

Web Audio Codelab #1

Getting Started with Web Audio API

Music 220A Summer 2021

Web Audio API

- A high-level Web API for processing and synthesizing audio in web applications (i.e. JavaScript)
- W3C Recommendation: <https://www.w3.org/TR/webaudio/>
- Developed by [W3C Audio Working Group](#) (Apple, BBC, Google, Mozilla...)
- Mature cross-browser support: <https://caniuse.com/audio-api>

Web Audio API: Features

- Modular routing
- 32-bit floats for high dynamic range processing
- Sample-accurate scheduled sound playback with low latency
- Automation of audio parameters
- Integration with WebRTC and HTMLMediaElement
- Synthesis and processing using JavaScript

Web Audio API: Resources

- [Web Audio API book](#) (Smus)
- [MDN: Web Audio API](#)
- [Music 220A example code repository](#)
- [W3C Web Audio API Spec](#)

Tip:

Tools for Music 220A

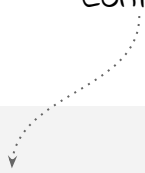
Music 220A tools

- Your preferred browser
- Your preferred code editor (e.g. <https://code.visualstudio.com/>)
- Terminal ([for Windows](#))
- Optional: GitHub account (<https://github.com/>)
- Optional: Code Sandbox account (<https://codesandbox.io/>)

Tutorial:

Hello Sine!

Context



Source

Oscillator



Processor

Gain




```
const context = new AudioContext();  
const osc = new OscillatorNode(context);  
const amp = new GainNode(context);
```

Oscillator



Gain



SPEAKER

Destination

```
const context = new AudioContext();
const osc = new OscillatorNode(context);
const amp = new GainNode(context);

osc.connect(amp);
amp.connect(context.destination);
// Or, osc.connect(amp).connect(context.destination);
```

“Play sound for 2 seconds”

Oscillator

“Set volume to 25%”

Gain

Destination

SPEAKER

```
const context = new AudioContext();
const osc = new OscillatorNode(context);
const amp = new GainNode(context);

osc.connect(amp);
amp.connect(context.destination);
// Or, osc.connect(amp).connect(context.destination);

osc.start(0.0);
osc.stop(2.0);
amp.gain.value = 0.25;
```

Tip:

Autoplay and User Gesture

```
<button id="start">Start</button>
<script>
  const buttonEl = document.getElementById('start');
  buttonEl.addEventListener('click', () => {
    // Your Web Audio code should start here.
    osc.start();
    context.resume();
  }, {once: true});
</script>
```