

Homework 1: Rational Paranoia

This homework is due **Wednesday, October 4** at **6 p.m.** and counts for 6% of your course grade (4% if you are a graduate student taking CMSC 33250). You will have a budget of four extensions (24-hour periods) over the course of the quarter that you can use to turn assignments in late without penalty and with no questions asked. You cannot consume partial days. Once your extensions are used up, further extensions will only be granted in extraordinary circumstances.

We encourage you to discuss the problems in general terms with other students in the class. However, the answers you turn in must be your own original work, and you are bound by the University's policy on Academic Honesty and Plagiarism. Also, please document any material discussions you had with others about this assignment (e.g., "Note: I discussed this exercise with Jane Smith"). Solutions should be submitted electronically via `chisubmit` in plain text format using the template found at `hw1/hw1.txt` in the upstream repository.

For each scenario below, imagine that you are in charge of security. Apply the security mindset to answer these questions:

- What assets are important for you to protect? For each asset, what security properties do you need to enforce?
- What threats should you defend against? For each threat, who are the attackers and what are their motivations and capabilities?
- What countermeasures can you justify? For each countermeasure, what threats does it mitigate and what are its costs?

Answer each of the above in the form of a bulleted list, with brief justifications or explanations as necessary. State any critical assumptions you decide to make. Your grade will be based on the thoroughness, realism, and thoughtfulness of your analysis.

1–3. Pick **three** of the following scenarios. (If you answer them all, we'll drop the highest score.)

- (a) You are developing and deploying a self-checkout system for Walgreens.
- (b) You are designing the ticketing system for the White Sox baseball stadium.
- (c) As director of the NSA, you set procedures for hiring new employees.

- (d) You are grading homework submissions for a class of 50+ students.
4. Choose another scenario from everyday life that we haven't discussed in class.
Your choice may be directly related to computer security, but it doesn't have to be.

