

Sun City Summerlin Computer Club Seminar

Digital Music and an **iTunes Tour**

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Agenda

- **What Is *Digital* Music**
- **Audio File Formats and Standards**
- **Apple's Free iTunes Jukebox Program**
- **Building Your Music Collection With iTunes**
- **Organizing Your iTunes Music Library**
- **Burning Music CDs**

What Is Digital Music?

- **Music is represented as a stream of numbers.**
 - **Measurements of electrical voltage level at an instant.**
 - **Can convert the stream of numbers back to voltages.**
 - **Use 16 bits (2 bytes) per measurement (sample).**
 - **For stereo, two streams – one for each channel.**
 - **Standard audio CD sample rate is 44,100 per second.**
- **Number stream may be saved in various ways**
 - **On an audio CD.**
 - **In a music file on a PC/Mac hard disk.**
 - **Music files may be compressed in various ways or left uncompressed.**
- **Look at a MP3 file with GoldWave (on PC)**

Sound Card / Chip Basics

- **Able to output analogue stereo sound from digital output stream (D to A conversion; i.e. numbers converted to an electronic wave form).**
- **Able to convert analogue stereo input to a digital sound stream (A to D conversion; i.e. convert an electronic wave form to numbers).**
- **Connects to CD / DVD drive so the PC can “play” music CDs.**
- **Sound card/chip has Line-in, Speaker out, and Microphone jacks.**
- **<http://www.howstuffworks.com/sound-card.htm>**

Audio File Formats (1)

- **Microsoft WAVE (.WAV)**
 - 44,100 samples/sec, stereo, 16-bit samples each channel.
 - Uncompressed, consumes about 10.6 MB per minute of sound (44,100 * 2 * 2 * 60).
 - CD Quality (same specs).
- **Motion Picture Experts Group Level 3 (.MP3)**
 - Compressed, size varies based on sample rate.
 - 128K bits/sec (“Near CD” quality), 64 Kbps (“FM” quality).
 - At 128Kbps, uses about 1 MB per minute of sound.
 - Little point in going higher than 192 Kbps for MP3.

Audio File Formats (2)

- **Microsoft Windows Media Audio (.WMA)**
 - Compressed, size varies based on sample rate.
 - Supports Digital Rights Management standards.
- **Apple Advanced [Audio] Codec (.AAC)**
 - Compressed, file size varies based on sample rate.
 - .AAC not normally copy protected.
- **MP4 / M4P**
 - Newer standard, handles audio and video.
 - Compressed.
 - Popular for handheld devices
 - M4P is copy protected

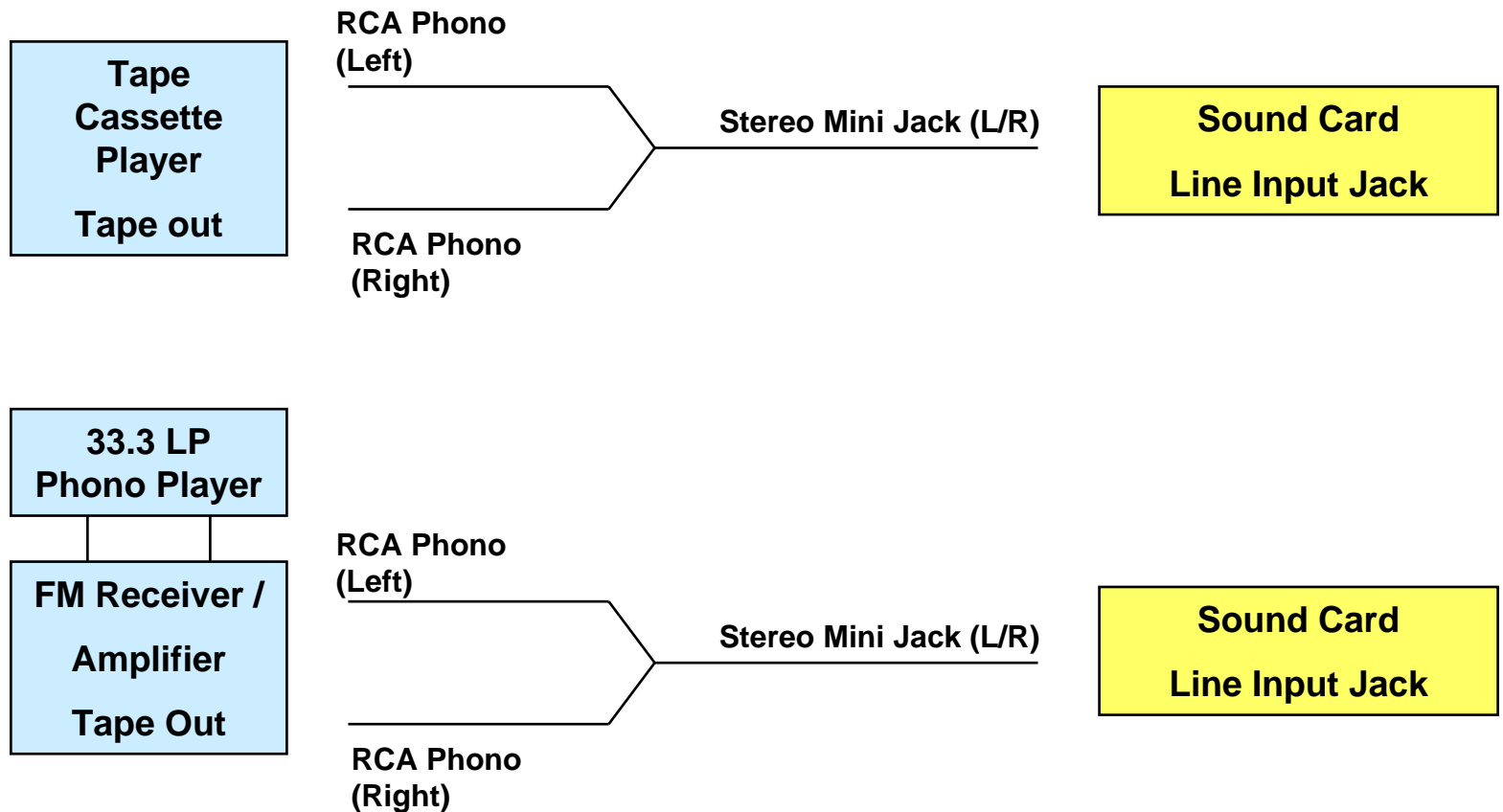
Free iTunes Tour

- **Getting iTunes**
- **Music Library**
- **Video Library**
- **Play Lists**
- **Importing Audio CDs**
- **Setting Preferences**
- **Internet Radio**
- **Online Music / Video Store**
- **Burning a music CD**

Building Your Music Library

- Convert *your own* music CD collection to music files.
 - iTunes can “Import from CDs into MP3 or AAC.”
- Buy “used” CDs (save about 50%) to rip.
- Borrow music CDs to rip?
 - Friends, public library.
- Buy digital music on-line.
 - \$.99 per song, \$9.99 per “album”.
 - Most stores now sell unprotected MP3 files (256KB sampling)
- Record Internet streaming audio
 - Use a tool like Total Recorder
- Convert your audio tapes and LPs to music files.
 - Need a “line-in” recording tool (e.g. Spin It Again).
 - After recording, you may want to separate and “clean-up” the recorded sound.

Converting Audio Tapes and LPs



Organizing Your Music Library

- **Physical Placement of your music files.**
 - Folder and file hierarchy is important.
 - Good choice is: Artist > Album > Song name.
- **Set up Descriptive “tags” in your music files.**
 - Artist name, song name, album name, genre, date
 - Tedious work. But, once done, these make it easy to find a favorite song.
 - iTunes does this very well.
- **Adjust physical file names to match what’s in the tags.**

CD Burning Tips

- Use good quality media.
- Use media rated to desired speed (e.g. 40X).
- Burners should have full access to the CPU and HD.
- Enable “Burn Proof” buffer mode if available.
- Shut down background programs, especially those that access the Internet. For example:
 - Web browsers.
 - E-mail clients.
 - Stock tickers, indexers, power managers.
 - Screen savers.

Burning an Audio CD With iTunes

- **File > New Play List**
- **Drag and drop songs from the Library to the Play List**
- **Keep track of total playing time (< 70 minutes)**
- **Drag songs in the playlist into preferred order or turn on shuffle.**
- **Edit > Preferences > Advanced**
Set the CD burning parameters for “Audio CD”.
- **Click the “Burn Disc” button at the bottom right.**
- **iTunes will check the collection and then begin the burn.**

Useful Web Links

- <http://www.howstuffworks.com/cd.htm>
- <http://www.smartcomputing.com> (subscribers)
- <http://www.apple.com>

Where To Find Music

- <http://www.mp3.com/>
- <http://www.emusic.com/>
- <http://www.half.com/products/music/index.cfm>
- <http://www.jumpmusic.com/>
- <http://music.download.com/>
- <http://www.secondspin.com>
- **On-line Music stores:**
 - Amazon store
 - iTunes store
 - Walmart store