Implementing a Prototype Secured Web Information System via Servlet and XML

Objective: To obtain experience in building a secured Web information system

What to do?

As we rely more on the Internet, Internet security has become extremely important for us. It is obvious that Internet can bring us convenience and colorful life. However, without good security, Internet could bring us more troubles than benefits. Therefore, it is especially important for the designers of Web information systems to keep users' personal information highly confidential.

In this assignment, the students will investigate and grasp some advanced issues on security for the Web information system. The major objective is to build a secured Web information system by utilizing XML and Servlet. Experiments and analyses should be conducted in this assignment. The programming component of this assignment consists of two parts: (1) creating dynamic Web pages; (2) building a prototype secured Web information system.

The secured Web information system includes a login page with two fields (user ID and password) and information content pages with a logout button on each content page. The information content pages should be organized in a tree or network structure by hyperlinks. The most critical issue in this assignment project is Web security. The student will learn how to solve these problems in a real application. For example, (1) A user cannot get into the secured Web information system after logout by clicking on the browser's back button or typing in the URL address directly; (2) The user has to login using user ID and password in order to get into the secured website after logout; (3) All the URL addresses of the secured Web information system need to be protected; (4) The image files of secured Web pages shouldn't be allowed to save on the client's local machine; (5) After closing the browser, the user cannot get into the secured Web information system without login again; (6) Users cannot copy and paste the text information on the secured Web pages; (7) Secured pages should not be able to be printed, for example, by using a browser's print function; (8) Information on the server side should be protected. For example, the user cannot use "view source" function to find where the image files are stored on the server and how the secured Web pages are implemented. We strongly suggest that better solutions to these Web security problems listed above should be done on the server side instead of on the client side.

What to submit?

You should submit the following items:

1. The assignment report that describes your secured information website, the Web address of your website, several test cases, the design of your programs and the analysis of your design and implementation.
2. The programs for implementing a prototype secure Web Information system, XML documents, DTD file and XSL style sheets.
3. A file called README.txt where you give a tutorial about how to compile and run your programs.

How will you be graded?

The following will play a crucial role in your grade for this assignment.

1. Correctness of programs for building a prototype secured Web Information system and creating dynamic Web pages.
2. Your assignment report should include introduction, description of your information website, description of your implementation in particular about how to solve and address the above problems, and analysis of the results.
3. Your group class presentation for the project.
4. Security of your information Web sites and justification of your proposed solutions to solve the security problems.
5. Clarity of your programs (comments!).
6. Ease of using README to evaluate your programs and results.
7. Your collaborations with your team members.

The full mark for this assignment is 25. Your programs and assignment report account for 15 marks. Your team presentation accounts for 5 marks. The group-peer marking from your team members accounts for 5 marks.