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The CIA Triad and the Difference Between Authentication and Authorization

The CIA Triad, which describes Confidentiality, Integrity, and Availability, and the difference between authentication versus authorization, is what this paper will provide an overview of. It will include real world examples and citations that will outline the extreme importance of these ideas in cybersecurity.

CIA Triad

The CIA Triad is any idea that was developed for the cybersecurity field as well as many others that involve the requirement of security. There are three basic parts, Confidentiality, Integrity, and Availability.

- **Confidentiality** is the idea that information is securely accessed by those who have the proper authorization to see or use it. Techniques such as Multi Factor Authentication (MFA), encryption, and access controls are important factors that are used to maintain confidentiality (Chai, 2021).
- **Integrity** is the idea that there is a sense of trustworthiness and accuracy of data. It checks to make sure that information has not been changed in transit or accessed by unauthorized users and changed. Ways to check for integrity are tools such as cryptographic hashes, digital signatures, and checksums.

- **Availability** is the idea that systems, networks, and data are available when authorized users need them. Situations like downtime due to different cyber attacks and system failures can disrupt this, so tools were implemented in order to combat this, such as failover systems, redundancies, and regular maintenance checks.

Authentication versus Authorization

Even though they get confused a lot, authentication and authorization are very different and have different definitions entirely in the cybersecurity world.

- **Authentication** is the action of taking a user and verifying their identity or the identity of a device. An example of this would be a banking group having you log into your account, using a password and username as verification.
- **Authorization** is the direction of who gets to use what resources or actions that they are allowed to do. For example, a bank gives the logged in user controls to their account balance and the ability to transfer funds, but not access to another user who is not apart of their account.

A much more simple definition would be the following: Authentication asks who you are while Authorization asks are you allowed to do this or that.

Conclusion

All in all, having a correct understanding of the CIA Triad and the differences between both authentication and authorization is very important in the cybersecurity world. These few concepts are the building blocks for secure system setups that are providing critical protection to sensitive data while allowing specific but appropriate access to data when it is needed to be accessible.

References

References Chai, P. (2021). Cybersecurity: An Introduction to the CIA Triad and Access Controls. https://drive.google.com/file/d/1898r4pGpKHN6bmKcwlxPdVZpCC6Moy8l/view