

CSE 484 - Homework 3 (Fall 2021)

This homework is focused on a variety of topics from the last ~third of the quarter. It is designed to give you exposure to some security/privacy related tools, and to prompt you to revisit and think deeply about the ethics questions from Homework 1.

Overview

- **Due Date:** Monday, November 29th, 2021 at 11:59pm
- **Group or Individual:** Individual
- **How to Submit:** Submit a PDF via Canvas
- **Total Points:** 20 points across 2 parts

Part 1: Web Privacy and Tracking (10 points)

Web privacy and tracking is undergoing a massive shift: Major browsers (Safari, Firefox) have removed 3rd party cookie tracking (mostly.) Chrome is discussing the next generation of tracking that has some level of privacy. Advertising and adtech companies are rapidly shifting their approach to tracking to keep their ecosystem function. It's a whole new world!

The following questions are each a rough summary of a recent development in tracking and adtech. Answers should be 1-2 paragraphs per question.

Recently, a new phenomenon has appeared: a site X directly includes a 3rd party tracking script (e.g. `<script src=Y>`) that fingerprints the browser, sets a 1st party (X) cookie with that fingerprint and sends that cookie to (at least 1) tracking site associated with Y.

1. **(2 points):** Why does none of this violate the Same Origin Policy? (Be specific)
2. **(3 points):** What does this allow the 3rd party (Y) to do assuming they convince multiple sites to embed the same tracking scripts?

Google has proposed a new approach to personalized ads: Federated Learning of Cohorts (FLoC). Under FLoC you will not have any 3rd-party tracking cookie, but instead have an “ad cohort ID”. This ID is computed using your browsing history, is changed every few months, and you are guaranteed that at least several thousand people have the exact same cohort ID. Advertisers will not be told what browsing history is associated with a given FLoC ID, but will be able to query the browser for its current FLoC ID.

3. **(2 points):** Does FLoC provide anonymity to a user? Why or why not?
4. **(3 points):** If browsers implement this, and report their current FLoC ID to any page that asks, how can an advertising network use this to personalize ads for the current user?

Part 2: Revisiting Your Ethics Questions (10 points)

Ethics is often domain specific, created by the practices, beliefs, and advocacy of domain experts. In this way, ethics in computer security (as it is in many other technology domains) is

currently in-the-making. As future professionals, *your* practices, beliefs, and advocacy will help contribute to our understanding of computer security ethics. *You* are already computer security ethicists!

Please **choose one of the following** ethics questions to address in your answer:

1. When, if ever, should a government be able to ban a technology or application? For example, under what circumstances should a government be able to mandate that app stores remove a specific application?
2. Who should be held responsible for problematic activities that occur on platforms (e.g., encrypted messaging platforms, social media platforms, Tor)?
3. Should university-based research on computer vision techniques that enable “deep fakes” be stopped or paused?
4. How should companies be held accountable when security breaches occur or privacy violations come to light?
5. Under what circumstances should a government require companies to provide or build in backdoor access to encrypted technologies for law enforcement purposes?
6. Should homeowners be allowed to set up cameras that record what happens in a public space visible from their property?
7. Should parents have a right to monitor their children’s use of technology? Alternatively (or additionally), should employers have a right to monitor their employees' use of technology?

To help justify your answer, you may find it helpful to revisit an ethical framework from Homework 1. Repeating those links here:

- [Menlo report](#), which connects computer security ethics to research ethics.
- [Capabilities framework](#), which foregrounds global well-being, justice, and development.
- [Manifest-no](#), which emphasizes refusal of historically harmful data regimes.

There are not necessarily correct/incorrect answers to ethical questions. Though the questions above may be framed as yes/no questions (“should...?”), **it is very likely that your answer will involve “it depends” -- you probably want to discuss under which circumstances something should or should not be done, rather than simply being able to answer “yes” or “no”.**

Your response should:

- **(1 point)** Note explicitly which question you are answering (from the list above);
- **(2 points)** Be 350-450 words long;
- **(7 points)** Try to use the assigned ethical framework to explain your response.

There are no right or wrong answers, but some answers are better justified than others. All responses that thoughtfully engage with the question will receive full credit. Responses that are hard to understand, vague, or overly simplistic (these are not simple questions!) will receive partial credit.