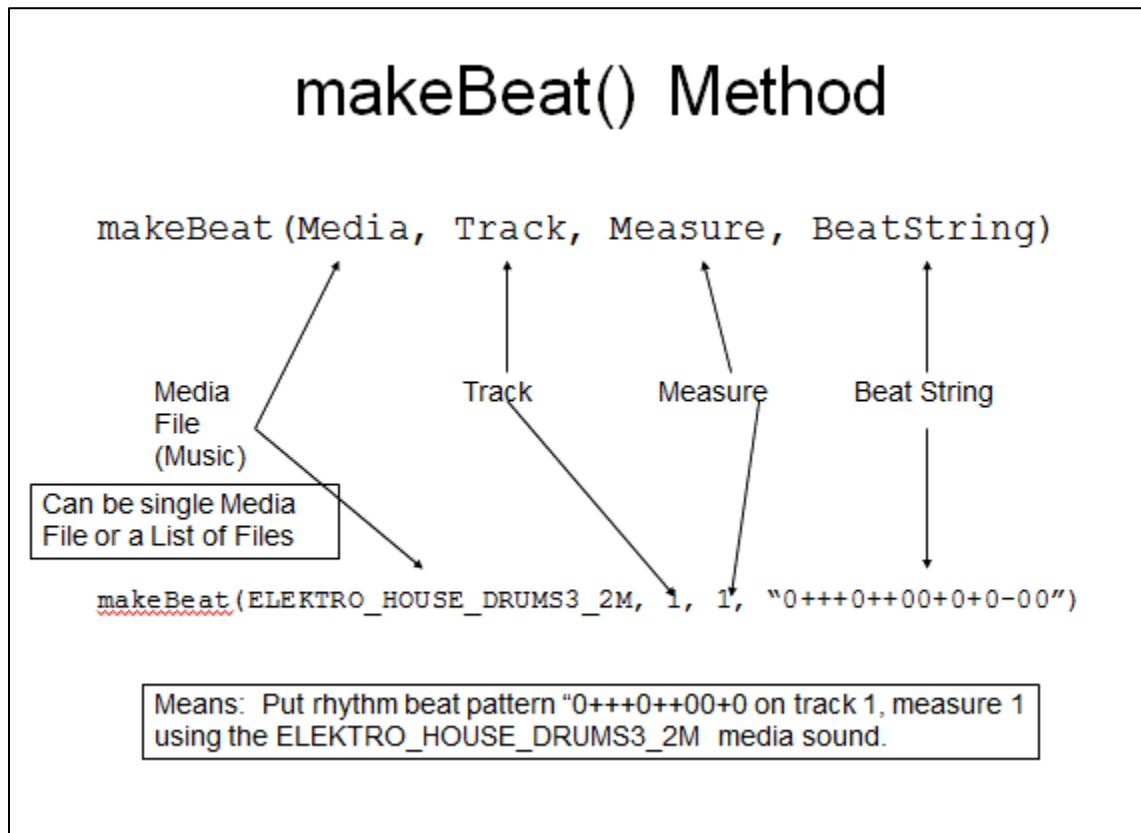


## EarSketch 2 MakeBeat and For Loop Exercise:

### Using makeBeat() to create your own rhythmic patterns.

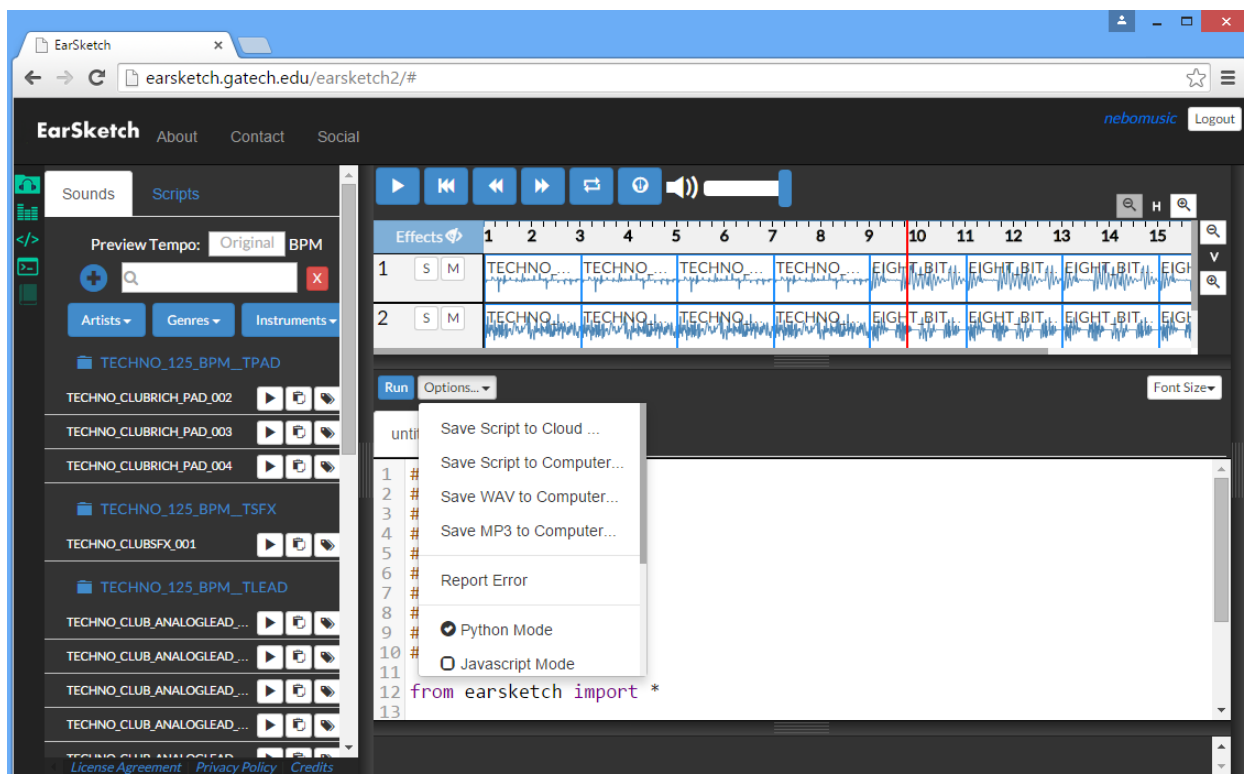
In composing or remixing, artists take “slices” of beats and combine them in rhythmic patterns to create interest and drive.

The makeBeat() function allows the programmer to select a media sound (or list of sounds) and slice them with a string. The usage is as follows:

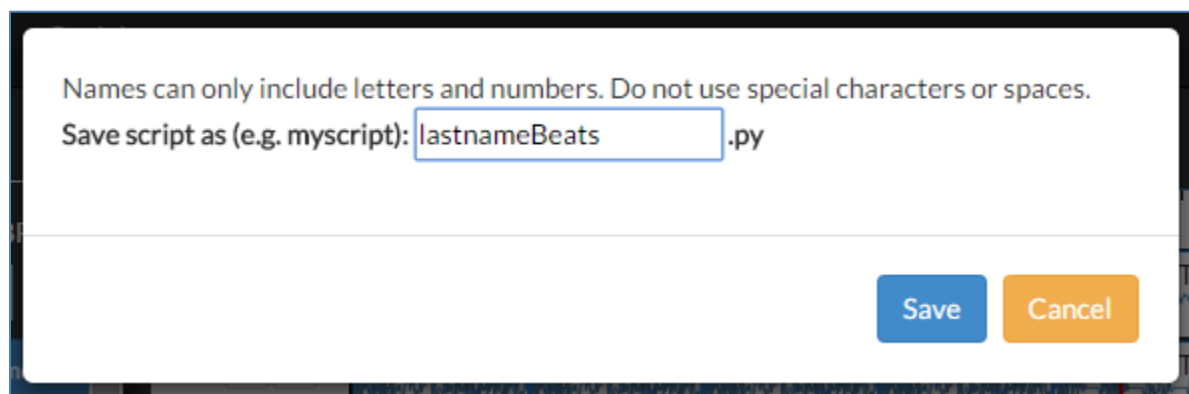


## Directions for Make Beat Practice:

1. Go to the EarSketch Website: (<http://earskech.gatech.edu/earskech2/> )
2. Log in with your username and password.
3. Select “Options -> Save Script to Cloud”



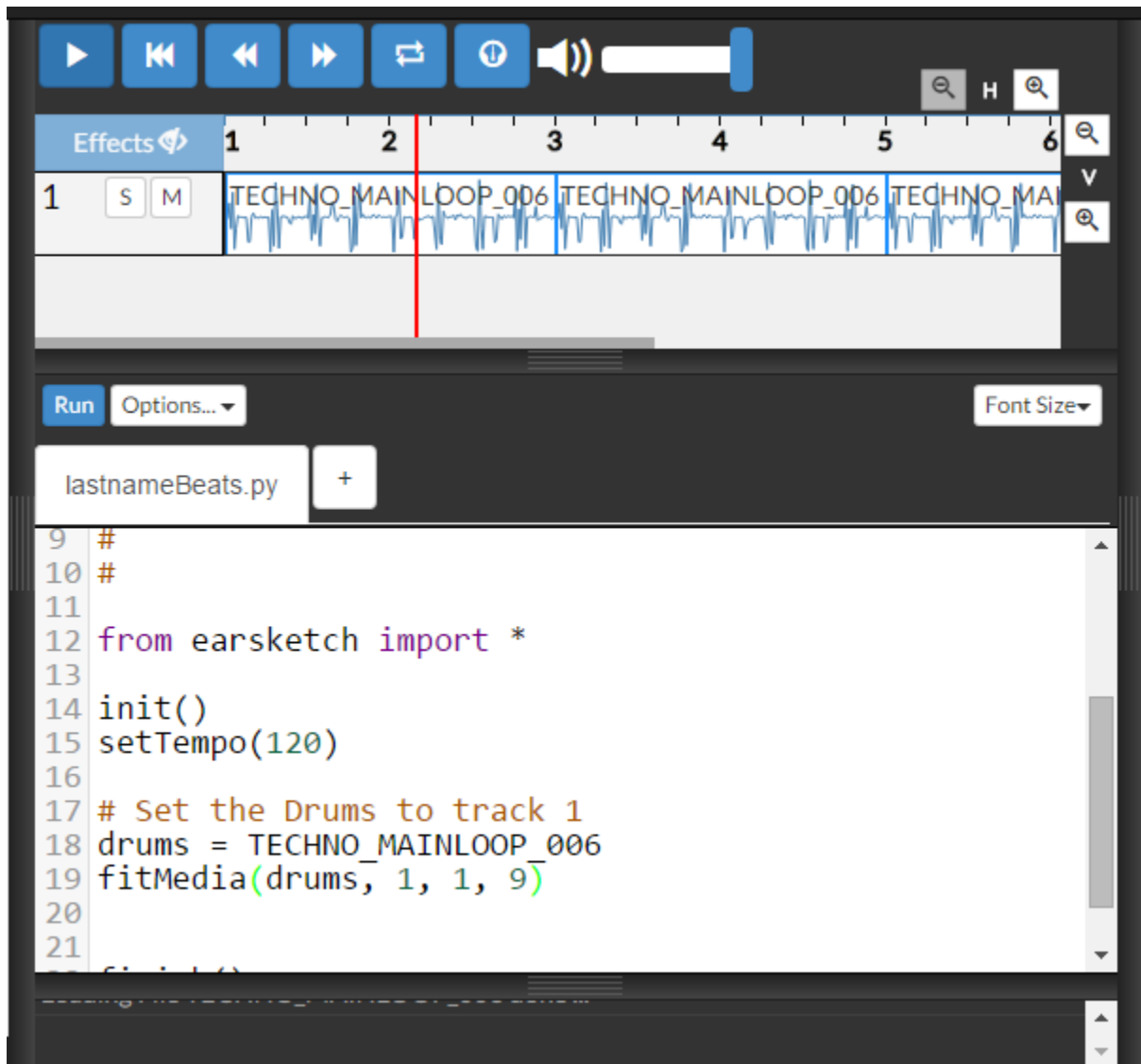
4. Name the script “LastnameBeats” Click ‘Save’



5. Type the following code to add a drum sound to track 1. You may choose your own instruments.

```
11
12 from earsketch import *
13
14 init()
15 setTempo(120)
16
17 # Set the Drums to track 1
18 drums = TECHNO_MAINLOOP_006
19 fitMedia(drums, 1, 1, 9)
20
21
22 finish()
23
```

6. Click 'Run' and then the Play icon to listen to your track.



The image shows a screenshot of a digital audio workstation (DAW) interface. At the top, there is a transport control bar with buttons for play, stop, previous, next, and a volume slider. Below this is a track labeled 'Effects' with a volume knob. The main track area shows a track named 'TECHNO\_MAINLOOP\_006' with a blue waveform. A red vertical line indicates the current playback position. Below the track area, there is a 'Run' button and an 'Options...' dropdown menu. A file browser shows 'lastnameBeats.py' with a '+' button. The code editor displays the following Python code:

```
9 #
10 #
11
12 from earsketch import *
13
14 init()
15 setTempo(120)
16
17 # Set the Drums to track 1
18 drums = TECHNO_MAINLOOP_006
19 fitMedia(drums, 1, 1, 9)
20
21
```

## 7. We will now use the makeBeat() function to create rhythm patterns.

Beat patterns in EarSketch use strings to refer to subbeats of a measure in order to place clips at specific places in the measure as well as define the clip's play length, all at once. Here's an example of a beat pattern using a string:

```
beat = "0-00-00-0+++0+0+"
```

Every character stands for one sixteenth note subbeat of a measure. Minus signs are rests, meaning that there's nothing being played, and plus signs extend the audio clip into the next sixteenth-note subbeat. This string is telling Reaper that it should:

0 play the clip for one sixteenth of a measure

- rest for one sixteenth

0 play for one sixteenth

0 play for one sixteenth again

- rest for one sixteenth

0 play for one sixteenth

0 play for one sixteenth again

- rest for one sixteenth

0+++ play the clip for four sixteenths (or one quarter)

0+ play for two sixteenths (or one eighth)

0+ play for two sixteenths (or one eighth)

8. Go back to the Code Editor. We will now add code to create beat pattern. Choose a new sound and add code to create the beat pattern on measure 1 of track 2.

```
11
12 from earsketch import *
13
14 init()
15 setTempo(120)
16
17 # Set the Drums to track 1
18 drums = TECHNO_MAINLOOP_006
19 fitMedia(drums, 1, 1, 9)
20
21 # Make Beats on Track 2
22 fillDrum = ELECTRO_DRUM_MAIN_BEAT_003
23 beat1 = "0+++0+++0-000+00"
24
25 makeBeat(fillDrum, 2, 1, beat1)
26
27
28 finish()
29
```

9. Click 'Run' and then go to Workstation to listen to the music.

The screenshot displays a DAW interface with a transport control bar at the top, including play, stop, and volume controls. Below the transport bar, two tracks are visible: Track 1, labeled 'TECHNO\_MAINLOOP\_006', and Track 2, labeled 'TECHNO\_MA...'. Both tracks show audio waveforms. A red vertical line indicates the current playback position. At the bottom, a code editor window is open, displaying Python code for the 'lastnameBeats.py' file. The code includes comments and function calls like 'init()', 'setTempo(120)', and 'fitMedia()'. The 'Run' button is highlighted in the code editor's toolbar.

```
9 #
10 #
11
12 from earsketch import *
13
14 init()
15 setTempo(120)
16
17 # Set the Drums to track 1
18 drums = TECHNO_MAINLOOP_006
19 fitMedia(drums, 1, 1, 9)
```

10. We have one measure of rhythm on track 2. Now we want multiple measures of rhythm. To do this, we will use a 'for loop'.

The "for loop" allows the programmer to call a section of code repeatedly within a range of values. The range() function will return integer values depending on the arguments.

**For example:**

```
fillDrum = HIP_HOP_SYNTHDRUMS2_2M
beat = "0+++0+++0-000+00"

for measure in range(1, 9, 2):
    makeBeat(fillDrum, 1, measure, beat)
```

**Means:**

```
fillDrum = HIP_HOP_SYNTHDRUMS2_2M
beat = "0+++0+++0-000+00"

for measure in range(1, 9, 2):
    makeBeat(fillDrum, 1, measure, beat)
```

measure is the "index variable" = assigned values from the range()

(1, 9, 2) means start counting at 1, end before 9 [meaning 8] and skip count by 2:

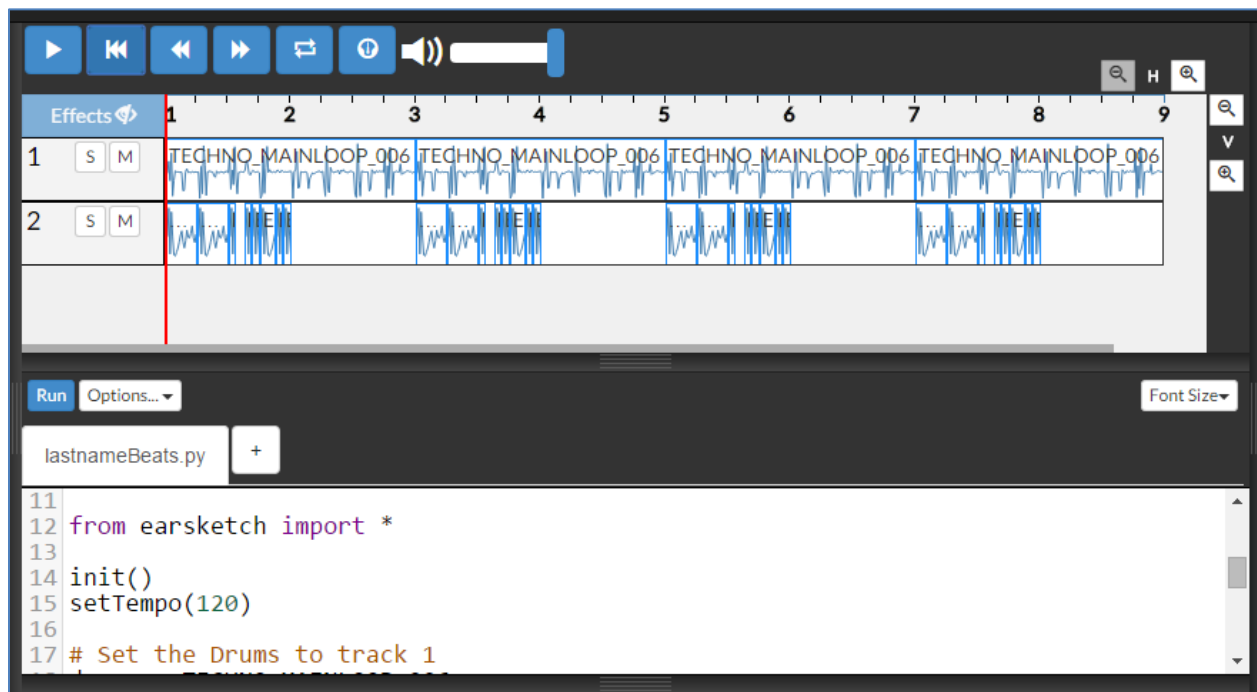
(1, 3, 5, 7)



11. In your code, add and modify following lines to build the for loop.

```
11
12 from earsketch import *
13
14 init()
15 setTempo(120)
16
17 # Set the Drums to track 1
18 drums = TECHNO_MAINLOOP_006
19 fitMedia(drums, 1, 1, 9)
20
21 # Make Beats on Track 2
22 fillDrum = ELECTRO_DRUM_MAIN_BEAT_003
23 beat1 = "0+++0+++0-000+00"
24
25 # for loop to put beat patterns on track 2
26 for measure in range(1, 9, 2):
27     makeBeat(fillDrum, 2, measure, beat1)
28
29
30 finish()
```

12. Click 'Run' and listen!



The screenshot displays the Earsketch software interface. At the top, there is a playback control bar with buttons for play, stop, previous, next, and a volume slider. Below this is a timeline with markers from 1 to 9. Two tracks are visible: Track 1 contains a sample named 'TECHNO\_MAINLOOP\_006' repeated across the timeline, and Track 2 contains a sample named 'ELECTRO\_DRUM\_MAIN\_BEAT\_003' repeated across the timeline. At the bottom, there is a code editor window with a 'Run' button and an 'Options...' dropdown. The code editor shows the following code:

```
11
12 from earsketch import *
13
14 init()
15 setTempo(120)
16
17 # Set the Drums to track 1
```

13. To finish this lesson, you must:
- a. Place music according to the following requirements using 4 Musical Samples
    - 1) Drums on Track 1 using fitMedia from measures 1 to 9
    - 2) makeBeat on Track 2 on measures 1, 3, 5, 7: You choose the sound
    - 3) makeBeat on Track 3 on measures 2, 4, 6, 8: You choose a different sound
    - 4) makeBeat on Track 4 on measure 1, 5: You choose a different sound
  - b. There must be at least 9 measures of music. (This example will be short). You can have more measures if desired.
  - c. Copy and paste the script into your Google site on your EarSketch page.
  - d. Place a Screenshot of your DAW with sound waves (Tracks and Measures) on your Google site EarSketch page.