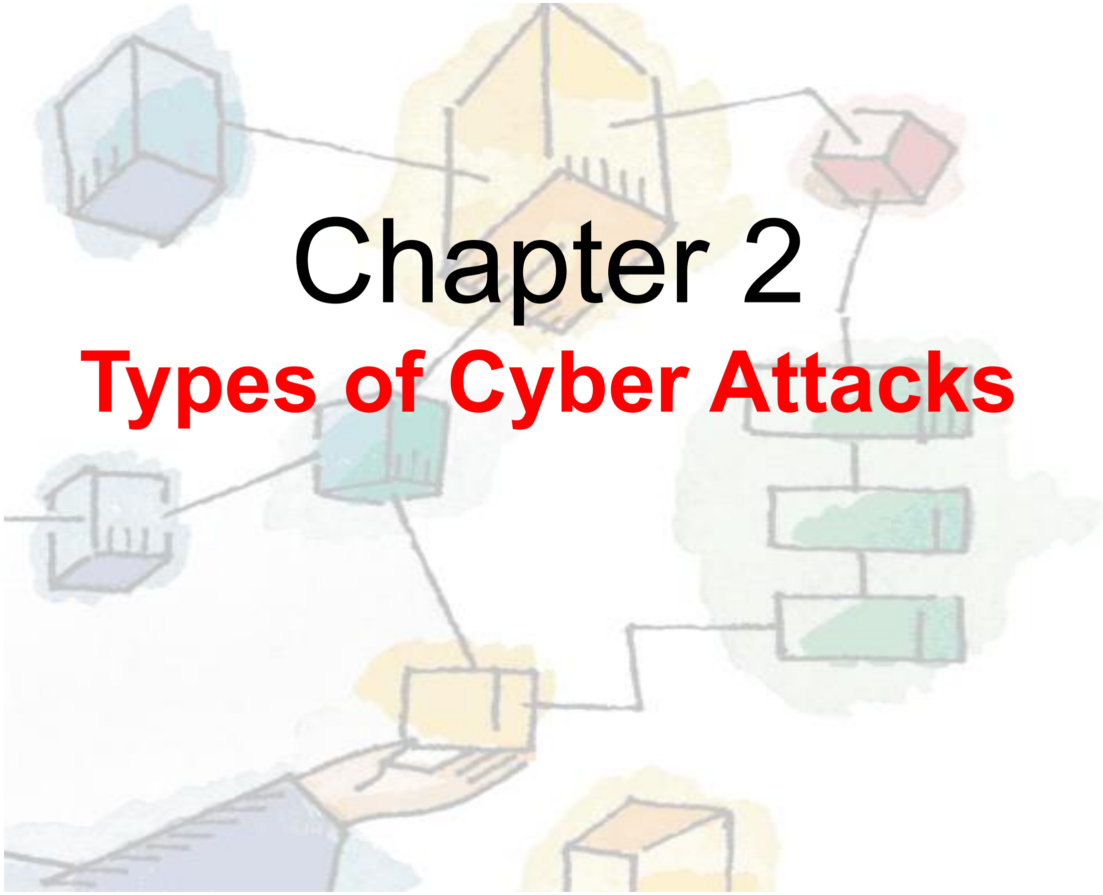
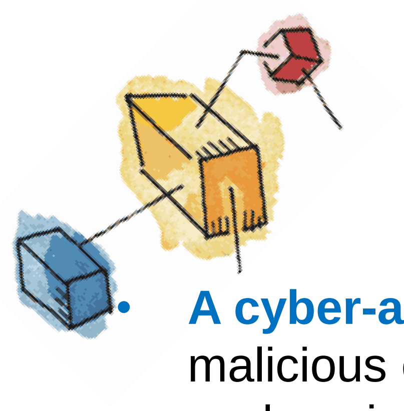
Cyber Security



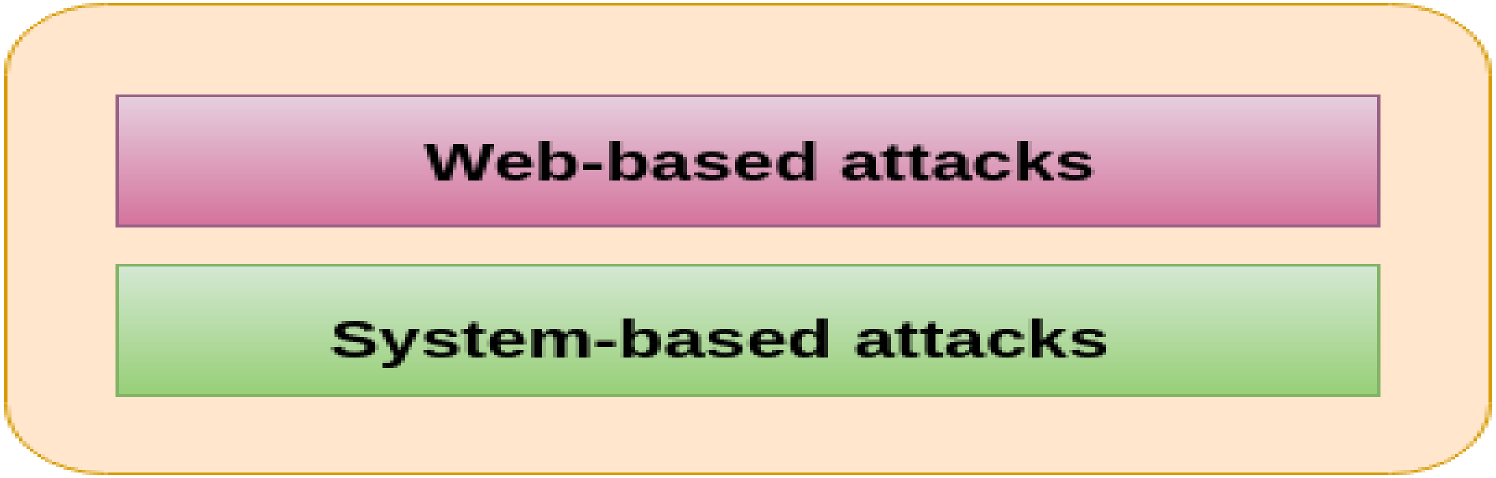
Chapter 2

Types of Cyber Attacks



Types of Cyber Attacks

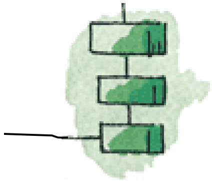
- **A cyber-attack** is an exploitation of computer systems and networks. It uses malicious code to alter computer code, logic or data and lead to cybercrimes, such as information and identity theft.
- We are living in a digital era. Now a day, most of the people use computer and internet. Due to the dependency on digital things, the illegal computer activity is growing and changing like any type of crime.
- **Cyber-attacks** can be classified into the following categories:

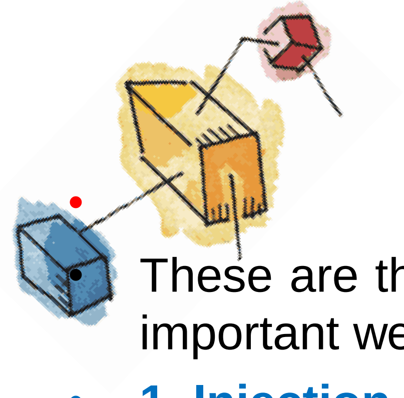


Web-based attacks

System-based attacks

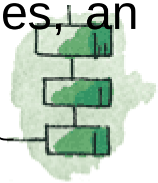
Classification of Cyber attacks





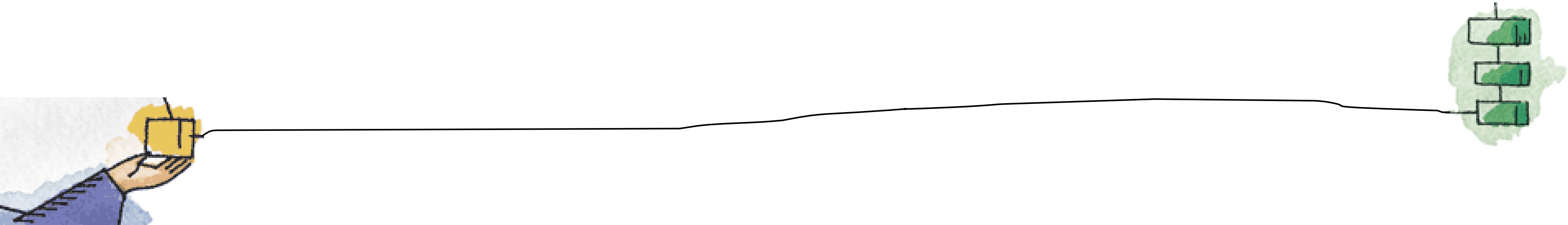
Types of Cyber Attacks

- ## 1: Web-based attacks
- These are the attacks which occur on a website or web applications. Some of the important web-based attacks are as follows-
- **1. Injection attacks**
- It is the attack in which some data will be injected into a web application to manipulate the application and fetch the required information.
- **Example-** SQL Injection, code Injection, log Injection, XML Injection etc.
- **2. DNS Spoofing**
- DNS Spoofing is a type of computer security hacking. Whereby a data is introduced into a DNS resolver's cache causing the name server to return an incorrect IP address, diverting traffic to the attackers computer or any other computer. The DNS spoofing attacks can go on for a long period of time without being detected and can cause serious security issues.
- **3. Session Hijacking**
- It is a security attack on a user session over a protected network. Web applications create cookies to store the state and user sessions. By stealing the cookies, an attacker can have access to all of the user data.

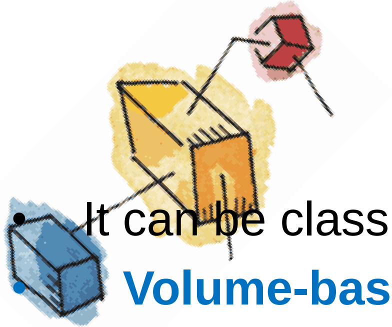


Types of Cyber Attacks

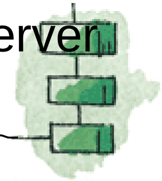
- **4. Phishing**
- Phishing is a type of attack which attempts to steal sensitive information like user login credentials and credit card number. It occurs when an attacker is masquerading as a trustworthy entity in electronic communication.
- **5. Brute force**
- It is a type of attack which uses a trial and error method. This attack generates a large number of guesses and validates them to obtain actual data like user password and personal identification number. This attack may be used by criminals to crack encrypted data, or by security, analysts to test an organization's network security.
- **6. Denial of Service**
- It is an attack which meant to make a server or network resource unavailable to the users. It accomplishes this by flooding the target with traffic or sending it information that triggers a crash. It uses the single system and single internet connection to attack a server.



Types of Cyber Attacks

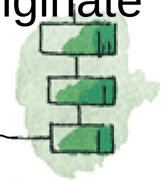


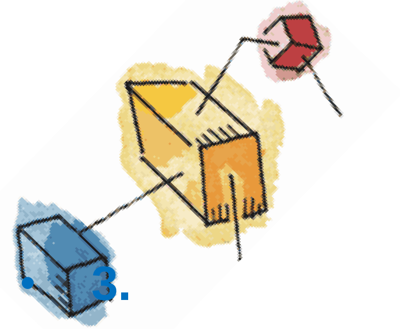
- It can be classified into the following-
- **Volume-based attacks-** Its goal is to saturate the bandwidth of the attacked site, and is measured in bit per second.
- **Protocol attacks-** It consumes actual server resources, and is measured in a packet.
- **Application layer attacks-** Its goal is to crash the web server and is measured in request per second.
- **7. Dictionary attacks**
- This type of attack stored the list of a commonly used password and validated them to get original password.
- **8. URL Interpretation**
- It is a type of attack where we can change the certain parts of a URL, and one can make a web server to deliver web pages for which he is not authorized to browse.
- **9. File Inclusion attacks**
- It is a type of attack that allows an attacker to access unauthorized or essential files which is available on the web server or to execute malicious files on the web server by making use of the include functionality.



Types of Cyber Attacks

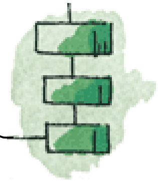
- **10. Man in the middle attacks**
- It is a type of attack that allows an attacker to intercepts the connection between client and server and acts as a bridge between them. Due to this, an attacker will be able to read, insert and modify the data in the intercepted connection.
- ## 2: System-based attacks
- These are the attacks which are intended to compromise a computer or a computer network. Some of the important system-based attacks are as follows-
- **1. Virus**
- It is a type of malicious software program that spread throughout the computer files without the knowledge of a user. It is a self-replicating malicious computer program that replicates by inserting copies of itself into other computer programs when executed. It can also execute instructions that cause harm to the system.
- **2. Worm**
- It is a type of malware whose primary function is to replicate itself to spread to uninfected computers. It works same as the computer virus. Worms often originate from email attachments that appear to be from trusted senders.





Types of Cyber Attacks

- **3.**
- **Trojan horse**
- It is a malicious program that occurs unexpected changes to computer setting and unusual activity, even when the computer should be idle. It misleads the user of its true intent. It appears to be a normal application but when opened/executed some malicious code will run in the background.
- **4. Backdoors**
- It is a method that bypasses the normal authentication process. A developer may create a backdoor so that an application or operating system can be accessed for troubleshooting or other purposes.
- **5. Bots**
- A bot (short for "robot") is an automated process that interacts with other network services. Some bots program run automatically, while others only execute commands when they receive specific input. Common examples of bots program are the crawler, chat room bots, and malicious bots.



Information Security Vs. Cyber security:

- **Information Security Vs. Cyber security: What's The Difference?**
- The terms **Cyber Security** and **Information Security** are often used inter changeably. As they both are responsible for the security and protecting the computer system from threats and information breaches and often Cyber security and information security are so closely linked that they may seem synonymous and unfortunately, they are used synonymously. If we talk about data security it's all about securing the data from malicious users and threats. Now another question is what is the difference between Data and Information? So one important point is that "not every data can be information" data can be informed if it is interpreted in a context and given meaning.
- Cyber security
- The activity can be defined as the defending of computers, servers, mobile devices, electronic systems, networks and data from malicious attacks which range from business organisations to personal devices. The attacks are divided into different categories such as network security, application security, information security, operational security, and disaster recovery along with business continuity.

Information Security Vs. Cyber security:

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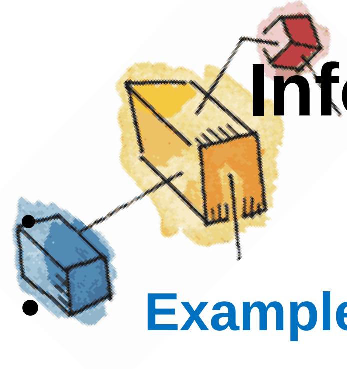
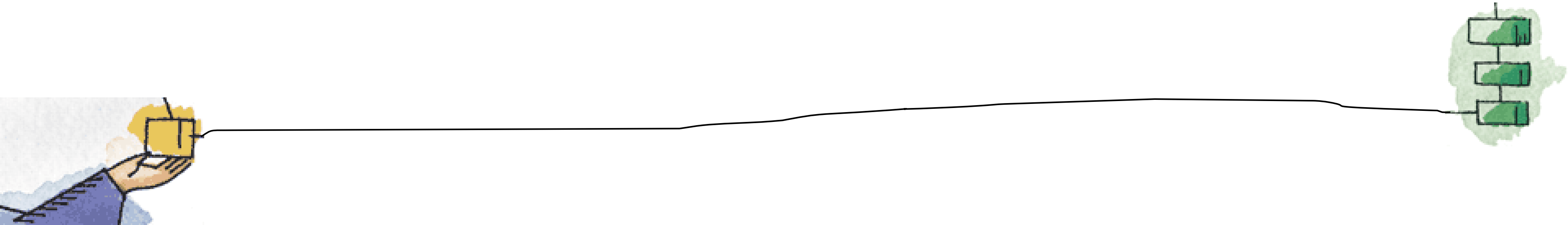
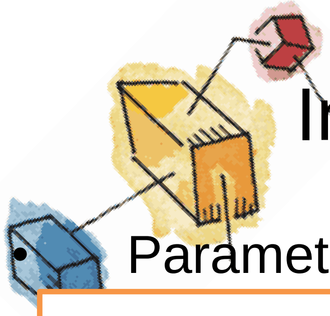
- Network security and application security focuses on securing computer networks, along with software and device free from threats and vulnerabilities, respectively. Disaster recovery is associated with the reaction of an organisation in case a loss of data takes place and tries to restore its operational capabilities in order to continue the functioning of the organisation.
- **Information security**
- Information security in a simplified manner can be described as the prevention of unauthorised access or alteration during the time of storing data or transferring it from one machine to another. The information can be biometrics, social media profile, data on mobile phones etc. due to which, the research for information security covers various sectors such as crypto currency and online forensics.

Information Security Vs. Cyber security:



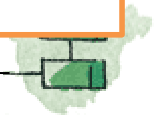
- **Examples and Inclusion of Cyber Security are as follows:**
- Network Security
- Application Security
- Cloud Security
- Critical Infrastructure
- **Examples and inclusion of Information Security are as follows:**
- Procedural Controls
- Access Controls
- Technical Controls
- Compliance Controls





Information Security Vs. Cyber security:

• Parameters	CYBER SECURITY	INFORMATION SECURITY
Basic Definition	It is the practice of protecting the data from outside the resource on the internet.	It is all about protecting information from unauthorized users, access, and data modification or removal in order to provide confidentiality, integrity, and availability.
Protect	It is about the ability to protect the use of cyberspace from cyber attacks.	It deals with the protection of data from any form of threat.
Scope	Cyber security to protect anything in the cyber realm.	Information security is for information irrespective of the realm.
Threat	Cyber security deals with the danger in cyberspace.	Information security deals with the protection of data from any form of threat.
Attacks	Cyber security strikes against Cyber crimes, cyber frauds, and law enforcement.	Information security strikes against unauthorized access, disclosure modification, and disruption.



Information Security Vs. Cyber security:

Parameters	CYBER SECURITY	INFORMATION SECURITY
Professionals	Cyber security professionals deal with the prevention of active threats or Advanced Persistent threats (APT).	Information security professionals are the foundation of data security and security professionals associated with it are responsible for policies, processes, and organizational roles and responsibilities that assure confidentiality, integrity, and availability.
Deals with	It deals with threats that may or may not exist in the cyber realm such as protecting your social media account, personal information, etc.	It deals with information Assets and integrity, confidentiality, and availability.
Defence	Acts as first line of defence.	Comes into play when security is breached.