Assignment 4 of CS-3715

Due on March 12, 2007

Note The assignment must be submitted before 9am, Monday, March 12th in the CS3715 class. The assignment must contain a cover page with the course name, and your student number. Late assignments will not be accepted. For the programming part, source code must be submitted on paper, and with submit-assignment. Source code should be commented in a reasonably informative manner, but not required to be in the javadoc format. For the written part, only hard copy needs to be submitted.

Written Part (0 marks)

Programming Part (20 marks)

- "Loan" – A trend in Web applications is to move computing intelligence from the server side to the client side. This can both reduce the work load of Web servers and shorten reponse time to users. One example is using JavaScript to perform HTML form validation before submitting data. In this assignment, you are asked to design a simple HTML page containing a form that takes input from user to calculate the loan based on a given formula using JavaScript. Since a user may enterinvalid information in certain input fields, your JavaScript program should also check the validity of each field after the user has changed it.

  Here are the requirements:

  1. Use the following formula to calculate the monthly payment R (rent) based on the users input of principal P, monthly interest rate r (yearly rate divided by 12), and the number months in the loan term n.

     $$R = P \cdot \frac{r}{1 - \frac{1}{(1+r)^n}}$$

  2. When the user clicks the "Calculate" button in the form, your JavaScript program should display the three calculated values: the monthly payment, sum of all the payments in the term, and total interest paid, if the inputs are valid.

3. Each field of the form that accepts user input should be validated. Here, we adopt one of the two usual approaches, i.e. field-by-field validation. To do that, each input that needs validation is assigned a validation function to handle the `onchange` event. (For this assignment, you are allowed to use three different landler for the three input fields.) In addition to each field being a string that can be parsed to a numeric value, a handler takes this value and tests if it satisfies the following.
   - For the principal, any value between 0 and 10,000,000 is allowed.
   - For the interest rate, any value between 0 and 100 is allowed.
   - For the loan term, any integer between 1 and 720 is allowed.

   These requirements are also included in the label of the corresponding input elements in the HTML page. When a validation is failed for a field, its requirement should be displayed in red bold face. Otherwise, it is displayed in regular (e.g. black) color and face. You should implement this by changing the CSS style.

Separate your JavaScript code and CSS style sheets from your HTML file. Your submission should include these three files.