

CS1316 HW4: Playing a Simple Song Score

DUE DATE: Friday June 20, 2008

You could think of a music score as a tree structure:

- the Score is the root of the tree containing the name of the music and a linked list of Movement objects. To play a score, you play each Movement in sequence.
- A Movement contains the rate at which this movement should be played (in Quarter Notes per minute) and a linked list of Part objects. To play a Movement, you play each part in parallel, mixing the sound values of each Part into one Sound object.
- A Part contains the instrument index to be used for that part and a linked list of Phrase objects. To play a Part, you play each Phrase in sequence into a Sound object using the specified instrument..
- A Phrase contains a linked list of Note objects. To play a Phrase, you play each Note (which might be silent – a Rest) in sequence into a Sound object.

For Homework 4 you will be provided with the music score of Saria's Song from which you will be creating a class that plays the first 21 measures. You **must** use the PhraseBook class to maintain a library of repeated phrases. You will be turning in 2 files: `Saria.java` and `PhraseBook.java`.

Saria.java

To build this class, start with the BachFugue class built in lecture; rename the file and its components. Since Saria's song has only one movement and two parts, remove one of the Bach parts and then delete the code that adds phrases to each part, but retain all the "wrapper" material that causes the tree to be built with one movement and the sound to be played. Note that you do not have to be concerned with playing all the components – the line `s.play()` causes all that to happen automatically.

Examine the score of the song and determine a good selection of phrases. As you add phrases to the phrase book, you can build your music up using the stored library.

PhraseBook.java

Start with the PhraseBook used in class, and remove all the stored phrases. As you identify phrases from the song, define and add them to the PhraseBook. One good phrase to start with might be the first 4 notes of the song in the lower part: JMC.F2, JMC.A2, JMC.A2, JMC.A2 all of which have rhythm type JMC.EIGHTH_NOTE. Obviously, this phrase is repeated over and over again in the lower part, and can be used to construct much of that part.

Notice that the test main program in the PhraseBook is designed to allow you to review some or all of the phrases currently in the phrase book.

Bonus

10pts – find another .wav file to play your song. Modify the existing Orchestra class to add your new instrument (and give it an index value). Look at the Orchestra class to see how instruments (like the Piano) were added to the orchestra.

Note: If the pitch of your instrument is not at JMC.C4 – 261 Hz, you won't be able to mix your instrument with the other instruments of the orchestra.

Random Notes:

- Make sure your homework compiles before turning it in.
- Make sure to turn in the .java file
- COMMENT YOUR CODE! If you don't comment, we assume you copied from someone and have no idea what you're doing. As usual, lack of commenting will cost you a substantial amount of points.

What you are given

- This description of the assignment
- The attached scores for Saria's Song
- The code and .wav files at <http://www.prism.gatech.edu/~ds182/CS1316/Sounds/>

What to Turn In

Notice that you should not turn in any of the other library files. You should not have changed them.

- Saria.java
- PhraseBook.java
- Orchestra.java if you add a new instrument.
- Your .wav file if you added one.

How to Turn In

- Turn in via TSquare