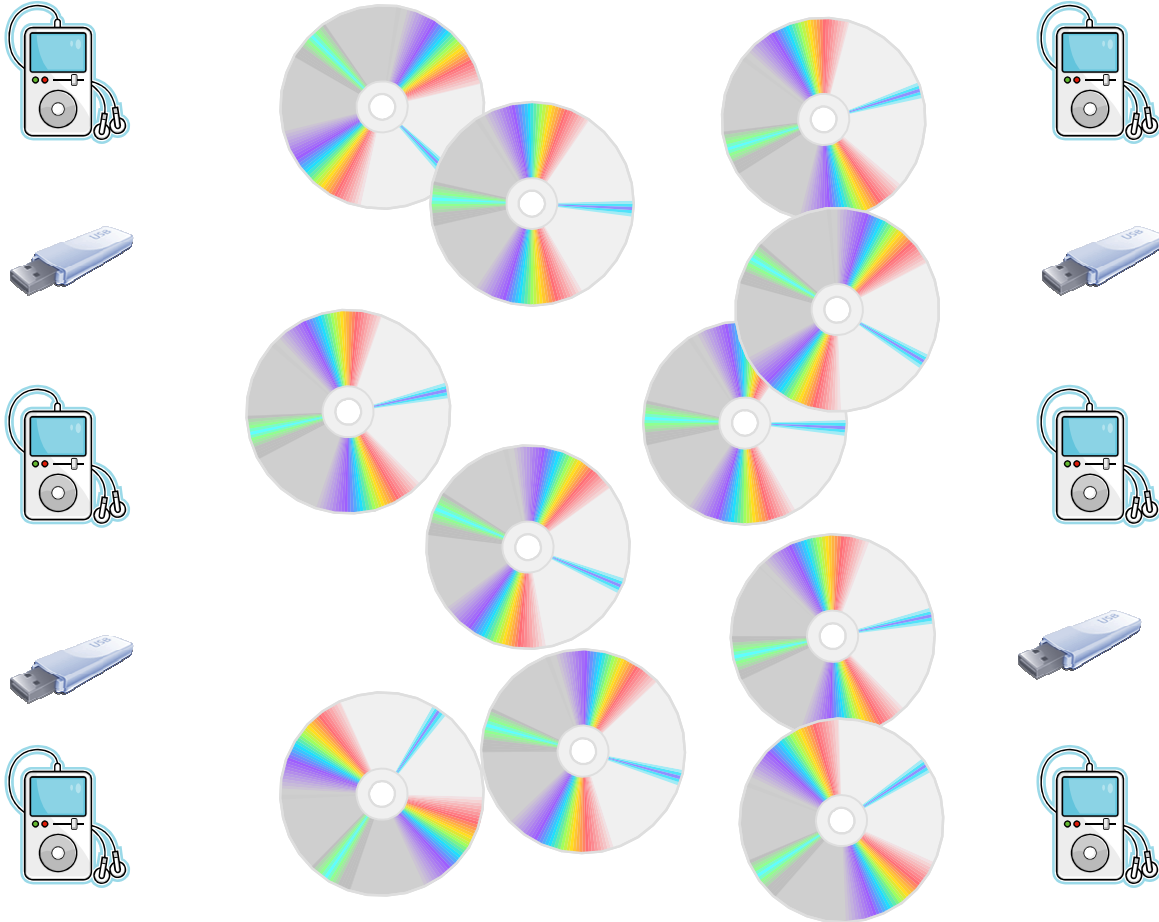


Copying CDs and Files



**New York Society Library
May 16th, 2007**

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Burning CDs:



CD-R (Compact Disc-Recordable): a Write Once, Read Many optical media that retains a high level of compatibility with standard CD readers. Although files can be added on at separate points, once the CD is **finalized or closed**, it cannot be overwritten.

CD-RW (Compact Disc ReWritable): is a rewritable optical disc format. Once files have been recorded onto the CD, the user can add or erase files repeatedly.

A CD-R is considered to record at a higher quality, and is therefore more suitable for archival purposes. CD-RWs do not play in some older CD players and are higher in price, making them less popular.

DVD-R (DVD Recordable): is used to copy DVDs on to another disc only once, as with CD-Rs. **DVD-RW** discs may be written to about 1,000 times before needing replacement. DVD+R and DVD+RW are competing types of recordable DVD discs.

Note: Most new computers come with a CD-R/W drive. Your computer may have one CD drive or two. If you have two, generally one drive is designated as a CD/DVD player, while the other drive is used to insert CD-R/W discs only. When making a copy of a CD, it can be done faster with two drives because they can read and copy simultaneously. If your PC or laptop has only one drive, your burner program will copy the CD files on to your hard drive first, then burn the files on to a new blank disc.

An **audio file format** is a container format for storing audio data on a computer system. There are numerous file formats for storing audio data. Common audio file formats include:

.wav (Waveform): is an audio format that contains uncompressed audio. WAV is the format used for tracks on original CDs, and it is generally larger in size than mp3s and contain better sound quality.

.mp3 (MPEG-1 Audio Layer 3): is a popular digital audio encoding format that compresses audio files, but is still faithful to the original recording.

.wma (Windows Media Audio): Proprietary compressed audio file created by Microsoft, was intended to compete with the .MP3 file but never reached the same popularity. It is primarily a Windows Media Player file, but other media and CD players can read it as well.

Standard **video/audio file formats** include MPEG, MP4, AVI, MOV (Quicktime Player video), DivX, DV, and VOB. ASF and WMV are standard Windows formats.

Burning/Ripping programs

Most new computers include a pre-installed burning program. You can also download free or low-cost media players that can include burner options. A good selection of CD burners/rippers may be searched and downloaded from: <http://www.download.com> – search for “cd burner,” “cd ripper,” or “dvd burner,” filter by user/editor rating and cost.

Common programs include:

Nero: <http://www.nero.com>

Roxio: <http://www.roxio.com>

Real Player: <http://www.real.com> (Free basic)

Yahoo Music Jukebox

<http://music.yahoo.com/jukebox> (Free basic)

Windows Media Player:

www.microsoft.com/windows/windowsmedia (Free + rip option)

DeepBurner & DeepRipper: <http://www.deepburner.com> (Free basic)

A few popular DVD burner and ripper programs can be found at <http://www.imtoo.com>, www.deepburner.com, <http://www.cdburnerxp.se/>

Burn options:

Audio CD: copies compressed computer audio files, such as MP3 or WMA, into CD-player WAV format. The “minutes” count on the surface of your CD-R/W will tell you how many minutes of audio you can record (typically 74-80 minutes).

Data CD: saves data files, including music files (such as MP3), with their original file formats, to be used in another computer. Note: Some newer CD players can play back data audio files. The “megabyte” number on the surface of your CD-R/W lets you know how many bytes of data you can fit on the CD (typically about 700MB).





Ripping CDs: →

Ripping is also referred to as digital extraction, or “importing.” It is the process of copying audio and video from CDs or DVDs onto a computer. It is the opposite of burning, which copies files *from* your computer on to a removable disc. You can rip an entire CD to your computer, or select specific songs to be ripped.

Examples of ripping: ripping your CDs on to your computer so you can play them on your computer, ripping CDs on to your computer to copy the songs to an MP3 player, or ripping songs on to your computer to create your own mix CD with your favorite songs. Ripping is also required to extract audio and video content onto a computer for editing, storage, duplication or backup purposes.

Some programs rip audio files to a default audio file type. Ex: Windows Media Player rips files to a .wma file. To rip your files to MP3 format, go to Options → Preferences, find the Rip tab, and change the default settings.



USB Flash Drive: (a.k.a. thumb drives, handy drive, flash disk, memory stick, UFD): is a portable storage device. To access the data stored in a flash drive, the drive must be connected to a computer by plugging it into a USB host controller built into the computer.

Note: You can copy only data files directly to a UFD. To copy audio and video files from a CD, you must first rip the files to the computer, then copy them to the UFD. Audio and video files burned as a data disc can be transferred directly to a UFD from the CD.



Some USB memory sticks offer password-protection. Biometric memory sticks add security by requiring fingerprint recognition for access to files on the drive.

USB vs. CD:

PROS

CONS

	PROS	CONS
UFD	Durable, compact, dense, biometric security option	Files vulnerable to viruses and accidental erasure, small enough to lose, can offer more storage space than typical CDs
CD-R, CD-RW	Can be used as a backup copy to store away	Scratch-able, limited storage

MP3 Players are used most often as a portable music player, but can also be used to store data files, such as images and word processing documents. Files are transferred to an MP3 player by plugging it into a USB port on the computer, and then copying the files to the USB drive.

The Ipod is an exception in that it requires its own software, iTunes, to play and transfer files.

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