Computer Troubleshooting
Part (1)

Basic Troubleshooting Techniques

If you use a computer for work or entertainment, it is likely you've experienced error messages or unexpected crashes. These problems are common, and the more time you spend using a computer, the more likely it is you will use troubleshooting techniques.

Computer troubleshooting is not reserved for IT professionals. With the right knowledge, tools, and approach, anyone can navigate through computer woes.

We will discuss what computer troubleshooting is, the most common problems you may face and how to deal with issues that range from simple to complex.

What is computer troubleshooting?

Computer troubleshooting is the process of identifying, diagnosing and resolving issues or problems that occur in computer systems, software applications, or related hardware components. When computers encounter problems, troubleshooting is necessary to restore their normal functioning and ensure optimal performance. This practice is crucial for both individual users and IT professionals who support larger systems. In order to deal with these issues, it is important to collect relevant information about the computer and the circumstances of the use, isolate the problem, and develop a solution.

Computer troubleshooting can range from simple tasks, like rebooting the device, to complex processes that require in-depth technical knowledge. Experienced IT professionals often use a systematic approach, combining their expertise with logical thinking to efficiently identify and resolve the issue. However, this does not mean that users are incapable of dealing with some of the most common issues themselves.

The most common troubleshooting issues

When working with computers, there are many problems you might face. You have certainly experienced some of the issues we will describe below.
These are the 15 most common situations that computer users often encounter.

1. **Computer won't turn on**
   This can be caused by a faulty power supply, loose connections, or a malfunctioning motherboard. Troubleshooters may need to check power cables and the power outlet or test individual components.
2. **Slow performance**
   Sluggishness in the computer's operation can result from insufficient RAM, too many running processes, or malware. Users may need to close unnecessary programs, perform disk cleanup, or run a malware scan.

3. **Internet connection issues**
   Users may experience a loss of internet connectivity due to router problems, ISP issues, or wireless signal interference. Troubleshooting involves checking router settings, modem connections, or wireless configurations.

4. **Blue screen of death (BSOD)**
   A blue screen error in Windows can indicate hardware or driver issues. Troubleshooters may need to update drivers, check for hardware problems, or scan for malware.
5. **Software crashes or freezes**
   This can be caused by buggy applications, insufficient system resources, or conflicts between programs. Users may try updating the software, reinstalling it, or closing other resource-intensive applications.
6. **Printer problems**
   Printing failures can be due to connectivity issues, outdated drivers, or paper jams. Troubleshooters should check printer connections, update drivers, and clear any paper jams.
7. **No sound/audio issues**
   Users might encounter problems with sound output due to muted settings, faulty speakers, or driver conflicts. Troubleshooting involves checking audio settings, testing different speakers, and updating audio drivers.
8. **Overheating**
   Computers may shut down or experience performance issues due to overheating caused by dust buildup, faulty fans, or inadequate ventilation. Cleaning the computer and ensuring proper airflow can resolve this.
9. **Unresponsive peripheral devices**
   Issues with external devices like USB drives, mice, or keyboards can arise due to loose connections, driver problems, or defective hardware. Troubleshooters may test the devices on other ports or computers and update drivers.
10. **Virus or malware infections**
    Malware can cause various problems, from pop-ups to system instability. Users should run a reliable antivirus program to scan and remove any infections.
11. **Application-specific errors**
    Some software may display specific error messages or fail to function correctly. Users can search for the error message online to find potential solutions or update the application.
12. **Missing or corrupted files**
    Important system files might go missing or become corrupted, leading to various issues. Running system file checkers or restoring from backups can often resolve these problems.
13. **Screen resolution or display issues**
    Problems with the display can result from incorrect settings or outdated graphics drivers. Troubleshooters can adjust resolution settings or update drivers.
14. **Email problems**
    Issues with email accounts can be due to incorrect configurations, server problems, or security issues. Troubleshooting involves verifying settings, checking server status, and updating email software.
15. **Password-related issues**
    Users may forget their passwords or face problems with password resets. Password recovery processes or contacting support can be used to resolve these problems.

How to deal with computer issues

As mentioned, depending on the problem, there is no need for an IT expert. With the help of YouTube tutorials, support forums or other resources, you might be able to deal with troubleshooting yourself.

Here are some steps you can take to effectively find a solution to common computer issues:

1. **Stay calm and patient**
   Troubleshooting can be frustrating, but maintaining a calm and patient attitude will help you think more clearly and make better decisions.
   This is valuable advice for any problem you may face. However, when it comes to computers, not thinking clearly can lead to more problems and frustration. It is much better to look for the source of the problem than it is to try multiple solutions to no avail.
2. **Identify the problem**
   Carefully observe the symptoms or error messages to understand the specific issue you are facing.
   Using the list of common problems we provided above, you might be able to identify the cause of your problem and investigate potential solutions.
3. **Perform basic checks**
   Start with simple checks like ensuring all cables are properly connected, the power source is functional, and the computer is clean from dust and debris.
4. **Research the problem**
   Use search engines to look up the error message or symptoms. Often, others have encountered similar issues and shared solutions online.
5. **Review recent changes**
   Think about any recent software installations, updates, or hardware changes that might have triggered the problem. Rolling back changes can help isolate the issue.
6. **Use safe mode**
   Boot your computer in safe mode, which loads a basic set of drivers and settings. This can help you determine if the problem is caused by third-party software or drivers.
7. **Check hardware components**
   If you suspect hardware issues, test components individually (e.g., RAM, hard drive) or try them on another computer to see if the problem persists.
8. **Update drivers and software**
   Ensure your operating system, drivers, and software are up-to-date. Outdated components can cause compatibility issues and instability.
9. **Run antivirus and malware scans**
   Perform a full system scan using reliable antivirus software to check for and remove any potential malware infections.
10. **Create backups**
    Before attempting major changes or fixes, create backups of important data to avoid data loss in case something goes wrong.
11. **Use system restore or reset**
    If your computer has system restore points or a reset option, consider using them to revert your system to a stable state.

12. **Use diagnostic tools**
    Many operating systems have built-in diagnostic tools that can help identify and resolve specific issues. Explore your OS settings for these tools.
13. **Check event viewer**
    On Windows, use the Event Viewer to review system logs for any error or warning messages that can provide clues about the problem.
14. **Test in another user account**
    Create a new user account and see if the issue persists. This can help determine if the problem is user-specific or system-wide.
15. **Ask for help**
    If you've exhausted your troubleshooting options or are unsure about potential solutions, don't hesitate to seek help from online communities, forums, or tech-savvy friends.
    Working with a company specialising in IT solutions can help you solve problems more quickly. If you are uncomfortable or unsure about a particular troubleshooting step, it's best to seek professional assistance to avoid causing further damage.

The use of the process of elimination

If finding the cause of a problem becomes a challenging task, using the process of elimination can help reach the root of the issue and find a more efficient solution.

The process is a systematic troubleshooting technique used to narrow down the possible causes one by one until the true cause is found. The method is especially useful when there are multiple variables or components that could be responsible for the problem.

Here's how it works:

1. **Identify the problem**
   Begin by clearly defining the problem or symptoms you are experiencing. Understanding the exact issue is crucial to start the elimination process effectively.
2. **Create a list of potential causes**
   Based on your knowledge and experience, list all possible factors that could be causing the problem. This list should include both common and less likely causes.
3. **Organise the list by probability**
   Arrange the potential causes in the order of likelihood. Start with the most common and easily verifiable causes at the top of the list.
4. **Test and eliminate**
   Begin testing each potential cause one by one. Start with the most probable cause and work your way down the list. For each test, observe the behaviour of the system and note any changes.
5. **Document the results**
   Keep a record of the steps you take, the results of each test, and any relevant observations. This documentation will help you keep track of your progress and can be useful for future reference.
6. **Repeat the process**
   If a test does not reveal the root cause, move on to the next potential cause on the list. Continue the process of elimination until you find the cause of the problem.

7. **Verify the solution**
   Once you identify the likely cause, perform further testing or verification to confirm that it is indeed the root cause. Sometimes, there might be multiple factors contributing to the problem.
8. **Implement the solution**
   After identifying the root cause, apply the appropriate fix or solution to resolve the issue.
9. **Test the system**
   Finally, test the system again to ensure that the problem has been resolved and that no new issues have been introduced.
10. **How to solve more difficult problems**
    We have explained how you can deal with simple problems and find common solutions. However, that is not always the case. Sometimes you'll find more challenging issues that require more complex strategies, combining technical knowledge, critical thinking and perseverance.

Here are some strategies to help you tackle these issues:

1. **Research and gather information**
   Start by thoroughly researching the problem. Use search engines, online forums, official documentation, and technical resources to gather information about the issue. The more you understand the problem, the better equipped you'll be to solve it.
2. **Break down the problem**
   Complex issues can seem overwhelming. Break the problem down into smaller, manageable components. Identify the symptoms and potential causes for each component.
3. **Prioritise and focus**
   Determine which parts of the problem need immediate attention and focus on those first. Addressing critical issues can often lead to resolving other related problems.
4. **Consult expert resources**
   Don't hesitate to seek help from experienced professionals or technical communities. Online forums, community groups, or even contacting official support channels can provide valuable insights and solutions.
5. **Test and validate assumptions**
   Formulate hypotheses about the root cause of the problem and systematically test them. Verify your assumptions through testing, and use the results to guide your next steps.
6. **Keep detailed records**
   Document all the steps you take, including changes made and results observed. Having a record of your troubleshooting process can be helpful if you need to retrace your steps or seek assistance.
7. **Try different approaches**
   If a particular solution doesn't work, try alternative methods. Be open to different approaches and explore creative solutions.

8. **Be cautious with system changes**
   Avoid making too many changes simultaneously, as this can make it difficult to determine which change caused the problem or if any changes conflict with one another. Make one change at a time and retest.
9. **Use diagnostic tools and logs**
   Many operating systems and software applications have built-in diagnostic tools and log files that can provide valuable information about errors and system behaviour. Utilise these tools to aid your troubleshooting.
10. **Patience and persistence**
    Complex problems may not have quick solutions. Stay patient and persistent in your efforts, and remember that solving challenging issues can take time.
11. **Backup important data**
    Before attempting any major changes or fixes, back up critical data to prevent data loss in case something goes wrong.
12. **Stay update**
    Keep your operating system, drivers, and software up-to-date. Sometimes, updates can resolve known issues or provide new features and optimisations.
13. **Consider systemic factors**
    In some cases, problems may be caused by larger systemic issues, such as hardware compatibility, network configuration, or environmental factors. Think broadly about all potential influences on the problem.
14. **Take breaks**
    If you're feeling stuck or overwhelmed, take a short break to clear your mind.

Conclusion

With so much of our personal and professional lives depending on computers, it is very likely that you have or will, in the future, have to deal with some common issues. Knowing how to deal with these problems and reaching a solution can be an invaluable skill.

No matter what the issue is, keeping calm is crucial. Only by carefully assessing the situation will you be able to isolate the problem and find the root cause of the issue. The list of the most common problems we have provided here, as well as the best troubleshooting tips and techniques, will help guide you through finding a solution.

However, it is important to keep in mind that expert help might be necessary. Working with IT professionals is always the best approach to dealing with computer problems, especially when finding the solution yourself seems too challenging.

Computer Troubleshooting
Part (2)

Basic troubleshooting techniques and tools for diagnosing and resolving issues.

Troubleshooting is the identification or diagnosis of "trouble" in the management flow of a system caused by a failure of some kind. The problem is initially described as symptoms of malfunction, and troubleshooting is the process of determining and remedying the causes of these symptoms. Do you know what to do if your screen goes blank? What if you can't seem to close an application, or can't hear any sound from your speakers? Whenever you have a problem with your computer, don't panic! There are many basic troubleshooting techniques you can use to fix issues like this. In this lesson, we'll show you some simple things to try when troubleshooting, as well as how to solve common problems you may encounter.

General tips to keep in mind

There are many different things that could cause a problem with your computer. No matter what's causing the issue, troubleshooting will always be a process of trial and error—in some cases, you may need to use several different approaches before you can find a solution; other problems may be easy to fix. We recommend starting by using the following tips.

- **Write down your steps**: Once you start troubleshooting, you may want to **write down** each step you take. This way, you'll be able to remember exactly what you've done and can avoid repeating the same mistakes. If you end up asking other people for help, it will be much easier if they know exactly what you've tried already.
- **Take notes about error messages**: If your computer gives you an **error message**, be sure to write down as much information as possible. You may be able to use this information later to find out if other people are having the same error.
- **Always check the cables**: If you're having trouble with a specific piece of computer **hardware**, such as your monitor or keyboard, an easy first step is to check all related cables to make sure they're properly connected.
- **Restart the computer**: When all else fails, **restarting the computer** is a good thing to try. This can solve a lot of basic issues you may experience with your computer.

Using the process of elimination

If you're having an issue with your computer, you may be able to find out what's wrong using **the process of elimination**. This means you'll make a list of things that could be causing the problem and then test them out one by one to eliminate them. Once you've identified the source of your computer issue, it will be easier to find a solution.

Scenario:

Let's say you're trying to print out invitations for a birthday party, but the printer won't print. You have some ideas about what could be causing this, so you go through them one by one to see if you can **eliminate** any possible causes.

First, you check the printer to see that it's turned on and plugged in to the **surge protector**. It is, so that's not the issue. Next, you check to make sure the printer's **ink cartridge** still has ink and that there is paper loaded in the **paper tray**. Things look good in both cases, so you know the issue has nothing to do with ink or paper.

Now you want to make sure the printer and computer are **communicating correctly**. If you recently downloaded an **update to your operating system**, it might interfere with the printer. But you know there haven't been any recent updates and the printer was working yesterday, so you'll have to look elsewhere.

You check the printer's **USB cord** and find that it's not plugged in. You must have unplugged it accidentally when you plugged something else into the computer earlier. Once you plug in the USB cord, the printer starts working again. It looks like this printer issue is solved!

This is just one example of an issue you might encounter while using a computer. In the rest of this lesson, we'll talk about other common computer problems and some ways to

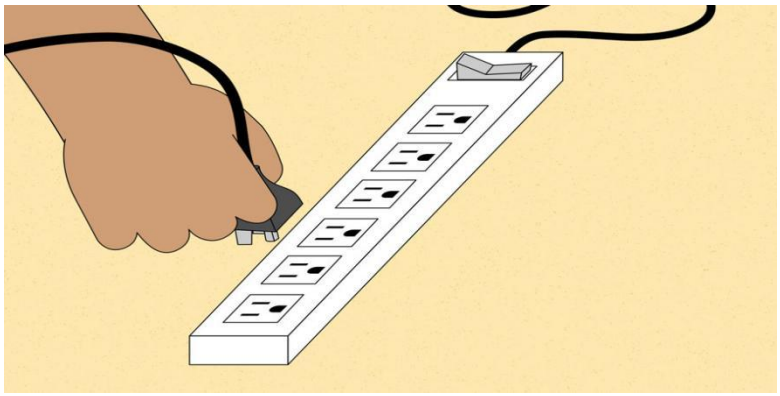
Simple solutions to common problems

Most of the time, problems can be fixed using simple troubleshooting techniques, like **closing** and **reopening** the program. It's important to try these simple solutions before resorting to more extreme measures. If the problem still isn't fixed, you can try other troubleshooting techniques.

Problem: Power button will not start computer

- **Solution 1**: If your computer **does not start**, begin by checking the power cord to confirm that it is plugged securely into the back of the computer case and the power outlet.

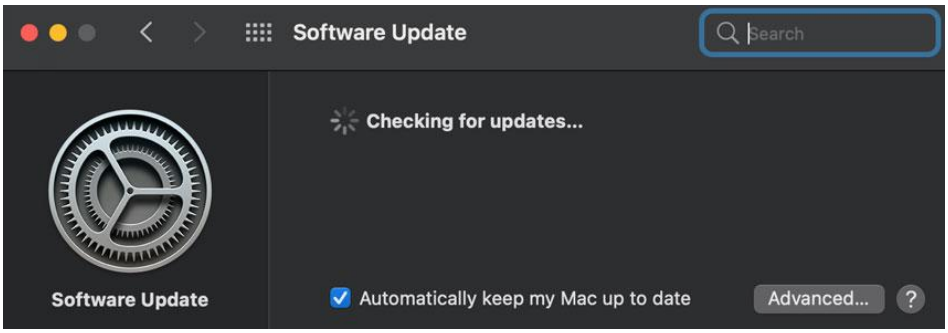
- **Solution 2**: If it is plugged into an outlet, make sure it is a **working outlet**. To check your outlet, you can plug in another **electrical device**, such as a lamp**.**
    - **Solution 3**: If the computer is plugged in to a **surge protector**, verify that it is turned on. You may have to **reset** the surge protector by turning it off and then back on. You can also plug a lamp or other device into the surge protector to verify that it's working correctly.



- **Solution 4**: If you are using a **laptop**, the **battery** may not be charged. Plug the **AC adapter** into the wall, then try to turn on the laptop. If it still doesn't start up, you may need to wait a few minutes and try again.

Problem: An application is running slowly

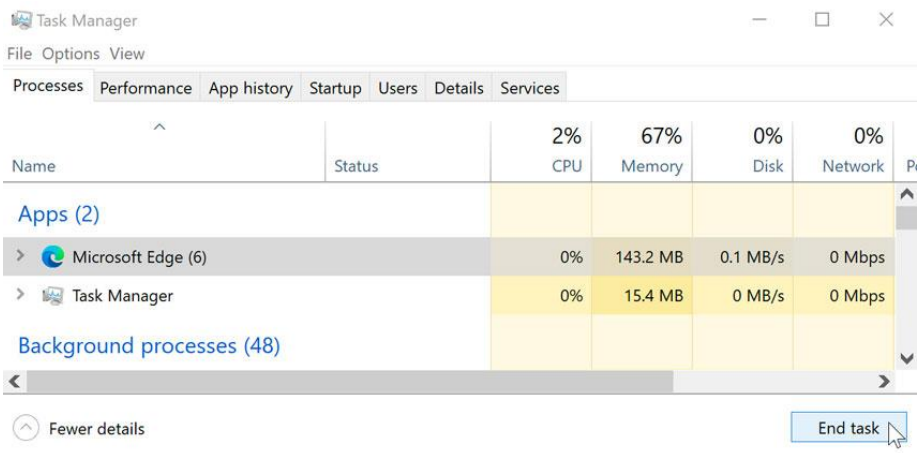
- **Solution 1**: Close and reopen the application.
    - **Solution 2**: Update the application. To do this, click the **Help** menu and look for an option to check for **Updates**. If you don't find this option, another idea is to run an online search for application updates.



Problem: An application is frozen

Sometimes an application may become stuck, or **frozen**. When this happens, you won't be able to close the window or click any buttons within the application.

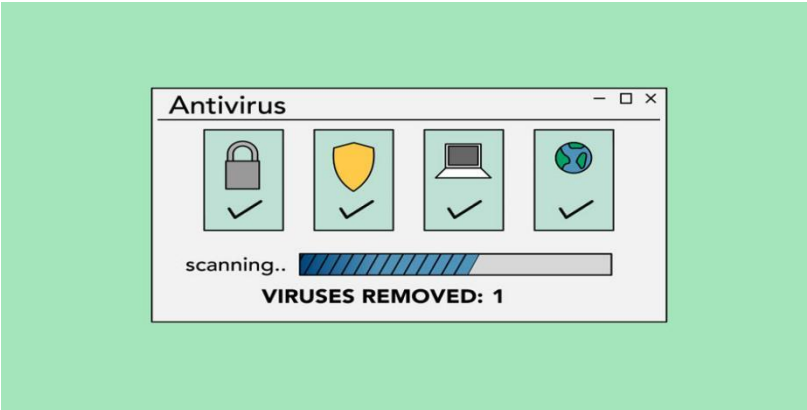
- **Solution 1**: Force quit the application. On a PC, you can press (and hold) **Ctrl+Alt+Delete** (the Control, Alt, and Delete keys) on your keyboard to open the **Task Manager**. On a Mac, press and hold **Command+Option+Esc**. You can then select the unresponsive application and click **End task** (or **Force Quit** on a Mac) to close it.



- **Solution 2**: Restart the computer. If you are unable to force quit an application, **restarting** your computer will close all open apps.

Problem: All programs on the computer run slowly

- **Solution 1**: Run a **virus scanner**. You may have **malware** running in the background that is slowing things down.

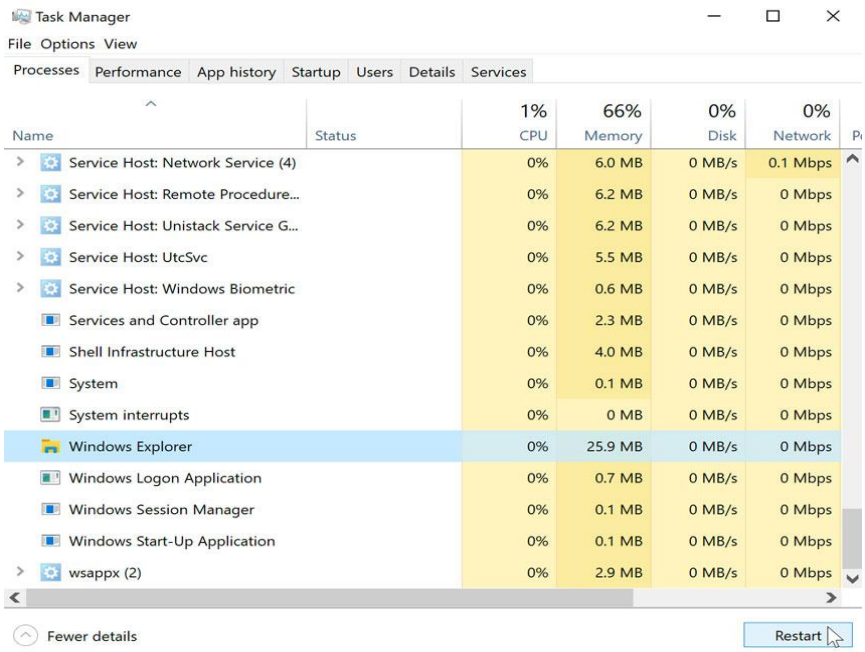


- **Solution 2**: Your computer may be running out of hard drive space. Try **deleting** any files or programs you don't need.
- **Solution 3**: If you're using a **PC**, you can run **Disk Defragmenter**. To learn more about **Disk Defragmenter**, check out our lesson on **Protecting Your Computer**.

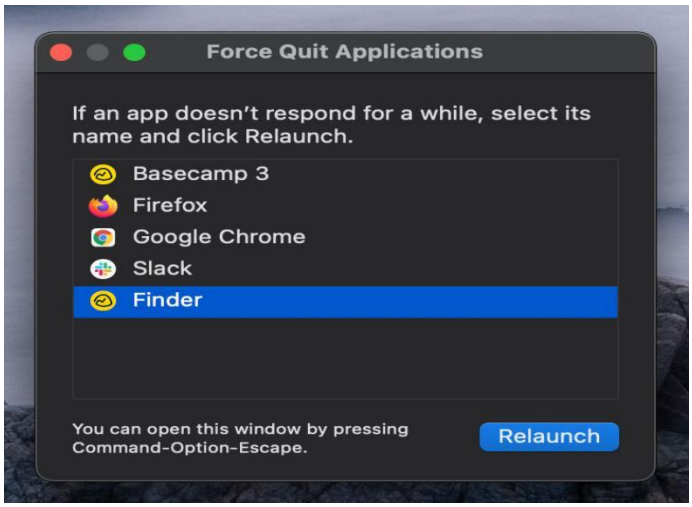
Problem: The computer is frozen

Sometimes your computer may become completely unresponsive, or **frozen**. When this happens, you won't be able to click anywhere on the screen, open or close applications, or access shut-down options.

- **Solution 1 (Windows only)**: Restart Windows Explorer. To do this, press and hold **Ctrl+Alt+Delete** on your keyboard to open the **Task Manager**. Next, locate and select **Windows Explorer** from the **Processes** tab and click **Restart**. You may need to click **More Details** at the bottom of the window to see the Processes tab.



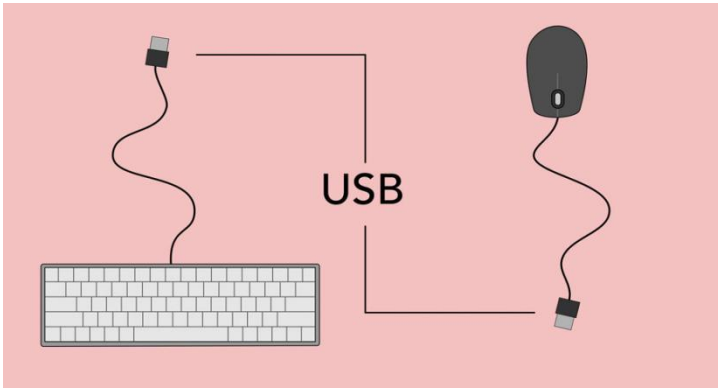
- **Solution 2 (Mac only):** Restart Finder. To do this, press and hold **Command+Option+Esc** on your keyboard to open the **Force Quit Applications** dialog box. Next, locate and select **Finder**, then click **Relaunch**.



- **Solution 3**: Press and hold the Power button. The Power button is usually located on the front or side of the computer, typically indicated by the **power symbol**. Press and hold the Power button for **5 to 10 seconds** to force the computer to shut down.
- **Solution 4**: If the computer still won't shut down, you can **unplug the power cable** from the electrical outlet. If you're using a laptop, you may be able to remove the battery to force the computer to turn off. **Note**: This solution should be your **last resort** after trying the other suggestions above.

Problem: The mouse or keyboard has stopped working

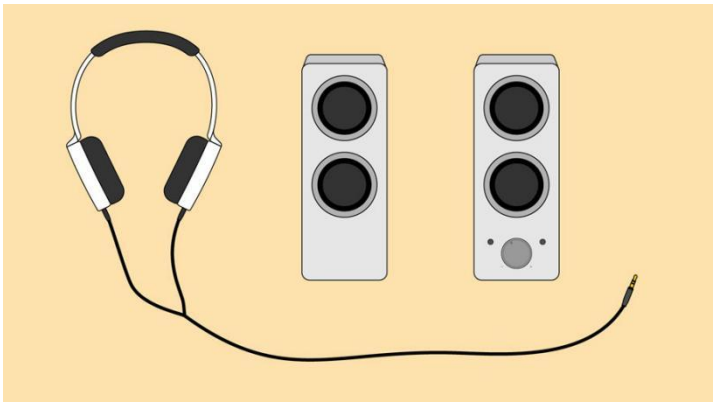
- **Solution 1**: If you're using a **wired** mouse or keyboard, make sure it's correctly plugged into the computer.



- **Solution 2**: If you're using a **wireless** mouse or keyboard, make sure it's turned on and that its batteries are charged.

Problem: The sound isn't working

- **Solution 1**: Check the volume level. Click the audio button in the top-right or bottom-right corner of the screen to make sure the sound is turned on and that the volume is up.
- **Solution 2**: Check the audio player controls. Many audio and video players will have their own separate audio controls. Make sure the sound is turned on and that the volume is turned up in the player.
- **Solution 3**: Check the cables. Make sure external speakers are plugged in, turned on, and connected to the correct audio port or a USB port. If your computer has **color-coded** ports, the audio output port will usually be **green**.
    - **Solution 4**: Connect headphones to the computer to find out if you can hear sound through the headphones.



Problem: The screen is blank

- **Solution 1**: The computer may be in **Sleep** mode. Click the mouse or press any key on the keyboard to wake it.
- **Solution 2**: Make sure the monitor is **plugged in** and **turned on**.
- **Solution 3**: Make sure the computer is **plugged in** and **turned on**.
- **Solution 4**: If you're using a desktop, make sure the monitor cable is properly connected to the computer tower and the monitor.

Solving more difficult problems

If you still haven't found a solution to your problem, you may need to ask someone else for help. As an easy starting point, we'd recommend **searching the Web**. It's possible that other users have had similar problems, and solutions to these problems are often posted online. Also, if you have a friend or family member who knows a lot about computers, they may be able to help you.

Keep in mind that most computer problems have simple solutions, although it may take some time to find them. For difficult problems, a **more drastic solution** may be required, like reformatting your hard drive or reinstalling your operating system. If you think you might need a solution like this, we recommend **consulting a professional** first. If you're not a computer expert, it's possible that attempting these solutions could make the situation worse.