

HTML

What is HTML?

- **HTML** stands for Hypertext Markup Language
- A computer language understood by Web browsers to format Webpages
- We describe the format of the Webpage by marking it up with special symbols we refer to as tags, e.g., the following **tags** format the text as bold:
- ****This text is bold****

What is HTML?

- Page format is written in plain text as opposed to some proprietary binary format
- Some text can be formatted to do some action and is referred to as hypertext to distinguish it from text that does not do any action

Creating an HTML Webpage

- Creating an HTML Webpage is as easy as creating a text file
- From your favorite text editor, create a new file and save it with the .html extension
- Often HTML Webpages are referred to as HTML Documents
- Here's a simple HTML document in file ***hello.html***:
- `Hello World!`
- Open the same file `hello.html` with a browser

The document type

- The **DOCTYPE** declares the type of the document as html. Helps browsers making sure they open the right type of document

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>This is the Page Title</title>
```

```
<link href="style.css" rel="stylesheet"/>
```

```
</head>
```

```
<body>
```

```
Hello World!
```

```
</body>
```

```
</html>
```

HTML Comments

- Comments are short pieces of text developers add to document code
- Help developers remember what thinking when they wrote the code
- Comments are ignored by Web browsers since they only mean something to the developer

```
<!-- This is a short one line comment -->
```

```
<!-- This is a longer  
two line comment -->
```

Hello World!

The body tag

- The **body** tag contains the main content of a Webpage and it's where we'll be spending most of our time

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>This is the Page Title</title>
```

```
<link href="http://somewhere.in.europe/style.css" rel="stylesheet"/>
```

```
</head>
```

```
<body>
```

```
Hello World!
```

```
</body>
```

```
</html>
```

The structure of HTML documents

- HTML Documents have the following structure. Rewrite hello.html so that the content is in the body tag

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>This is the Page Title</title>
```

```
<link href="style.css" rel="stylesheet"/>
```

```
</head>
```

```
<body>
```

```
Hello World!
```

```
</body>
```

```
</html>
```


The HTML root tag

- HTML Documents are **XML (eXtensible Markup Language)** documents with root tag **html**

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>This is the Page Title</title>
```

```
<link href="style.css" rel="stylesheet"/>
```

```
</head>
```

```
<body>
```

```
Hello World!
```

```
</body>
```

```
</html>
```

The head tag

- The head tag configures meta information about the document such as the author, document title, scripts, styling, etc

```
<!DOCTYPE html>
```

```
<html>
```

```
<head>
```

```
<title>This is the Page Title</title>
```

```
<link href="style.css" rel="stylesheet"/>
```

```
</head>
```

```
<body>
```

```
Hello World!
```

```
</body>
```

```
</html>
```

White spaces are ignored

- We use white spaces to structure documents visually.
Browsers only respect single spaces; tabs and newlines are ignored

```
<body> <!-- we'll stop using body since it's implied -->  
Hello World!
```

Consider this paragraph of text. It's separated visually from the text above by a new line character that adds vertical spacing.

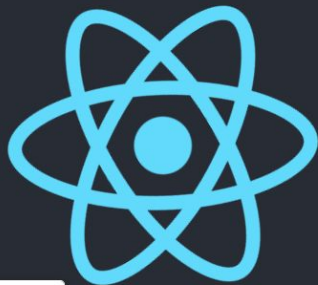
Also these paragraphs are indented from the left margin with tabs. Tabs and newlines are ignored so this whole content will render as a single paragraph.

```
</body>
```

DOM

Document Object Model (DOM)

- The **DOM** is a tree like data structure browsers use to represent and render Websites
- A browser parses an **HTML** document and creates an equivalent **DOM** instance
- **HTML** controls the DOM's content and structure
- **CSS** controls the DOM's styling, look and feel
- **JavaScript** can programmatically add, remove, modify the DOM based on algorithms/events



p 371.79 x 30.67

Edit src/App.js and save to reload.

[Learn React](#)

```
Elements Console >> 1 [Settings] [More] [Close]

<!DOCTYPE html>
<html lang="en">
  <head>...</head>
  <body>
    <noscript>You need to
    this app.</noscript>
    <div id="root">
      <div class="App">
        <header class="App-header"> flex
          
          ...
          <p>...</p> == $0
          <a class="App-link" href="https://reactjs.o
            rg" target="_blank" rel="noopener noreferre
            r">Learn React</a>
          </header>
        </div>
      </div>
    </body>
  </html>

html body div#root div.App header.App-header p

Styles Computed Layout Event Listeners >>

Filter :hov .cls + [Print] [Close]

element.style {
}

p {
  display: block;
  margin-block-start: 1em;
  margin-block-end: 1em;
  margin-inline-start: 0px;
  margin-inline-end: 0px;
}
```

The **DOM** is a hierarchical tree data structure maintained by the browser that represents the current document render on screen

HTML, CSS and JavaScript control the **DOM** providing content, layout, styling and logic

Example DOM

- Consider the following HTML

`<body>`

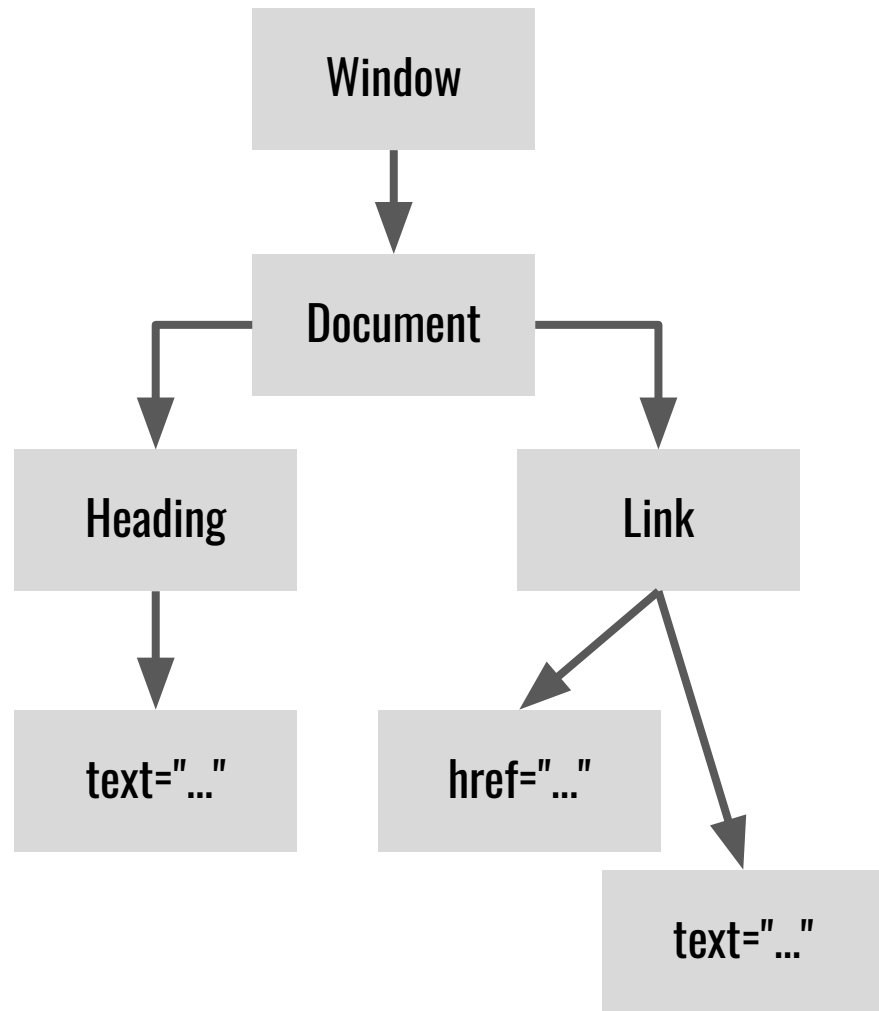
`<h1>Read about the DOM</h1>`

``

`DOM on MDN`

``

`</body>`



HEADINGS & PARAGRAPHS

Headings

- Use headings as titles to introduce distinct sections
- Headings come in 6 sizes starting with h1, h2, through h6
- H1 is the largest size, h6 is the smallest

<h1>This is the largest heading**</h1>**

<h2>This is the second largest heading**</h2>**

<h6>This is the smallest heading**</h6>**

Using headings

- For instance we can use headings to introduce all the topics we've covered so far...

<h1>HTML</h1>

<h2>Paragraphs</h2>

<!-- content discussing paragraphs -->

<h2>Headings</h2>

<!-- content discussing headings -->

Paragraphs

- Use paragraphs to explicitly add vertical spacing between portions of text

<p>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</p>

<p>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</p>

LISTS

Lists

<h2>Courses Spring 2018</h2>

CS5610

CS4500

CS5200

<h2>Semesters</h2>

Spring

Summer 1

Summer 2

Fall

Courses Spring 2018

- CS5610
- CS4500
- CS5200

Semesters

1. Spring
2. Summer 1
3. Summer 2
4. Fall

Ordered lists

- Ordered lists enumerate line items

`<h2>Ordered lists</h2>`

Follow these steps

``

`Learn HTML`

`Learn JavaScript`

`Build cool stuff`

``

Ordered lists

Follow these steps

1. Learn HTML
2. Learn JavaScript
3. Build cool stuff

Unordered lists

- Unordered lists render as bullet points

<h2>Unordered lists</h1>

Follow these steps

Learn HTML

Learn JavaScript

Build cool stuff

Unordered lists

Follow these steps

- Learn HTML
- Learn JavaScript
- Build cool stuff

TABLES

Tables

- Use tables to display **tabular data**, their intended purpose, e.g., each row is a record, each column has same data types.
- Do not use tables to layout content. Use DIVs and CSS instead

<table>

<thead></thead>

<tbody></tbody>

</table>

Table headings and rows

```
<table border="1"> <!-- border attribute sets border width -->
  <thead> <!-- contains table heading content -->
    <tr> <!-- heading can have several rows; 1 row is common -->
      <th>Username</th><th>Password</th><th>First Name</th>
      <th>Last Name</th><th>Role</th><th>&nbsp;</th>
    </tr>
  </thead>
</table>
```

Username	Password	First Name	Last Name	Role	
----------	----------	------------	-----------	------	--

Table body, table rows, and table data

```
<table border="1">
```

```
  <tbody>
```

```
    <tr>
```

```
      <td>alice</td>    <td>*****</td>  <td>Alice</td>
```

```
      <td>Wonderland</td> <td>Student</td> <td>Edit | Remove</td>
```

```
    </tr>
```

```
  </tbody>
```

```
</table>
```

Username	Password	First Name	Last Name	Role	
alice	*****	Alice	Wonderland	Student	Edit Remove
bob	*****	Bob	Marley	Faculty	Edit Remove

INPUT, DATES & DROP DOWNS

Input fields and labels

```
<label for="usernameFld">
```

Username

```
</label>
```

```
<input id="usernameFld"
```

```
  type="text"
```

```
  title="Username"
```

```
  placeholder="alice" />
```

Username

alice

First Name

Alice

Last Name

Wonderland

```
<label for="firstNameFld">
```

First Name</label>

```
<input id="firstNameFld"
```

```
  value="Alice" />
```

Date input fields

<label

for="dobFld">

Date of Birth

</label>

<input

type="date"

id="dobFld"

value="2011-11-22" />

Date of Birth

11/22/2011

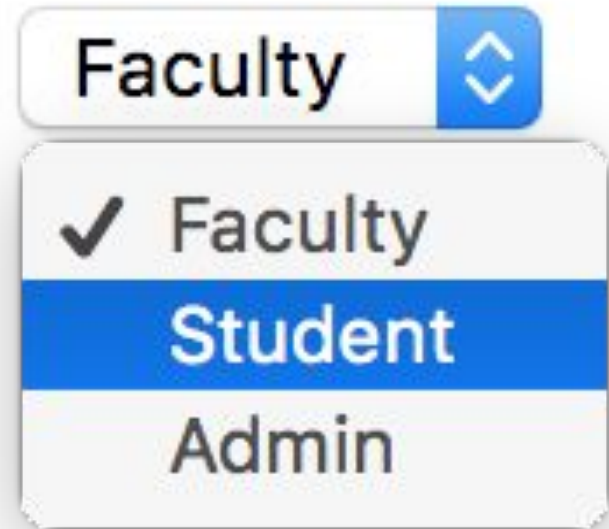
November 2011 ▼



Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

Dropdowns with SELECT

```
<select name="role">  
  <option value="FACULTY">  
    Faculty  
  </option>  
  <option value="STUDENT">  
    Student  
  </option>  
  <option value="ADMIN">  
    Admin  
  </option>  
</select>
```



**BUTTONS,
RADIOS &
CHECKBOXES**

Buttons

```
<button type="button">
```

Delete

```
</button>
```

```
<button type="button">
```

Edit

```
</button>
```

```
<button type="submit">
```

Update

```
</button>
```

A rectangular button with a light gray border and the text "Delete" in black.A rectangular button with a light gray border and the text "Edit" in black.A rectangular button with a light gray border and the text "Update" in black.

Default submit behavior won't be used in course

Checkbox and radio buttons

`<label>`

`<input name="b" type="checkbox"/> Tenured`

`</label>`

Tenured:

`<label>`

`<input name="a" type="radio"/> Yes`

`</label>`

`<label>`

`<input name="a" type="radio" checked"/> No`

`</label>`



Tenured:



Wrap with label to increase click area

ANCHORS

Anchors

- Use anchors to link to other documents, email or phones

`Wikipedia`

`See my profile`

`Jose`

`Call me`

Table of Content

<h2 id="toc">Table of Content</h2>

Jump to Section 1

Jump to Section 2

<h1 id="#section1">Section 1</h1>

TOC

<h2 id="#section2">Section 2</h2>

TOC

INLINE FRAMES (IFRAME)

Iframes

- Iframes (inline frames) allow embedding other Websites into your own

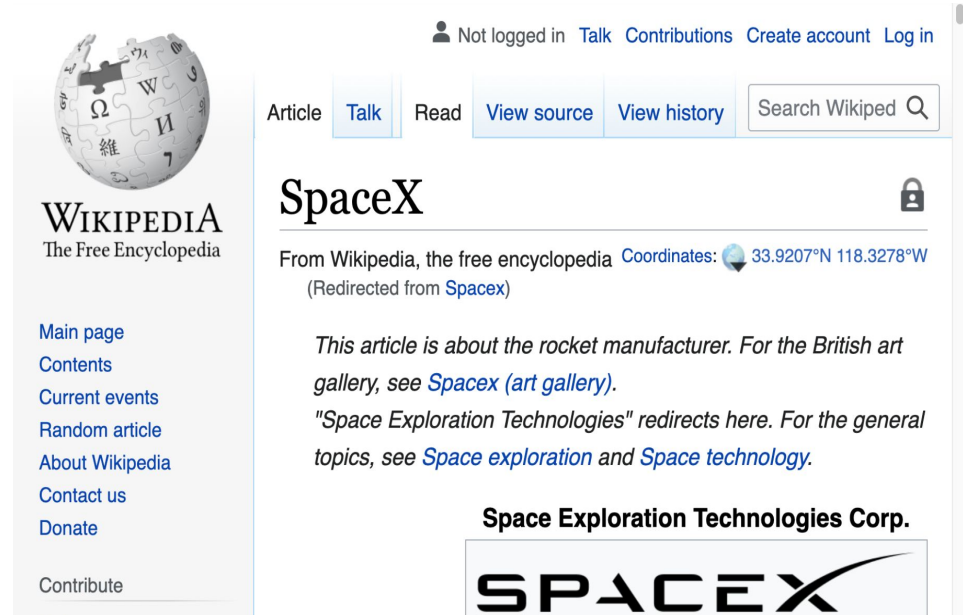
```
<iframe src="http://url/to/other/website.html"  
width="200px" height="100px"></iframe>
```

Embedding Wikipedia

- Set `iframe's src attribute` Website's URL

```
<iframe src="https://en.wikipedia.org/wiki/SpaceX"  
width="400px"  
height="300px">  
</iframe>
```

- Specify size of frame



Embedding YouTube Videos with iFrame

The image shows a YouTube video player interface. At the top, there is a search bar with the text "starship 15 landing" and a "Premium" badge. The video player shows a Starship rocket launch. The video title is "Starship | SN15 | Flight Test Recap" with 1,577,783 views and a date of May 13, 2021. The video has 97K likes and 547 comments. A share menu is open on the right, showing options to "Share in a post" (with a "CREATE POST" button and "5.73K subscribers"), "Share" (with icons for Embed, WhatsApp, Facebook, Twitter, Email, and 카카오톡), and a "Start at 0:02" option. A white arrow points to the "Embed" button in the share menu. Another white arrow points to the "SHARE" button in the video player's bottom bar.

starship 15 landing

Premium

Share in a post

CREATE POST

5.73K subscribers

Share

Embed WhatsApp Facebook Twitter Email 카카오톡

https://youtu.be/7CZTLogIn34 COPY

Start at 0:02

Starship | SN15 | Flight Test Recap

1,577,783 views • May 13, 2021

97K 547 SHARE SAVE ...

Embedding YouTube Videos with iFrame

- Copy iframe tag to your Webpage

```
<iframe width="560" height="315"  
src="https://www.youtube.com/embed/7CZTLogln  
34" title="YouTube video player" frameborder="0"  
allow="accelerometer; autoplay; clipboard-write;  
encrypted-media; gyroscope; picture-in-picture"  
allowfullscreen></iframe>
```

Embedding Google Slides with iFrame

- File, Publish to the web, Embed, Publish

`<iframe`

```
src="https://docs.google.com/presentation/d/e/2PACX-1v
TrbGSby9TY1qA9ZWLRa7BFWERL4e-oLF_JGeKD9DHj9BaW
R3SEDZNAgYGBeRhZah3DhTjmhJp9WqEy/embed?start=fal
se&loop=false&delayms=3000" frameborder="0"
width="960" height="569" allowfullscreen="true"
mozallowfullscreen="true"
webkitallowfullscreen="true"></iframe>
```

SCALABLE VECTOR GRAPHICS

Scalable Vector Graphics

Container defines coordinate system to embed SVG fragments within HTML document

```
<svg viewBox="0 0 300 100" stroke="red" fill="grey">  
  <circle cx="50" cy="50" r="40" />  
  <rect width="100" height="100" />  
  <svg viewBox="0 0 10 10" x="200" width="100">  
    <circle cx="5" cy="5" r="4" />  
  </svg>  
</svg>
```

Lines

Use SVG's line element to draw lines

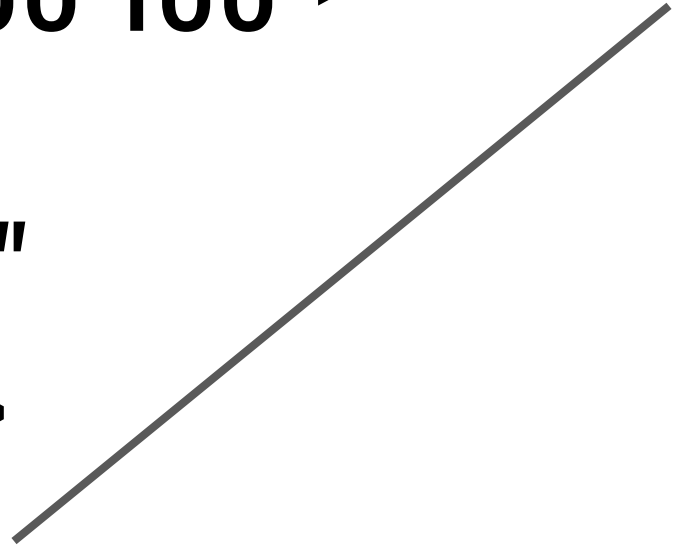
```
<svg viewBox="0 0 100 100">
```

```
  <line x1="0" y1="80"
```

```
    x2="100" y2="20"
```

```
    stroke="black" />
```

```
</svg>
```



Rectangle

Use SVG's rect element to draw rectangles

```
<svg viewBox="0 0 220 100">
```

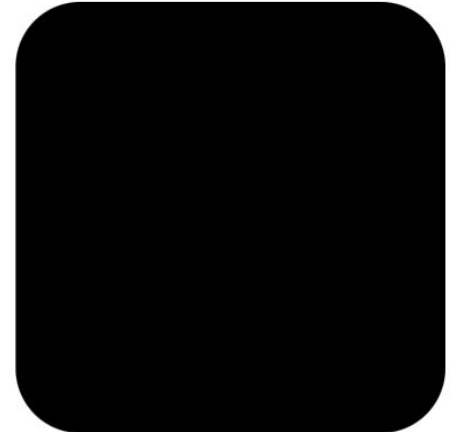
```
  <rect width="100" height="100" />
```

```
  <rect x="120" width="100"
```

```
    height="100"
```

```
    rx="15" />
```

```
</svg>
```



Circle

Use SVG's rect element to draw rectangles

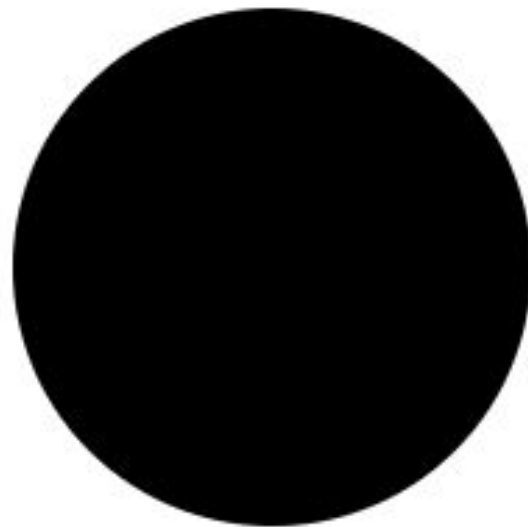
```
<svg viewBox="0 0 100 100">
```

```
  <circle cx="50"
```

```
    cy="50"
```

```
    r="50"/>
```

```
</svg>
```



Polygon

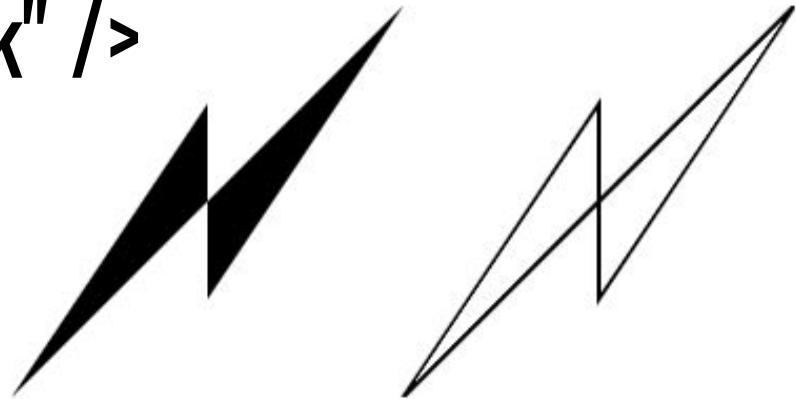
Use SVG's polygon element to draw polygons

```
<svg viewBox="0 0 200 100">
```

```
  <polygon points="0,100 50,25 50,75 100,0" />
```

```
  <polygon points="100,100 150,25 150,75 200,0"  
    fill="none" stroke="black" />
```

```
</svg>
```



USER
ADMIN

Create table headings

```
<table>
  <thead>
    <tr>
      <th>Username</th>
      <th>Password</th>
      <th>First Name</th>
      <th>Last Name</th>
      <th>Role</th>
      <th>DOB</th>
      <th>&nbsp;</th>
    </tr>
    ...
```

Username

Password

First Name

Last Name

Role

DOB

Add form row

```
<tr>
  <th><input placeholder="username"/></th>
  <th><input placeholder="password"/></th>
  <th><input placeholder="first name"/></th>
  <th><input placeholder="last name"/></th>
  <th><select><option>Faculty</option>
    <option>Student</option>
    <option>Admin</option></select></th>
  <th><input type="date"/></th>
  <th><button>Update</button>
    <button>Create</button></th></tr>
</thead>
```

Username	Password	First Name	Last Name	Role	DOB		
<input type="text" value="username"/>	<input type="password" value="password"/>	<input type="text" value="first name"/>	<input type="text" value="last name"/>	Faculty 	<input type="text" value="mm/dd/yyyy"/>	<input type="button" value="Update"/>	<input type="button" value="Create"/>

Add table body content

```
<tbody><tr><td>alice</td><td>****</td><td>Alice</td><td>Wonderland</td><td>Faculty</td><td>11/22/1968</td><td><button>Delete</button><button>Edit</button></td></tr><tr><td>bob</td><td>****</td><td>Bob</td><td>Marley</td><td>Student</td><td>10/12/1982</td><td><button>Delete</button><button>Edit</button></td></tr></tbody></table>
```

Username	Password	First Name	Last Name	Role	DOB	
<input type="text" value="username"/>	<input type="text" value="password"/>	<input type="text" value="first name"/>	<input type="text" value="last name"/>	<input type="text" value="Faculty"/>	<input type="text" value="mm/dd/yyyy"/>	<input type="button" value="Update"/> <input type="button" value="Create"/>
alice	****	Alice	Wonderland	Faculty	11/22/1968	<input type="button" value="Delete"/> <input type="button" value="Edit"/>
bob	****	Bob	Marley	Student	10/12/1982	<input type="button" value="Delete"/> <input type="button" value="Edit"/>

Column span

Column span

<table>

<thead></thead>

<tbody></tbody>

</table>

Row span

Row span

<table>

<thead></thead>

<tbody></tbody>

</table>

Table footer

Table footer

<table>

<thead></thead>

<tbody></tbody>

<tfoot></tfoot>

</table>

Column layout with tables

Column layout

<table>

<thead></thead>

<tbody></tbody>

<tfoot></tfoot>

</table>

Border layout with tables

Border layout

<table>

<thead></thead>

<tbody></tbody>

<tfoot></tfoot>

</table>

Layout with CSS

Layout with CSS

<table>

<thead></thead>

<tbody></tbody>

<tfoot></tfoot>

</table>

HTML



CSS

