

Hands-on Lab: Unit Conversion using HTML5 Structural Elements

In this lab, you will be creating a simple web page Unit Converter application that converts metric units to imperial units. The page will be divided into three sections, each of which will do one of the following:

- Convert temperature from Celcius 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 strcuture 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.

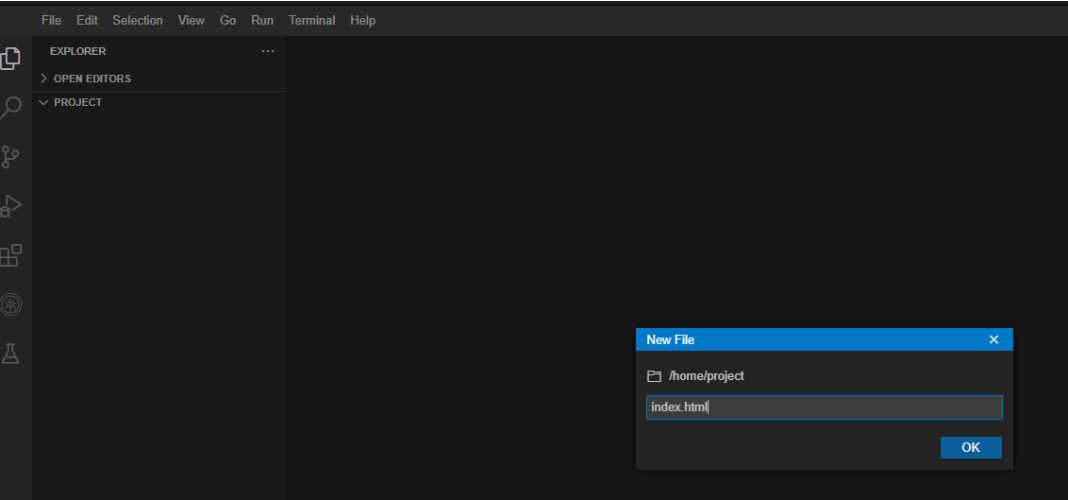
Bonus section: Adding CSS styling

Task 1: Create the basic app strcuture

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 menu, clicking on File -> New file, 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

```
<!DOCTYPE html>
<html>
  <head>
    <!-- This is your page title that appears on the browser window or tab -->
    <title>Unit Conversions</title>
  </head>
  <body>
    <section id="home">
      <!-- This is the main heading -->
      <header><b>Unit Conversions</b></header>
    </section>
  </body>
</html>
```

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. *ids* 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 the anchor tag for redirecting to its corresponding section (temperature) -->
  <a href="#temperature"><button>Temperature</button></a>
  <!-- Button for the anchor tag for redirecting to its corresponding section (weight) -->
  <a href="#weight"><button>Weight</button></a>
  <!-- Button for the anchor tag for redirecting to its corresponding section (distance) -->
  <a href="#distance"><button>Distance</button></a>
</nav>
```

6. Save your code.

▼ Click here to see how your code should look so far:

```
<!DOCTYPE html>
<html>
  <head>
    <!-- This is your page title that appears on the browser window or tab -->
    <title>Unit Conversions</title>
  </head>
  <body>
    <section id="home">
      <!-- This is the main heading -->
      <header><b>Unit Conversions</b></header>
      <nav>
        <!-- Button for the anchor tag for redirecting to its corresponding section (temperature) -->
        <a href="#temperature"><button>Temperature</button></a>
        <!-- Button for the anchor tag for redirecting to its corresponding section (weight) -->
        <a href="#weight"><button>Weight</button></a>
        <!-- Button for the anchor tag for redirecting to its corresponding section (distance) -->
        <a href="#distance"><button>Distance</button></a>
      </nav>
    </section>
  </body>
</html>
```

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>
  
  <figcaption>Celsius to Fahrenheit Conversion</figcaption>
</figure>
```

Next you will complete the following:

- 1. Display **temperature** as a heading
- 2. Create two input fields and two labels
- 3. 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>
    
    <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="Temperature">Celsius</label> <br/>
  <input type="number" />
  <!-- Label for Temperature output -->
  <input type="number" />
  <label for="Temperature">Fahrenheit</label>
</fieldset>
```

The input field uses the label attribute to provide a name to the user input and the type attribute for specifying the input type (e.g. text, number, etc.)

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

```
<fieldset>
```

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

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

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

Save the updated code and check the page

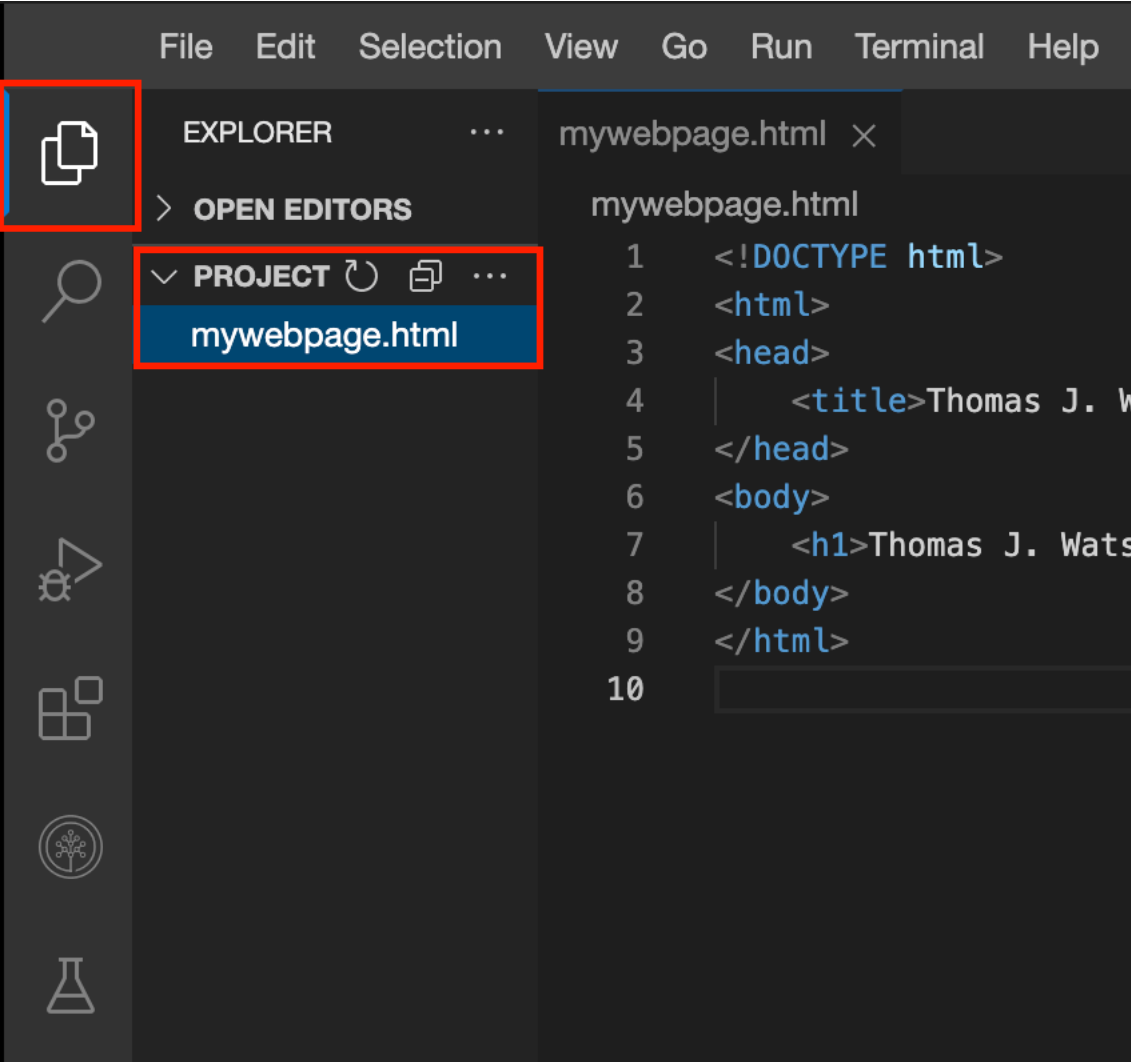
1. Save the code updated so far.

▼ Click here to see the code:

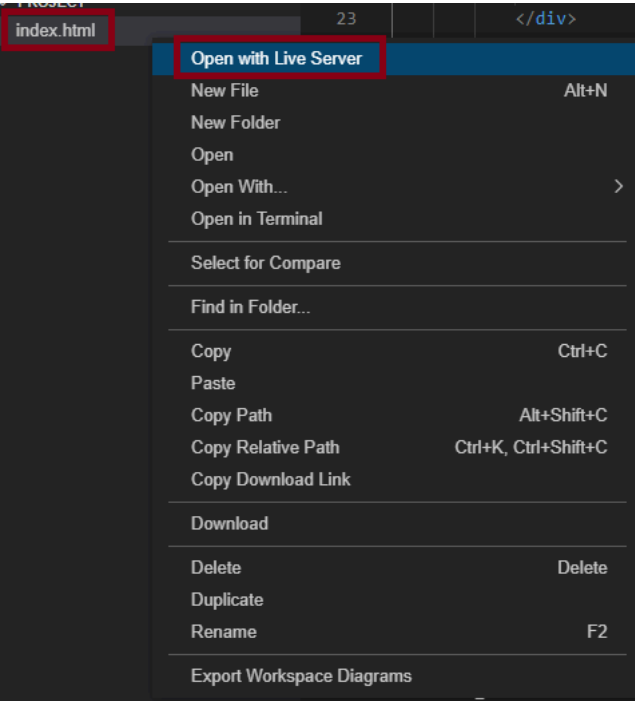
```
<!DOCTYPE html>
<html lang="en">
<head>
  <!-- This is your page title that appears on the browser window or tab -->
  <title>Document</title>
</head>
<body>
  <section id="home">
    <!-- This is the main heading -->
    <header>
      Unit Conversions
    </header>
    <nav>
      <div>
        <!-- Button for the anchor tag for redirecting to its corresponding section (temperature) -->
        <a href="#temperature"><button>Temperature</button></a>
        <!-- Button for the anchor tag for redirecting to its corresponding section (weight) -->
        <a href="#weight"><button>Weight</button></a>
        <!-- Button for the anchor tag for redirecting to its corresponding section (distance) -->
        <a href="#distance"><button>Distance</button></a>
      </div>
    </nav>
  </section>
  <div id="all-conversion-sections">
    <section id="temperature">
      <div id="tmp">
        <figure>
          
          <figcaption>Celcius to Farenheit Conversion</figcaption>
        </figure>
        <article>
          <!-- This contains the specific elements for temperature conversion -->
          <fieldset>
            <legend>Temperature</legend>
            <!-- Label for Temperature input -->
            <label for="Temperature">Celsius</label> <br/>
            <input type="number" id="c"> <br/>
            <!-- The conversion button -->
            <button onclick="temperature()"> Convert </button> <br/>
            <!-- Label for Temperature output -->
            <input type="number" id="f"> <br/>
            <label for="Temperature">Fahrenheit</label>
          </fieldset>
          </article>
          <aside>
            To convert celsuis to fahrenheit yourself, use this formula replacing the `C` with your temperature in celsuis: (C × 9/5) + 32
          </aside>
        </div>
      </div>
    </section>
  </div>
</body>
</html>
```

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

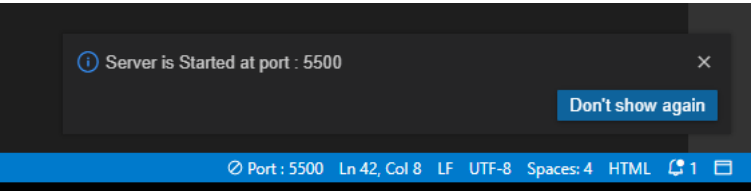
3. Open the file explorer and navigate to your file.



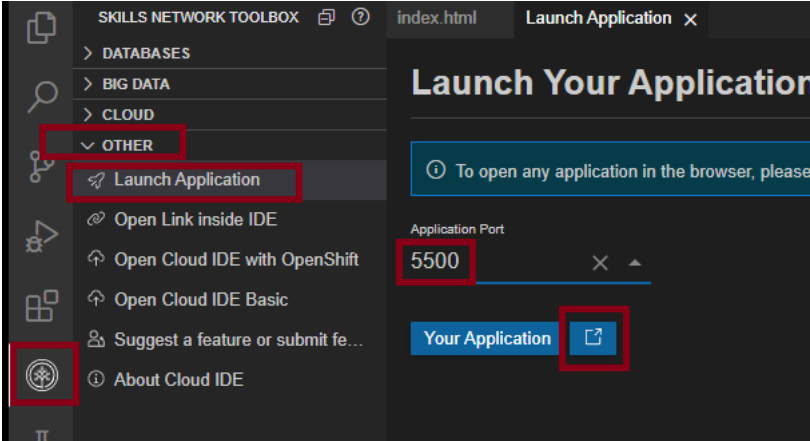
2. Right click on your file & click on ‘Open with Live Server’



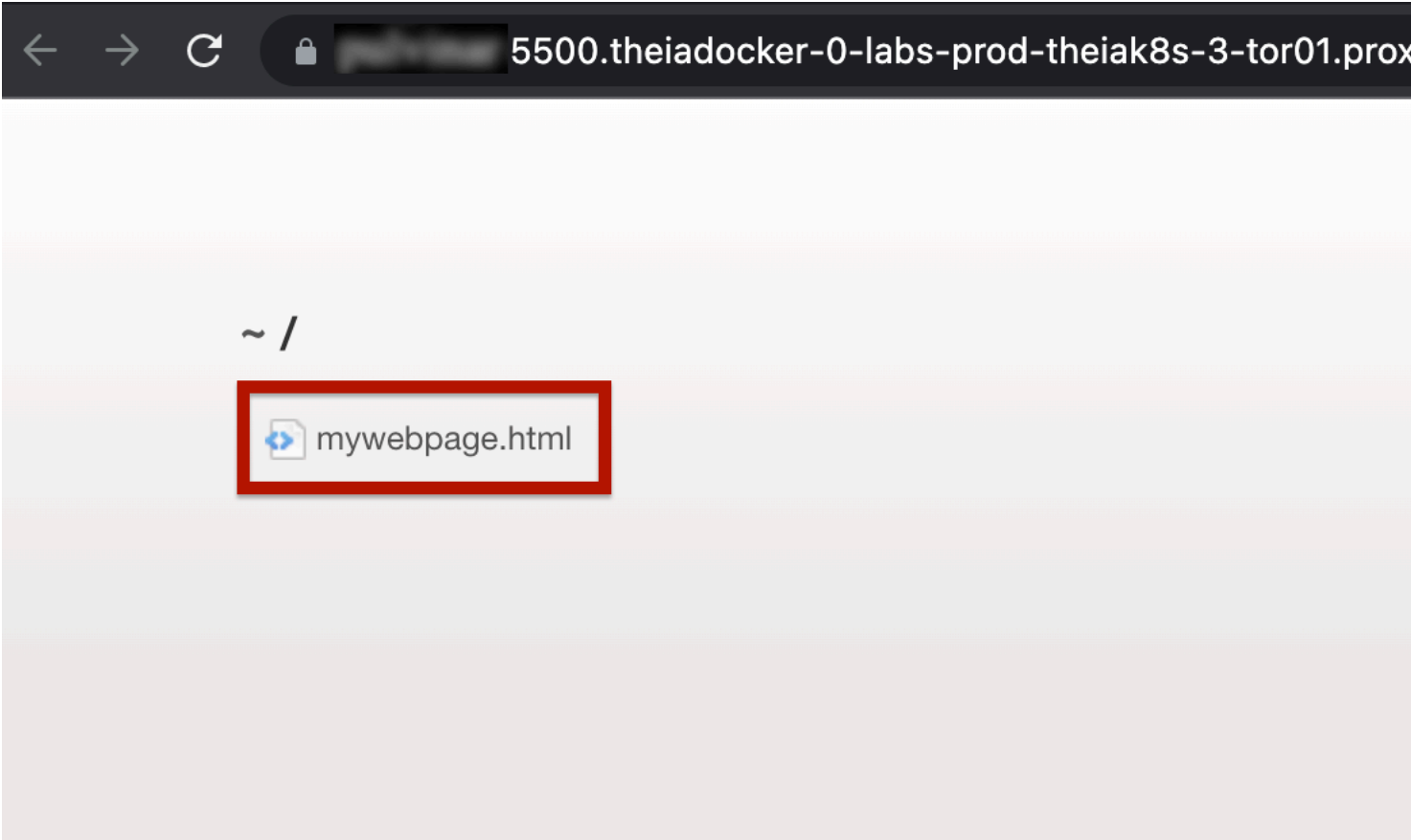
3. This should show a notification mentioning that the server has started on port 5500.



4. Click on the Skills Network button on the left to open the "Skills Network Toolbox". Click "Other" then "Launch Application". From there, enter



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



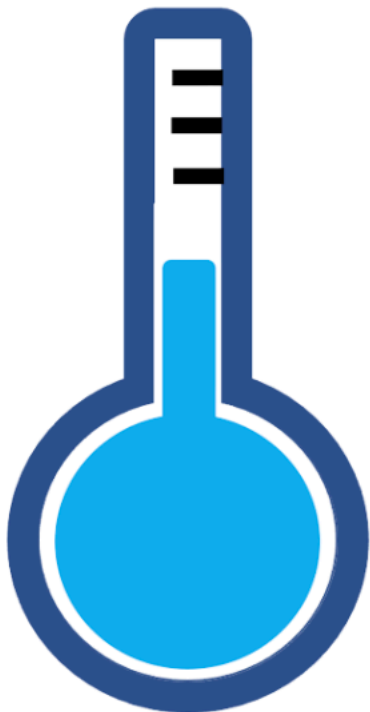
Your page should look like this:

Unit Conversions

Temperature

Weight

Distance



Celcius to Farenheit Conversion

Temperature

Celsius

Convert

Fahrenheit

To convert celsuis to fahrenheit yourself, use this formula replacing the `C` with you

Task 3: Weight (Kilograms to Pounds) Conversion

1. After the temperature section in the all conversions calculator 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/IBMDDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%20Labs/02%20-%20HTML5%20Elements/images/weight.png"

2. Set the width of the image to be 150px

3. Set the caption to be "Kilograms to Pounds Conversion"
2. Inside the <div id="wgt"> tag, add the following tags:
1. Article
2. Fieldset
3. Legend (set to "Weight")
4. Input and output labels being Kilograms and Pounds respectively
5. 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">
  <div id="wgt">
    <figure>
      Kilogram</label> <br/>
        <input type="number" id="kg"> <br/>
        <!-- The conversion button -->
        <button onclick="weight()"> Convert </button> <br/>
        <!-- Label for Weight output -->
        <input type="number" id="lbs"> <br/>
        <label for="Weight">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:

Unit Conversions

Temperature

Weight

Distance



Celcius to Farenheit Conversion


Temperature

Celsius

Convert

Fahrenheit

To convert celsuis to fahrenheit yourself, use this formula replacing the `C` with your temperature in celsuis: $(C \times 9/5) + 32$



Weight Conversion

Weight

KG

Convert

Pounds

To convert kilograms to pounds yourself, use this formula replacing the `kg` with your weight in kilograms: $kg \times 2.205$

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:
1. A div tag with its `id` set to `dst`

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/speedo.png"
 2. Set the width of the image to be 150px
 3. Set the captation to be "Kilometers to Miles Conversion"

```
<section id="distance">
  <div id="dst">
    <figure>
       tag, add the following tags:



- 1. Article
- 2. Fieldset
- 3. Legend (set to "Distance")
- 4. Input and output labels being Kilometers and Miles respectively
- 5. 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">
 <div id="dst">
 <figure>
 Kilometers</label>

 <input type="number" id="km">

 <!-- The conversion button -->
 <button onclick="distance()"> Convert </button>

 <!-- Label for Distance output -->
 <input type="number" id="m">

 <label for="Distance">Miles</label>
 </fieldset>
 </article>
 <aside>
 To convert kilometers to miles yourself, use this formula replacing the `km` with your distance in kilometers: km ÷ 1.609
 </aside>
</div>
</section>
```

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

Unit Conversions

- Temperature
- Weight
- Distance



Celcius to Farenheit Conversion

Temperature

Celsius

Convert

Fahrenheit

To convert celsuis to fahrenheit yourself, use this formula replacing the `C` with your temperature in celsuis:  $(C \times 9/5) + 32$



Weight Conversion

Weight

KG

Convert

Pounds

To convert kilograms to pounds yourself, use this formula replacing the `kg` with your weight in kilograms:  $kg \times 2.205$



Kilometers to Miles Conversion

Distance

KM

Convert

# Miles

To convert kilometers to miles yourself, use this formula replacing the `km` with your distance:

This completes all conversion calculators within the body tag.

## Task 5: Add the page footer and home button

1. Add another div tag with attribute id set to **go\_home**, to navigate to the top of the page and copy and paste the following code in the div. This will render a button with a home icon.

```
<div id="go_home">

</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 and CSS as a part of IBM Fullstack Cloud Developer Certification</footer>
```

3. Save the completed code in index.html.

▼ Click here to see the completed code

```
<!DOCTYPE html>
<html lang="en">
 <head>
 <title>Document</title>
 </head>
 <body>
 <section id="home">
 <header>
 Unit Conversions
 </header>
 <nav>
 <div>
 <button>Temperature</button>
 <button>Weight</button>
 <button>Distance</button>
 </div>
 </nav>
 </section>
 <div id="all-conversion-sections">
 <section id="temperature">
 <div id="tmp">
 <figure>
 Celcius to Farenheit Conversion</figcaption>
 </figure>
 <article>
 <fieldset>
 <legend>Temperature</legend>
 <label for="Temperature">Celsius</label>

 <input type="number" id="c">

 <button id="temperature"> Convert </button>

 <input type="number" id="f">

 <label for="Temperature">Fahrenheit</label>
 </fieldset>
 <aside>
 To convert celsuis to fahrenheit yourself, use this formula replacing the `C` with your temperature in celsuis: (C × 9/5) + 32
 </aside>
 </article>
 </div>
 </section>
 <section id="weight">
 <div id="wgt">
 <figure>
 Weight Conversion</figcaption>
 </figure>
 <article>
 <fieldset>
 <legend>Weight</legend>
 <label for="Weight">KG</label>

 <input type="number">

 <button id="weight"> Convert </button>

 <input type="number">

 <label for="Weight">Pounds</label>
 </fieldset>
 <aside>
 To convert kilograms to pounds yourself, use this formula replacing the `kg` with your weight in kilograms: kg x 2.205
 </aside>
 </article>
 </div>
 </section>
 <section id="distance">
 <div id="dst">
 <figure>
 Distance Conversion</figcaption>
 </figure>
 <article>
 <fieldset>
 <legend>Distance</legend>
 <label for="Distance">KM</label>

 <input type="number">

 <button id="distance"> Convert </button>

```

```

 <input type="number">

<label for="Distance">Miles</label>
 </fieldset>
 <aside>
 To convert kilometers to miles yourself, use this formula replacing the `km` with your distance in kilometers: km ÷ 1.609
 </aside>
</article>
</div>
</section>
</div>
<div id="go-home">

 <img src="https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-CD0101EN-SkillsNetwork/labs/Theia%20La

</div>
<footer>Learn more about HTML and CSS as a part of IBM Fullstack Cloud Developer Certification</footer>
</body>
</html>
```

4. The final application should render like this:

Unit Conversions

- Temperature
- Weight
- Distance



Celcius to Farenheit Conversion

Temperature

Celsius

Convert

Fahrenheit

To convert celsuis to fahrenheit yourself, use this formula replacing the `C` with your temperature in celsuis:  $(C \times$



Weight Conversion

Weight

KG

Convert

Pounds

To convert kilograms to pounds yourself, use this formula replacing the `kg` with your weight in kilograms:  $kg \times$



Kilometers to Miles Conversion

Distance

KM

Convert

Miles

To convert kilometers to miles yourself, use this formula replacing the `km` with you



## Learn more about HTML and CSS as a part of IBM Fullstack Cloud Developer Certi

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

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

Congratulations! You’ve successfully completed this lab

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### Other Contributor(s)

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### Changelog

Date	Version	Changed by	Change Description
2022-10-18	1.0	Samaah	Lab and initial version created
2022-10-21	1.1	K Sundararajan	Updated instructions based on SME feedback
2022-10-24	1.2	Michelle Saltoun	Updated lab grammar and content

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