

1. In your text editor, open **index.htm** from the HandsOnProject2-1 folder in the Chapter02 folder. Enter your name and today's date where indicated in the comment section in the document head.
2. At the bottom of the document, before the closing `</body>` tag, enter `<script>`, insert a blank line, and then enter `</script>` to create a new script section.
3. Within the script section you created in the previous step, enter the following function.

```
1 function convert() {  
2     var degF = document.getElementById("fValue").value;  
3     var degC = degF - 32 * 5 / 9;  
4     document.getElementById("cValue").innerHTML = degC;  
5 }
```

This function, named `convert()`, starts by looking up the Fahrenheit value entered by users and assigning it to a variable named `degF`. It then performs calculations on `degF` to arrive at the Celsius equivalent, which is assigned to a variable named `degC`. Finally, it assigns the value of `degC` as the `innerHTML` value of the element with the `id` value `cValue`.

4. Below the closing `}` for the `convert()` function, but before the closing `</script>` tag, enter the following statement to add an event listener:

```
document.getElementById("button").  
    addEventListener("click", convert, false);
```

5. Save your work, open **index.htm** in your browser, enter **-40** in the Enter temp in ° F box, and then click the **Convert to ° C** button. **-40° Fahrenheit** is actually equivalent to **-40° Celsius**. However, the formula incorrectly calculates that **-40° F** is equivalent to **-57.7° C**. This is because the calculations in the equation must take place in a different order than the order of precedence dictates.
6. Return to the **index.htm** file in your text editor, and then add two sets of parentheses to the first statement in the `convert()` function to modify the order in which the calculations are performed, as follows:

```
var degC = (degF - 32) * (5 / 9);
```

7. Save your work, refresh or reload **index.htm** in your browser, enter **-40** in the Enter temp in ° F box, and then click the **Convert to ° C** button. As Figure 2-18 shows, the temperature is now calculated correctly as **-40° C**.

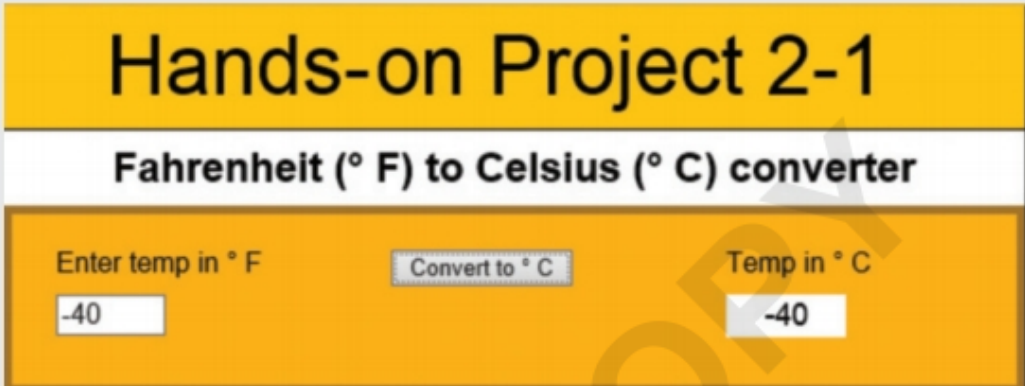


Figure 2-18: Fahrenheit to Celsius converter

### Hands-On Project 2-2

In this project, you'll create a script that uses logical operators and the conditional operator to give users feedback based on whether form fields are completed.

1. In your text editor, open **index.htm** from the HandsOnProject2-2 folder in the Chapter02 folder. Enter your name and today's date where indicated in the comment section in the document head.
2. At the bottom of the document, before the closing `</body>` tag, enter `<script>`, insert a blank line, and then enter `</script>` to create a new script section.
3. Within the script section you created in the previous step, enter the following function:

```
1 function submitInfo() {  
2     var name = document.getElementById("nameinput");  
3     var email = document.getElementById("emailinput");  
4     var phone = document.getElementById("phoneinput");  
5     (name.value && email.value && phone.value) ?   
6         alert("Thank you!") : alert("Please fill in all fields");  
7 }
```

This function starts by declaring three variables, which point to three web page elements. The remaining code is a single conditional expression. The statement to be tested for a Boolean `true` or `false` value checks if the element with the `id` value of `nameinput` is `truthy` (in this case, is not `""`), and `(&&)` if the element with the `id` of `emailinput` is `truthy`, and if the element with the `id` of `phoneinput` is `truthy`. If all of these statements are true, then the entire statement has the Boolean value `true`,

and an alert box is displayed with the text "Thank you!". If any of these statements is false, then the entire statement has the Boolean value `false`, and an alert box is displayed with the text "Please fill in all fields".

- Below the closing `}` for the `submitInfo()` function, but before the closing `</script>` tag, enter the following statement to add an event listener:

```
document.getElementById("submit").  
    addEventListener("click", submitInfo, false);
```

- Save your work, open **index.htm** in your browser, and then click the **Submit** button. The browser displays an alert box containing the text "Please fill in all fields" because the fields were all blank when you clicked the button. Click the **OK** button in the alert box, enter text in just the Name box, and then click **Submit**. The browser again displays an alert box containing the text "Please fill in all fields" because two of the fields were still blank when you clicked the button. Click the **OK** button in the alert box, enter text in all three fields, and then click **Submit**. As shown in Figure 2-19, the browser now displays an alert box containing the text "Thank you!" because none of the boxes were empty when you clicked the button. Click **OK**.

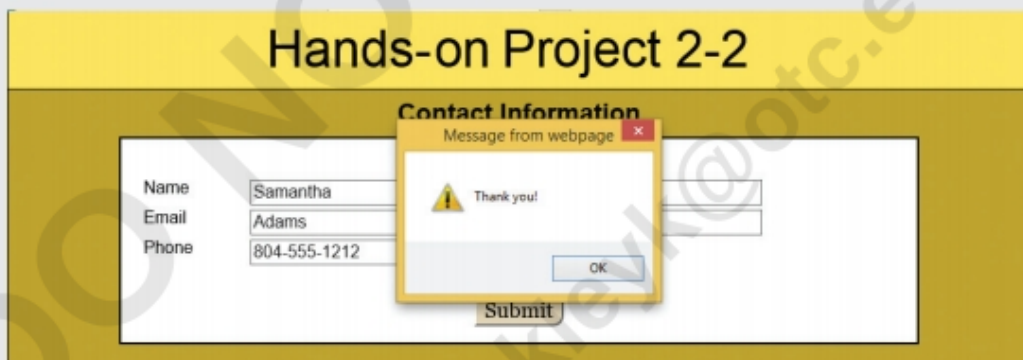


Figure 2-19: Thank you! alert box

### Hands-On Project 2-3

In this project, you'll create a script that displays an alert box containing a custom message based on the element a user clicks. Note that your result should work on all modern browsers, but will not work on IE8 or previous versions of IE.

- In your text editor, open **index.htm** from the **HandsOnProject2-3** folder in the **Chapter02** folder. Enter your name and today's date where indicated in the comment section in the document head.



2. Open **index.htm** in your browser. The web page displays three shapes: a square, a triangle, and a circle.
3. Return to your text editor. At the bottom of the document, before the closing `</body>` tag, enter `<script>`, insert a blank line, and then enter `</script>` to create a new script section.
4. Within the script section you created in the previous step, enter the following event listener:

```
1 document.getElementById("square").  
2     addEventListener("click", function() {  
3         alert("You clicked the square");  
4     }, false);
```

This code adds an event listener to the element with the id of `square`. The code uses an anonymous function as the second argument for the `addEventListener()` method. When a user clicks the element, the anonymous function is executed, which generates an alert box containing the text "You clicked the square".

5. Below the event listener code you added in the previous step, but before the closing `</script>` tag, enter the following code to add event listeners for the remaining two shape elements:

```
1 document.getElementById("triangle").  
2     addEventListener("click", function() {  
3         alert("You clicked the triangle");  
4     }, false);  
5 document.getElementById("circle").  
6     addEventListener("click", function() {  
7         alert("You clicked the circle");  
8     }, false);
```

6. Save your work, refresh or reload **index.htm** in your browser, and then click the **square**. As Figure 2-20 shows, the browser opens an alert box that displays the text "You clicked the square". Click **OK**, and then repeat for the triangle and the circle. Each alert box should name the shape you clicked.

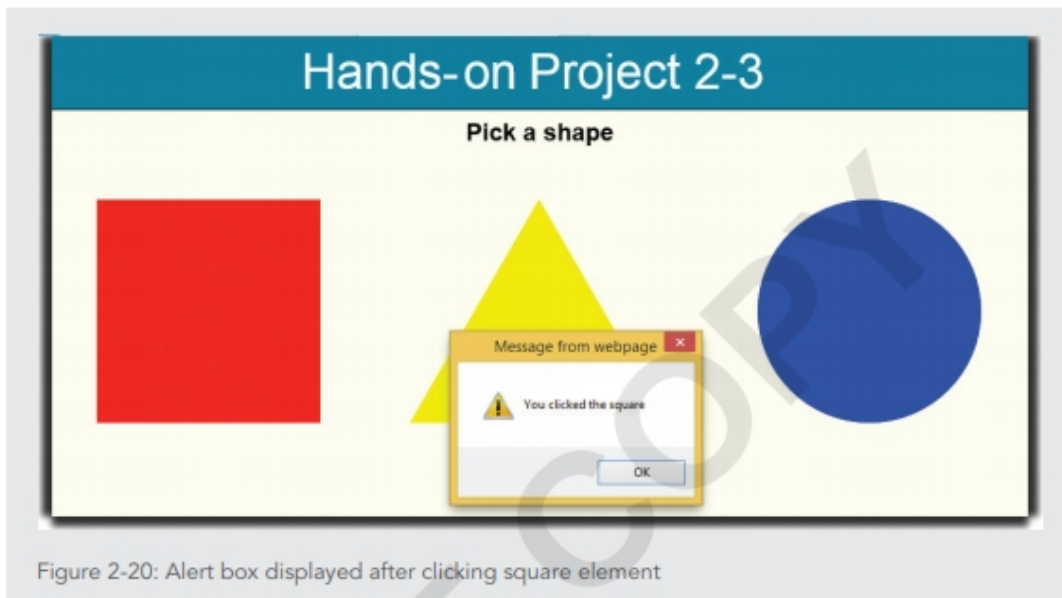


Figure 2-20: Alert box displayed after clicking square element

#### Hands-On Project 2-4

In this project, you'll create a script that totals purchases and adds tax. Note that your result should work on all modern browsers, but will not work on IE8 or previous versions of IE.

1. In your text editor, open **index.htm** from the HandsOnProject2-4 folder in the Chapter02 folder. Enter your name and today's date where indicated in the comment section in the document head.
2. Open **index.htm** in your browser. The web page displays a form with five check boxes and a Submit button. Each check box allows users to select an item from a lunch menu. You'll create a script that totals the prices of all the elements a users selects, adds sales tax, and displays the order total in an alert box.
3. Return to your text editor. At the bottom of the document, before the closing `</body>` tag, enter `<script>`, insert a blank line, and then enter `</script>` to create a new script section.
4. Within the script section you created in the previous step, enter the following function.

```
1  function calcTotal() {  
2      var itemTotal = 0;  
3      var item1 = document.getElementById("item1");  
4      var item2 = document.getElementById("item2");  
5      var item3 = document.getElementById("item3");
```

```
6     var item4 = document.getElementById("item4");
7     var item5 = document.getElementById("item5");
8     (item1.checked) ? (itemTotal += 8) : (itemTotal += 0);
9     (item2.checked) ? (itemTotal += 9) : (itemTotal += 0);
10    (item3.checked) ? (itemTotal += 8) : (itemTotal += 0);
11    (item4.checked) ? (itemTotal += 13) : (itemTotal += 0);
12    (item5.checked) ? (itemTotal += 6) : (itemTotal += 0);
13    var salesTaxRate = 0.07;
14    var orderTotal = itemTotal + (itemTotal * salesTaxRate);
15    alert("Your order total is $" + orderTotal);
16 }
```

The `calcTotal()` function starts by creating six local variables—`itemTotal`, and one variable storing a reference to each check box element. Each statement in lines 8–12 contains a conditional statement that evaluates whether one of the check boxes on the page is checked. If so, the price corresponding to that check box is added to the `itemTotal` variable; if not, 0 is added to the `itemTotal` variable. After examining the values of all the check boxes, the function declares two additional variables. The `salesTaxRate` variable specifies the percentage of the purchase price that must be added to the total for tax. In line 14, the value of the `orderTotal` variable is calculated by first multiplying `itemTotal` and `salesTaxRate` to determine the sales tax amount and then adding that amount to the `itemTotal` value. The function ends by generating an alert box containing the text “Your order total is \$” followed by the value of the `orderTotal` variable.

5. Below the closing `}` for the `calcTotal()` function, but before the closing `</script>` tag, enter the following code to add an event listener:

```
document.getElementById("submit").  
    addEventListener("click", calcTotal, false);
```

6. Save your work, refresh or reload `index.htm` in your browser, click the **Fried chicken** check box, and then click the **Submit** button. As Figure 2-21 shows, the alert box displays a total of \$8.56. Click **OK**.