Adobe Audition 2021

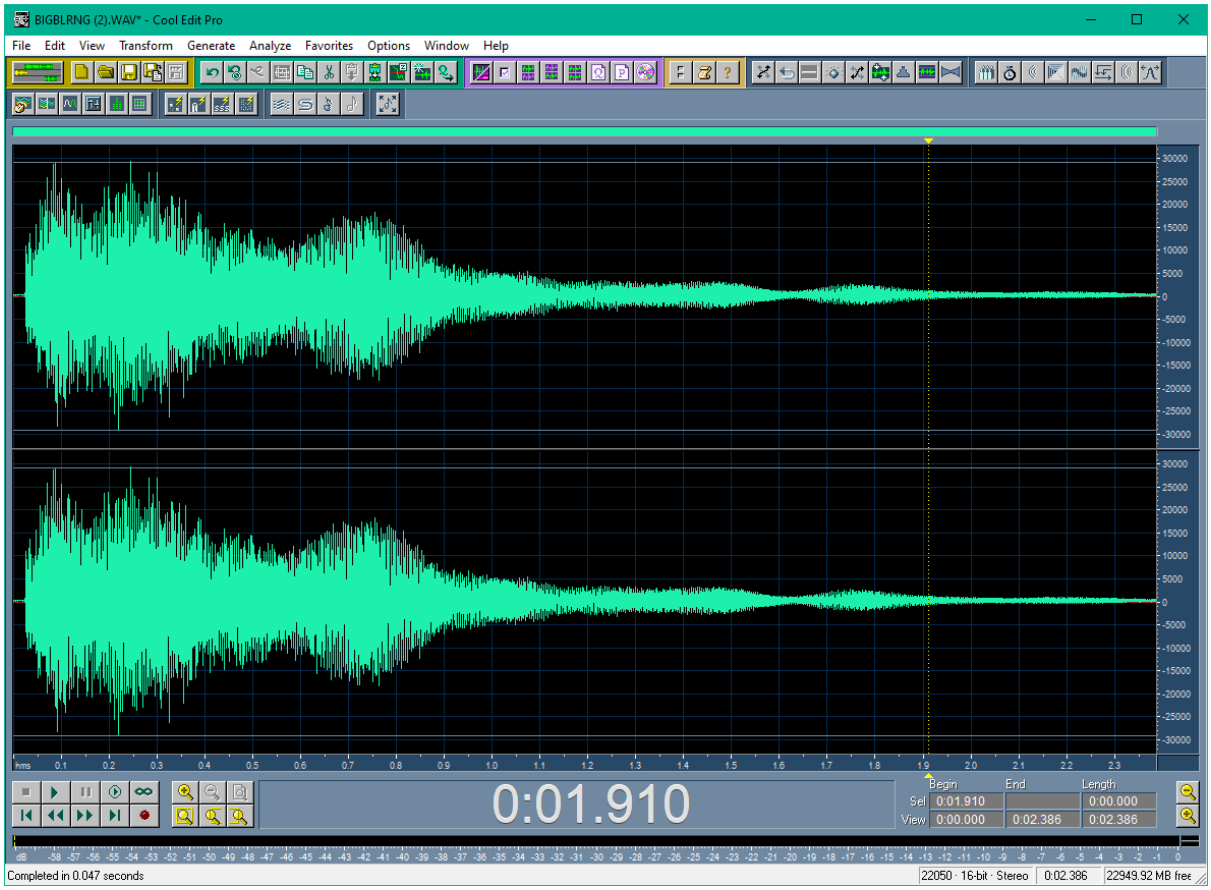
1 – Introduction

What is Audition?

Adobe Audition is an application for editing sound on a computer. It can be used for a wide variety of purposes including recording, modifying and combining sounds. It is part of the **Creative Cloud** family of Adobe products. These exercises were created using the 2021 version of Audition (version 14), but most of the tools shown in these exercises will be similar in other versions.

History

Adobe Audition began as an application called **Cool Edit** and **Cool Edit Pro** developed by a company called **Syntrillium**. It was a popular editing application due to its wide range of useful tools as well as its support for a wide range of audio formats including the then new MP3 format.

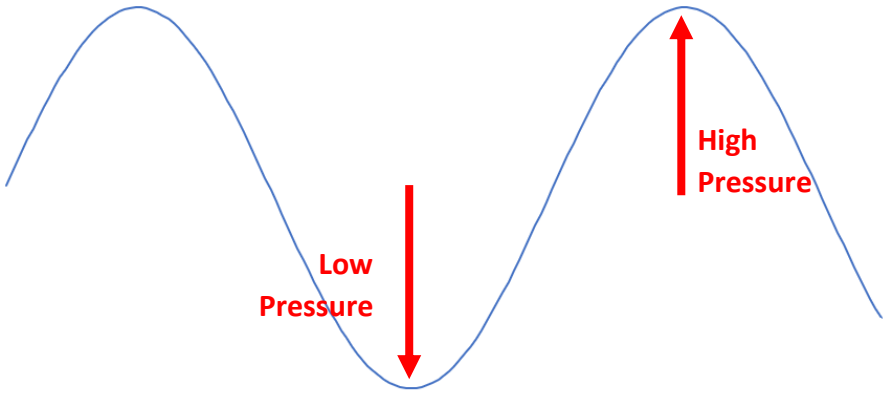


Adobe Acquired Syntrillium in 2003 including the Cool Edit Pro software which was rebranded as Audition. In the years since, Adobe have continued to improve on what was already an excellent audio editing tool and have also increased its integration with other popular Adobe products. For example, if a video clip is being edited using **Adobe Premier** then the sound from that video can be modified using Audition.

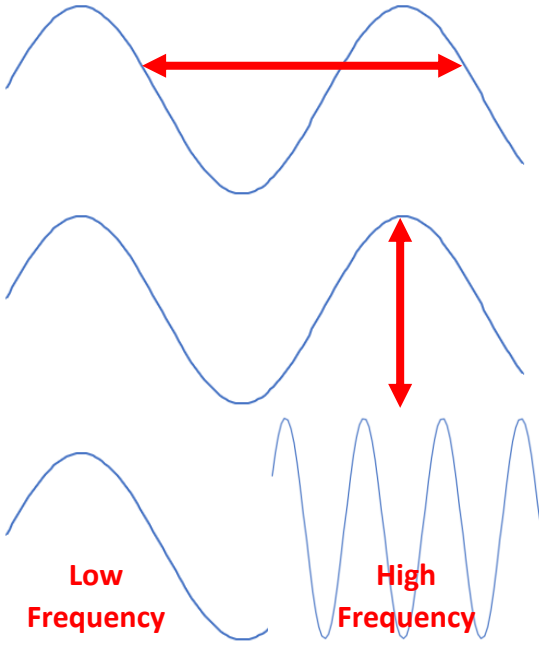
How Does Sound Work?

Before you work with editing sound it is useful to know a bit about how sound works.

When an object vibrates it causes the air around it to vibrate. Vibrations carried through the air cause our ear drum to vibrate which our brain interprets as sound. When vibrations travel through the air the vibrations cause differences in air pressure. Changes between high and low air pressure can be represented by a curved line or **waveform**.



A sound wave has several important properties that can be measured.



Wavelength
The length of a wave. I.e. The distance between a point on a wave and the same point on the next wave.

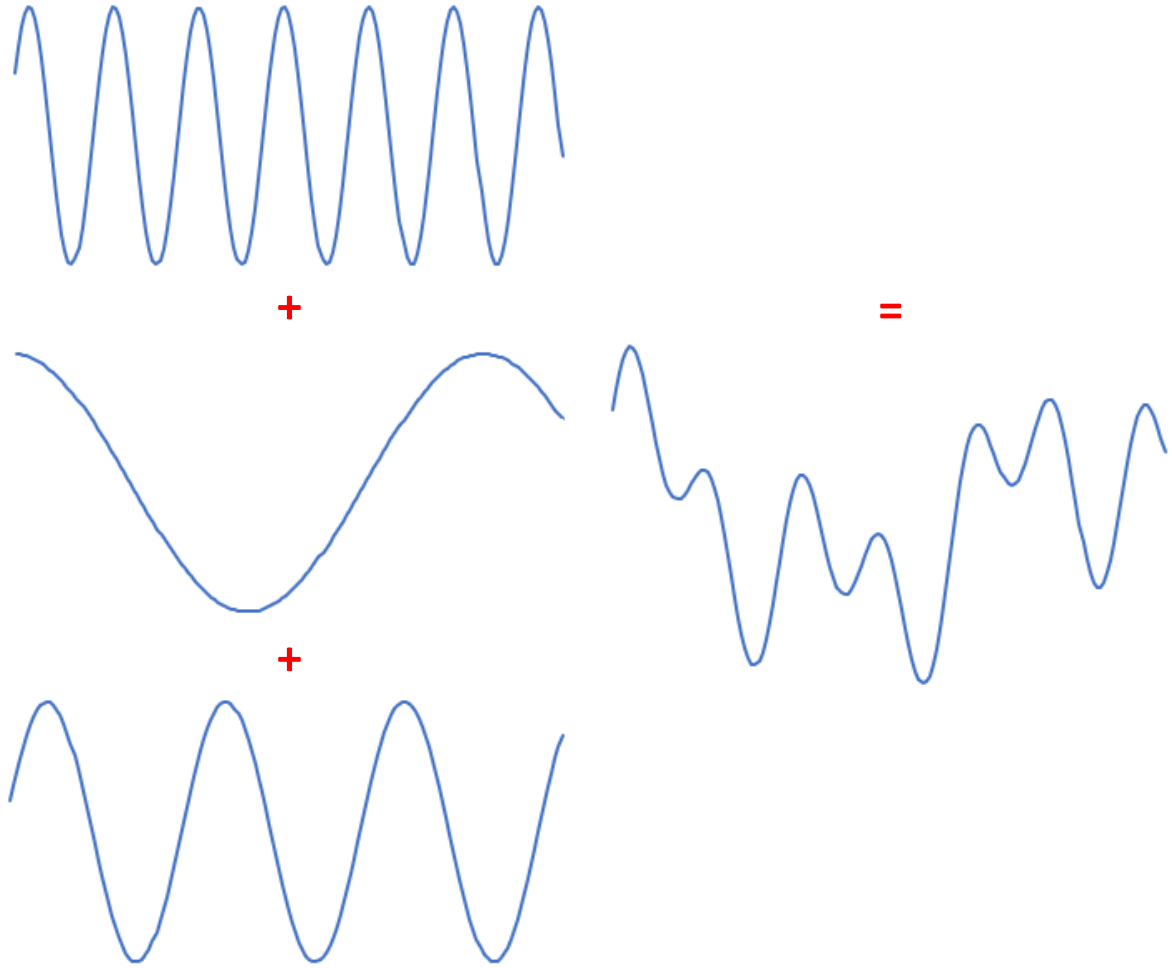
Amplitude
The height of a waveform which indicates how strong or powerful the sound signal is.

Frequency
The number of times a wave goes through a full cycle per second. Higher frequencies result in higher pitched sounds.

When Sound Waves Collide (Phasing)

When different sounds occur together, the high and low frequencies of each sound combine which can create less regular looking waveforms. These combinations of different sounds and less regular looking wave forms are more like what we hear in real life. They are also a lot more like what we typically see when we are editing sounds on a computer.

In the example below, the 3 waveforms on the left would combine to make a waveform like the one on the right.



Analog Audio

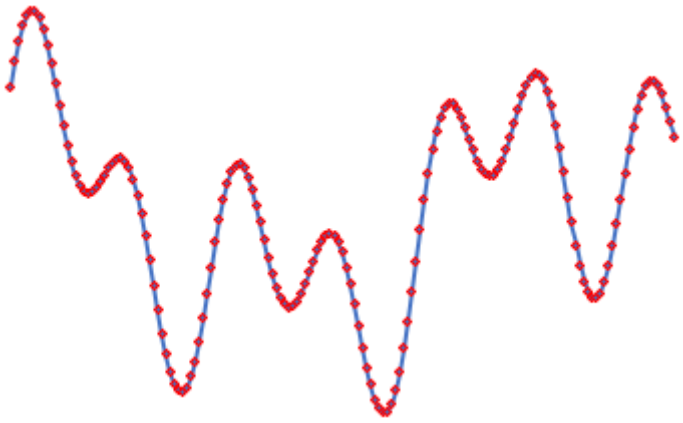
When sound vibrations travel into a microphone, the pressure waves are converted in to changes in electrical voltage. This can then be stored on something like magnetic tape or the grooves in a vinyl record.

Speakers or headphones take these changes in voltage that have been recorded and create vibrations in the speaker, which is then projected as sound.

Digital Audio

Switches are used to turn things on and off like a light switch. A computer is a very complex collection of switches that can work at very fast speeds. Often billions of times a second. These changes between on and off are represented as Binary using ones and zeros. Storing information in this way is referred to **Digital**.

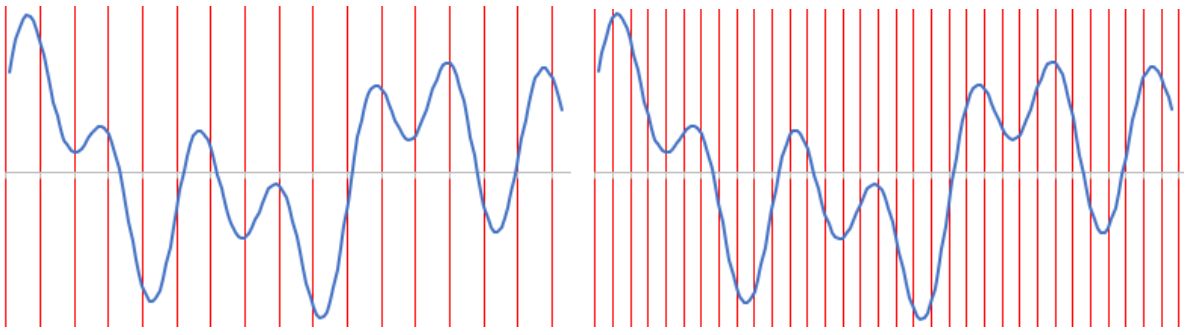
Computers can't store analog information like a record or tape can since computers work with digital information. This means that for sound to be stored on a computer, the analog signal needs to be stored digitally. This is done by measuring or **sampling** the sound at certain points and then storing information about each sample. When more detailed measurements for a given sound are stored, the digitally recorded sound can be reproduced more accurately. The example below shows a sound wave measured at regular intervals. Each of those measurements can then be stored as information in the computer. This is **Analog to Digital Conversion**.



There are 2 measurements that determine the quality of digital audio recordings.

Sample Rate

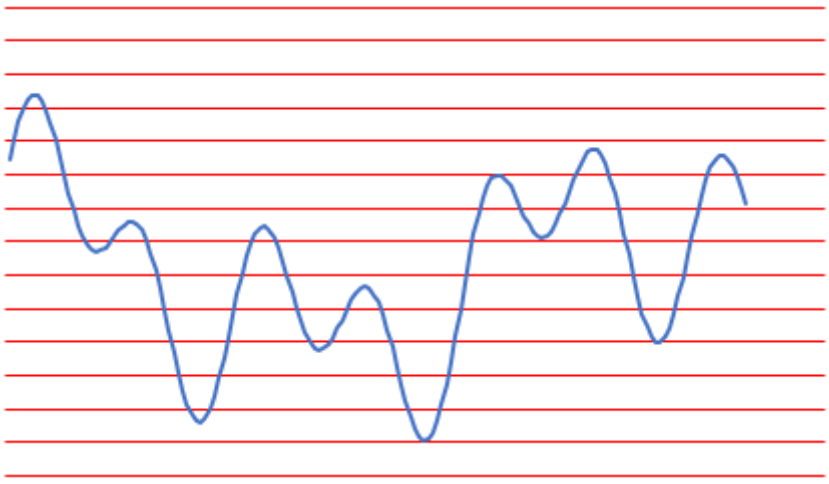
Sample rate refers to how frequently the computer samples or measures the sound that is being recorded. The more times per second the sound is measured, the more accurately the sound can be recorded. The example below shows that when measurements are taken more frequently like the example on the right, then more points on the waveform will be recorded.



CD quality audio uses a sample rate of **44,100 khz** (kilohertz). This means that for every second of audio, the sound has been sampled 44,100 times to create a detailed recording of the original sound. In fact, the human ear would have trouble distinguishing any more detailed sound recording than that. The higher the sample rate, the closer the digital recording will be to the original analog waveform.

Bit Depth

While sample rate refers to how frequently sound is sampled in a digital recording, Bit Depth refers to how detailed each sample can be. Remember that a waveform represents changes between high and low pressure. In the example below, each line represents a level that a sample can be recorded at. If there are only 16 levels like in the example below then the sound can't be reproduced very accurately. **CD quality sound** records at **16 bit** which means **65,536** possible values for each sample. This allows for a high degree of accuracy when representing, or recording, the original analog waveform. **DVD quality sound** is recorded at **24 bi**t which means over **16 million** possible values for each sample.



Did you know	A **Spotify** premium account plays music at 44.1 khz and 16 bit rate which is the same quality as the audio on a CD. Many streaming services, including non-premium Spotify accounts, play music at lower frequencies and bit rates.

Questions