



**Reading
App Builder**

Using Audacity for Audio-Text Synchronization



Reading App Builder: Using Audacity for Audio-Text Synchronization

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You are free to print this manual for personal use and for training workshops.

The latest version is available at
<http://software.sil.org/readingappbuilder/resources/>

and on the Help menu of Reading App Builder.

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1. Introduction

To add audio-text synchronization to apps built with Reading App Builder, you need to create a **timing file** to go alongside each audio MP3 file. The timing files provide the information the app needs to highlight phrases in the text as the audio is playing.

You can choose between two different methods to create the timing files:

1. **Audacity**: listen to an audio file in the Audacity audio editor and lay down a labels track, placing a label at the start of each phrase.
2. **aeneas**: an automated method of synchronizing text and audio.

This document takes you through the first of these methods: using Audacity to create the timing files. Instructions on the other method can be found in the user manual *Using aeneas for Audio-Text Synchronization*.

PLEASE NOTE:

Many users of Reading App Builder are finding that aeneas is providing very accurate synchronization results, so we do recommend you try it out.

One timing file for each audio file

To synchronize audio and text in your app, you will need:

- one MP3 audio file and one timing file per chapter, or
- one MP3 audio file and one timing file per picture story book.

For example, if you have a book 'History of Mali' with 20 chapters, you will need 20 audio files and 20 timing files. If you have a picture story book with 8 pages, you need a single audio file which covers all 8 pages together with a single timing file.

Example: if you have an audio file for 'History of Mali' chapter 1, History_Mali_01.mp3, you need to create a corresponding timing file, e.g. History_Mali_01.txt.

Note: If you have several audio files per chapter or several chapters in one audio file, you will need to concatenate or split your files to create files of one chapter each before creating the timing files. This could be done in Audacity.

Timing files

A timing file for a single chapter will look like this, with a line for the timing of each phrase to be highlighted:

8.252945	8.252945	a
16.401422	16.401422	b
27.235258	27.235258	c
33.809408	33.809408	d
66.545898	66.545898	e
74.952265	74.952265	f
96.749997	96.749997	g
111.571459	111.571459	h
127.398309	127.398309	i
130.636807	130.636807	j
149.545453	149.545453	k
157.938255	157.938255	l
172.479752	172.479752	m
190.809003	190.809003	n
206.453448	206.453448	o
217.292729	217.292729	p
229.985550	229.985550	q

The first and second columns indicate the time in seconds. The third column contains the phrase label (a-z).

For a longer chapter, you will soon run out of letters of the alphabet. When you get to “z”, the next label you need to use is “aa”, then “ab”, “ac”, “ad”, etc. When you get to “az”, the next label you need to use is “ba”, then “bb”, “bc”, “bd”, etc. In other words, this follows a similar naming convention to the column names in a spreadsheet.

Phrases can be between punctuation marks, e.g. up to the next “.” or “,”. You can define the set of punctuation characters that mark the end of a phrase. Individual poetic lines can also be highlighted one by one, for example in a psalm or a song.

A timing file for a picture story book will look like this, with the number representing the page of the book and the letter representing the phrase within that page:

0.000	2.920	1a
2.920	5.840	1b
5.840	10.080	1c
10.080	13.560	2a
13.560	15.260	2b
15.260	17.240	2c
17.240	19.020	2d
19.020	21.540	2e
21.540	24.560	2f
24.560	27.660	3a
27.660	30.060	3b
30.060	32.620	3c
32.620	36.140	3d

Word level highlighting:

If you want to split a phrase after one or more words, you can use word-level highlighting for that phrase. For this, the labels in the timing files should contain an underscore and then the index of the word, e.g.

- a_4** starts at the 4th word of the first phrase (a)
- b_5** starts at the 5th word of the second phrase (b)
- b_9** starts at the 9th word of the second phrase (b)

A timing file with word-level phrase breaks might look like the following example:

3.188682	3.188682	a
7.415084	7.415084	a_4
12.934091	12.934091	a_11
16.746603	16.746603	b
17.356305	17.356305	b_5
18.853311	18.853311	b_9
19.829615	19.829615	c
20.905796	20.905796	d
21.884018	21.884018	e
22.858863	22.858863	f
25.613723	25.613723	g
27.108508	27.108508	h
28.839213	28.839213	i_6
29.158316	29.158316	i_10
30.192832	30.192832	j
31.388587	31.388587	k
32.683989	32.683989	l
36.440027	36.440027	m
38.297624	38.297624	n

2. Getting Started

2.1. Phrase Lists

To help you identify when to mark a timing break, we recommend you create *Phrase Lists*. These will arrange the phrases line by line for you.

To create phrase lists for each of the chapters in your app:

1. Launch **Reading App Builder**.
2. Navigate to the **Book Collection** page for your app.
3. Go to the **Audio Synchronization** tab.
4. Click on **Create Phrase Lists** and follow the instructions in the wizard.

A set of Word documents (.docx), comma-separated files (.csv) or tab-separated files will be created, one for each chapter.

A phrase list document for a **single chapter** looks like the following:

Chicken and Millipede 1	
a	Chicken and Millipede were friends.
b	But they were always competing with each other.
c	One day they decided to play football to see who the best player was.
d	They went to the football field and started their game.
e	Chicken was fast,
f	but Millipede was faster.
g	Chicken kicked far,
h	but Millipede kicked further.
i	Chicken started to feel grumpy.
j	They decided to play a penalty shoot-out.
k	First Millipede was goal keeper.
l	Chicken scored only one goal.

Each row in the phrase list document represents a separate timing phrase which will need to be marked.

You can define which characters are recognised as phrase ending characters in the **Features > Audio** page of Reading App Builder. By default, it is: a full stop/period (.), a question mark (?), an exclamation mark (!), a colon (:), and a comma (,).

A phrase list document for a **picture story book** looks like the following:

Chicken and Millipede	
1	Chicken and Millipede were friends.
	But they were always competing with each other.
	One day they decided to play football to see who the best player was.
2	They went to the football field and started their game.
	Chicken was fast,
	but Millipede was faster.
	Chicken kicked far,
	but Millipede kicked further.
	Chicken started to feel grumpy.
3	They decided to play a penalty shoot-out.
	First Millipede was goal keeper.
	Chicken scored only one goal.
	Then it was the chicken's turn to defend the goal.

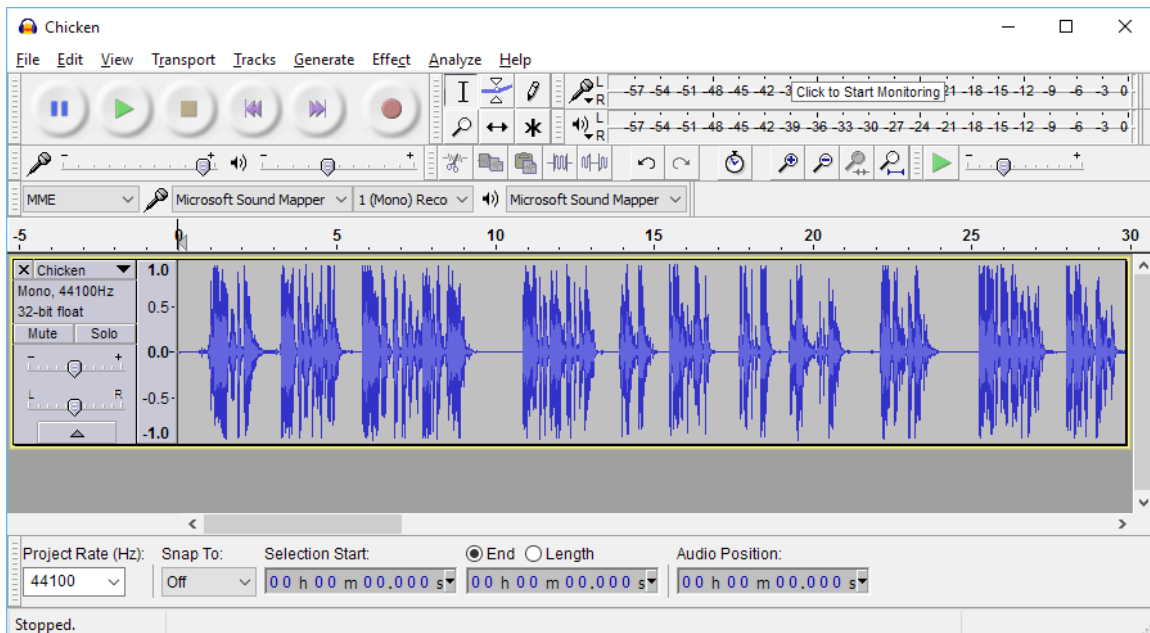
2.2. Installing Audacity

Install the **Audacity** sound-editing program if you do not already have it. Please see **Appendix: How to install Audacity**.



3. Producing Timing Files

1. Launch Audacity.
2. Open the MP3 file using **File** ➤ **Open** on the main menu.
3. If the file is stereo with two tracks, it can be helpful to reduce it to mono for this process so it doesn't take up so much room on your screen. Do this with **Tracks** ➤ **Stereo Track to Mono**.
4. Zoom in a couple of times so it is easier to see the gaps between the audio waveforms.



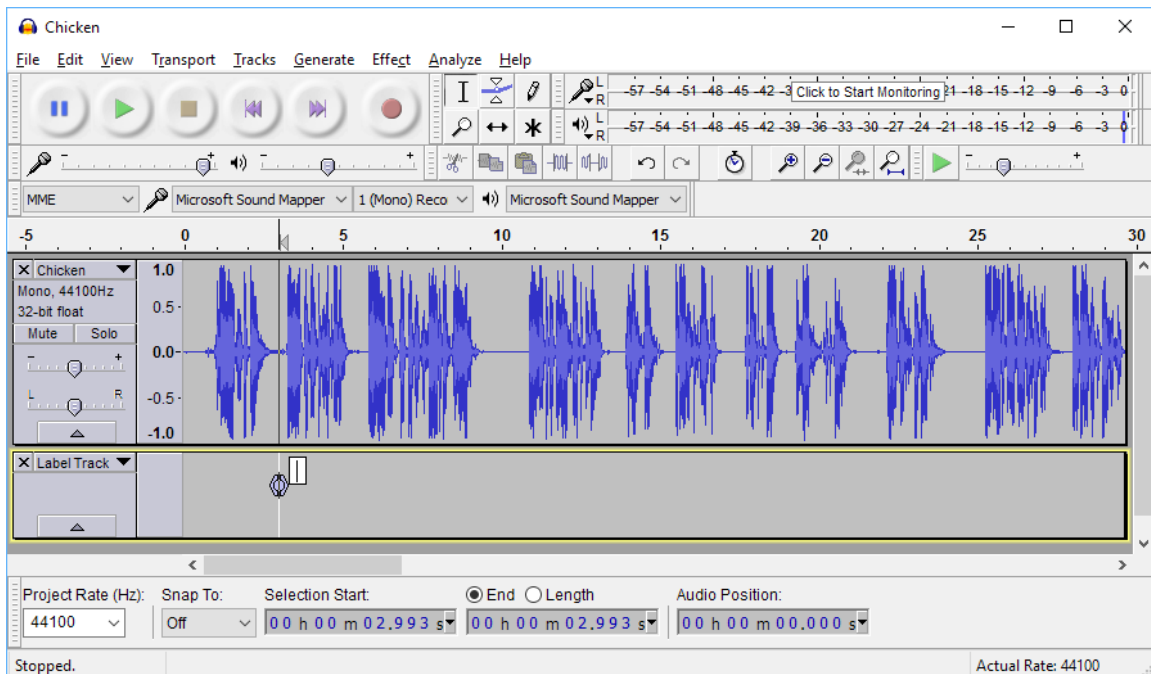
5. Have the Scripture text or Phrase List open to the chapter you will be listening to.

You could display the text in a different window (i.e. have Audacity take up the left part of the screen and the Scripture text on the right, or have the screens

arranged at the top and bottom of the screen), but this can be awkward since you will need to scroll the text from time to time and then click in the Audacity window to give it focus again. While you are doing this you might lose your place and miss a phrase break. What can work better is if you have a printed text in front of you or if the text is already on a smartphone or tablet. Then you can concentrate more fully on the text and avoid the complication of switching between windows.

6. Move the cursor to just before the beginning of the first phrase (i.e. after any titles or chapter headings).
7. Place the first label marker using **CTRL-B**. A label track will be created.

*If you are using a Mac, the shortcut to use is **Command B**.*



8. Type the first label, such as “a”. This indicates that “phrase ‘a’ starts here”. (Look at the phrase list document to tell you which label to use. In the case of a picture story book, the first label will be “1” rather than “a”.)

The cursor should already be in the label, so you just need to press the “a” key after pressing CTRL+B above.

9. Press ‘Play’ to start listening to the audio. As you listen, place a label at each timing break using **CTRL-M**.

You don't really need to look at Audacity for this. Just follow the text closely and keep pressing CTRL-M at the phrase breaks.

If you are using a Mac, the shortcut to use is **Command .** – that is Command and period (.) together.

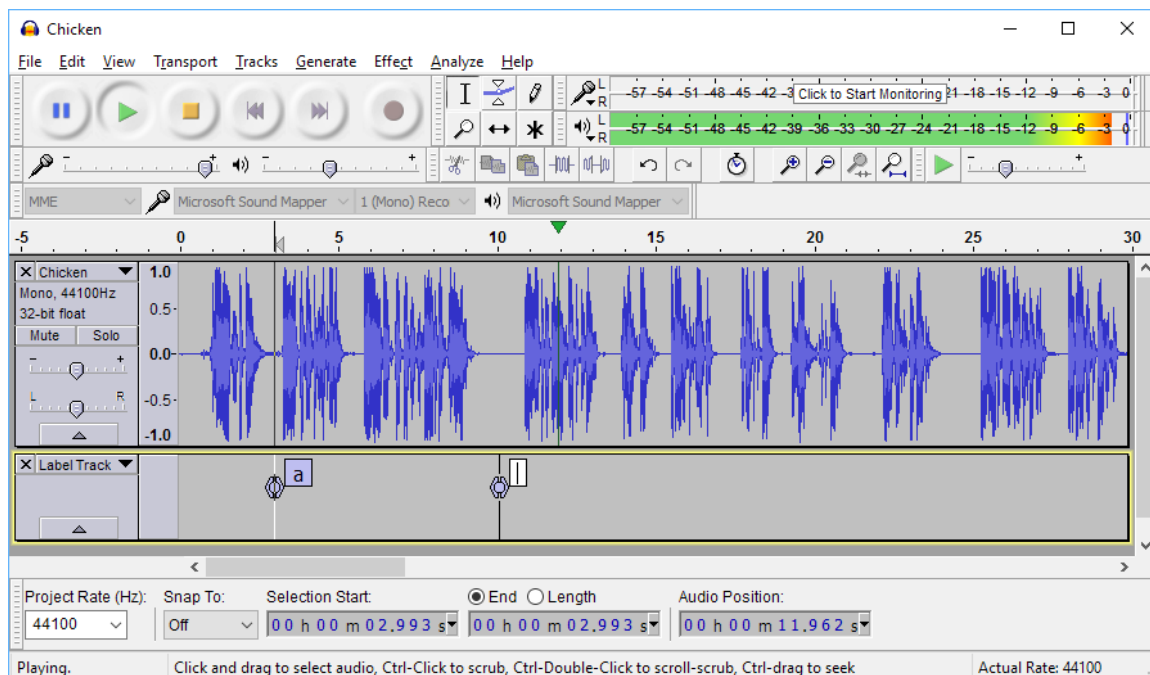
	Windows	Mac
Add Label At Selection (at cursor position when paused)	CTRL-B	Command B
Add Label At Playback Position (at current position when playing audio)	CTRL-M	Command .

Default key mappings for adding labels

Usability Tip: Instead of pressing two keys together (CTRL-M) to add a label, it is easier if you reassign the key binding to be a single key, such as F1. See Section 4: Usability Tips for more details on how to do this.

10. When you get to the start of a new phrase, type the label while the audio is still playing.

If you are quick, you'll find there is no need to stop the audio for this. The cursor is in the new label already so all you have to do is type the letters or numbers. If you miss typing a label, you can always come back to it at the end.

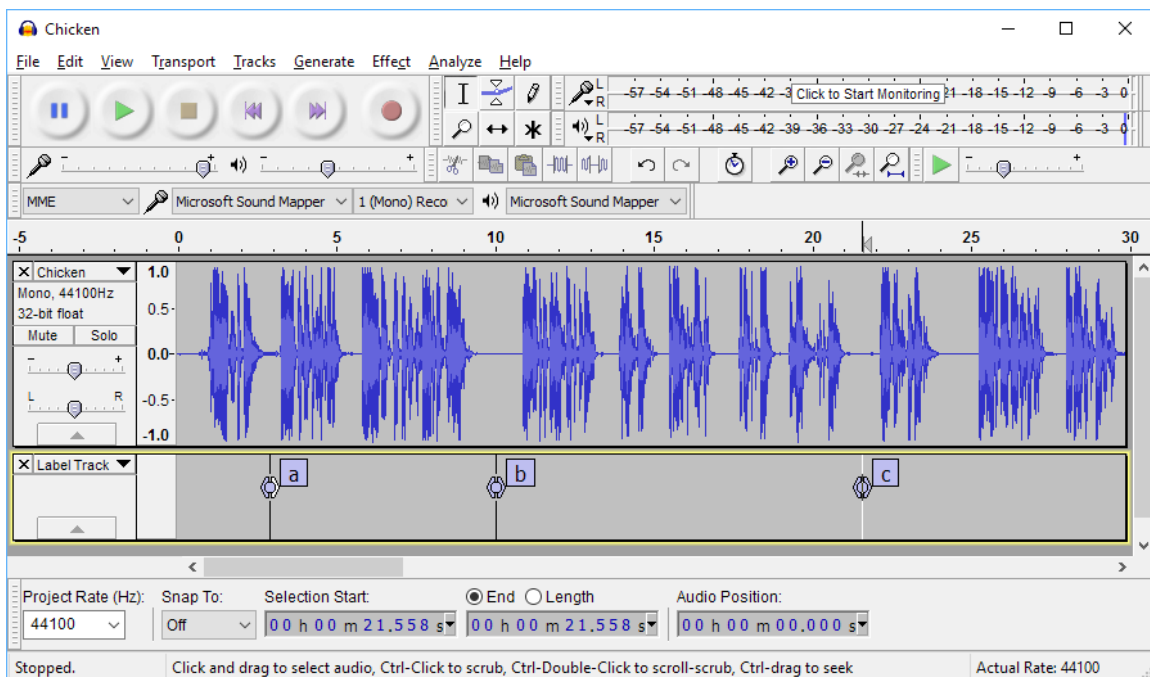


If you lose your way, stop playback, move back a few seconds and press play again.

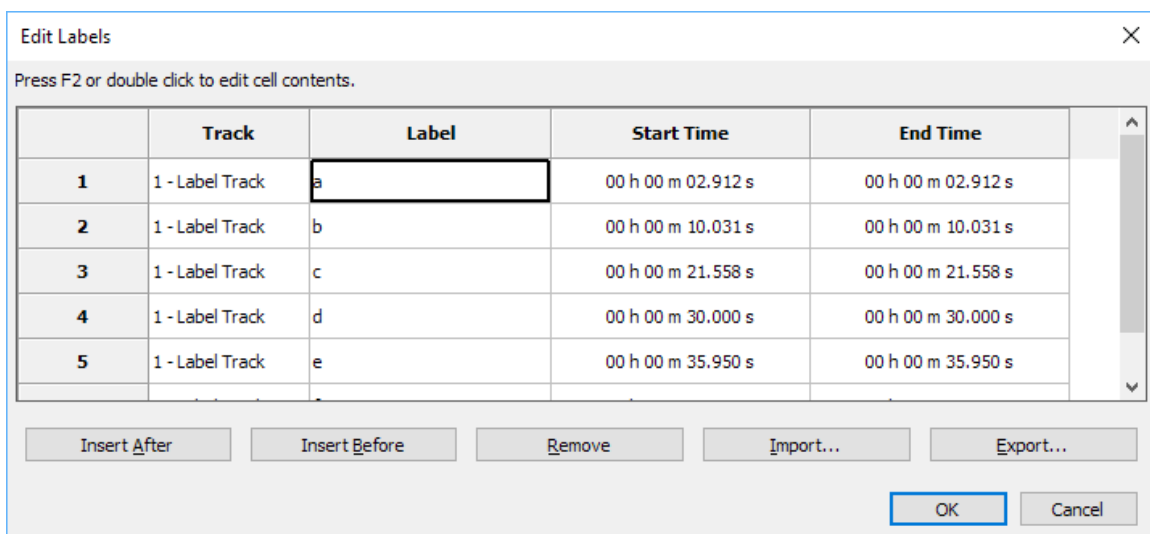
To delete a label you have placed by accident, press the **DELETE** key when the label is selected.

11. When you have finished placing labels for the whole chapter or picture story book, go back to each label :

- i. Move it slightly if you missed the middle of the blank section between phrases. Do this by dragging the circle in the middle of the marker.
- ii. Type timing labels into the small white boxes in the label track if you didn't do this earlier.



Another way of adding labels is via **Tracks** ➤ **Edit Labels...** This is an easier way to add timing labels quickly. You can also delete unwanted labels here.



During this process you will be able to see if you have missed out a phrase somewhere or if you have added an unwanted marker that needs to be deleted.

12. Export the label track to a text file using **File** ➤ **Export Labels...** Choose a name such as My-Book-01.txt (for chapter 1), My-Book-02.txt (for chapter 2), etc.

13. Open the timing file in a text editor such as Notepad. You should see something like this:

3.188682	3.188682	1
7.415084	7.415084	
12.934091	12.934091	
16.746603	16.746603	2
19.829615	19.829615	
20.905796	20.905796	
21.884018	21.884018	3
22.858863	22.858863	
25.613723	25.613723	4
27.108508	27.108508	
30.192832	30.192832	
31.388587	31.388587	
32.683989	32.683989	5
36.440027	36.440027	
38.297624	38.297624	

14. The three columns are *From*, *To* and *Label*. Make sure all the timing labels are present. If you have missed out a label somewhere, fix it in the text file or within Audacity and export again.

The timing file is now ready to be used in an app.

4. Timing Labels Assistant

If you are using Audacity in Windows, there is a helpful utility program that will make marking labels significantly easier. It is called **Timing Labels Assistant (TLA)**.

TLA is built with [AutoHotKey](#) to simulate keystrokes in Windows. It allows you to specify a phrases file and will insert the label name (a, b, etc.) for you automatically when you press the key to add the next label.

You can find it here: <https://github.com/indiamcq/timing-labels-assistant>

Download the zip file, **Timing-Labels-Assistant_v1.2.29.zip** (or a later version), and unzip it to a writable folder on your computer (i.e. not in Program Files). The main TLA executable is called **Timing-Labels-Assistant.exe**.

To use TLA:

1. Run the **Create Phrase Lists** wizard within Reading App Builder to create a set of tab-delimited .phrases files for the book chapters you want to synchronize. That's the 3rd option in the choice of file types.
2. Open **Audacity** with the audio file to be synchronised and zoom into the waveform 2-3 times.
3. Launch **Timing-Labels-Assistant.exe**.
4. Choose the .phrases file corresponding to the audio file you have open in Audacity. It will be opened for you in Notepad.
5. Arrange Notepad to the side of your Audacity window so you can see both.
6. Start playing the audio.
7. Press the **TAB** key or the **+** key on the numeric keyboard to place a marker. (This is much easier than pressing CTRL+M). The markers will appear in the order they are in the .phrases file.

If markers do not appear when you press TAB or +, check that CTRL+M is still associated with the command **Add Label at Playback Position**. See section 5.2 for more details.

8. You will hear a beep when the list of markers comes to an end.

To restart from a given label:

- Click on the icon in the taskbar and select **Restart timing at label...**
- Enter the label you want to start from, e.g. b.
- Press **OK** and continue from step 6 above.

To exit:

- Click on the icon in the taskbar and select **Exit**.

5. Usability Tips

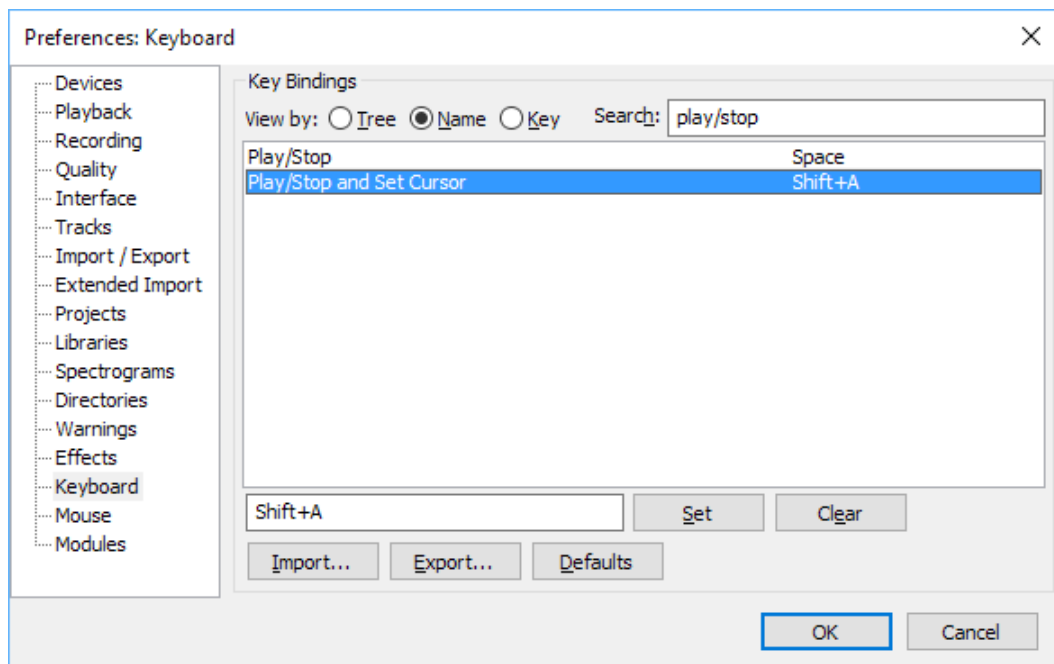
5.1. Tip #1: Change the keyboard binding for the spacebar

By default, the spacebar is assigned to Play/Stop. This is good, but the problem is that if you stop somewhere and then start again, the playback goes back to the original start position rather than playing from where you stopped.

To modify this:

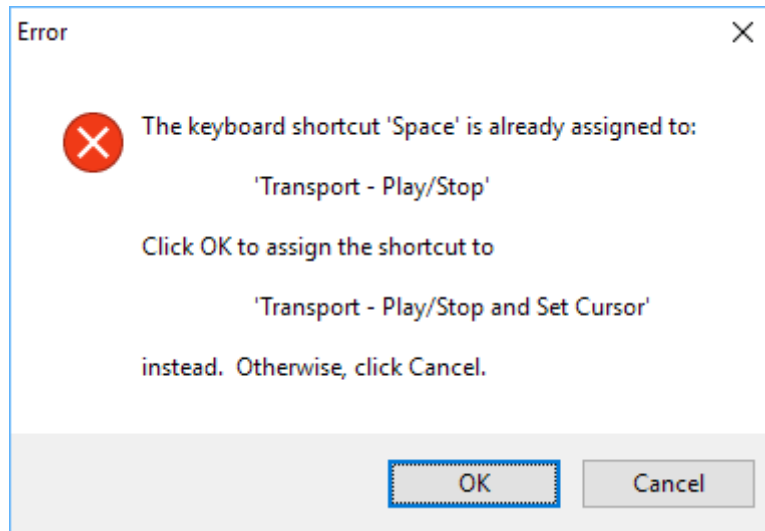
1. Go to **Edit** ➤ **Preferences** ➤ **Keyboard**.
2. Select the line **Play/Stop and Set Cursor**. To find this quickly, type 'play/stop' into the Search field at the top.

You are looking for the line that ends with '...and Set Cursor' rather than simply 'Play/Stop'.



3. Change the key binding for this line to Space (rather than Shift+A).
4. Press **Set**.

5. You will be asked if you want to make the change. Click **OK** to do this.



6. Click **OK** to save the changes to the Preferences.

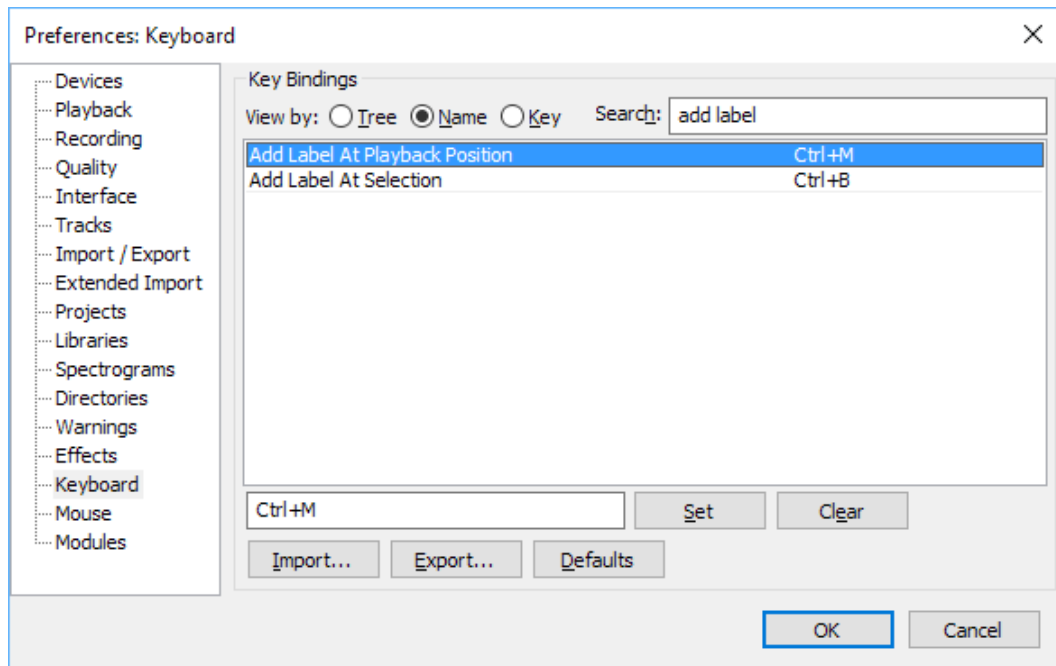
5.2. Tip #2: Change the keyboard binding for adding a label

Instead of pressing two keys together (**CTRL-M**) to add a label, it is easier if you reassign the key binding to be a single key, such as **F1**. Then you have one hand free to type the labels.

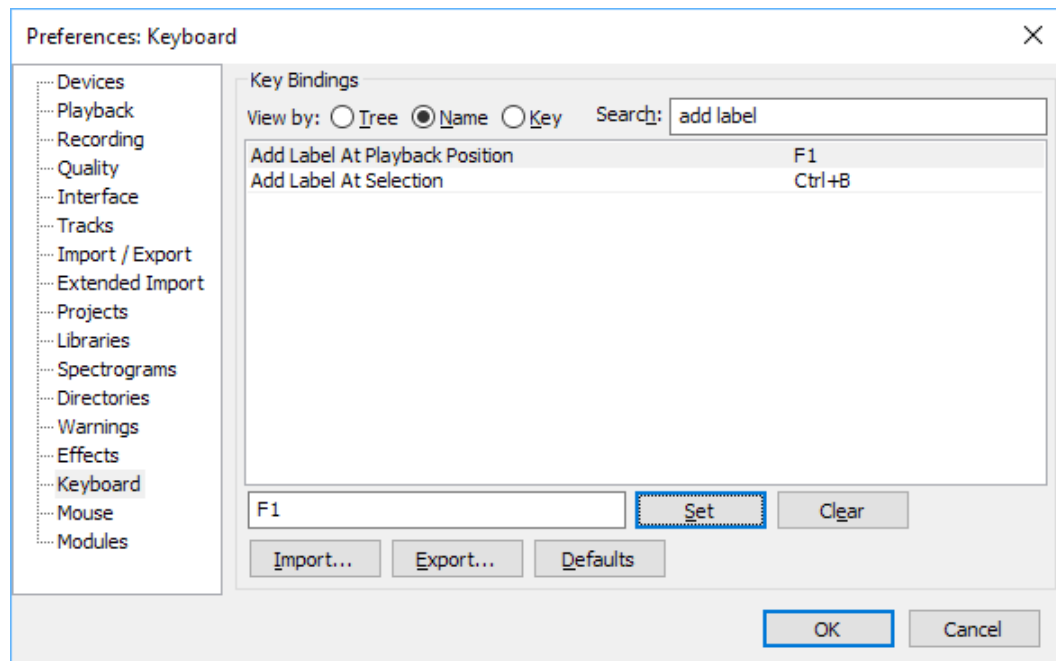
NOTE: This tip is only useful if you are not using *Timing Labels Assistant (TLA)*. If you are using TLA, you need to keep CTRL-M as the key combination to add a label.

To change the keyboard binding for adding a label:

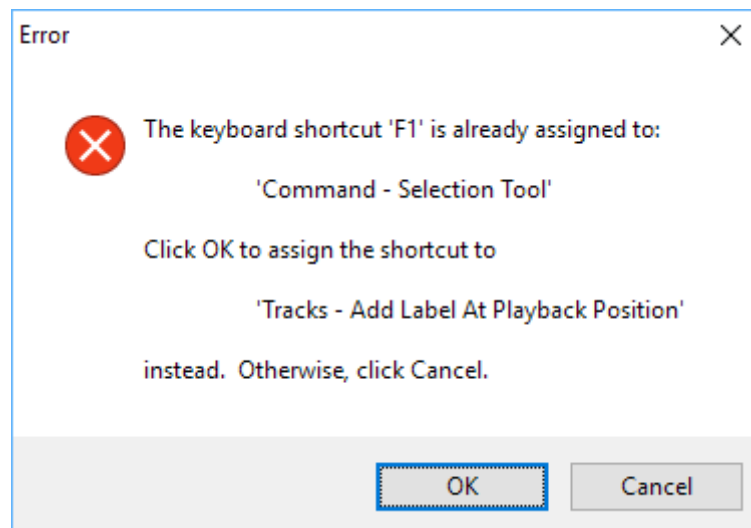
1. Go to **Edit > Preferences > Keyboard**.
2. Select the line **Add Label at Playback Position**. To find this quickly, type 'add label' into the Search field at the top.



3. Type the key you want to use instead of **CTRL-M**, such as **F1**.
4. Press **Set**.



5. If the keyboard shortcut you have chosen is already in use for another function, you will be asked if you want to make the change. Click **OK** to do this.



6. Click **OK** to save the changes to the Preferences.

6. FAQ

6.1. How can I change the punctuation characters which are recognised as ‘end of phrase’ marks?

You can define which characters are recognised as phrase ending characters in the **Features** ➤ **Audio** page of Reading App Builder.

You can add Unicode characters here using the format \uABCD where ABCD is the hexadecimal Unicode code point, e.g. \u061F for an Arabic question mark, \u1362 for an Ethiopic full stop.

6.2. How can I get it to highlight section headings?

In some audio files, the section headings are read out by the narrator as well as the main text. To include them in the highlighting, use labels ‘s1’, ‘s2’, ‘s3’, etc., where ‘s1’ is the first section heading, ‘s2’ is the second section heading and so on.

Note that the ‘s’ is lower-case and there is no space between the ‘s’ and the number.

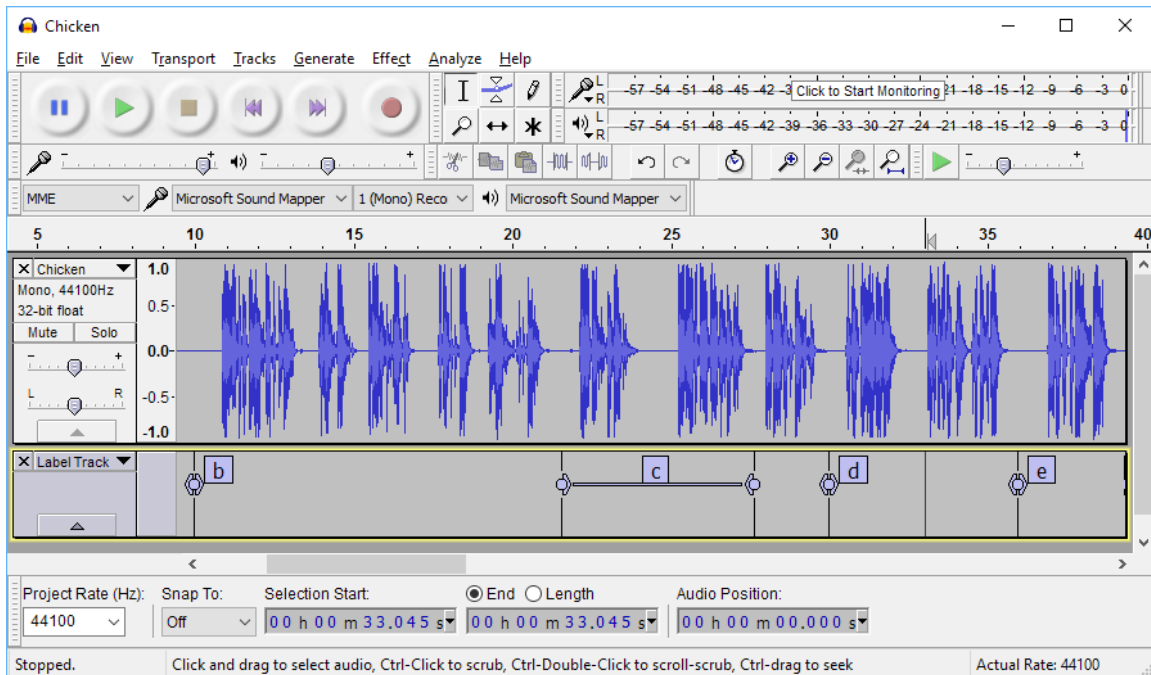
Use this same method for other types of headings, e.g. use ‘d’ as the prefix for \d headings, ‘sp’ as the prefix for \sp headings, ‘is’ for \is, etc.

For **section headings in picture story books**, add the page number before the label, e.g. 1s1, 1s2, 1s3 for section headings on the first page; 2s1, 2s2, etc. for section headings on the second page.

6.3. There are parts of the audio where I don't want any text highlighted. How can I turn off the highlighting for a few moments?

You might want to turn off text highlighting during musical interludes or sound effects. To do this, you need to give the labels a range, rather than being at a single point.

Here is an example:



In the above timing file:

- Phrase “b” highlighting will start at the “b” label and end at the beginning of the “c” label (as normal).
- Phrase “c” highlighting will start at the initial point of the “c” label range and continue until the end of the “c” label range.
- Nothing will be highlighted between the end of the “c” label range and the “d” label.
- Phrase “d” highlighting will start at the “d” label.

To create a label range, drag the < or > part of the label marker.

6.4. I'd like to give someone else the task of creating timing files. Is there any way of them testing these without needing to know how to build the app?

Yes, if you have chosen Audio Distribution by external folder or download, the MP3 files will be in a folder on the SD card. The app will look for a corresponding timing file in this folder if it doesn't already have a timing file packaged inside the APK.

The timing filename in this case should be same as the mp3 file, but with the **.txt** extension rather than **.mp3**.

So, for example, if you have a file such as **My-Book-01.mp3** in the folder, you can put the file **My-Book-01.txt** in the same place and the app should recognise it.

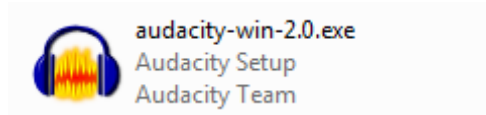
Using this method, others can work on providing timing files for the app and test them, without needing to rebuild the app. Once the timing files are working, you can rebuild the app and package them inside the apk. They are very small so should not increase the size of the apk significantly.

7. Appendix – How to Install Audacity

1. Download the latest Audacity installation program from the Audacity website:

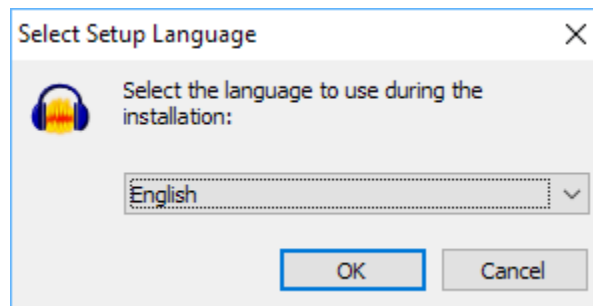
<http://www.audacityteam.org>

For version 2.1, the filename is **audacity-win-2.2.0.exe**. It is 19 MB in size.



It might be that a newer version than 2.2.0 is available. If so, download this newer version instead.

2. Double-click **audacity-win-2.2.0.exe** to start the installation.
3. Select English as the language to use :

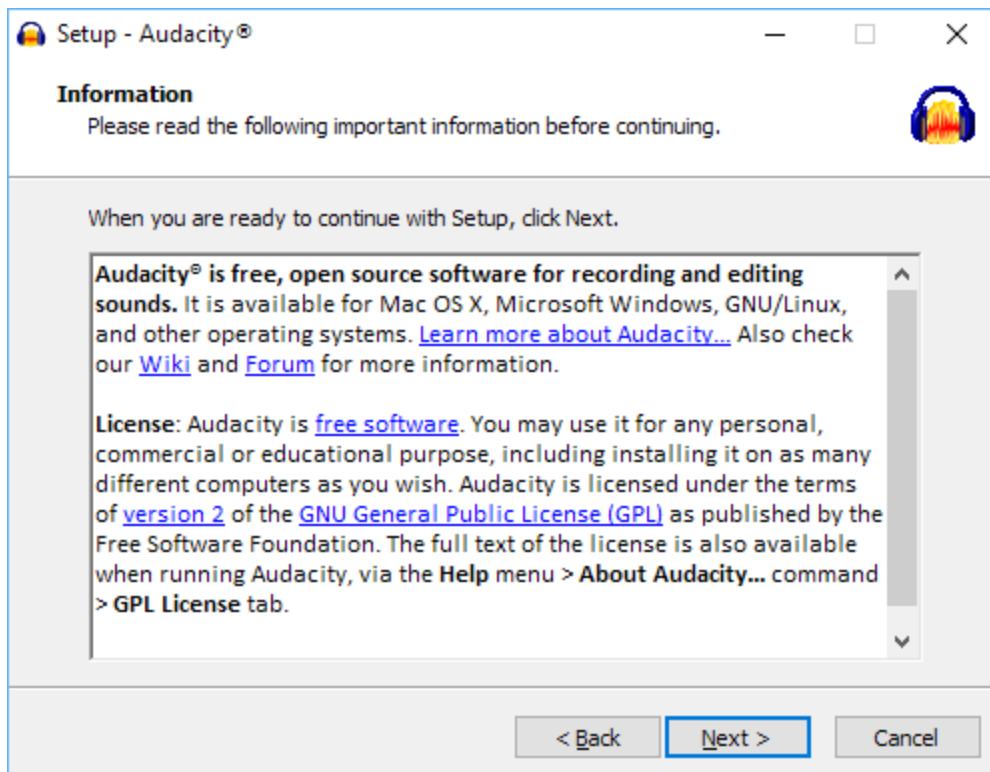


The Setup Wizard opens:



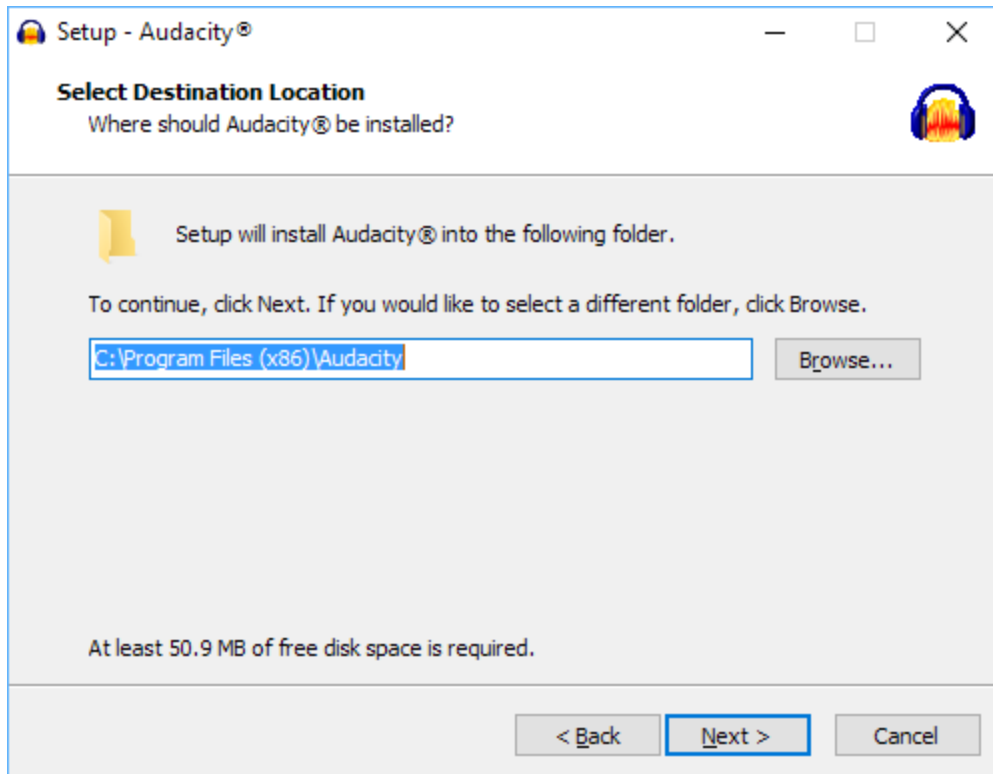
4. Click **Next** to continue.

A page of licence information will appear:

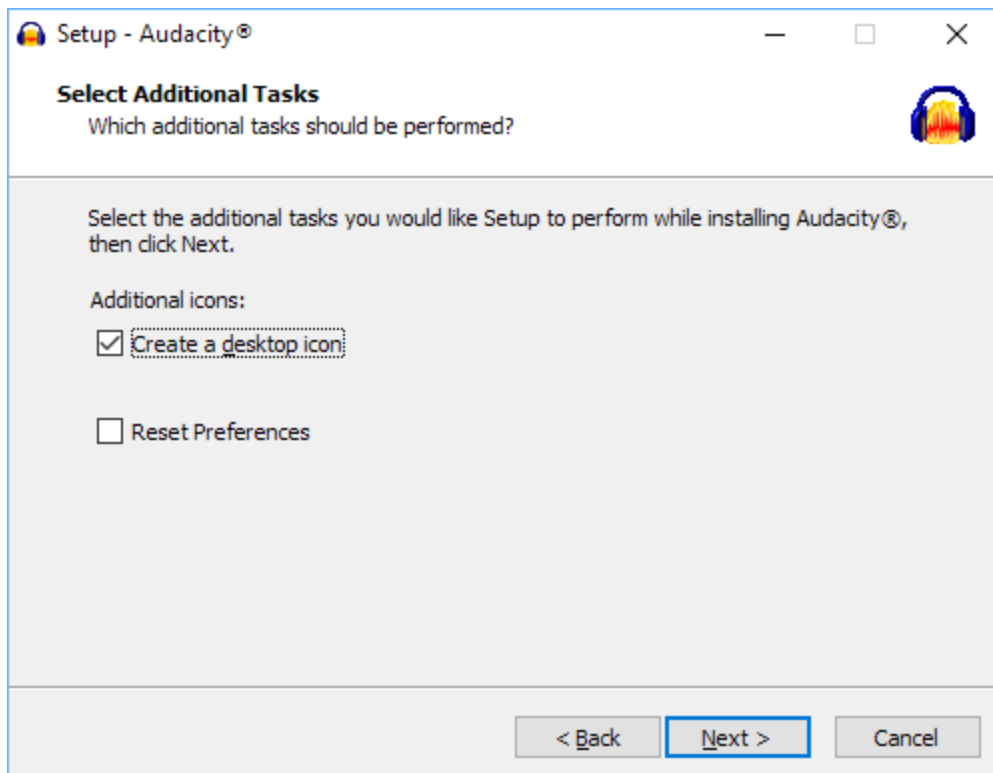


5. Click **Next** to continue.

You will see the page **Select Destination Location**:

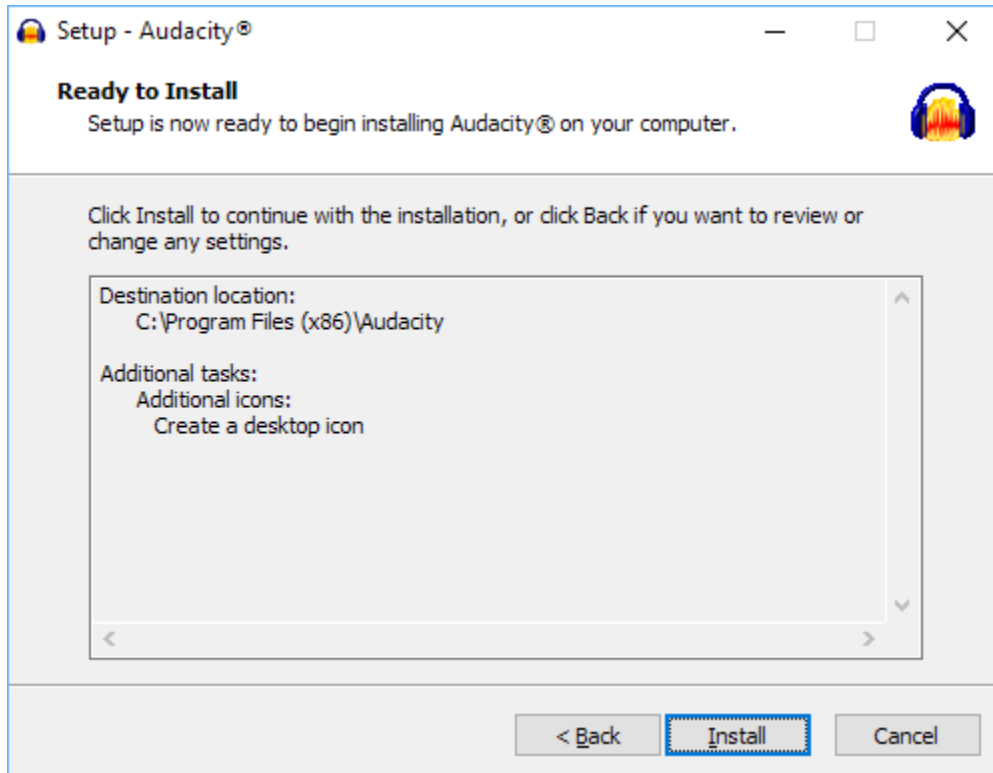


6. The suggested location in which to install Audacity is normally fine, so click **Next**. You'll see the **Select Additional Tasks** page:

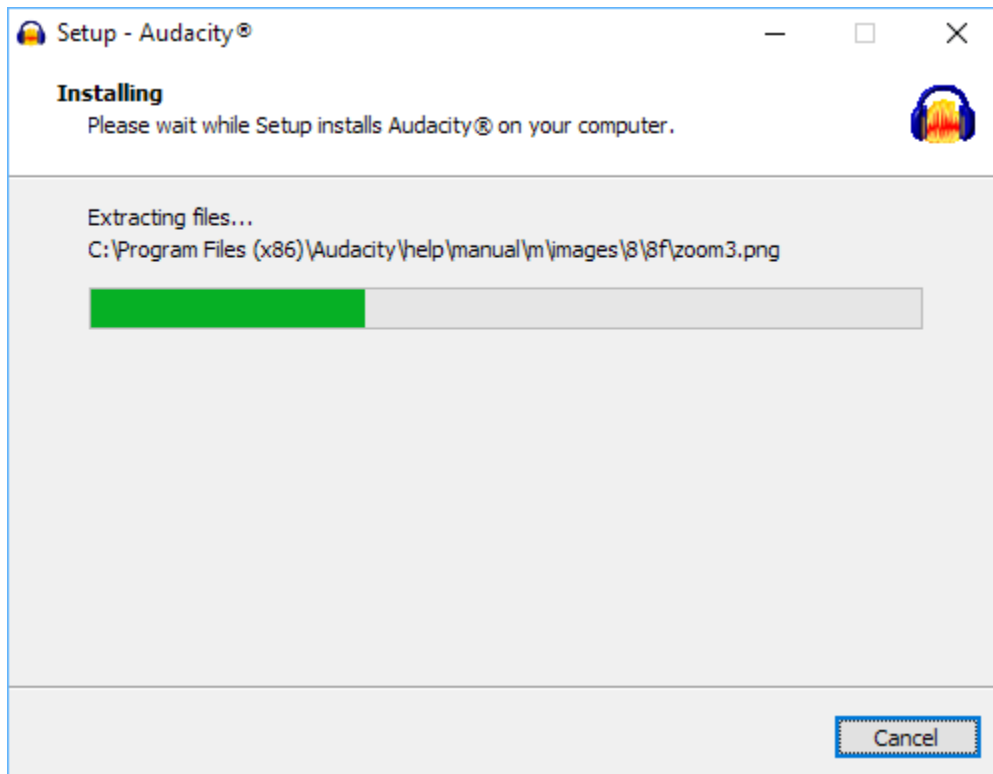


7. Click **Next** to continue.

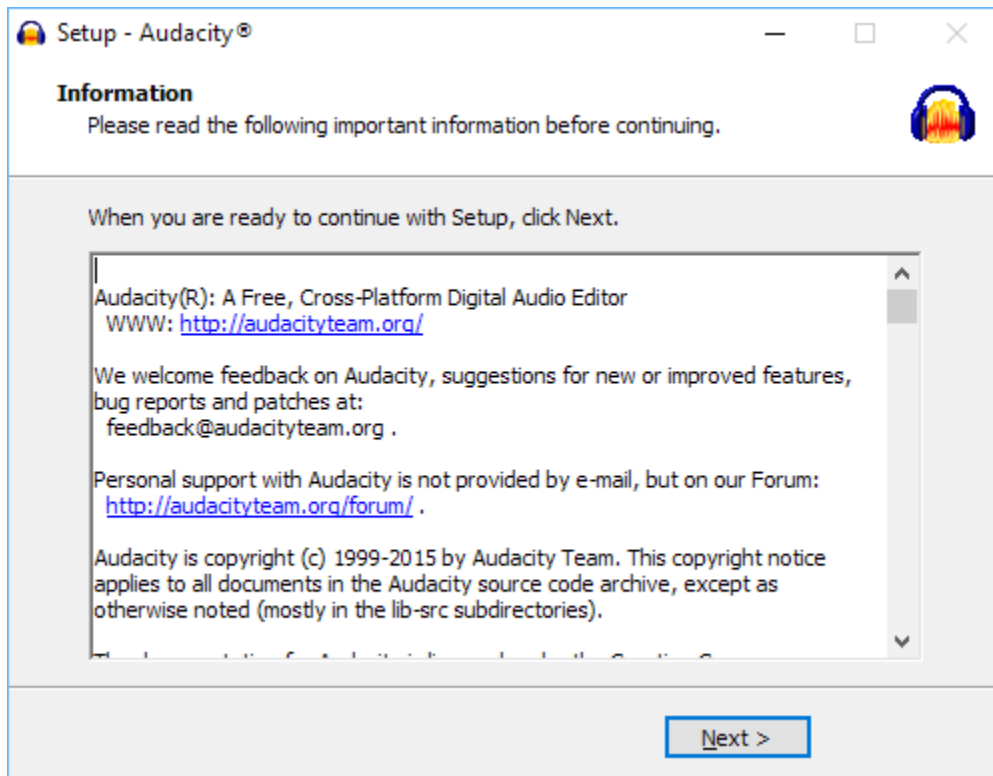
You'll then see the **Ready to Install** page:



8. Click **Install** to begin the installation.



When the installation is complete, you will see a page of information:



9. Click **Next** to continue.

You will then see the final page of the Setup Wizard:



10. Click **Finish** to close the Setup Wizard and launch Audacity.

Audacity is now ready to use.