

Intro to Safety and Security

Textbook

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Security and Privacy in Computer Networks

A **computer network** is a group of computers or devices connected together so they can share information. These networks are used in homes, schools, businesses—even in cars and smart homes! But just like you lock your front door to keep your home safe, computer networks need protection too.

Network security means making sure that only trusted people or devices can access the network and that the information shared across it stays safe. If a network isn't secure, hackers could break in and steal personal data, like passwords, bank info, or private conversations.

Privacy is about controlling who can see your information. Even if a network is working properly, privacy can still be lost if people share too much online or don't use good settings to protect their accounts.

Common Threats to Information Security

Whether you're on a school computer or using your phone at home, there are risks to your digital safety. Here are some common **threats and vulnerabilities**:

- **Malware:** Short for "malicious software," malware can damage your computer or steal your data. It includes viruses, worms, and spyware.

- **Phishing:** A fake email or message that tricks you into giving out personal info, like passwords or credit card numbers.
- **Smishing:** Like phishing, but it happens through text messages (SMS).
- **Hacking:** When someone breaks into a system or network to steal or damage data.

These threats can harm both individuals and organizations. That's why it's important to think before you click, only open messages from people you trust, and never share personal details with strangers.

Personal Safety Online

Using email, chat rooms, or messaging apps is a great way to stay in touch—but there are dangers to be aware of. People online are not always who they say they are. Some may try to trick or manipulate others for dangerous reasons.

Predatory behavior is when someone tries to build trust with a young person online to take advantage of them. This can happen slowly, through regular chatting, compliments, or fake friendships.

Human trafficking is a serious crime where people are tricked, forced, or taken from their homes. Unfortunately, some traffickers use the internet to find and target victims.

To stay safe:

- Never share personal info (like your school, address, or phone number) with people you meet online.
- Tell a trusted adult if something feels weird or uncomfortable.
- Keep your profiles private and block/report suspicious users.

A helpful way to think about safety is to sort it into categories:

Type of Security	Examples
Information Security	Protecting passwords, personal data, files
Network Security	Using secure Wi-Fi, strong passwords, firewalls
Physical Security	Locking devices, not leaving tech unattended

Defense in Depth: Layers of Protection

One smart way to protect a network is with a **defense in depth** strategy. That means using many layers of protection instead of just one.

Here are some simple **layered defenses**:

- **Firewalls:** Block suspicious traffic from entering or leaving a network.
- **Allow/block lists:** Decide which devices, websites, or users are trusted or not.
- **Default password changes:** Many devices come with easy-to-guess passwords like "admin" or "1234." Changing them makes hacking harder.
- **Secure access points:** Protect places where people connect to the network, like Wi-Fi routers or login portals.

Think of defense in depth like wearing a helmet, pads, and a seatbelt while riding a bike—each layer adds more protection.

Critical Thinking Questions

1. How does using multiple layers of security make a network safer than using just one?
2. Why is it important to protect your personal information, even when you're just chatting with friends online?
3. What would you include in a safety checklist to keep yourself secure when using the internet?

Questions (5)

1. What is one reason why network security is important?

MULTIPLE CHOICE

Choose the correct answer:

- A. It makes websites load faster
- B. It helps connect more people to the network
- C. It keeps unauthorized users from accessing personal or private data
- D. It allows users to download anything they want

2. Which of the following is an example of a phishing attack?

MULTIPLE CHOICE

Choose the correct answer:

- A. A friend sends you a funny video
- B. You get a message from your school account
- C. You install a new game from a trusted app store
- D. A message tells you to click a link to win a prize and asks for your password

3. What is a danger of using public chat rooms without adult supervision?

MULTIPLE CHOICE

Choose the correct answer:

- A. You might get too many messages
- B. You could be contacted by someone pretending to be someone else
- C. You might run into pop-up ads
- D. You might be added to a group chat

4. What does “defense in depth” mean when protecting a network?

Choose the correct answer:

- A. Using only one strong password
- B. Hiding your Wi-Fi router
- C. Building multiple layers of protection like firewalls and secure passwords
- D. Installing a new operating system

5. Which of these is a physical security measure?

Choose the correct answer:

- A. Locking your laptop when you leave your desk
- B. Creating a strong password
- C. Turning on a firewall
- D. Using a VPN

Answer Keys & Solutions

Questions

1. What is one reason why network security is important?

MULTIPLE CHOICE

Correct Answer:

- A. It makes websites load faster ✗ Incorrect
- B. It helps connect more people to the network ✗ Incorrect
- C. It keeps unauthorized users from accessing personal or private data ✓ Correct
- D. It allows users to download anything they want ✗ Incorrect

2. Which of the following is an example of a phishing attack?

MULTIPLE CHOICE

Correct Answer:

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- B. You get a message from your school account ✗ Incorrect
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