CIS150: Fundamentals of Information Systems
Spring Semester 2010

Final Exam - Possible Essay Questions

Below are a number of questions that I am definitely considering for possible use as Essay (or Short Answer) formats on the Final Exam. I plan to select a handful of questions from each of the three sections (Computer Crimes and Security, Consumer Privacy, and Workplace Privacy, the latter of which includes the Impact of IT on Employment presentation material) below. In addition, several of the remaining questions will be adapted as True/False, Multiple Choice, or Multiple Answer formats for inclusion on Final Exam. This list should not be misconstrued as all-inclusive, but rather useful insight.

Computer Crimes and Security

Question 1
In class we defined computer sabotage as a disruption of service that destroys files, damages computer resources, or hurts website revenues. One example of computer sabotage is a macro virus. A virus is a piece of code that causes an unexpected and usually undesirable event. It is usually attached to a file or email attachment that, when opened, executes the virus that may modify, delete, or damage files. A virus does not spread itself but instead requires an action by a person to spread (like forwarding an infected email or using a disk to send an infected file). Identify and explain three (3) other types of computer sabotage that we discussed in class and provide an example of each.

Question 2
You have been invited to make a 20-minute presentation for a high-school computer class to discourage the students from "hacking". Plan the entire presentation. That is, list and explain the arguments that you will make and emphasize during your presentation. Your answer should include descriptions of specific examples, cases, and laws that support your arguments. How many slides?

Question 3
You have been hired as an IT security consultant to "fix the security problem" at Acme United Global Manufacturing. The company's website has been hacked mercilessly over the last six months, with three of the attacks making headlines for the negative impact they have had on the corporation and its customers. As the new IT security consultant, identify and briefly explain the key elements of a cost-effective program to reduce the number and severity of future security incidents at Acme. In your answer discuss both technology-based and company policy-based solutions to the problem.

Question 4
Explain (3-4 sentences) what the Computer Fraud and Abuse Act (1986) is and what it says. In your answer explain what activity is illegal under this law and what the penalties are for violations.

Question 5
Encryption is a security tool that prevents unauthorized access to communications, databases, and computers. Encryption protects information stored on a computer or transmitted over the Internet. In class, we discussed the steps involved in two methods of encryption - private key encryption and public key encryption. Clearly explain how **private key** encryption works. For example, assume that you want to send a message to another student - explain how this would be done using encryption.

Question 6

Encryption is a security tool that prevents unauthorized access to communications, databases, and computers. Encryption protects information stored on a computer or transmitted over the Internet. In class, we discussed the steps involved in two methods of encryption - private key encryption and public key encryption. Clearly explain how **public key** encryption works. For example, assume that you want to send a message to another student - explain how this would be done using encryption.

Question 7

In class we discussed how public key encryption enables people to authenticate each other through **digital signatures**. Clearly explain how you would send a message using public key encryption and digital signatures to authenticate yourself to the recipient (e.g. another student) of the message.

Question 8

Describe three (3) types of disasters that are deemed "acts of nature" and provide a recommendation for each one to mitigate the risk of serious damage.

Question 9

Disasters (e.g., acts of nature, crime, or terrorism) may cause substantial loss of infrastructure for a company. To help safeguard from such disasters many companies locate backup processing centers in geographically removed sites. Explain the differences among a hot site, a warm site, and a cold site.

Question 10

Consider the following statement:

> *Major financial institutions should spend as much money as necessary to guarantee that their computer systems are completely secure, thus ensuring that no "hackers" can ever break into their databases to steal confidential date or sensitive customer information.*

Based on our class discussions, answer whether this statement is True or False. Explain your answer and support your explanation.

I.T. Safety and Reliability

Question 11

The Therac-25 radiation equipment involved errors in software, overall design, and management of operations. Describe a specific error for each of these three types, providing a single paragraph each.

Question 12

The Denver automated baggage handling system involved errors in software, overall design, and management of operations. Describe a specific error for each of these three types, providing a single paragraph for each error.

Question 13

The *Case of the Killer Robot* involved errors in software, overall design, and management of operations. Describe a specific error for each of these three, providing a single paragraph for each.

Question 14

List and describe two principles of human computer interaction (or user interface) design that are particularly important in safety-critical applications. For each principle identify and explain an example of a "real-world" safety-critical application (i.e., not the *Killer Robot*) that violated the principle and describe the impact of each violation.

Question 15

Consider the *Case of the Killer Robot*. Imagine that you are the leader of a task force assigned to correct the problems uncovered by this accident. Develop a list of the top five (5) critical actions to take to avoid future problems. Be specific.

Question 16

You are designing a computer-controlled pizza machine. The operator will simply type in the code number for the particular pizza ordered, and the machine will do the rest. It will have recipes for many kinds of pizzas, including ingredients, cooking times, and cooking temperatures. Robot arms will scoop the ingredients from bins and put them on the pizza dough. The machine controls the oven, removes each pizza when it is done, and moves it to a counter for a waiter to serve or box for delivery.

a) Describe two (2) potential safety hazards related to the use of this machine.

b) Discuss what should be included in the design of the computer-controlled pizza machine to reduce the likelihood of a serious safety problem.

Project Management

Question 17

What is meant by the phrase "triple constraint" as applied to managing technology projects? What are the other two related factors that also need to be considered?

Question 18

Contrast the three widely-recognized approaches to effectively manage projects. Under what circumstances should each one be selected over either of the others?

Question 19

What is a project charter? What are some of the key items included in a project charter?

Question 20

What is a post-implementation review? What are some of the key items that should be included in the assessment process?

Question 21

Briefly describe each of the three types of dependencies that a project manager would typically include in a project plan.

Question 22

What does the acronym "CPM" mean? How can it be successfully used to reduce the amount of time to complete a project?

Question 23

What are some of the basic principles of Cost Management?

Question 24

You are the project manager for developing the latest release of your software firm's flagship product. The product release date is just two weeks away and enthusiasm for the product is extremely high among your customers. Stock market analysts are forecasting sales of more than $25 million per month. If so, earnings per share will increase nearly 50 percent.

There is just one problem; two key features promised to the customers in this release have several bugs (i.e., programming errors) that would severely limit the features' usefulness. You estimate that at least six weeks are needed to find and fix the problems. In addition, even more time is required to find and fix 50 additional, less severe bugs uncovered by the Software Testing team.

a) Identify the "ethical question" facing you (the project manager) in the case.

b) One critical stakeholder in this case is you – the *project manager* and *software provider*. List three (3) other critical stakeholders in this case and identify an important obligation that you (as the software provider) have to each of these three stakeholders.

c) List and describe two (2) specific courses of action that you may take as project manager to address the "ethical question". Try to be creative! (i.e., do not list "do nothing" as one of your actions). In addition, briefly explain the likely consequences of each proposed action for each stakeholder.

d) Describe your normative recommendation as project manager in this case. What is the basis of your recommendation (teleological or deontological)?