Spectrum Analyzer Assignment

- Issue

  Implement a spectrum analyzer.

  The frequency spectrum is a decomposition of the audio waveform into its frequency components (sine waves) using the Fourier transform. Frequency spectrum data can be easily obtained from the Web Audio API's AnalyzerNode. Let's display this data as a graph to visually experience what kind of frequency components each oscillator has and how the filter works.

- implementation procedure

  Since waveform drawing using AnalyzerNode is already implemented in WaveDisplay.vue (Oscilloscope), let's create a spectrum analyzer component based on this.

  - ➔ The creation and setting of the AnalyzerNode is done in the setupWorklet function of Main.vue, which is passed from Main.vue to the child component as Vue props.
  - ➔ The waveform (drawWave function) is drawn using a path on a canvas element. What is canvas? https://www.genius-web.co.jp/blog/web-programming/draw-graphic-on-htmlusing-the-canvas-elements-basic-story.html
  - ➔ The drawing is updated by calling the WaveDisplay function at regular intervals from a timer running in Main.vue.
    How to call methods of a child component from its parent component ↓
    https://qiita.com/s_ryota/items/84f33b742ad177e2811f

  With reference to these, here are the specific procedures

  1. Duplicate the WaveDisplay.vue file and rename it accordingly.
  2. Refer to WaveDisplay to load the duplicated component in Main.vue and make sure it is displayed on the page.
  3. Refer to the following and change the part of the drawWave function that obtains waveform data to obtain spectral data. Note the difference in the array size obtained.
     - https://developer.mozilla.org/ja/docs/Web/API/AnalyserNode

  If you have room, you can customize the look and feel. Also, since most common spectrum analyzers have a log scale for the horizontal axis (frequency), you may want to change it that way.