MetroTune Requirements Document

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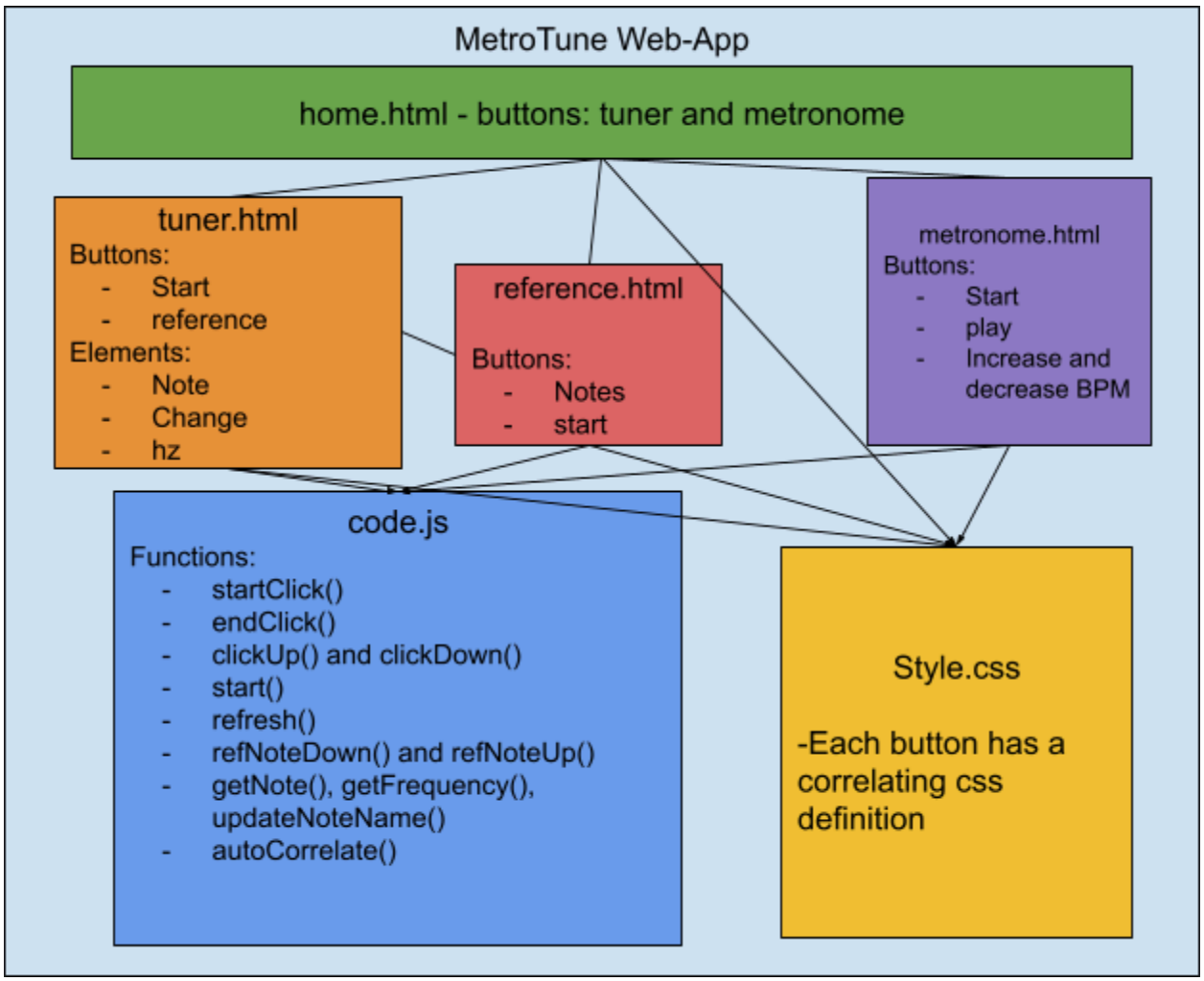
5.1 Introduction

MetroTune is a multi-page web app where the user is able to access a tuner, metronome, and reference notes. This is an all-in-one site where the user can access some of the most important tools for musicians. Each html page is controlled by a correlating javascript file as well as styled by a css file. The following sections detail the functional, performance, and environmental requirements of MetroTune.



5.2 Functional Requirements

The functional requirements of the MetroTune web app include that the user must be able to activate the audio context on each page. This will allow each tool to be able to run properly. After clicking start to start the tool on each page, the user must then be able to interact with the tools. The MetroTune web app is divided into two subsystems. The first being the webpage subsystem that includes the HTML and CSS files. The second is the application subsystem that includes the Javascript file that controls the web app.

5.2.1 Webpage Subsystem

5.2.1.1 Each page must have a start button to activate the audiocontext
5.2.1.2 Each page (other than the home page) must have a linked button to go back to the homepage
5.2.1.3 The homepage must have linked buttons to access the tool pages
5.2.1.4 The homepage shall have a brief description of the app itself
5.2.1.5 The homepage shall have the MetroTune logo displayed at the top of the screen
5.2.1.6 The tuner page must display the current note name
5.2.1.7 The tuner page must display the cents away from the note being in tune
5.2.1.8 The tuner page must display the hz of the note being played
5.2.1.9 The tuner page must have a linked button to access reference notes
5.2.1.10 The metronome page must have a play button to start the metronome
5.2.1.11 The metronome page must have a pause button to stop the metronome
5.2.1.12 The metronome page must display the current beats per minute (BPM)
5.2.1.13 The metronome page shall have a plus button to add a beat to the BPM
5.2.1.14 The metronome page shall have a minus button to subtract a beat to the BPM
5.2.1.15 The reference page must have a series of playable notes
5.2.1.16 The reference page must have the note names displayed on their buttons
5.2.1.17 The reference page must display the hz of the current note being played

5.2.2 Application Subsystem

5.2.2.1 The start function must activate the audio context from the Web Audio API
5.2.2.2 The start function must be called when any start button is pressed
5.2.2.3 The start function must call the refresh function
5.2.2.4 The refresh function must update the window
5.2.2.5 The refresh function must call the autocorrelate function
5.2.2.6 The refresh function must call the changeHz function
5.2.2.7 The refresh function must call the updateNoteName function
5.2.2.8 The refresh function must call the updateChange function
5.2.2.9 The autocorrelate function must detect pitch using the ACF2+ algorithm
5.2.2.10 The changeHz function must update the text context of the Hz element
5.2.2.11 The updateNoteName function must update the text context of the note with the current note
5.2.2.12 The updateNoteName function must call the getNote function
5.2.2.13 The getNote function must get the note name from the note pitch
5.2.2.14 The updateChange function must call the getChangeNeeded function
5.2.2.15 The updateChange function must update the cents text content
5.2.2.16 The getChangeNeeded function must return the cents value
5.2.2.17 The refNoteDown function must play the note being clicked
5.2.2.18 The refNoteUP function must stop playing the note that was clicked
5.2.2.19 The startClick function must start the metronome

5.2.2.20 The endClick function must stop the metronome
5.2.2.21 The clickUp function must add one beat to the BPM
5.2.2.22 The clickDown function must remove one beat from the BPM

5.3 Performance Requirements

5.3.1 Time to load windows
5.3.1.1 When moving between windows, the web app shall load the next window in under 1 second(s)

5.3.2 Time to start tool
5.3.2.1 When starting a tool (tuner or metronome), the tool shall be usable in under 1 second(s)

5.3.3 Time to play note
5.3.3.1 The time to play a reference note shall be under 1 second(s) for it to play a sound

5.3.4 Time to control metronome
5.3.4.1 The metronome shall begin playing within 1 second(s) after starting
5.3.4.2 The metronome shall stop playing within 1 second(s) after stopping
5.3.4.3 The BPM should update within 1 second(s) after adding a beat
5.3.4.4 The BPM should update within 1 second(s) after subtracting a beat

5.3.5 Time to display tuner information
5.3.5.1 The note shall appear in under 1 second(s) after note recognition
5.3.5.2 The hz shall appear within 1 second(s) that the note appears on screen
5.3.5.3 The cents shall appear within 1 second(s) that the note appears on screen
5.3.5.4 The note’s color shall coordinate with cents within 1 second(s) that the note appears on screen

5.3. Time to return
5.3..1 Each function listed within 5.2.2 shall return its desired output in under 1 second(s)

5.4 Environment Requirements

5.4.1 Metrotune shall have the following requirements in each category:

Category	Requirement
Hard Drive Space	5MB
Operating System	Microsoft Windows OS or Mac OS
Browser	Chrome, Safari, Bing, etc.

5.4.2 MetroTune shall be able to run using any standard web browser
5.4.3 MetroTune shall run locally in any standard web browser
5.4.4 MetroTune shall not require any special computing hardware to operate
5.4.5 MetroTune shall require 5 MB of hard drive space to download the web app