ECEN 1030 Matlab project
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Introduction:
For this Matlab project, we decided to build a musical system containing two different parts.
One part is a simulation system which transfer user's normal computer keyboard to a simple
piano keyboard so that the computer can give sound feedback while the user typing on the
computer keyboard as if a real piano. The second part can be called music playing system which
means the user can choose which kind of music he wants to listen and the machine can play the
corresponding music automatically. We will describe these two part clearly below.

How our design worked:
    Part I: For this simulation system part, my partner and I design a transformation which can
transfer the computer keyboard into piano keyboard. For this part, we decided to use 14 keys
which are number "1-7" and letter "q-u". For the number "1-7", we set them as low frequency
and letters "q-u" we set them as high frequency.

Here is a list that show each number and letter corresponding scale

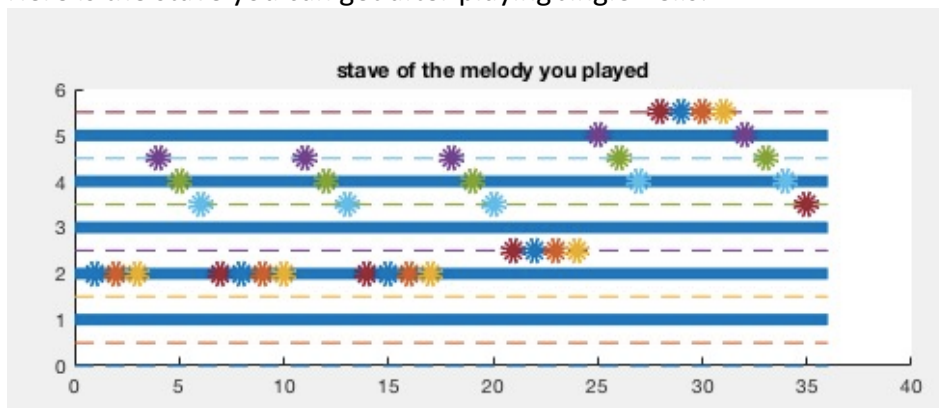| low frequency	1	2	3	4	5	6	7
high frequency	q	w	e	r	t	y	u
corresponding scale	c	d	e	f	g	a	b

For the low frequency, we use the function "440*2^(n/12)" to calculate the frequency. Also for
the high frequency part, we use "880*2^(n/12)" to calculate. Based on this, we can build a
piano keyboard which can play music in C major. After you finish playing piano and want to
finish, type number "0" to quit and in the meantime this system can show the stave you played
before.

Here is an example if you want to try on this system:
Jingle Bells
Numbered musical notation: 5-5-5-e-w-q-5 5-5-5-e-w-q-6   6-6-6-r-e-w-t   t-t-t-r-e-w-q
Here is the stave you can get after playing Jingle Bells:

Part II: in the music play system, you can choose the music you want to listen. First of all, this system, the system can let you choose which kind of music you want to listen(there are three types of music you can choose based on different languages: 中文(Chinese), English, lingua italiana). there are three corresponding songs storing in this system, so that when you give the system your choice, it can use and play the corresponding song for you. If you want to stop listening music, just type '3'.

If you want to finish the system and want to leave, just type number "4" in order to quit. And the system will immediately show a picture has "time to say goodbye" on it and finish running the system. In the meantime, if the music is still playing, it will automatically stop.

Conclusion:

For this project, we really gain some wonderful experience about how to use Matlab to build something interesting we prefer and let us realize how powerful Matlab is. If we have more time, we really want to use GUI to make a piano keyboard that when we tying on computer keyboard it can have corresponding feedback.