

AUDACITY

The free software program to record and edit sound files.

AUDACITY is a computerized program that lets you record, play and edit your audio files. The computer converts the lineal audio signals to digital audio signals so they can be seen, analyzed and corrected easily. Once converted, the computer treats the audio signals as any other digital data. When the final recording is edited, it can be stored on your hard disk or a CD. It can also be recorded on an audiocassette tape. When the sound comes out of the computer to the speaker or cassette recorder, it is converted back to a lineal audio signal.

How to install the Audacity Program

The Audacity program can be installed by downloading it from the web site (in different languages) <http://internap.dl.sourceforge.net/audacity/audacity-win-1.2.3.exe> or from a CD. To install the program from a CD, follow these instructions:

1. Put the CD with the Audacity program in the CD reader on your computer.
2. Wait a few seconds until the instructions come on the screen.
3. Click on **Next**.
4. Click on, "**I agree with the....** " and then click on **Next**.
5. Click on **Next** and on **Yes**.
6. Click on **Start** and wait while the program installs itself.
7. Then click on **Next** and on **Exit** when finished.

Now you will see the Audacity program on your screen. Follow the next steps:

1. Click on **File** and on **Preferences**.
2. Click on **Audio I/O** (In/Out) and on **Device** to choose computer's sound card.
3. In **Record**, also choose your computer's sound card.
4. You can also click on **Interface** if you want to change the program to another language like Spanish. Check to see if it is in English and click on **OK**.

Note: You will also need 3 previously recorded WAV. files for this tutorial. See pages 2, 3, and 4.

1. PLAY

In order to listen to an audio file you need to activate the **WINDOWS** program that controls the volume. This can be done by clicking twice on the little speaker icon in the lower right hand part of your screen. If that's not available, click on **Start, Programs, Accessories, Entertainment** and **Volume Control**. A small mixer will appear on your screen with a number of level controls. Adjust the **Volume** control and the **Wave** control near maximum. You can also play a CD or any sound file and adjust these two controls.

Note: If you make a check or click on "**Mute all**", you won't hear anything in the speakers. Once you have checked this adjustment, download the Volume control to your tool bar at the bottom right hand corner of your screen. Then return to the **AUDACITY** program, open it and you will see the **Audacity** startup window.

Now you will play and listen to an audio file that was previously recorded for this tutorial. Take your mouse, and click on **Open** in the **File** menu (above) and open the box called "**Audacity sample files**". Click on the file "**voice.wav**", and then click on **Open**.

If there are two signals, one above the other, it was recorded in **Stereo**. If there is only one signal, it means it was recorded in **Mono**. Observe that the window has a **time base** along the top that is calibrated in minutes and seconds. Since this is a mono file and is very narrow, click on the bottom of the window and pull it down like a window shade.

Click on the **Play** button and listen. The recording says "**Audacity, (cough - cough) the free software program that lets you record, analyze and edit your audio files, Audacity**". Now, place the arrow of the mouse in the window and it changes from an arrow to a symbol like the capital letter "**I**". This is called the "**Editing Tool**" cursor.

If you want to listen to a sound file, put the cursor "**I**" in the window and click on the **Play** button. If you want to stop it, click on the **Stop** button. While listening to the file, you will see a vertical line that moves from the left to the right of your screen. This vertical line is called the "**Play Cursor**". The fixed vertical line is called the "**Edit Cursor**".

If you want to play or analyze part of a file, (like the coughing) place the cursor "**I**" before the part you want to listen to and click. Then click on the **Play** button. You can also select a portion of the file and listen and analyze just that part. Place the cursor "**I**" before the part you want to listen to and click on the left button of the mouse. Keep holding the button down while you drag the cursor to the other side of the portion you want to listen to and then release it. Now you can see that the selected part seems darker than the rest of the file. Now click on **Play** and listen.

If you want to magnify that section to see it better, click on the plus (+) on the **zoom box**. The other side (-) does the opposite or makes it smaller

II. EDITING

STEP 1: Open the audio file to be edited.

To modify or edit a file you must first open the file you want to modify and then select the portion of the file you want to correct. (like the coughing on the "**Voice.wav**.")

STEP 2: Select and analyze a portion of the file.

With the "**Voice.wav**" open and on your screen, place the cursor on the left side of the cough. Now click on the mouse button and drag the cursor to the right side of the cough. This selects the portion of the file that has the coughing. Click on **Play** and listen. You should hear only the coughing. Now we are going to eliminate the coughing.

If you want to see the selected part better, click on the + in the **Zoom box** and zoom in. Or you can click on the **zoom-in** box under the **Edit** menu.

When you place the cursor to the side of the selected part, you will see a small hand that shows the left and the right, depending on which side you are. This cursor indicates that you are ready to change the size of the selection.

You can also change the size of the selected area by putting the cursor to the right side of the selected area. You will see a small hand with a finger pointing to the right. Now, click on the left mouse button and while holding it, pull it to the right to make the selection larger or to the left to make it smaller.

STEP 3: Modify parts of the file

Select the **Delete** command under the **Edit** menu and click on **Delete**. Now you can't see or hear the cough. Play and listen again to make sure the space between the words where the cough was, are natural. If it doesn't sound right, you can select the "**Undo**" command under the **Edit** menu and click on **Undo**. This brings you back to before your last edit. Now select a little more or a little less space than before (to make it sound natural) and **Delete** again.

You will also notice that the **Audacity** at the end of the file is much weaker than the **Audacity** at the beginning. So let's raise the volume level of the last **Audacity** to the level of the first. First **select** the word **Audacity** at the end of the file and click on **Amplify** in the **Effects** menu. You will see a small box with a horizontal slide and **db level indicator** above it. Now click your mouse on the slide and pull it to the right until it registers **+3db**. Then click on **OK** and you will see that the level of that part of the file is like the first. If not, then click on **Undo** and raise it a little higher or lower, what ever is needed to make the two words have the same volume level.

Now save your file as "**Goodvoice.wav**" and click on **Export as WAV** under the **File** menu. When the name **Goodvoice.wav** comes up click on **Save**. You are going to use this file in another project later on. Now, click on the "**X**" box in the window to clear your screen.

STEP 4: Edit with "Cut" and "Paste"

Now we are going to open another pre-recorded file. Click on **Open** under the **File** menu. **Select** the file called, "**Promo.wav**". Click to open.

Now play and listen to the file. It says, "**Hi! We are recording a sound file with the program that permits us to edit freely.... AUDACITY.... Good Morning.**"

Now let's change it to say, "**Hi, Good Morning. We are recording a sound file with the program AUDACITY that permits us to edit freely.**"

To produce that change, we need to do the following:

1. Select the words "**Good Morning**" in the recording and listen to it. Then choose the **Cut** command under the **Edit** menu and click. Then place the cursor after "**Hi!**" and click. Now choose the **Paste** command under the **Edit** menu and click. Now "**Good Morning**" comes after "**Hi!**" Select it and listen to it to see if it sounds OK.

Note: From now on we will use these commands for the following actions. **Edit / Cut,**

Edit / Paste, Edit / Undo, etc.

2. Now select the part, "**that permits us to edit freely**" and listen to it. Then click on **Edit / Cut**. Next, place the cursor after "**Audacity**". Then choose **Edit / Paste** and then click. Now the phrase, "**that permits us to edit freely**" comes after "**Audacity**". Listen to it to see if it sounds natural.
3. Listen to the whole file. It must say, "**Hi, Good Morning. We are recording a sound file with the program AUDACITY that permits us to edit freely.**"
4. Listen to it carefully to see if it sounds natural. You can immediately erase or change anything that does not sound natural. Just use the command **Edit / Undo**. This command will restore the file as it was before your edit and gives you the chance to correct it.
5. Now, save this new file with a new name or close it to lose the editing. You can also give it a new name and export it as a **WAV**. document.

III. EDITING TOOLS: Mixing, fading and correcting errors

In this lesson you will learn how to mix files, and do different types of fading that will let you create a professional product. For example:

1. Take a music file, lower the volume gradually for a few seconds then gradually raise it
2. again to the original level.
3. Mix a voice with the faded part of the music.
4. Fade in and fade out portions of the recording.

STEP 1: Fade in and fade out a portion of music and prepare it for mixing with a voice.

Open the pre-recorded music file by clicking on "**Open file.**" Select the file called "**music.wav**", click and then play it.

Note the place where you want to insert the voice over the music. Let's start at 7 seconds. First, change the **Editing Tool** cursor to the "**Envelope tool**" cursor by clicking on the block with the two white triangles next to the **Editing Tool "I"** box.

Now you can see that the color of the audio track has changed and there is a blue line above and below the sound with the cursor converted into two triangles. Now you are ready to make the "**valley**" in the music track.

To make this "**valley**", you need to place four points on the music track where the level of the music will change. Place the first point of the **Envelope tool** at 7 seconds and then click. Place the second point at 8 seconds, the third point at 16 seconds and the fourth point at 17 seconds. Note that there are now four white dots along the top and bottom of the envelope and maybe the blue lines have lowered also. Now, place the cursor at the 8 second white point, pull it down and see how the "**valley**" starts to form.

Continue dragging the 8 second dot down until you have lowered the volume down to half volume or less. Now move over to the third white dot at 16 seconds, click on it and pull it down to the same level as the 8 second marker. Now you have a complete valley starting out at 7 seconds, dropping to half volume at 8 seconds. Then it continues on to 16 seconds and then goes back up to the original level at 17 seconds.

STEP 2: Add the narration.

Now open the file that has the narration. Click on the “**Project menu**” and click on “**Import Audio**”. Select the file “**Goodvoice.wav**” and click on “**Open**”.

Note that the duration of the **Goodvoice.wav** is about 8 seconds and appears below the **music.wav**. To put together a production you need to place the voice over the valley in the music track. Needless to say, the voice needs to be stronger than the background music so the message is not lost in the music.

Now, click on the icon, “←→” (the double arrow) called the “**Time Shift Tool**”.

While holding the mouse button down, pull the double arrow down to the voice track and push the beginning of the voice recording to the right to line it up vertically with the spot where the music fades down. Listen to them to see if they sound right. Also make sure that the narration fits into the valley of the music track.

STEP 3: Fade out the final portion of the music and fade in the initial portion.

Click on the icon “I”, “**Selection Tool**” Place the cursor at 20 seconds and click, then drag it to the end of the music track. Next, select “**Fade out**” in the “**Effects menu**”. You have now gradually lowered the music level to completely fade out at the end. Now listen to it to see how it sounds.

If you want to have the music fade in at the beginning, you can select the first three seconds of the music by placing the cursor on the 3 second mark, click and drag the cursor to the beginning of the music. Then click on “**Fade in**” in the “**Effects menu**”.

If you are satisfied with your work you can save it by clicking on “**File**” and “**Export as WAV**” as you did previously in other lessons. Then a small box will appear advising you that the two files will be mixed into one file. Now click on “**OK**”.

Then another box will open asking you for a new name for your file. You can call it “My Promo.wav” or something else using the extension, **WAV**.

Note: If you wish the music to be shorter, you can cut out the final part and make a new “**Fade out**” point. Take time to practice what you have learned up to this point.

IV. RECORDING

Recording sounds on a computer with **AUDACITY** is very similar to recording with a cassette recorder, but with Audacity, you have many more options. Before recording you need to open the **File** menu and click on **Preferences**. Then click on **Audio I/O** and choose **channel 1 (mono)**. Then click on **Quality**. Change the **Sample Rate** frequency to 44100 Hz. Choose the **Default Sample Format** of 16-bit.

Now, take a shielded cable and plug it into the output of the recorder and plug the other end into the computer where it says “**Line In**”. In the **AUDACITY** window or screen, you will see a small options box in the upper center of the screen below the tool bar. Click on **Audio input** and choose option, “**Line In**”.

Now you are ready to record.

Next turn on your cassette recorder and play a recording or music at normal volume. Then click on the red **Record button** in **AUDACITY**. Now while the recording is running you can adjust the level of audio that comes from the recorder with the gain control to the left of the options box. While you are adjusting the audio level or gain don't be concerned with the recording, because we are going to erase it. Adjust the gain control until the signal level comes to at least **-6 db** but no more than **0 db** on the **Input level VU meter** located in the upper right-hand portion of the window. To raise the level, move the control towards **(+)** and to lower it, move it towards **(-)**

Now that everything is set, click on the **Stop button** and close the track by clicking on the **X** box to the left of your recorded track.

When everything is adjusted correctly, rewind your cassette tape, click on the **Red** record button and press the play lever on the cassette recorder. When you want to stop, click on the **Stop** button.

Recording with a Microphone: Now take a microphone and plug it into the computer where it says **Mic**. You may need to use a mixer. If so, plug the output into the “**line in**” jack. Then in the **AUDACITY** program window, click on the options for audio input and choose **Microphone**. Choose **line in** if using the mixer. Now you are ready to record.

Now click on **Record** (red button). While speaking into the microphone, adjust the microphone level control to the right **(+)** or to the left **(-)** until the signal level is at least **-6db**, but no more than **0db** on the **input VU meter**. While making these adjustments don't worry about the recording since we will be erasing it.

Note: If you are recording only one person speaking or reading, it would be better to use the **Pause** control instead of stopping each time. Because every time you **stop** you close the file. Then when you have to start again, you automatically open another track. When using the **Pause** control, you continue to use the same audio track or file.

V. SAVING OR ERASING A FILE

When your audio recording or file is finished, you must save it as follows:

1. Click on the **File menu** and click on **Export as WAV**.
2. Write in the new name of your file and click on **Save**.

Note: It is a good policy after recording a file, - especially a long one, - to export it and save it before editing it.

There is another way to save your audio recording, by compressing it using the format MP3. Do the following:

1. Click in **File – Export as MP3**
2. Write the new name and click on **Save**.
3. There will appear a block that says, “Edit the Tags for the file MP3”. Click on **“OK”**.

What this format does is compress your audio file causing it to occupy less space on your Hard Drive. Instead of occupying 1064 KB, it only occupies 194 KB of your HD while still maintaining the same quality as the original.

VI. SAVING A PROJECT

When you want to save your **project**, (all your recording, editing and modifications) first click on **File – Save Project** (name of your project), but if you want to give it a new name, click on **File – Save Project As**, and write in the new name and **Save**.

To erase a file that you no longer want, select:

1. **File – Open**
2. Click on the file you want to erase.
3. Press the **Delete** key.
4. There will appear a question asking you if you really want to delete this file. Click on **Yes**, if you still want to delete it, or say **No** if you changed your mind.
5. Then click in **Close** to close.

VII. EFFECTS MENU

1. **Repeat Last Effect:** When you want to repeat the same effect (like an echo) in other parts of your audio file, use this command.
2. **Amplify:** Use this command every time you want to raise or lower the volume level of your audio file or a portion of it. This is accomplished by typing in the desired volume level in decibels (like -4 db or +5 db) or by moving the bar below. When you click on the box (**No clipping**) the computer will not permit distortion, even if you adjust the volume level to a high or above the distortion point. When you click on **Preview**, the computer lets you hear (preview) what the new volume level sounds like before you actually change it.
3. **BassBoost:** This command increases the level of the lower or bass frequencies of the selected portion.
4. **Change Pitch:** This command permits you to change the frequency response or the tonal level of the selected portion without changing the timing.
5. **Change Speed:** This command permits you to change the speed of the selected portion, but it will also change the tone and length of the file.

6. **Change Tempo:** This command permits you to change the length of the selected portion of your audio file without changing the tonal quality. It is very useful in applications where you need to fit a small sound bite into a fixed time space.
7. **Compressor:** Compresses the dynamic range of the selected portion by increasing the volume of the weak sounds to the same level as the strong sounds, giving maximum signal strength without distortion.
8. **Echo:** This command is used to produce an echo that gives a special effect to a voice or selected portion, giving it more prominence. (like speaking in a stadium or from a mountain top)
9. **Equalization:** This command raises or lowers the frequencies of the selected portion of the file by manually forming an equalization envelope.
10. **Fade in:** This command permits you to gradually raise the volume level of a selected portion of a file.
11. **Fade out:** This command lets you gradually lower the volume level of a selected portion of a file.
12. **Filtro FFT:** This command lets you raise or lower the level and frequencies of the selected portion by manually moving a blue bar.
13. **Invert:** This command will invert the selected portion of the wave file.
14. **Noise Removal:** This command permits you to eliminate any noise in your recording like hiss or sounds in an old cassette, etc.
15. **Normalize:** This command increases the gain of a selected portion of an audio file to maximum level without clipping or distortion, while still maintaining the respective audio levels.
16. **Nyquist:** Use not recommended.
17. **Phaser:** This command permits you to change the phase of the selected portion to produce special effects.
18. **Repeat:** This command repeats over and over, the selected portion.
19. **Reverse:** This command reverses the wave of the selected portion so it can be played backwards.
20. **Wahwa:** This command gives the selected portion a Wah-Wa effect.