

**2018 Fall**  
**CTP431: Music and Audio Computing**

# **Intro to HTML/CSS/JavaScript and Web Audio API**

Graduate School of Culture Technology, KAIST  
Juhan Nam



# Outlines

- HTML
- CSS
- JavaScript
- Web Audio API
  - Examples



# Before Starting

- Editors
  - Sublime Text, Atom, Vim, Emacs (or whatever convenient for you)
- Web browsers
  - Chrome is recommended. It is also a developer tool
- All-in-one testbed (and code sharing) sites running on web browsers
  - <https://codepen.io/>
  - <https://jsfiddle.net/>
  - <http://jsbin.com/>
  - <https://editor.p5js.org/> (for p5.js)

# HTML (Hyper Text Markup Language)

- Hyper Text
  - Documents are interconnected by hyperlinks
- Markup Language
  - System for annotating documents formatted with tags
  - Example: Latex, XML
- Practice
  - <https://www.w3schools.com/html/>

# CSS (Cascaded Style Sheet)

- Style sheet language
  - Determine the “appearance” of documents
  - Layout, color, fonts
  
- Practice
  - <https://www.w3schools.com/css/>



# JavaScript

- Real “programming language” running on web browsers
  - Neither much related to Java nor a just script language
  - Basic purpose: adding “interactive elements” to web documents
- Features
  - Imperative and structured: syntax from C (e.g., if, while/for, switch)
  - Object-oriented: use “proto-type” instead of “class”
  - Dynamically typed: use “var” for all types of variables and strings
  - The browser often ignores errors: to allow the document to be loaded regardless of the validity of code
  - Support both client-side and server-side programming (but we will focus on the client side)

# JavaScript

- DOM (Document Object Model)
  - The HTML document is modeled as a tree-structured object (“document”)
  - Allow JavaScript to access to elements in the HTML/CSS and modify them
- BOM (Browser Object Model)
  - The browser is modeled as a tree-structured object (“window”)
  - Allow JavaScript to access to elements in the web browser
- Practice
  - <https://www.w3schools.com/js>

# Web Audio API

- A multimedia API in HTML5 standard
  - Web Audio: audio
  - WebGL: visual (2D/3D graphics)
- Features
  - Source: oscillator, audiobuffer (sample)
  - Audio effect: gain, filter, compressor, delay, convolution, pan
  - Control: parameter scheduling
- Specification/References
  - [https://developer.mozilla.org/en-US/docs/Web/API/Web\\_Audio\\_API](https://developer.mozilla.org/en-US/docs/Web/API/Web_Audio_API)
  - <https://webaudio.github.io/web-audio-api/>



# Examples

- See the github folder
  - <https://github.com/juhannam/ctp431-2018/tree/master/session1>
- Rule of Thumb
  - **Create:** *AudioNode*
  - **Connect:** connect one *AudioNode* to another *AudioNode*
  - **Control:** change *AudioParam*