Sound

Sound consists of pressure waves moving through air.

Without air, there is no sound.

Our ears are sensitive to pressure waves and transmit these signals to the brain.
Hand Clap
Periodic Wave
Sound Recording

Acoustic waves to electrical waves

A microphone consists of a small membrane that vibrates.

Movements of the membrane are translated into electrical signals.

Higher pressure typically corresponds to higher voltage.
Digital Audio

Analog to digital

An audio signal is an analog (continuous) format.

The electrical waves must be converted to digital information for computational processing.

Digital recording is accomplished with an analog-to-digital converter (ADC).

The ADC captures a snapshot of the electric voltage on an audio line and represents it as a digital number.

Capturing the voltage thousands of times per second creates a good approximation of the original audio.
Digital/Analog Sound
Digital Audio Playback

Digital to analog

All computers must give us analog signals to be useful.

The screen converts digital information to light.

The digital-to-analog converter (DAC) takes the sample and sets a certain voltage on the analog outputs to recreate the signal.

This voltage is conveyed to the speakers which create pressure waves in the air.
Audacity
Open-source sound editing software

Free, open-source software that can be altered and redistributed
Multilingual
Easy to use
Records live audio
Cuts, copies, splices and mixes sounds together
Exports to different formats (with appropriate plugin)
HTML5 Audio and Video

HTML5 now supports audio and video natively in the web browser.

For years, it was necessary to rely on a third party to deliver this kind of content.

Now we can use the `<audio>` and `<video>` tags.

The `<audio>` and `<video>` tags use the `<source>` tag to specify one or more media resources.
Introduction to Web Design & Computer Principles
CSCI-UA 4

Web Audio and Video
HTML5 Media Elements