AUDIO 2: SOUND CHECK WITH A USB MICROPHONE [10 points]

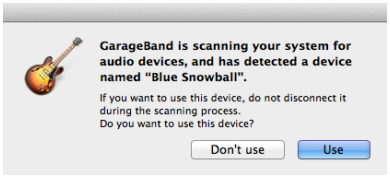
In this activity, you'll setup and configure a USB Microphone, then do a sound check. The sound check is one of the most important steps a music producer can do when producing any recorded audio. In essence, the sound check goes a long way in guaranteeing that you will get a good signal - one that is clear, loud enough to hear, and without distortion - when you record. First, watch this video tutorial:

VIDEO TUTORIAL FOR THIS ACTIVITY: GarageBand USB Mic Recording [6:11]

Question: Can you explain what a **"Signal-to-Noise Ratio"** is and the role the sound check plays in ensuring you get a good SNR?

PROCEDURE:
For this activity you'll need a **USB Mic** (such as the Blue Microphones Snowball Mic). ***If no USB mic is available****, use the built-in mic on your device.*

USB MIC CONFIGURATION
When GarageBand is running and you plug the mic's USB cable into one of your computer's USB ports, an alert message should pop up letting you know that GarageBand detects the mic. It's asking if you want to use it. Click "Use" to continue.



If such an alert message does not pop up when you plug in the mic, try unplugging/re-plugging the USB cable. You can also force GarageBand to recognize the mic by opening the Preferences (GarageBand menu), selecting the Audio/MIDI tab, and choosing "Blue Snowball" (or whatever the name of the mic is) from the "Input Device" drop-down menu.

NOW IT GETS A LITTLE TRICKY!
For more control over the mic recording process, you need to descend into the inner depths of GarageBand! Some cool things can be added to a track in the **Smart Controls** area.

Smart Controls. To open Smart Controls, select the audio track in the Track Window (the one in which

you will do your voice recording), and click on its round, dial-shaped icon.

Next, open the Inspector; its icon is simply a letter “i”. Some helpful things which can be configured in the Inspector include:

- **Record Level** (often called “**trim**” level)
- **Input (source)**, in this case our USB Mic (i.e. Snowball mic) – choose **mono** or **stereo**. When using a Snowball mic, the Input (source) may be either Stereo 1/2 (for a stereo recording) or Mono 1 (for a single channel, mono, recording). Either is fine.
- Monitoring and Feedback Protection
- and more!

SOUND CHECK

The Recording Level slider (also known as the “trim”) is one of the most important settings! You will use it to do a soundcheck with the mic to ensure that when recording you get a nice, strong signal but one that does not “clip” or distort.

Place the mic about 4 or 5 inches away from the source (your mouth) and speak in a full, normal voice – just as you would when performing your voice over. For your soundcheck, simply say, **“Testing, testing 1, 2, 3…this is (Your Name) conducting my USB microphone soundcheck.”** As you speak, watch the **VU (Volume Units) meter** in the Track Header. Ideally the two parallel green lines will pop into the 50-75% range of the VU meter, never peaking out into the dark orange/red.

It is important that you get a strong, clean signal that takes advantage of the dynamic range of the system...YET, doesn’t distort/clip. When the trim level is too high, the waveform will collide with the amplitude ceiling of the track. The visual squaring off of the waveform (called “clipping”) represents the distortion to the signal that has occurred. On the other hand, if the recorded signal is too weak, another problem occurs. In this case, the waveform will appear close to the x-axis representing silence. But “silence” can be relative! The mic will undoubtedly pick up some ambient noise in the place where you record (i.e. fluorescent light buzz, air conditioning unit, etc.). If you record at too low a level and later need to increase the Volume level (gain) on your track, you’ll be amplifying BOTH the weak signal AND the low-level noise. Sound engineers try to get a good **“signal-to-noise ratio” (SNR)** so any ambient noise is not apparent on playback.

TURNING IN YOUR WORK

To receive credit for this assignment, you need to **upload/turn in two items as directed for this class.**

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1) **MP3 file export of your soundcheck.** This will be the brief recording of you saying **"Testing, testing 1, 2, 3…this is (Your Name) conducting my USB microphone soundcheck."** Remember, to export your project as MP3 audio, go to the Share Menu, select "Export Song to Disk," and choose a high quality MP3 file type. Be sure to **name the file "(Your Name) Soundcheck.mp3".**
2) **Screenshot of your entire GarageBand window.** This is so I can see the waveform in the audio track in which you recorded so I can evaluate the strength of your signal. To take a screenshot (picture from your computer screen), type one of the following key commands:
    a) **SHIFT-COMMAND-3** (captures the entire screen)
    b) **SHIFT-COMMAND-4** (which allows you to highlight a specific area of the screen you want to capture)

Once you take your screenshot, the image file will appear on your computer's desktop. **Please rename the file "(Your Name) Soundcheck"**. A screenshot ***of a good soundcheck*** will look something like this:

GRADE: Participation, based on adhering to the guidelines above: 10 POINTS.

IF YOU HAVE SOME EXTRA TIME - PLEASE GO FURTHER WITH YOUR VOICE RECORDING....

INTRO TO DSP PLUG-INS: SMART CONTROLS

Digital Signal Processing (DSP) plug-ins such as reverb, equalization (EQ) and compression are frequently added to recorded signals to enhance the sound. GarageBand presets each track with the DSP plug-ins it thinks you're most likely to use, calling these **Smart Controls**.

To work with these Smart Control effects in GarageBand, click on the Smart Control (round dial) icon and the Smart Control area opens at the bottom of the program.

To learn more about Smart Controls, I recommend both of the following:

1) Read through the section on Smart Controls in Apple's GarageBand help guide.

2) Experiment with altering the settings to HEAR THE DIFFERENCE these plug-ins make. It's hard to speak theoretically about things such as EQ, compression, and reverb until you've actually experienced the sonic difference they make.

If you have time, apply **reverb** to your vocal track (and any of the other DSP plug-ins you'd like to try).

Share your results with your instructor and the class.