ChordWorld Design Overview

ChordWorld is the world class which extends SoundWorld.

ChordWorld contains several fields:

* A *HashSet* of the current chord, the current notes
* Two *HashMaps* of keys, one in increasing musical order, the other in drawing order, white keys then black keys
* The current *Chord* being played
* The current chord mode, represented as a *String*
* An *int*, representing the MIDI frequency of the low C on the keyboard
* An *int*, representing the instrument
* An *int*, representing the chord inversion mode

ChordWorld extends SoundWorld, and contains virtually everything needed in the game. When initialized, ChordWorld initializes the key mappings and the drawing order of the musical keys.

ChordWorld contains key methods that determine what to do with each key press. There are keys to play chords on the keyboard, as well as keys to change the four settings in ChordWorld, the instrument, chord mode, octave, and chord inversion mode.

Based on the key pressed and the current modes, ChordWorld generates the appropriate chord, plays the three notes, makes the correct notes on the keyboard glow red, and displays the name of the chord.

When you press a key to play a chord, the *onKey* method checks if it is one of the mapped keys, and if it’s not already being played, then it clears the hashset represents notes being played, and clears the bucket and tunes of keyTunes. The method then calls *makeChord*, telling it to generate a chord based on the current octave, the musical offset of the key pressed, the chord mode, and the inversion mode. *onKey* then adds that newly generated chord to keyTunes, and then adds all the notes’ musical offsets to the hashset.

Because the musical modes are somewhat complex, there are helper methods to determine what the second and third notes of the chord should be. Then the main chord generation method, *makeChord*, adds the three appropriate notes, in the appropriate order, and returns the chord.

The main draw method, *onDraw*, has five helper methods to draw all the parts of ChordWorld. The method *drawKeyBoard* draws the rectangles of the keyboard. The next three methods, *drawMode, drawOctave, and drawInversion*, display the current modes at the bottom of the window. Finally, *drawChord* displays the name of the chord, based on the root note and the chord mode.