HoA#5: Network Security

This class assignment will get you familiar with securing networks and data transfer over TCP/IP Ethernet networks. By the end of the HoA, you should be able to:

* Discuss the motivation behind securing TCP/IP Ethernet networks
* Be aware of cybercrime and how to avoid it
* Discuss the five key areas of TCP/IP security:
  + Encryption
  + Integrity
  + Nonrepudiation
  + Authentication
  + Authorization
* Discuss the encryption/authentication standards

# Cyberattacks in the News

* To begin, find two examples of security breaches in the news. *Briefly* summarize the articles. F

# Cybersecurity & Crime: Common Types and How to Avoid IT

Watch the video called [The Internet: Cybersecurity and Crime](https://www.youtube.com/watch?v=AuYNXgO_f3Y&feature=youtu.be). In the video, security experts from Google and Symantec discuss common types of cybercrime and provide tips on how to avoid it. Your task is to watch the five minute video and discuss:

* The most common types of cybercrime
* The top four tips on how to avoid being hacked

# Encryption

Next, watch the video called [The Internet: Encryption & Public Keys](https://www.youtube.com/watch?v=ZghMPWGXexs&index=5&list=PLzdnOPI1iJNfMRZm5DDxco3UdsFegvuB7). Based on the video (and the book), answer the following questions.

* What is encryption? Give an example.
* Discus the Caesar cipher (this is also in the book in Chapter 10). Why is the Caesar cipher bad?
* Explain symmetric and asymmetric encryption, and public keys and private keys. What is an example?
* What is SSL and TLS?

# Integrity

* What does integrity mean in the context of networking?
* Explain hash and the secure hash algorithm.
* What is MD5? Visit the following website—<http://www.md5hashgenerator.com/>-- and generate a MD5 hash.
  + What hash did you create?

# Nonrepudiation

* Nonrepudiation is a fancy word that means what?
* Explain digital signatures and why they are important.
* What is a certificate? Give an example.

# Authentication

* What is meant by authentication? Give an example.
* Read the following article called [*Biometrics and mobiles: Banking’s Future*](http://www.cnbc.com/2014/06/10/biometrics-and-mobiles-bankings-future.html)*.* What does this have to do with authentication? What are some other authentication methods that interest you?

# Authorization

* What is meant by authorization?
* What is an access control list? Summarize ACL using the following article: [*Securing Networks: Access Control List Concepts*](https://www.pluralsight.com/blog/it-ops/access-control-list-concepts)

# Encryption/Authentication Standards

There are certain standards associated with encrypting TCP/IP Ethernet networks. These are:

* Secure Sockets Layer (SSL)
* Transport Layer Security (TLS)
* Internet Protocol Security (IPsec)
* HTTPS

Briefly discuss the above standards and give an example of each.