Calvin Zheng

Carnegie Mellon University Pre-College Program

15-112 Term Project Proposal

My project will focus on creating music from notes that the user will either input from a file or by typing into the graphical user interface. I intend to create this program to help people that want to create their own songs with various instruments, particularly the piano. If time permits, I plan to include additional instruments. This program will be able to take in a string of notes and create the music for them.

The graphical user interface portion of my project will be accomplished mainly through the use of Tkinter. I will create various screens that give users options as to what they would like to use the program for. The user can either type the string directly into the program or they can select a file that they would like to make music out of. Currently I plan on using object-oriented programming in order to accomplish creating a music staff and the notes. I plan to have a parent Note class that can be separated into smaller classes, like QuarterNote, that inherit from it.

In addition, I would like to give users the option to play their music. In order to accomplish this, I plan to use the PyAudio module to locate the separate .wav files and play them. I currently have a function called mapNotesToFile function this is capable of finding the notes. With PyAudio, I can also take into consideration half notes, eighth notes, whole notes, and more since there is a way to convert time, in seconds, into frame rate, which the audio player reads. I am utilizing a playSongs function in order to accomplish this. Currently, my project only has the capability of playing C4, D4, E4, F4, G4, A4, and B4 notes from the piano. I would like to expand this to include all eighty-eight notes on the piano. As of right now, I am using recordings from freesound.org by a user named Goup\_1. For my finished product however, my intent is to use my own recordings of these notes from my piano.

While the user is playing his or her music, I would like to show animations by using Tkinter. For example, if a note is being played, I would like to show it either flashing or releasing various colorful particles to place emphasis upon it. If time permits, I would like to have my program animating through its newly constructed music sheet as it is playing each note. Also, I would like to give my users the option to save their music into a folder so that they can print or use it later. I would be using the built-in os module in order to accomplish this.

Overall, the focus of my term project is to create a program that can create sheet music from a simple string input or from a file that obtains the string. If time permits, I want to expand my project to include the ability to allow users to choose between bass clef or treble clef in order to fit their needs. Also, I will attempt to implement playing two notes at once, if it is possible with PyAudio.