Podcast MA Digital Activism elective

February 2022

We choose the podcast as the *conversation starter* assignment for the Digital Activism course for three reasons. First, it is a *digitally native* assignment format suitable for both online and offline delivery of the course. In that capacity, it is replacing the student presentations of yesteryear. Second, we hope that you find it a more *engaging* way to immerse yourselves in the course materials than making and watching presentations. Producing a podcast allows discussion, experimentation, and generally developing an aesthetic, personal relation to the issues we take up during the course -- while you can listen to podcasts away from your laptop and even away from the classroom, if you prefer. Third, we feel that your work and time is *valuable*, so you might like to create something that can be more easy to share with those around you and potentially on the Internet. For instance, we consider publishing the best podcasts on the departmental Masters of Media blog, and perhaps syndicate them to relevant podcasts and radios in the Digital Activism sphere. *Hope that you will find this assignment enjoyable!*

First, sign up to topics in groups!

A shared document, also linked from the home page of the Canvas space for the course is used to distribute the work of preparing a podcasts for classes. You can find the same link below this paragraph. The first task is to communicate and coordinate with your fellow students about your mutual plans and interests. It generally works best if about three students take care of each podcast each week, but you can take on a single reading from a single week individually, or in collaboration with another student. Sign up on the shared document for the topic you plan to turn into a podcast. Remember that the work may include planning; formulating questions and brainstorming answers; writing commentary; curating music; finding cases to discuss; recording or generating interesting background sounds like jingles; scavenging on other podcasts; recording a conversation; sound design; and a lot of editing. You can take on making a podcast yourself if you feel really strong about it, but collaboration may yield the best results!

The link to the shared document where you can sign up:

https://docs.google.com/spreadsheets/d/1-tsMQqe1PGDLJDwy4H2s_oB8FI-1a5VlFZGETV4KA7c/edit#gid=0

Then, follow these steps to complete the assignment and plan to upload it *24 hours before class*:

1. **Study this worksheet.**
2. **Download and install** Audacity here. Make sure you are using the correct version and OS.
3. Set up a good working environment on your computer, including a folder structure that helps you organize your files. Remember to backup continuously in different stages and

preferably in different locations. Download some sample sounds and voices, experiment with the software to get a feel of the process and possibilities.

4. Study **the readings** assigned to the topic in the syllabus, and discuss them with your collaborators. Research the topic a further on the Internet. Consider cases that you can use to demonstrate, explore, or critique the ideas (theories) in the readings.
5. Plan how to present **the topic** to your fellow students! You will have to provide some sort of summary of the required readings, but also develop and share an original perspective that goes beyond the readings themselves. Proving background on the set materials and discussing cases and examples could be useful for the latter part of the task.
6. Script **the format**. You could record the podcast as a discussion interleaved with a musical interlude, which is the most widespread approach, familiar from radio programmes. You can also experiment with alternative formats such as making or simulating an interview, using found materials, enacting situations or exploring the *soundscapes* associated with the topic. Consider **remote recording** options: https://www.podcast.co/create/record-podcasts-remotely
7. Record, gather, edit **materials**. Save recordings as **WAV files.** Back them up.
8. **Edit** your podcast. Remember all the things in this worksheet, especially normalising the audio levels before you are done. It should be 20-40 minutes long (including musical interludes), depending on the number of group members. E.g. if you work alone, provide 20 min. If you are with 4, you provide 40 min. It can include other audio and voices but at least half of the audio should be from your group. Consult a teacher in advance if you are in need of more directions.
9. **Export** as MP3 and name the file according to the schema "PODCAST-WEEK[number]-[topic]-by-[your_name(s)]". For instance, "PODCAST-WEEK6-Hacking_and_hacktivism-by-Jane_Doe_and_John_Doe.mp3". You could also save the final product in WAV format in case you want to edit it later or it gets to be played on the radio.
10. **Post** it on Canvas under the **Discussions** option in the left hand menu, *before Tuesday 1pm*: https://canvas.uva.nl/courses/22576/discussion_topics/326157

You can contact Maxigas any time if you run into technical problems, or the relevant teacher for the topic if you need advice on the content. However, consider that it may take up to two days for us to get back to you! This is another reason why planning is key.

Good luck on your audio adventure!

Some examples of (digital) activist podcasts

Dissident Island Radio

Dissident Island Radio is a radical internet radio show broadcasting on the first and third Friday of every month from the London Action Resource Centre. Our shows cover a wide range of topics from climate justice, to animal rights, to anti-fascism, to squatting, to economic justice, and beyond as well as featuring much frivolity and our regular DJ slot. Not content to simply produce a kick-ass radio show, the Dissident Island crew regularly throw benefit parties in various squatted

venues, as well as producing a zine, and sharing our radio making skills at workshops.
http://www.dissidentisland.org/

Bellingcat podcast

Bellingcat is an independent international collective of researchers, investigators and citizen journalists using open source and social media investigation to probe a variety of subjects – from Mexican drug lords and crimes against humanity, to tracking the use of chemical weapons and conflicts worldwide. With staff and contributors in more than 20 countries around the world, we operate in a unique field where advanced technology, forensic research, journalism, investigations, transparency and accountability come together.
https://www.bellingcat.com/category/resources/podcasts/

Working with Podcasts

Basic concepts and Introductory Exercise in Audio and Podcasting

Department of Media Studies
University of Amsterdam

Digital Practices Worksheet

Version: February 2021

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Turfdraagsterpad 9, 1012 XT Amsterdam, the Netherlands
https://www.uva.nl/en/disciplines/media-studies
http://www.mediastudies.nl/

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Worksheet format by Fernando van der Vlist and Anne Helmond, further developed by Bernhard Rieder. Some tutorials adapted from Audacity (CC 3.0) with attribution in relevant parts.

Contents

1. Introduction

In this worksheet you learn

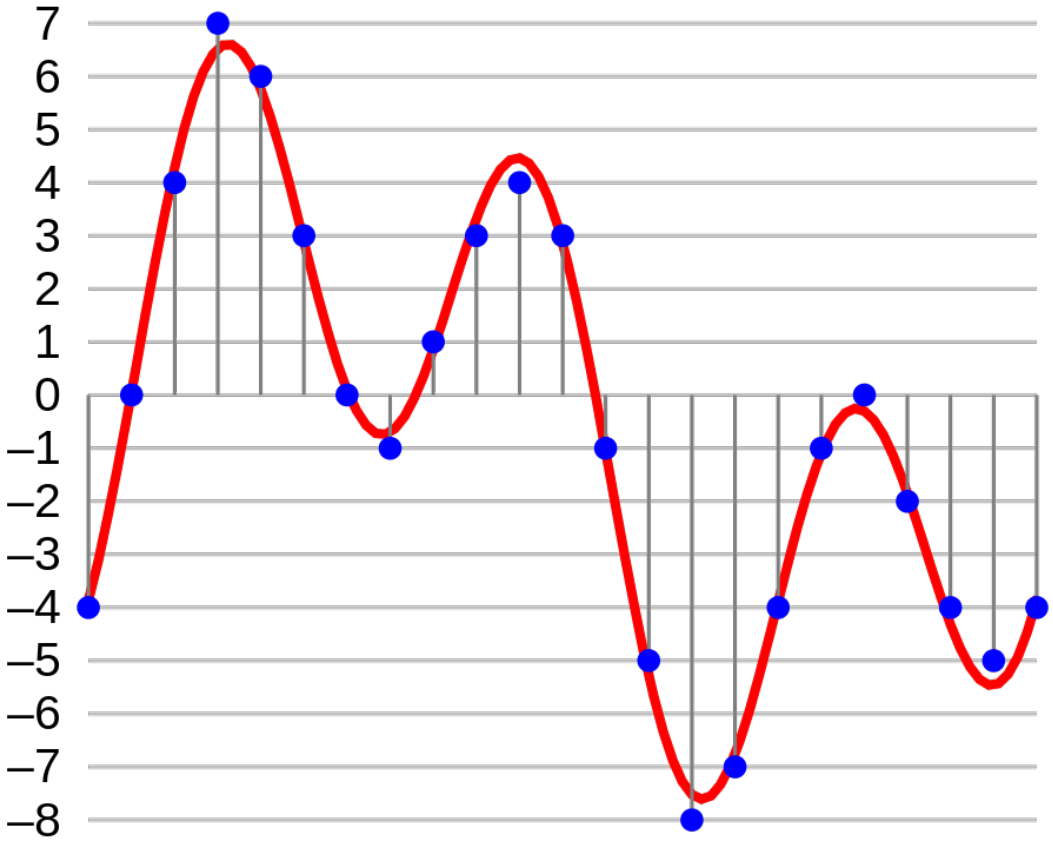
- the logic of digital audio;
- how to use open-source software to create your own audio recodings and a podcast.

1.1. The digitalisation of sound

Just like any other type of files, digital (and online) sound can be seen as a form of data. We perceive sound as analogue, rather than digital: a vibration of a certain characteristics (volume, amplitude, frequency etc.) transmitted through a suitable medium (air, your body, a piece of wire). In order to hear sound, one must be physically able to perceive such vibrations, and be in a suitable medium (for instance, sound does not travel in vacuum). Ever since the invention of the phonograph (gramophone) and the telephone in the late 19th century, humans have managed to successfully record, store and transmit sound in the form of electrical impulses and radiowaves. The vibrations are captured through specialised equipment - microphones and transmitters - transported across distance and then transformed - through receivers and speakers - back into form perceivable by humans.

Despite being around for more than a century, digitalisation has introduced a challenge to sound transmission. Electricity or radio waves are analogue, just like sound waves, and can therefore be translated in its entirety. A conversion is invented and applied to the sound of, for instance, telephone conversation, which is then heard by the receiver. Issues - commonly referred to as “noise” - can occur, but generally speaking information is transmitted as-is. Digital files, on the other hand, always present a choice to be made. Digital data cannot represent continuous (analogue) information as it is broken into discrete (digital) bits. Thus, a sound wave is sampled at several key moments, then compressed and processed for storage of transmission. Below, see an example of a soundwave (in red) sampled and quantified at 4 bit (source: Wikipedia). Note how not all information remains constant, and some (blue) points do not correspond to the actual waveform. Depending on the sampling and compression, you might hear distorted audio, or miss certain aspects entirely. Wehn CD-ROM made early digital audio available in the 1980s, for example, they had minimal compression and so very large file sizes (74 minutes of recorded music at 44.1 kHZ). Generally speaking, the smaller the size of the file, the worse its audio quality is. Early MP3 files in mid-1990s, were revolutionary for conveniences - you could have hundreds of songs on a single CD, a precursor to modern music storage devices. Yet, MP3s were derided by music makers and audiophiles alike as considerably worse than the CD audio prevalent in the same era. You can still hear similar debates today (for instance, with the revival of the vinyl record as the “truer” format) but recent advances in compression algorithms has mitigated this issue to

some extent. For instance, a FLAC (Free Lossless Audio Codec) format, commonly used by music lovers, is virtually indistinguishable from a CD recording for most listeners, while being about half the size of a CD-DA CD- track file.



Further reading

- Sterne, Jonathan. 2006. “The Mp3 as Cultural Artifact.” *New Media & Society* 8 (5): 825–42. https://doi.org/10.1177/1461444806067737.
- Beato, Rick. 2017. *Audiophile or Audio-Fooled? How Good Are Your Ears?* https://www.youtube.com/watch?v=YgEjI5PZa78.
- MicroPyramid. 2017. “Understanding Audio Quality: Bit Rate, Sample Rate”. *Medium*. https://medium.com/@MicroPyramid/understanding-audio-quality-bit-rate-sample-rate-14286953d71f

1.2 Podcasting, platforms and the open web

Suggested in 2004 as a portmentau of “iPod” and “broadcast” by UK technology journalist Ben Hammerseley, podcasts are a sociotechnical medium stemming both from the ability to compress, store and transmit audio discussed above, as well as the development of the culture around personal mobile devices. For historicity’s sake, one can divide podcasting into its first 10 years,

and the post-2014 era. The release of the true crime podcast “Serial” in that year has re-invigorated the industry and introduced the format to many new listeners. Since then, the growing popularity of the medium has led to a full podcasting industry, one that includes podcasters (of various specialisations), podcasting networks (that manage multiple podcasts, often under some common brand), podcatchers - software to listen to episodes, storage and bandwidth services providers, and - of course - the listeners.

There is something quite remarkable about podcasts in the contemporary media landscape: their relative openness. Podcasts are in many ways a legacy system, predating Web 2.0 and its emphasis on platforms and walled gardens. Despite being primarily associated with the Apple platforms (and even getting their name from Apple’s iPod), there is no single service or device that can “lock down” a podcast. True, some limited - or premium - podcasts exist that require passwords (usually provided after purchasing a subscription) but those are locked **for all users on all platforms.** Consider in contrast something like Netflix or Spotify: the nature of the content is often integrally locked to that of the platform: one cannot watch Stranger Things anywhere **but** Netflix or alternatively, once an offering leaves Netflix’s catalogue, a Netflix user no longer has access to it (even if previously available there). In Contrast, you can listen to the sam podcast via any supporting programme - or a “podcatcher” - Apple Podcasts, Google Podcasts, Overcast, Podcast Addict, Spotify etc.) Such openness is due to the nature of podcasting underlying infrastructure: the Real Simple Syndication (RSS) feed. Created in early 2000s, the RSS feed allows synchronization of audio content automatically.

Clicking on the RSS icon () will subscribe one to a podcast if viewed from an RSS-default device. If not, it will simply open the feed, which is written in the XML markup language, common in other web applications. For instance, the RSS feed of The Beef and Dairy Network podcast looks like this:


```
rss version="2.0">
<channel>
<description>
The number one podcast for those involved or just interested in the production of beef animals and dairy herds. A comedy podcast by @benpartridge.
</description>
<title>Beef And Dairy Network Podcast</title>
<generator>Tumblr (3.0; @beefanddairynetwork)</generator>
<link>https://www.beefanddairynetwork.com/</link>
<item>
<title>Episode 53 - Lesley Clocks</title>
<description>
<p><iframe style="border: none" src="//html5-player.libsyn.com/embed/episode/id/12070142/height/360/theme/standard/thumbnail/yes/direction/forward/" height="360" width="100%" scrolling="no" allowfullscreen webkitallowfullscreen mozallowfullscreen oallowfullscreen msallowfullscreen></iframe></p> <p>Freya Parker joins in for this episode in which we speak to Lesley Clocks, the sister of Kenrin Clocks, who was badly injured on a Danish Hog Farm. </p> <p>By Freya Parker, Sarah Dempster, Moujan Zolfaghari, Nick Wiger, Heather Campbell, Jake Yapp, Mike Wozniak, Henry Paker, Gemma Arrowsmith, Cromerty York, Tom Crowley, Elis James, Nathaniel Metcalfe and Clarissa Maycock.</p> <p>Stock media provided by Setuniman/Pond5.com and Soundrangers/Pond5.com</p>
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The feed essentially describes the podcast and then each episode based on a series of commonly agreed tags, including titles, length in seconds or the address of images for each episode. But as stated before - this is not an exclusionary system. Let us suppose that one's podcatcher is not capable of displaying images for any reason. The RSS feed will then be parsed to display only those supported features, leaving out the non-relevant ones.

All and all, Apple has had a considerable leverage over the world of podcasting in its early days, ostensibly being able to lock-it into its own ecosystem, in the same way it did with iTunes and music. This however did not happen, and today podcasts are one of the last media where the content is universally available, while the competition on consumers choices happen through presenting variations on the experience of consuming them. This is changgin in later years, with several major players, particularly Spotify and Overcast, attempting to create platform ecosystem with exclusive content tied to the app/ programme used to listening, in a similar way to the vertical integration of production, distribution and advertising we have seen in other industries.

Further reading

- Mullin, Benjamin and Steele, Anne. 2020." Amazon in Talks to Buy Podcast Maker Wondery". *The Wall Street Journal.* https://www.wsj.com/articles/amazon-in-talks-to-buy-podcast-maker-wondery-11606931396
- The Verge. 2020." Why Spotify Bought Joe Rogan's Podcast." *YouTube.* Accessed May 22, 2020. https://youtu.be/VYwg3xTBH_c
    - And the following twitter thread: https://twitter.com/benthompson/status/1264576467255439360?s=20
- Stanley, Graham. 2006. "Podcasting: Audio on the Internet Comes of Age." *TESL-EJ* 9 (4) https://doi.org/10.1177/1461444806067737.
- Bottomley, Andrew J. 2015. "Podcasting: A Decade in the Life of a 'New' Audio Medium: Introduction." *Journal of Radio & Audio Media* 22 (2): 164–69. https://doi.org/10.1080/19376529.2015.1082880.

1.3 Podcasts as a medium

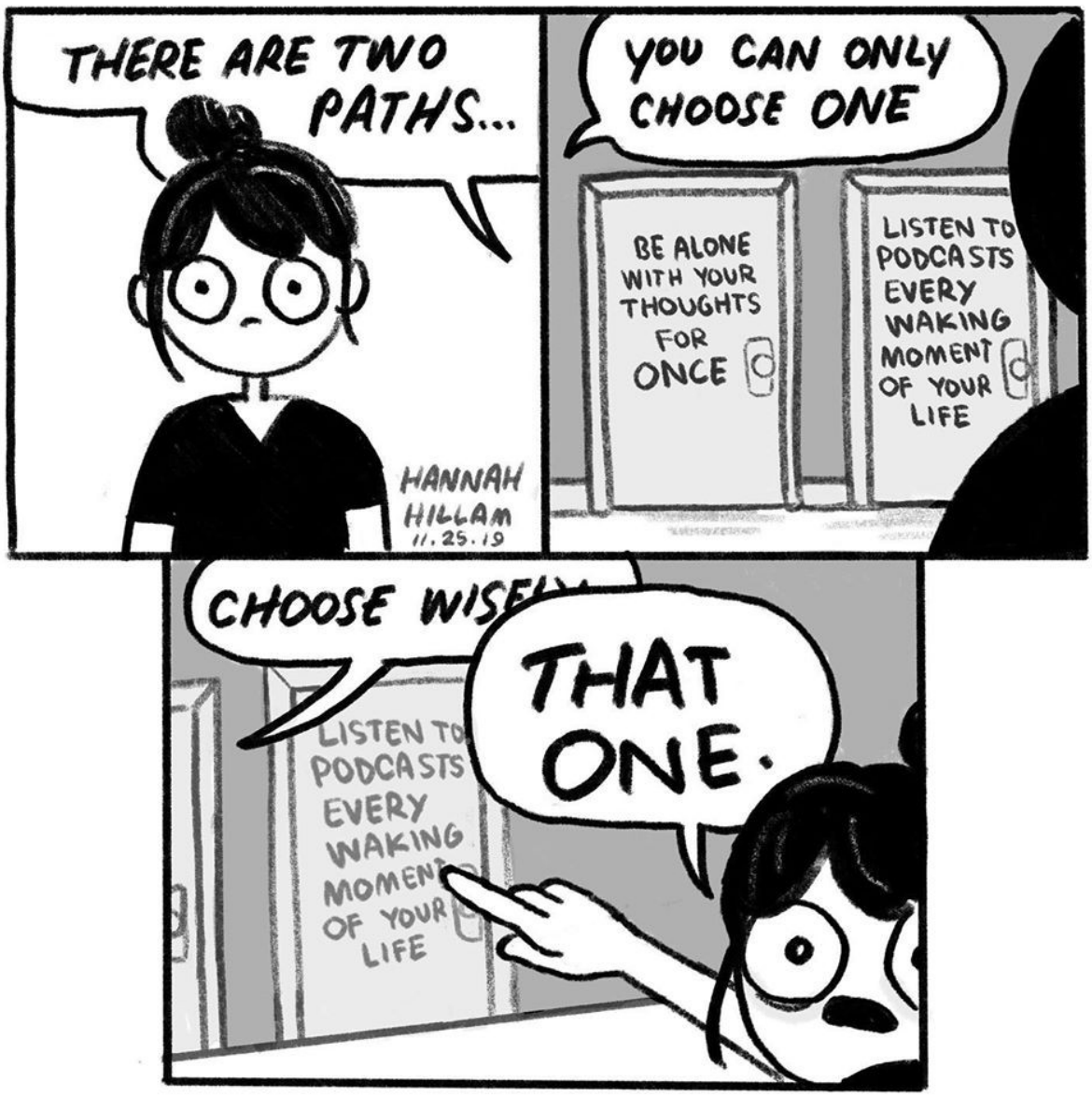
While predominantly covered during the lecture and the mandatory literature, it's worth mentioning the several possible theoretical venues through which podcasts can be understood in media studies. First and foremost, they have a shared lineage with other audio formats, from Radio to stored audio, and an affinity to music. Second, it is a highly personalised mobile medium, linked potentially to the Walk- and later Disc-man portable music devices as well as the various MP3 players that culminated in the market dominance of the Apple iPod. Those emphasise the individual taste and the ability to consume music (and other types of Audio) on the go. Third, it

relates directly to what Deuze calls “media life” and can be specifically situated within the Attention Economy: as more and more of our free time is colonised by (digital) media, podcasts presents an insidious agent for media that is combined with other activities. And Fourth, one can consider the development of parasocial relationships with podcasts.

Ultimately, the word is still out even on the degree of podcasts’ “medium-ness”, as some both within the industry and in scholarly circles see them more as an extension of radio programming online, or alternatively as serialised audio-books. The plethora of podcast genres, including fiction and non-fiction, further complicates the issue. In your final assignment, you will go through the process of conceiving, recording and editing an episode of your own podcast, to better understand the material.

Here are some podcasts that represent a variety of genres and are interesting for familiarisation, each with a recommended episode for getting acquainted. You can listen to them in browser, but I suggest opening the links on your phone, and listen to the episodes in their “natural” environment.

1. Documentary : 99% invisible
   https://99percentinvisible.org/episode/project-cybersyn/
2. Interviews: Ezra Klein
   https://www.vox.com/ezra-klein-show-podcast/
   Antitrust, censorship, misinformation, and the 2020 election
   https://megaphone.link/VMP6129554436
3. Mockumentary comedy: The Beef and Dairy Network
   https://www.beefanddairynetwork.com The anniversary special
   https://www.beefanddairynetwork.com/post/160921529730/episode-23-75th-anniversary-special
4. Music: Song Exploder songexploder.net
   Janelle Monae episode http://songexploder.net/janelle-monae
5. Comedy/ stand-up: The Jackie and Laurie Show
   https://maximumfun.org/shows/jackie-and-laurie-show



Source: Hannah Hillam, Verbal Vomit

2. Working with Audio

2.1 Audacity and open-source podcasting

To edit our podcast, or any other audio file, you will require an audio editor software. For the purpose of this course, we will use Audacity, a widespread open-souce software available to download here. While suffering from some interface clutter and perhaps a steep learning curve, it's versatile, well-documented and has an extensive plug-ins and support community. As with any other modules of this course, you are always encouraged to search online for any issues revolving the practical side of the assignments, examine the documentation on Audacity's Wiki (which was incorporated into this worksheet) and/ or its forums. Also, keep in mind that the sound **files** you are editing must arrive into the computer somehow - either by recording it with a microphone or by converting an existing analogue sound into digital format.

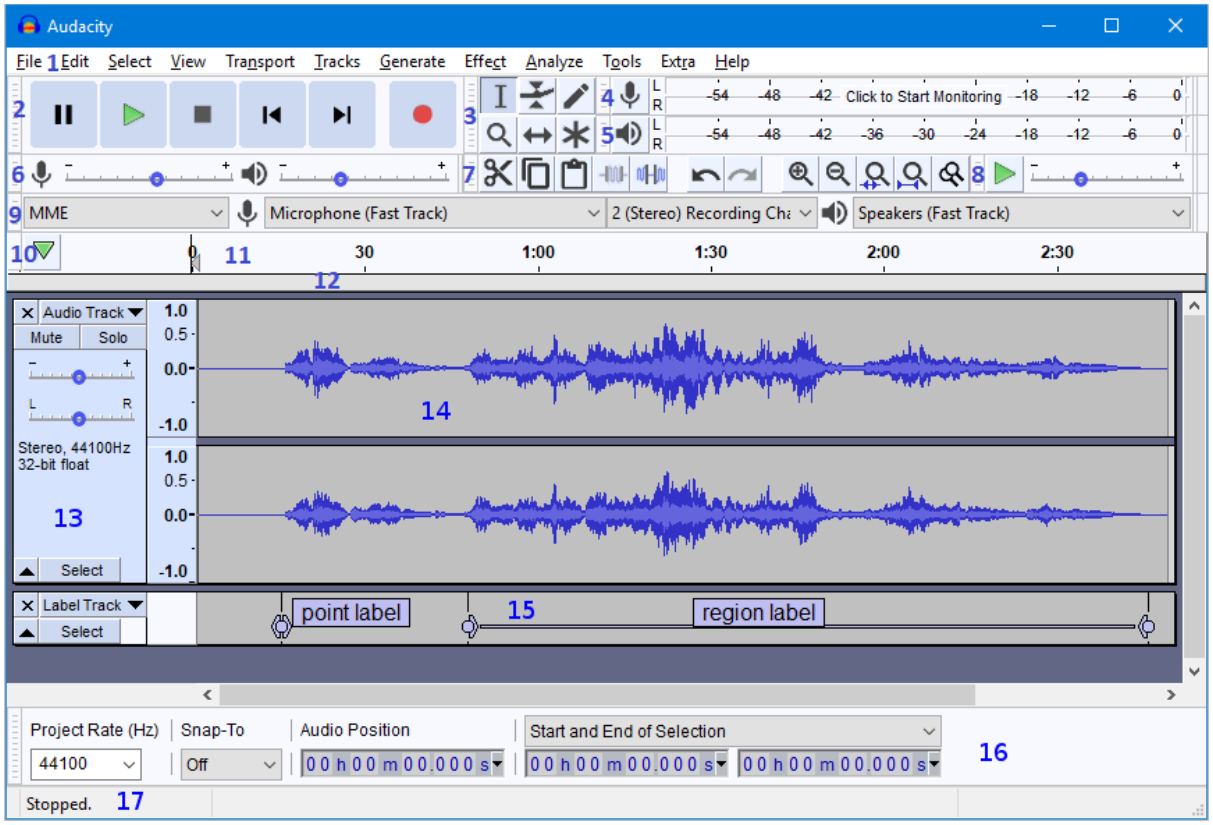
Note, that other alternative audio editing software exists, some of it much user friendly and some built from scratch for creating podcasts. As the podcasting ecosystem heats up, many actors show interest in consolidating, or at least influencing, this market. For instance, the streaming music giant Spotify has now purchased not one but two separate services intended for podcasters. As a cross-platform service focused on listening, it is in a better position than most to offer itself as a default home for podcasting outside of Apple's entrenched services. For this purpose they offer the free Anchor for the novice podcaster, and subscription-based Soundtrap for the more professionally inclined. Both offer additional service on top of audio editing, predominantly in the form of publishing, publicising and spreading your podcasts. But both also lock you into Spotify's ecosystem to a degree, and are somewhat antithetical to the open-source, RSS-based legacy of podcasts. Additionally, through simplification they black-box some of the processes that go into the making of sound.

Thus, this worksheet used Audacity for both its ethos and as a way to make these processes more transparent to you. That being said, there is no requirement to use it for the successful completion of the final project. You could teach yourself rudimentary audio editing and/ or podcasting skills from multiple places online and use any software you wish. The "magic" of a podcasts (and other audio media outputs) often lies in its ubiquity and opaquity: if you create a successful product, your listener cannot differentiate between the ways it was made. Therefore, you are free to experiment in the production of your final assignment. The only requirement for it **is to be a listenable audio file of the correct length and adhering to the content requirements detailed at the end of this worksheet.**

2.2. Downloading and installing Audacity

You can download the client here: https://www.audacityteam.org/download/
Please follow the best practices outlined in this course in creating a demarcated and organised

working space on your device. Note that Audacity has 2 types of outputs: project files and audio files. Project files contain all the information on a specific workflow, including the location of the various files and their metadata. A finalised audio file is only for listening. Most of the features available in the project format - the splitting into different channels, change of a fade duration - become unavailable once a project is exported onto a file. Save often, save as separate types and save in separate locations. Remember the editors's old saying when it comes to backups: two is one and one is none.



Familiarise yourselves with audacity UI. Below you can find the description of the elements as well as additional reading from the wiki on their functionality. It is also a good idea to print out (some of) the keyboard shortcuts, particularly in the 'edit' section: https://manual.audacityteam.org/man/keyboard_shortcut_reference.html

Note that your time in the 11-14 sections of the UI.

1 Menu Bar
2 Transport Toolbar
3 Tools Toolbar
4 Recording Meter Toolbar
5 Playback Meter Toolbar
6 Mixer Toolbar
7 Edit Toolbar
8 Play-at-Speed Toolbar
9 Device Toolbar
10 Unpinned Play/Recording Head
11 Timeline

12 Scrub Ruler
13 Track Control Panel
14 Audio Track
15 Label Track
16 Selection Toolbar
17 Status Bar

2.3 Preparing for recording

There are various ways to prepare for a recording of a podcast, and none of them guarantees a success.

At the very least, you should:

1. ... be in as quiet space as possible - do a test recording of a few minutes and listen back. There might be some background noise you automatically tune out, like air conditioning or computer fans.
2. ..have a plan. "*Plans are nothing*; *planning is everything*", is a very true sentence, attributed to Dwight D. Eisenhower. By this I mean that when recording, particularly with more than one person, it's difficult to preempt all occurences. What you **can** do however is sit down before recording and think about the direction you want the conversation to go and prepare a list of topics. If you do a scripted show, have a look at various existing radio scripts and adapt one to your needs: https://www.cloudrad.io/8-tips-on-how-to-write-a-radio-script/
3. … have a beverage. One gets parched.
4. … prepare for a long haul. It's far better to keep recording even if something goes wrong, or you begin to laugh, or you go off-track. That's what editing is for.

3 Recording yourself

Adapted from Audacity Wiki (CC 3.0):
https://manual.audacityteam.org/man/tutorial_connecting_up.html
https://manual.audacityteam.org/man/connecting_a_microphone.html
https://manual.audacityteam.org/man/tutorial_selecting_your_recording_device.html
https://manual.audacityteam.org/man/tutorial_making_a_test_recording.html
https://manual.audacityteam.org/man/tutorial_recording_and_editing.html

3.1 Setting up the equipment

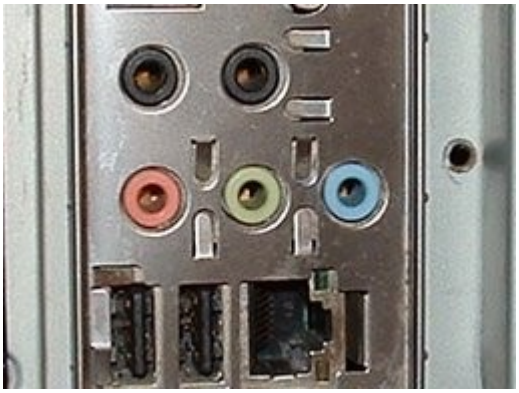
Identifying the sound ports on your computer

First of all you need to know the sound input capabilities of your computer.

PCs - Windows and Linux

Most desktop PCs (Windows and Linux) will have sound ports on the back of the computer similar to these illustrations.

The rear of a typical PC



The color-coded jacks on the sound card

The pink port is normally the microphone input, and is usually mono but might be stereo. The light blue port is normally the line input port and is usually stereo. The green port is normally the headphone output port, also usually stereo. Check your computer manual to be sure.

PC laptops vary widely in the types of sound input and output ports they provide, where they are on the laptop, and how they are labeled. Many modern laptops do not have a line input at all. Again, check your computer manual to be sure of the capabilities of your laptop, where the ports are and how they are labeled.

Mic In

Generally the Mic In port on a computer is only meant to have a small computer microphone plugged into it. If you have a microphone with an 1/8" (3.5mm) 3-conductor jack plug, it will probably work if plugged into this port.

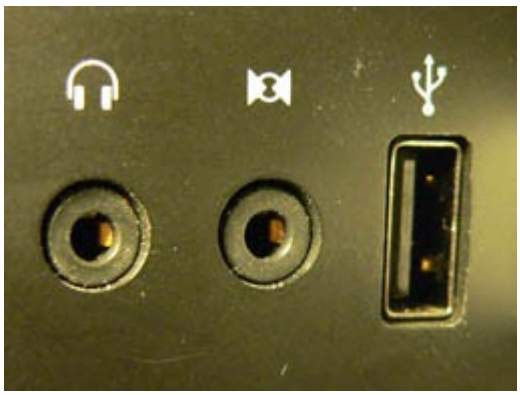
Line In

The Line In port is the highest quality input available on most sound cards (like the one pictured above). It expects to have a Line level signal plugged into it, this is the same level used by most consumer-oriented audio equipment. Equipment such as tape decks, record players, MiniDisc players, Video Game Systems and so on should be plugged into this port.

Macs

Macs do not generally have a microphone input port. You might need to use a USB microphone

Audio connections on a PowerBook



Audio connections on an iMac

In these illustrations of sound ports on Macs, the round port with the headphone symbol is the Line Output port. The round port beside the headphone port is the line input port.

Other Macs (Mini, Mac Pro, MacBook and MacBook Pro) are similarly equipped. Check your manual for the locations and labeling of these ports.

If your computer has a microphone input port

You're all set. Just plug a compatible microphone into the microphone input port on your computer.

What do we mean by *compatible*? Any microphone with a permanently attached cord that ends in a mini-plug should work. Note that many audio interfaces provide battery voltage for mono electret microphones on the ring of a stereo mini-plug. Check your computer manual to be sure if this feature is provided. If it is, be sure to use a microphone that is designed to accommodate this.

A mono mini-plug

A stereo mini-plug

A computer headset-mic combination is pretty much guaranteed to work. These microphones are not the highest quality, but can be had fairly inexpensively. If you're just getting started and want to experiment without spending a lot of money, one of these would be a good choice. Just do not be surprised if your recorded voice sounds a bit tinny or flat.

Desktop-standing microphones can be had for at little as $10 or as much as $500. Choosing a

microphone is beyond the scope of this tutorial. Try searching the web for "computer microphones", visit your local computer store, talk to your friends, or ask questions on the Audacity Forum.

Unless you are prepared to spend extra money for a microphone pre-amp or standalone mixer do not buy a microphone with an XLR connector:

An XLR plug

USB devices

For better audio quality, many people use an *USB audio device*. If you have such a device, attach your microphone and speakers to that device, and plug the device into your computer's USB port.

USB Cable and Plug

USB Ports

If your computer does not have a microphone input port

Do not plug a microphone into the line input port on your computer. The volume will be way too low (the line input port does not apply the needed amplification to boost the very quiet signal from the microphone). You will not break anything, but you will be very frustrated with the results.

Option 1 - Buy/ rent/ aks a friend for a microphone to USB adapter

These devices plug into a USB port on your computer, and have a microphone input jack (usually 1/8").

You will still need a compatible microphone. Be sure to carefully read the specifications of any adapter you are considering and make sure you get a microphone that will work with that interface.

Option 2 - Buy/ rent/ ask a friend for a USB microphone

These microphones have become common. They combine a microphone and the USB adapter all in one package.

Testing your input connection

Before you fire up Audacity you should use your computer's sound control panel or the custom mixer application for your specific sound card, select the input device you want to use and verify that you are getting sound into the computer from that device.

Once you have verified that you are getting sound into the computer you can move on to getting that sound into Audacity.

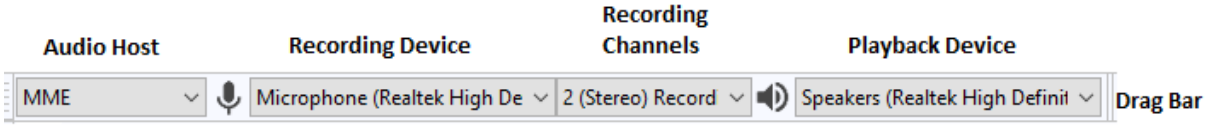
Setting up the audio host and playback device

Device Toolbar

On the device toolbar, if you are unsure what settings to use, use MME if it is available, ALSA if on Linux and Core Audio if on Mac.

The choice of recording and play back devices may take some detective work (or trial and error). The items earlier in the list are generally built-in devices, e.g. a speaker actually in the laptop, and the later items devices that are plugged in, e.g. headphones.

The **Device Toolbar**, shown below, is displayed by default in a new installation of Audacity. If Device Toolbar is not visible, click on View > Toolbars > Device Toolbar.



You may want to expand the size of the Device toolbar by dragging right on the drag handle / drag bar **Resizer**.

Choose your preferred **Audio Host**, **Recording Device** and **Playback Device** from the dropdown menus. This selects the particular interface with which Audacity communicates with your chosen recording and playback devices.

The "Audio Host" is the interface between Audacity and the sound device. On **Windows**, the choice is between the following audio interfaces.

- ***MME*:** This is the Audacity default and the most compatible with all audio devices.
- ***Windows DirectSound*:** This is more recent than MME with potentially less ***latency***.
- ***Windows WASAPI*:** This host is the most recent Windows interface that Audacity supports. WASAPI was first officially released in 2007. WASAPI is particularly useful for "loopback" devices for recording computer playback. 24-bit recording devices are supported. Playback is *emulated* using this host. As a result, the playback slider in Mixer Toolbar will only scale the system playback slider's current level up or down rather than directly manipulating that system slider.

On **Mac** the only choice is Core Audio.

On **Linux** there is often only one option: ***ALSA***. Other options could be OSS and/or Jack Audio Connection Kit (also known as "Jack" or "Jackd").

On **Windows**:

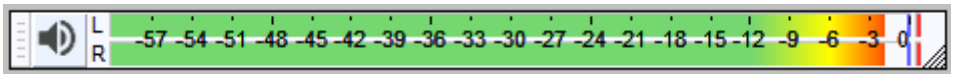
- Windows DirectSound may by default have only slightly lower latency than MME.
- Selecting Windows DirectSound or Windows WASAPI and enabling both "Exclusive Mode" boxes in Windows Sound allows Audacity to request audio direct from the device without ***resampling***.
- For *output device*, choose the named sound device your headphones or speakers are connected to (not a device like Microsoft Sound Mapper that uses the system default device). If you are using a USB-connected guitar, microphone or keyboard on Windows, you may also need to reset the default system playback device to your computer sound device in order to hear audio in other applications.

Windows computers almost always only have microphone inputs enabled by default. Earlier Windows systems may also need some inputs to be made visible before Audacity can use them.

If your line-in or other inputs are not shown in Device Toolbar, go to the system mixer for Windows, show and enable the missing inputs, then use Transport > Rescan Audio Devices or restart Audacity.

Click on Generate > Tone, accept the default values in the dialog then click OK: a 30-second tone will be generated into a new track. Press Space to begin playback - you should hear a loud tone coming from your computer speakers. You can use the output slider on the Mixer Toolbar to control the volume at which you listen to your Audacity project.

Note that the Playback Meter does not change as you adjust the output slider: this meter always indicate the volume of the mix of your Audacity project.



Setting up the recording device

Now that you know that you can hear what Audacity is playing you can continue setting up for recording.

Choose your preferred *recording device* from the *Recording Device* dropdown menu in the Device Toolbar.

In the *Recording Channels* dropdown menu choose whether you want to record in mono (1 channel) or stereo (2 channels). In general if you are recording a microphone or guitar you will want to record in mono. If you are recording a keyboard and the keyboard has stereo outputs you will want to record in stereo.

Settings

The number of different settings for recording is somewhat daunting, reflecting the many options for recording. Basically you can leave the settings at the default, and record just fine. However you might want to check this Tutorial on recording settings to find out more.

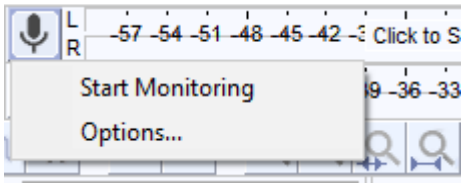
3.2. Your first recording

Before recording for real, it'a a good idea to have a test run.

When making recordings, particular critical recordings, you should consider shutting down all other applications giving Audacity sole use of the computer. This can help to avoid skips, small dropouts, and ticks in your recordings. And on Mac that means fully Quitting them (⌘Q) not just closing them, as otherwise Mac will leave them open consuming computer resources!

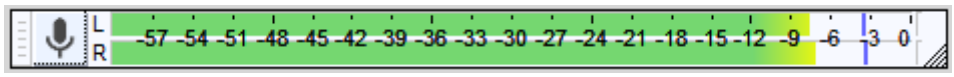
Step 1: Turn on monitoring

Click on the microphone symbol in the Recording Meter and select "**Start Monitoring**".



Step 2: Start the recording

Talk or play at a normal volume and watch the Recording Meter.



Try to aim for a maximum peak of around –6 ***dB*** (or 0.5 if you have your meter set to linear rather than dB). You can always boost the level later after you have completed your editing.

Step 3: Adjust the level

Adjust the recording volume with the right-hand Recording Volume Slider (by the microphone symbol).

You want the meter to get close to the right-hand edge without hitting it during the loudest parts *(-6 dB is a good target)*.

Note that if you are using a USB microphone or USB adapter the recording volume control may have no effect or may be grayed out and set to maximum. If you cannot get a "good" reading on the recording meter (does not get close to the right edge - too quiet; or goes all the way to the right edge - too loud), go back to your system sound control panel and adjust the volume there.

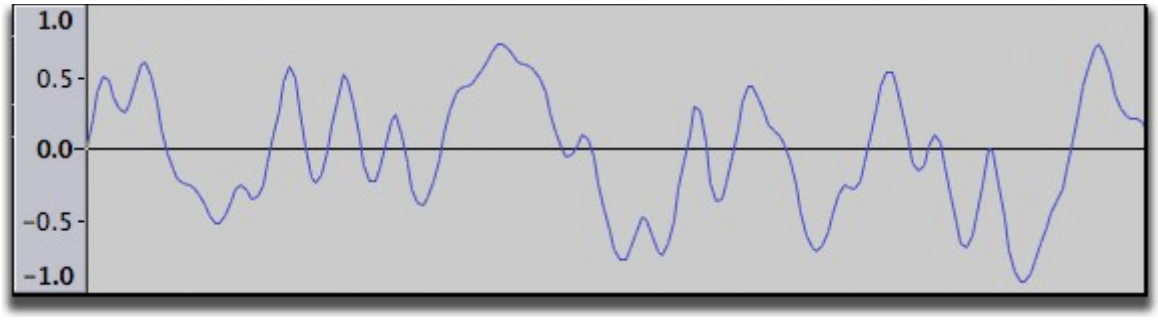
Step 4: Test recording

You are now ready to do a test recording.

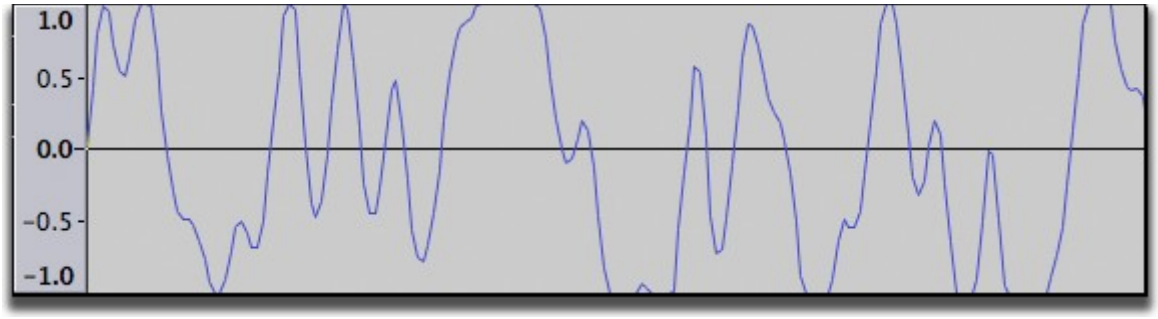
Get everything ready (microphone in place, guitar in hand) and click the ***Record*** button in Transport Toolbar. Record for few seconds while talking or playing, then click the **Stop** button .

Have a look at the recorded ***waveform*** - there should be no ***clipping*** visible. Clipping is bad - this is when the volume of the source that was sent to Audacity is louder than Audacity can record. The result is that the tops and bottoms of the recorded wave are chopped off ("clipped"). The illustrations below show a properly-recorded waveform and a clipped waveform. Note that these images from Audacity show the waveform when zoomed in - the total time displayed is about 0.004 seconds!

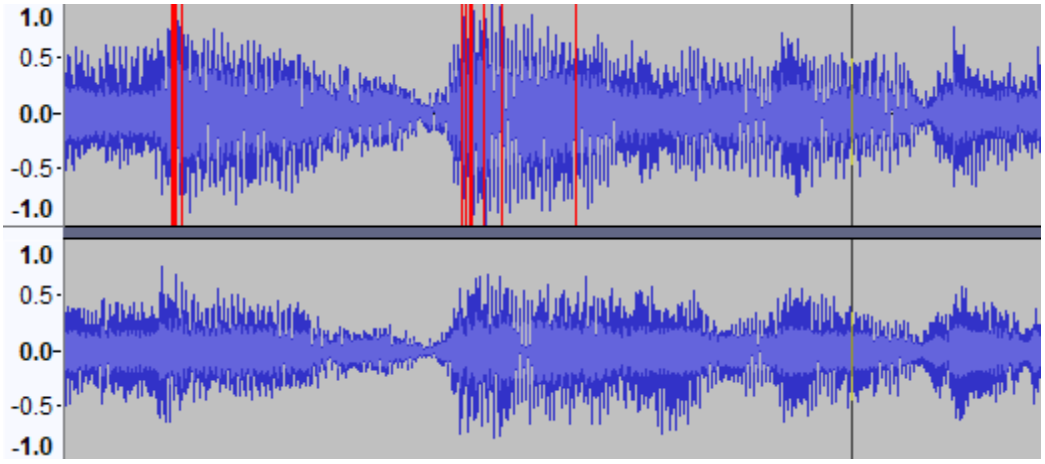
A properly recorded waveform



A clipped waveform



You can also check for clipping by clicking on View > Show Clipping. Audacity will display vertical red bars in the waveform wherever it detects clipping.



Click on Edit > Undo Record to remove the test recording.

If clipping occurred turn down the recording level a bit and try again. If no clipping occurred you are ready for the real thing!
As stated above, try to aim for a maximum peak of around –6 dB (or 0.5 if you have your meter set to linear rather than dB).

You are now ready to record **for real.**

Step 5: Record for real this time

Click the **Record** button in Transport Toolbar then begin talking or playing. Continue for as long as you want. When you feel you've recorded enough, click the **Stop** button .

Try to aim for a maximum peak of around –6 dB (see: ***dB***) or 0.5 if you have your meters set to linear rather than dB.

Tip: Enlarging the Meter Toolbar by clicking and dragging on the toolbar helps considerably with this task. See Undocking and Resizing

	If you have just made a recording it is strongly recommended to File > Export > Export Audio... it immediately to ***WAV*** or ***AIFF*** (ideally to an external drive) as a safety copy before you start editing the project.

Step 6: Remove any DC offset

DC offset can occur at the recording stage so that the recorded waveform is not centered on the horizontal line at 0.0 ***amplitude***. This can be caused if you have a faulty audio interface. If this is the case with your recordings, see the Normalize page for how to use Normalize to remove DC offset and how to check if your Windows sound device can perform this correction automatically.

Step 7: Edit Recording

You now have a good recording, but there are likely some bits at the beginning and end that you do not need - between the time you clicked the Record button and the time you starting talking or playing, and between the time you stopped talking or playing and the time you clicked the Stop button. You can adjust minor mistakes now, but editing will be covered in the next section.

Step 8: Amplitude adjustment

Since you were careful not to record too loud it is likely that your recording is not as loud as possible. To correct this you can use the Normalize effect.

1. Choose Select > All *(or use Ctrl + A)* to select all of the track.
    - With default Tracks Preferences, you may not need this step - all the audio in the project is selected if you choose an effect without first selecting any audio.
2. Choose Effect > Normalize....
    - Accept (for now) the default choices in the Normalize dialog and click the OK button
    - The volume is normalized to -1 dB, so leaving a little ***headroom*** below the maximum possible 0 dB level.

Note that Normalize defaults to retaining the existing balance between stereo channels. However basic consumer-level equipment can often record with channels unbalanced. To correct unwanted volume differences between left and right, check "Normalize stereo channels independently".

Extraneous noises in the recording can cause Normalize to create unwanted changes in the stereo balance, or prevent recordings being made as loud as they can be. Extraneous noises should be edited with Click Removal, Repair or Amplify before the Normalize step. Also see our tips for

reducing noise in the recording chain.

Step 9: Save and Export

1. Choose File > Save Project > Save Project, then choose a name for your project and a place to save it.
    - You have now saved an Audacity Project to disk. The project file (ending in .aup) can only be opened by Audacity. You can come back to the project and make changes to it later. For example you could do more editing, record more audio, or apply other effects.
2. To listen to your performance in other audio software (such as iTunes or Windows Media Player), or to burn it to CD, choose File > Export > Export Audio....

3.3. Editing your podcast

The objective in this tutorial is to record a simple narration, add some background music, cut the narration to fit the music, lower the volume of the music during the narration, and finally mix and export the final product.

Give yourself an hour or so to complete this tutorial.

On your first attempt:

- do not try to create a masterpiece
- do not work on something critical.

You are learning and experimenting, exploring the many tools Audacity offers you. Don't expect to get it perfect the first time.

It really does not matter what your narration is about, and whether you read it or ad lib. It also does not matter what the music is, but an instrumental track is preferable.

Step 1: Record the narration

Consider where your microphone is going to be in relation to everything else in the room. Try to place it so that it picks up a minimum of computer noise (hard drives, fan). When speaking into the microphone, point the microphone at your mouth but do not point your mouth at the microphone. If you can, place the microphone so that you are talking past it - think David Letterman and that microphone he has on his desk: he's always talking over it. Setting up the microphone so that it is level with your mouth but a little off to the side also works. This avoids "popped p's" and other breath effects from ruining your recording. Finally, try to set up the microphone so that it is 4 to 6 inches away from your mouth.

While you are talking, try to keep looking in one direction - moving your head left or right, up or down, while you're talking will change the tonal quality of your voice, and may be distracting to

your listeners. Speak in a normal, conversational tone of voice, but also speak clearly and enunciate carefully. Your listeners cannot see you so do not have the visual cues they would have if your were speaking to them in person.

If you need to listen to a obackground track (or doing a remote recording) while recording your narration (for example to record a commentary), you should:

- make sure that Transport > Transport Options > Overdub (on/off) is checked
- use headphones (to listen to the background track) so that your microphone will pick up only your voice.

If you do not need to hear yourself in the headphones you can continue with this tutorial. Otherwise please read the tutorial on overdubbing for details on how to set up Audacity so you can hear both the background track and yourself in your headphones.

If you are overdubbing your narration certain parts of the work flow presented below will change or be eliminated. For example: your first step will be to import the audio that you will be recording your narration against; you will not need to cut the narration to fit the background track.

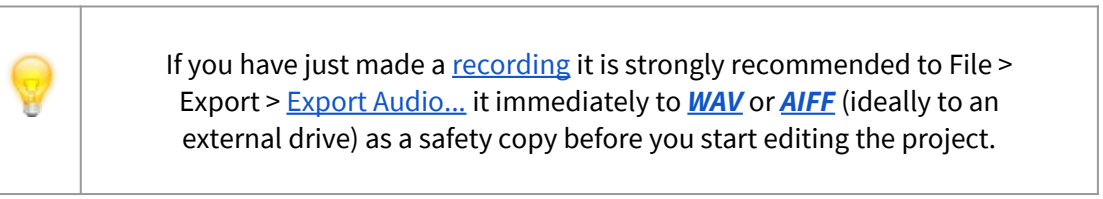
So let us begin ...

Start Audacity: a new untitled project window opens. Click on File > Save Project > Save Project or File > Save Project > Save Project As... and name your project.

Set the recording device to your microphone in Audacity's Device Toolbar *(or on Mac, set the microphone as the default recording source in Apple Audio MIDI Setup)*.

You are now ready to record the narration. Don't worry about mistakes, pauses, coughs and similar - we can edit those out later. In fact you may want to make a few deliberate mistakes so you can practice editing them out later. When you stop to make a correction, go back to the start of a natural break - sentence or phrase - and start again in a normal voice: once you've tried to edit out your mistakes you will realize the importance of this.

Click the *Record* button in the Transport Toolbar. Record your narration.



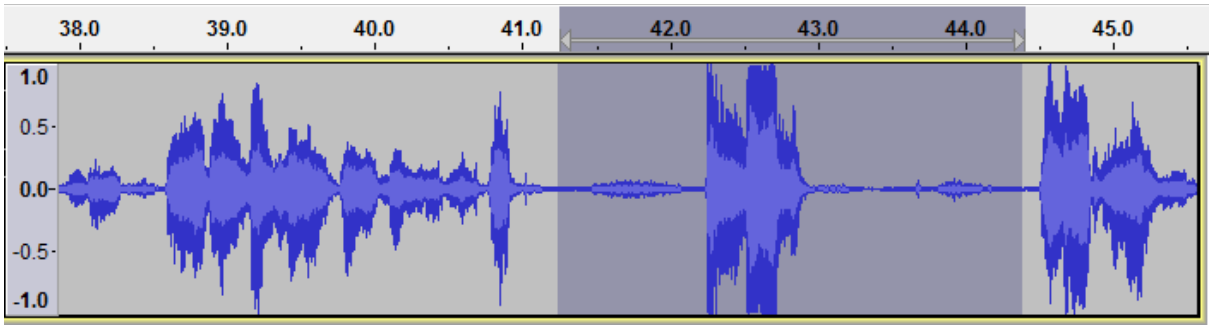
To be really professional, perform a level test of your voice before it is recorded for real. Click on the downward pointing arrow in the Recording Meter and click "Start Monitoring". While speaking into the microphone as loudly as you intend, adjust the recording level slider (by the microphone symbol) on the Mixer Toolbar so the Recording Meter is almost reaching the far right-hand side (but not far enough to bring the red clip lights on). If the Recording Meter is not visible, click on View > Toolbars and enable the **Meter Toolbar**

Step 2: Edit the narration

Cutting out the mistakes

Don't edit too tightly - the final result should sound natural. Use Audacity's Cut Preview feature to hear how each edit will sound before you make the edit. Then listen back to each edit - undo and try again if it does not sound natural.

The image below shows a situation where the speaker paused, cleared his throat and continued with the next sentence. We want to take out the throat-clearing plus enough space around it to make it sound natural.



As you can see, the portion to be removed is selected. Press the C key to hear two seconds of audio before, and one second of audio after the selection - this lets you hear what it will sound like after the selection is deleted. This is called "Cut Preview". Adjust the length of the selection until the edit sounds natural. Various ways to adjust a selection were discussed in the Editing an Existing Audio File tutorial. When you are happy with the selection, press the Delete key, choose Edit > Delete or press Ctrl + K to delete the selection.

If you want to hear more than two seconds before or one second after the selection choose Edit > Preferences *(on Mac it's Audacity > Preferences)*, select the **Playback** section, and in the *Cut Preview* section set the "**Preview Before Cut Region**" and "**Preview After Cut Region**" times to your liking.

Continue in this manner correcting the mistakes until you are satisfied with the end result.

Save your work.

Leveling out the volume

Unless you are professional narrator or voice-over specialist there are probably level (volume) variations during your narration. Remember, your listeners cannot see you, so having a consistent volume for your narration is important so they'll be able to hear and understand everything you're saying.

You could go through and manually adjust the volume throughout your narration track using the Envelope Tool, but there's an easier way - use Audacity's built-in *Compressor* effect. Click on the Track Control Panel of your narration track to select the entire track then choose Effect > Compressor. The Compressor is a complex but very useful effect, so let's take a moment to see how it works.

The Compressor effect works by making the loud parts quieter, then amplifying everything, which

ends up making the quiet parts louder.

- Check ☑ Make-up gain for 0dB after compressing and ☑ Compress based on Peaks.
  - The former means that Compressor will maximize the volume of the track after it does its work. The latter means that Compressor will look at the peaks of the waveform rather than its average value.
- The "**Threshold**" control is the "tipping point" - the point where Compressor decides if something is "loud" (and should be made quieter) or "quiet" (in which case it leaves it alone).
  - For our first pass we'll set "**Threshold**" to "-12 dB".
- The "**Noise Floor**" control tells Compressor that anything below that level is noise and it shouldn't make it any louder.
  - For now we'll set that control to "-80 dB".
- The "**Ratio**" control tells Compressor how much quieter it should make the loud parts.
  - Set it to "6:1".
- Set the "**Attack Time**" to "0.5 secs"
- Set the "**Release Time**" to "1.0 secs".
  - These two controls tell Compressor how fast it should respond to changes in volume.

Click the OK button and let Compressor do its work. Listen back to the result.

- Are the quiet parts still too quiet? Choose Edit > Undo Compressor and try again with a Threshold setting of -18 dB.
- Does your voice sound unnaturally squashed? Undo and try again with a Threshold setting of -6 dB.

Note that once you've gone through setting everything up the first time, on subsequent tries you just change the Threshold. This make it easy to home in on the setting that works.

When you have your narration edited to your liking, be sure to save your project. Now it's time to add the music.

Step 3: Import the background music file

For the purpose of the assignment you can use music from here:
https://www.freebackgroundtracks.net/free-music/

Be aware that using any copyrighted music in your project will prevent its publication. It will only be usable as an assignment for the course, not anywhere online. You can generally find royalty-free tracks for personal use (with attribution) by searching online.

Choose File > Import > Audio... and open the background music file you've chosen for the project. Audacity imports the music file into your project and puts it in its own stereo track.

Click the *Skip to Start* button ⏮ on the Transport Toolbar, then click the *Play* button ▶. Note that Audacity automatically mixes the music and narration for you. Click the *Stop* button ■ when you've heard enough.

Look at the Track Control Panel at the left of each track. Note the "**Mute**" and "**Solo**" buttons. You can use these to control which tracks you hear when you click the Play button. Clicking the "**Mute**"

button will turn that track off - it will not be included in the mix when you press the Play button. Clicking the "**Solo**" button will cause only that track to be heard when you press the Play button. The exact behavior of the Solo button can be set in the Tracks Preferences panel.

Step 4: Time-shift the tracks

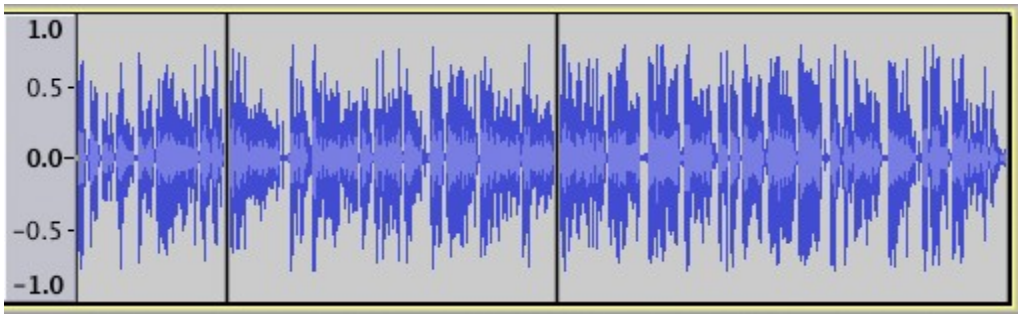
The Audacity Tracks and Clips page describes how to use the *Time Shift Tool* to slide clips around.

Cutting the Narration Track

Start by clicking the "**Solo**" button on the narration track - we do not want to listen to the music track while we're doing this work on the narration track.

For the purposes of this tutorial we will assume that we want to cut the narration into three separate segments. Each of these segments will begin when the music makes a dramatic change.

Find the spot between the first and second portions of the narration. Using the *Selection Tool* click at this point. Choose Edit > Clip Boundaries > Split - a split line appears. There are now two clips on the narration track. Similarly, put a split point between the second and third portions of the narration. The narration track will now look something like this:



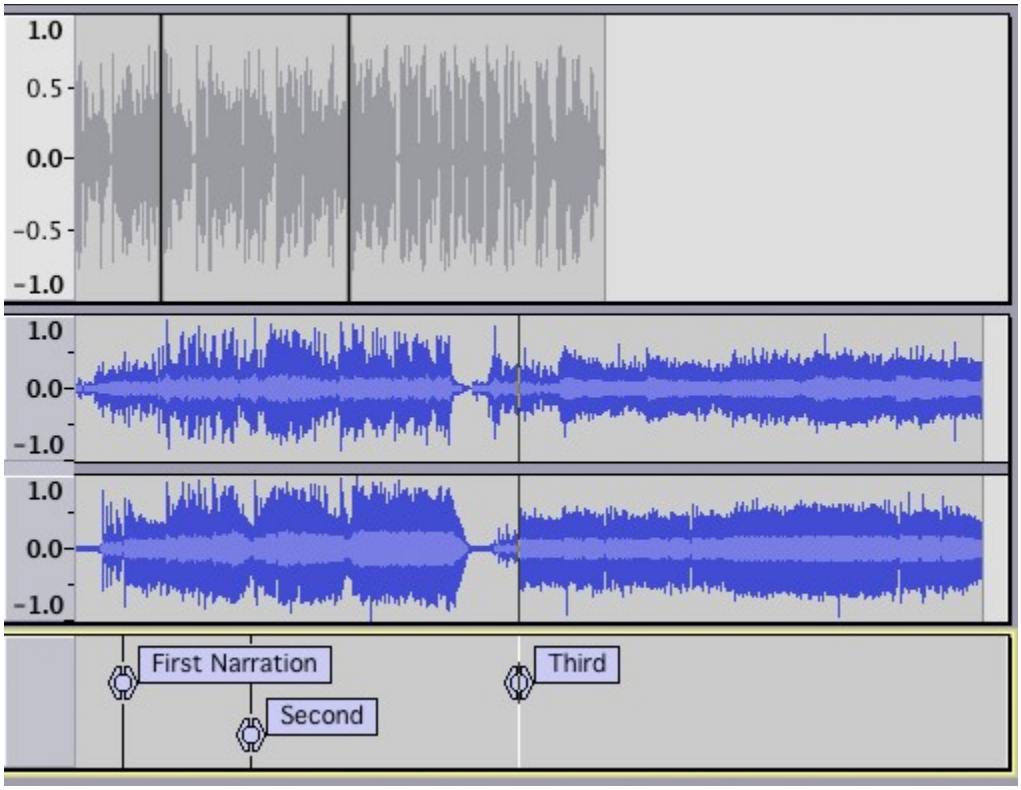
Marking the places in the background music track where you want the narration clips to start

Remember, our goal is to cut the narration to fit the music. So our next step is to pick the spots in the background music track where we want the three narration clips to start

Click the "**Solo**" button on the narration track to turn off the Solo function on that track. Click the "**Solo**" button on the background music track so you will only hear that track.

Identify the point in the background music track where you want the narration to begin. Click at that point with the *Selection Tool*. Choose Edit > Labels > Add Label at Selection. Type a name for the label, for example "First Narration".

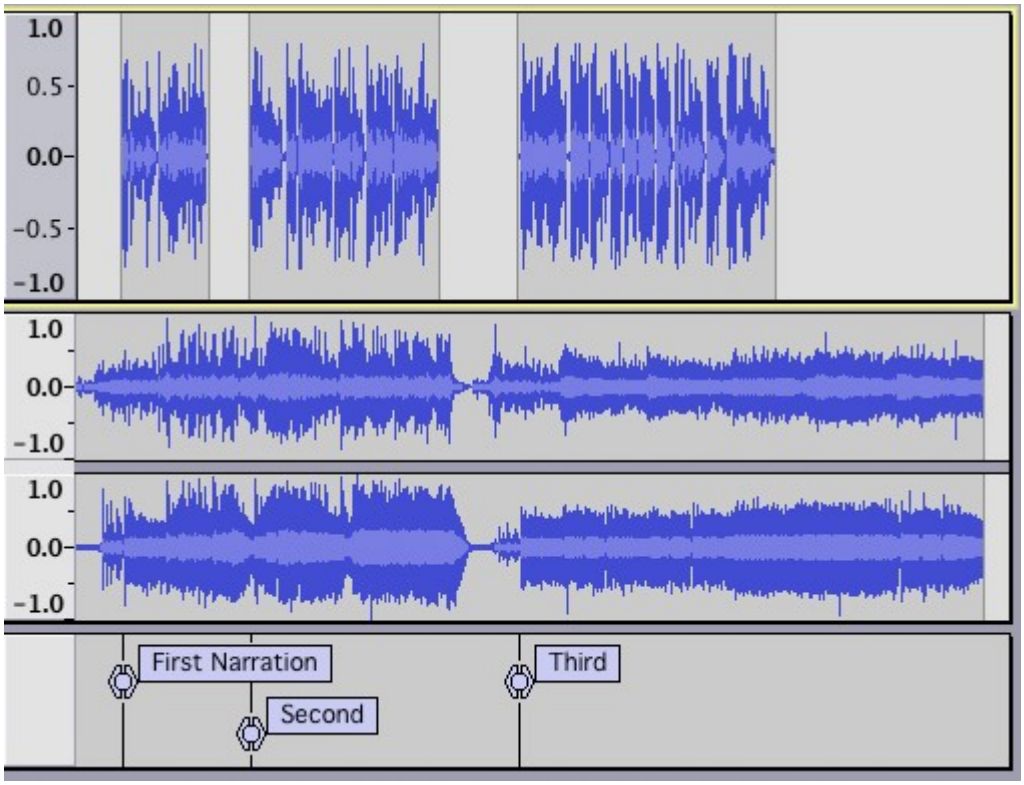
Similarly, identify the points in the background music track where you want the second and third narration clips to begin, and create labels at those points. Your project window should look something like this:



Moving the clips to work with the music

Click the Solo button on the background music track to turn off the Solo function on that track, so we can hear both the narration and music tracks.

Using the *Time Shift* Tool ↔ drag the third narration clip so that the start of the clip lines up with the third label. Audacity will help you line this up perfectly - when the start of the clip lines up with the third label a yellow Boundary Snap Guide will light up. Similarly, drag the second narration clip to line up with the second label, and drag the first narration clip to line up with the first label. Your project window should now look something like this:



Remember, you can - and probably should - use music cues throughout the podcast, to signal transition, help edit around awkward transitions and otherwise contribute towards a positive aural experience for your listeners.

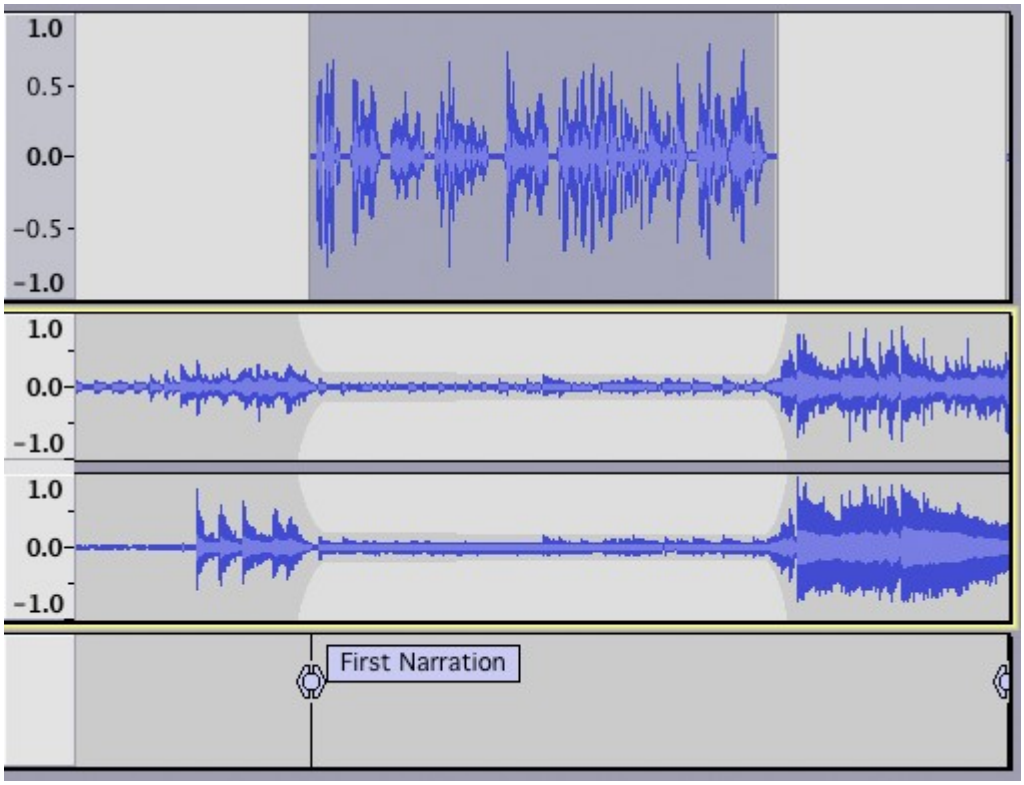
Step 5: Adjust relative volume levels

You now have the narration clips where you want them. It's now time to adjust the volume of the background music so your listeners can hear what you're saying. There are at least two ways to do this: manually with the Envelope Tool, or automatically with the Auto Duck effect.

Using the Envelope Tool

Details on how to use the Envelope Tool are here. You may want to read that page before continuing.

Zoom in on the first narration clip. A quick way to do this is: double-click on the first narration clip; choose View > Zoom > Zoom to Selection ; then choose View > Zoom > Zoom Out Select the *Envelope Tool* from the Tools Toolbar. In the music track, click to create a control point a second or so before the first narration clip begins. Click to create a second control point just as the narration starts. Drag the second control point down to reduce the volume of the music track. Click in the Timeline a few seconds before the start of the first narration clip to hear the effect. Press Space to stop playback. Adjust the first and second control points to get the length and depth of the fade you want. In a similar manner create the fade up at the end of the first narration clip.



You could continue in this manner doing the fades on the music track for each clip in the narration track. Or you could try using the *Auto Duck* effect. The advantage of using the Envelope tool is that you can always go back and change the fades. Auto Duck, being an effect, permanently alters the music track.

Step 6: Smooth fade of the background music

Unless you're very lucky (or have planned very, very well), the music probably goes on for some time after the narration is finished. In this case you'll want to fade out the music. Decide how long you want the music to continue a full volume after the narration has finished, and how long you want it to take to fade out.

Using the *Selection Tool*, click in the music track at the point where you want the music to be completely faded out. Choose Select > Region > Cursor to Track End. Press the Delete key. Now click at the point where you want the music to begin fading out. Again choose Select > Region > Cursor to Track End, then Choose Effect > Fade Out.

Step 7: Check your mix

If you maximized the volume of your narration track back in Step 2 there is a good chance that when you mix it with the music track the resulting mix will be too loud and cause clipping - this is a bad thing. Remember, we maximized the volume and leveled out the loud and soft passages so that people would be able to hear you. To check for clipping, play back a *short portion* of the project where there is narration and background music. Watch the Playback Meter - if clipping occurs the red "clip bars" will appear at the right-hand end of the Playback Meter. If this happens, use the Track Gain Slider to turn down the volume of both the narration and music tracks to -2 dB. Listen to the short section again and look for the red clip bars on the Playback Meter. If clipping

still occurs, turn down the volume of the narration and music tracks to -4 dB each.

Step 8: Save and Export

The File > Save Project > Save Project command just saves the Audacity project. You need to [Export Audio|**Export**]] your project in order to use it with other audio applications. When you export your project, Audacity automatically mixes it, so the exported file sounds just like what you hear when you click the Play button.

Make sure there are no unwanted bits of audio far along the time line or your exported file will be unexpectedly long!

Click on the **Fit to Width** button  in the Edit Toolbar. If the expected length of your final mix is displayed in the window, all is fine. If the displayed time line is much longer than your actual production, look for the unwanted bits of audio and delete them. You may need to click just past the real end of your narration/music and delete everything from there to the end of the track(s).

Audacity can export in a variety of formats. The two most commonly used are MP3 (for podcasts and similar) and WAV (for burning to CD). In order to export to MP3 format you must first install the optional LAME MP3 encoder.

(Optional) - Mix and Render

You may want to *Mix and Render* your project before you export it. The *Mix and Render* command (in the Tracks menu) will mix your project, and put the resulting mix in a new track (this is the "render" portion of the command). This gives you the opportunity to maximize the volume of the final mix, and do a final check for clipping. If you would like to try this, follow these steps:

- Choose Select > All
  - Mix and Render only mixes the selected tracks - you want to mix all of them
- Choose Tracks > Mix > Mix and Render
  - your project is mixed into a new stereo track and the previous, separate tracks are deleted
- Choose View > Show Clipping
  - The Show Clipping command will put red vertical bars anywhere clipping has occurred in your track. If any red bars appear, choose Edit > Undo Mix and Render and go back to Step 7.

If no clipping was detected, proceed:

- Click in the Track Control Panel of the newly-created track
- Choose Effect > Normalize
  - accept the default values and click the OK button.
  - the volume of your final mix is maximized.

You exported a project in a previous tutorial. If you need a refresher on how the **Export Audio** works, that information is on the Export Audio Dialog page.

Congratulations, your narration over background music is now ready to share with the world.

Step 9: Backup

Backup your exported WAV or MP3 files - you do not want to lose all that valuable work and have to do it all over again, do you? Computer hard drives can fail, destroying all data.

Ideally use a dedicated drive *(1+ TB external drives are convenient and economical)*, or upload to an online (cloud) storage service, to store the WAVs or MP3s. Better still is to make two copies on different external devices and even better is to hold an off-site backup

Publishing your Podcast

It is not required to publish anything that you've created for the course online. Submitting an audio file through the Canvas is sufficient. However, if you want you are free to share your creation provided no copyrighted material (music, written works, etc.) were used. Useful advice on how and where to host your podcasts, how to set up RSS feeds and how to publicise your work can be found in the Wiki Tutorial "How to publish a Podcast".