Lab #5
CSCI 201

Title
Form Validation with Servlets, JSPs, and AJAX

Lecture Topics Emphasized
HTML
JavaScript
Servlets
JSP
AJAX

Introduction
In the previous lab, you validated the form in a servlet then redirected to a JSP to display error messages. Since AJAX has come into existence, there is no reason to submit to the servlet and refresh the entire page. Instead, we can send the data to the servlet and receive the response without having to refresh the entire page. We can display error messages next to the appropriate fields, making a smoother user experience.

Description
This lab is going to build on the previous lab. The only difference will be how the data is validated. When the user clicks the Submit button on the form, instead of submitting the form to a servlet, you will call a JavaScript function. That function will send all the data to a servlet and receive the response. The response will either contain the error messages of the fields that were invalid OR no error messages (meaning that the page should be submitted).

We will be using AJAX for form validation, meaning that the form no longer needs to be submitted to the servlet for validation. Go to your initial form page in Lab 4, and modify the action attribute in the form tag, so that the form will be submitted to your result page directly.

Now, we need to implement the AJAX validation. The onsubmit attribute in a form tag specifies the JavaScript function to call before submitting the form to the action attribute. The specified JavaScript function can also stop a form from submitting by returning false, though the default value is true (i.e. if you don’t return anything in your JavaScript function, the form will be submitted). Refer to the lecture slides and implement AJAX in the JavaScript function. Make sure you are using the synchronous AJAX call.

Please note that even though the AJAX call is triggered by the onsubmit attribute in the form tag, it is a separate request happening behind the scenes, and the request does not have access to the form fields. So, make sure you are using the GET method, and append the form fields to the URL as parameters, which will be used later in the servlet for form validation.
We will also need to modify the servlet. Instead of forwarding the user to appropriate pages, we now need to return a response. Use the PrintWriter to write your response. The response.getWriter() method returns a PrintWriter object. Make sure you flush and close the writer at the end.

Note that when we submit a form through the GET method, the form fields are actually being appended to the URL as parameters behind the scenes. To get the parameters in the servlet, you will use request.getParameter().

---

Go back to the initial form page. You will need to check the response in your JavaScript function. If there are error messages returned, the error messages should be printed at the top of the form. (If you want a little more of a challenge, you can print the error messages next to their respective fields instead.) Remember to return false in your JavaScript function if there are error messages, so that the form does not get submitted to the result page.

If there are no error messages, the form should submit to the result page that will display all the data. No modification is necessary for the result page.

NOTE: In the previous lab, you had to place all the data back into the form if there were any errors. Since we have never left the page that contains the form, you won’t need to do that in this lab. The data will still be shown in the form fields.

**Grading Criteria**
Labs are graded based on your understanding of the course material. To receive full credit, you will need to 1) complete the lab following the instructions above **AND** 2) show your understanding of the lab material by answering questions upon check-off.

If there is a discrepancy between your understanding of the material and your implementation (i.e. if your code is someone else’s work), you will receive a grade of 0 for the lab. Please note, it is the professor’s discretion to report the incident to SJACS.
Check-off Questions
Instructors, please randomly select one question from each section.

Question 1
a) Why do we need to manually append the form fields to the URL? Please explain using your own words.
b) What happens if we do not append the form fields to the URL? Please explain using your own words.

Question 2
a) Why do we need to take out the `forward()` method in the servlet?
b) Where does the redirect happen in this lab?
c) In this lab, is the form validation done on the server or the client? Please explain.
d) Draw a flow chart to illustrate the relationship among the three files.

Question 3
a) Why do we make the AJAX call synchronous in this lab? Please explain.
b) Are we able to use other functionalities on the page while the servlet is validating the form fields? In other words, is the page frozen? Please explain.
c) Can we use asynchronous AJAX calls for form validation? Please explain.