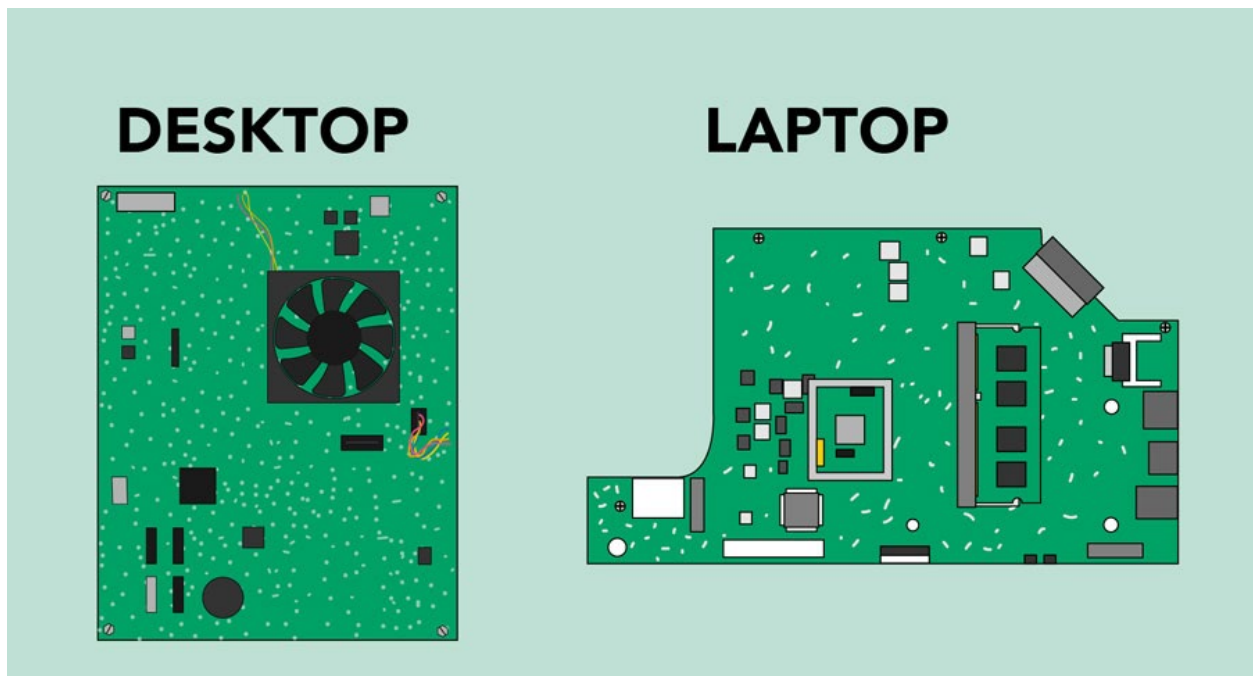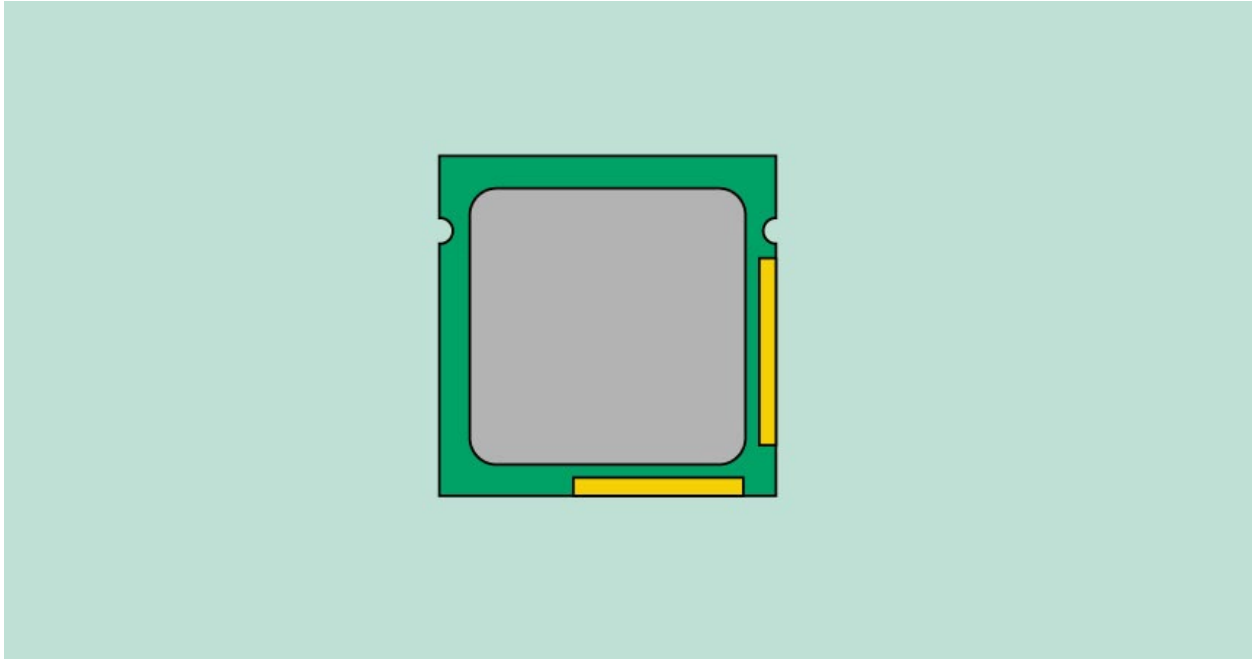# Inside a computer

Have you ever looked **inside a computer case**, or seen pictures of the inside of one? The small parts may look complicated, but the inside of a computer case isn't really all that mysterious. This lesson will help you master some of the basic **terminology** and understand a bit more about what goes on inside a computer.

Motherboard



The **motherboard** is the computer's **main circuit board**. It's a thin plate that holds the CPU, memory, connectors for the hard drive and optical drives, expansion cards to control the video and audio, and connections to your computer's ports (such as USB ports). The motherboard connects directly or indirectly to every part of the computer.

CPU/processor

The central processing unit (CPU), also called a **processor**, is located inside the **computer case** on the motherboard. It is sometimes called the brain of the computer, and its job is to carry out commands. Whenever you press a key, click the mouse, or start an application, you're sending instructions to the CPU.

The CPU is usually a **two-inch ceramic square** with a **silicon chip** located inside. The chip is usually about the size of a thumbnail. The CPU fits into the motherboard's **CPU socket**, which is covered by the **heat sink**, an object that absorbs heat from the CPU.

A processor's **speed** is measured in **megahertz (MHz)**, or millions of instructions per second; and **gigahertz (GHz)**, or billions of instructions per second. A faster processor can execute instructions more quickly. However, the actual speed of the computer depends on the speed of many different components—not just the processor.

RAM (random access memory)
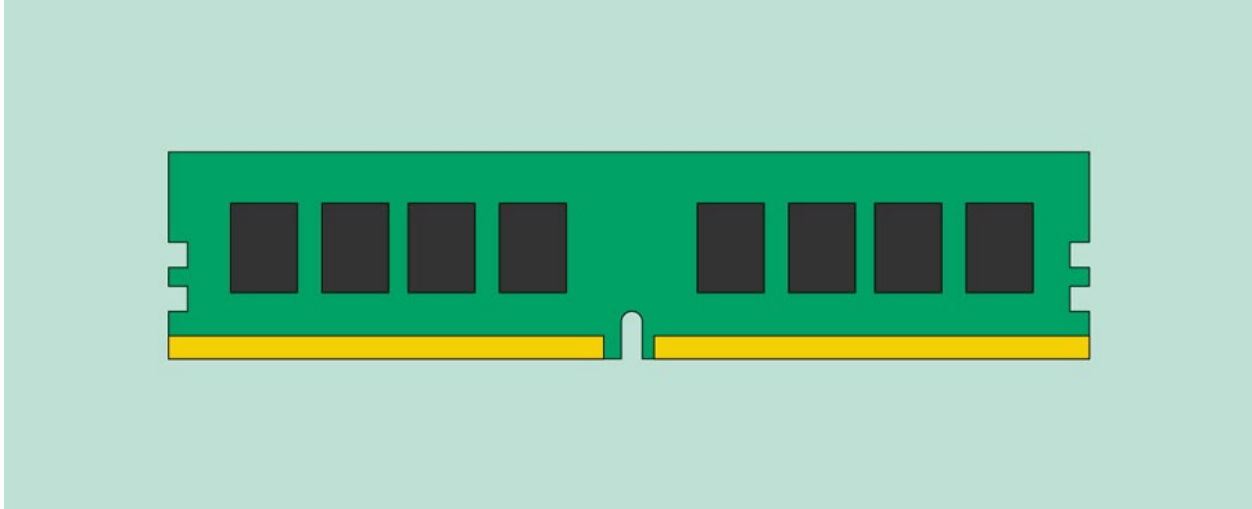
RAM is your system's **short-term memory**. Whenever your computer performs calculations, it temporarily stores the data in the RAM until it is needed.

This **short-term memory disappears** when the computer is turned off. If you're working on a document, spreadsheet, or other type of file, you'll need to **save** it to avoid losing it. When you save a file, the data is written to the **hard drive**, which acts as **long-term storage**.
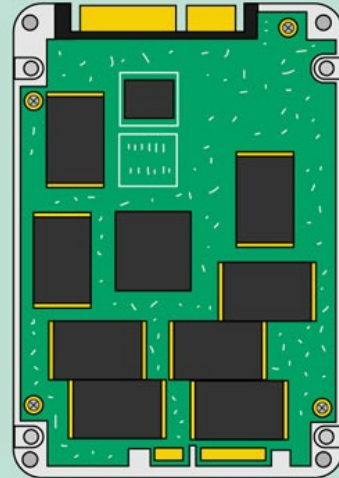
RAM is measured in **megabytes (MB) or gigabytes (GB)**. The **more RAM** you have, the more things your computer can do at the same time. If you don't have enough RAM, you may notice that your computer is sluggish when you have several programs open. Because of this, many people add **extra RAM** to their computers to improve performance.

Hard drive
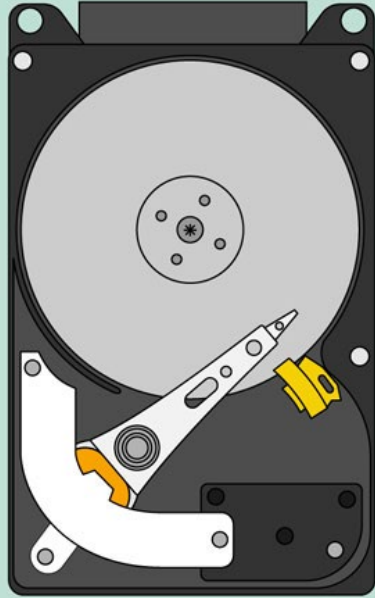
HARD DRIVE       SOLID-STATE DRIVE

The **hard drive** is where your software, documents, and other files are stored. The hard drive is **long-term storage**, which means the data is still saved even if you turn the computer off or unplug it.

When you run a program or open a file, the computer copies some of the data from the **hard drive** onto the **RAM**. When you **save** a file, the data is copied back to the **hard drive**. The faster the hard drive, the faster your computer can **start up** and **load programs**.

Power supply unit
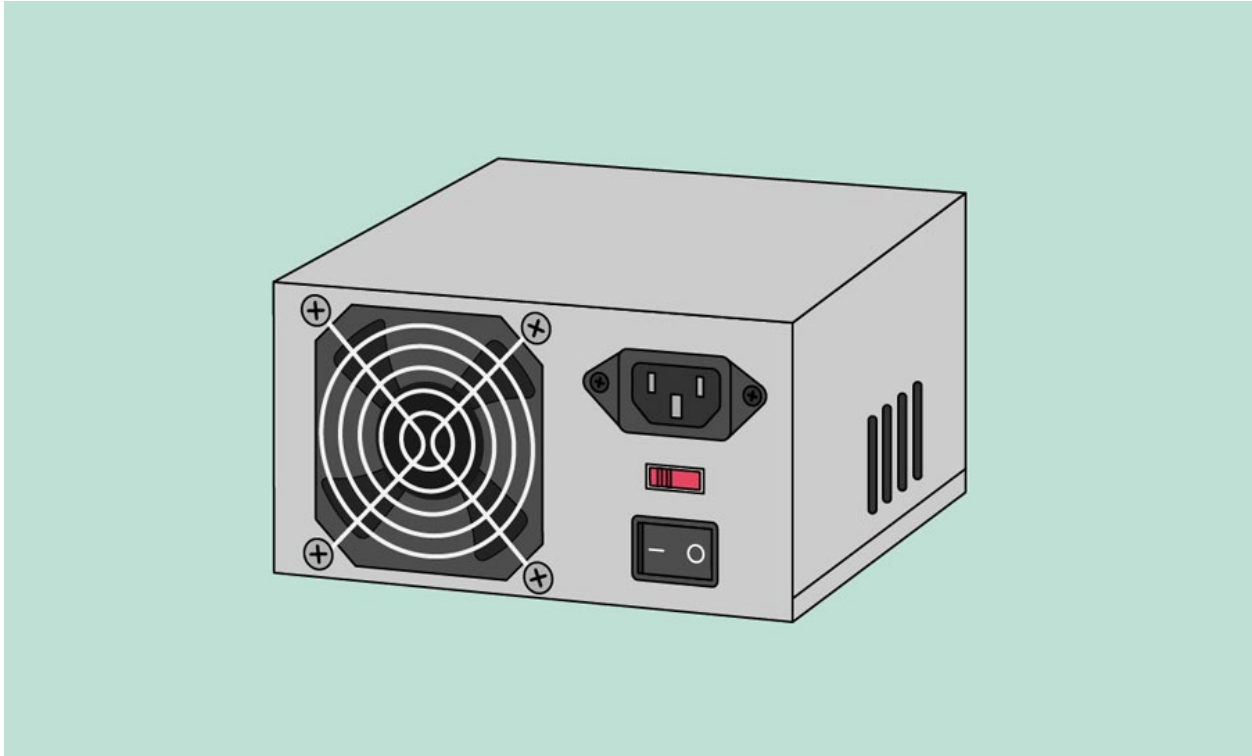
The power supply unit in a computer **converts the power** from the wall outlet to the type of power needed by the computer. It sends power through cables to the motherboard and other components.

If you decide to open the computer case and take a look, make sure to **unplug** the computer first. Before touching the inside of the computer, you should touch a grounded metal object—or a metal part of the computer casing—to discharge any static buildup. Static electricity can be transmitted through the computer circuits, which can seriously damage your machine.

Expansion cards

Most computers have **expansion slots** on the motherboard that allow you to add various types of **expansion cards**. These are sometimes called **PCI (peripheral component interconnect) cards**. You may never need to add any PCI cards because most motherboards have built-in video, sound, network, and other capabilities.

However, if you want to boost the performance of your computer or update the capabilities of an older computer, you can always add one or more cards. Below are some of the most common types of expansion cards.

Video card
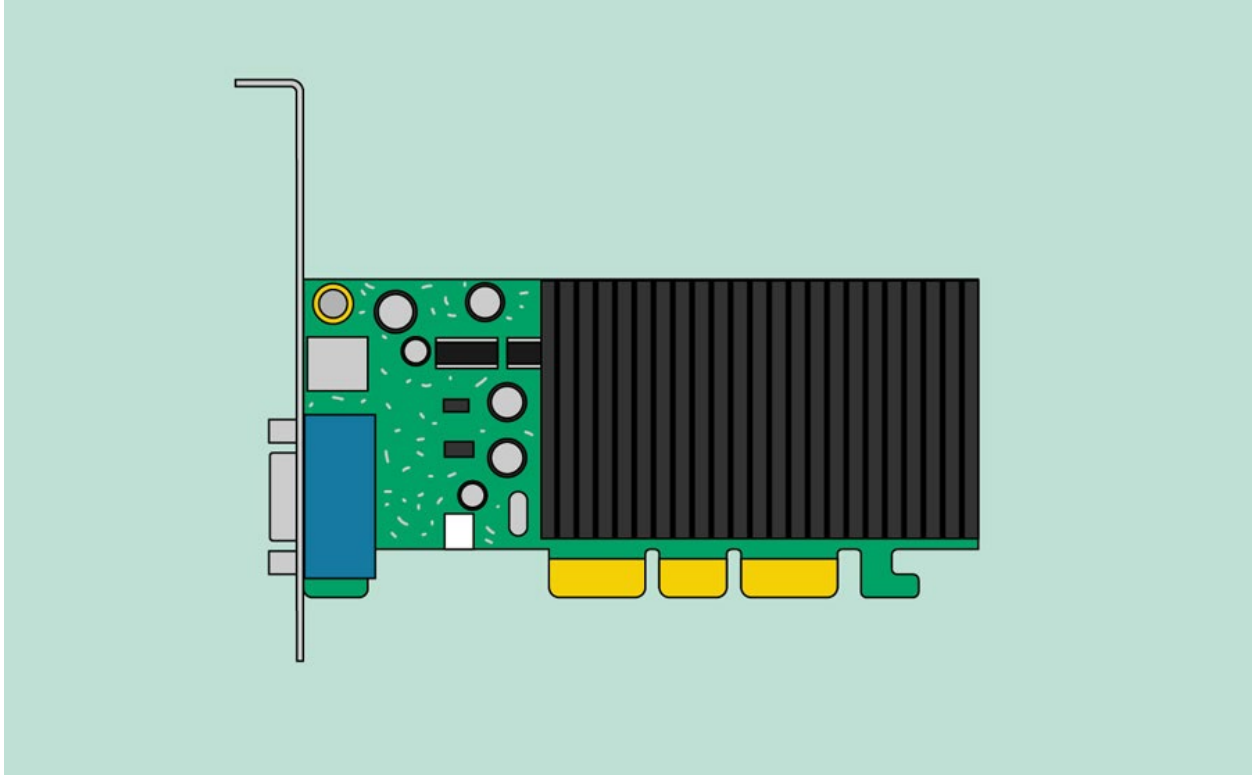
The **video card** is responsible for **what you see** on the monitor. Most computers have a **GPU (graphics processing unit)** built into the motherboard instead of having a separate video card. If you like playing graphics-intensive games, you can add a faster video card to one of the **expansion slots** to get better performance.

Sound card

The **sound card**—also called an audio card—is responsible for **what you hear** in the speakers or headphones. Most motherboards have integrated sound, but you can upgrade to a dedicated sound card for higher-quality sound.

Network card
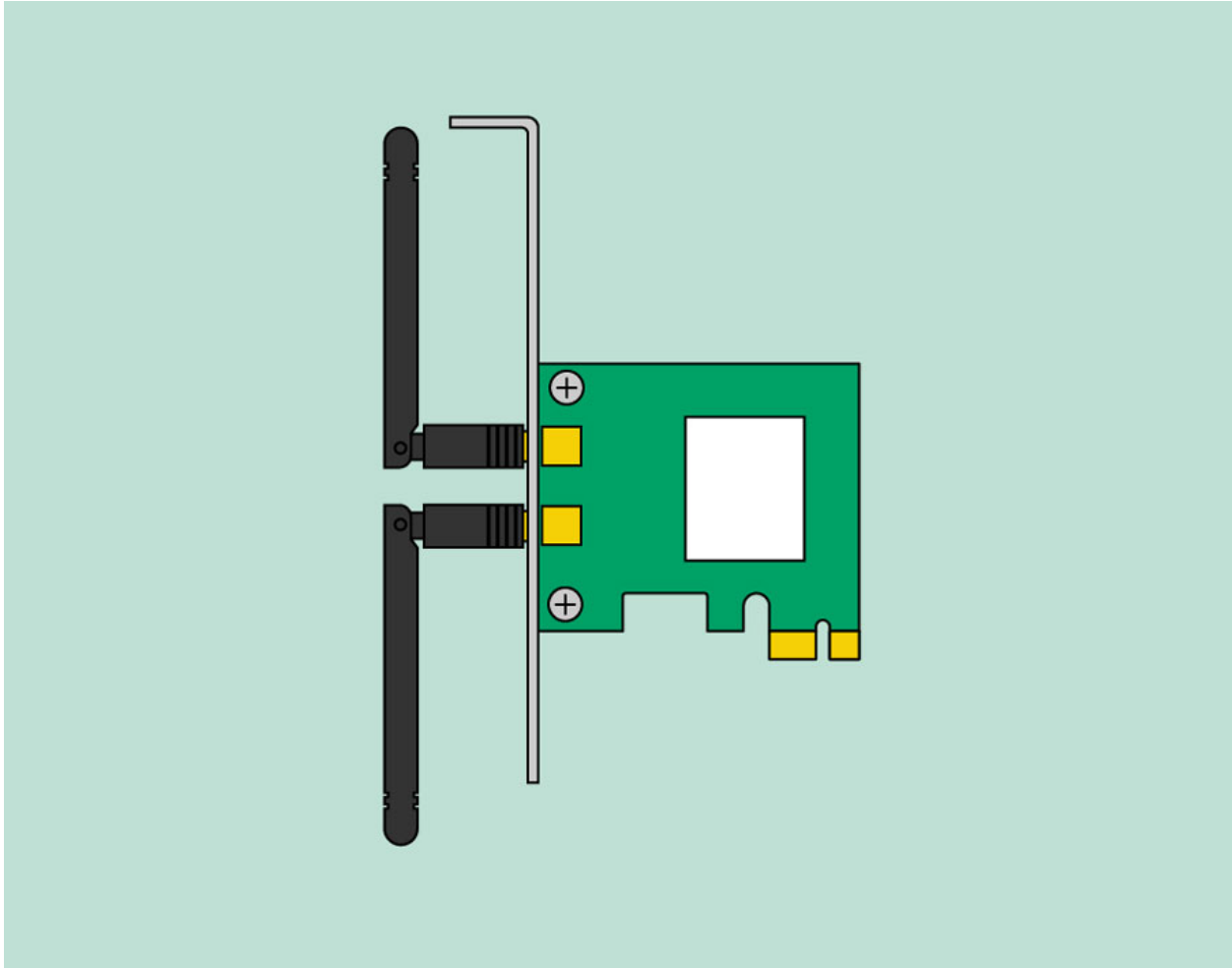
The **network card** allows your computer to communicate over a network and access the Internet. It can either connect with an **Ethernet** cable or through a **wireless** connection (often called **Wi-Fi**). Many motherboards have built-in network connections, and a network card can also be added to an expansion slot.

Bluetooth card (or adapter)
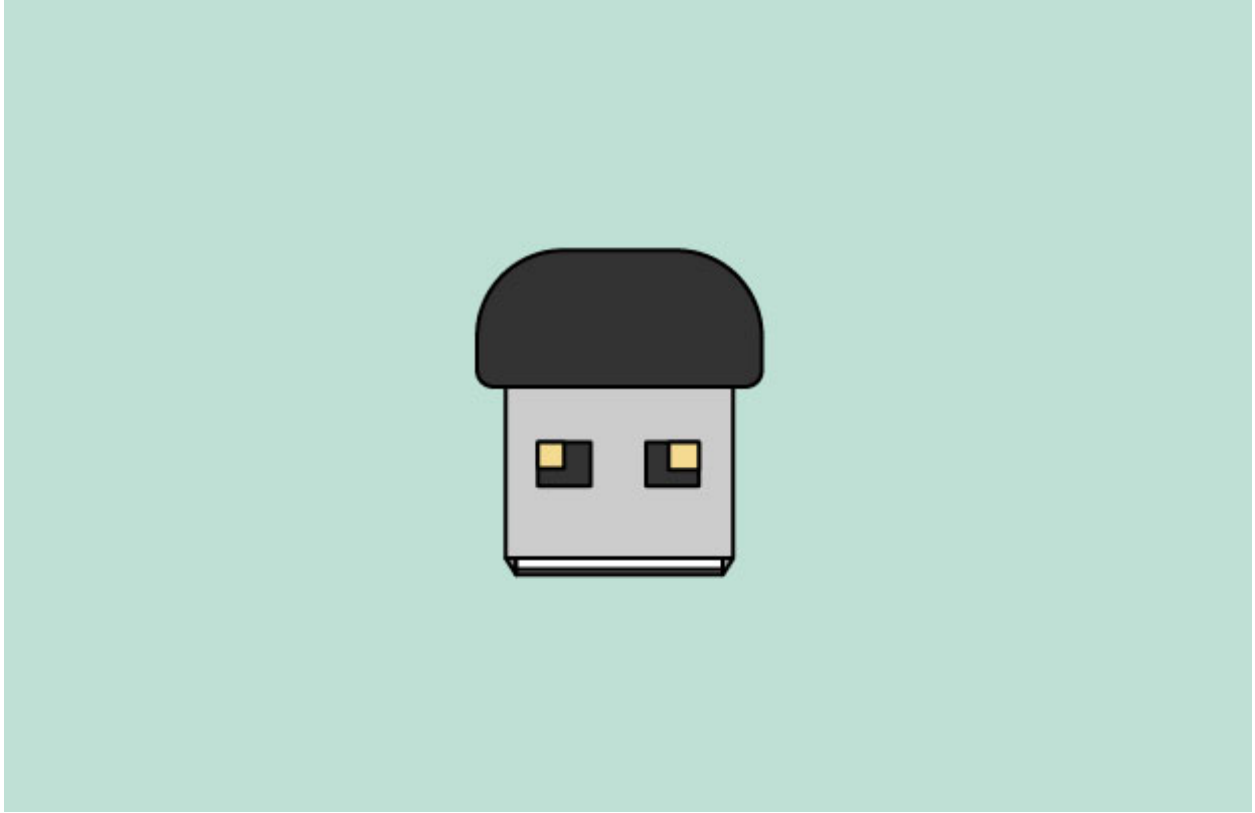
Bluetooth is a technology for wireless communication over short distances. It's often used in computers to communicate with wireless **keyboards**, **mice**, and **printers**. It's commonly built into the motherboard or included in a **wireless network card**. For computers that don't have Bluetooth, you can purchase a USB adapter, often called a **dongle**.

# What is a laptop computer?

A laptop is a personal computer that can be **easily moved** and used in a variety of locations. Most laptops are designed to have all of the functionality of a desktop computer, which means they can generally run the same **software** and open the same types of **files**. However, laptops also tend to be more expensive than comparable desktop computers.

How is a laptop different from a desktop?

Because laptops are designed for portability, there are some important differences between them and desktop computers. A laptop has an **all-in-one design**, with a built-in **monitor**, **keyboard**, **touchpad** (which replaces the mouse), and **speakers**. This means it is fully functional, even when no peripherals are connected. A laptop is also quicker to set up, and there are fewer cables to get in the way.

You'll also have to the option to connect a regular mouse, larger monitor, and other peripherals. This basically **turns your laptop into a desktop computer**, with one main difference: You can easily disconnect the peripherals and take the laptop with you wherever you go.

Here are the main differences you can expect with a laptop.

- **Touchpad:** A touchpad—also called a **trackpad**—is a touch-sensitive pad that lets you control the pointer by making a drawing motion with your finger.
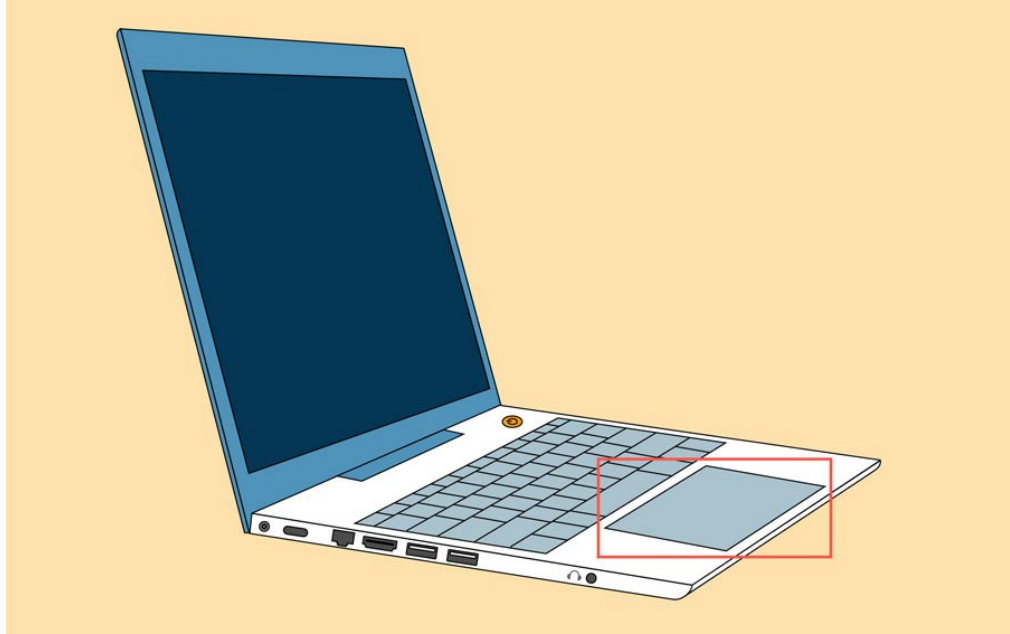
- **Battery:** Every laptop has a battery, which allows you to use the laptop when it's not plugged in. Whenever you plug in the laptop, the battery **recharges**. Another benefit of having a battery is that it can provide **backup power** to the laptop if the power goes out.

- **AC adapter:** A laptop usually has a specialized power cable called an **AC adapter**, which is designed to be used with that specific type of laptop.



- **Ports:** Most laptops have the same types of ports found on desktop computers (such as **USB**), although they usually have **fewer ports** to save space. However, some ports may be different, and you may need an adapter in order to use them.

- **Price**: Generally speaking, laptops tend to be **more expensive** than a desktop computer with the same internal components. While you may find that some basic laptops cost less than desktop computers, these are usually much less powerful machines.