Cyber Security

2024

Cyberbombs That Sneak into Your Devices

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Objectives

After finishing this lesson, you will be able to:

- **Understand the range of cyberattack techniques**
- **Recognize the motivations behind attacks**
- **Develop a sense of potential consequences**

Malware – The Hidden Threat

- Some cyberattacks are designed to cause damage, not directly steal data.
- Type: **viruses, worms, Trojans, ransomware, and spyware.**
- **Malware** can steal passwords, crash your system, extort money, and spy on you.

Viruses: The Self-Replicating Threat

- How Viruses Work
  - Like a biological virus, they need a host to spread.
  - They insert their code into files, programs, or even your operating system.
  - When you open the infected file, the virus runs and spreads
- The Damage
  - Viruses can slow down your computer or make it crash.
  - They can steal your sensitive information.
  - Some are sneaky, while others announce themselves with a bang!

Computer Worms: Network Invaders

- How Viruses Work
  - **Stand-alone malware** – they don't need to piggyback on other files
  - Exploit security holes in your computer and network to spread
  - Multiply like crazy, slowing everything down
- The Danger
  - Even if they don't steal data directly, they clog up your network
  - Can make internet and work tasks painfully slow
  - Can open the door for other, even nastier malware to sneak in!

Trojans: The Digital Deception

- The Trick
  - **Disguised as helpful software or hidden inside something legitimate.**
  - Relies on YOU to accidentally let it in (clicking links, installing apps)
  - Doesn't spread on its own like viruses or worms
- What They Do
  - Once inside, a Trojan can do almost anything the attacker wants.
  - Steal your passwords or bank details.
  - Let other malware sneak onto your system.
  - Even take remote control of your computer.

Ransomware: Your Data Held Hostage

- How Ransomware Works
  - **Encrypts your files so you can't access them.**
  - Demands payment, or threatens to delete your data forever
  - Can even steal your files instead of just encrypting them
- The Danger
  - Often arrives disguised as a virus or Trojan.
  - Attacks are getting smarter, targeting valuable data
  - Stakes are high – businesses and individuals can lose everything

Scareware: When Fear is the Weapon

- The Trick
  - Fake pop-ups scream about 'viruses' on your device.
  - They push useless 'security software' you have to buy
  - Preys on your fear, not actual tech problems.
- Why it Works
  - Even tech-savvy people can get startled in the moment.
  - No one wants their computer to break.
  - Scammers know how to exploit panic.

Spyware: The Silent Watcher

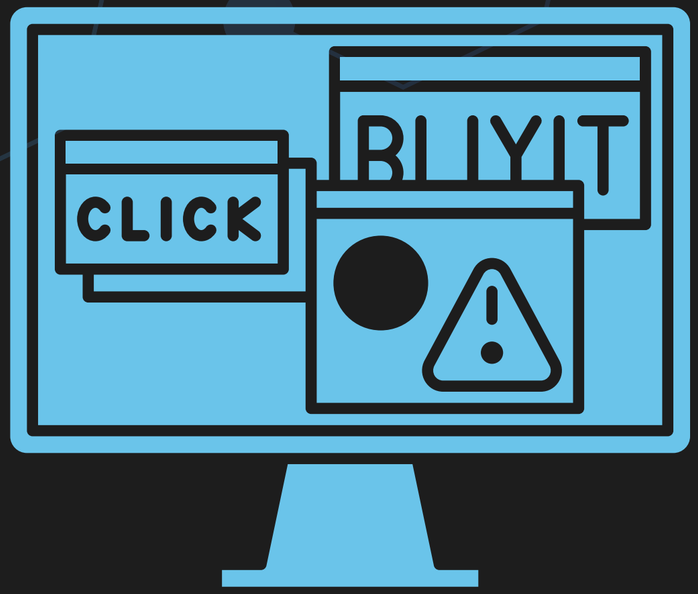
- What Spyware Does
  - Steals your keystrokes, passwords, and personal information.
  - Snaps secret photos or videos with your webcam.
  - Records everything you say near your device
  - Tracks your every move, online and offline.
- The Blurred Line
  - Some spying tools are used by legitimate businesses (tracking cookies)
  - **Even popular apps can collect sensitive data about you.**
  - **The difference is in permission – malware spies without it.**

Cryptominers: Stealing Your Power for Profit

- How Cryptominers Work
  - Malware hijacks your computer's processing power.
  - Use to solves complex math problems to create cryptocurrency.
  - Profit goes straight to the attacker, not you.
- Why They're Dangerous
  - Miners skyrocket your electricity bill.
  - Slow down your device to a crawl.
  - **Easy money for criminals, even if you don't earn much**

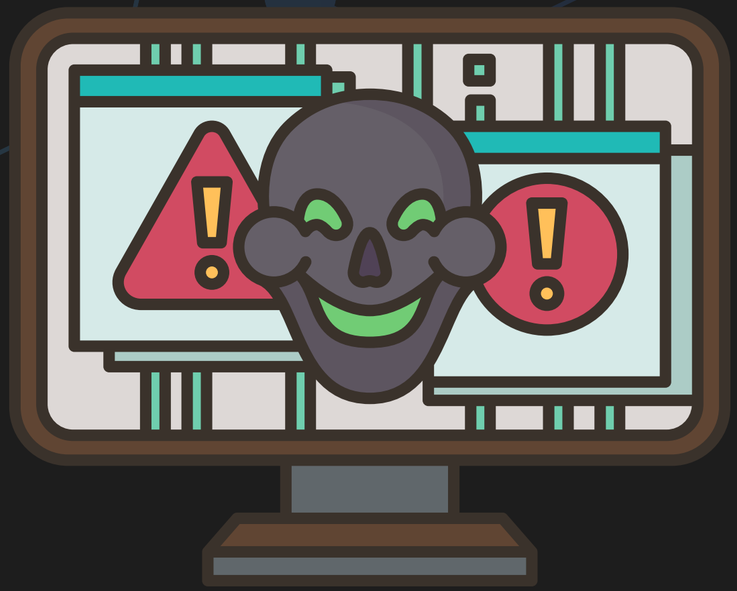
Adware: The Double-Edged Sword

- Adware Can Be Legitimate
  - Often comes bundled with 'free' software.
  - Displays ads, but you know it's there.
  - Developers use it to make money instead of charging you
- When Adware is Malware
  - Sneaks onto your device without permission.
  - Bombards you with pop-ups or hijacks your browser.
  - Can track your activity to personalize the ads.



Blended Malware: The Ultimate Threat

- The Hybrid Attack
  - Combines the worst parts of viruses, worms, Trojans, and more.
  - Can spread quickly, hide cleverly, and inflict maximum damage.
- Why It's Dangerous
  - Difficult to detect with traditional security tools.
  - Often created by experienced, well-funded attackers



Zero-Day Malware: The Invisible Attack

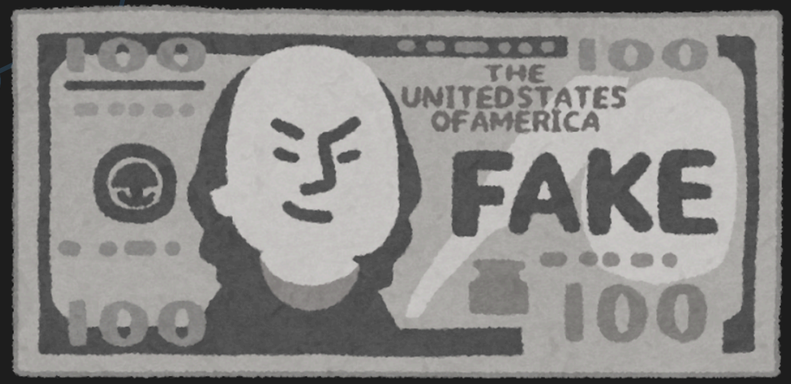
- What Makes It Dangerous
  - Exploits an unknown flaw in software or systems.
  - No patches or defenses exist yet.
  - Devastating attacks made possible.
- The High Price Tag
  - Complex to create, requiring expert knowledge.
  - Often developed by well-funded groups, even governments.
  - A single exploit can cost over $1 million!

Fake Malware: When Hacking Is Just a Bluff

- The Trick
  - Fake virus alerts or emails demand money.
  - No actual hacking involved, just scare tactics.
  - Preys on fear and confusion.
- Why It Works
  - Panic can override logic, even for tech-savvy people.
  - Scammers know the right buttons to push.
  - Easy money if victims fall for it.

Fake Renewals: When Protection is the Scam

- The Scam
  - Emails or pop-ups claim your security subscription is expiring.
  - Demands urgent payment to renew.
  - Mimics real security companies to trick you.
- How to Spot a Fake
  - Check the sender's email address closely for misspellings.
  - Hover over links WITHOUT clicking to see the real destination.
  - Never renew through an unsolicited email or pop-up.



Question

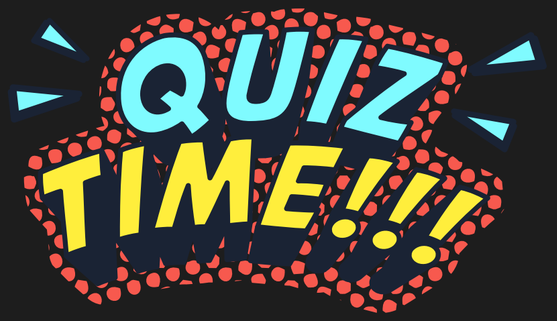
Which of the following is NOT a common type of malware?

A. Spyware

B. Firewall

C. Ransomware

D. Trojan



Question

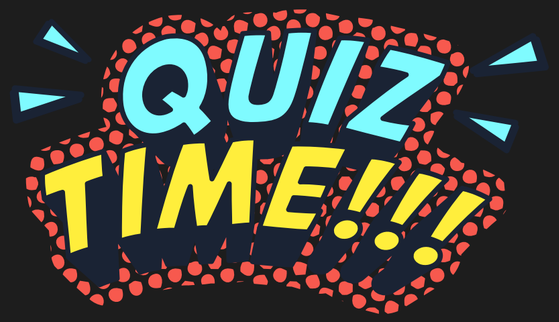
Viruses typically spread by:

A. Exploiting vulnerabilities in network connections.

B. Inserting their code into files or programs.

C. Disguising themselves as helpful software.

D. Both (a) and (b).



Question

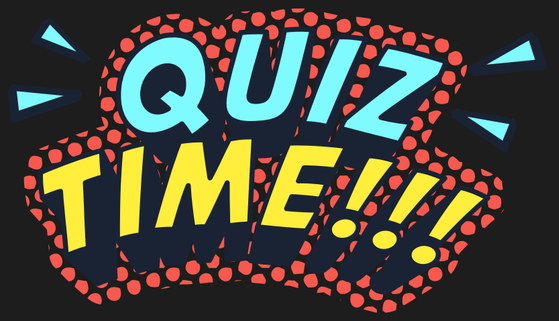
Worms are different from viruses because they can spread

A. Without needing a host file or program.

B. By stealing your passwords

C. By encrypting your data.

D. Only on Windows computers..



Question

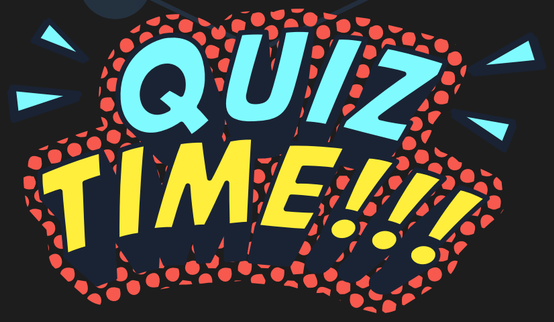
Trojans are most commonly spread through:

A. Network connections.

B. Social engineering tactics like tricking users into clicking links.

C. Hardware malfunctions.

D. All of the above.



Question

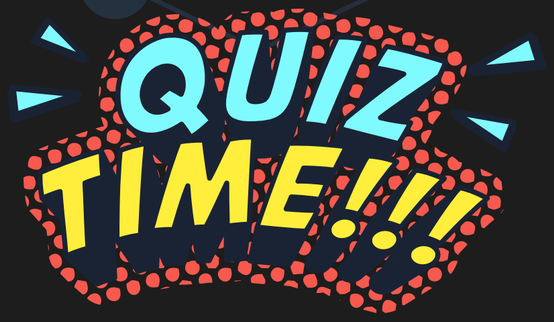
Ransomware encrypts your files and demands a ransom payment in exchange for:

A. Updating your security software

B. Installing a new antivirus program.

C. The decryption key to access your files again.

D. All of the above.



Question

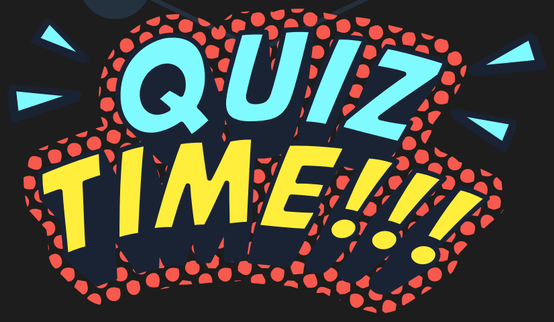
Scareware attempts to pressure users into buying unnecessary security software by:

A. infecting their device with a virus.

B. Displaying fake pop-up warnings about non-existent threats.

C. Stealing personal information through keylogging

D. All of the above.



Question

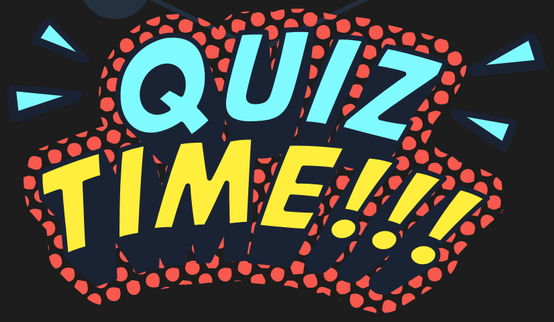
Spyware can steal a variety of information from your device, including:

A. Your browsing history.

B. Your keystrokes as you type.

C. Recordings from your webcam or microphone.

D. All of the above.



Question

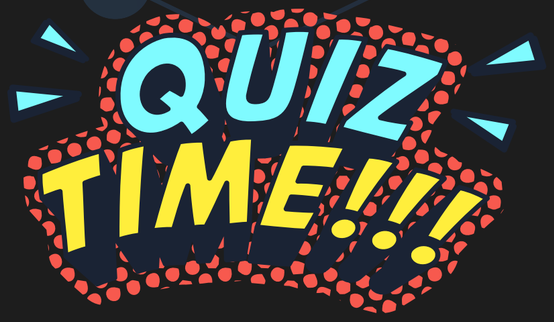
Cryptocurrency miners hijack your computer's processing power to:

A. Generate new cryptocurrency for the attacker.

B. Slow down your device to a crawl.

C. Both of them

D. None of them



Question

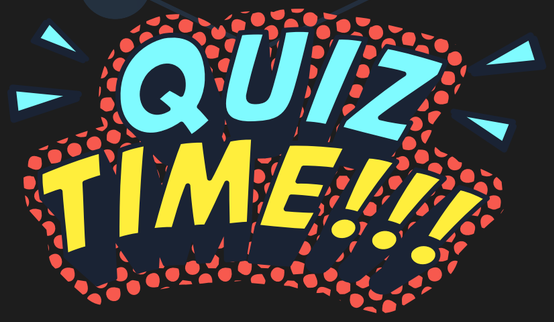
Adware can be legitimate if:

A. It displays intrusive pop-up ads.

B. It comes bundled with free software, and you know about it beforehand.

C. It steals your browsing data

D. It hides in your device's system files.



Question

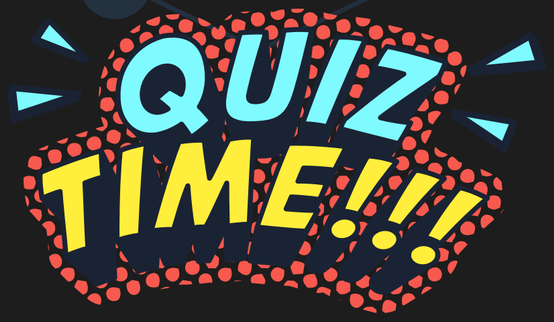
Zero-day malware is particularly dangerous because:

A. It's easy to create and inexpensive.

B. It exploits unknown vulnerabilities in software or systems.

C. It can spread quickly through email attachments.

D. It targets Apple devices specifically.



Question

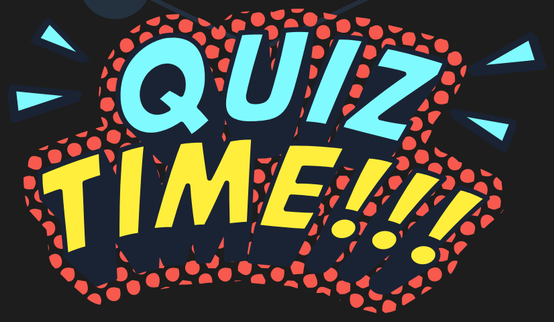
Blended malware attacks are dangerous because they:

A. Combine features of different malware types for maximum impact.

B. Only affect outdated systems.

C. Are created only by inexperienced hackers.

D. Are easy to detect and defend against.



Question

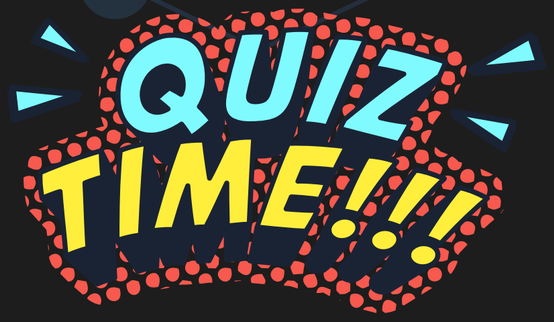
The goal of most malware is to:

A. Help secure your computer.

B. Make the attacker money or cause disruption.

C. Test advanced hacking techniques.

D. Improve the performance of your system.



Question

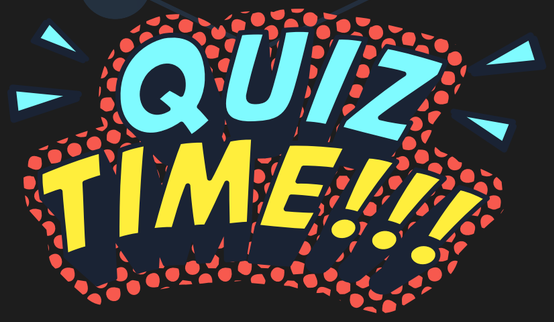
Which of these is NOT a good defense against malware?

A. Keep your software and operating system updated.

B. Install reputable security software.

C. Avoid opening emails or clicking on links from unknown senders.

D. Rely on your computer's built-in defenses only.



Question

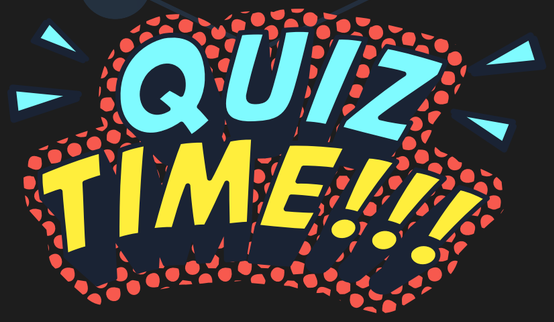
One way social engineering attacks like fake renewal scams can be successful is by:

A. Targeting users when they're already tired or stressed.

B. Mimicking legitimate companies and messages to lower suspicion.

C. Both of them

D. None of them



Question

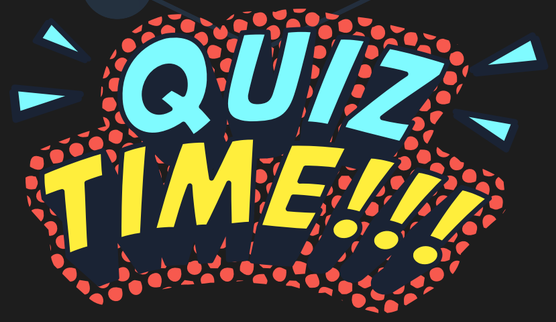
Which of these statements is TRUE about malware?

A. Macs and other non-Windows devices are immune to malware.

B. If you're careful, you can avoid all malware infections.

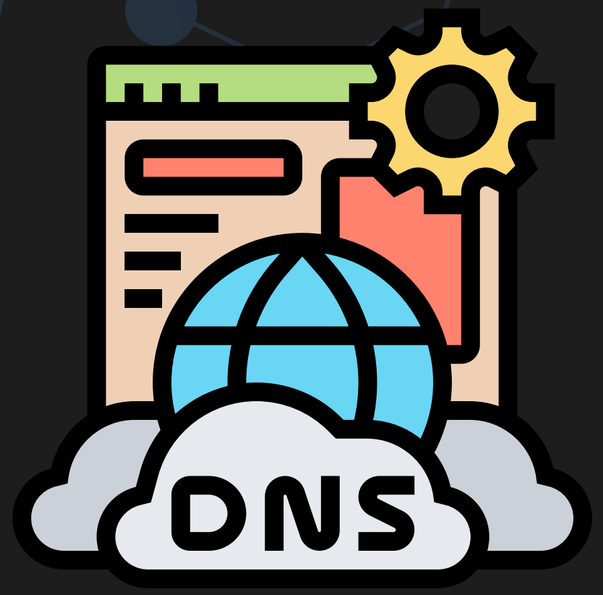
C. Modern anti-malware software can catch 100% of all threats.

D. Malware is constantly evolving, requiring vigilance and updated protection.



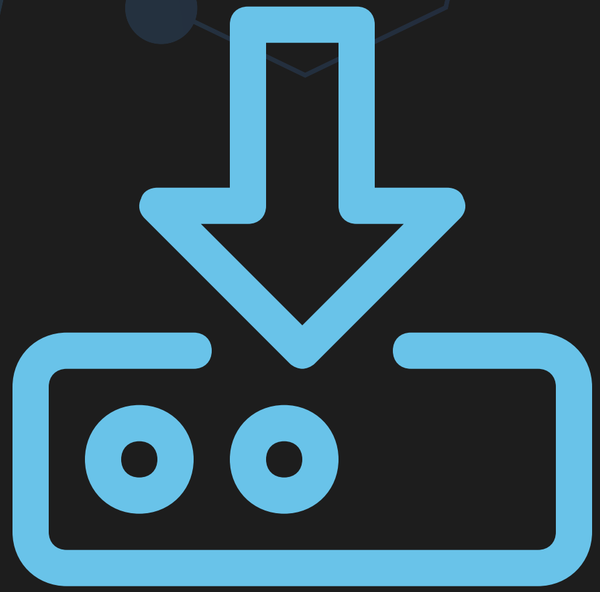
When the Internet's Map Lies: DNS Poisoning

- Your Internet Guide
  - **Translates website names (example.com) into IP addresses computers understand.**
  - Like a giant phonebook for the internet.
- DNS Poisoning
  - Attackers corrupt the 'phonebook', sending you to fake websites.
  - Can steal passwords, even if you typed the address correctly.
  - Your map leads to a trap.



Drive-By Downloads: The Hidden Ride

- What Are They?
  - Malware that sneaks onto your device without your full knowledge.
  - Can be completely automatic (poisoned websites)
  - Or disguised as something helpful (fake 'security patches')
- Why They're Dangerous
  - They play on trust or a sense of urgency.
  - Even cautious users can get tricked by clever disguises.

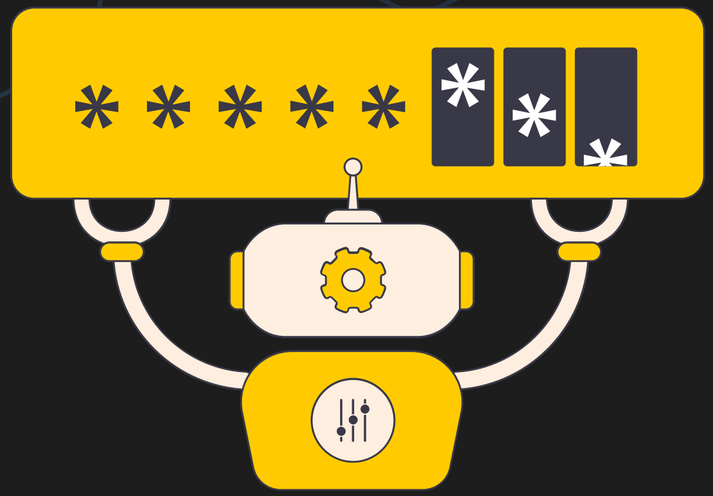


How Passwords Get Stolen

- Passwords are stolen in many ways:
  - Database breaches
  - Social engineering tricks
  - Automated guessing attacks
  - Malware that steals your keystrokes
  - Sniffing on unsecured networks

Credential Attack

- Credential Attacks use stolen or 'guessed' login information to break into systems:
  - Brute Force: A flurry of random character symbols
  - Dictionary Attack: An open dictionary
  - Calculated Attack: A person's silhouette + common data points (birthdate, pet names, etc.)
  - Blended Attack: A combination of the above symbols

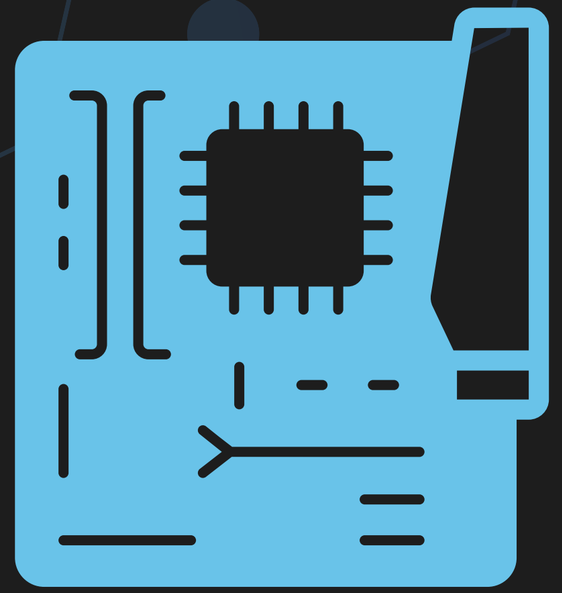


When Updates Cause Trouble

- The Need for Updates
  - Patches fix security flaws and bugs in software
  - Not updating leaves you vulnerable to attack.
- The Maintenance Dilemma
  - Updates sometimes break other programs or cause problems.
  - Delays are common as people troubleshoot compatibility.
  - Security needs often lose out to keeping things working.

Advanced Attacks: Beyond the Buzzword

- What Makes Them Advanced?
  - Often involves expensive research and development.
  - May exploit unknown vulnerabilities (zero-day attacks).
  - Require a high level of technical skill to pull off.
- The Fuzzy Definition
  - No official standard for what 'advanced' truly means.
  - Expert opinions vary.



Opportunistic vs. Targeted Attacks

- Opportunistic
  - 'Spray and pray' approach, hoping to exploit many systems.
  - Low skill needed, but lower success rate per target.
- Targeted
  - Focused on a specific victim.
  - Attacks tailored to that system's defenses.
  - High effort, but potentially devastating.

Question

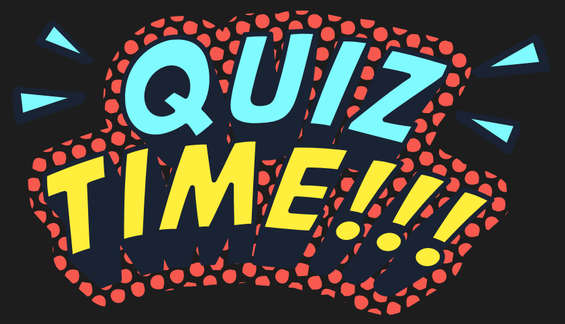
Criminals can steal passwords through various methods. Which is the MOST common way passwords are compromised?

A. Brute force attacks that try every possible password combination.

B. Social engineering tricks that manipulate users into giving away passwords

C. Network sniffing on unsecured Wi-Fi networks

D. Stealing password databases from online stores (if not properly encrypted)



Question

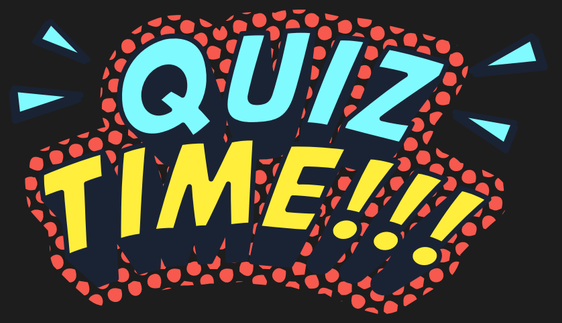
Malvertising refers to:

A. Using legitimate advertising to promote fake security products.

B. Online ads that contain hidden malware that infects devices.

C. Spam emails that appear to be from reputable companies.

D. Phishing attacks that try to trick users into revealing personal information.



Question

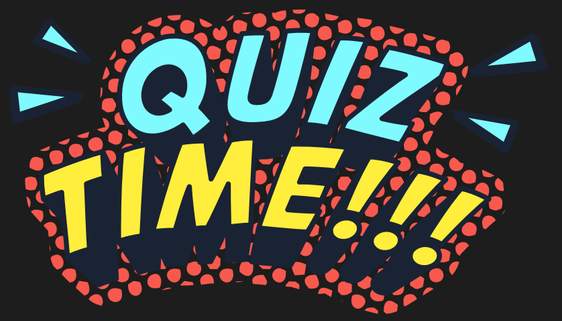
Which of these is NOT a way that drive-by downloads can infect your device:

A. Clicking on a malicious advertisement on a website

B. Downloading a seemingly helpful software that's malware

C. Visiting a compromised website that automatically infects your device

D. Opening an email attachment containing hidden malware



Question

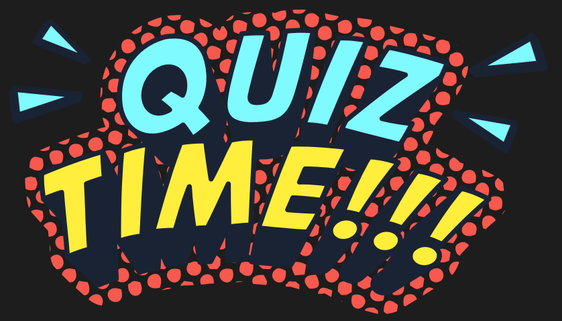
A common challenge in keeping computer systems secure is:

A. The high cost of security software.

B. The lack of user awareness about cyber threats.

C. The difficulty of balancing security updates with maintaining software compatibility

D. All of the above



Question

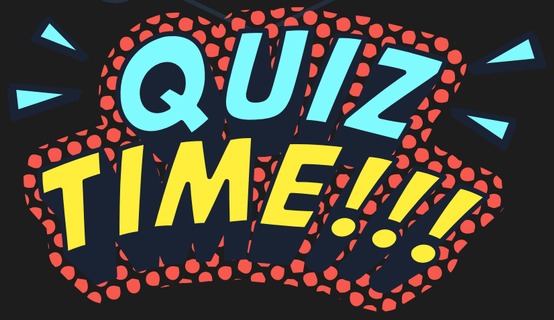
Credential stuffing attacks involve:

A. Stealing passwords through social engineering tricks.

B. Using stolen usernames and passwords to try logging into other accounts.

C. Guessing passwords through brute force or dictionary attacks.

D. Exploiting vulnerabilities in network security protocols.



Question

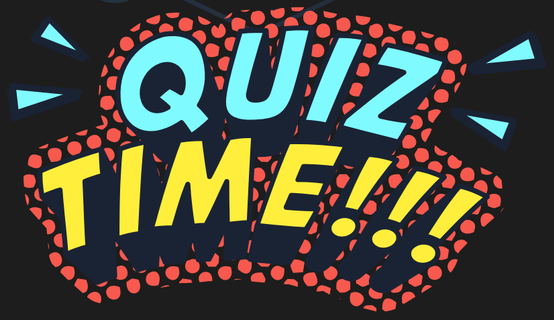
DNS (Domain Name System) translates:

A. IP addresses into human-readable website names.

B. Usernames into passwords for secure logins.

C. Encryption codes are used to scramble sensitive data.

D. Website content into different languages for global users.



Question

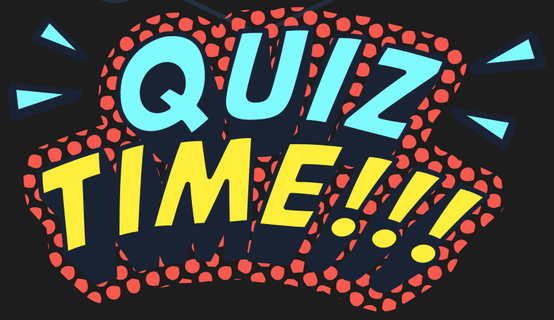
In a DNS poisoning attack, criminals aim to:

A. Steal your credit card information when you enter it on a website.

B. Redirect your web traffic to a fake website that impersonates a legitimate one.

C. Overload a website with traffic to take it down (denial-of-service attack).

D. Corrupt the data on your computer's hard drive.



Question

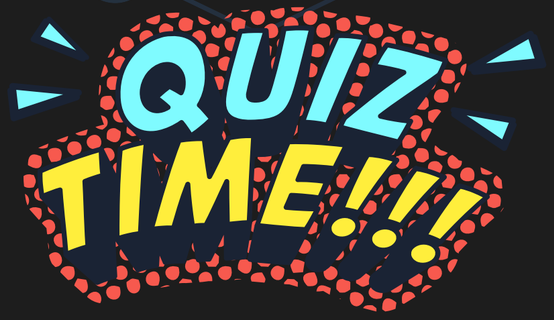
Which of these best describes an opportunistic cyberattack?

A. A highly targeted attack that exploits a specific system's vulnerabilities.

B. A broad attempt to infect as many devices as possible with malware.

C. A social engineering attack that manipulates users into giving away personal information.

D. A denial-of-service attack that floods a website with overwhelming traffic.



Question

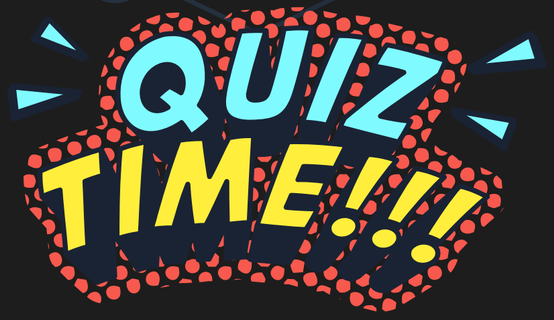
What is the main benefit for attackers when using malvertising?

A. They can directly steal money from user accounts.

B. It allows them to bypass a user's security software.

C. They can infect a large audience through trusted websites.

D. Malvertising is a cheap and easy way to launch cyberattacks.



Question

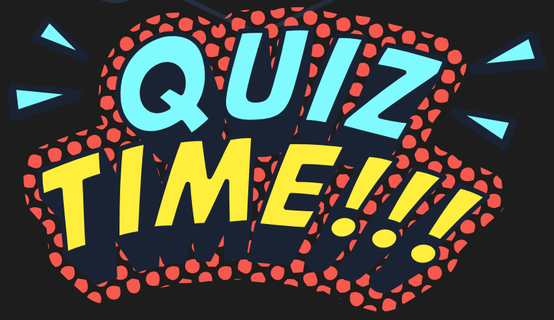
What is a key way to protect yourself from drive-by downloads and other malware threats?

A. Regularly clear your browsing history and cookies.

B. Only visit websites you know and trust (avoid suspicious links)

C. Disable pop-up windows entirely on your web browser.

D. Update your computer's operating system and software regularly.

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Q&A