

# Learning Guide Unit 1

Site: [University of the People](#)  
Course: CS 3340-01 Systems and Application Security - AY2025-T1  
Book: Learning Guide Unit 1

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**Description**

Learning Guide Unit 1

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# Overview

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## UNIT 1: General concepts of cybersecurity

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### Topics

- Introduction
- Network security
- Security Protocols SSL and HTTPS
- C.I.A. triad

### Learning Objectives

By the end of this Unit, you will be able to:

1. Describe the key concepts of cyber security, their importance, and the most current cyber-security attacks.
2. Discuss the challenges faced by individuals regarding network security.
3. Discuss C.I.A. triad as a core stone of Cybersecurity based on research.

### Tasks

- Read the Learning Guide and Reading Assignments
- Participate in the Discussion Assignment (post, comment, and rate in the Discussion Forum)
- Complete and submit the Written Assignment
- Make entries to the Learning Journal
- Take the Self-Quiz

# Introduction

Modern work is highly digitized. People use a variety of digital devices connected to computer networks. It is hard to find any industry where businesses do not use computer networks to collect, transmit, and process different information and valuable data.

Data and information have become a valuable commodity that enables businesses and people to implement projects, reach various goals, strengthen their financial status, and much more. For these reasons, both individuals and businesses should be prepared to defend their private and sensitive information. They have to gain knowledge in recognizing cyber threats and allocate resources to implement corresponding countermeasures. Network, Internet, Endpoint, Cloud, and Application security are some of the common categories of cyber security. In this unit, we will be focusing on an overview of cybersecurity and its various categories.

Let's take a moment and explore more about cybersecurity and the benefits of building a career in this field.

**Watch: Reasons You Should Become a Cybersecurity Engineer**



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## Resources

NexGenT. (2020, June 19). *5 Reasons you should become a cybersecurity engineer* [Video]. YouTube. <https://www.youtube.com/watch?v=R38GihL3I3Y>

## Network security

Network security is used to restrict unauthorized or malicious users from getting inside your network. This ensures that usability, reliability, and integrity remain non-negotiable. This type of security is essential to stop a hacker from accessing data inside the network. It also stops them from negatively affecting users' ability to access or use the network.

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### Reading Assignments

Learn more by reading and viewing the following references:

#### Read

- [Key concepts in cyber security: Towards a common policy and technology context for cyber security norms. CCDCOE.](#)
- [Network Attacks and Network Security Threats](#)
- [Computer Security Threats](#)

#### Watch

- [Network Security Tutorial | Introduction to Network Security | Network Security Tools | Edureka](#)

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### Resources

Edureka!. (2018, August 19). *Network security tutorial | introduction to network security | network security tools | edureka* [Video]. YouTube. <https://www.youtube.com/watch?v=6Jubl1UnJTE>

Mossé Cyber Security Institute. (2020, February 5). *What is network security?* [Video]. YouTube. <https://www.youtube.com/watch?v=kd9RRBk8tIA>

*Network attacks and network security threats.* (2021, December 14). Cynet. <https://www.cynet.com/network-attacks/network-attacks-and-network-security-threats/>

Thomas, C., Fraga-Lamas, P., & Fernandez-Carames, T. M. (2020). *Introductory chapter: computer security threats*. Intechopen.com. <https://www.intechopen.com/chapters/72730>

Vishik, C., Matsurbara, M., & Plonk, A. (2016). Key concepts in cyber security: Towards a common policy and technology context for cyber security norms. In A. Osula & H. Roigas (Eds), *International cyber norms: Legal, policy & industry perspectives* (pp 241-242). NATO. [https://www.ccdcoe.org/uploads/2018/10/InternationalCyberNorms\\_Ch11.pdf](https://www.ccdcoe.org/uploads/2018/10/InternationalCyberNorms_Ch11.pdf)

## Security Protocols SSL and HTTPS

Security protocol SSL (Secure Sockets Layer) was introduced in 1994 by Netscape. This protocol supports transport security for browsers. The protocol is used to issue security certificates to websites. Up-to-date SSL certificate ensures that the website is secure for users.

### Reading Assignments

Learn more by reading and viewing the following references:

#### Read

- [What is SSL?](#)

#### Watch

- [http vs https | How SSL \(TLS\) encryption works in networking ? \(2021\)](#)

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#### Resources

IT k Funde. (2021, April 28). *http vs https | how SSL (TLS) encryption works in networking ? (2021)* [Video]. YouTube. <https://www.youtube.com/watch?v=eWdPWSBKxso>

Kubucation. (2018, April 2). *How does https work? What's a ca? What's a self-signed certificate?* [Video]. YouTube. [https://www.youtube.com/watch?v=T4Df5\\_cojAs](https://www.youtube.com/watch?v=T4Df5_cojAs)

*What is SSL?* (n.d.). Global sign by GMO. <https://www.globalsign.com/en-in/ssl-information-center/what-is-ssl>



## C.I.A. triad

C.I.A. triad is a foundation of cybersecurity. It serves as a constant reminder to balance cybersecurity measures enabling **confidentiality**, **integrity**, and **availability** (C.I.A.). Confidentiality ensures the information and services remain confidential, i.e. information can be encrypted so only authorized users have the decryption key. Integrity prevents data from unauthorized modification, it ensures the data quality. Availability ensures that the computer network, its resources, and services are available when needed to those authorized to access them.

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### Reading Assignments

Learn more by reading and viewing the following references:

#### Read

- [Confidentiality, integrity and availability \(CIA triad\)](#)

#### Watch

- [The "C.I.A." security concepts](#)

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### Resources

Project Ares (2018, September 19). *3 steps to protect your reputation online* [Video]. YouTube. <https://www.youtube.com/watch?v=rwigKjEsdTc>

Chai, W. (2021, January). *Confidentiality, integrity and availability (CIA triad)*. TechTarget. <https://whatis.techtarget.com/definition/Confidentiality-integrity-and-availability-CIA>

Barker, K. (2015, October 4). *The "C.I.A." security concepts* [Video]. YouTube. <https://www.youtube.com/watch?v=432IHWNMqJE>



# Reading Assignment

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1. Chai, W. (2021, January). *Confidentiality, integrity and availability (CIA triad)*. TechTarget. <https://whatis.techtarget.com/definition/Confidentiality-integrity-and-availability-CIA>
2. *Network attacks and network security threats*. (2021, December 14). Cynet. <https://www.cynet.com/network-attacks/network-attacks-and-network-security-threats/>
3. Thomas, C., Fraga-Lamas, P., & Fernandez-Carames, T. M. (2020). *Introductory chapter: computer security threats*. Intechopen.com. <https://www.intechopen.com/chapters/72730>
4. Vishik, C., Matsurbara, M., & Plonk, A. (2016). Key concepts in cyber security: Towards a common policy and technology context for cyber security norms. In A. Osula & H. Roigas (Eds), *International cyber norms: Legal, policy & industry perspectives* (pp 241-242). NATO. [https://www.ccdcoe.org/uploads/2018/10/InternationalCyberNorms\\_Ch11.pdf](https://www.ccdcoe.org/uploads/2018/10/InternationalCyberNorms_Ch11.pdf)
5. *What is SSL?*(n.d.). Global sign by GMO. <https://www.globalsign.com/en-in/ssl-information-center/what-is-ssl>

## Video Resources

1. Barker, K. (2015, October 4). *The "C.I.A." security concepts* [Video]. YouTube. <https://www.youtube.com/watch?v=432IHWNMqJE>
  2. Edureka!. (2018, August 19). *Network security tutorial | introduction to network security | network security tools | edureka* [Video]. YouTube. <https://www.youtube.com/watch?v=6Jub11UnjTE>
  3. IT k Funde. (2021, April 28). *http vs https | how SSL (TLS) encryption works in networking ?(2021)* [Video]. YouTube. <https://www.youtube.com/watch?v=eWdPWSBKxso>
  4. Kubucation. (2018, April 2). *How does https work? What's a ca? What's a self-signed certificate?* [Video]. YouTube. [https://www.youtube.com/watch?v=T4Df5\\_cojAs](https://www.youtube.com/watch?v=T4Df5_cojAs)
  5. Mossé Cyber Security Institute. (2020, February 5). *What is network security?* [Video]. YouTube. <https://www.youtube.com/watch?v=kd9RRBk8tIA>
  6. NexGenT. (2020, June 19). *5 Reasons you should become a cybersecurity engineer* [Video]. YouTube. <https://www.youtube.com/watch?v=R38GIhL3I3Y>
  7. Project Ares (2018, September 19). *3 steps to protect your reputation online* [Video]. YouTube. <https://www.youtube.com/watch?v=rwigKjEsdTc>
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## Discussion Assignment

Conduct online research on cyber-attacks in recent times, give a summary and a link to the article you chose, and describe the following:

- the primary motivation of hackers in the current world.
- response measures taken by the hackers.
- lessons you learned from this online research and reading.

Your Discussion should be a minimum of 200. Please include a word count. Following the APA standard, use references and in-text citations for the textbook and any other sources.

# Written Assignment

For this assignment, perform the following tasks:

- Expand and explain CIA triad. How do they support the cybersecurity defenses against cyber criminals? (minimum 100 words)
- Conduct additional research, find an example of when an organization (business) successfully protected its assets against cyber-criminals by properly implementing cybersecurity C.I.A. triad. (minimum 100 words)
- Write one concluding paragraph (100 words minimum) presenting your opinion on why a proper implementation of the C.I.A triad is a core stone for cyber defense.

Submit a paper that is 2-3 pages in length exclusive of the reference page, double-spaced using 12-point Times New Roman font. The paper must cite at least two (2) outside sources in APA format and be well-written. Check all content for grammar, and spelling and be sure that you have correctly cited all resources (in APA format) used. Refer to the [UoPeople APA Tutorials in the LRC](#) for help with APA citations.

Your assignment will be peer-assessed using the **Written Assignment Peer Assessment [Rubric](#)**.

## Written Assignment Peer Assessment

In the unit following the submission of your written assignment, you will peer assess three (3) of your classmates' assignments according to the instructions found in the Assessment Form. During this peer assessment period, you are expected to provide details in the feedback section of the Assessment Form, indicating why you awarded the grade that you did to your peer. The written assignment grade is comprised of a combination of your submission (90%) and your peer assessments (10%).

# Learning Journal

*The Learning Journal is a tool for self-reflection on the learning process. In addition to completing directed tasks, you should use the Learning Journal to document your activities, record problems you may have encountered, and draft answers for Discussion Forums and Assignments. The Learning Journal should be updated regularly (weekly), as your instructor will assess the learning journals as part of your Final Grade.*

In this unit, we learned about computer network security needs, challenges, and some most common threats. Reflect on what you have learned, by answering each of the following questions:

1. Describe the most interesting topic you learned about in this unit. Think about reasons why you noticed this topic, your impression, your plans for further exploration of that topic.
2. Describe why learning basic cybersecurity skills is important for anyone using a digital device, networks, and the internet? Describe some of the cybersecurity concerns related to using digital devices for both personal and business needs.
3. Describe the challenges you face when securing access and use of your digital devices such as computers, tablets, smartphones. Explain what you do to protect your data and digital devices from unauthorized access both physically and virtually (online). Do you think you are secure or do you need to do more to secure your devices and/or improve your practices? - yes/no? Give rationale to support your answer.

The Learning Journal entry should be a minimum of 500 words and 750 words. Use APA citations and references if you use ideas from the readings or other sources.

You will be assessed by your instructor using the Learning Journal [Rubric](#).

## Self-Quiz

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The Self-Quiz gives you an opportunity to self-assess your knowledge of what you have learned so far.

The results of the Self-Quiz do not count towards your final grade. However, the quiz is an important part of the University's learning process and it is expected that you will take it to ensure understanding of the materials presented. Reviewing and analyzing your results will help you perform better on future Graded Quizzes and the Final Exam.

Please access the Self-Quiz on the main course homepage; it is listed inside the Unit.

## Checklist

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- Read the Learning Guide and Reading Assignments
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