Hands-on Lab: Unit Conversion using HTML5 Structural Elements

Estimated Time: 30 minutes

- Convert temperature from Celsius to Fahrenheit
- Convert weight from Kilograms to Pounds
- Convert distance from Kilometers to Miles

Learning Objectives

After completing this exercise, you should be able to perform the following tasks:

1. Create a basic application structure using HTML Tags
2. Use `<header>` and `<nav>` tags to highlight important information at the top of an HTML page
3. Use the `<article>` tag to create articles within an HTML Page
4. Use the `<section>` tag to split the page into logical sections
5. Use `<figure>` and `<figcaption>` tags to add an image along with an appropriate caption
6. Use the `<footer>` tag to include information at the bottom of the page
7. Use the `<aside>` tag to provide information that is related to the application, but doesn't impact the application.

Task 1: Create the basic app structure

1. Click on the button below to create a new file named `index.html`.

Open **index.html** in IDE

You can also create this by going to the project explorer, clicking on New File symbol as highlighted in image below and creating a new file in the `/home/project` directory with the name `index.html`.

2. Insert the basic HTML document structure into your file, including both the `<head>` and `<body>` tags. Add a `<title>` tag with title `Unit Conversions`

```
<!DOCTYPE html>
<html>
  <head>
    <!-- This is your page title that appears on the browser window or tab -->
    <title>Unit Conversions</title>
  </head>
  <body>
  </body>
</html>
```

3. Create a section with id **home**, within the body. This section will represent the top section of your webpage.

```
<section id="home">
</section>
```

4. Within the home section, create a header, using the `<header>` tag, with the text `Unit Conversions`. Bold the text to make it stand out

```
<section id="home">
    <!-- This is the main heading -->
    <header><b>Unit Conversions</b></header>
</section>
```

4. Create a navigation bar inside the home section, after the header tag

```
<nav>
  <!-- This will have the main unit conversion buttons -->
</nav>
```

- You need to create unit conversions for:

  1. Temperature
  2. Weight
  3. Distance

- We will create anchor tags with buttons which redirect users to certain sections of the same page.

- We will be using the `id` attribute to reference these sections. `id`s are represented with the # symbol.

5. Add 3 anchor & button tags for the 3 types of conversions (temperature, weight, and distance) inside the navigation bar

```
<nav>
  <!-- Button for redirecting users to the temperature section -->
  <a href="#temperature"><button>Temperature</button></a>
  <!-- Button for redirecting users to the weight section -->
  <a href="#weight"><button>Weight</button></a>
  <!-- Button for redirecting users to the distance section -->
  <a href="#distance"><button>Distance</button></a>
</nav>
```

6. Save your code.

▶ Click here to see how your code should look so far

Task 2: Temperature (Celsius to Fahrenheit) Conversion

You will now create a button for Temperature conversions (Celsius to Fahrenheit)

1. Create a div tag, which will be used to hold all the conversion sections.

```
<!-- Code that was previously added in the preceeding steps-->
<div id="all-conversion-sections">
  <!-- This will have the conversion sections for Temperature, Weight, and Distance -->
</div>
```

2. Add a section tag inside and set its attribute `id` to `temperature` inside this all-conversion-sections div tag

```
<div id="all-conversion-sections">
  <!-- This will have the conversion sections for Temperature, Weight, and Distance -->
  <section id="temperature">
  <!--Temperature conversion section -->
  </section>
</div>
```

3. Create a div tag with `id` set to `tmp`. Add a figure tag inside this div tag, where you will be adding a visual depiction of the conversion.

```
<section id="temperature">
  <div id="tmp">
    <figure>
      <!-- Figure and its caption will come here -->
    </figure>
  </div>
</section>
```

4. Add an image tag inside the figure, having `src` attribute set to the URL "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%20Labs/02%20-%20HTML5%20Elements/images/thermo.png" and a width set to 200px. Then, add a `figcaption` tag to give a caption to this figure.

```
<figure>
  <img src="https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%20Labs/02%
  <figcaption>Celsius to Fahrenheit Conversion</figcaption>
</figure>
```

Next you will complete the following:

- Display **temperature** as a heading
- Create two input fields and two labels
- Create a button to convert

5. Add an article tag to the `tmp` div tag to contain an article that will hold the elements for temperature conversion. We are using the article tag since this conversion is meaningful on its own.

```
<div id="tmp">
  <figure>
    <img src="https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%20Labs/0
    <figcaption>Celsius to Fahrenheit Conversion</figcaption>
  </figure>
  <article>
    <!-- This contains the specific elements for temperature conversion-->
  </article>
</div>
```

6. Add fieldset and legend tags inside the article to group the fields pertaining to temperature conversion.

```
<article>
  <!-- This contains the specific elements for temperature conversion -->
  <fieldset>
    <legend>Temperature</legend>
    <!-- The fields and button for temperature input will come here -->
  </fieldset>
</article>
```

7. Add labels and input fields, within the fieldset tag, for the temperature input (in Celsius) and output (in Fahrenheit). Use the `number` input type for both these fields.

```
<fieldset>
  <legend>Temperature</legend>
  <!-- Label for Temperature input -->
  <label for="celsius">Celsius</label> <br/>
  <input type="number" id="celsius"/> <br/>
  <!-- Label for Temperature output -->
  <input type="number" id="fahrenheit"> <br/>
  <label for="fahrenheit">Fahrenheit</label>
</fieldset>
```

The input field uses the `type` attribute for specifiyng the input type (e.g. text, number, etc.). The `label` tag is used to identify to a user the type of input they should be providing, which is also specified in the `id` of the input tag.

8. Insert a “Convert” button between the input and output fields.

```
<fieldset>
  <legend>Temperature</legend>
  <!-- Label for Temperature input -->
  <label for="celsius">Celsius</label> <br/>
  <input type="number" id="celsius"> <br/>
  <!-- The conversion button -->
  <button id="temperature"> Convert </button> <br/>
  <!-- Label for Temperature output -->
  <input type="number" id="fahrenheit"> <br/>
  <label for="fahrenheit">Fahrenheit</label>
</fieldset>
```

9. Add an aside tag after the article to teach a user how to do this calculation themselves.

```
<aside>
  To convert celsius to fahrenheit yourself, use this formula replacing the `C` with your temperature in celsius: (C × 9/5) + 32
</aside>
```

Save the Updated Code and Check the Page

1. Save the code updated so far.

▶ Click here to see the code:

2. **To preview your webpage, you can use the built-in Live Server extension by following the instructions below.**

a. Open the file explorer and navigate to your file.

b. Right click on your file & click on ‘Open with Live Server’

c. This should show a notification mentioning that the server has started on port 5500.

d. Click on the Skills Network button on the left to open the “Skills Network Toolbox”. Click “Other” then “Launch Application”. From there, enter the port no. as 5500 and launch your application.

e. Click on the file name to view its preview.

f. Your page should look like this:

Task 3: Weight (Kilograms to Pounds) Conversion

1. After the `temperature` section in the `all-conversion-sections` container, add another section tag and set its `id` attribute to `weight`. Within this new section, insert the following:

1. A div tag with its `id` set to `wgt`
2. A figure tag to represent the heading, having `img` and `figcaption` tags within it
    1. Set the image source URL to be: "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%20Labs/02%20-%20HTML5%20Elements/images/weight.png"
    2. Set the width of the image to be 200px
    3. Set the caption to be "Kilograms to Pounds Conversion"

2. Inside the `<div id="wgt">` tag, add the following tags:

- Figure (with img and figcaption)
- Article
- Fieldset
- Legend (set to "Weight")
- Input and output labels being Kilograms and Pounds respectively
- Aside (with the calculation "kg x 2.205")

The structure and rest of the tags should be the same as in the `tmp` div tag.

3. The `section id="weight"` tag should resemble the following:

```
<section id="weight">
    <!-- Weight conversion section -->
    <div id="wgt">
        <figure>
            <img src="https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%
            <figcaption>Kilogram to Pound Conversion</figcaption>
        </figure>
        <article>
            <!-- This contains the specific elements for weight conversion -->
            <fieldset>
                <legend>Weight</legend>
                <!-- Label for Weight input -->
                <label for="kilo">Kilograms</label> <br/>
                <input type="number" id="kilo"> <br/>
                <!-- The conversion button -->
                <button id="weight"> Convert </button> <br/>
                <!-- Label for Weight output -->
                <input type="number" id="pounds"> <br/>
                <label for="pounds">Pounds</label>
            </fieldset>
        </article>
        <aside>
            To convert kilograms to pounds yourself, use this formula replacing the `kg` with your weight in kilograms: kg x 2.205
        </aside>
    </div>
</section>
```

4. View your application using the Live Server extension. It should render like this:

Task 4: Distance (Kilometers to Miles) Conversion

1. Add another section, after the `weight` section, and set its `id` attribute to `distance`. Within this new section, insert the following:

- A div tag with its `id` set to `dst`
- A figure tag to represent the heading, having `img` and `figcaption` tags within it
    - Set the image source URL to be: "https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%20Labs/02%20-%20HTML5%20Elements/images/speedo.png"
    - Set the width of the image to be 200px
    - Set the caption to be "Kilometer to Mile Conversion"

```
<section id="distance">
    <!-- Distance conversion section -->
    <div id="dst">
        <figure>
            <img src="https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%
            <figcaption>Kilometer to Mile Conversion</figcaption>
        </figure>
    </div>
</section>
```

2. Inside the `<div id="dst">` tag, add the following tags:

- Article
- Fieldset
- Legend (set to "Distance")
- Input and output labels being Kilometers and Miles respectively
- Aside (with the calculation "km ÷ 1.609")

The structure and rest of the tags should be the same as in the `tmp` and `wgt` div tag

3. The `section id="distance"` tag should resemble the following:

```
<section id="distance">
     <!-- Distance conversion section -->
     <div id="dst">
         <figure>
             <img src="https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia
             <figcaption>Kilometer to Mile Conversion</figcaption>
         </figure>
         <article>
             <!-- This contains the specific elements for distance conversion -->
             <fieldset>
                 <legend>Distance</legend>
                 <!-- Label for Distance input -->
                 <label for="km">Kilometers</label> <br/>
                 <input type="number" id="km"> <br/>
                 <!-- The conversion button -->
                 <button id="distance"> Convert </button> <br/>
                 <!-- Label for Distance output -->
                 <input type="number" id="miles"> <br/>
                 <label for="miles">Miles</label>
             </fieldset>
         </article>
         <aside>
             To convert kilometers to miles yourself, use this formula replacing the `km` with your distance in kilometers: km &divide; 1.609
         </aside>
     </div>
</section>
```

4. View your application using the Live Server extension. It should render like this:

This completes all conversion calculators within the body tag.

Task 5: Add the page footer and home button

1. Add another div tag, below the `all-conversion-sections` div with attribute id set to **go-home**, to navigate to the top of the page. Copy and paste the following code in the div, to render a button with a home icon.

```
<div id="go-home">
    <a href="#home">
        <img src="https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%20La
    </a>
</div>
```

2. Add a footer tag (shown below) inside the body tag, after the go-home div tag. This will be give some information to the user on where to look for more course details.

   ```
   <footer>Learn more about HTML as a part of the IBM Fullstack Cloud Developer Certification</footer>
   ```

3. Save the completed code in `index.html`.

▶ Click here to see the completed code

4. The final application should render like this:

With this, the code for the HTML5 elements is complete.

You will learn to add some styling and actionable scripts to this page in the later part of the course.

Congratulations! You’ve successfully completed this lab

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