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Basics of Cyber Security

- ★ The CIA triad in Cyber Security
- ★ Types of Attacks
- ★ Attack surfaces



The CIA Traids In Cybersecurity

The CIA Triad is a core concept in Cyber Security. It represents the three main principles used to protect information systems.

The CIA in cyber security are:

- Confidentiality
- Integrity
- Availability

1. Confidentiality

Only authorized people can access data

Purpose:

Prevents unauthorized access to sensitive information

Examples:

Passwords & PINs

Encryption (AES, RSA)

Access control (Login, OTP, biometrics)

Real-life example:

Only you can read your WhatsApp messages

2. Integrity

Data must be accurate and not altered

Purpose:

Ensures data is not changed or tampered with

Examples:

Hashing (SHA-256)

Digital signatures

Checksums

Real-life example:

Bank balance should not change without a valid transaction

3. Availability

Data and systems must be accessible when needed

Purpose:

Ensures systems are up and running

Examples:

Backup systems

Load balancing

Protection against DDoS attacks

Real-life example:

ATM should work anytime you need cash

Attackers In Cybersecurity

In Cyber Security, attackers are classified based on skill, intent, and access level.

Types of Attackers

1 Script Kiddies

- ◆ Beginners who use ready-made tools
- ◆ No deep technical knowledge

Example: Using free hacking apps to deface websites

2 Black Hat Hackers

- ◆ Hack for personal gain or damage

- ◆ Illegal activities

Example: Stealing passwords, spreading malware

3 White Hat Hackers (Ethical Hackers)

- ◆ Hack legally to find vulnerabilities
- ◆ Work for companies

Example: Penetration testers

4 Gray Hat Hackers

- ◆ Mix of white & black hat
- ◆ May break rules but not for personal harm

Example: Finding a bug and informing the company without permission

5 Insiders

- ◆ Employees or trusted people
- ◆ Already have system access

Example: Employee leaking company data

6 Hacktivists

- ◆ Politically or socially motivated
- ◆ Attack to spread a message

Example: Website defacement for protests

7 Cyber Criminals

- ◆ Organized groups
- ◆ Financial motivation

Example: Ransomware gangs, credit card fraud

8 State-Sponsored Attackers

- ◆ Government-backed
- ◆ Highly skilled & well funded

Example: Cyber espionage, cyber warfare

Attack Surface in Cyber Security

Attack Surface refers to all possible points where an attacker can try to enter, attack, or extract data from a system.

① Types of Attack Surfaces

1 Network Attack Surface

- ◆ Points exposed through a network

Examples:

Open ports

IP addresses

Firewalls & routers

Wi-Fi networks

Example: Open port 21 (FTP) can be attacked

2 Application Attack Surface

- ◆ Vulnerabilities in software and applications

Examples:

Web applications

APIs

Login forms

SQL Injection, XSS

Example: Weak login page in a website

3 Physical Attack Surface

- ◆ Physical access to devices

Examples:

USB ports

Laptops

Servers

Unlocked systems

Example: Attacker plugs in a malicious USB

4 Human Attack Surface

◆ Weakness due to human behavior

Examples:

Phishing emails

Weak passwords

Social engineering

Example: Employee clicks fake email link

| DAY-TO-DAY APPS

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