AUDACITY TUTORIALS

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Contents

NOTE:

Make sure "Project Rate (Hz)" (in bottom left corner of Audacity window) is set to "48000" (see Fig. 1)

While working through these tutorials pay attention to the difference between selecting a position (by just clicking the mouse at a position) and selection a portion/selection of time/audio (by pressing and dragging the mouse)

- When pasting audio - the selected portion of audio will be replaced with the pasted material. This means that if the portion selected is shorter than the audio to be pasted the time will be expanded, if the portion selected is longer than audio to be pasted the time will be contracted!!!
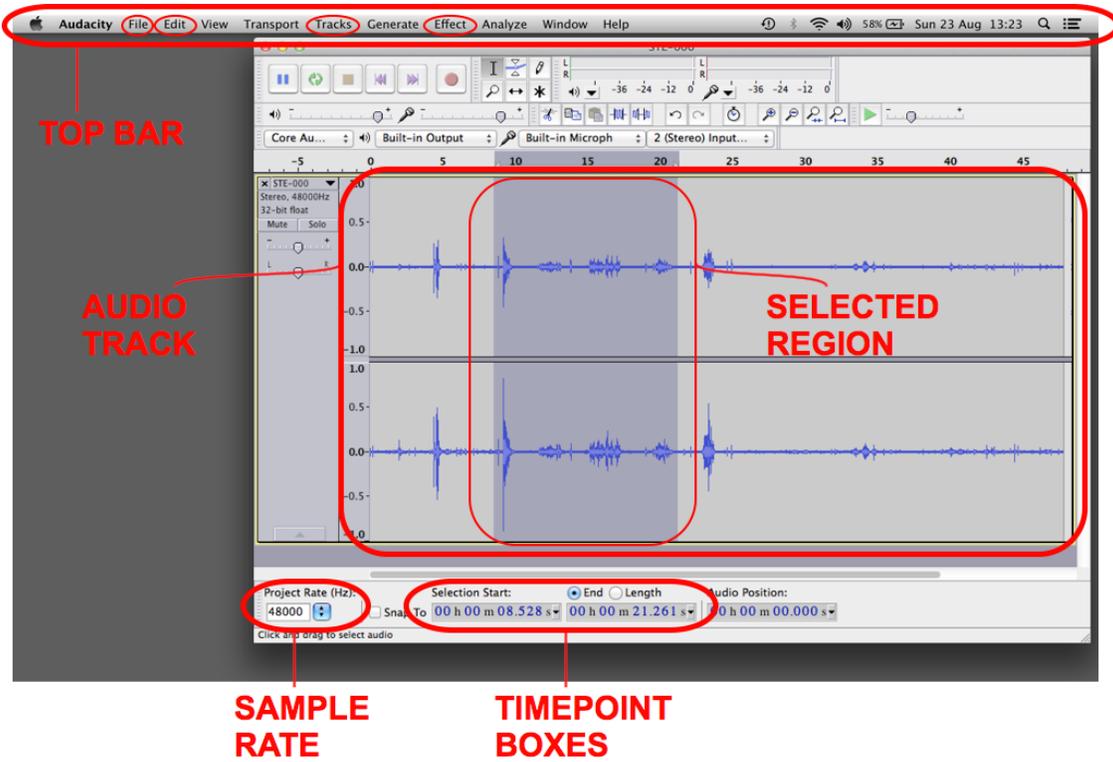
FIGURE 1. The Audacity window

1. Loading Samples and Basic Editing - Cut and Paste Collage

(1) Open Audacity.

(2) Switch to Finder and Drag and Drop audio file into Audacity window.

(3) Once file has loaded press spacebar to play.

(4) Press "command & A" to select the entire sample.

(5) Using the mouse, click:

    (a) "Effect" (along the top bar).

    (b) Select "**Normalize**."

    (c) Set "Normalize maximum amplitude" to "-1.0."

    (d) Press "OK."

(6) Press spacebar to listen to "Normalized" sample.

(7) Use mouse to select a portion of the sample. Press spacebar to hear just this portion of the sample.

(8) Press "command & X" to **CUT** this portion of the sample.

(9) Use mouse to select another area of the sample. Press "command & V" to **PASTE** the portion which was cut in the previous step to this new position.

(10) Press "command & A" to select all of the audio.

(11) Press spacebar to hear the new arrangement of the audio. Listen for 'clicks'/'pops' at the points where you cut/pasted the audio!

(12) Press "command & C" to **COPY** this portion of the sample.

(13) Use mouse to select another area of the sample. Press "command & V" to **PASTE** the portion which was cut in the previous step to this new position.

(14) Press "command & A" to select all of the audio.

(15) Press spacebar to hear the new arrangement of the audio. Listen for 'clicks'/'pops' at the points where you cut/pasted the audio!

(16) Repeat steps 7 - 15.

2. Avoiding Discontinuities ('clicks'/'pops') 1 - Cut and Paste Collage

(1) Open Audacity.

(2) Switch to Finder and Drag and Drop audio file into Audacity window.

(3) Once file has loaded press spacebar to play. **Normalize** the sample and listen again (see tutrorial 1).

(4) Use mouse to select a portion of the sample. Press spacebar to hear just this portion of the sample.

(5) Press the 'Z' key to 'snap to zero crossings' - points at which the waveform passes through 0, cutting at these points will not result in discontinuities in the audio (or at the very least discontinuities will be lessened).

(6) Press "command & X" to **CUT** this portion of the sample.

(7) Using the mouse, click:
   (a) "Edit" (along the top bar).
   (b) Select "Region Save."
   This will store the selected region (in this case a single point in time) so you can return to exactly the same point later.

(8) Along the bottom of the Audacity window are 3 boxes representing different points of time in the project.
   - The start point of the selected region.
   - The end point of the selected region.
   - The audio playback position.

(9) Along the bottom of the window ensure that "End" is selected. Change the time shown in the FIRST of the timepoint boxes (labelled "Selection Start") to a time 10 - 50 milliseconds EARLIER than the "End" time. This will select a brief period of time immediately before the original cut point (step 6).

(10) Using the mouse, click:
   (a) "Effect" (along the top bar).
   (b) Select "Fade Out."
   This ensure that the audio drops to complete silence before the cut point (step 6).

(11) Using the mouse, click:

(a) "Edit" (along the top bar).

(b) Select "Region Restore."

This brings us back to the region you saved in step 7.

(12) Change the time shown in the SECOND of the timepoint boxes (labelled "End") to a time 10 - 50 milliseconds LATER than the "Selection Start" time. This will select a brief period of time immediately after the original cut point (step 6).

(13) Using the mouse, click:

(a) "Effect" (along the top bar).

(b) Select "Fade In."

This ensure that the audio begins with complete silence at the cut point before rising to the original volume afterwards.

(14) Press "command & A" to select all of the audio. Press spacebar to hear the new arrangement of the audio.

(15) Listen to fades - if the volume drop is too noticeable, or if you can still hear clicks, press "command & Z" to undo the fades. Navigate to "Restore Region" (go to "Edit" along the top bar) and then repeat steps 8 - 14.

(16) Now select a new region, or point in time, using the mouse.

(17) Press 'Z' to snap to zero-crossing.

(18) Press "command & V" to **PASTE** audio originally cut in step 6.

(19) Save the region (see step 7).

(20) Change the "End" timepoint box to the same time as shown in the "Selection Start" timepoint box.

(21) Create a **"FADE OUT"** (see steps 9 - 10).

(22) Restore the region (step 11)

(23) Set both timepoint boxes to the beginning of the region (see step 20).

(24) Create a **"FADE IN"** (see steps 12 - 13).

(25) Listen to the whole project, going back and changing the fades applied in steps 21 and 23 if necessary (see steps 14-15).

(26) Restore the region. Set the "Selection Start" to the "End" point of the region (*Take a note of the "End" point first and ensure both time equal the note you made before advancing*) apply a **"FADE OUT"** immediately before this point.

(27) Repeat step 26, but this time create a **"FADE IN"** immediately after the end point of the region.

(28) Listen to the whole project, redoing fades if necessary.

(29) Repeat steps 4 - 28 but use **COPY** rather than cut.

(30) Repeat steps 4 - 29.

(31) Create a brief **"FADE IN"** at the beginning of the entire project and a brief **"FADE OUT"** at the very end - this ensure a smooth (discontinuity free) start and finish to the audio.

(32) Save an Audacity File (".aup") by either navigating to "File" and then "Save" (along the top bar) or by pressing "command & S[1].

- This creates both an Audacity File (".aup") and a folder named "filename_data." You both file and folder in order to reopen the Audacity project!!!

(33) Export an audio file by either navigating to "File ⟩⟩ Export" or pressing "command & shift & E." Export as ".aiff" file with 24 bits and a sample rate of 48000 by:

- Make sure "Project Rate (Hz)" in the bottom corner of the Audacity window is set to "48000."
- Select "Other uncompressed file" for Format.
- Press "Options."
- Select "AIFF (Apple/SGI)" for "Header."
- Select "Signed 24 bit PCM" for "Encoding."

(34) Find the file in Finder and press "command & I" to view information. Look under "More Info" to make sure that the "Sample Rate" is 48000 and "Bits per sample" is 24. If not delete the audio file and **EXPORT** from Audacity again following the instructions above.

(35) Listen to the audio file in iTunes/VLC/etc.

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[1]**NOTE:** This file will only be opened by Audacity (so we can go back and edit projects later)! We have to export as an audio file to listen to the file in iTunes etc.

3. Equalization/Filtering

(1) Drag and Drop audio file into Audacity window.

(2) Once file has loaded press spacebar to play. **Normalize** the sample and listen again (see tutrorial 1).

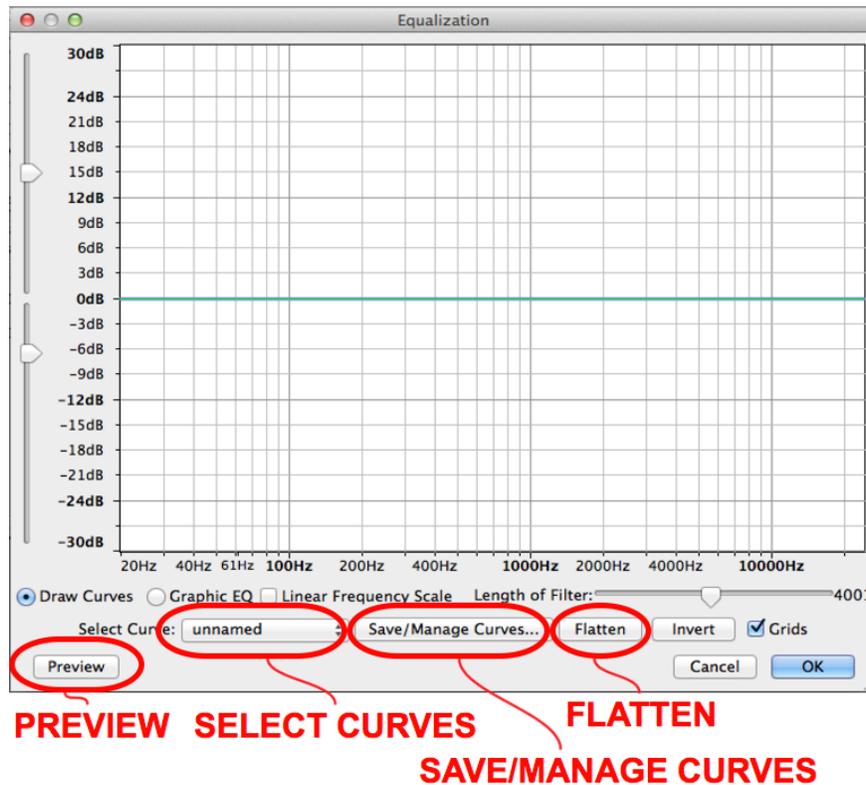(3) Navigate to "Effects" (along top bar) and select "Equalization."

Figure 2. The Audacity "Equalization" window

(4) In the "Equalization Window," use the "**Select Curves**" menu to choose a preset equalization curve.

(5) Press "**Preview**" to listen to your sample with the equalization.

(6) Repeat steps 4 - 5, choosing a different preset each time. Pay attention to how the different presets change both the graph and the sound of your sample.

(7) Once you have tested **ALL** of the presets, choose the one that most emphasised the aspects of your sample you want to focus on (i.e. the one which gives the best **Signal-to-Noise Ratio**).

(8) **Preview** the sound with equalization again.

(9) Compare the **equalized** sound to the original by pressing the "**Flatten**" button and then pressing "**Preview**" again.

(10) Return to the **preset** you chose in step 7.

(11) Using the mouse, change the graph to further emphasise the the aspects of your sample you like. **Preview** after every change.

(12) Click the "**Save/Manage Curves...**" button.

(13) In the window that opens, under "Curve Name" select "**unnamed**. Press the "**Rename** button and give your equalization curve a name. Click "OK" to save the curve name, and then click "OK" again in the "Manage Curves" window. Your equalization curve will now be saved in the "**Select Curves**" menu.

(14) **Preview** the original sound again (see step 9).

(15) Choose your curve from the "**Select Curves**" menu and **Preview** again.

(16) If you're happy with how the **equalization** sounds press "OK."

(17) Save Audacity File.

(18) Export Audio File (AIFF, 48000, Signed 24).

(19) Listen to Audio file in iTunes/VLC.

4. Noise Removal

(1) Drag and Drop audio file into Audacity window.

(2) Once file has loaded press spacebar to play. **Normalize** the sample and listen again.

(3) Using the mouse highlight a few seconds of silence in your sample (usually at beginning or end of recording).

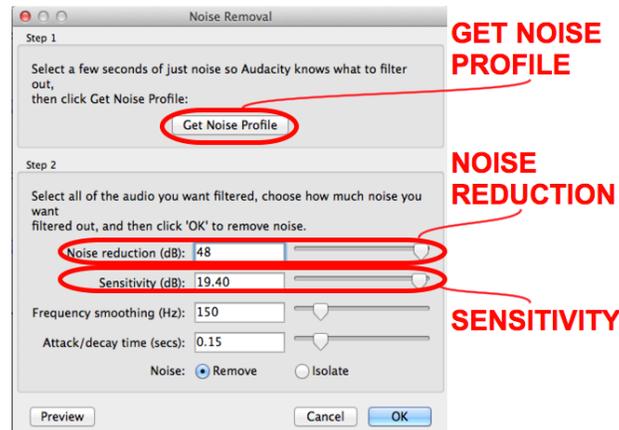(4) Navigate to "Effects" (along top bar) and select "Noise Removal."

Figure 3. The Audacity "Noise Removal" window

(5) In the "Noise Removal Window," press "**Get Noise Profile**. This will close the "Noise Removal Window."

(6) Press "command & A" to select the whole sample.

(7) Navigate to "Effects" (along top bar) and select "Noise Removal."

(8) In the "Noise Removal Window," experiment with different settings for **Noise Reduction** and **Sensitivity**, pressing **Preview** after each change. Note how if both are set too high you will get a very digital sound, if both too low you probably won't notice any difference from the original sample. As with equalization (see tutorial 3), the goal is to bring out the desired aspects of the recording, while hiding those less desirable (i.e. to create a better **Signal-to-Noise Ratio**).

(9) Once you are happy with the noise reduction, press "OK."

(10) Save Audacity File.

(11) Export Audio File (AIFF, 48000, Signed 24).

(12) Listen to Audio file in iTunes/VLC.

5. Basic Editing 2 - Mixing/Overlaying and Retaining Timing

(1) Open Audacity.

(2) Switch to Finder and Drag and Drop audio file into Audacity window.

(3) Once file has loaded press spacebar to play. **Normalize** the sample and listen again (see tutrorial 1).

(4) Use mouse to select a portion of the sample. Press spacebar to hear just this portion of the sample.

(5) Press "command & alt & X" to **CUT** this portion of the sample but retain the original timing (i.e. replace cut section with silence).

(6) Press "command & A" to select all.

(7) Press spacebar to hear sample with silence where portion was cut in step 5.

(8) Using the mouse, click:

    (a) "Tracks" (along the top bar).

    (b) Go to "Add New."

    (c) Select "Stereo."

  This will create a new stereo track in the main window.

(9) Use the mouse to select a position in the second stereo track and press "command & V" to **PASTE** selection from step 5 to this position.

(10) Repeat step 9.

(11) Press "command & A" to select all of the audio in BOTH stereo tracks.

(12) Press spacebar to hear the new arrangement of the audio. Listen again for 'clicks'/'pops' at the points where you cut/pasted the audio! Also listen for repetition of portion that you cut and pasted, and any points where pasted audio overlaps with original sample.

(13) Repeat steps 4-12, this time **COPY** ("command & C") a selection of audio and **PASTE** to a NEW track.

(14) Repeat steps 4 - 13.

6. Avoiding Discontinuities 2 - Mixing/Overlaying and Retaining Timing

(1) Repeat tutorial 5 ("Basic Editing 2 - Mixing/Overlaying and Retaining Timing"), this time using the "snap to zero crossings" and "fade" features covered in tutorial 2 to ensure you do not have any discontinuities in the audio (don't forget fades at beginning and end of project!).

(2) Save Audacity File.

(3) Export Audio File (AIFF, 48000, Signed 24).

(4) Listen to Audio file in iTunes/VLC.

7. Basic Effects 1

(1) Drag and Drop audio file into Audacity window.

(2) Once file has loaded press spacebar to play.

(3) Use mouse to select a portion of the sample. Press spacebar to hear just this portion of the sample. **Normalize** the sample and listen again (see tutrorial 1).

(4) Press the 'Z' key to 'snap to zero crossings,' and save the region (see tutorial 2).

(5) Navigate to "Effects" (along top bar) and select "Reverse."

(6) Listen to the whole project, paying particular attention to the reversed section. If you can hear discontinuities (clicks/pops) restore the region and apply fades to beginning and end of region (see tutorial 2).

(7) Select another region and snap to zero crossings.

(8) Navigate to "Effects ⟩ Paulstretch."

(9) Press "Preview" to listen to how the effect will sound.

(10) Change the "Stretch Factor" and "Preview" again. After the preview has finished click "OK."

(11) Save the region, and then listen to the whole project - create fades if necessary.

(12) Repeat this process with other "Effects." I would suggest paying particular attention to:

- Bass and Treble
- Change Pitch
- Change Speed
- Phaser
- Repeat
- Wahwah

NOTE: Use "**Preview**" when available to explore the different parameters of each effect. Remember to snap to zero crossings, save regions, and create fades(if necessary)!!!

(13) Finally, select the whole project and use the "Normalize" effect. This increases/decreases the volume of all the audio an equal amount - so that the loudest point is equal to the "Normalize maximum amplitude" value (-1db is good).

(14) Save the Audacity project and export audio file.

8. Basic Effects 2 - Mixing/Overlaying and Retaining Timing

(1) Repeat tutorial 7, this time though **CUT/COPY**, and **PASTE** sections onto a new stereo track and RETAIN the timing of the original sample (see tutorial 5), then apply effects to audio on the NEW track.

(2) Explore splicing selections directly onto a new track by highlighting a region and pressing "command & alt & I."

(3) Use the following effects to create overlapping of the original (un-altered) audio with effects while retaining the timing of the original:

- Change Speed,
- Repeat, and
- Paulstretch

(4) Explore copying ("command & C") selections of the audio onto new stereo tracks and using some of the other effects mentioned in tutorial 7 to create moments where the original (un-altered) sample sounds at the same time as a different section of the sample which has been passed through an effect.

(5) Save the Audacity project and export audio file.

9. Saving Audacity Projects and Exporting Audio

NOTE: *You should have already done this in previous tutorials, this is just so you can find instructions quickly*

To **SAVE** the Audacity project:

- Save an Audacity File (".aup") by either navigating to "File" and then "Save" (along the top bar) or by pressing "command & S[2].
  - This creates both an Audacity File (".aup") and a folder named "filename_data." You **BOTH** file and folder in order to reopen the Audacity project!!!

To **EXPORT** an audio file from Audacity:

- Export an audio file by either navigating to "File ⟩⟩ Export" or pressing "command & shift & E." Export as ".aiff" file with 24 bits and a sample rate of 48000 by:
  - Make sure "Project Rate (Hz)" in the bottom corner of the Audacity window is set to "48000."
  - Select "Other uncompressed file" for Format.
  - Press "Options."
  - Select "AIFF (Apple/SGI)" for "Header."
  - Select "Signed 24 bit PCM" for "Encoding."
- Find the file in Finder and press "command & I" to view information. Look under "More Info" to make sure that the "Sample Rate" is 48000 and "Bits per sample" is 24. If not delete the audio file and **EXPORT** from Audacity again following the instructions above.
- Listen to the audio file in iTunes/VLC/etc.

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