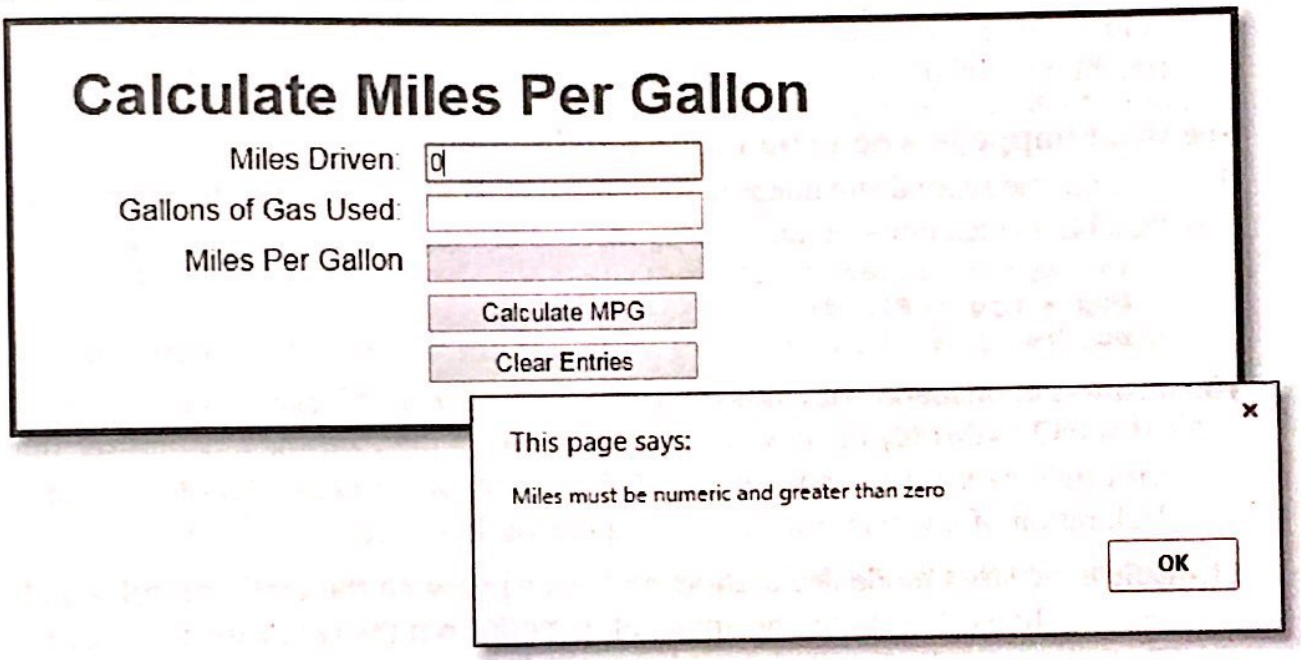
Exercise 4-1 Enhance the MPG application

In this exercise, you'll enhance the validation for the MPG application, and you'll provide for clearing the entries from the form.



If you have any problems when you're testing, remember to use Chrome's developer tools as shown in figure 1-16 of chapter 1.

Test the application

1. Open your text editor or IDE, and open this HTML file:

   `c:\javascript_jquery\exercises\ch04\mpg\index.html`

   Then, review the JavaScript code to see that it's the same as in figure 4-10.
2. Test this application with valid data to see how it works. When you click the Calculate MPG button, the correct result should be displayed.
3. Test the data validation routine. Note that one error message is displayed in an alert dialog box if either entry is nonnumeric or if either entry is less than or equal to zero.

Enhance the data validation

4. Modify the if-else statement that provides the data validation so it checks each text box separately. If the data in a text box is invalid, an error message should be displayed and the focus should be moved to that text box.
5. Test this change to be sure that a separate error message is displayed for a text box if it contains invalid data.

Provide for clearing the entries from the form

6. Add a Clear Entries button below the Calculate MPG button. To do that, copy the HTML for the label and input elements for the Calculate button, and paste it after the input element for the Calculate button. Then, modify the HTML for the Clear Entries button so it has a unique id and an appropriate value attribute.

7. Add a function expression named clearEntries() that clears the entries in the four text boxes. Then, add a statement in the onload event handler that attaches the clearEntries() function to the click event of the Clear Entries button.

8. Add a statement to the onload event handler that attaches the clearEntries() function to the double-click event of the miles text box. Then, test this change.

See what happens when you remove strict mode

9. Change the second statement in the calculateMpg() function as follows so the variable name is misspelled as *Mpg* instead of *mpg*.

```
var mpg = (miles / gallons);
Mpg = mpg.toFixed(1);
return mpg;
```

10. Test this application with valid entries, and note that it doesn't work. Then, press F12 to display the developer tools, click on the Console tab, and see this error message: Mpg is not defined. This shows that strict mode prevents the declaration of a variable without using the var keyword.

11. Delete the strict mode declaration, and test again with the 1000 for miles and 33 for gallons. This time, the application works, but the result isn't rounded. That's because the JavaScript engine treated Mpg as a new variable.

12. Restore the strict mode declaration and return the variable name to mpg. Then, test again to make sure the application is working.