# **Copyright, DRM, and the DMCA**

The internet is full of creative works: songs, artwork, books, t-shirt designs, videos, and more. The internet makes it easy to enjoy and share those creative works, but that doesn't mean it's always legal to do so.

### **Copyright laws**

Since then, most countries have introduced copyright laws and 177 countries (including the United States) have agreed to the [Berne Convention](https://www.wipo.int/treaties/en/ip/berne/), an international agreement on copyright across borders.

In countries that support the Berne Convention, a creative work is copyrighted as soon as it is "fixed in a tangible medium" (for example, written down in a physical or digital medium). The author is entitled to the copyrights of that work and does not need to post copyright notices. Authors are not required to formally register their work, but they may choose to register so that they can enforce the copyright in court.

Authors don't, however, have exclusive rights to their ideas; only rights to the way the ideas are expressed.

What rights does that give the author? In the United States, these are some of [the exclusive rights](https://www.copyright.gov/title17/92chap1.html#106):

* The right to reproduce their work
* The right to create derivative works
* The right to distribute copies by sale or rental
* The right to publicly display visual works
* The right to publicly perform audio works via digital transmission

The copyrights don't last forever, however. The Berne Convention states a minimum duration of 50 years after the author's death, but the United States extended that to 70 years in most cases.

Once the copyright has expired, creative works enter the **public domain**, and can be used and adapted by anyone without restriction. Many famous books from the 19th century are now in the public domain, such as Bram Stoker's Dracula and Jane Austen's Pride and Prejudice.

### **Fair use**

Copyright sounds fairly restrictive, yet we encounter uses of copyrighted works every day:

* An album review in a magazine that quotes lyrics from a song
* A classroom assignment that includes paragraphs from the class textbook
* Search results that include thumbnails of images from the website

Are these copyright violations? Maybe—but in the United States at least, they might be legal according to the doctrine of **fair use**. Fair use allows limited use of copyrighted materials for purposes like criticism, comment, news reporting, teaching, or research.

Ultimately, only a judge can determine if a particular use is fair use, and the judge will consider [four factors](https://www.copyright.gov/title17/92chap1.html#107):

* What's the purpose and character of the use? (e.g. educational vs. entertainment, non-profit vs. for-profit, transformative vs. iterative)
* What's the nature of the copyrighted work? (e.g factual vs. fictional)
* How much of the copyrighted work is used, and how significant is that portion of the copyrighted work?
* What's the impact of the use on the potential market for and value of the copyrighted work?

If a non-profit educational website uses a paragraph from a history book in an article, it is likely to be considered fair use. If a commercial entertainment website streams an entire historical drama from a film studio, it is almost certainly *not* fair use.

The question of fair use does not always have a clear answer, so court cases help to expand on and specify the four factors, particularly what it means for a use to be "transformative." You can get a feel for what the courts deem to be fair use by looking through [these past court cases](https://fairuse.stanford.edu/overview/fair-use/cases/).

### **Copyright in the digital age**

Back in the days of the printing press, few people had the ability to easily reproduce work, so copyright concerns weren't commonplace. But in the digital age, *all of us* can reproduce work. In fact, it's now so easy to violate copyright that many people violate copyright without even realizing it, simply by downloading a file, pasting some text, or sharing a funny image on social media.

#### **The rise of digital file sharing**

In the 1990s, peer-to-peer file sharing networks emerged that made it very easy to download files. One of these networks, called Napster, was particularly popular—at its peak, some colleges estimated that [60% of their internet bandwidth](https://www.wired.com/2000/02/save-our-napster-say-students/) was being used by Napster to download MP3 files. Many of those MP3 files were digital recordings of copyrighted music; internet users were happy to finally have a way to listen to hundreds of their favorite songs for free.

However, recording artists discovered their songs circulating on Napster and they weren't all thrilled by the discovery. In 2001, Napster was suddenly facing three lawsuits for enabling copyright violations: one from heavy metal band Metallica, one from rapper Dr. Dre, and one from the top record companies in the music industry.

As a result of those cases, Napster attempted to remove the plaintiff's copyrighted songs from search results using digital fingerprinting algorithms.

When a judge ruled that it wasn't removing enough of them, Napster eventually shut down and filed for bankruptcy.

#### **A new era in digital music**

Thanks to the rise and fall of Napster, entrepreneurs realized that people wanted an easy way to listen to music online and have been experimenting with legal ways to make that happen ever since.

For example, the companies Spotify and Pandora offer monthly subscription services for streaming songs, while Amazon and Apple charge low prices to buy a single song. Generally, those companies pay royalties to the copyright owners of the songs and only offer songs by permission of the copyright owner.

### **Digital rights management**

Even when a company gives customers an easy way to legally download a copy of copyrighted work, there is still a risk for future copyright violations. What if one customer decides to share it for free with thousands of others? The thousands will be happy, but the copyright owner won't get any revenue from their enjoyment of the work.

That's why some copyright owners are a fan of **digital rights management (DRM)**: tools that restrict where and how a user can use copyrighted media.

For example, the popular music streaming service Spotify adds a DRM layer to streamed songs which prevents their subscribers from listening to the songs anywhere besides Spotify apps. The DRM layer scrambles the audio data in a way that only the Spotify player understands how to unscramble. A desktop MP3 player would be confused by the audio data and not know how to play it.

Computer programmers like a challenge, however, and they've figured out ways to circumvent most forms of DRM. If a user really wants access to the original DRM-free data, they can often find tutorials and tools to circumvent the DRM. So if that's the case, what's stopping users from bypassing the DRM?

### **The Digital Millennium Copyright Act**

In 1998, the United States passed the **Digital Millennium Copyright Act (DMCA)** , which criminalizes the production and distribution of technology that tries to circumvent DRM.

Using the DMCA, a copyright owner can send takedown notices to services or individuals that are distributing their copyrighted works, and assuming their copyright has indeed been violated, the service or individual must comply with the takedown request or face legal action.

Google has received [over 4 billion DMCA takedown requests](https://transparencyreport.google.com/copyright/overview) from copyright owners that discover their works show up in an unauthorized form in search results. .

### **Concerns and criticisms**

A common criticism of the DMCA is the abuse of takedown notices. In a [2016 study](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2755628), researchers evaluated a random sample of DMCA takedown requests to Google Image Search and found that about 36% were of questionable validity. As the chart below shows, nearly half of those invalid requests weren't actually copyright related complaints, and around one third were situations that were likely legal due to fair use:

Given the high proportion of invalid DMCA requests, most content hosting services use a combination of automated algorithms and human review to determine which notices are valid. However, services still make mistakes and accidentally take down legitimate content. While there are consequences for knowingly filing false takedown notices, some companies and individuals have used takedown notices for censorship or to stifle competition.

Another big concern about DRM and DMCA is the impact on visually impaired users who need to use assistive technologies like screen readers to consume digital media.

If an e-book is protected with DRM, a screen reader may be unable to read it entirely. This means the visually impaired user is either cut off from the information entirely or they must use a DRM circumvention technology and risk violating the DMCA. Neither of those are good situations, so there are [movements](https://www.copyright.gov/1201/2011/initial/american_foundation_blind.pdf) to move away from DRM and exempt accessibility technologies from the DMCA anti-circumvention provisions.