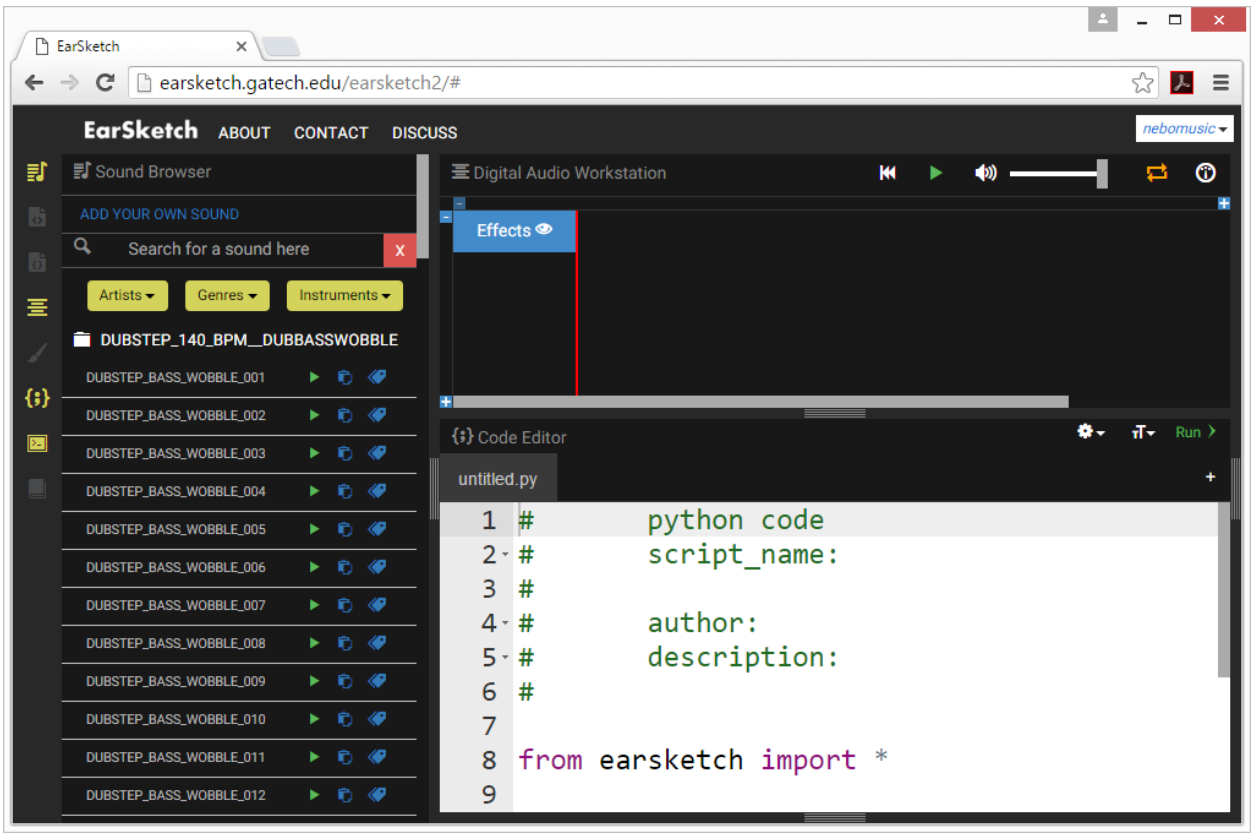
**Directions for EarSketch A and B Section Exercise: (Variable Version)**
**EarSketch 2**

**Description:**

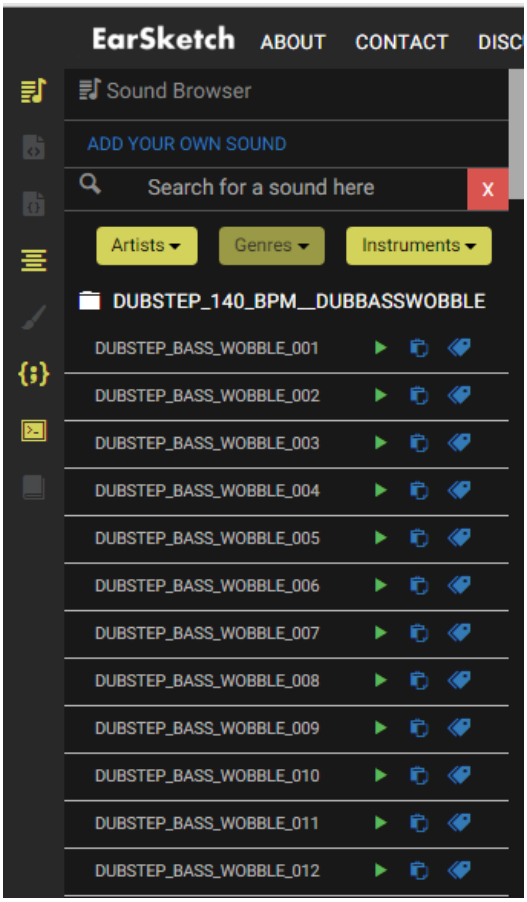
This exercise will work through creating a multi section mix in EarSketch using variables and effects. Music is structured in sections (A, B, C or sometimes called Verse, Chorus, Bridge). Our goal is to create multi sectioned music using variables.

**Process:**

1. Go to http://earsketch.gatech.edu/earsketch2 and login with your EarSketch account name and password.



2. To listen to music examples, use the sound browser to the left and click on the play icon. You can browse the music clips using the Genres and Artists buttons.




3. We will now write our first mix. In the Coding Window of the EarSketch online workstation, type the following line (Note that comments in Python are written with a #)

```
from earsketch import *

init()
setTempo(120)

# Variables for Music Section A



finish()
```

4. We will now define three variables for drums, lead, and bass: (You may pick three sounds for yourself. Try to select a drum part, melody, and bass)

```
12
13 # Variables for Music Section A
14 drums = TECHNO_MAINLOOP_003
15 lead = TECHNO_CLUBLEAD_001
16 bass = TECHNO_ACIDBASS_007
17
```

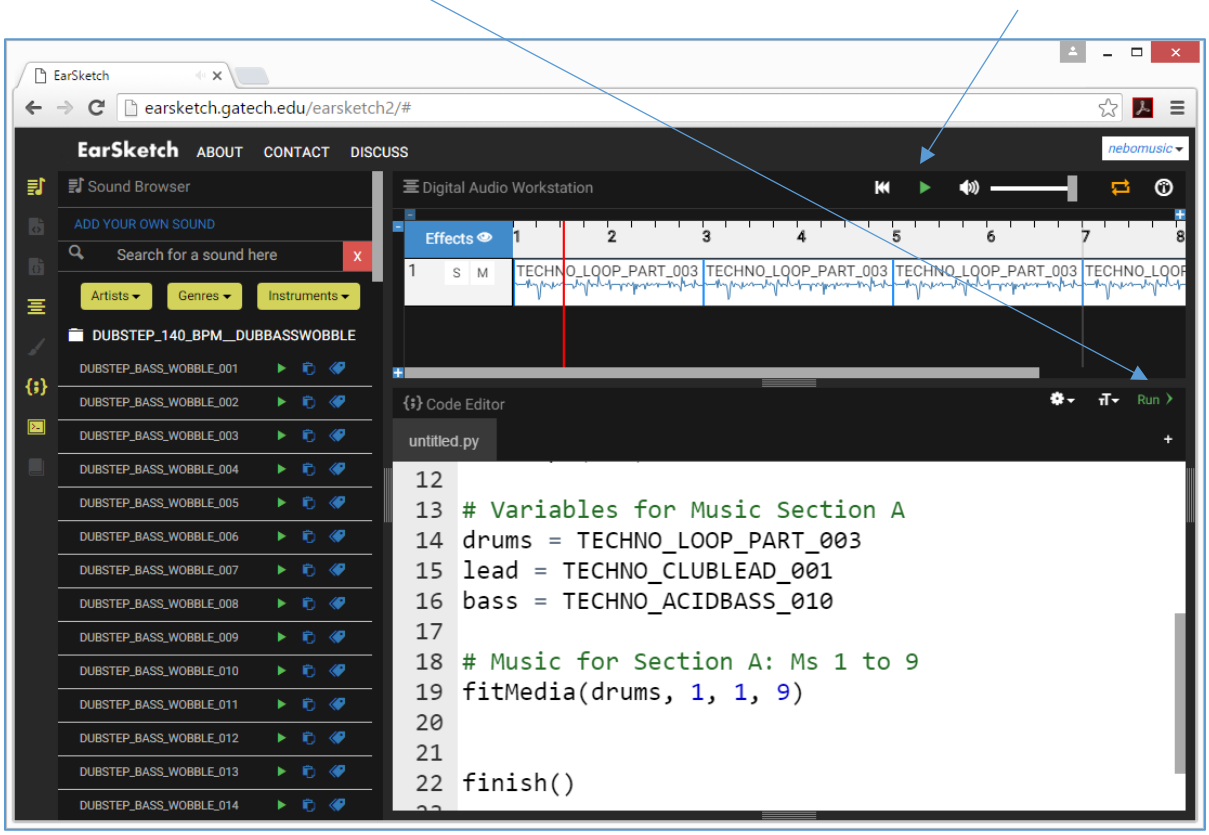
5. Now that we have defined our music, we will use fitMedia() to place the drums on track one. Type the following to begin placing music on track one. In this example we:

a. Locate 'drums' on track 1
b. Start the 'drums' at measure 1
c. End 'drums' at measure 9

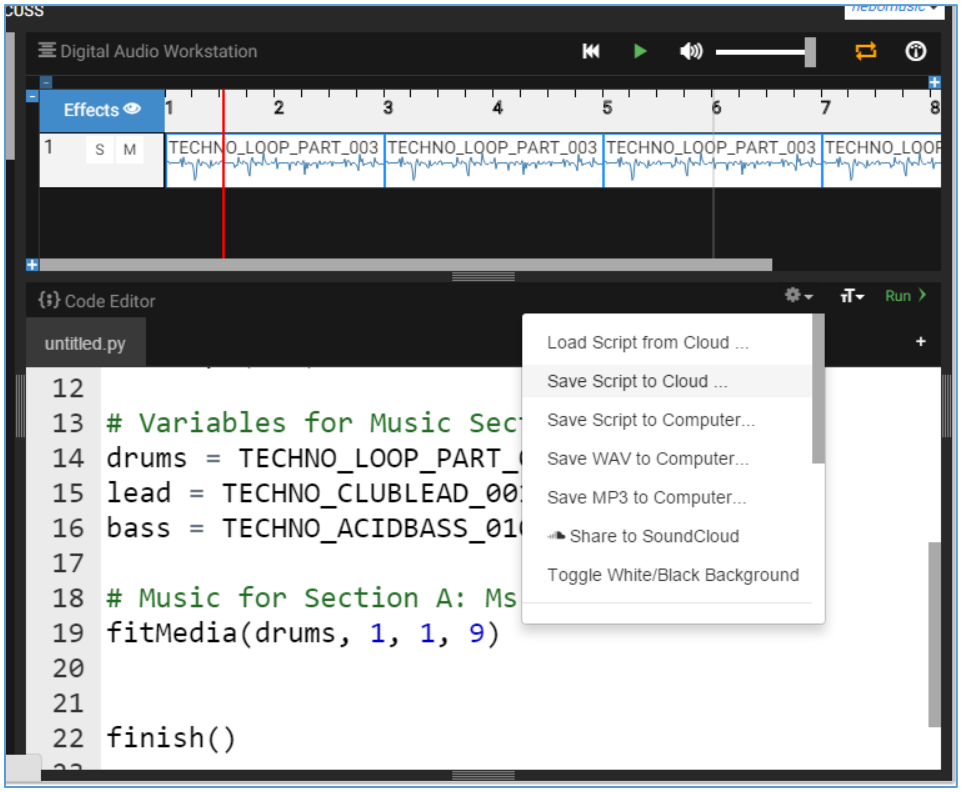
```
12
13 # Variables for Music Section A
14 drums = TECHNO_MAINLOOP_003
15 lead = TECHNO_CLUBLEAD_001
16 bass = TECHNO_ACIDBASS_007
17
18 # Music for Section A: Ms 1 to 9
19 fitMedia(drums, 1, 1, 9)
20
21
22 finish()
23
```

6. Click the word ‘run’ to run the program. You should see the music in the workstation window.

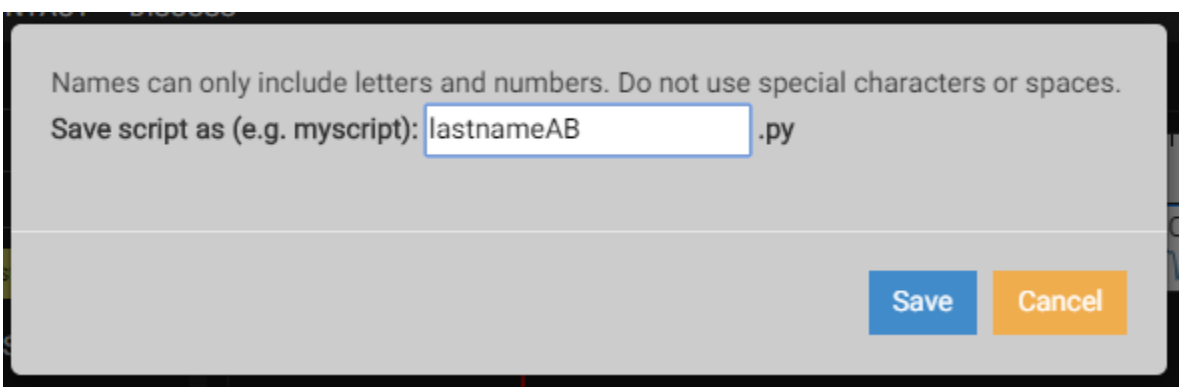
The playback controls are here:



7. We now want to save the code. Select the ‘gear’ icon and then “Save Script to Cloud”




8. Type “lastnameAB” in the window and click Save.



9. We will now add two more tracks for the lead and bass. Remember, you can change the assignment of the variable to a new sound if you want to modify the music. Feel free to experiment with the lengths of the clips. My example will have three clips that go from 1 to 9:

```

# Music for Section A: Ms 1 to 9
fitMedia(drums, 1, 1, 9)
fitMedia(lead, 2, 1, 9)
fitMedia(bass, 3, 1, 9)

```

Click 'run' and then play the music to hear all three tracks together.

10. We will now create a contrasting section of music from measures 9 to 17. Add a new comment and then select 3 or 4 more music samples:

```

# Variables for B Section: Ms 9 to 17
drumB = EIGHT_BIT_ANALOG_DRUM_LOOP_003
leadB = EIGHT_BIT_ATARI_SYNTH_001
speak = EIGHT_BIT_VIDEO_SPEAKNSPELL_BEAT_001

```

11. Now we will write the fitMedia() calls for section B

```

# Music for Section B: Ms 9 to 17
fitMedia(drumB, 1, 9, 17)
fitMedia(leadB, 2, 9, 17)
fitMedia(speak, 3, 9, 17)

```

12. Click 'run' to run the code and then listen to your music. Remember that you can adjust variables to select new musical clips. Make sure the clips work well together!

13. We now want to add effects such as volume control or frequency filters. Note the format for the setEffect function:

## Setting Volume Effects

```
setEffect(track, VOLUME, GAIN, level, start,
level2, end)
```

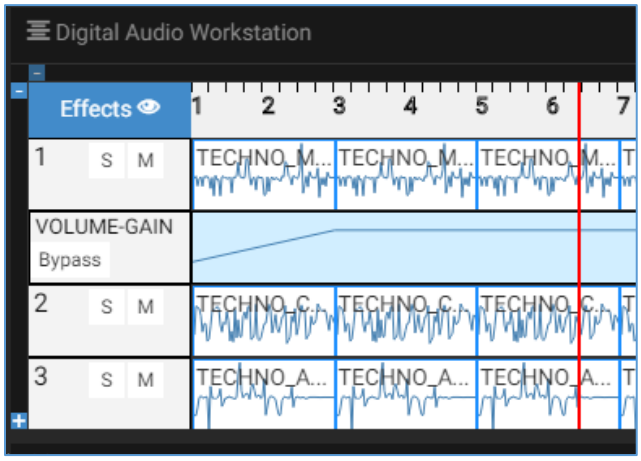
- Example

```
setEffect(1, VOLUME, GAIN, -40, 1, 10, 5)
```

14. We will now add a line of code to have the music 'fade in' on track 1. Add these lines of code to your program:

```
27
28 # Music for Section B: Ms 9 to 17
29 fitMedia(drumB, 1, 9, 17)
30 fitMedia(leadB, 2, 9, 17)
31 fitMedia(speak, 3, 9, 17)
32
33 # Adding Effects
34 setEffect(1, VOLUME, GAIN, -40, 1, 0, 3)
35
36 finish()
```

15. Run the code and note the new ‘blue line’ that indicates the envelope of the effect.




16. If we want all the tracks to fade in, we add a setEffect() function call for each track:

```
# Adding Effects
setEffect(1, VOLUME, GAIN, -40, 1, 0, 3)
setEffect(2, VOLUME, GAIN, -40, 1, 0, 3)
setEffect(3, VOLUME, GAIN, -40, 1, 0, 3)
```

17. Run the code to listen to the ‘fade in’.

18. We now want to ‘fade out’ in measures 8 to 9. Add these lines to do a ‘fade out’

```
# Fade Out
setEffect(1, VOLUME, GAIN, 0, 8, -40, 9)
setEffect(2, VOLUME, GAIN, 0, 8, -40, 9)
setEffect(3, VOLUME, GAIN, 0, 8, -40, 9)

# Set Volume back to normal for measure 9
setEffect(1, VOLUME, GAIN, 0, 9)
setEffect(2, VOLUME, GAIN, 0, 9)
setEffect(3, VOLUME, GAIN, 0, 9)

finish()
```

19. There are many more effects. We will do an example with FILTER. FILTER acts on a track to reduce frequencies in the sound to change timbre. It can make the track sound 'muffled' or 'bright'. Add these lines of code to change track 3 from measures 9 to 15:

```

# Add Filter to track 3
setEffect(3, FILTER, FILTER_FREQ, 20000, 1, 20000, 9)
setEffect(3, FILTER, FILTER_FREQ, 20, 9, 20000, 13)

finish()
```

20. There are many other effects. Other examples are shown below:

## Selected List of Effects and Parameters

| Effect | Parameter | Min to Max Values |
|---|---|---|
| VOLUME | GAIN | -60 to 12 |
| DELAY | DELAY_TIME | 0 to 300.0 |
| CHORUS | CHORUS_LENGTH | 1.0 to 15.0 |
| CHORUS | CHORUS_NUMVOICES | 1.0 to 8.0 |
| DISTORTION | DISTO_GAIN | 0.0 to 50.0 |
| FILTER | FILTER_FREQ | 20.0 to 20000.0 |
| PAN | LEFT_RIGHT | -100 to 100 (Left to Right) |

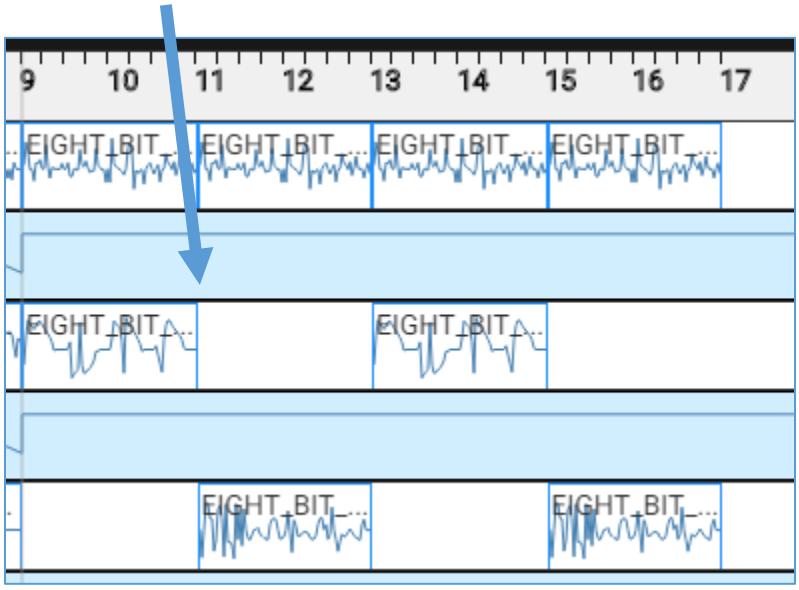
Complete Effect list at:
http://earsketch.gatech.edu/category/learning/reference/every-effect-explained

**21. To complete this assignment you must do the following: (10 points each)**

A. Add a Section C from measures 17 to 25. Select at least 3 more sounds (you can use more!). Define variables and then use fitMedia() to assign the music samples to tracks and measures between 17 and 25.

B. Use decimal numbers such as 9.5 or 12.25 to start and end measures in fitMedia(). Use at least two examples of starting and ending clips with decimal values.

C. Vary the length of clips within sections. Try having one sound such as lead play for 2 measures and then another sound take over for the next 2 measures. The music would show as gaps like this: You must have at least 8 measures where music 'takes turns'.




D. Use at least 3 different effects in your mix. Use the chart from step 20 as a guide.

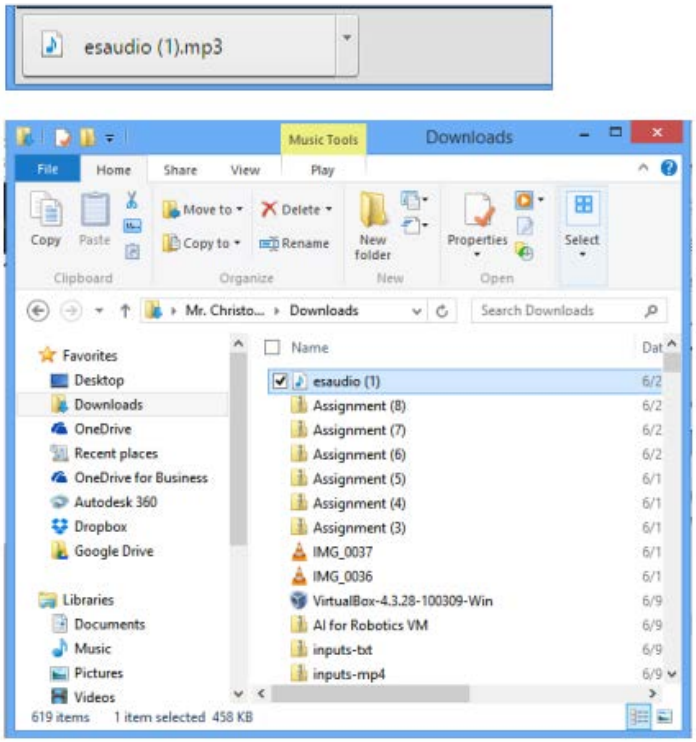
E. It must sound good! Select music clips that work well together.

**22. To turn in the project you must:**

A. Copy and paste the code to your EarSketch page on your Google Site

B. Take a screenshot of the EarSketch website with your code and the music mixer section and place on the EarSketch page of your Google Site.

3) The music will appear in your downloads folder as ‘esaudio.mp3’




4) Move this file to your Computational Media folder in the EarSketch folder.

5) Upload this .mp3 file to your Google Site using the “Add Files” function.