Cyber Security

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What is Security?

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Definition

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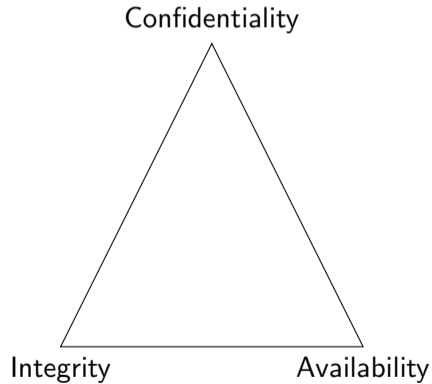
Important

There is no perfect security!

Security, Saftey and Privacy

- **Security:** preventing losses due to intentional actions by malevolent actors
- **Safety:** preventing losses due to unintentional actions or by benevolent actors
- **Privacy:** the right to be left alone

CIA triade

Confidentiality

Integrity   Availability

CIA triade

- **Integrity:** Undetected modification is only possible by authorized users.
- **Availability:** Authorized users should have access to resources, and unauthorized users should not be able to hinder/deny this access.
- **Confidentiality:** Only authorized users are allowed to gain access to protected data, messages, . . .

Terminology

- **Threat:** the danger of an attack on a system.
- **Vulnerability:** a system weakness that can be exploited by an attacker.
- **Exploit:** an instance of taking advantage of a system vulnerability.
- **Attacker:** the person/organization that actually executes an attack.
- **Defender:** the person/organization maintaining system security.
- **Hacker:** skilled programmer. Can be research or cracker.
- **Attack:** the act of carrying out an exploit.
- **Vector:** is the method that code uses to propagate itself or infect a computer.
- **Attack surface:** the sum of the different points for attack vectors.

Price of Security

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- Money
- Time
- Performance
- Usability $\rightarrow$ currently the major problem in IT security.