CMSI 182

Introduction to Computer Science

Fall 2006

Assignment 1026

This assignment caps off our XHTML exploration by integrating it with the JavaScript programming language. This is a recurring theme in computer science — "interoperability" among multiple technologies.

For Submission

We start by interacting with the JavaScript scratch page on the course Web site, after which it will be your turn to make a full XHTML page + JavaScript program from scratch.

Training Wheels: JavaScript Scratch Page

Modify the first two programs that you wrote in Assignment 0921 (i.e., converting inches to centimeters and calculating the average of *n* numbers) so that the input values for these programs are derived from the entry fields of the JavaScript scratch page on the course Web site. In both cases, have your program use *Input 1* for the user's input.

- For the inches-to-centimeters conversion program, you will need the built-in *parseFloat()* function to convert the text that the user enters into a number that can be used for calculations.
- For the average of *n* numbers, have the user enter the numbers as a comma-separated list (e.g., "8, 12, 30, 40, 48, 29, 22"). Then, use the built-in *split()* method to convert this single piece of text into an *array* of separate items (e.g., "8," "12,", "30," etc.). Finally, you will need the *parseFloat()* again in order to convert the text into numbers.

  To use *split()* correctly, invoke it this way:

  ```
  var numberText = input1.value.split(", ");
  ```

  This will give back an *array* (see the *Operating Systems* handout and the midterm) consisting of the individual text items without the commas. Then, you can *loop* through this array in a manner similar to how we have done our sample "batch operating system" programs (handout, midterm).

Down the Rabbit Hole: Page *and* Program

Adapt the third program from Assignment 0921 — "make change" — into a *complete* XHTML + JavaScript combination:

- Create an XHTML page with a *form* that holds one text input field, labeled "Make Change for:" (refer to your October 19 notes as well as the JavaScript scratch page itself for pointers).
- Include a "Make Change" button in the form as well, such that clicking on this button will display, below the form (and *not* as an alert), the number of quarters, dimes, nickels, and pennies that are needed for the amount entered by the user.
- You will need the built-in *parseInt()* function to convert the user's text into a number.
- As a reminder, recall that the steps to designate a section of your Web page that can be modified by your JavaScript program are:
  1. Create a *span* with an *id* attribute.

     ```
     <span id="output"></span>
     ```

  2. To modify the content of this span, use the *getElementById()* method on the built-in *document* object then set its *innerHTML* property.

     ```
     document.getElementById("output").
         innerHTML = /* Result goes here. */;
     ```

How to Turn it In

Do the assigned work electronically, then:

1. E-mail the code and XHTML file to me, and
2. Submit hardcopy versions of these items.

Turn these in by the October 26 class.

Extra Credit

Look up and learn how to use the *for-in* loop (it looks like for (var i in array) { }) and use that instead of *while* in the average calculation program.

Extra Extra Credit

Allow the "make change" program to have *customized coin denominations* — that is, let the user modify the available set of coins with which to make change. For example, instead of the "25, 10, 5, 1" set that we use, the user might want to make change with "20, 15, 3, 2, 1" denominations.