

CD Players – Where did they go? What about all my music CDs?
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CD players used to be all around us, well, at least they could be found in our computers and our automobiles, but not so anymore. In the age of streaming Netflix videos and Delivery of Software Applications by downloads, CD players have lost their significance. But if you feel you must have a CD player on your computer, you can add an external CD player. These types of devices will usually read and write CDs and DVDs. They are fairly inexpensive, around \$30, and they connect to the computer using USB. (As always, the more USB ports on your computer, the better.)

In our automobiles, many domestic and foreign car models that used to have CD players as part of their infotainment center have eliminated the CD player. In its place, they have included a USB port, and they have included an MP3 player in the infotainment electronics. The MP3 player, in conjunction with the USB port, allows the entertainment center to play MP3 music from a flash memory device plugged into the USB port. That's all well and good, but how do you get your music on to a flash memory device? Fortunately, there is a simple answer – Windows Media Player (WMP). But before we look into how to use WMP, let's take a quick look at recorded music and a brief history thereof. Recorded music began with Thomas Edison, who invented the phonograph in 1877. Initially, the music was stored on metal cylinders. The cylinders were replaced by disks, tape and finally CDs. The disks evolved from 78s to 45s and finally the 33 $\frac{1}{3}$ albums. Tapes developed from Reel-to-reel to 8 Track and finally the very popular tape cassettes. All of these were developed to record "analog" music and was the way we recorded and played back music until around the late 1980s.

During the 1980s, even before the release of the iPod, research was being done to develop methods of compressing digital music. (The iPod would eventually replace the Walkman, a device that almost every music lover owned.) The outcome of the research was the .mp3 music file specification that allowed music files to be created that would be small enough to fit into the amount of memory that could be put into a portable device, in those days. Large memory devices were not as available then, as they are now, so the size of a music file was very important. (By the way, there are other music file types, but .mp3 has become the de facto music standard.) The .mp3 file type is considered a lossy compressed file, meaning that there is some quality degradation in the resulting music. The amount of "loss" is established when the original uncompressed file is compressed. This is accomplished by the use of a "Quality" setting. The quality is indicated in "Kilobits per second" (kbps). A setting of 128 kbps is termed "near-CD" quality, which gives you a file size of about one-tenth the size of the original file, and sound quality that is quite impressive. A file that produces a higher quality will be larger, but I'd be surprised if those of us over 65 could tell the difference, so the near-CD quality is probably more than adequate.

The .mp3 file specification allows us to create music files that we can use on our devices but it is the .wav file that creates a music file that is an exact reproduction of the originally recorded music; this is what you find on music CDs. The .wav file contains all of the musical quality of the original performance. The .wav file contains the digital results of the analog music signal being sampled at a rate so as to include all frequencies that can be heard by the human ear. This sampling results in a digital representation of the original music. To be technical, this is called a linear pulse-code modulation format. When played on a CD player, the stream of digital information produces music exactly as it was originally performed. But these .wav files are fairly large; most music selections will create files in the 30 to 40 Mbytes range.

So now that we know about .wav and .mp3 file types, we can get back to Windows Media Player. WMP is a component of Windows 10, so everyone has a copy of WMP which is currently at version 12. WMP not only plays CDs and music files, but it is capable of “ripping” the tunes from a standard CD. (“Ripping”, though it sounds horrible, it is perfectly legal.) When you start WMP you will not have controls for ripping if there isn’t a CD in the CD tray (you will see “No disk” under the Tools tab). Once you put a CD into the tray, the “Rip CD” and “Rip settings” controls will appear on the WMP toolbar.

Before you rip the CD, check that the settings are to your needs. Click the down-facing arrow next to “Rip settings” to check a few of these settings. First, select “Format” and then check the box next to “MP3” in the pop-up window. Next, select “Audio Quality” and check your selection (128 Kbps is probably fine and it will create the smallest files). Next, select “More Options” and it will open a window for making “Rip Music” adjustments. The first adjustment is where the ripped files will be stored. If you want to change the destination, click “Change” and in the pop-up window navigate to the location of your choice. Next, on the Options Window, click “File Name”. This is where you determine how the ripped music file will be named. Check the items that you want to be in the file name, like “Artist” and “Song title”, move the items up or down to get the right sequence. Next, choose the “Separator” like space or dash. The “Preview” shows the choices that have been made. (I typically name the files “Artist dash Song title”.) Click OK on the “File Name Options” window. The other two Rip settings, Format and Quality, have already been set up so now you’re good to go. Click “OK” in the Options window to get back to the main WMP window. Now all you have to do is click “Rip CD” and let’er rip. When you originally put the CD into the tray, all tunes were selected. If you don’t want a particular tune ripped, uncheck the box next to the tune’s name. The “ripped status” will show how the process is proceeding. When all the tunes are ripped, you will find them in the location that you set up in the Rip settings. They will be in a folder with the name of the artist or CD. Using File Explorer, move the tunes to your permanent “Music” folder. From here, you can put them on a flash memory device for use in your car, or put them directly into any of your devices, like a tablet, a music player, your smartphone, or another computer. Now you’re ready to take advantage of the music you previously purchased for a CD player on any of your other devices.