Introduction to Web Design & Computer Principles
CSCI-UA 4

Digital Audio
Sound Editing with Audacity
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

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
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Digital Audio
Sound Editing with Audacity
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)
Sound Editing

Audio sample
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.
<table>
<thead>
<tr>
<th>Introduction to Web Design &amp; Computer Principles</th>
<th>Digital Audio</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSCI-UA 4</td>
<td>Sound Editing with Audacity</td>
</tr>
</tbody>
</table>