

CS336 Homework Assignment #1

Due: Friday, March 10th, 5:00 pm.

Points: 100 points

No short answers. Well explain your answers. Do not copy and paste answers and examples from other websites.

1. Distinguish between vulnerability, threat, and control.
2. Give 3 examples of violation of availability, 3 examples of violation of confidentiality, and 3 examples of violation of integrity.
3. Describe a situation in which you have experienced harm as a consequence of a failure of computer security. Was the failure malicious or not? Did the attack target you specifically or was it general and you were the unfortunate victim?
4. Consider a program to display on your website your city's current time and temperature. Who might want to attack your program? What types of harm might they want to cause? What kinds of vulnerabilities might they exploit to cause harm?
5. Consider a program that allows consumers to order products from the web. Who might want to attack the program? What types of harm might they want to cause? What kinds of vulnerabilities might they exploit to cause harm?
6. (10 points) Assume that passwords are selected from four-character combinations of 26 alphabetic characters. Assume that an adversary is able to attempt passwords at a rate of one per second.
 - (a) Assuming no feedback to the adversary until each attempt has been completed, what is the expected time to discover the correct password?
 - (b) Assuming feedback to the adversary flagging an error as each incorrect character is entered, what is the expected time to discover the correct password?
7. (10 points) Suppose a per-subject access control list is used. Deleting an object in such a system is inconvenient because all changes must be made to the control lists of all subjects who did have access to the object. Suggest an alternative, less costly means of handling deletion.
8. (10 points) How are passwords stored on your personal computer? Pick one from 1) the password which you use to login to the system, or 2) if you use password manager which keeps your passwords for logging into different websites. Do some research and explain how it works.
9. List three reasons people might be reluctant to use biometrics for authentication. Can you think of ways to counter those objections?
10. If you forget your password for a website and you click [forgot my password], sometimes the company sends you a new password by email but sometimes it sends you your old password by email. Compare these two cases in terms of vulnerability of the website owner.