SEMtech!

Student Engagement & Mentoring in Technology

Troubleshooting Methodology

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What is Troubleshooting?

- Troubleshooting is a **systematic approach** to diagnosing and resolving IT issues.
- The **CompTIA IT Fundamentals (ITF+) exam** outlines a **structured methodology** for effective problem resolution.
- This methodology applies to **hardware, software, networking, and cybersecurity issues**.

The 8-Step Troubleshooting Process

Identify the problem

Research knowledge base/internet

Establish a theory of probable cause

Test the theory to determine the cause

Establish a plan of action and identify potential effects

Implement the solution or escalate

Verify full system functionality and apply preventive measures

Document findings, actions, and outcomes

Step 1 - Identify the Problem

- Gather information from the user.
- Replicate the issue if possible.
- Check logs, error messages, and recent changes.

Example:
A user reports that their computer won't turn on. You check power connections and listen for beep codes.

Step 2 - Research Knowledge Base/Internet

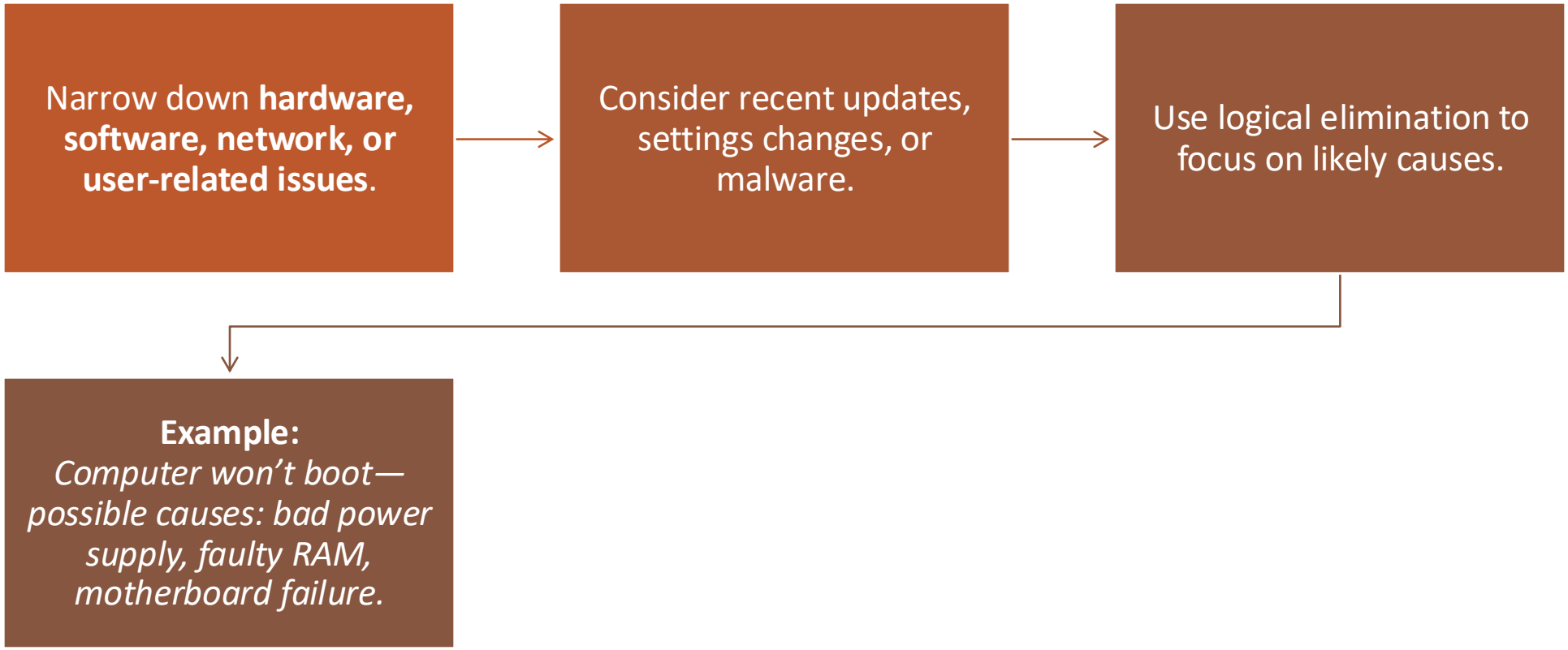
Use **vendor documentation, online forums, and error code lookups**.

Check company IT records for similar cases.

Search IT forums like **Stack Overflow, Reddit, and manufacturer support sites**.

Example:
A Windows update caused an issue—check Microsoft forums for known problems.

Step 3 - Establish a Theory of Probable Cause

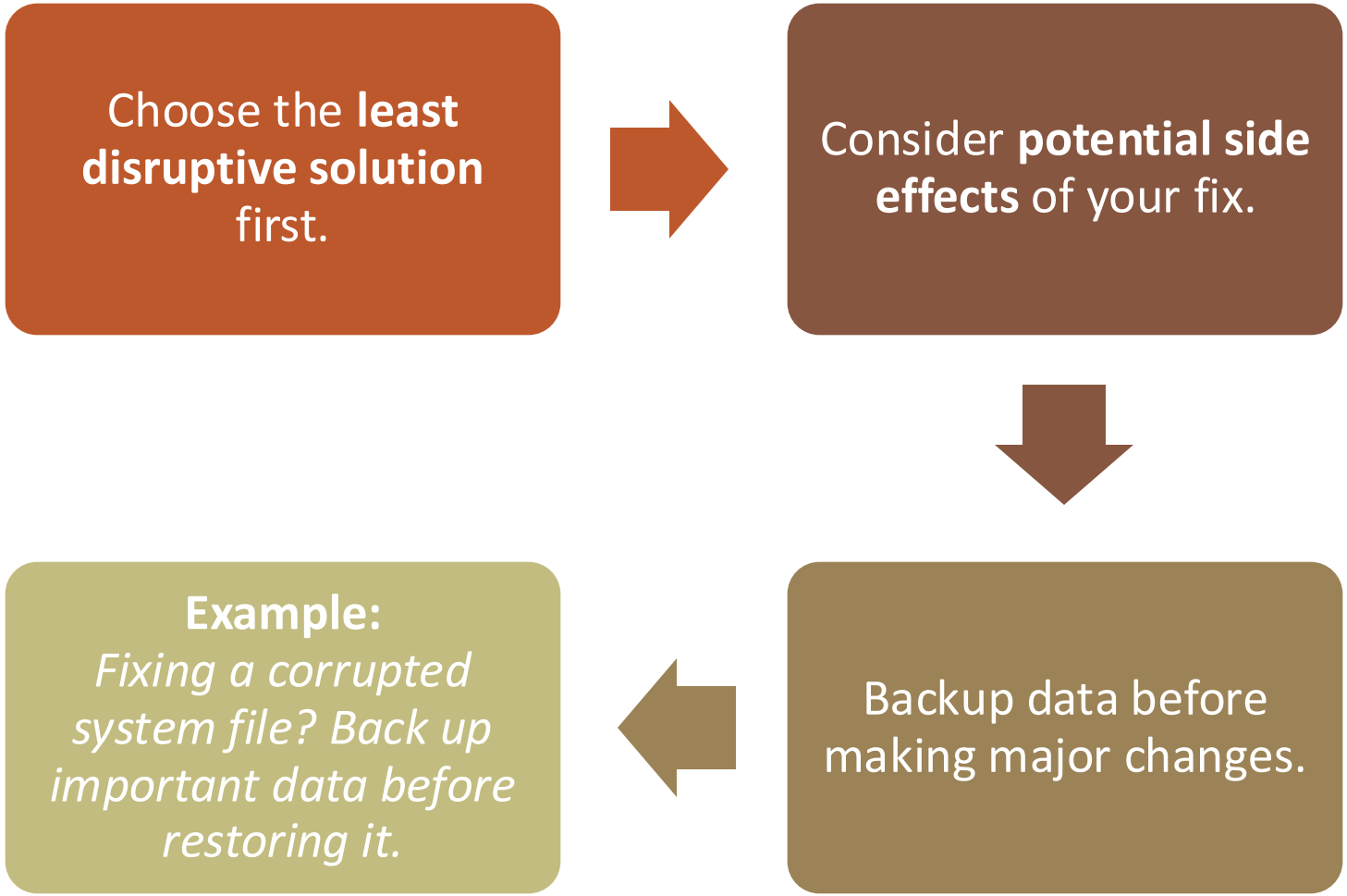


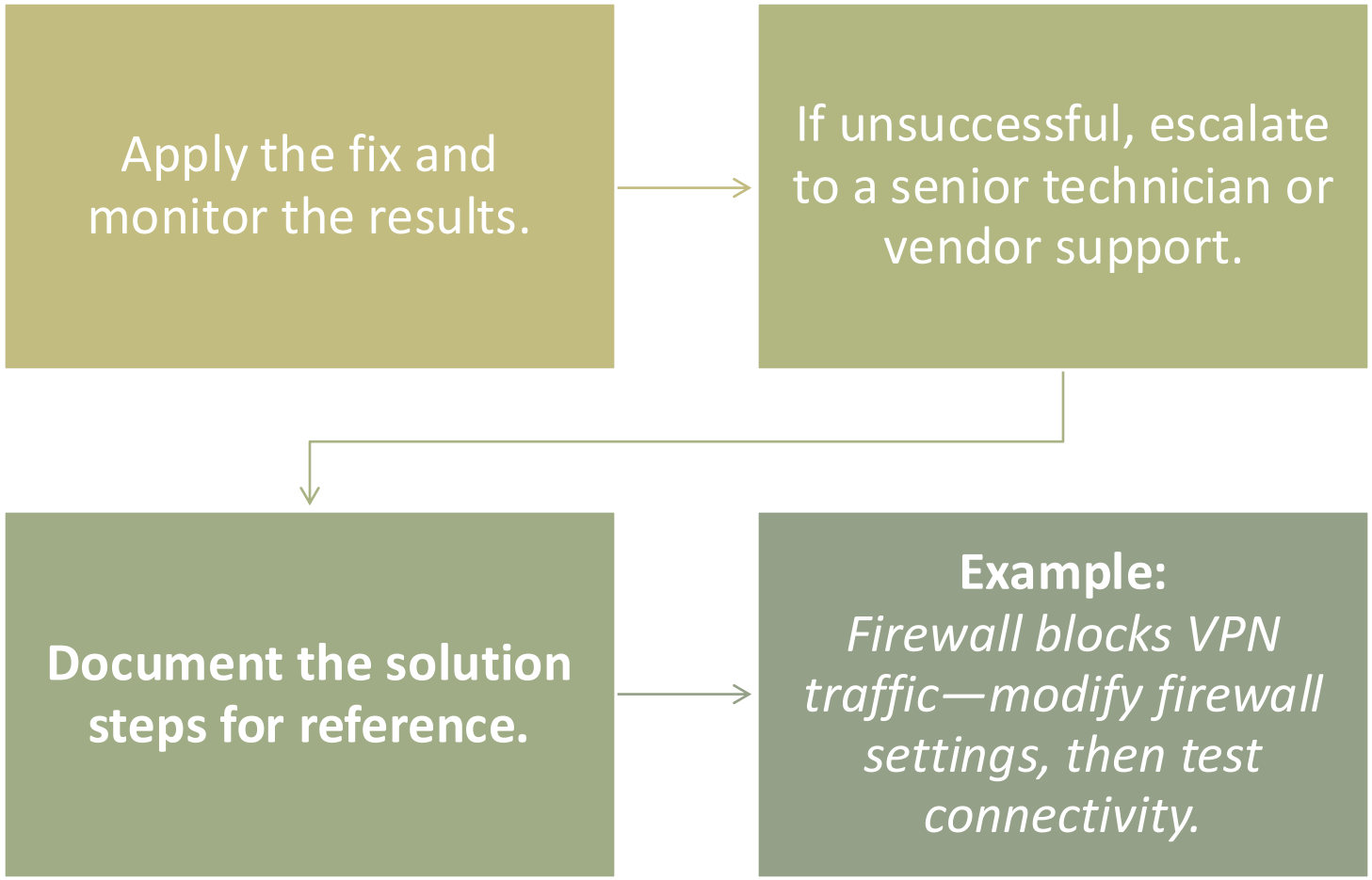
Step 4 - Test the Theory to Determine the Cause

- Try **quick tests** (restart, swap cables, check task manager).
- Run **diagnostic tools** (ping, ipconfig, hardware tests).
- If the issue persists, **reassess your theory**.

Example:
Wi-Fi is slow → Run a speed test → Background software update is consuming bandwidth.

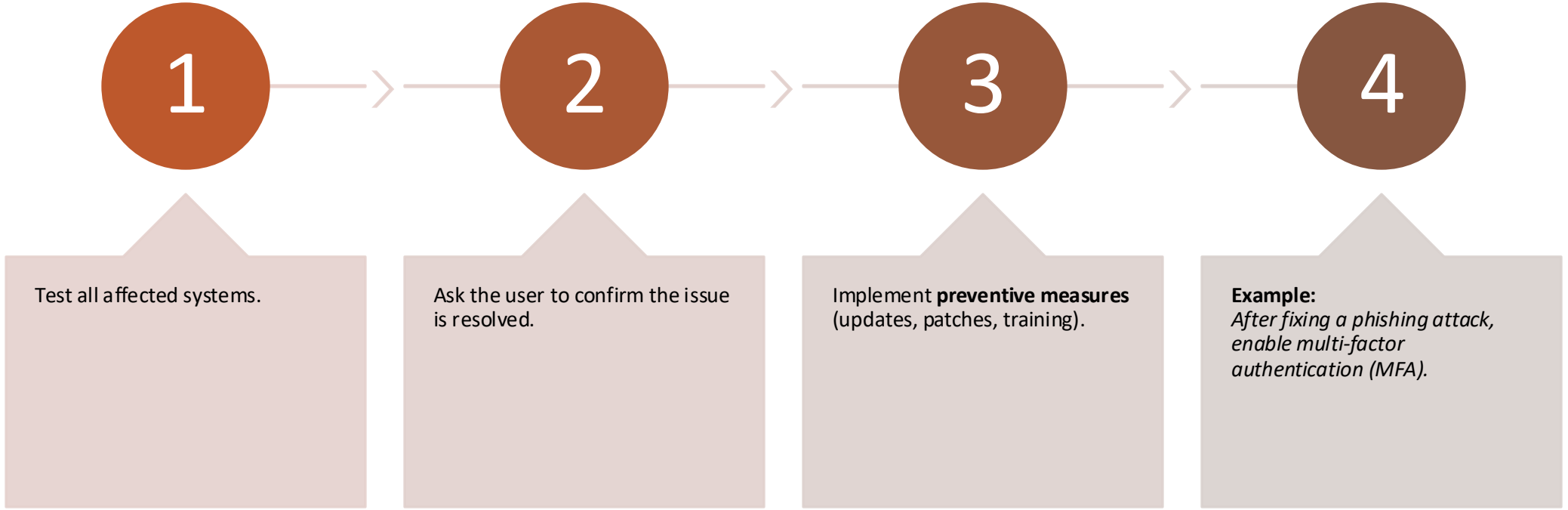
Step 5 - Establish a Plan of Action





Step 6 - Implement the Solution or Escalate

Step 7 - Verify Full System Functionality



Step 8 - Document Findings & Lessons Learned

- Record the **problem, troubleshooting steps, and resolution**.
- Update company knowledge base.
- Improve training or security policies if needed.

Example:
Documenting a known bug in accounting software for future reference.

Case Study - Cybersecurity Incident

Phishing Attack Compromised Email Account

The employee clicked a fake IT support email and entered credentials.

IT checked login logs—unauthorized access detected.

Solution: Forced password reset, enabled MFA, and educated employees.

Preventive Measure: Improved **email filtering and phishing simulations**.

Case Study - Healthcare IT Downtime

Hospital EHR System Failure

Doctors couldn’t access patient records.

IT checked server logs—high CPU usage due to a faulty update.

Solution: Rolled back update, restarted servers.

Preventive Measure: Scheduled **test environments before future updates**.

Case Study - VPN Failure in Enterprise

Remote Employees Unable to Connect to VPN

Multiple employees reported VPN login failures.

IT found that a firewall update was blocking VPN traffic.

Solution: Adjusted firewall settings, restarted VPN servers.

Preventive Measure: **Automated alerts for VPN downtime**.

Key Takeaways

Follow	Follow structured troubleshooting steps to resolve IT issues efficiently.
Test	Always test solutions and verify full functionality.
Implement	Implement preventive measures to reduce future issues.
Document	Document findings to improve IT processes.

Q&A

QUESTIONS?

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