CIS 700 Electronic Voting Laboratory Exercise and Assignment

This 2.5 hour laboratory is intended to give the students first-hand experience with the multitude of issues related to use of open software in the creation and deployment of an electronic voting system.

This assignment is due at the beginning of class (before the exam) on Wednesday, August 13, 2008. There will be NO extensions. (Although, if you have some truly bona fide, documentable, extenuating circumstances that prevent you from turning in your report on time, contact Dr. Mercuri BEFORE the assignment is due.) Provide both a paper copy of your report AND ALSO email your report as a .doc or .pdf to Dr. Mercuri.

Note: This project has the potential of being frustrating! The developers of the two voting systems (that we are trying out) claim that fairly ordinary people (i.e. election officials) should be able to set up and run elections using the materials they have provided. Others disagree. Part of this laboratory involves determining whether a team of above average people (i.e. students in this class) can successfully use the instructions they've provided to set up a voting system, vote, and audit the election. The important part of this lab is that you try as best as possible to accomplish the goals, but if you are unsuccessful, your report will detail the problems you encountered. Your grade on the report will based on how hard your group tried to get your system to work, and how well you documented what you experienced, not whether it actually worked or not. Think of it like Donald Trump's (and he is a Penn alum!) Apprentice teams, and don't "get fired"!

For this lab exercise we will be using two different voting products – OVC and Scantegrity. The class will divide itself into research teams of 3 people (4 is OK but only with permission from Dr. Mercuri). The teams will be "randomly" assigned one of the voting products by Dr. Mercuri. Approximately half of the teams will be using OVC and the other half will be using Scantegrity. The challenge is, in (hopefully) less than 2 hours, to set up and test the voting product you have been assigned. During the last half-hour of the lab, teams will be "randomly" paired so that there will be a pair of teams with a voting system of each type. The OVC team will show the Scantegrity team in their pair how to vote on the OVC voting system and they will try it out (by voting in a very small election). Then the Scantegrity team will show the OVC team how to vote on the Scantegrity voting system and they will try it out (etc.). Each person in the teams will be expected to fully participate in figuring out how to set up their voting system and help the voters use it. If your team was unable to get your voting machine to function, then you should explain to the other team how they were SUPPOSED to have voted, if it had worked. You can use additional materials in the websites for the voting products (see the course website for links to these) in order to assist your explanation to the voters.

The written (preferably printed by a computer) report (that EACH person will turn in – your report is NOT a collaborative project and must be created independently by each student) must include the following information/answers:

A. Your name, the names of the team members you worked with on your voting product, and the names of the voters who voted on your voting product.

B. Identify which voting product you set up, and which team's (the names of the members of that team) voting product you "voted" on.

C. Your report must include YOUR answers (in paragraph form, although corroborating diagrams can be used, this is in addition to text and is not necessary) to the best of your ability, to ALL parts of EACH of the following questions (note that you do NOT, and probably SHOULD NOT, have to agree with, or even know about, the answers given by other members of your team, or by the members of the team that voted on your voting system). Please refer to the below questions by number in your report:

1. Was your team able to set up an election and get your voting product to work? If not, what aspects were not working and what do you believe were the obstacles that prevented it from working.
2. How difficult did you think it was to follow the instructions to create your team's voting product? Explain.
3. Do you believe that someone who was non-technical, but who had some basic computer and Web skills would be able to create this voting product for use in a real election? Why or why not?
4. Do you believe that your voting product was open source? Why or why not? If it was open source, did you review any of the code? Describe what you found.
5. What aspects of election security do you believe your voting product provides? Explain and give examples.
6. What vulnerabilities do you believe your voting product has? In other words, what aspects of your voting product do you believe could be tampered with, altered, and so on, in such a way that it could affect the election outcome? How would this be done? Address specific aspects and try to "prove" your claims. Would the tampering be detectable? If so, how easily? If not, why not? Would the tampering be possible by individuals who created the system for use (such as an election official), by the voters (or non-election officials), by the organization or people who first developed the product? Explain in detail.
7. Explain how your team tested its voting product before the other team voted on it. Do you believe the testing your team used was comprehensive? Why or why not? Were any flaws or limitations of the product revealed by the testing? Explain.
8. Were you able to conduct a successful election with another team's members as voters? How do you think they found the experience (easy, hard, ...)? Briefly describe what occurred in the election. If you were not able to conduct an election, briefly describe what you presented the other team during the voting session.
9. Was your team able to vote on another team's voting product? How did you find the experience (easy, hard, ...)? Briefly describe what occurred. How well do you think the other team trained you (or explained) how to vote on their product? Do you believe the other team's voting product to be vulnerable to tampering? What aspects? Did you try to tamper with it? Explain.
10. Do you think the voting product your team created was better or worse than the voting product your team voted on? Explain.