

# **Sun City Summerlin Computer Club**

## **Digital Media SIG**

### ***“Getting Started”***

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# **Agenda**

- **What Is *Digital* Music**
- **Audio File Formats and Standards**
- **Building Your Music Collection**
- **Cleaning up and editing recorded music**
- **Organizing Your Music Library**
- **Burning music CDs**
- **Useful Web Links for More Information**
- **Recording Video Tapes**

# 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 hard disk.
  - Music files may be compressed in various ways or left uncompressed.
- **Look at a MP3 file with GoldWave**

# Key Audio File Formats

- **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.

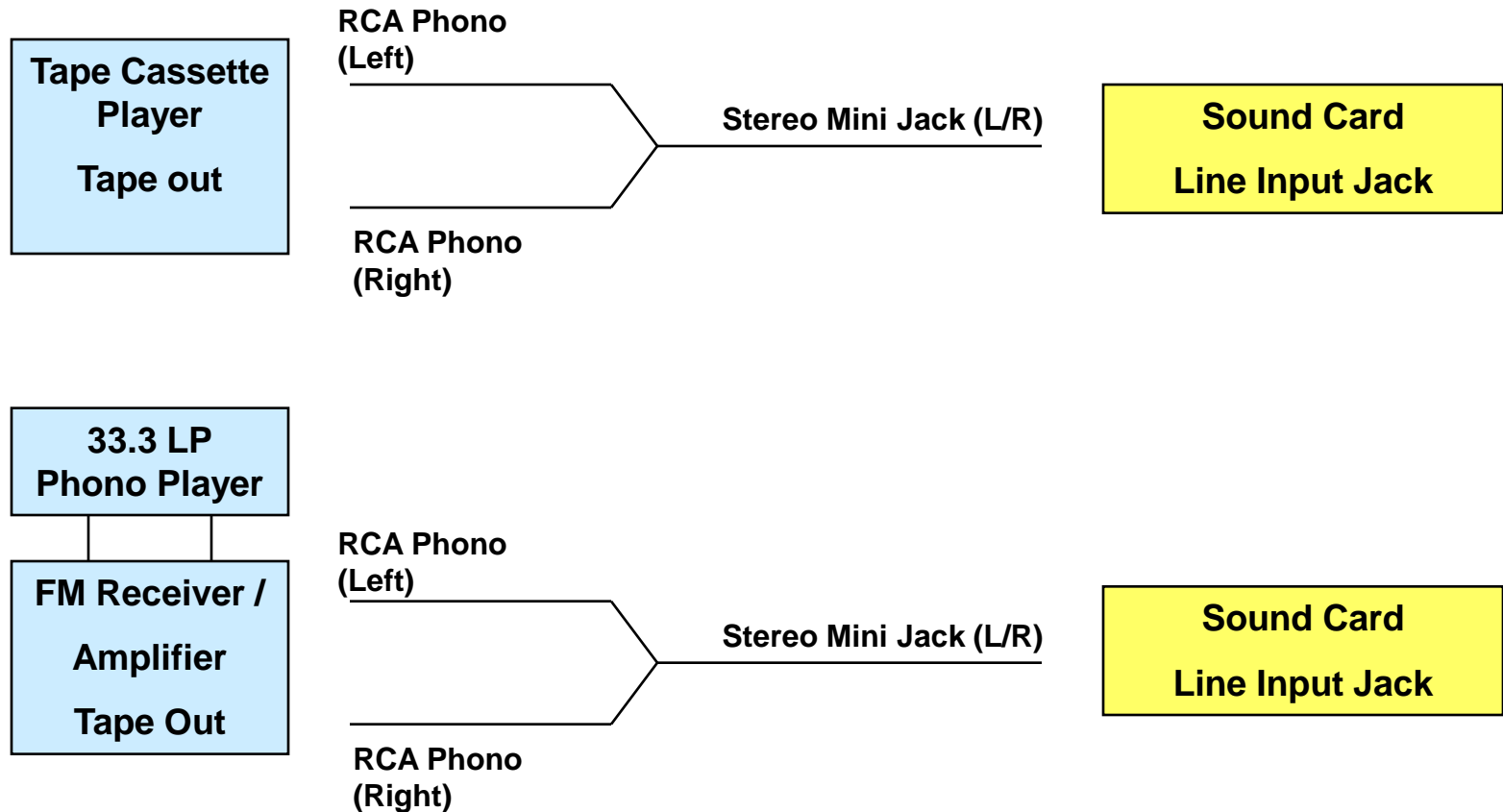
# Building Your Music Library

- Convert *your own* music CD collection to music files.
  - Use any of the popular “rippers”.
- 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, need to separate and “clean-up” the recorded sound.

# Audio CD Rippers

- **Ripping (Definition)**
  - Copying contents of an Audio CD to your hard disk.
  - Digital audio data is converted to: .WAV, .WMA or .MP3.
  - Often audio album and track information looked up in online CD Database (CDDB).
  - Each track on the CD becomes a separate MP3 file.
  - Legal, fair *personal* use of copyrighted material you own.
- **Many CD rippers available (shareware, freeware, jukeboxes).**
- **Easy – Place CD in your CD drive and “rip away”.**
  - Ripped files can go into any folder – usually “My Music”.
- **Demo – Ripping a CD with iTunes**

# Converting Audio Tapes and LPs



# Line-In Preliminary Steps (1)

- Hook up equipment as per preceding diagram.
- **Make sure Line-in is coming from RCA jacks (316 milli-volt), not *speaker* jacks.**
- Power on all the stereo equipment.
- Use Windows Volume Control or Spin It Again's Volume level check to set recording levels.
- Mute the Mic input.
- Clean the LP, tape heads, stylus, ...



# Line-in Preliminary Steps (2)

- **“Play” the tape / LP to be recorded into the line-in jack.**
  - **PC speakers will output the sound.**
  - **Tests reception and volume levels.**
- **Rewind or re-queue the audio to be recorded.**
- **Launch Line-in recording software**
  - **Spin It Again, GoldWave, Audacity, Nero, ...**
- **Adjust program settings as needed to record from Line-In.**
  - **(Set MP3 bit rate to 128 or 160 – no point in going higher)**

# Line-In Recording (1)

- **Best Approach:**
  - Record entire LP or tape as two single MP3 files (easiest).
  - Side 1 is one large MP3; Side 2 is second large MP3.
- **Activate the recording window in Spin It Again or GoldWave.**
- **Set the artist name, album name and track title (e.g. “Side 1”).**
- **Start Recording in the software.**
- **Start playing the LP, tape or single song you want to record.**

## **Line-In Recording (2)**

- **Allow the album or tape side to play to completion.**
- **Stop the LP or tape on the player.**
- **Stop the recording software.**
- **Save the file to the E:\Music\_Temp folder (if on the Media PC).**
- **Set up as above to record the second side using track title “Side 2”.**
- **Set up for recording the next LP, tape or single song.**

# Digital Music Editors

- **GoldWave (Shareware)**
  - Does line-in recording
  - Full-featured music editor
- **Audacity (Open Source)**
  - Does line-in recording
  - Full-featured music editor
- **Roxio Creator Suite Music Editor**
- **Nero Wave Editor**
- **Spin It Again (can do noise reduction)**

# Post-Processing a Full Album

- Use GoldWave, Nero Wave Editor, Roxio, Audacity
- Clean up each “side x” file with noise and hiss filters, mute and crop off start / end noise.
- Optional - can break each side up into individual files:
  - Open the “full album” MP3 file for Side 1 or Side 2.
  - View the entire wave form.
  - Zoom in as needed.
  - Identify start / end of each song (short interval of 0 level between).
  - Highlight the song from start to end (include some silence at each end).
  - Save the highlighted segment as a separate MP3 file.

# Organizing Your Music Library

- **Physical Placement of music files.**
  - Folder and file hierarchy important.
  - Best is Artist > Album > Song name.
  - Default is your personal “My Music” or “Music” folder.
  - If have two hard drives, consider placing on second.
- **Set up Descriptive “tags” in music files**
  - Artist name, song name, album name, genre, date
  - Tedious work. But, once done, these are recognized by all players and jukebox programs.
  - iTunes does this very well.
- **Adjust physical file names based on tags.**
- **Use a Jukebox program to index your files into a Library.**
- **Demo – Setting up an iTunes music library.**

# **Jukebox Programs**

- **Most support a Music Library to organize your music.**
- **Most support ripping from Audio CDs.**
- **Some support stereo recording off the sound card “line” input.**
- **All can play CDs and music files back through your sound card.**
- **Can usually convert between some file formats.**
- **Can often burn new music CDs with your favorite tracks.**
- **Most now support on-line music radio streams.**
- **Most now support on-line music stores for downloads.**

# **Popular Juke Box Programs**

- **Microsoft Windows Media Player 10 / 11**
- **iTunes V9**
- **WinAmp 5**
- **VLC Player**
  
- **Yahoo Music Jukebox (*not recommended*)**
- **Real Player (*not recommended*)**



# **Music CD Burning Programs**

- **Most Jukebox Programs (see previous).**
- **Roxio - Easy CD Creator or Easy Media Creator**
  - **Good, easy to use, handles all media types.**
- **Ahead Software – Nero (CD & DVD)**
  - **Good, easy to use , handles all media types..**
- **Ashampoo Burning Studio**
- **Music Morpher Gold (Free)**

# **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:**
  - **MS Internet Explorer, MS Personal Web Server.**
  - **E-mail client (Outlook, Outlook Express or AOL).**
  - **Stock tickers, indexers, power managers.**
  - **Screen savers.**

# Demo - Burning Audio CDs

- Can use *iTunes*, Media Player, WinAmp, Roxio or Nero.
- Demo – creating and burning an iTunes Play List
  - 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.

# Recording Video Tapes

- Can use Pinnacle “Direct to DVD” or Pinnacle Studio 12 or 14.
- Example Steps:
  - Turn on the VHS player.
  - Place your VHS tape into the VHS player.
  - Rewind the tape.
  - Start Pinnacle Direct to DVD (icon is on the desktop).
  - Insert a blank DVD disk into the PC’s DVD recorder tray.
  - Press the play button on the VHS tape deck
  - Click the record button in Direct to DVD.
  - Be patient – *recording is in real time.*
  - Limit – 104 minutes of recording.

# Useful Web Links

- <http://www.howstuffworks.com/cd.htm>
- <http://www.smartcomputing.com> (subscribers)
- <http://audacity.sourceforge.net/>
- <http://www.download.com/>
- <http://www.roxio.com>
- <http://www.nero.com/en/index2.htm>
- <http://www.musicmatch.com>
- <http://www.winamp.com>
- <http://www.microsoft.com>
- <http://www.ashampoo.com>
- <http://www.audio4fun.com/>

# Where To Find Music

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