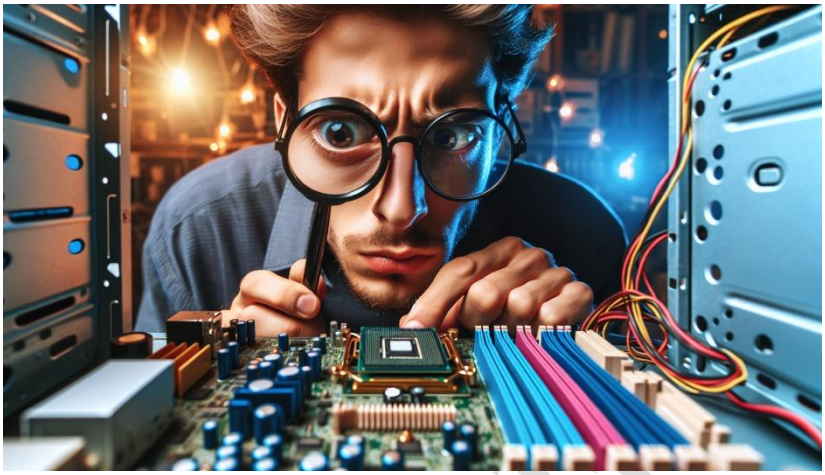
Introduction to Computer Troubleshooting



Think of computer troubleshooting like being a doctor for your computer. When your computer is "sick" (not working properly), you follow a process to figure out what's wrong (the diagnosis) and then fix it (the treatment).

The Golden Rule of Troubleshooting: Always start with the simplest solution first

1. **Identify the Problem:** What exactly is happening? Is the computer slow? Won't turn on? Showing an error message?
2. **Establish a Theory of Probable Cause:** What could be the reason? Is it plugged in? Did I install a new program recently?
3. **Test the Theory:** Check your guess. If you think it's unplugged, check the power cable.
4. **Create a Plan of Action and Fix the Problem:** Once you know the cause, plan how to fix it (e.g., update a driver, run a virus scan).
5. **Verify Full System Functionality:** Make sure the fix worked and didn't cause new problems.
6. **Document the Solution:** Remember what you did so you can fix it faster next time!

1. Computer Troubleshooting: The Basics

Common Hardware Issues and Solutions

Hardware is the physical part of the computer you can touch (like the keyboard, monitor, etc.).

Common Issue	Simple Solutions to Try First
Computer Won't Start	1. Is it plugged in? Is the power outlet working? 2. Check the power cable. 3. For laptops, the battery might be completely dead; let it charge for a while.
Monitor is Black	1. Is the monitor turned on? 2. Is the monitor cable securely connected to the computer? 3. Is the computer itself actually on?
Keyboard/Mouse Not Working	1. Try unplugging and replugging the USB cable. 2. Try a different USB port. 3. For wireless devices, check the batteries.
Computer Overheating	1. Make sure the air vents are not blocked. 2. Clean the dust from the fans (requires care). 3. Avoid using the computer on soft surfaces like a bed.

Diagnosing Software Problems

Software is the programs and the operating system (like Windows or macOS).

- **Recent Changes:** The most common cause! Did you just install a new program or update? Try uninstalling it.
- **Error Messages:** Write down the exact error message. You can search for it online to find specific solutions.
- **One Program vs. Entire Computer:** Is only one program crashing (e.g., just your web browser)? Then the problem is likely with that program. Is the whole computer slow or frozen? Then the problem is likely with the operating system or hardware.

2. Hardware & Advanced Software Diagnosis

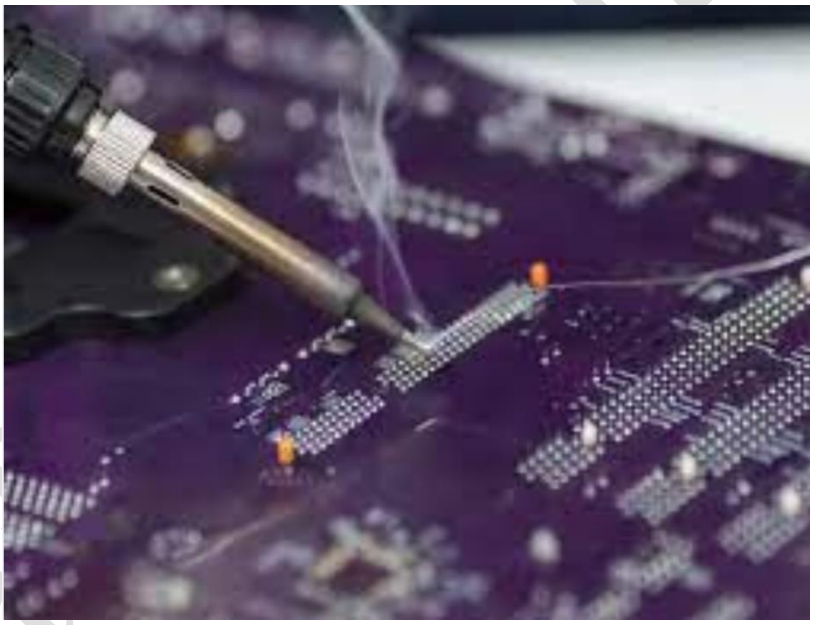
Hardware Components Diagnosis and Repair

For deeper hardware issues, you need to be more systematic.

- **Listen for Beeps:** When you turn on the computer, it performs a "Power-On Self-Test" (POST). If it fails, it might beep in a specific pattern (e.g., one long beep, two short beeps). This code tells you what's wrong (e.g., RAM issue, graphics card problem). Check the motherboard manual for the beep code meanings.
- **Swapping Parts:** The best way to test a hardware component is to replace it with a known working one. For example, if you suspect the RAM is bad, try replacing it with good RAM sticks to see if the problem goes away.
- **Important Note:** For university students, it's often safer to report complex hardware issues to your university's IT support rather than trying to open the computer yourself.

Using Safe Mode for Troubleshooting

Safe Mode is a special way to start Windows with only the most basic programs and drivers needed to run. It's a fantastic diagnostic tool.



- **Why is it useful?** If your computer works fine in Safe Mode, it means the core Windows system is okay. The problem is likely caused by:
  - A **program** that starts automatically.
  - A **driver** that is faulty.
  - **Malware**.
- **How to use it:** In Safe Mode, you can:
  1. **Uninstall recently installed software** that might be causing conflicts.
  2. **Run a virus scan** more effectively because the malware may not be active.
  3. **Update or roll back drivers**.
- **How to access Safe Mode:** Usually, you restart your computer and press the **F8** key repeatedly before the Windows logo appears. (In newer Windows versions, you may need to go to Settings > Update & Security > Recovery > Advanced Startup).