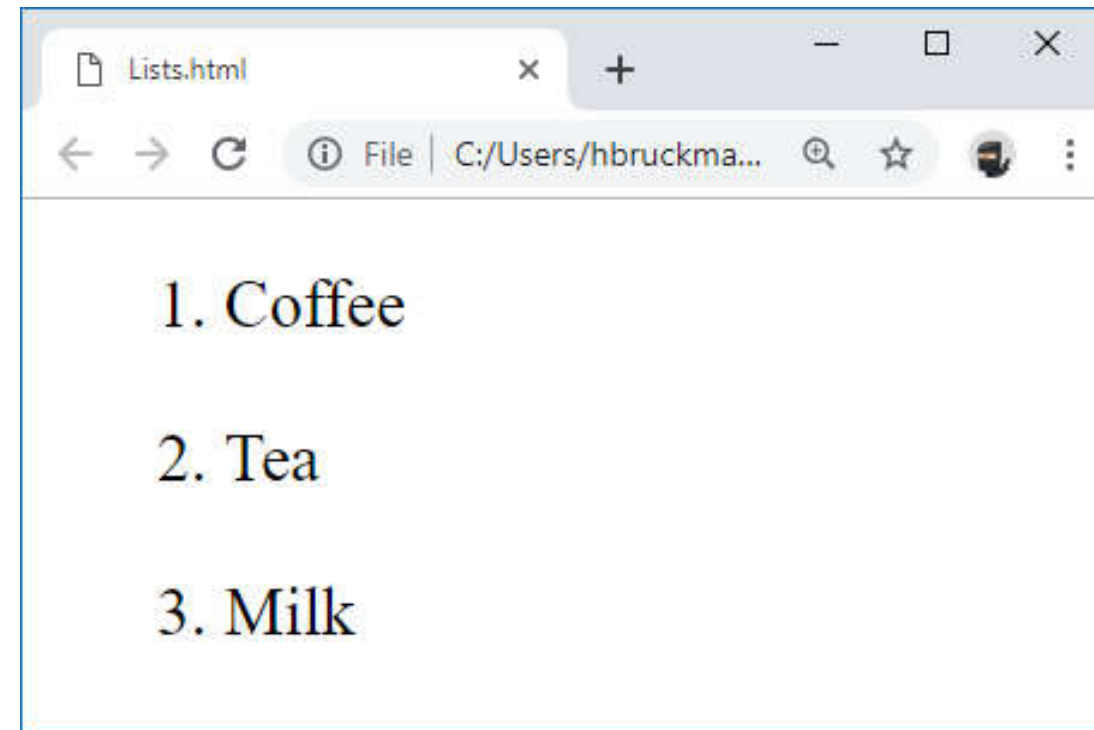
CSS List-Style-Type Values

Value	Description
none	No marker is shown
square	The marker is a square
upper-alpha	The marker is upper-alpha (A, B, C, D, E, etc.)
upper-greek	The marker is upper-greek
upper-latin	The marker is upper-latin (A, B, C, D, E, etc.)
upper-roman	The marker is upper-roman (I, II, III, IV, V, etc.)
initial	Sets this property to its default value. Read about initial
inherit	Inherits this property from its parent element. Read about inherit

HTML Lists

- Ordered List with **Default** Enumeration Example:

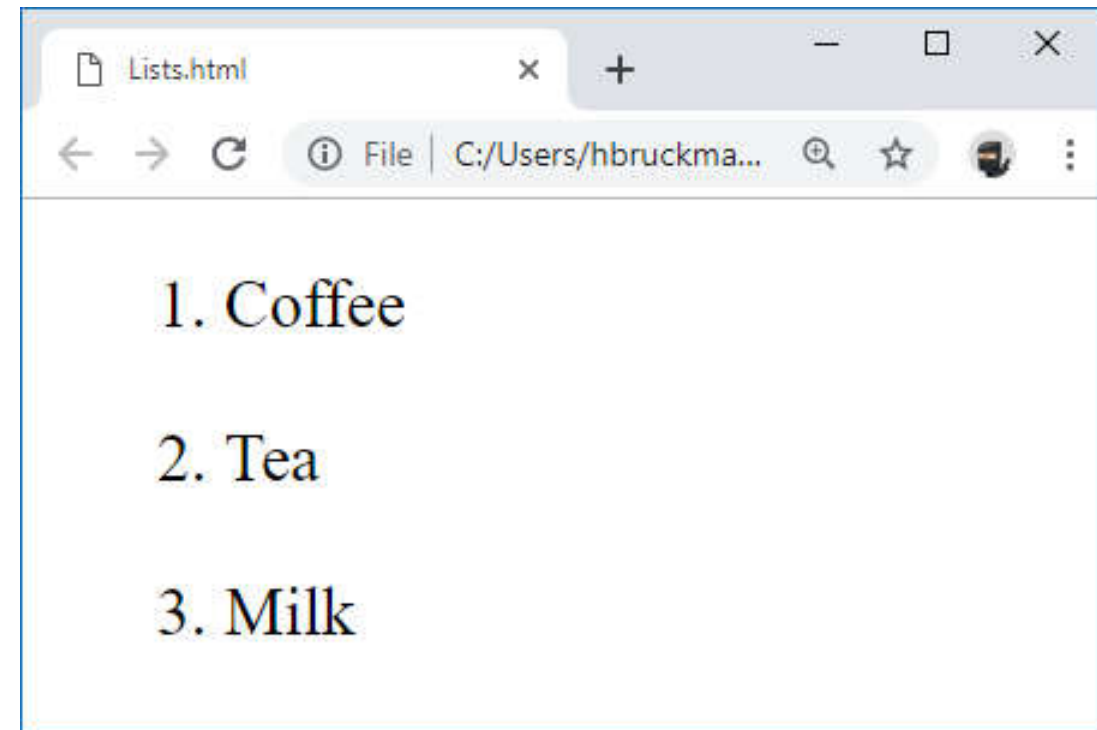
```
<ol>  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```



HTML Lists

- Ordered List with **N**umbers
Enumeration Example:

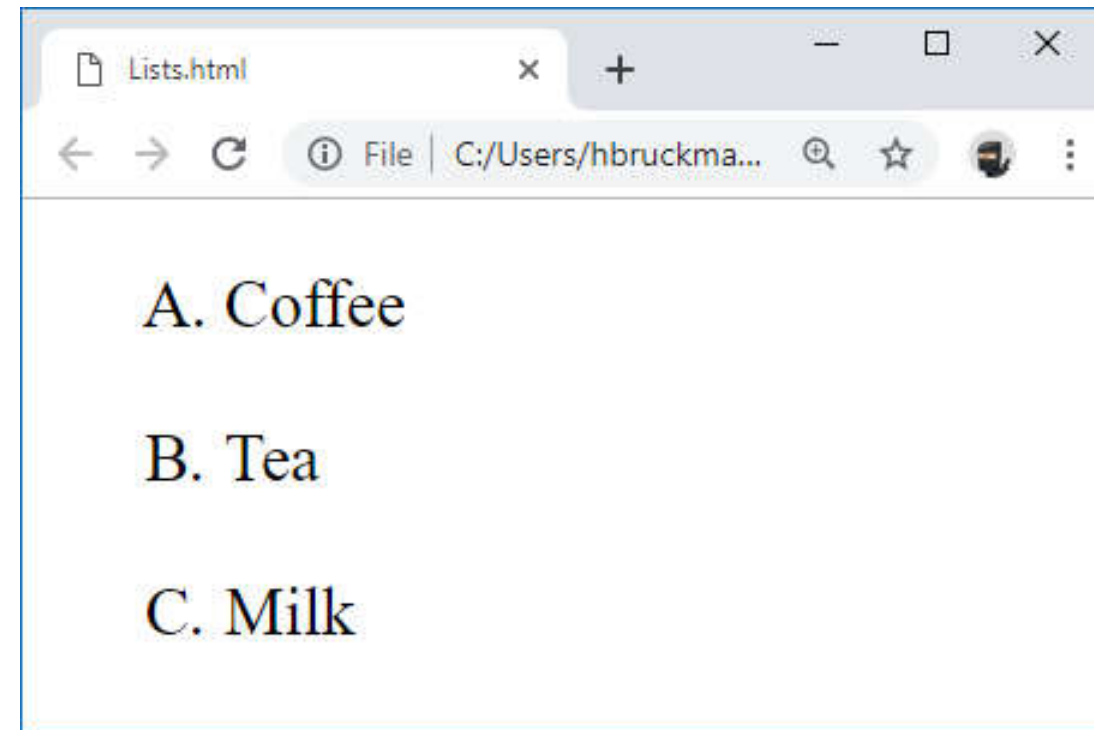
```
<ol type="1">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```



HTML Lists

- Ordered List with Uppercase Letter Enumeration Example:

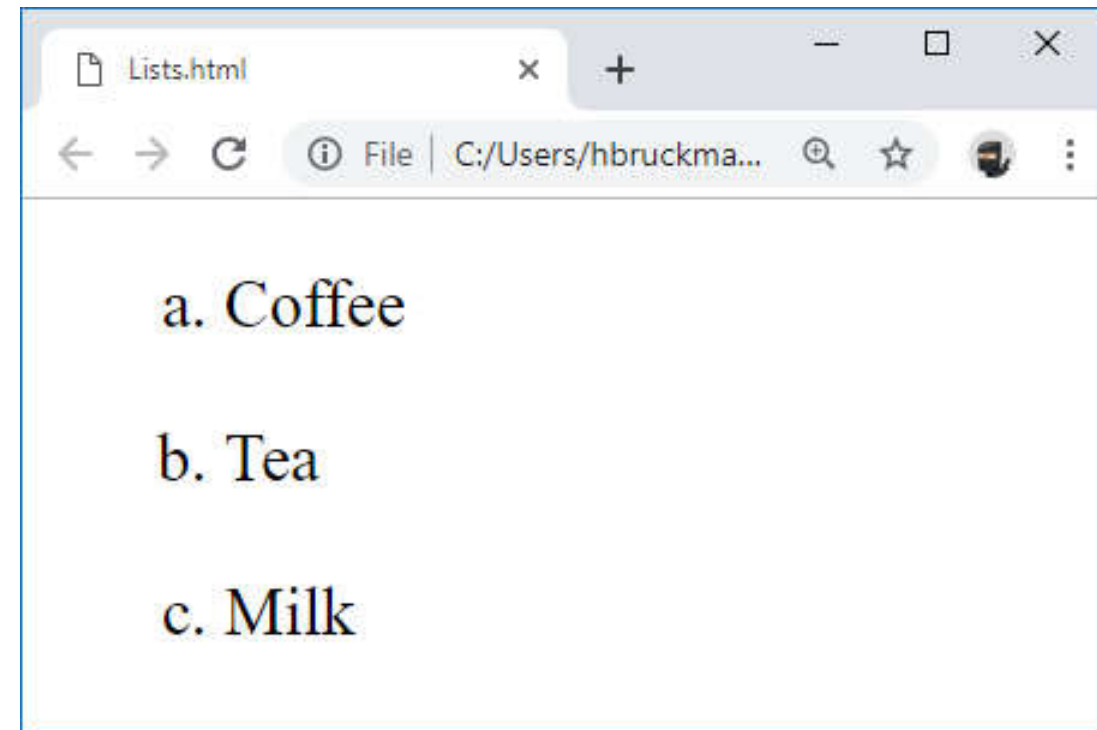
```
<ol type="A">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```



HTML Lists

- Ordered List with **Lowercase Letter** Enumeration Example:

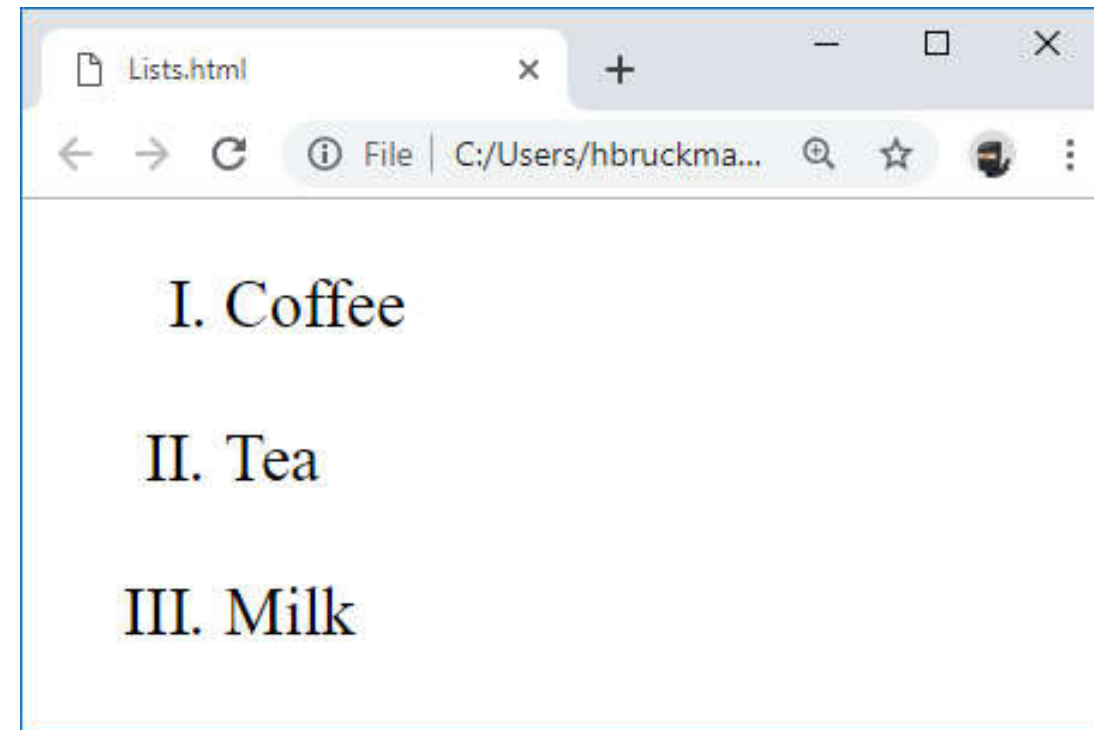
```
<ol type="a">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```



HTML Lists

- Ordered List with **Uppercase Roman** Enumeration Example:

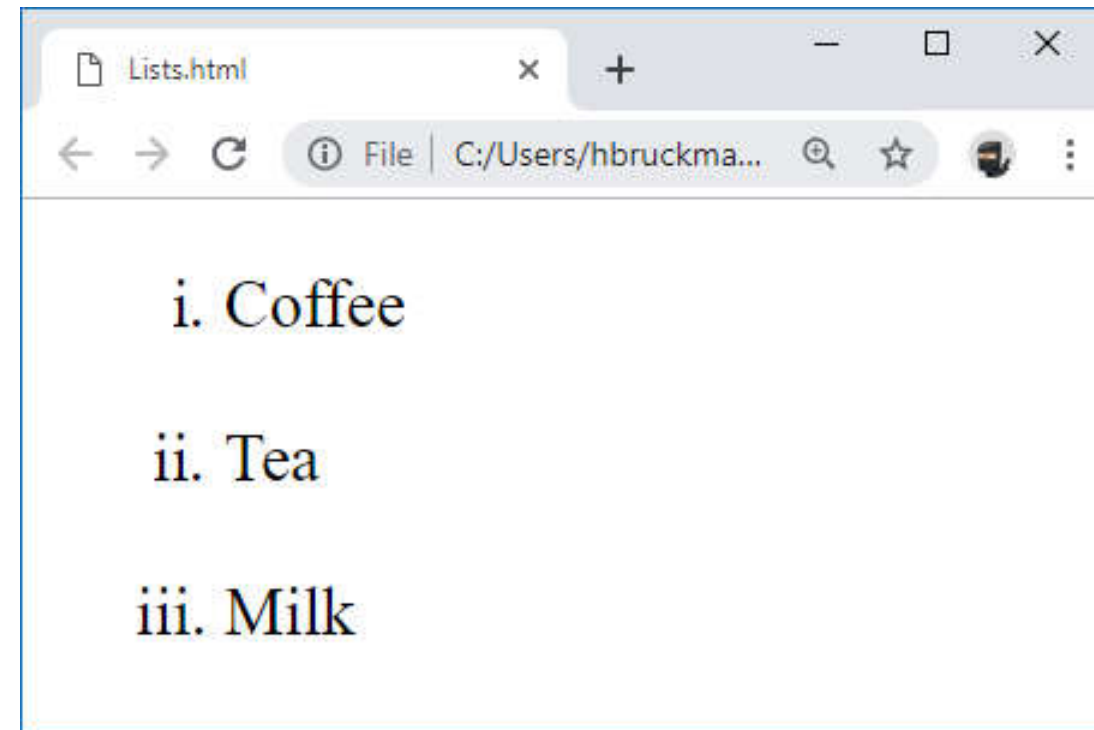
```
<ol type="I">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```



HTML Lists

- Ordered List with **Lowercase Roman** Enumeration Example:

```
<ol type="i">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```



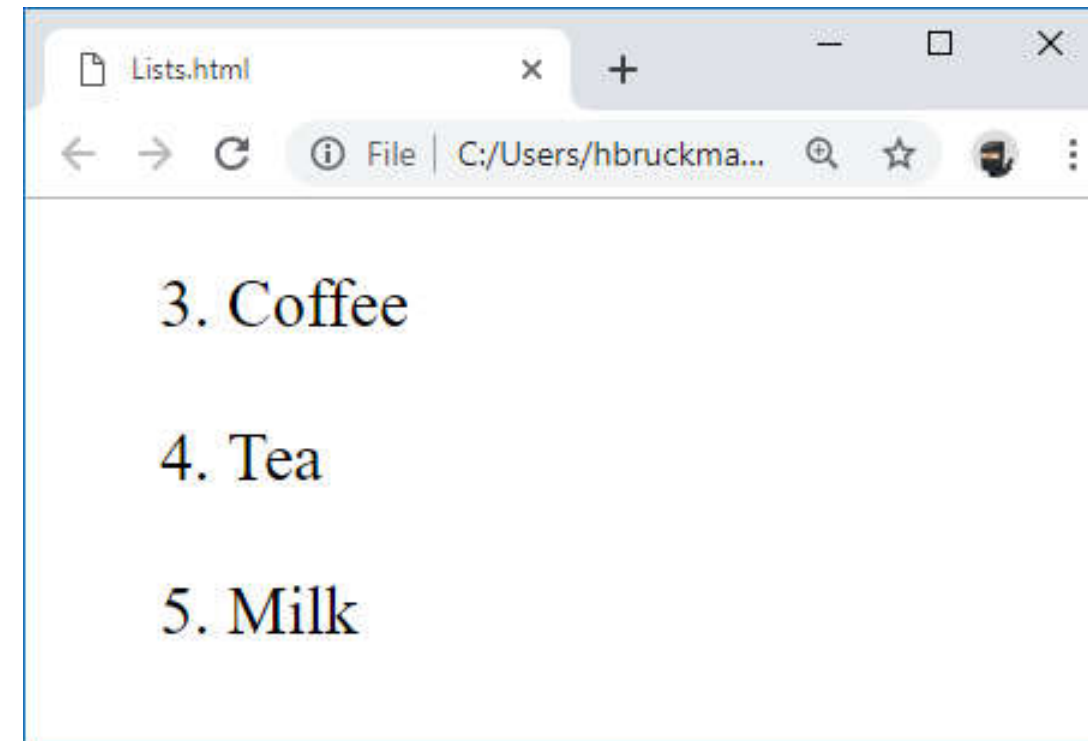
HTML Lists

- Ordered lists `` may have the `start` attribute to specify the number at which the list should begin counting.
 - `<ol start="3">`
- Ordered lists `` may have the `reversed` attribute to specify that the order of the enumeration should be backwards.
 - `<ol reversed>`
- The list items `` within ordered lists `` may have the `value` attribute to specify and/or override the number of each item.
 - `<li value="5">`

HTML Lists

- Ordered List with **Starting Number** Enumeration Example:

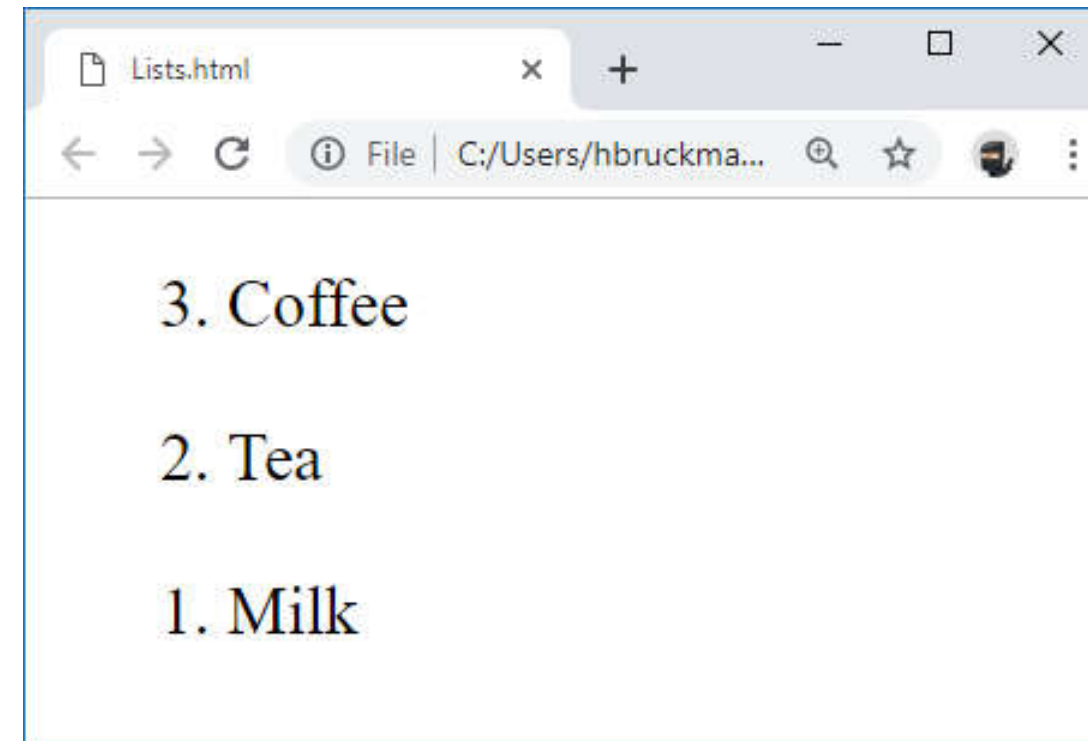
```
<ol start="3">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```



HTML Lists

- Ordered List with **Reversed** Enumeration Example:

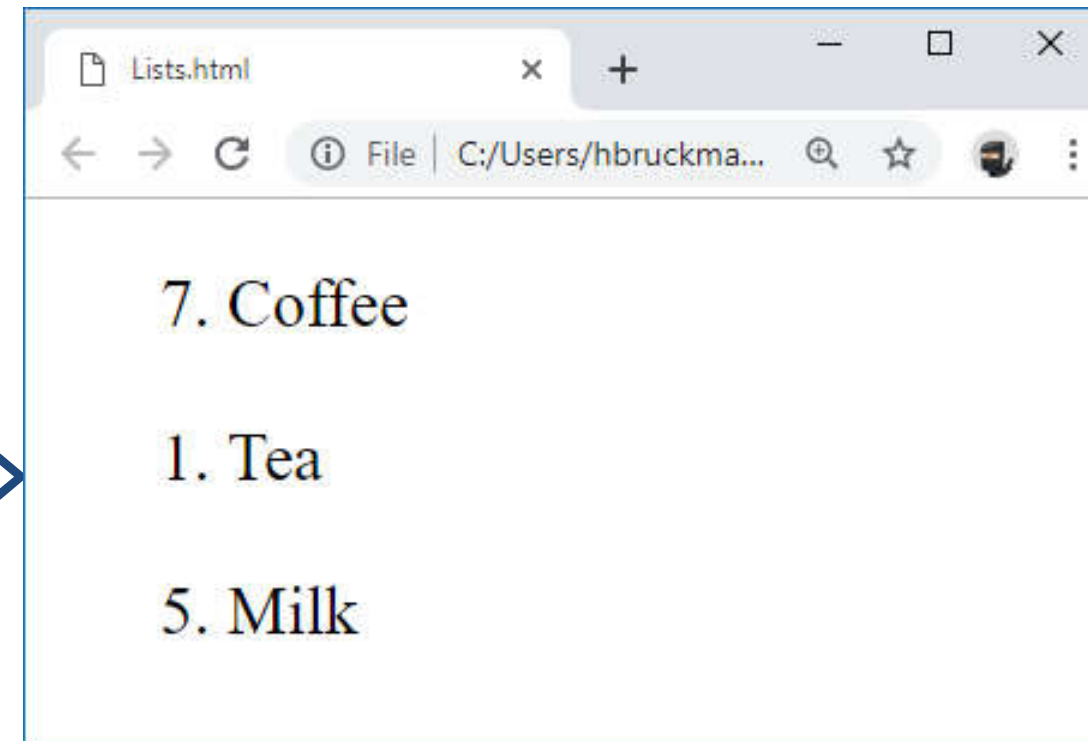
```
<ol reversed>  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```



HTML Lists

- Ordered List with **Specified Values**
Enumeration Example:

```
<ol>  
  <li value="7">Coffee</li>  
  <li value="1">Tea</li>  
  <li value="5">Milk</li>  
</ol>
```

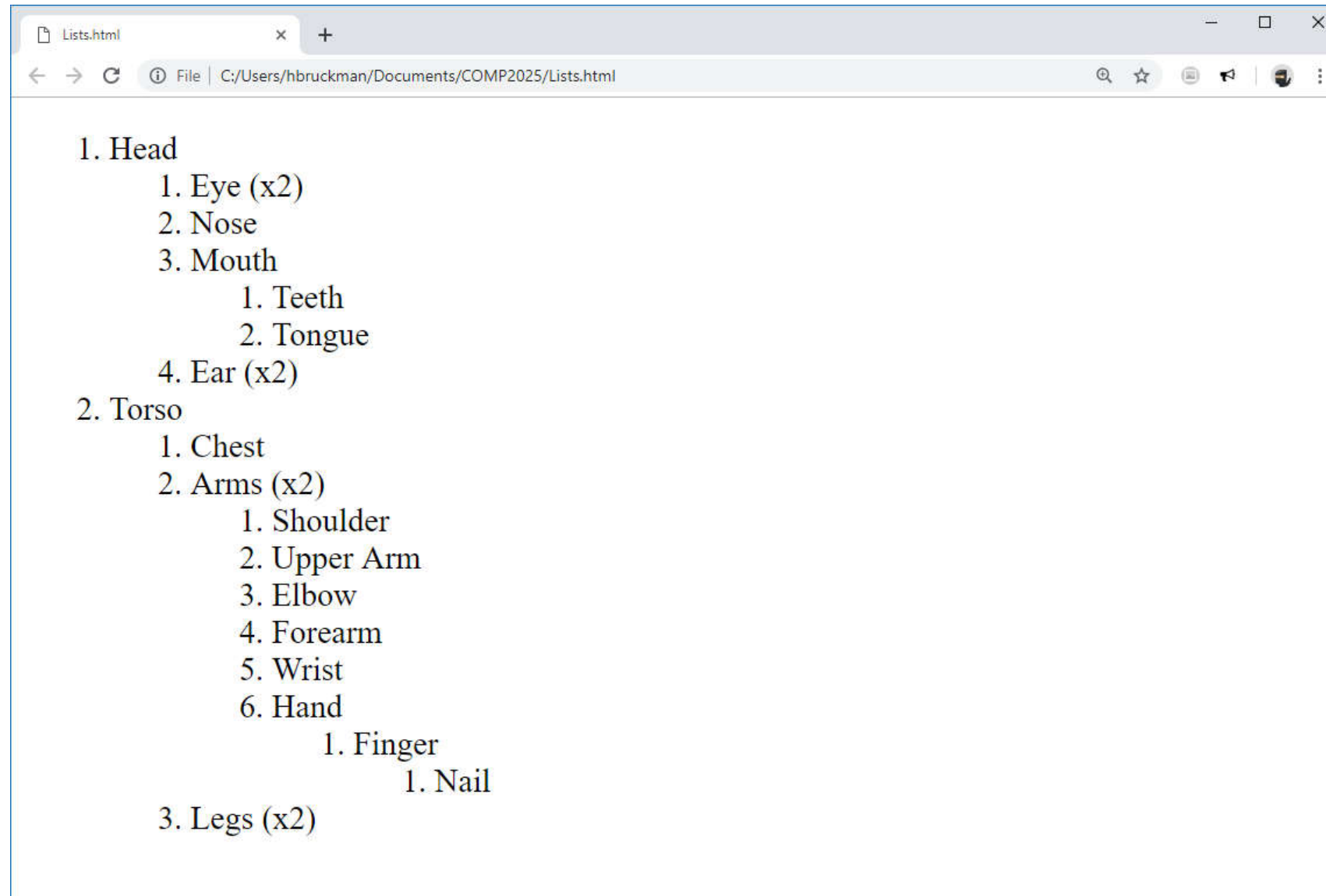


HTML Nested Lists

```
<ol>
  <li>Head</li>
  <ol>
    <li>Eye (x2)</li>
    <li>Nose</li>
    <li>Mouth</li>
    <ol>
      <li>Teeth</li>
      <li>Tongue</li>
    </ol>
    <li>Ear (x2)</li>
  </ol>
  <li>Torso</li>
  <ol>
    <li>Chest</li>
    <li>Arms (x2)</li>
```

```
<ol>
  <li>Shoulder</li>
  <li>Upper Arm</li>
  <li>Elbow</li>
  <li>Forearm</li>
  <li>Wrist</li>
  <li>Hand</li>
  <ol>
    <li>Finger</li>
    <ol>
      <li>Nail</li>
    </ol>
  </ol>
</ol>
  <li>Legs (x2)</li>
</ol>
```

Example

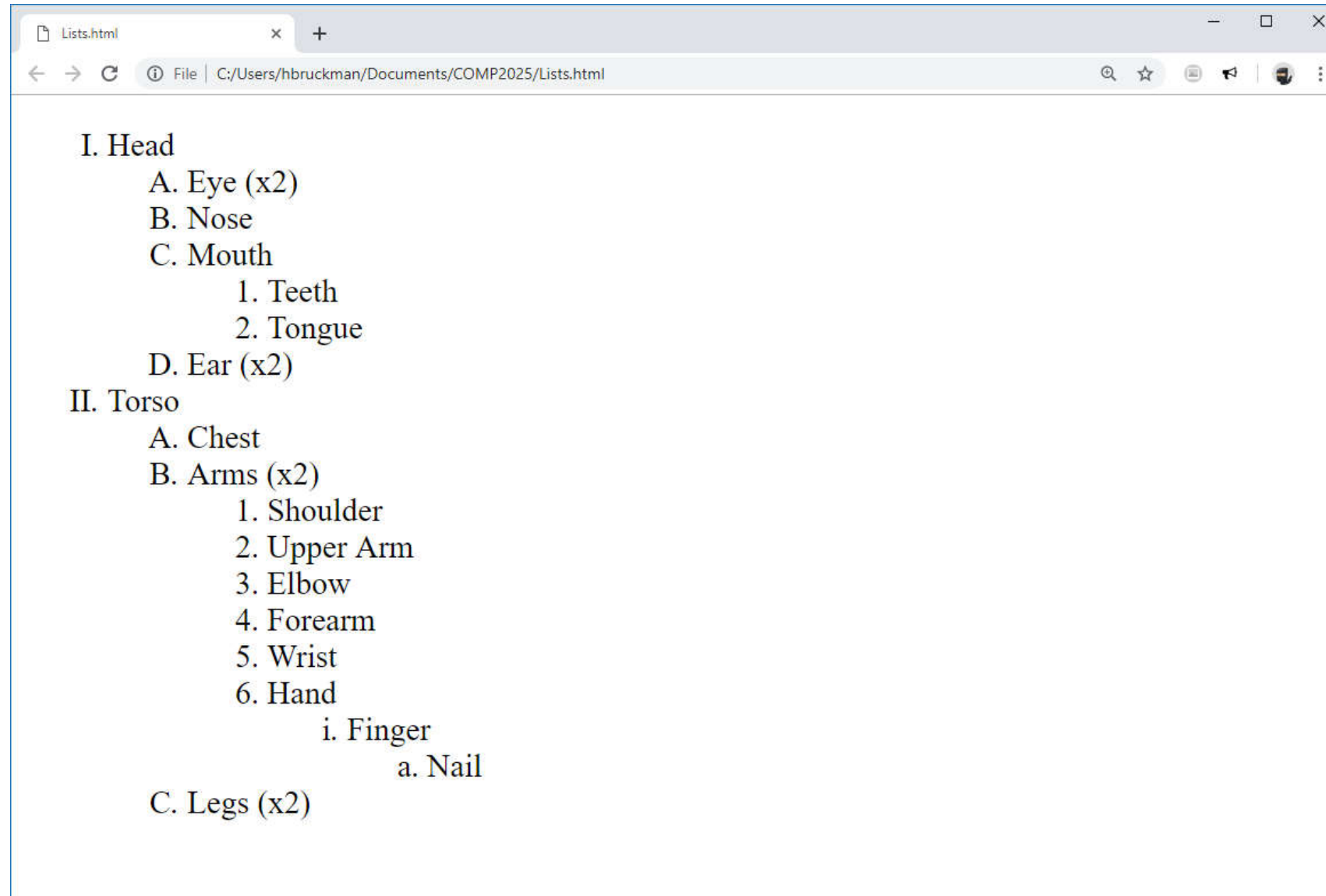


HTML Nested Lists

```
<ol type="I">
  <li>Head</li>
  <ol type="A">
    <li>Eye (x2)</li>
    <li>Nose</li>
    <li>Mouth</li>
    <ol type="1">
      <li>Teeth</li>
      <li>Tongue</li>
    </ol>
    <li>Ear (x2)</li>
  </ol>
  <li>Torso</li>
  <ol type="A">
    <li>Chest</li>
    <li>Arms (x2)</li>
```

```
<ol type="1">
  <li>Shoulder</li>
  <li>Upper Arm</li>
  <li>Elbow</li>
  <li>Forearm</li>
  <li>Wrist</li>
  <li>Hand</li>
  <ol type="i">
    <li>Finger</li>
    <ol type="a">
      <li>Nail</li>
    </ol>
  </ol>
</ol>
  <li>Legs (x2)</li>
</ol>
```


Example



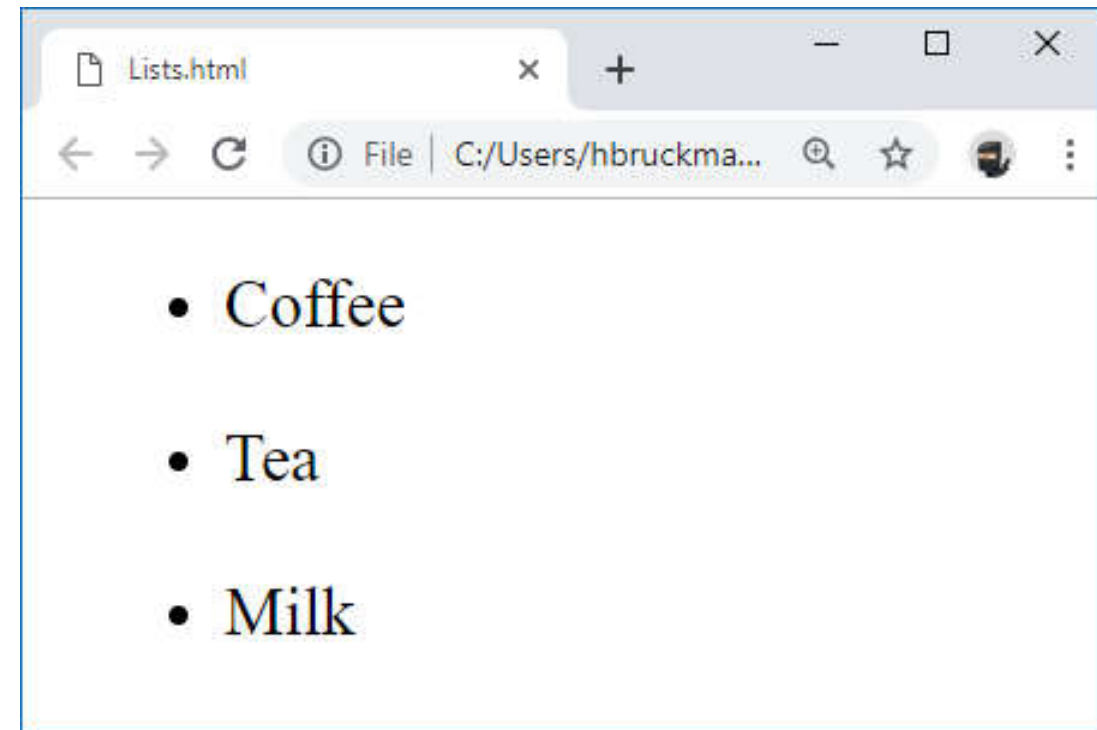
HTML Lists

- Unordered list `` may have the **type** attribute with the following values:
 - **"disc"**: for filled black circles (default 1st level)
 - **"circle"**: for hollow black circles (default 2nd level)
 - **"square"**: for filled black squares (default 3rd level and onward)
 - **"none"**: for no bullet decoration
- **NOTE**: The **type** attribute is not officially supported in `` tags. Rather, HTML5 uses the CSS **list-style-type** property with the values **circle**, **disc**, **square**, or **none**.

HTML Lists

- Unordered List with **Default** Decoration Example:

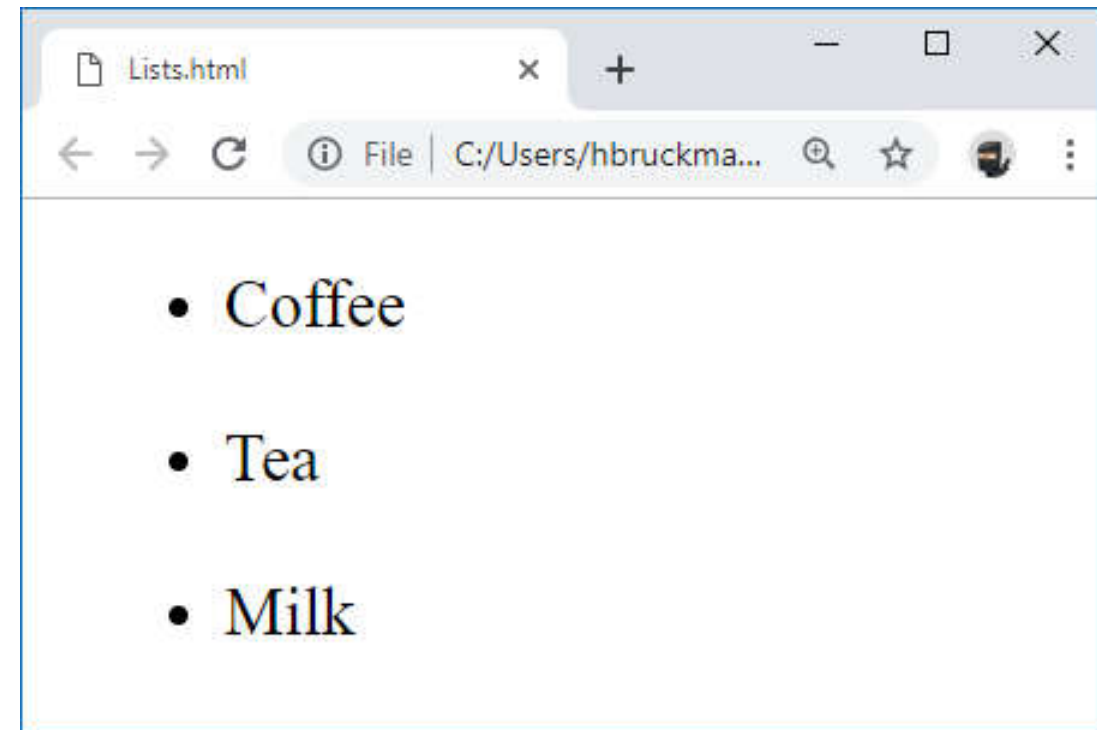
```
<ul>  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ul>
```



HTML Lists

- Unordered List with **Disc**
Decoration Example:

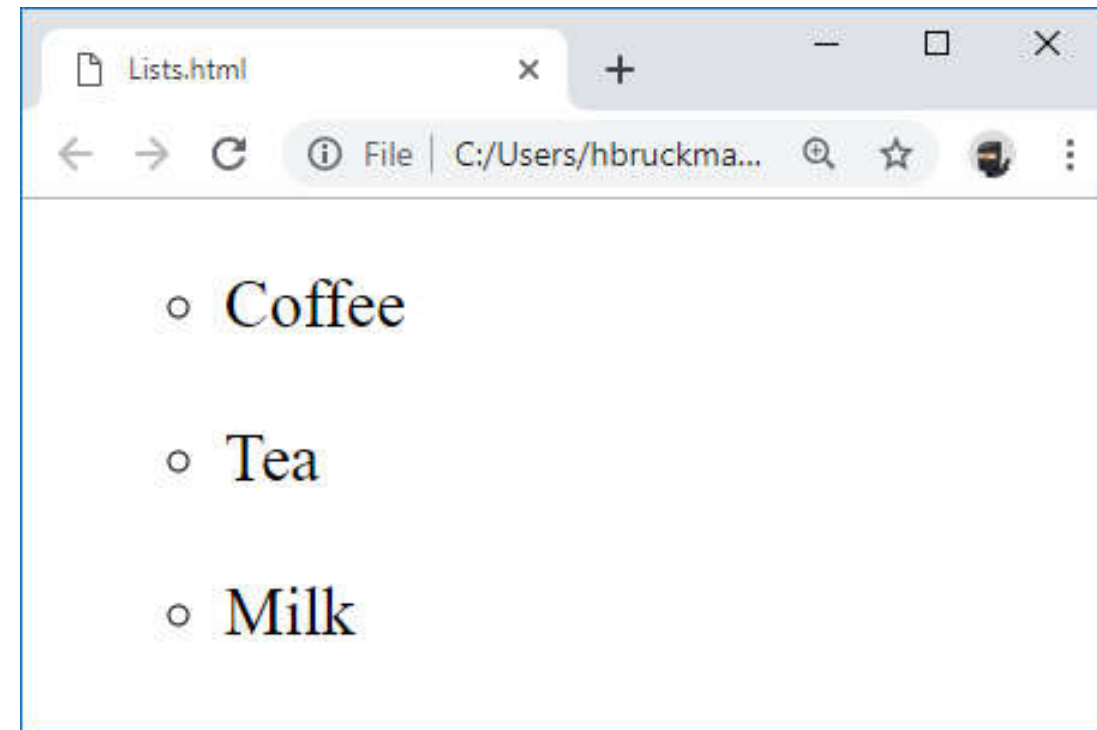
```
<ul type="disc">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ul>
```



HTML Lists

- Unordered List with **Circle**
Decoration Example:

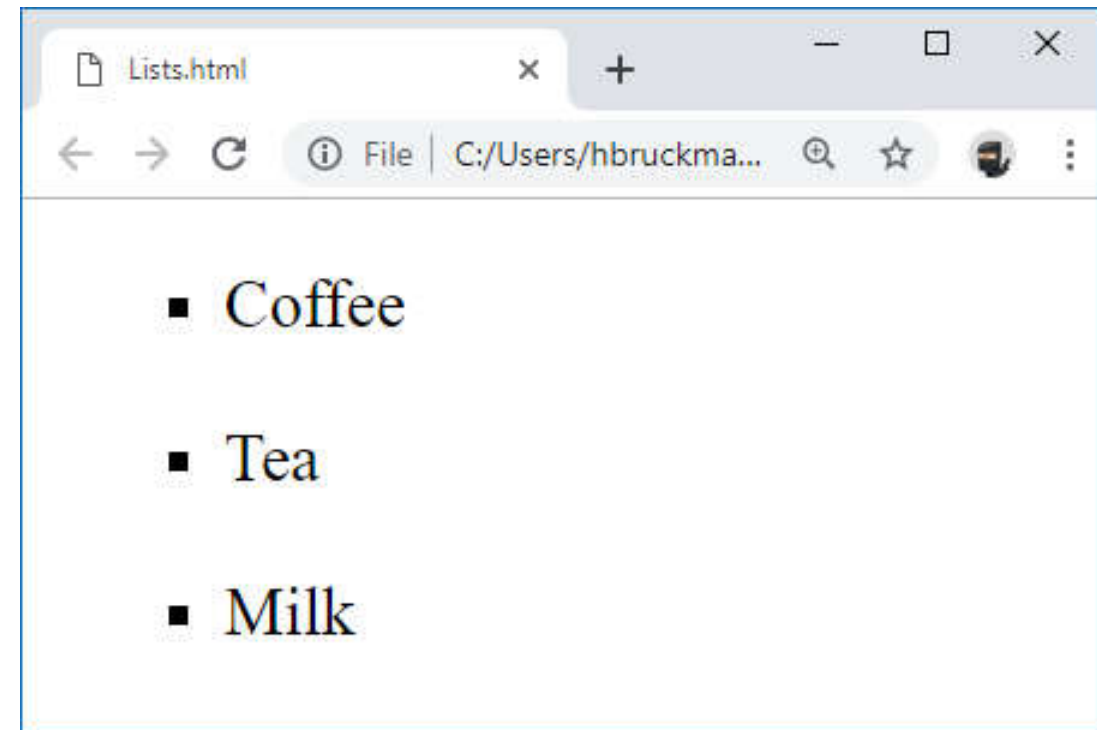
```
<ul type="circle">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ul>
```



HTML Lists

- Unordered List with **Square** Decoration Example:

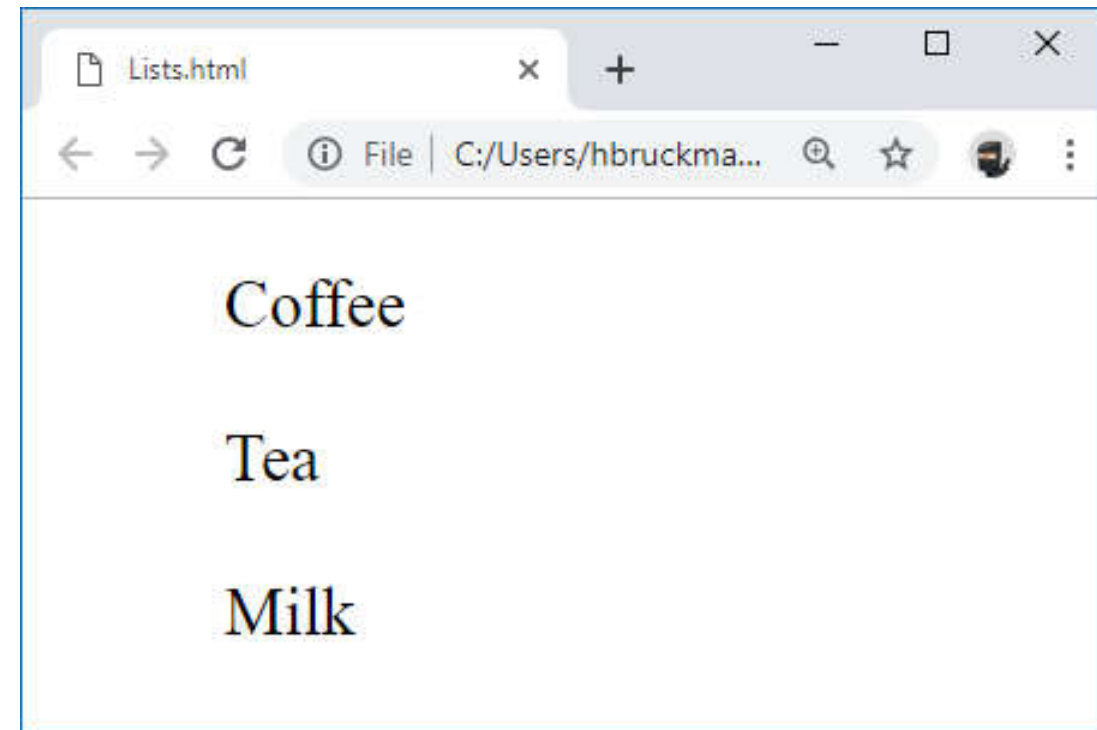
```
<ul type="square">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ul>
```



HTML Lists

- Unordered List with **None**
Decoration Example:

```
<ul type="none">  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ul>
```

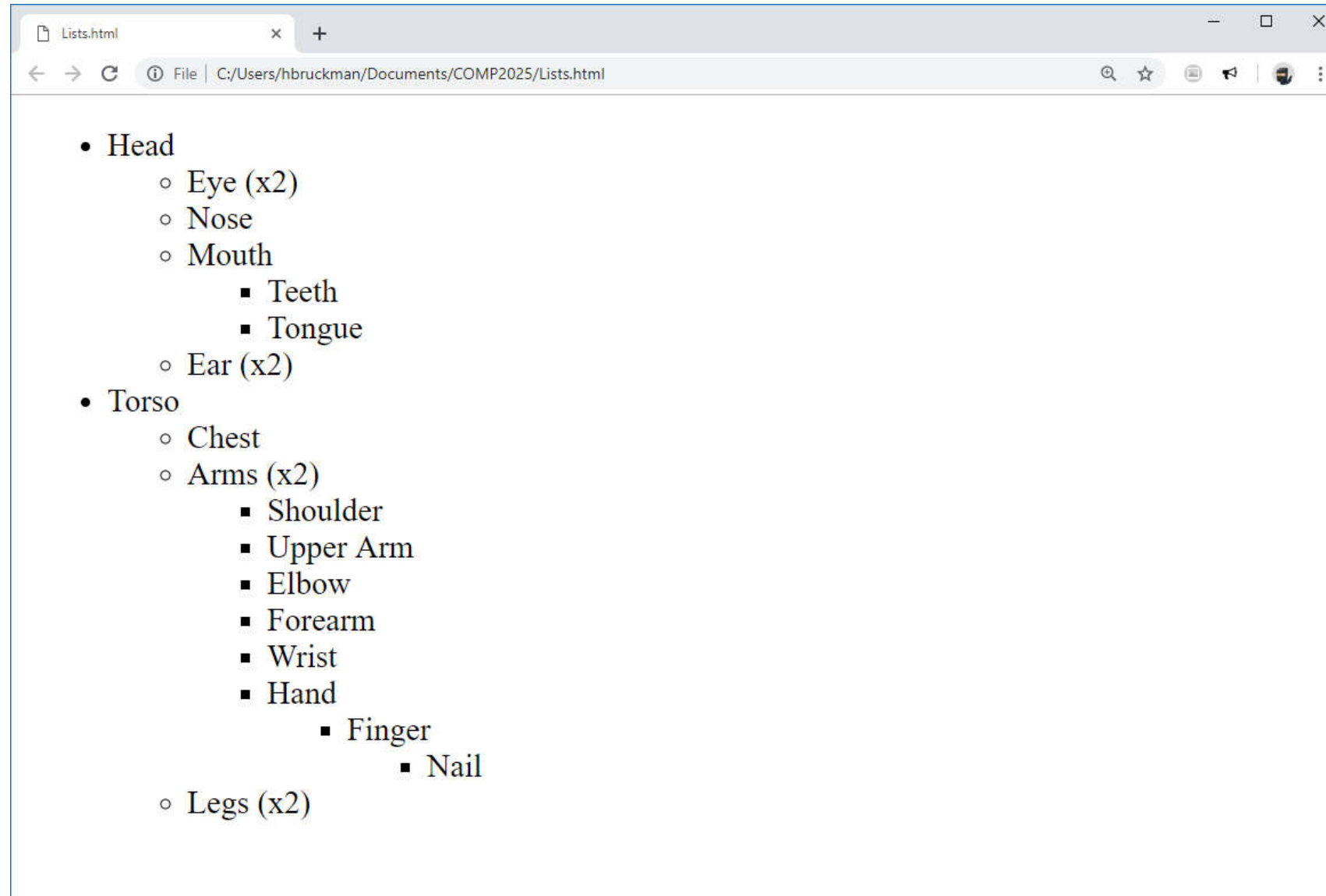


HTML Nested Lists

```
<ul>
  <li>Head</li>
  <ul>
    <li>Eye (x2)</li>
    <li>Nose</li>
    <li>Mouth</li>
    <ul>
      <li>Teeth</li>
      <li>Tongue</li>
    </ul>
    <li>Ear (x2)</li>
  </ul>
  <li>Torso</li>
  <ul>
    <li>Chest</li>
    <li>Arms (x2)</li>
```

```
<ul>
  <li>Shoulder</li>
  <li>Upper Arm</li>
  <li>Elbow</li>
  <li>Forearm</li>
  <li>Wrist</li>
  <li>Hand</li>
  <ul>
    <li>Finger</li>
    <ul>
      <li>Nail</li>
    </ul>
  </ul>
</ul>
  <li>Legs (x2)</li>
</ul>
```


Example

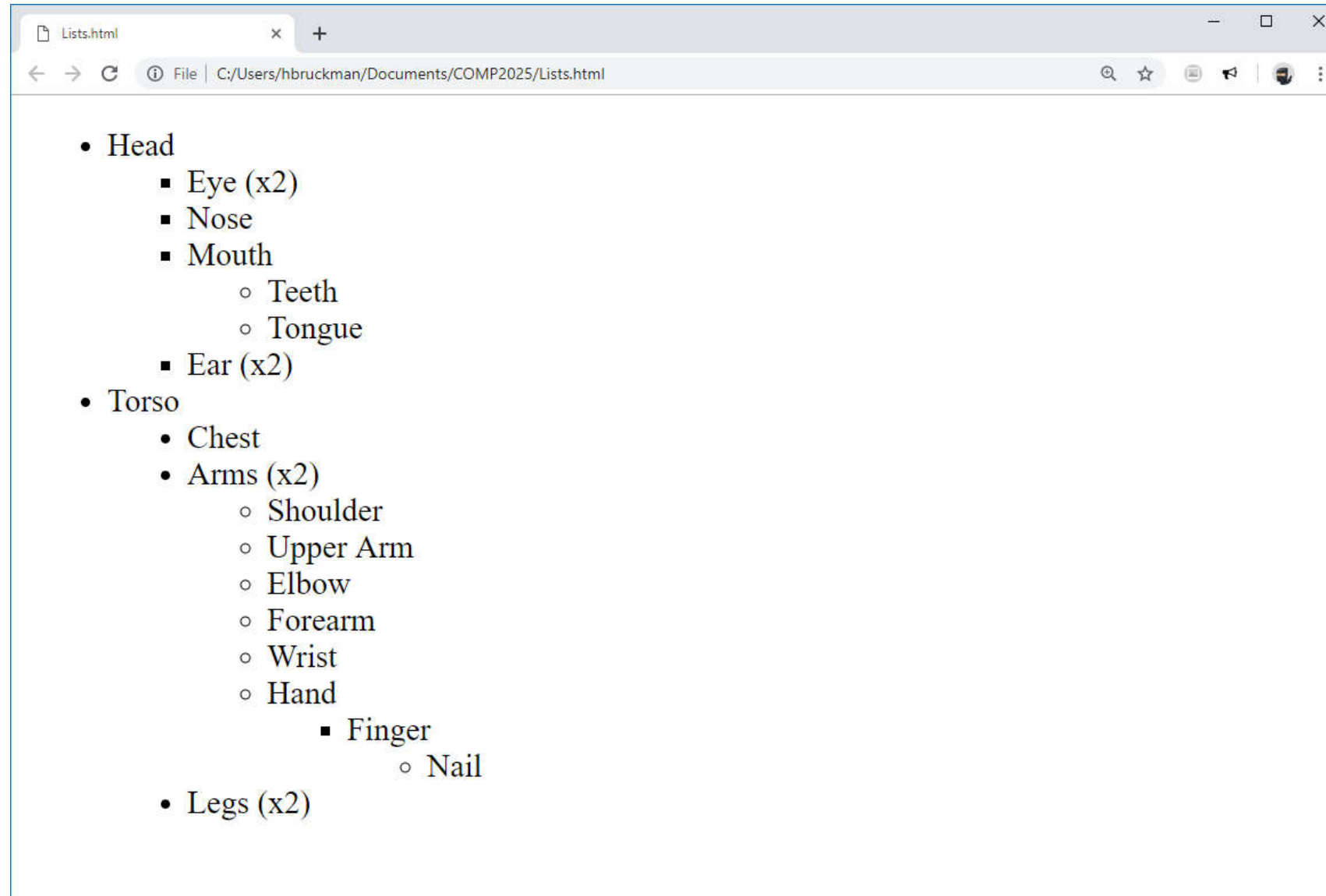


HTML Nested Lists

```
<ul type="disc">
  <li>Head</li>
  <ul type="square">
    <li>Eye (x2)</li>
    <li>Nose</li>
    <li>Mouth</li>
    <ul type="circle">
      <li>Teeth</li>
      <li>Tongue</li>
    </ul>
    <li>Ear (x2)</li>
  </ul>
  <li>Torso</li>
  <ul type="disc">
    <li>Chest</li>
    <li>Arms (x2)</li>
```

```
<ul type="circle">
  <li>Shoulder</li>
  <li>Upper Arm</li>
  <li>Elbow</li>
  <li>Forearm</li>
  <li>Wrist</li>
  <li>Hand</li>
  <ul type="square">
    <li>Finger</li>
    <ul type="circle">
      <li>Nail</li>
    </ul>
  </ul>
</ul>
  <li>Legs (x2)</li>
</ul>
```

Example



HTML Nested Lists (Mixed)

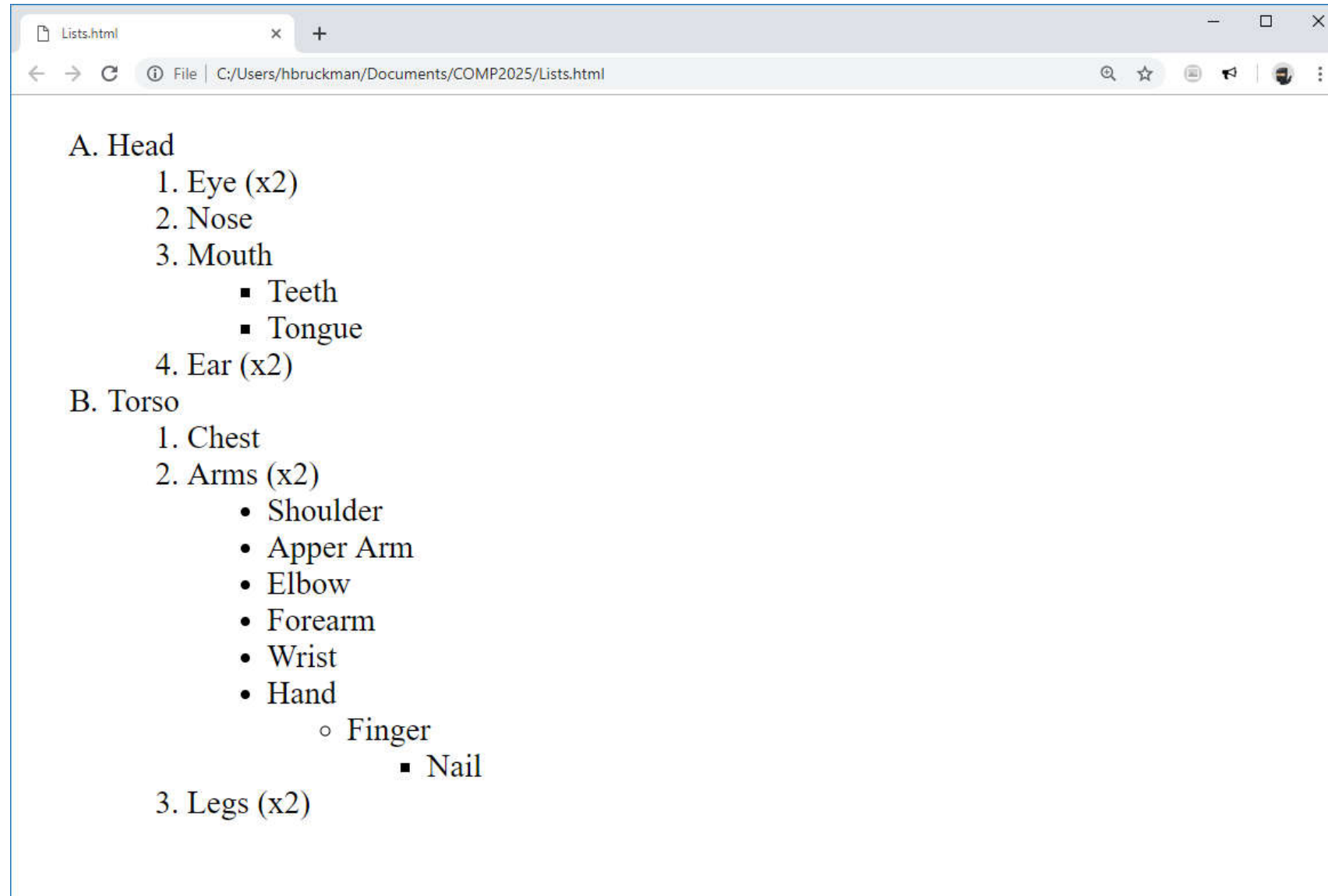
You can also nest unordered lists within ordered list and vice versa.

HTML Nested Lists (Mixed)

```
<ol type="A">
  <li>Head</li>
  <ol type="1">
    <li>Eye (x2)</li>
    <li>Nose</li>
    <li>Mouth</li>
    <ul>
      <li>Teeth</li>
      <li>Tongue</li>
    </ul>
    <li>Ear (x2)</li>
  </ol>
  <li>Torso</li>
  <ol type="1">
    <li>Chest</li>
    <li>Arms (x2)</li>
```

```
<ul type="disc">
  <li>Shoulder</li>
  <li>Apper Arm</li>
  <li>Elbow</li>
  <li>Forearm</li>
  <li>Wrist</li>
  <li>Hand</li>
  <ul type="circle">
    <li>Finger</li>
    <ul type="square">
      <li>Nail</li>
    </ul>
  </ul>
</ul>
<li>Legs (x2)</li>
</ol>
```

Example



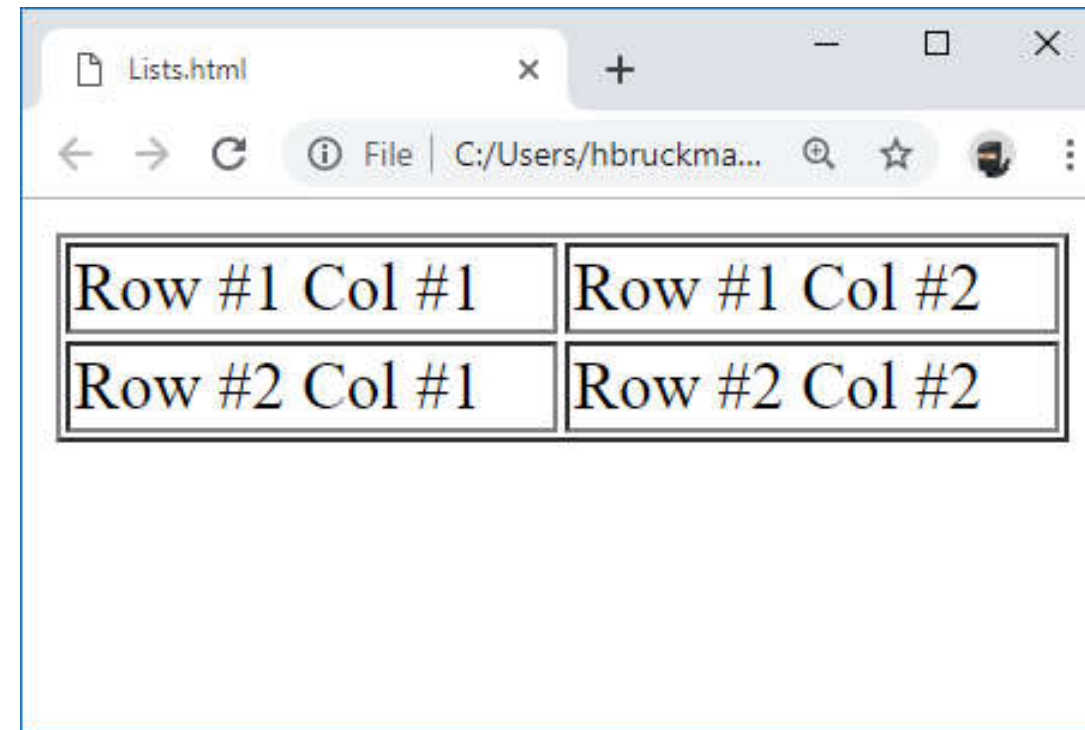
HTML Tables

- HTML table elements are created using the `<table></table>` tags.
- HTML tables are wrongly used to layout page content, but their correct use is to show tabulated data.
- An HTML table element must contain at least one:
 - Table row element, delimited by `<tr></tr>` tags. And at least one table header cell element `<th></th>` or table data cell element `<td></td>` inside the table row element.

HTML Tables

- The most basic way to create a table is:

```
<table border="1">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



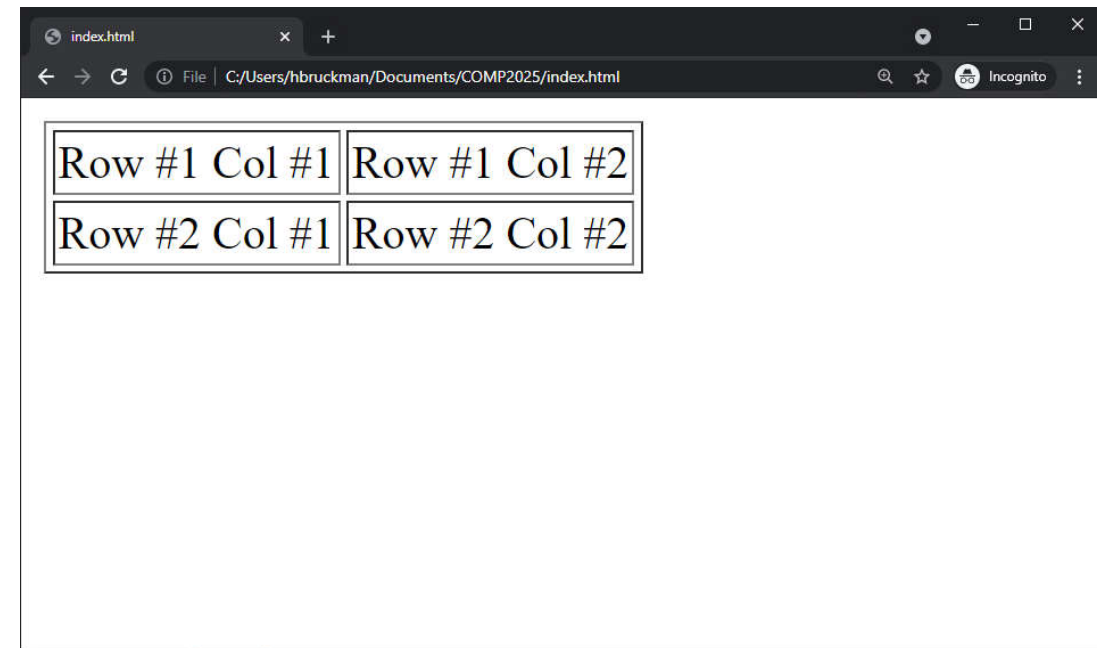
HTML Tables

- **border**: with a value of "0" (default) the table is drawn without a border (for layout purposes); with a value of "1" the table is drawn with borders (for table purposes). This attribute is **[deprecated]**, so use the **border** CSS property instead. The `<table>` CSS border property applies to the outer border of the table, not the inside cells. To change the border of individual cells you need to change the `<th>` or `<td>` CSS border property.

```
table, th, td
{
    border: 1px solid black;
    border-collapse: collapse;
}
```

HTML Tables

```
<table border="1">  
  <tr>  
    <td>Row #1 Col #1</td>  
    <td>Row #1 Col #2</td>  
  </tr>  
  <tr>  
    <td>Row #2 Col #1</td>  
    <td>Row #2 Col #2</td>  
  </tr>  
</table>
```



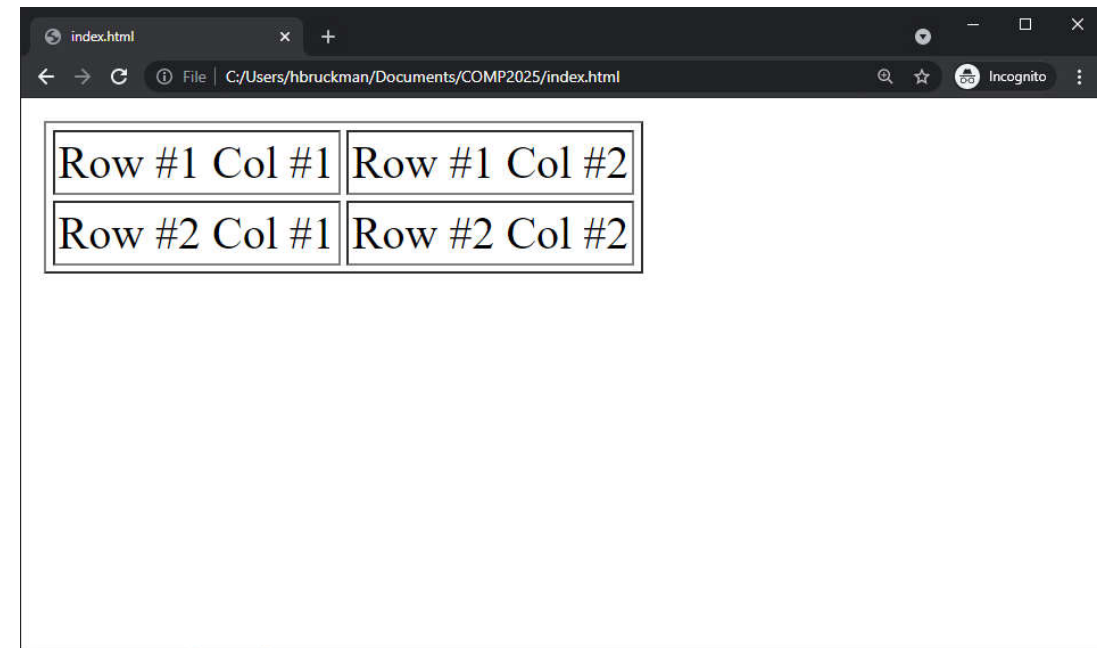
HTML Tables

- **align**: sets the horizontal alignment of the table relative to the window. Valid values include [**left** | **center** | **right**]. This attribute is **deprecated**, so use the **margin-left** and **margin-right** CSS properties instead.

```
table
{
    margin-left: auto;
    margin-right: auto;
}
```

HTML Tables

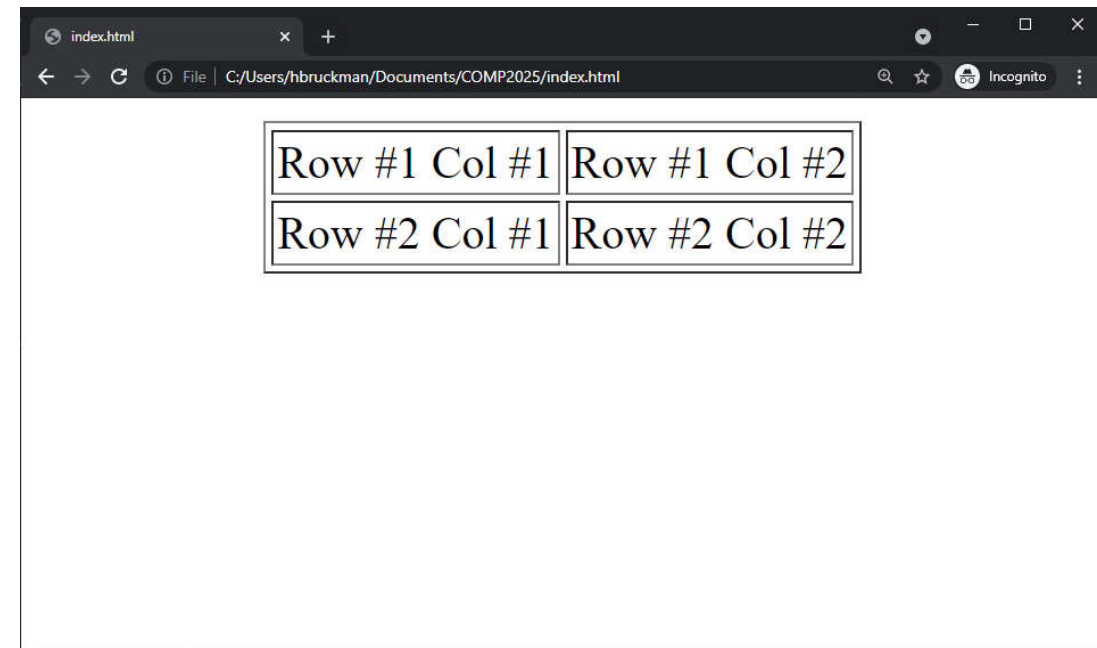
```
<table border="1" align="left">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```

A screenshot of a web browser window displaying the rendered HTML table. The browser's address bar shows the file path C:/Users/hbruckman/Documents/COMP2025/index.html. The table is rendered with a single border around the entire structure and individual borders around each cell. The content of the table is as follows:

Row #1 Col #1	Row #1 Col #2
Row #2 Col #1	Row #2 Col #2

HTML Tables

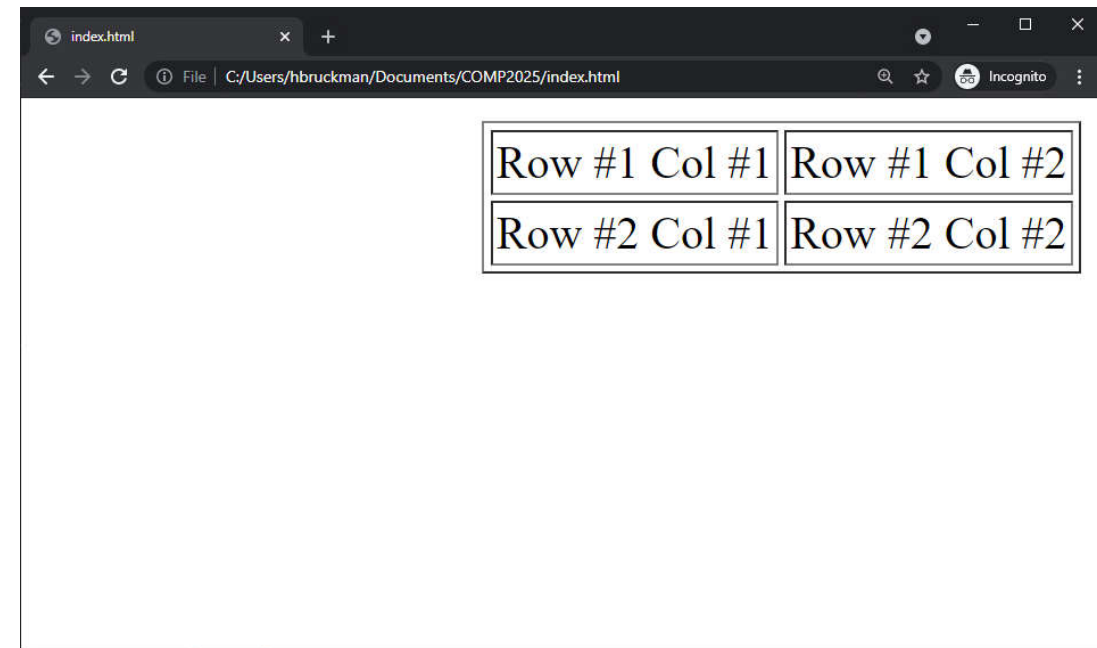
```
<table border="1" align="center">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```

A screenshot of a web browser window displaying the rendered HTML table. The browser's address bar shows the file path C:/Users/hbruckman/Documents/COMP2025/index.html. The table is centered on the page and has a single border. It contains two rows and two columns of text.

Row #1 Col #1	Row #1 Col #2
Row #2 Col #1	Row #2 Col #2

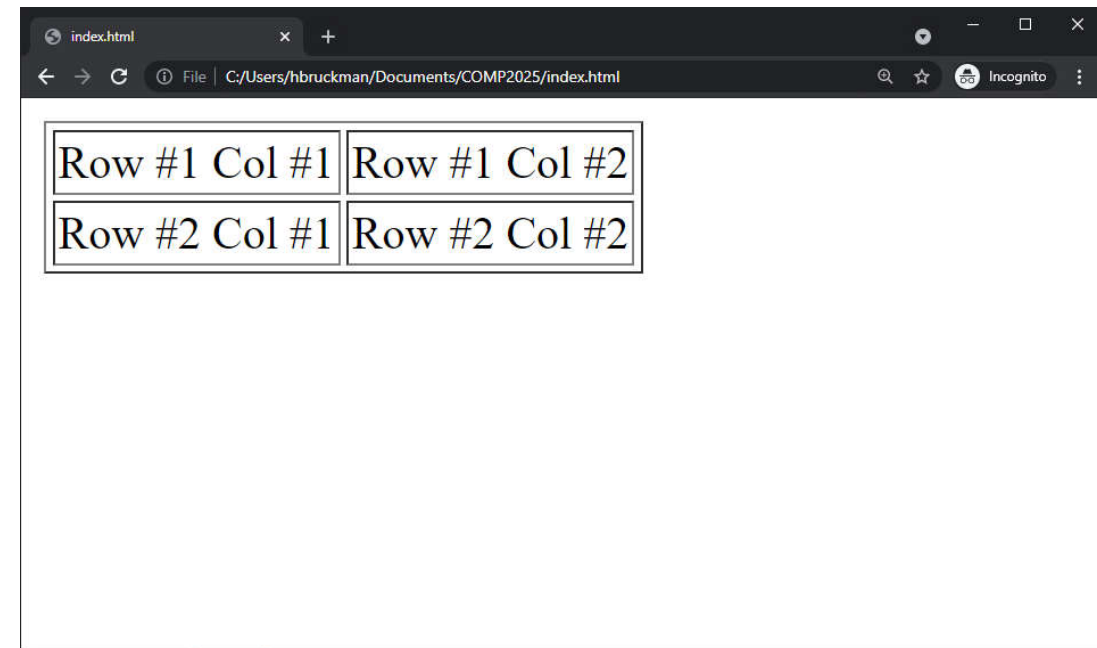
HTML Tables

```
<table border="1" align="right">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



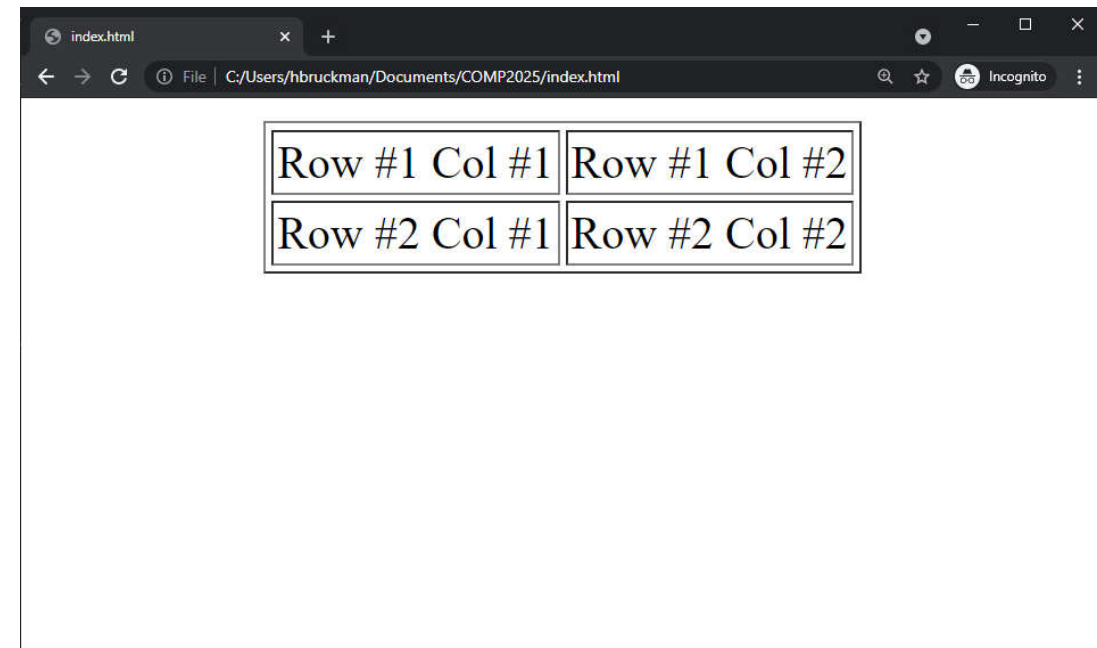
HTML Tables

```
<table border="1" style="margin-left: 0px; margin-right: auto;">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



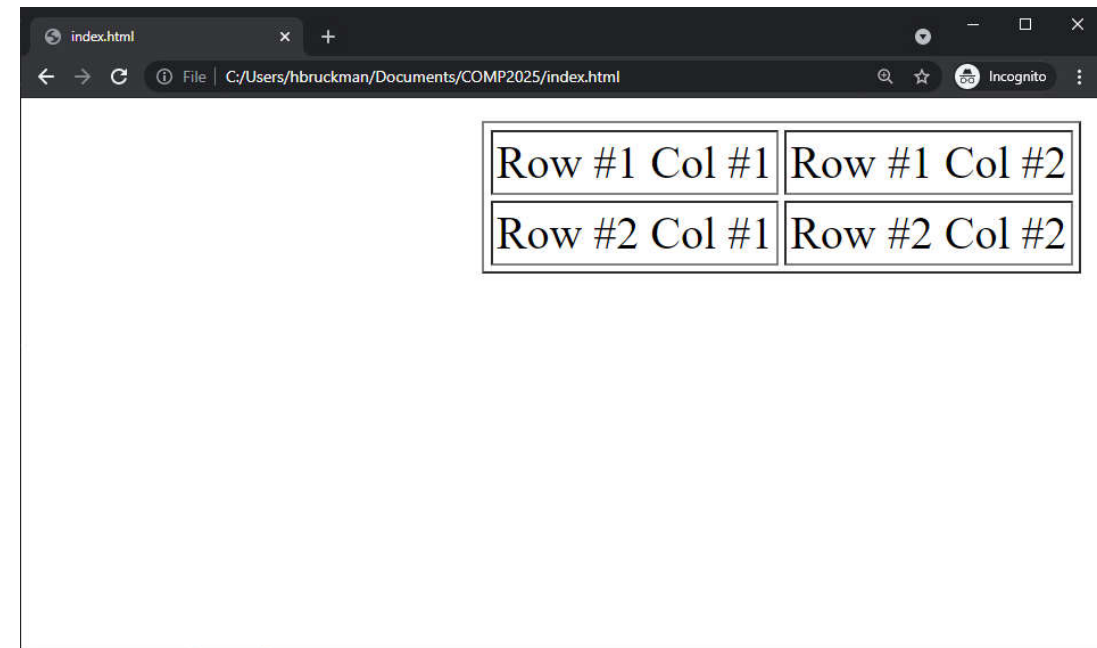
HTML Tables

```
<table border="1" style="margin-left: auto; margin-right: auto;">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



HTML Tables

```
<table border="1" style="margin-left: auto; margin-right: 0px;">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



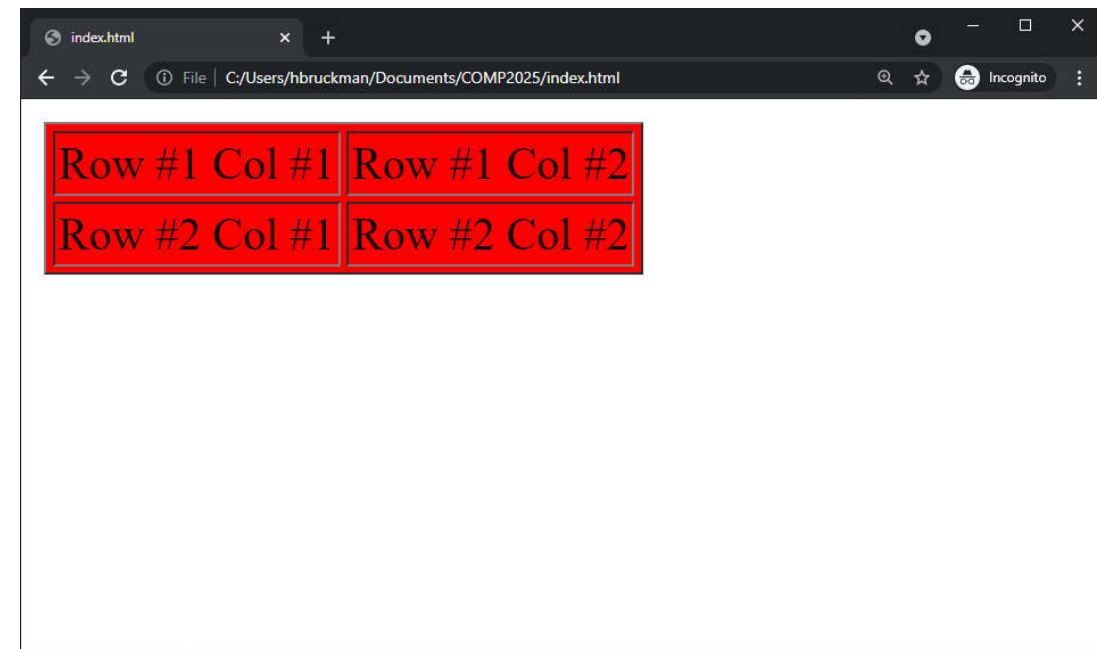
HTML Tables

- **bgcolor**: sets a background color for the table. Valid value formats include ["red" | "#ff0000" | "rgb(255,0,0)"]. This attribute is **deprecated**, so use the **background-color** CSS property instead.

```
body, table
{
    background-color: white;
}
```

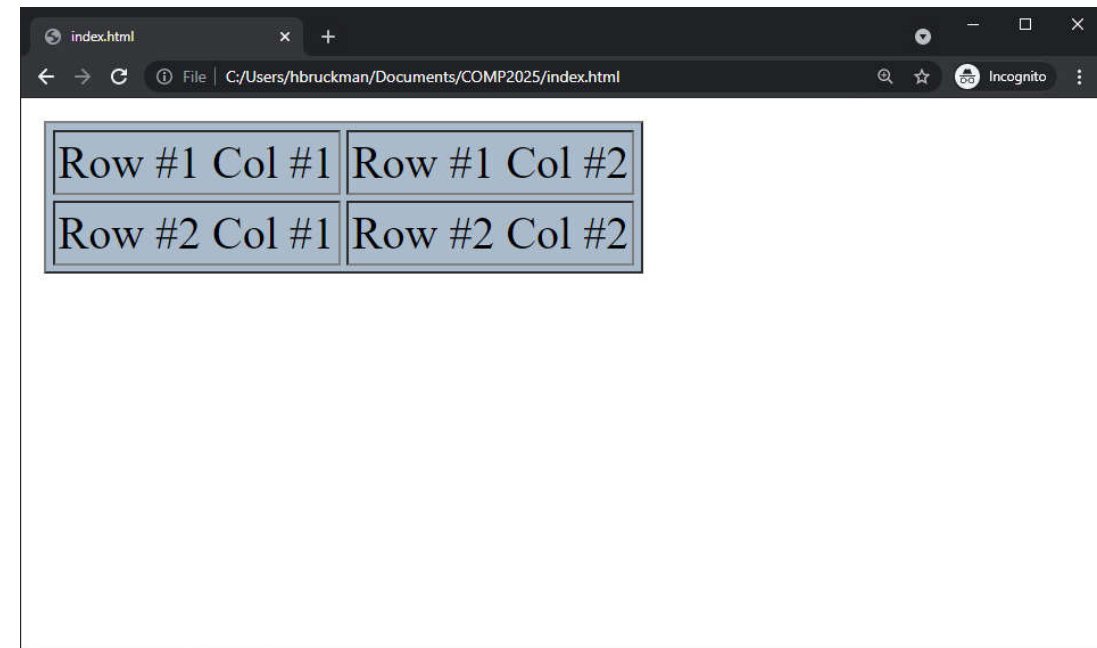
HTML Tables

```
<table border="1" bgcolor="red">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



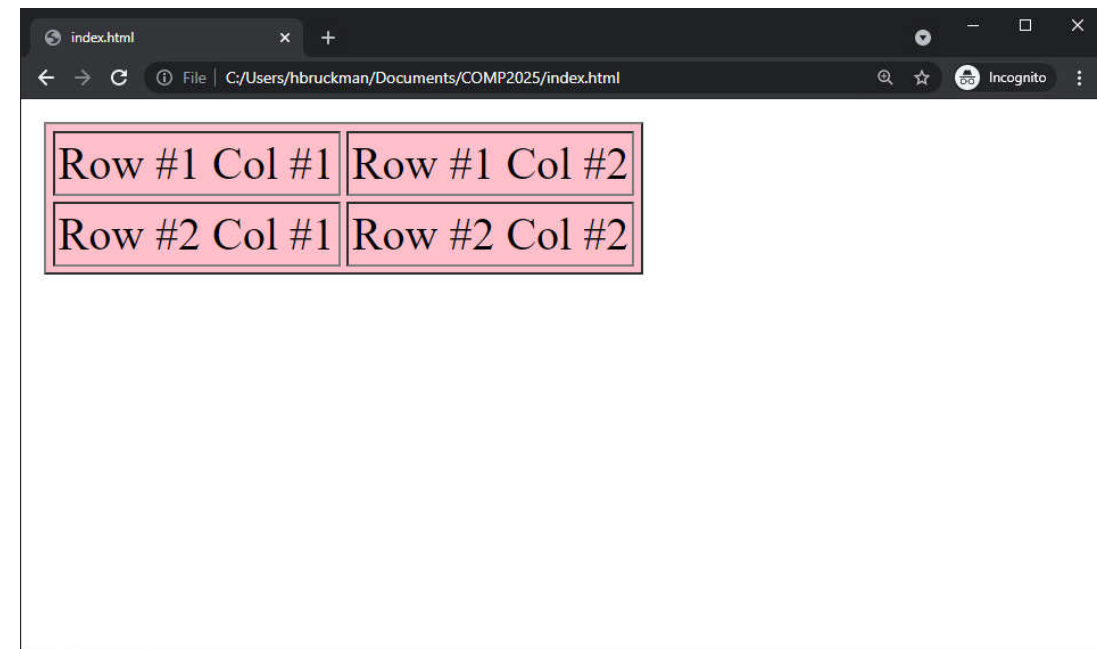
HTML Tables

```
<table border="1" bgcolor="#aabbcc">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



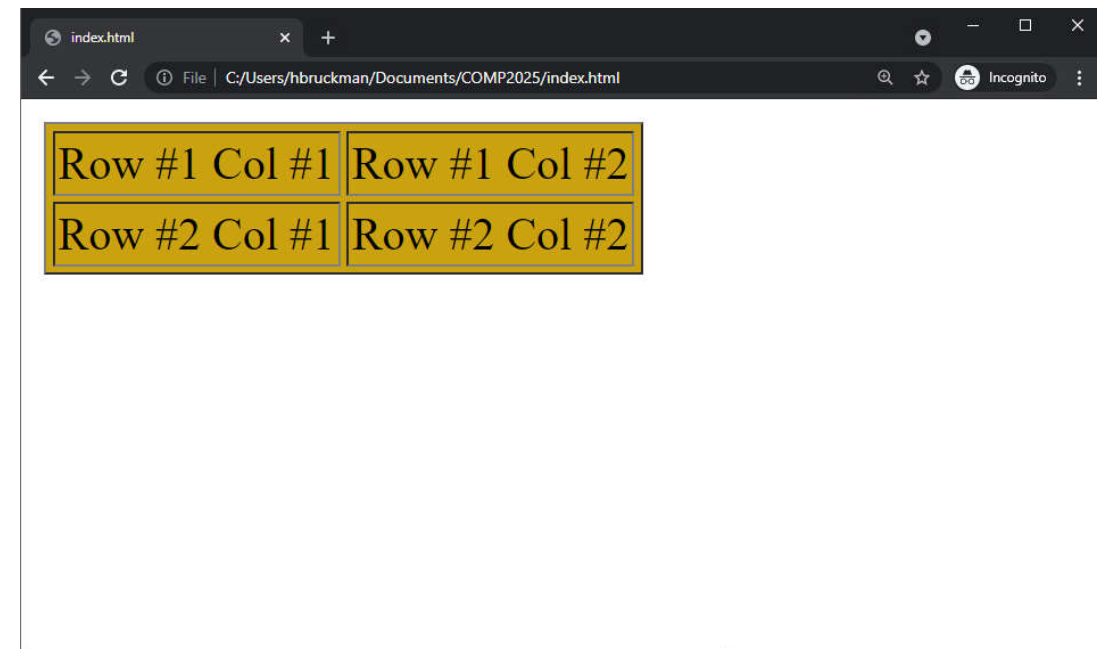
HTML Tables

```
<table border="1" style="background-color: pink;">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



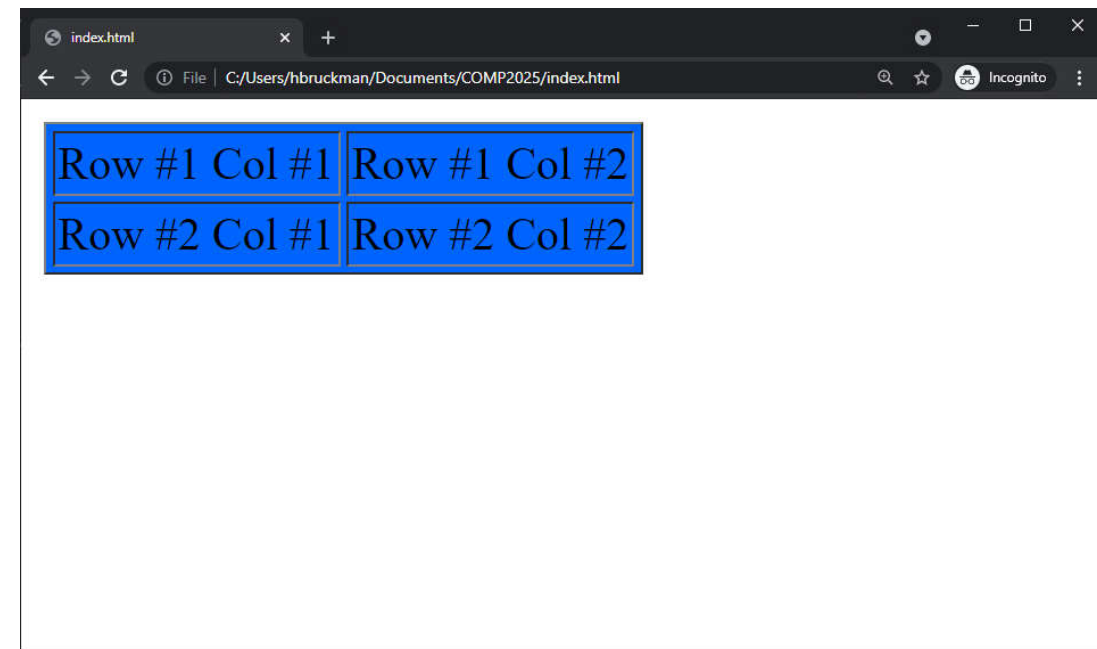
HTML Tables

```
<table border="1" style="background-color: #cba210;">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



HTML Tables

```
<table border="1" style="background-color: rgb(0,100,255);">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



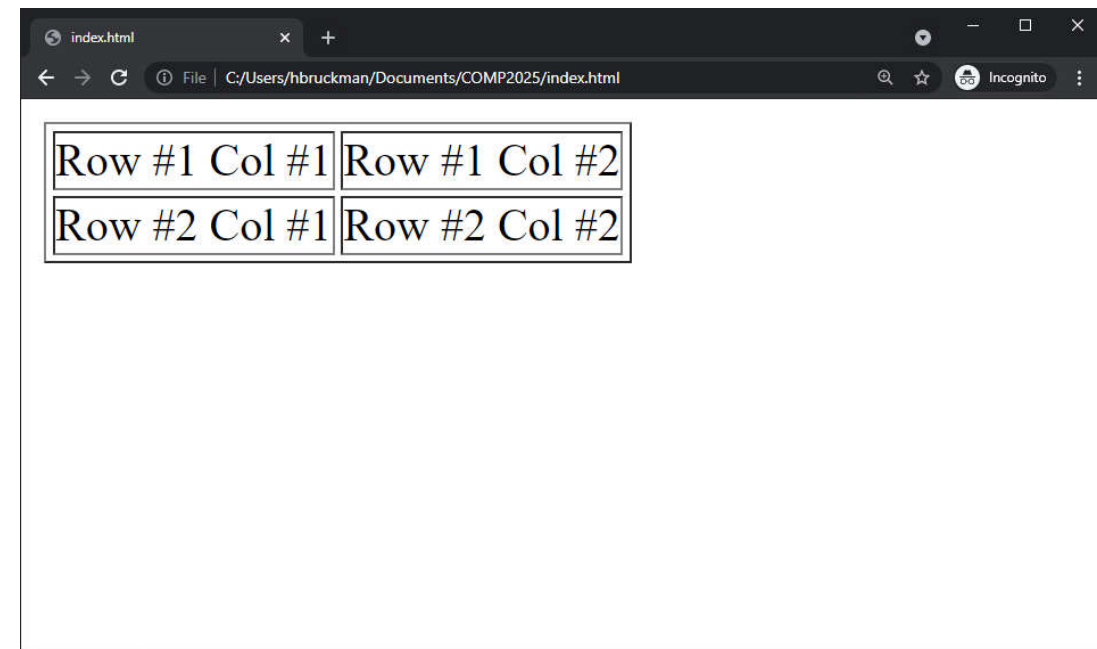
HTML Tables

- **cellpadding**: specifies the space between the cell wall and the cell content in pixels. This attribute is **[deprecated]**, so use the **padding** CSS property on the **<th>** and **<td>** instead.

```
th,td
{
    padding: 5px, 5px, 5px, 10px;
}
```

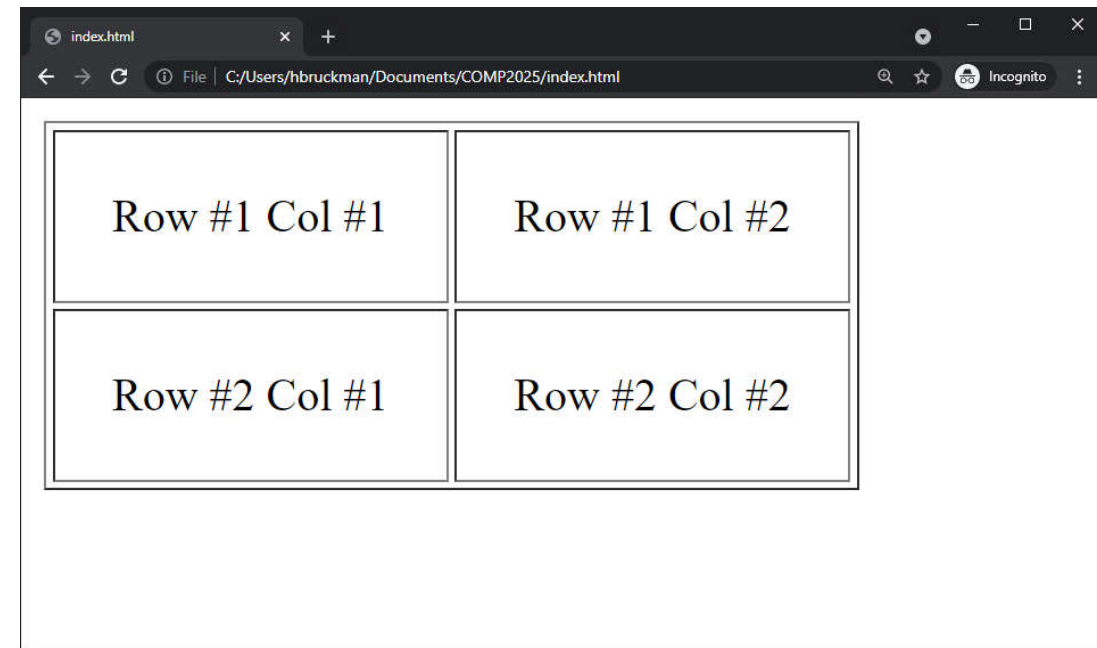

HTML Tables

```
<table border="1" cellpadding="0">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



HTML Tables

```
<table border="1" cellpadding="20">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```

A screenshot of a web browser window displaying the rendered HTML table. The browser's address bar shows the file path C:/Users/hbruckman/Documents/COMP2025/index.html. The table is a 2x2 grid with a thin black border and a cellpadding of 20. The cells contain the text 'Row #1 Col #1', 'Row #1 Col #2', 'Row #2 Col #1', and 'Row #2 Col #2' respectively.

Row #1 Col #1	Row #1 Col #2
Row #2 Col #1	Row #2 Col #2

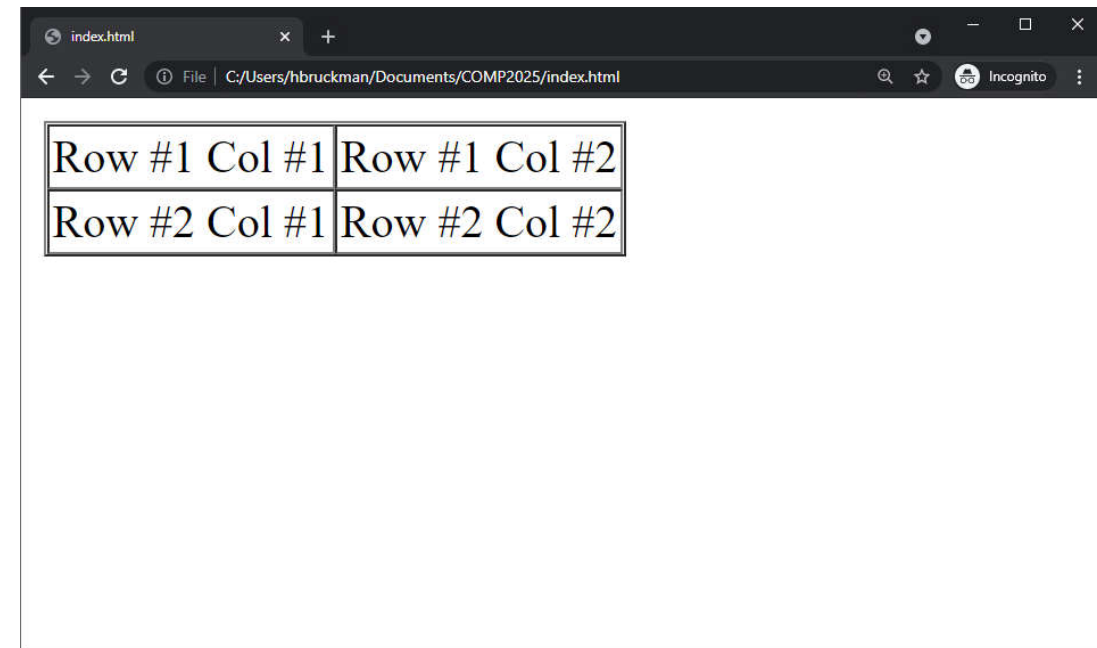
HTML Tables

- **cellspacing**: specifies the space between cells in pixels. This attribute is [**deprecated**], so use the **border-spacing** CSS property instead.

```
th,td
{
    border-spacing: 5px, 5px, 5px, 10px;
}
```

HTML Tables

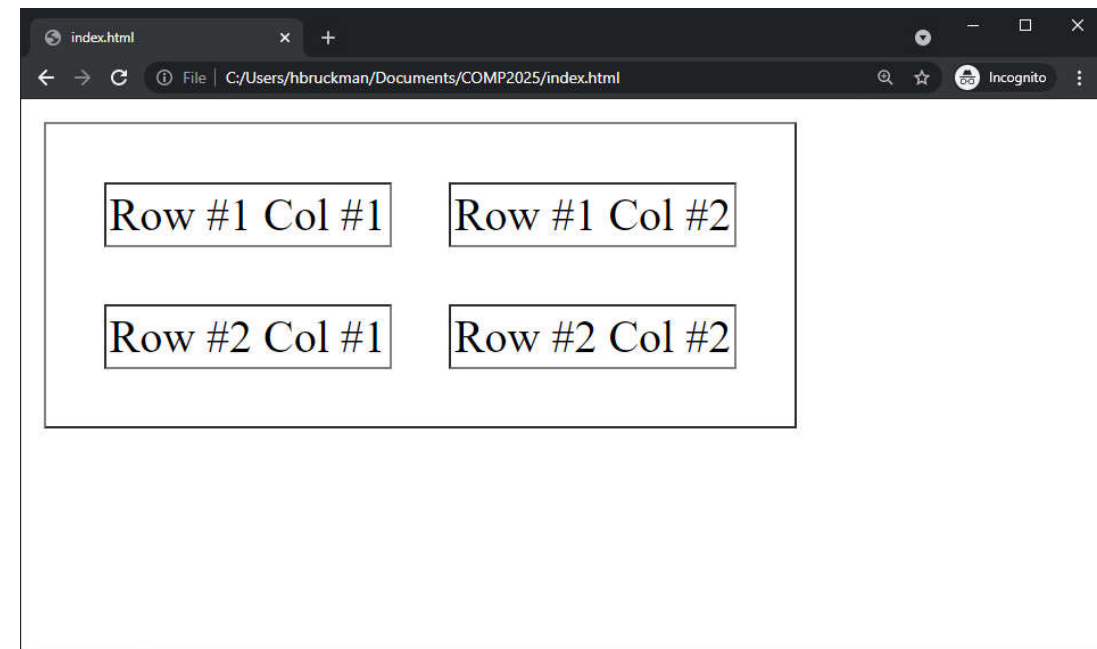
```
<table border="1" cellspacing="0">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```

A screenshot of a web browser window displaying the rendered HTML table. The browser's address bar shows the file path C:/Users/hbruckman/Documents/COMP2025/index.html. The table is a 2x2 grid with a black border and no cell spacing. The content of the table is as follows:

Row #1 Col #1	Row #1 Col #2
Row #2 Col #1	Row #2 Col #2

HTML Tables

```
<table border="1" cellspacing="20">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



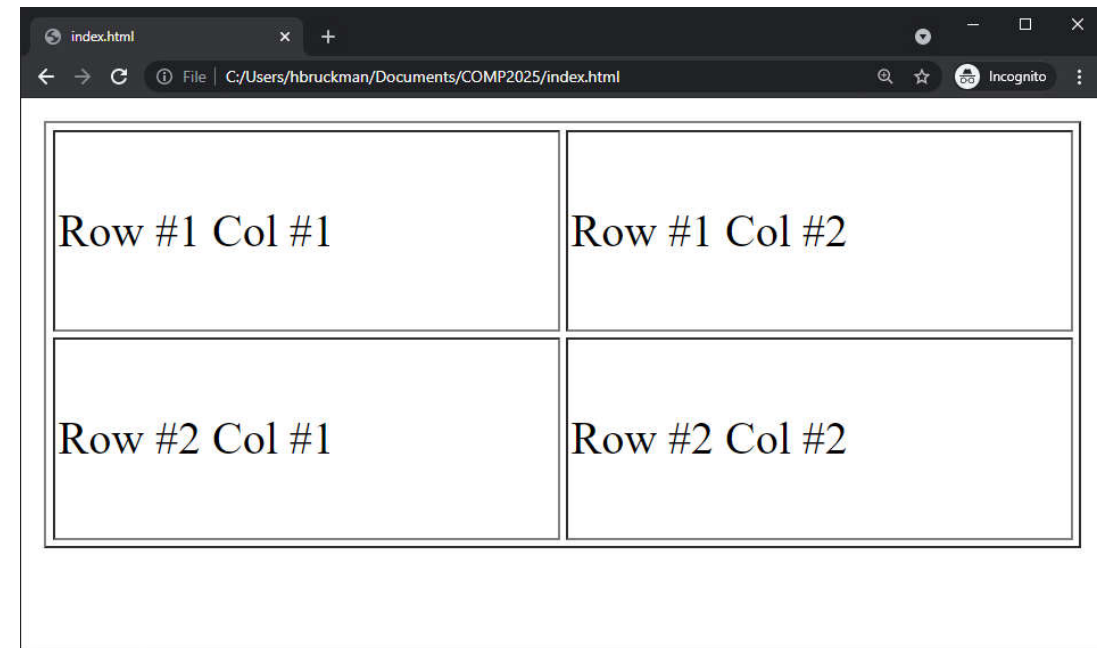
HTML Tables

- **width/height**: sets the width/height of the table either in pixels or in percentage of the window. These attributes are **[deprecated]**, so use the **width/height** CSS properties instead.

```
table
{
    width: 100%;
    height: 400px;
}
```

HTML Tables

```
<table border="1" width="100%" height="150">
  <tr>
    <td>Row #1 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```

A screenshot of a web browser window displaying the rendered HTML table. The browser's address bar shows the file path "C:/Users/hbruckman/Documents/COMP2025/index.html". The table is a 2x2 grid with a black border. The cells contain the text "Row #1 Col #1", "Row #1 Col #2", "Row #2 Col #1", and "Row #2 Col #2" respectively.

Row #1 Col #1	Row #1 Col #2
Row #2 Col #1	Row #2 Col #2

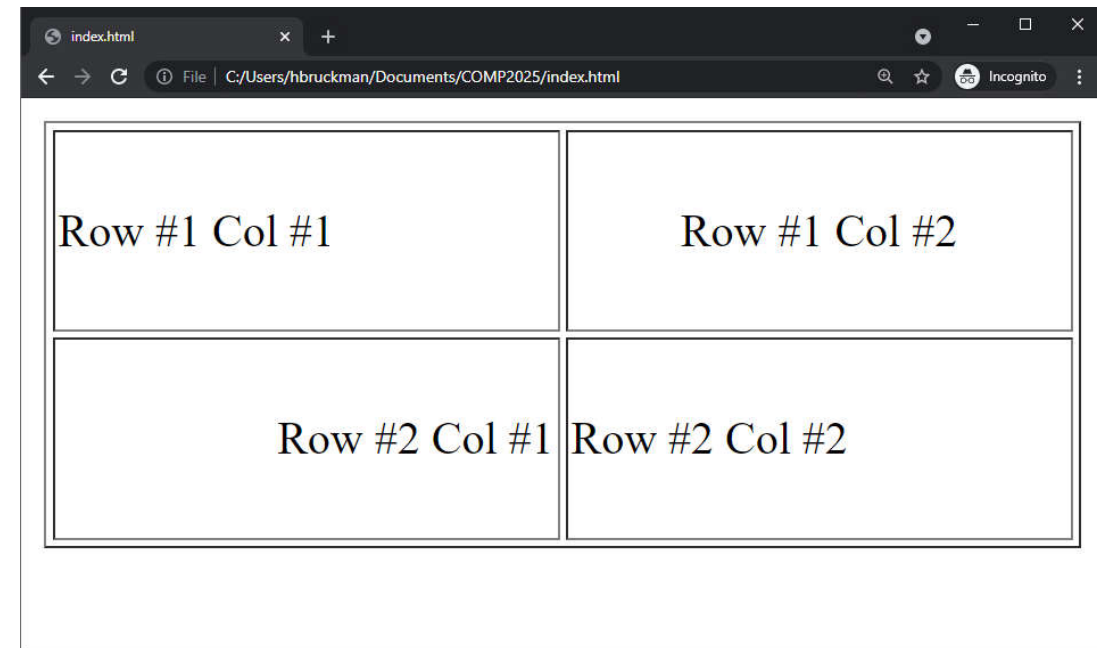
HTML Tables

- **align**: attribute of the `<th>` and `<td>` tags sets the horizontal alignment of the cell content. Valid values include `"left"` | `"center"` | `"right"` | `"justify"`. This attribute is **deprecated**, so use the **text-align** CSS property instead.

```
th, td
{
    text-align: center;
}
```


HTML Tables

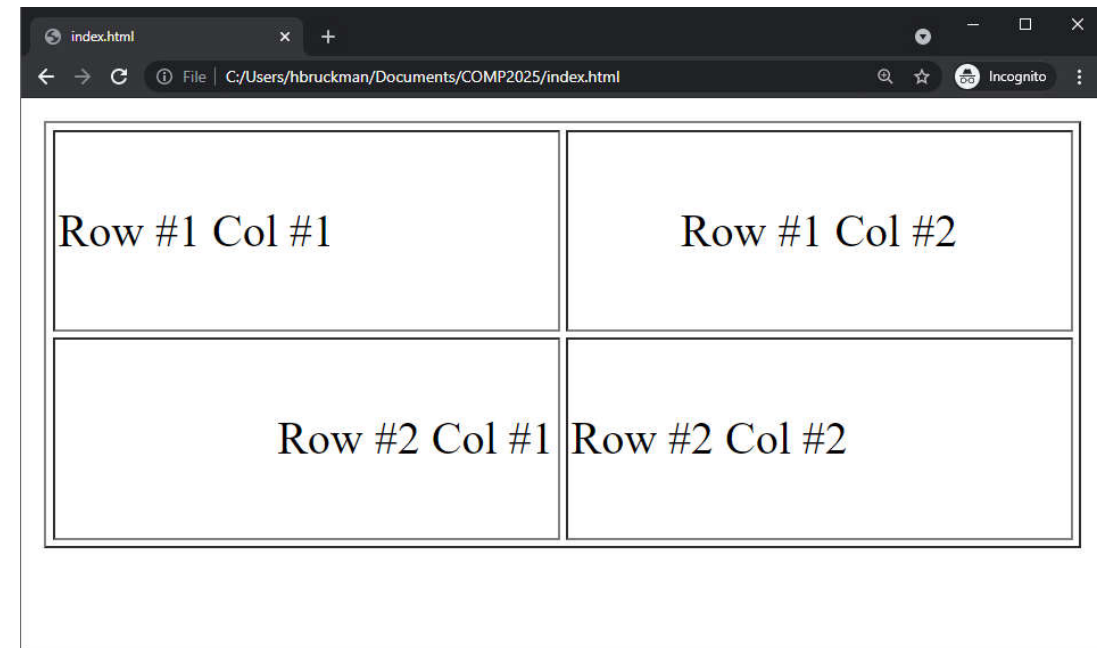
```
<table border="1" width="100%" height="150">
  <tr>
    <td align="left">Row #1 Col #1</td>
    <td align="center">Row #1 Col #2</td>
  </tr>
  <tr>
    <td align="right">Row #2 Col #1</td>
    <td align="justify">Row #2 Col #2</td>
  </tr>
</table>
```

A screenshot of a web browser window displaying the rendered HTML table. The browser's address bar shows the file path 'C:/Users/hbruckman/Documents/COMP2025/index.html'. The table is rendered with a black border and contains two rows and two columns. The first row has 'Row #1 Col #1' on the left and 'Row #1 Col #2' on the right. The second row has 'Row #2 Col #1' on the left and 'Row #2 Col #2' on the right.

Row #1 Col #1	Row #1 Col #2
Row #2 Col #1	Row #2 Col #2

HTML Tables

```
<table border="1" width="100%" height="150">
  <tr>
    <td style="text-align: left">Row #1 Col #1</td>
    <td align="center">Row #1 Col #2</td>
  </tr>
  <tr>
    <td align="right">Row #2 Col #1</td>
    <td align="justify">Row #2 Col #2</td>
  </tr>
</table>
```



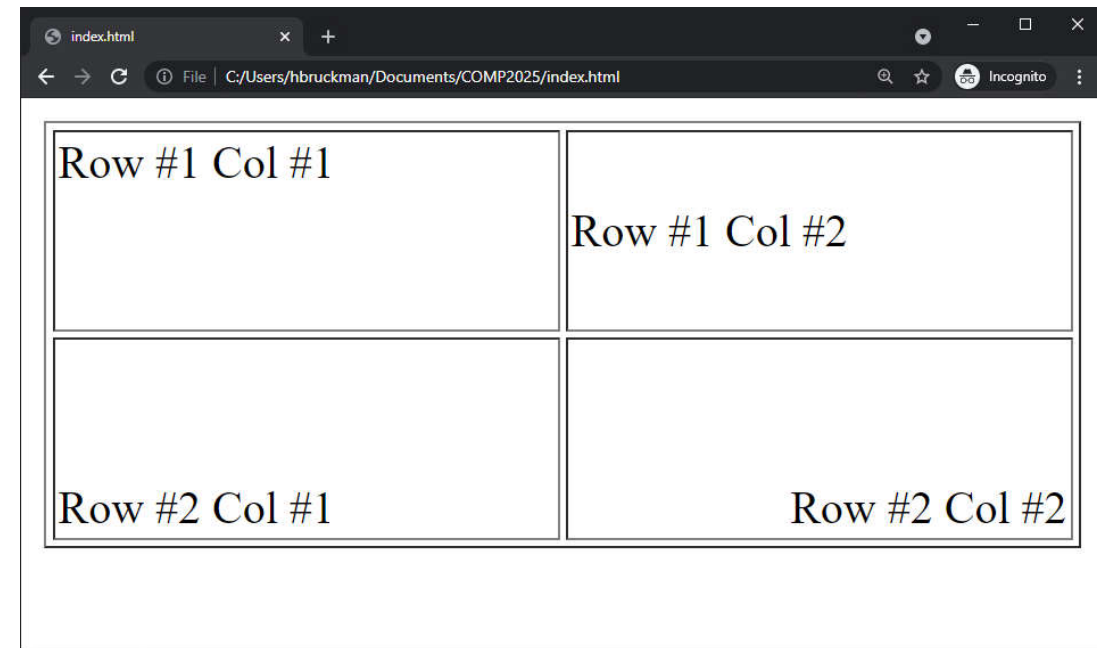
HTML Tables

- **valign**: attribute of the `<th>` and `<td>` tags sets the vertical alignment of the cell content. Valid values include [`"top"` | `"middle"` | `"bottom"`]. This attribute is [**deprecated**], so use the **vertical-align** CSS property instead.

```
th, td
{
    vertical-align: bottom;
}
```

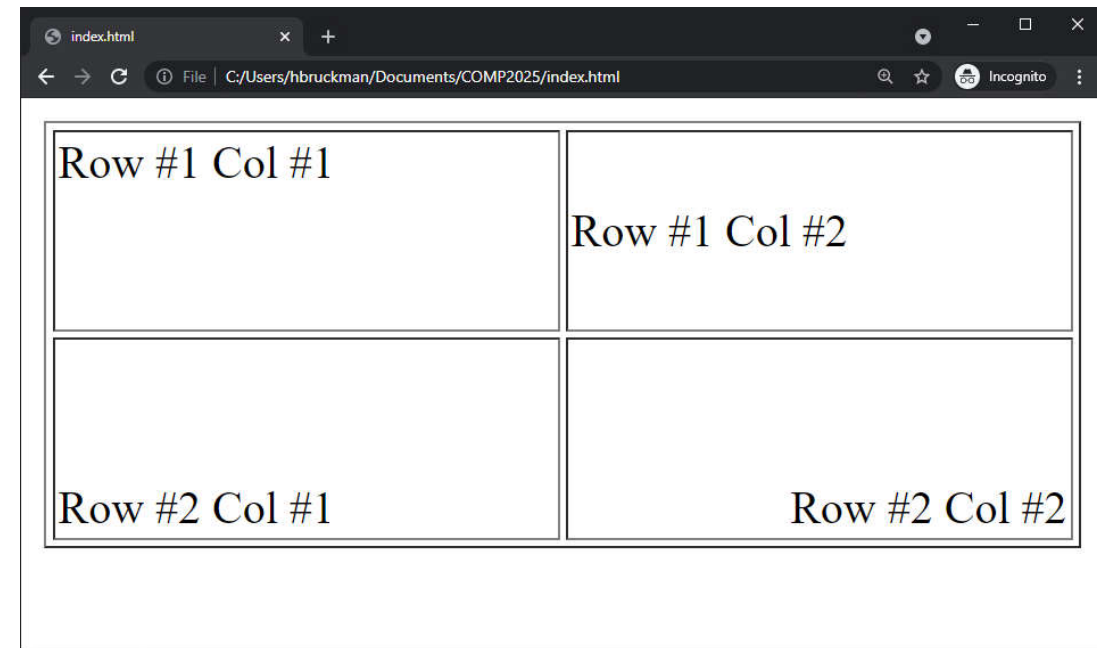
HTML Tables

```
<table border="1" width="100%" height="150">
  <tr>
    <td valign="top">Row #1 Col #1</td>
    <td valign="middle">Row #1 Col #2</td>
  </tr>
  <tr>
    <td valign="bottom">Row #2 Col #1</td>
    <td align="right" valign="bottom">
      Row #2 Col #2
    </td>
  </tr>
</table>
```



HTML Tables

```
<table border="1" width="100%" height="150">
  <tr>
    <td style="vertical-align: top">Row #1 Col #1</td>
    <td valign="middle">Row #1 Col #2</td>
  </tr>
  <tr>
    <td valign="bottom">Row #2 Col #1</td>
    <td align="right" valign="bottom">
      Row #2 Col #2
    </td>
  </tr>
</table>
```

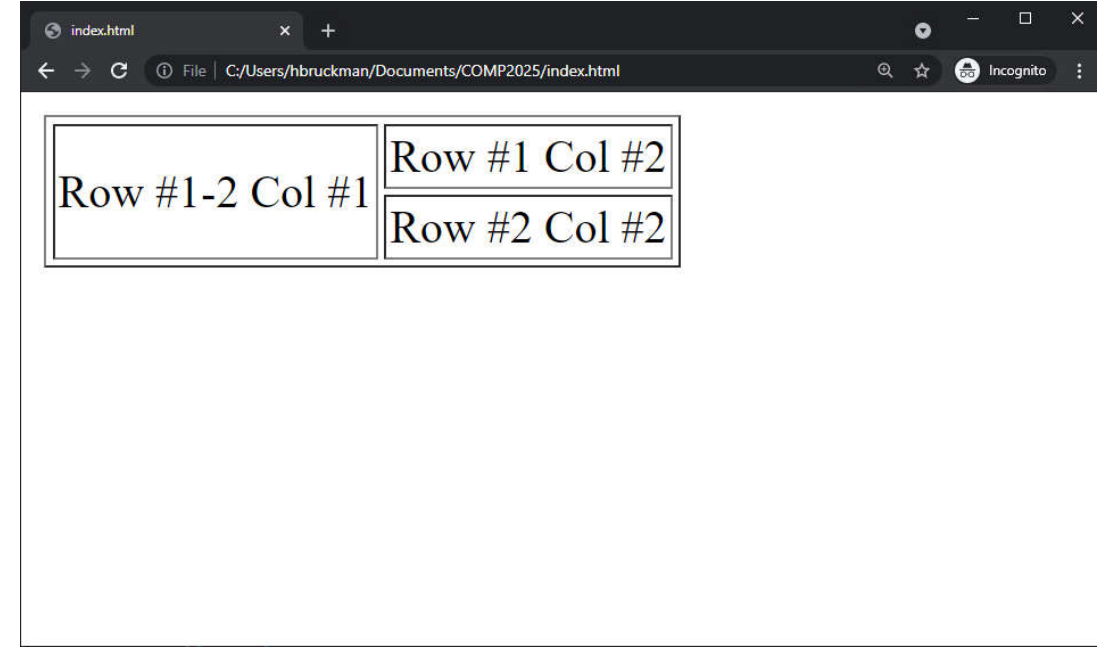


HTML Tables

- **rowspan/colspan**: attributes of the `<th>` and `<td>` tags merges two or more cells.

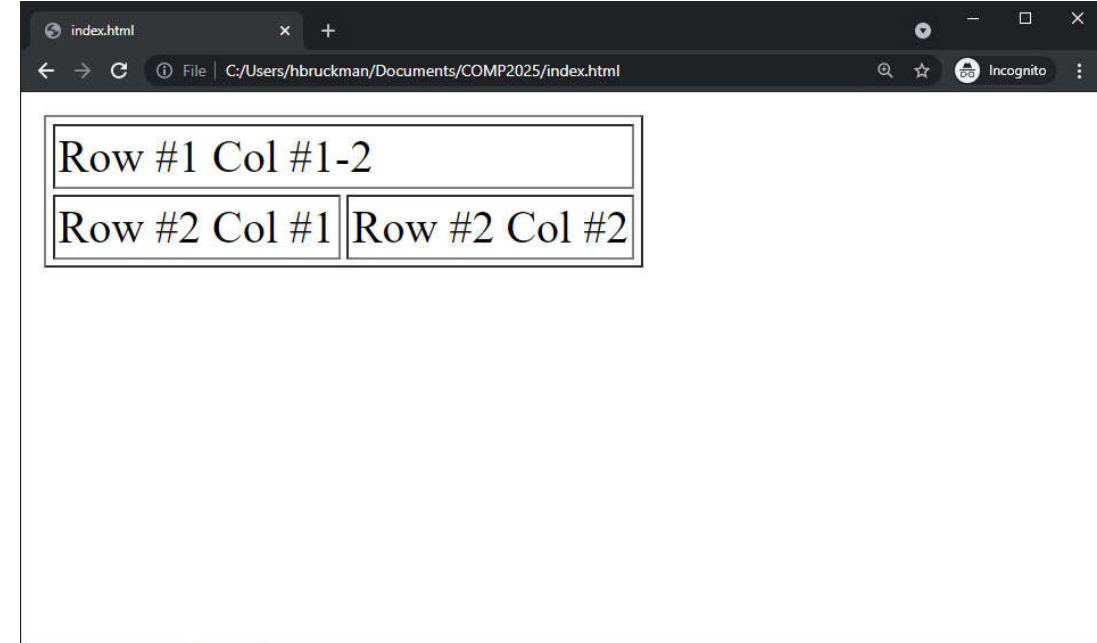
HTML Tables

```
<table border="1">
  <tr>
    <td rowspan="2">Row #1-2 Col #1</td>
    <td>Row #1 Col #2</td>
  </tr>
  <tr>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



HTML Tables

```
<table border="1">
  <tr>
    <td colspan="2">Row #1 Col #1-2</td>
  </tr>
  <tr>
    <td>Row #2 Col #1</td>
    <td>Row #2 Col #2</td>
  </tr>
</table>
```



HTML Tables

- An HTML table element may contain:
 - A caption element, delimited by `<caption></caption>` tags.
 - A caption may be the title and/or short description of the table.
 - Should be placed immediately after the `<table>` tag.

HTML Tables

- In addition, an HTML table may contain:
 - A column group element, delimited by `<colgroup></colgroup>` tags.
 - Should be placed after the caption element.
 - A column group may contain:
 - Column elements, delimited by `<col></col>` tags.
- Column groups and columns are used to stylize columns more efficiently. You can use the **span** attribute in a column element to stylize more than one column at a time.

HTML Tables

- An HTML table may also contain:
 - A table header element, delimited by `<thead></thead>` tags.
 - A table body element, delimited by `<tbody></tbody>` tags.
 - A table footer element, delimited by `<tfoot></tfoot>` tags.
- These must go in the order shown and below any column group element.
- Browsers can use these elements to enable scrolling of the table body independently of the header and footer. Also, when printing a large table that spans multiple pages, these elements can enable the table header and footer to be printed at the top and bottom of each page.

HTML Tables

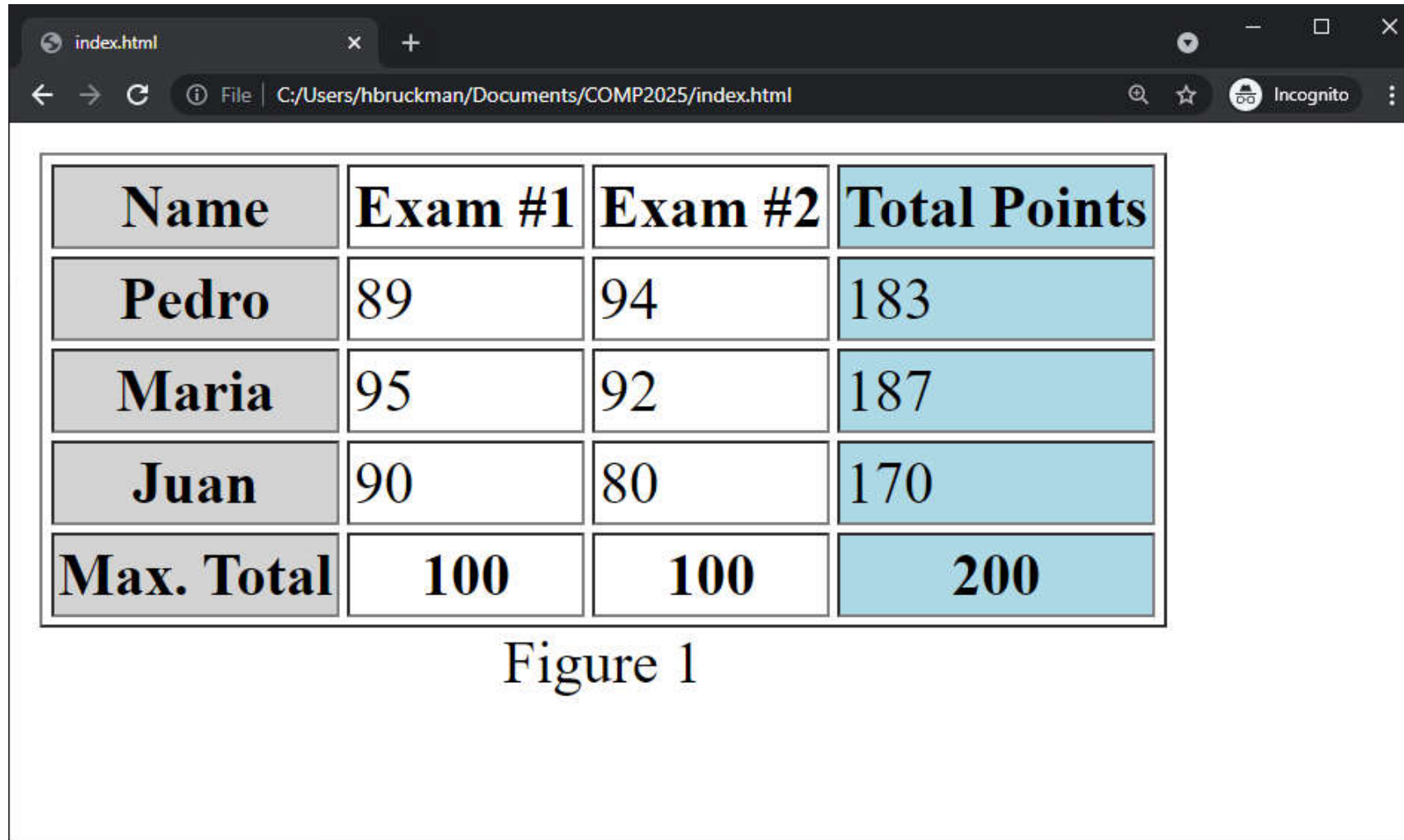
- Table header `<thead></thead>`, body `<tbody></tbody>`, and footer `<tfoot></tfoot>` should contain at least one:
 - Table row element, delimited by `<tr></tr>` tags. While a table row may contain:
 - Table header cell elements, delimited by `<th></th>` tags. By default, a table header cell is stylized as **bold**.
 - Table data cell elements, delimited by `<td></td>` tags.

HTML Tables

```
<table border="1">
  <caption align="bottom">Figure 1</caption>
  <colgroup>
    <col style="background-color: lightgray">
    <col span="2">
    <col style="background-color: lightblue">
  </colgroup>
  <thead>
    <tr>
      <th>Name</th>
      <th>Exam #1</th>
      <th>Exam #2</th>
      <th>Total Points</th>
    </tr>
  </thead>
  <tbody>
    <tr>
      <th>Pedro</th>
      <td>89</td>
      <td>94</td>
      <td>183</td>
    </tr>
```

```
<tr>
  <th>Maria</th>
  <td>95</td>
  <td>92</td>
  <td>187</td>
</tr>
<tr>
  <th>Juan</th>
  <td>90</td>
  <td>80</td>
  <td>170</td>
</tr>
</tbody>
<tfoot>
  <tr>
    <th>Max. Total</th>
    <th>100</th>
    <th>100</th>
    <th>200</th>
  </tr>
</tfoot>
</table>
```

Example



A screenshot of a web browser window displaying a table. The browser's address bar shows the file path C:/Users/hbruckman/Documents/COMP2025/index.html. The table has four columns: Name, Exam #1, Exam #2, and Total Points. It contains five rows of data, including individual student scores and a final row for maximum totals.

Name	Exam #1	Exam #2	Total Points
Pedro	89	94	183
Maria	95	92	187
Juan	90	80	170
Max. Total	100	100	200

Figure 1