



Understanding the CIA Triad

Corresponding Material

What is Cybersecurity?: CIA Triad

Discussion

The CIA Triad is a widely-accepted security measure that should be guaranteed in every secure system. It stands for Confidentiality, Integrity, and Availability.

- Confidentiality is the protection of information from people who are not authorized to view it.
- Integrity aims at ensuring that information is protected from unauthorized or unintentional alteration.
- Availability is the assurance that systems and data are accessible by authorized users when and where needed.

It is these three principles that are often exploited by various attacks.

Examples

1. Bob wants to watch the new episode of his favorite show on Hulu. However, the website will not load due to an attack.

Answer: Availability

Bob is not able to access his favorite show because the website is down when he needed it.

2. Alice has a website that she sells computer parts on. However, Bob has gotten ahold of her website and is able to alter the prices of the parts prior to purchasing anything.

Answer: Integrity

As a customer, Bob is not authorized to alter the price of the product. Since an unauthorized party is able to change information, this is a breach of integrity.

3. Alice went to her doctor to get an x-ray of her leg. Unfortunately, when the doctor called Alice, the doctor did not realize he was talking to Mallory and told Mallory the results of the x-ray.

Answer: Confidentiality

Due to laws that doctors must follow (HIPPA), doctors are only allowed to share medical information with the patient it concerns. By giving Mallory medical information about Alice, the doctor has given Mallory information she is not authorized to know.

Class Exercise

Decide which of the CIA (Confidentiality, Integrity, or Availability) triad was broken in each scenario.

1. Alice and Bob are students. Alice copies Bob's homework.



2. Alice and Bob play computer games. Right as Alice is about to slay Bob's character with a +10 spell, Bob yanks her Ethernet cable.
3. Alice writes a private note in her diary and then locks it. Unfortunately, Bob finds the key and is able to open Alice's diary and read her private note.
4. Bob sends Alice a check for \$10. She then adds a "0" to the amount so now Bob has sent Alice a check for \$100.
5. Alice has online homework due at 2:00 PM and she is rushing to finish it. Right before she is about to submit, her power cuts out and Alice is no longer able to submit her homework by the due date.
6. Alice and Bob are trying to pass notes in class, but Mallory is sitting in between them. In order for Alice to get a note to Bob, Alice must pass it to Mallory and then Mallory must pass the note to Bob. One time, Bob needed help with Question #5 on the test. Alice handed Mallory a note to give to Bob that said, "The answer is true." Instead of handing this note to Bob, Mallory crumpled it up and handed him a new note that said, "The answer is false." Unfortunately, Bob got the question wrong and thought Alice had done it on purpose.
7. Bob is trying to buy concert tickets to a concert that sells out in under 5 minutes. When ticket sales open, a million people attempt to purchase tickets and the system crashes. Unfortunately, Bob is now unable to buy concert tickets.
8. Bob and Alice are in the same class at school. When the teacher passes back the tests, he announces what each student received on the exam.