CS 33006   **Final Exam**   **Social & Ethical Issues**

Friday 14 May 2010

1. **In some cases, it may be legal to reproduce a copyrighted work without permission under "fair use". What factors are considered in determining whether or not "fair use" applies? (10 points)**

   The courts typically consider the purpose and character of the use, the nature of the copyrighted work, the amount of the work being copied, and the affect on the market for the work. "Fair use" is more likely to apply if the reproduction is for educational purposes, is nonfiction, is an except rather than the entire work, and is out of print.

2. **Which form(s) of intellectual property protection (i.e., trade secret, trademark, patent, copyright) apply to software? Explain. (10 points)**

   The expression of the idea in object code is protected by copyright, but the idea itself would have to be protected by a patent. Source code can be treated as a trade secret.

3. **The Third Amendment to the US Constitution says "No Soldier shall, in time of peace be quartered in any house, without the consent of the Owner, nor in time of war, but in a manner to be prescribed by law". Why was this so important that it needed to be a Constitutional Amendment? (5 points)**

   English common law held that "a man's home is his castle", and rejection of forced quartering of troops in houses was reaffirmed in the English Bill of Rights in 1689. Then England passed the Quartering Act, allowing military troops to be placed into colonial houses, which was seen as taking away their basic rights as English citizens. Thus the Amendment was added to the US Constitution, once again rejecting forced quartering.

4. **The National Crime Information Center database was established by the FBI in 2000 to aggregate data from other databases.**

   a. **What was the motivation for this aggregation? (5 points)**

      The goal was to aggregate date from multiple separate sources, and make that data available across state lines to multiple law enforcement agencies. Thus information about, for example, a stolen automobile or pistol in one state would be available to officials in another state.

b. What concerns have been expressed about this database? (5 points)

From Chapter 5: Erroneous records have led to false arrests, police have arrested people with the same name as someone in the database, the database has been used to keep track of people not suspected of a crime, corrupt employees have sold information from the database and altered records, and some employees have illegally accessed the database. As reported in Chapter 7, the Justice Department announced in 2003 that the FBI is not responsible for the accuracy of the information in the database.

5. In what ways has US governmental authority for wiretapping grown over time? (10 points)

Wiretapping was allowed by the US Supreme Court in 1928, but in 1934 it decided it was not ok. Later the FBI decided it was ok as long as the information obtained was not revealed publicly. During WWII, the government started intercepting all messages into or out of the US, and in 1986, devices were allowed to capture outgoing and incoming phone numbers. After 9/11, the authority grew even further. See Sections 5.7 and 5.8 in the class text for more information.

6. Four well-known computer viruses discussed in class were the Brain virus, the Michelangelo virus, the Melissa virus, and the Love Bug virus. Describe one of these viruses and what happened after it was released. (5 points)

See descriptions on pp. 296-297 of the class text.

7. What are the concerns about online / electronic voting? (10 points)

The systems may record votes incorrectly, may lack a paper trail for auditing votes, and may be vulnerable to tamping. Further, the source code for the systems is usually a trade secret, so it cannot be examined by outside parties for potential errors. There may also be questions in online voting about whether or not the person casting the vote is the person they declare themselves to be, and whether or not someone is being coerced into casting a particular vote.

8. The class textbook discussed five notable examples of software system failures, including the Patriot missile system, the Ariane 5 launch vehicle, AT&T's long-distance network, NASA's robot mission to Mars, and the automated baggage system at Denver International Airport.

a. Choose one of these five software system failures and describe the failure that occurred, why it occurred, and its consequences. (10 points)

See descriptions in Section 7.4 of the class text

b. It is common to reuse code in a software system, but what potential problems can occur when reusing code? (5 points)

Assumptions based on hardware, or the environment, or the users, etc. may be made in one piece of software, but not documented. If that code is then reused and the assumptions are no longer valid, the code may not work as expected.

c. Why is it appropriate to consider these software system failures in a class entitled "Social and Ethical Issues in Computing"? (5 points)

Designers of a software system have an obligation to design software that works correctly, and have an obligation to the pubic to not cause harm by their poor professional practices.

9. Why are certification and licensing often considered important characteristics of a "profession"? (10 points)

They provide a uniform measure, across universities and programs, that the graduate has learned sufficient material to be allowed to practice the profession. Further, the right to practice the profession can be withdrawn if the person fails to remain current or commits some violation beyond the appropriate bounds of the profession.

10. How should a professional Code of Ethics be used in conjunction with the ethical tools that we have been studying all semester (e.g., Kantianism, Utilitarianism, and Social Contract Theory)? (10 points)

A code of ethics often encompasses characteristics of the various ethical tools that we have been studying. However, a code of ethics may also also consideration of the desire to be right, together with virtue ethics (e.g., loyalty, honesty, kindness), which can be considered another ethical tool along with those studied earlier. Further, when different parts of a particular code of ethics apply to a particular situation, making it difficult to apply the code of ethics alone, the other ethical tools, particularly Utilitarianism, can make it possible to determine the most appropriate part of the code of ethics to apply.