

LEARNING MADE EASY



4th Edition

# Troubleshooting & Maintaining PCs

ALL-IN-ONE

for  
**dummies**<sup>®</sup>  
A Wiley Brand



**5**  
**Books**  
in one!

**Dan Gookin**

Author of *Word 2019 For Dummies*  
and *C Programming For Dummies*





# Troubleshooting & Maintaining PCs

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**by Dan Gookin**

for  
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## Troubleshooting & Maintaining PCs All-in-One For Dummies®, 4th Edition

Published by: **John Wiley & Sons, Inc.**, 111 River Street, Hoboken, NJ 07030-5774, [www.wiley.com](http://www.wiley.com)

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Published simultaneously in Canada

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Library of Congress Control Number: 2021930116

ISBN: 978-1-119-74030-8; 978-1-119-74031-5 (ebk); 978-1-119-74032-2 (ebk)

Manufactured in the United States of America

10 9 8 7 6 5 4 3 2 1

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# Introduction

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If trouble were predictable, it wouldn't be a problem. That's because the problem with trouble is that it's unpredictable.

You hold in your hands a thrill-packed book that's all about solving computer problems. The topic is troubleshooting. It needs to be covered in so many pages here because a computer hasn't yet been invented that didn't have trouble following it like a shadow on a sunny day.

The computing experience should be a pleasant one. And it can be — if you're informed and able to deal with the troubles you encounter. This book helps you along that journey in an informative and entertaining way. Welcome to *Troubleshooting & Maintaining Your PC All-in-One For Dummies*.

## About This Book

---

*A byte of prevention is worth a gigabyte of cure.*

This book's philosophy is that troubleshooting is easier to do when you understand how the computer works. This philosophy is the opposite of what most computer users expect, which is to look up a specific condition and find a specific cure for it. This approach has two glitches.

The first downfall with the look-it-up approach is that you don't learn anything. Because there's a method behind PC madness, often, the same solution can be applied to multiple problems. After you understand why things go wrong, it's not only easier to fix them — it's also possible to prevent them in the first place.

The second difficulty with the specific-solution approach is that it would make this book obnoxiously huge. With millions upon millions of potential hardware and software configurations available in all the PCs in the world, it would take several fat books to document every problem and its solution. Such a book would need to be delivered by forklift.

My approach is simple: Look up the problem, learn a bit about what might have caused it, and then arrive at a solution. The notion is that when trouble arises again later, you have the experience to deal with it in a practical manner. Because most PC troubles have a common origin, this solution works.

Before moving on, please be aware that there's a difference between trouble and an event that's merely annoying. For example, if the text you print from an email message is tiny, it's annoying, but it isn't a bug. Though specific annoying problems might not be covered in this book, you still can find a solution here. This is the beauty behind my philosophical approach to troubleshooting. After all, using Windows shouldn't be a frustrating experience.

## How This Book Works

This book is composed of five *minibooks*, each of which addresses a computer troubleshooting topic. The minibooks are split into traditional chapters, all geared to a specific subject within the minibook topic. Then the chapters are split into sections consisting of paragraphs, words, letters, and — finally — tiny dots. So, if you understand tiny dots, you'll understand this book.

To run the special troubleshooting tools and utilities, you take advantage of the Windows Start menu. Tap the Windows key to pop up this menu, and then start typing the name of a tool or utility. The text explains what to type. You then choose the matching utility from the search results list. This method is much faster than hunting for tools on the Start menu's programs list.

Because this book approaches troubleshooting in a philosophical way, lots of material is cross-referenced. For example, startup issues are also related to disk disaster recovery. So, in both chapters, you'll find references to the other chapter's material.

This book covers all varieties of computers, from a traditional desktop to an all-in-one model, a laptop, a 2-in-1, or even a tablet. As long as the computer runs Windows 10, you're good.

Speaking of Windows 10, this book is specific to that operating system. When this book refers to "Windows," it means Windows 10.

Text that you type appears in **bold**. In the context of a step, where the text is normally bold anyway, the stuff you type appears in regular roman text.

Do not press the Enter key until you're directed to do so. And even then, I recommend that you review what you type before you press Enter, just to ensure that you get everything typed properly.

Do not press a period at the end of any text you type, unless I explain that the period is needed. Unlike sentences in English, computer commands don't end with a period.

## Icons Used in This Book



TIP

I'd like to think that everything in this book is a tip, but for those special, worthy items, you'll find this icon lurking nearby.



WARNING

A reminder of something not to do, something to avoid, or something that can cause serious trouble is flagged by the Hazard icon.



REMEMBER

This icon flags text that is important enough to remember or that reminds you of something you may have forgotten that bears repeating.



TECHNICAL  
STUFF

When the urge to blurt out something nerdy overwhelms me, I succumb and use this icon to supply a warning sign. You're free not to read any technical text near this icon.

## Beyond the Book

The publisher maintains a support page with updates or changes that have occurred since this book went to press. You'll also find bonus content, in the form of an online Cheat Sheet, which isn't really cheating and isn't a sheet.

To peruse the online content, visit [www.dummies.com](http://www.dummies.com) and search for *Troubleshooting & Maintaining Your PC All-in-One For Dummies* — the whole thing! Click the matching search result to view specific information about this book.

You can also visit my own web page for more information or as a diversion, [wambooli.com](http://wambooli.com) — with specific information about this book found at [wambooli.com/help/troubleshooting](http://wambooli.com/help/troubleshooting).

I provide frequent updates and posts on that page, offering bonus information, supplements to this book, tips, tricks, trivia, and fun. And there's only one little advertisement on the page and no pop-ups.

## Where to Go from Here

Feel free to start reading this book in any minibook, chapter, or section. Everything is self-contained, so there isn't really a reason to read one section before another. For those rare times when it helps to know information located elsewhere in the book, I provide a cross-reference. But it's not necessary to read the book from front to back.

My email address is `dgookin@wambooli.com`. Yes, this is my real address. I reply to all email I receive, and you'll get a quick reply if you keep your question short and specific to this book. Although I enjoy saying "Hi," I cannot answer technical support questions or help you troubleshoot your computer. Thanks for understanding.

Please enjoy my book, and thank you for reading the Introduction.

Dan Gookin

**1**  
**Solve My  
Problem Now!**

# Contents at a Glance

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# Chapter 1

## Trouble Comes Hither

It's sudden, unexpected, and unwelcome. It's PC trouble, and it sneaks up like the dawn. Unlike the sun, however, technology issues hardly warm up your day with welcome sunshine. No, the dread-and-foreboding that comes with computer woe is a splash of cold water, a pebble in your shoe, and a long-term visit from an unwelcome guest all rolled into one.

You can't avoid computer woe, but you can prepare for its eventual arrival. You can also become familiar with the core cause of digital distress. The more you know about why things go wrong, the better you can prepare yourself for the inevitable.

## The Root of All PC Trouble

The cause of nearly all PC trouble is rooted in one thing: change.

Computers foul up because something has changed. It could be something you did, such as modify a setting, uncover a software bug, run a malicious program, or experience any of several items that all qualify as "change." Even time itself is an agent of change, in that PC hardware gets old, eventually wears out, and fails.

The goal isn't to avoid change, but rather to be aware of its consequences. The process of troubleshooting becomes easier when you realize that something you just did, intentional or not, might have triggered a problem.

## What's Changed?

No, it's not your fault that something changed. Computers are designed to be flexible. Rather than blame yourself when trouble arises, just recall what changed. When you do, you make it easier to troubleshoot and find the source of what's going wrong.

For example, you install a new keyboard and the mouse doesn't work. Perhaps you unplugged the mouse instead of the old keyboard? You update a graphics driver, but now all your computer games are reset to low resolution. The point is to be aware of what you've just done, to see how it relates to the current problem.

To help you discover what changed, or what might have caused recent issues, ask yourself, "What did I just do?" Specifically, did you recently or just now

- » Install new software?
- » Add new hardware?
- » Change a setting?

Think hard! That's because you do a lot with your computer and sometimes you do several things at once. For example, a dialog box may feature multiple settings but only one OK button. All the settings are applied instantly with a mouse-click. Undoing the change requires that you recall which changes you just made.



TIP

Windows keeps track of all system activities, including those that cause woe. See Book 3, Chapter 8 for information on the Event Viewer, which lets you peruse system logs for signs of trouble.

## Installing software

Software covers the gamut, from the PC's operating system to programs you install. It also includes the software that controls specific pieces of hardware, which are referred to as *drivers*.

The best way to avoid issues caused by installing new software is to create a restore point. This way, should problems arise, you can uninstall the software and use the restore point to recover the system's previous configuration.

- » The good news: Windows automatically creates a restore point whenever you install new software.
- » The bad news: Some older programs may not prompt Windows to create a restore point. And, when you modify settings, a restore point isn't created.
- » Refer to Book 3, Chapter 5 for details on System Restore. That chapter explains how to manually set a restore point and how to use the System Restore utility to recover from software installation boo-boos.

## Adding or removing hardware

Major hardware changes most definitely affect a computer system. Further, keep in mind that when you attach or remove a USB device, you're also adding and removing hardware. This process may trigger an issue that can occur right away or surface later, but the hardware change is probably the source.

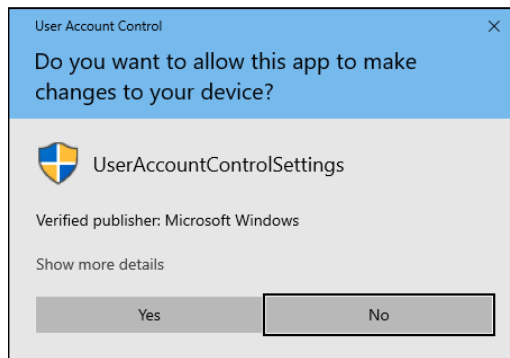
- » Create a restore point before you make hardware changes. Unlike with software installation, you must manually create a restore point before installing new hardware. Refer to Book 3, Chapter 5.
- » The quick fix for bad hardware is to remove it. Sometimes, detaching the bum device fixes the problem, and sometimes not. If software (driver) was installed when you attached the hardware, the software must be uninstalled as well.
- » Ensure that you read the hardware installation directions (or flimsy pamphlet) before you install the device. The directions describe which to install first — the device or its special software. Sometimes, new hardware screws up because you omit that step.
- » If hardware is going to fail, it usually does so within 30 days of installation, which is why most hardware warranties are for 90 days or fewer. In my experience, hardware that fails generally does so within 72 hours.
- » A power supply (hardware) might fail when overloaded, which goes against the hardware-fails-quickly rule. See Book 2, Chapter 4 for details on the power supply.
- » Unlike software errors, which are consistent, hardware problems can be intermittent. See the later section "Hardware-versus-Software Problems."

## Changing settings

If you're like me, you might change settings so often that you forget you do it. The settings can be subtle, from accessing a new Wi-Fi network to changing the screen resolution. Anytime you change a setting, you alter the computer's behavior, which can lead to something unusual or unexpected happening.

Most importantly, be on the lookout for User Account Control (UAC) warnings. Anytime you change a setting that can affect the entire system, you see such a warning, similar to the one shown in Figure 1-1.

As long as you're making the change, click the Yes button to proceed. If you're unaware of why the UAC warning appears, click No. And, if you have a standard-level user account, you must input an administrator password; a text box appears in the UAC warning (not shown in Figure 1-1).



**FIGURE 1-1:**  
A typical UAC  
warning.



Settings that affect the entire system feature the UAC Shield icon, shown in the margin. Choosing this type of setting prompts a UAC warning if your user account type is standard. Even then, administrator accounts get prompted with warnings as well. Regardless, the Shield icon serves as a reminder that the option you're changing can alter the system's behavior.

The point of the UAC is to pay attention! Changing settings can lead to PC trouble. For example, changing the text color to bright green and the text background color to bright green renders text unreadable. The solution is to undo the change.



**REMEMBER**

- » A UAC warning appears whenever you change a system-wide setting. It's your clue that proceeding might portend problems.
- » The best way to undo settings is to run System Restore, though a restore point may not be handy enough to affect the change. See Book 3, Chapter 5 for details.

- » By the way, green-on-green text is a horrid problem that's difficult to fix. You can select text to view it; selecting highlights the text and makes it readable. For a long-term solution, reboot into Safe mode to undo such a heinous text setting. See Book 3, Chapter 4 for details on Safe mode.

## Hardware-versus-Software Problems

Because a computer system is a combination of hardware and software, problems fall into one category or the other. Determining the specific source, however, is an art form. People who troubleshoot computers for a living follow three general rules to diagnose such errors:

- » If the issue is consistent, it's probably software.
- » If the issue is inconsistent, it's probably hardware.
- » If the issue is with the PC's firmware — good luck!

You're probably used to such ambiguity when it comes to technology, though these three axioms are worthy to follow.

- » *Software* consists not only of the program you use, but also the operating system, control programs or drivers, and utilities. Software tells the hardware what to do. It's the computer's "brains."
- » *Hardware* is anything you can touch in a computer: the power supply, mass storage, keyboard, memory, and so on. By itself, hardware is dumb. It needs software to make the system useful.
- » *Firmware* is software that's encoded on a hardware chip. Firmware provides the smarts that gets the system started and controls specific hardware subsystems, including graphics, networking, power management, and other key parts of a computer.

## Dealing with software issues

Software problems are predictable. If the Backup program won't run as scheduled, it's a consistent issue and the program itself (or the task scheduler) is to blame. If

Word always crashes when you try to print, it's a software issue not having anything to do with the printer.



REMEMBER

- » Software issues with a program — *bugs* — are fixed by the software developer. You can check the developer's web page for updates and support information, but you can't resolve the problem on your own, other than to avoid the feature that doesn't work.
- » Software drivers need updating from time to time, and even the update can be the problem. See Book 4, Chapter 2 for details.
- » Also refer to Book 2, Chapter 7 for various software solutions.

## Solving hardware issues

The most obvious sign that hardware is to blame occurs when the device doesn't work. In that case, replace it. All hardware on a PC is component-replaceable, so if you need a new power supply, you buy a new one. You can even install it yourself, if you're handy with a screwdriver and don't mind risking death by opening the PC case.

For peripherals, you can troubleshoot by swapping out a suspect device with one that works. For example, if the keyboard is acting funky, attach another keyboard and see whether the problem persists. If not, the original keyboard is defective. Replace it.

The only time hardware swapping doesn't work is with a laptop. Because the laptop's hardware is integrated, you can't readily swap out a keyboard or replace a power supply. That's why I recommend a full warranty on a laptop, just in case the parts go bad.

- » Yes, you can replace any hardware on a PC, though at some point you must consider when to just buy a new computer. See the next section.
- » Even mass storage (a hard drive or SSD) can be replaced, though always ensure that you have a fresh backup handy and that you've created a system recovery disk.
- » Backup is covered in Book 4, Chapter 4.
- » Creating a system recovery disk is covered in Book 3, Chapter 1.

## Addressing firmware issues

As with software, problems with the firmware must be addressed by the computer or motherboard manufacturer. Routinely, firmware updates are available.