**CS 370 Introduction to Security Week 1: Problem Set 1**

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# **Introduction**

The purpose of this assignment is to help you gain a better understanding and insight into the concepts and definitions we learned in Week 1 and help you see how they are applied.

Before beginning make sure you have watched the lecture videos on the following and completed the associated practice quizzes.

* What is Cybersecurity?
* Key Concepts of Cybersecurity
* Cybersecurity Terminology
* Cybersecurity Strategy
* Cybersecurity Principles

Also make sure you read Chapter 1 form the textbook.

# **Questions**

Please answer all of the questions below.

## What is Security?

Q1 [3 pts]: Articulate 3 reasons why securing cyberspace or computer systems and data is challenging?

## Key Security Notions/Attributes

Q2 [6 pts]: Name and define the six key properties/attributes of computer security?

Q3 [3 pts]: What is non-repudiation and what security property/objective covers non-repudiation?

Q4 [9 pts]: Classify each of the following as a violation/breach of one or more of the six key security properties

* Attack on JP Morgan bank reported here

- <http://dealbook.nytimes.com/2014/10/03/hackers-attack-cracked-10-banks-in-major-assault/>

* Attack on a federal Website reported here

- <http://abcnews.go.com/blogs/politics/2013/01/anonymous-hijacks-federal-website-threatens-doj-document-dump/>

* Wifi-hotspot incident reported on here

- <https://www.cnn.com/2014/10/03/travel/marriott-fcc-wi-fi-fine/index.html>

Q5 [4 pts]: Compare and contrast Confidentiality and Privacy.

## Security Terminology

Q6 [4 pts]: What is the difference between Attack Surface and a Vulnerability?

Q7 [4 pts]: Explain how the terms threat and attack related?

Q8 [4 pts]: What is the difference between snooping and spoofing? What security properties do they threaten?

## Security Strategy

Q9 [5 pts]: Why do we need 4 types of security mechanisms? Why couldn’t we simply use prevention mechanisms? If we are successful in preventing we don't need the other mechanisms do we?

Q10 [2 pts]: What are recovery mechanisms? Can you give an example?

Q11 [6 pts]: Explain why the right incentives are important. Specifically explain how the right incentives are necessary for policy, mechanism and assurance.

## Security Principles

Q12 [4 pts]: Compare and contrast “least-privilege” and “separation-of-privilege”?

Q13 [3 pts]: Describe the principle exemplified by the practice of using “sudo” instead of always running as a “superuser”?

Q14 [3 pts]: Explain the principle of psychological acceptability.

# **Submission Details**

Submit a PDF file with the questions and your corresponding answers.

The assignment is worth 60 points. It is due Wednesday of Week 2 at Midnight.