Devlin Jett

CYSE 200T

Professor Duvall

February 13, 2025

BLUF: What is the CIA triad and the difference between authorization and authentication.

The CIA Triad, which stands for Confidentiality, Integrity, and Availability, is an important framework in cybersecurity. Its three principles are intended to protect information systems

Confidentiality ensures that sensitive information is only available to those who have permission to read it. This usually happens via encryption, access control methods, and secure communication protocols. Encrypting personal data, such as medical information, guarantees that only authorized persons have access to it.

The goal of integrity is to ensure that data is accurate and consistent. It prevents unauthorized users from altering or tampering with information. Hash functions and digital signatures are common strategies used to maintain integrity. For example, ensuring that financial transaction records stay accurate and consistent throughout their existence is an important aspect of integrity.

Availability guarantees that information and systems are available when needed. This idea includes safeguarding systems from downtime, ensuring redundancy, and preparing for disaster recovery. For example, a cloud service provider assures that its services are available 24 hours a day, seven days a week, regardless of whether some servers fail.

Authentication vs. Authorization

Authentication is the process of determining the identification of a user, device, or system. It is the initial step in preventing unauthorized access to systems or data. When a user registers into a website with a username and password, the website uses authentication to verify the user's identity.

Authorization, on the other hand, relates to deciding which actions or resources an authenticated user is permitted to access. It comes after authentication and sets permission levels. Depending on their access privileges, a user may be able to read but not alter some files after logging in.

In simple terms authentication confirms "who you are," whereas authorization defines "what you can do" when your identity is verified.