

Homework 1: Rational Paranoia

This homework is due **Friday, September 4, 2026 at 11:59 p.m.** and counts for 5% of your course grade. Late submissions will be penalized by 10% plus an additional 10% every 5 hours until received. Late work will not be accepted after 24 hours past the deadline. If you have a conflict due to travel, interviews, etc., please plan accordingly and turn in your homework early.

We encourage you to discuss the problems and your general approach with other students in the class. You are also allowed to use AI, but you must submit every prompt you used as part of the assignment. No matter if you get help from the course staff, peers, or AI, the answers you turn in must be your own original work, and you are bound by the Honor Code. Solutions must be submitted electronically via Gradescope in **PDF format** by completing the template on page 3 below.

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?

What security threats will you choose to defend against?

*What countermeasures can you justify, in terms of costs **and** benefits?*

Answer each of the above in the form of a bulleted list, with brief justifications or explanations as necessary. Your explanations for each part should be approximately a paragraph in length. The overall response should be no less than three pages and no more than 6 pages. State any critical assumptions you decide to make. Your grade will be based on the thoroughness, realism, and thoughtfulness of your analysis.

- 1–2. Pick **two** of the following scenarios. (If you submit responses for more than two, you'll receive the two lowest scores.)

- (a) You run the weekly Powerball lottery.
- (b) You oversee the football stadium at a ACC school.
- (c) You run a small convenience store that caters to CS undergraduate and graduate students that works using automated checkout using Hokie Passports.
- (d) You manage the email server for a major presidential campaign.
- (e) You are grading homework submissions for a class of 100 students.

3. 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.

Submission Template

Problem 1

Scenario:

{Lottery|Stadium|Store|Email|Grading}

Assumptions:

explain_your_assumptions

Assets:

- *Asset - explanatory_paragraph*
- *Asset - explanatory_paragraph*
- ...

Threats:

- *Threat - explanatory_paragraph*
- *Threat - explanatory_paragraph*
- ...

Countermeasures:

- *Countermeasure - explanatory_paragraph*
- *Countermeasure - explanatory_paragraph*
- ...

Problem 2

(Use the same format as Problem 1 for a different scenario from the list.)

Problem 3

Original Scenario:

explain_your_scenario_and_assumptions

Assets:

...

Threats:

...

Countermeasures:

...

AI

If you used AI, please list every prompt you used
and the service(s) you used below: