

INF 529 Final Exam Spring 2020

Name: _____

This exam is open book and open note. You may use electronic devices to consult materials stored on the devices, but you may not use them to access material through the net, or for communication during the 120 minutes in which you are completing the exam. You have **120 minutes** to complete the exam. The exam begins at 11AM PDT on May 8th. You must submit the completed exam through DEN dropbox **and** by email to inf529@csclass.info and bcn@isi.edu by 1:30PM PDT.

Type your answers in the exam itself using word, or if you prefer a different editor using the text version of the exam that is provided. The filled out exam document will be what you will return to me as described above. In answering the questions, please **TYPE** your answers rather than importing large quantities of text using cut and paste in hopes that the cut and pasted text might include an answer. **Pasted text in your responses will be ignored and you will not receive credit for words included in the pasted text.**

Be sure to include your **name in the exam document**. Ideally, please rename the document to a **file name that includes your name (e.g. inf529-s20-final-FIRSTNAME-LASTNAME)**.

There are **100 points** in all and **3 questions**.

	Q1	Q2	Q3		Total Score
Score					

Complete the following statement:

I, **(replace with your first and last name)** attest to the fact that I completed this exam within the designated time allocated (e.g. in less than two hours), that I did not access external material (e.g. web sites) or use the internet during completion of the exam, and that I completed the exam on my own without accepting or providing assistance to anyone else.

Signed: (type you name here). Date: 5/8/2020.

1. Privacy and Security (50 points)

a) GDPR (10 points)

What are the most important differences in GDPR as compared with previous electronic privacy regulations? Be sure to discuss the of GDPR that makes it applicable to more activities than existing regulations. What are the activities covered by GDPR that are not covered by many previous privacy regulations?

b) CCPA (20 points)

Discuss some of the ways that the California Consumer Privacy Act will impact privacy for the rest of the United States. Discuss the specific provisions that will have an impact, and the reason that those provisions will impact consumers outside of California.

c) China's Social Credit Score (20 points)

What benefits might be provided to society from deployment of fully integrated and futuristic mass-surveillance and scoring systems such China's plans for their social credit score. What could go wrong in such a system and/or how might such a system be abused (how in terms of the method by which it could be abused, and also how in terms of the misuse that could be made of such a system).

2. Technologies (30 points)

a. Fairness and discrimination when processing “Big Data” (10 points)

Explain some of the ways that the application of data science and artificial intelligence to large unstructured data sets (i.e. Big Data) creates the potential for illegal discrimination. What actions can one take to reduce the likelihood of such discrimination?

b. End to end encryption (20 points)

What is meant by end-to-end encryption in applications like email (e.g. PGP), messaging (e.g. What’s App) and video conferencing (e.g. Zoom)? What potential remains in these systems for interception of communications? Why have many governments proposed limitations on or banned support of end-to-end encryption and what are some of the arguments against such bans.

3. Privacy in the age of Pandemics (20 Points)

It is quite common to see weakening of privacy protections and/or other freedoms during a crisis and the Covid-19 pandemic is a case in point. It is interesting to note that in the field of public health, monitoring the spread of disease and illness has always been referred to as epidemiological/disease surveillance, which highlights the intrusive nature of such monitoring.

In this question you are to consider the contact tracing framework put forth by Apple and Google, as discussed in class.

a. What is Privacy? (8 points)

Discuss some of the goals for privacy in such a coronavirus contact tracing application. Specifically, what do we mean by privacy for this application... What can be done with data, who should have access to the data or conclusions, and what kinds of monitoring/tracking/inferences should be prevented? Note that for some parts of this answer there might be more than one legitimate point of view, and you should discuss both points of view where appropriate.

b. Privacy Preserving Features (5 points)

What are some of the features of the Google/Apple proposal that tend to improve certain aspects of privacy as outlined by you in part (a).

c. Privacy problems (7 points)

List a few ways that someone could exploit the data collected by the app to violate the security policies described in part (a). Suggest steps that could be taken/changes to be made that could reduce the impact of any of the breaches you just described.