Assignment 3 of CS-3715

Due on February 26, 2007

Note The assignment must be submitted before 9am, Monday, February 26th 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)

- "Déjà vu"

  HTTP, per se, is considered stateless because the content of an HTTP reply is solely determined by its request. Such a request/reply pair is referred to as an HTTP *transaction*. For Web applications to function correctly, we often need to group multiple transactions into a single *session* in order to complete an operation that requires multiple steps. Thus, we must enhance the intelligence of either client or server side (or both) to "remember" these steps in a session. CGI is an ideal platform to realize such a capability enhancement. A typical technique for this is to use *hidden elements* of an HTML form to convey information, as mentioned in class. In this assignment, you are required to enhance a pizza order example to maintain a Web application session of three steps. The technique you need to demonstrate here is the use of hidden form elements.

  Consider a pizza order application:

  `http://www.cs.mun.ca/cgi-bin/user-cgi/~yzchen/cs3715/a3/pizza.cgi`

  This Web application consists of a single script called `pizza.cgi`. The first page it shows is a form to customize a pizza. After clicking "Submit order", the same script is invoked with an additional query string describing your customized pizza. For this second time of invocation, `pizza.cgi` generates another page to summarize the order.

The script, spawned as the same CGI program, is able to differentiate these two invocations by processing the query string submitted with the URL. In particular, if the query string is empty, it generates an order form to send to the standard output. If it is not empty, it parses the string to customize the pizza and sends the result as a different HTML page. As you can see, the second page describes the size, toppings, and price of the ordered pizza.

More than often, a Web application generates a "confirmation page" before a final purchasing is made. Here, you are asked to use Java to design a CGI program that adds a confirmation page (as in Figure 1) to the program pointed by the above URL. In this page, the user can input the name and phone number for pizza delivery. In addition, your CGI records such information in a log file for future processing (Figure 2). After the the "Confirm Order" button is clicked, your CGI program is invoked and it generates a final page as in Figure 3.

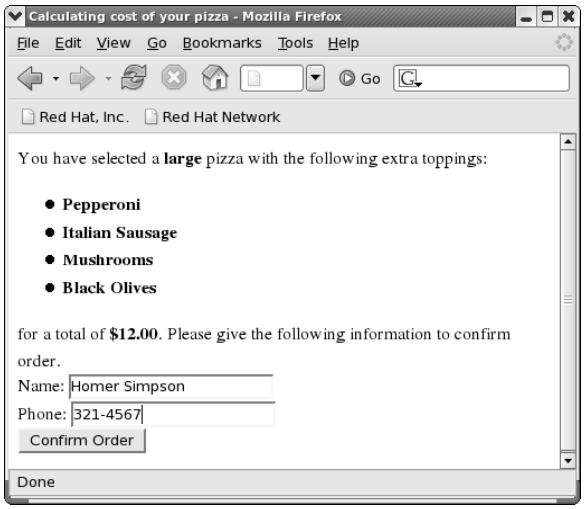

Figure 1: Confirmation page.

To use hidden form elements to convey information, your CGI program should embed a hidden `input` element with a specific name/value pair. Such a name/value pair will be included as part of the query string next time when the form is submitted. For example, as output of the first invocation of `pizza.cgi`, you can include `<input type="hidden" name="stage" value="confirmationpage">` in the *first* page. Such a hidden element will not be shown in the pizza order form but it will hint `pizza.cgi`, when it is invoked for the second time, that the session will proceed to step two. Similarly, the output of the second invocation of `pizza.cgi` can include `<input type="hidden" name="stage" value="final">` in the *confirmation* page. With such information available in the query string, your program should parse for such an element to direct its flow control for different stages of the session.

Remember that the third (final) page summarizes the pizza order, e.g. the size, top-

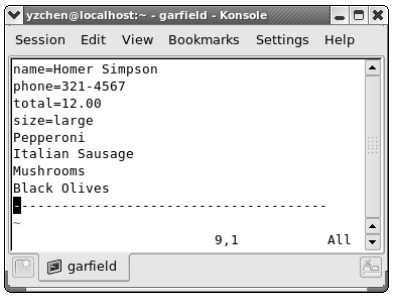

Figure 2: Log file.

pings and price. For the order information to be available to the third invocation of `pizza.cgi`, such information also needs to be embedded in hidden form elements output by the second `pizza.cgi` invocation.

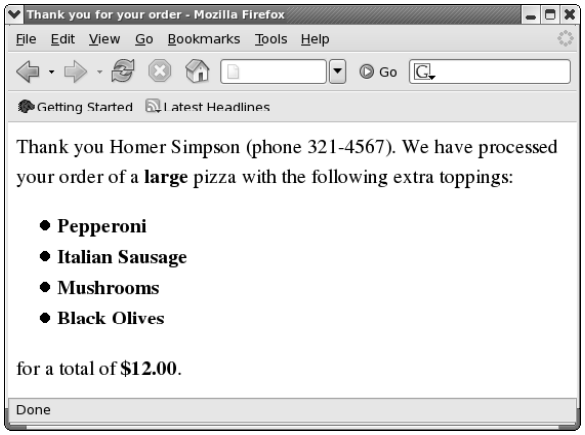

Figure 3: Final page.

Your assignment should implement the following two components:

- A core Java program (and its invoking bash script) to complete the three-step pizza purchasing session. Three different HTML pages should be generated by your program. The first page is the same as that of the 2-step example provided. The second page should resemble Figure 1. The third page should resemble Figure 3. Put it on the Departments Web server and provide a URL for execution.
- Logging. After an order is confirmed, your CGI program should record the purchase in a log file as illustrated previously. When writing to the log file, it must be locked.

Submit your assignment both as hard copy and electronically.