Going Further With EarSketch!
Goals for Today

- Recap yesterday
- Functions (reusable sauces)
- Live coding demo
- Team projects
Yesterday’s Recap

Turn and tell someone 2 positive things and 1 muddy point you encountered working with EarSketch, and two opportunities for improvement. (30 seconds)

Share out as a large group...
Coding
Repetition

Looping Example 1:

Your favorite Song...which also happens to illustrate a few loops!
Coding Repetition

Looping Example 2:

Here is another *song*... does it have loops?
Looping Code Comparison

```
drum1 = ELECTRO_DRUM_MAIN_BEAT_008
drum2 = ELECTRO_DRUM_MAIN_BEAT_007

fitMedia(drum1, 1, 1, 1.5)
fitMedia(drum2, 1, 1.5, 2)
fitMedia(drum1, 1, 2, 2.5)
fitMedia(drum2, 1, 2.5, 3)
fitMedia(drum1, 1, 3, 3.5)
fitMedia(drum2, 1, 3.5, 4)
...
fitMedia(drum1, 8, 8.5)
fitMedia(drum2, 8.5, 9)
```
For Loop
(Control Flow Structure)

- **Loop Counter Variable** (Note: could be any variable name)
- **Range Function** (Note: goes through loop from 1 to 8)
- **Colon** is used in Python to indicate indent of loop body
- **Loop Body** (indented)
- **Not in loop** (Not indented)
Functions with DJ Marissa

Go to Earsketch tutorial #10.
Live Coding Concert

by

DJ Amit
Application to the Classroom:

1 minute mini-discussion:

How might this program be used in different content areas? (Math, Science, Language Arts, Art, PE, Science)

Share out...

In small groups of 2 or 3:

Decide on one of these contexts, and design a quick culminating activity, incorporating EarSketch.
Making Custom Beats: makeBeat

`makeBeat()` allows us to compose music note by note instead of at the measure level, perfect for drum beats. This approach is often called **step sequencing** in music production.

Strings

We need to understand the `string` data type to use `makeBeat()`. In Python, a string is a series of characters with single or double quotation marks around it, like "Hello World!" or 'This is a test sentence'. Strings are often used in programming to represent non-numerical data such as words, but can include numbers. For example, the string "123 Ferst Dr." could represent an address, using numbers, spaces, letters, and punctuation. Like numbers (and other types of data), strings can be assigned to variables: `address = "123 Ferst Dr."`

Note that 5 and "5" mean very different things to the computer: 5 is a number it can perform math on, while math operations won’t work with the string "5". For example, 5 + 6 is evaluated as 11, while "5" + "6" is evaluated as "56".
makeBeat

Like our other functions, makeBeat() also takes four arguments:

1. **Clip Name**
2. **Track Number**
3. **Measure Number**: makeBeat() only requires a starting measure; the string length determines the end measure.
4. **Beat String**

Example:

```python
for measure in range(1, 4):
    makeBeat(synth, 1, measure, beat1)
    makeBeat(cymbal, 2, measure, beat2)
```
**String Concatenation**

Concatenation is a means to link strings together. In doing so, a new string is formed. For example, concatenating the strings "hello" and "world" yields "helloworld". Strings are concatenated with the + symbol, like in the following example. To view the new string we use the print statement, which prints the string to the console.

Example code:

```
#Setup
from earsketch import *
init()

#Concatenation
stringA = "Computer"
stringB = "Science!"
newString = stringA + " " + stringB  # concatenating stringA and stringB with a space in between
print(newString)

#Finish
finish()
```