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Lesson 6: Repeat and reuse

With functions

Learning objectives

Know how to develop custom functions to reduce repeating code

Understand the difference between arguments and parameters

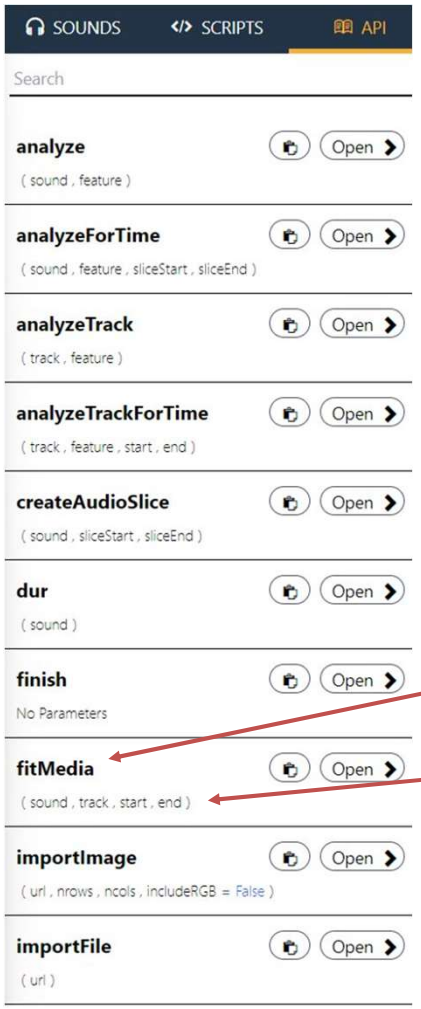
Code your own custom function with parameters

Call a function multiple times

Share your music and identify the message in the music of others

Functions

- You've been using functions for some time, but these are functions that have been coded by developers.
- There are many other functions that you can call on in the API section of EarSketch.
- You can see what arguments are needed for each function.



Function name

List of required argumen

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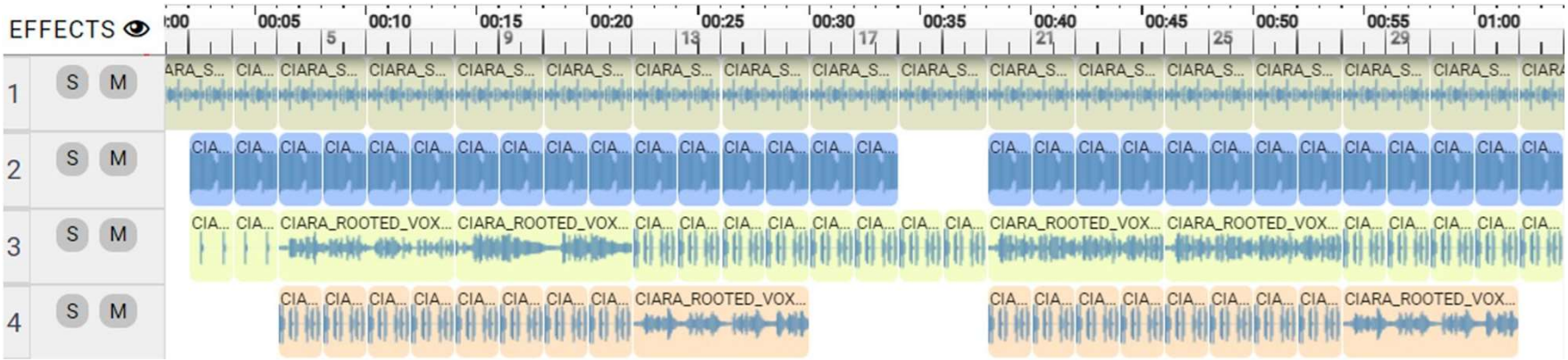
Finding repeating patterns



Activity (pairs)

Can you identify in this visualization:

- The intro
- Verse 1 and Verse 2
- The Chorus

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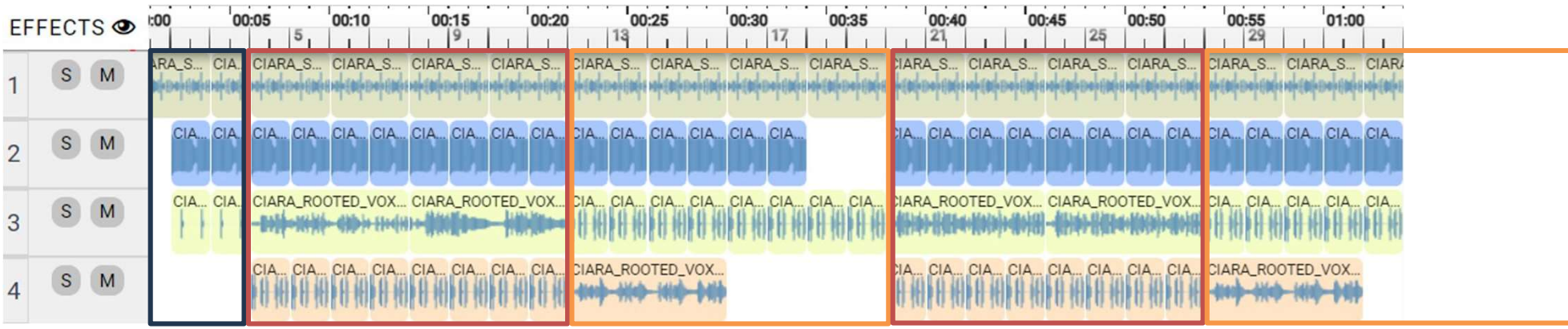
Finding repeating patterns



Intro

Verse 1 and 2

Chorus

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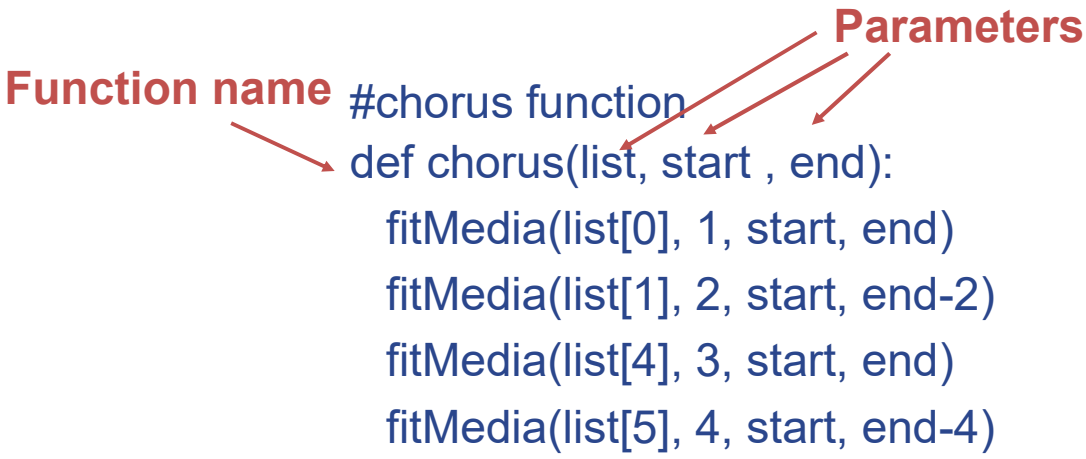
Defining your own function

```
#chorus
fitMedia(ciara[0], 1, 12, 20)
fitMedia(ciara[1], 2, 12, 18)
fitMedia(ciara[4], 3, 12, 20)
fitMedia(ciara[5], 4, 12, 16)
```



- Previously you've been *calling* a function, which someone else has defined above, a new function has been created and has been defined as **chorus()**
- The function has three **expects to receive 3 arguments**
- When defining the function these are known as **parameters**

Calling a function

It's important to define the function first so it exists and then call it later in the code.

Here, we are providing the function chorus() with three items – the sound, start measure and end measure.

```
ciara_drum = CIARA_SET_DRUMBEAT_1 ciara_bass =
CIARA_SET_BASSLINE_1
ciara_vox = CIARA_ROOTED_VOX_VERSE_1
ciara_perc = CIARA_SET_PERC_CLAP_1 ciara_kick =
CIARA_SET_KICK_1
ciara_vox2 = CIARA_ROOTED_VOX_CHORUS
ciara_vox3 = CIARA_ROOTED_VOX_PRECHORUS_1
ciara = [ciara_drum, ciara_bass, ciara_vox, ciara_perc,
    ciara_kick, ciara_vox2, ciara_vox3]
chorus(ciara, 12,
20)
```

Arguments

Parameters

```
def chorus(list, start , end):
  fitMedia(list[0], 1, start, end)
  fitMedia(list[1], 2, start, end-2)
  fitMedia(list[4], 3, start, end)
  fitMedia(list[5], 4, start, end-4)
```

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Creating your first function

```
def chorus(list, start , end):
    fitMedia(list[0], 1, start, end)
    fitMedia(list[1], 2, start, end-2)
    fitMedia(list[4], 3, start, end)
    fitMedia(list[5], 4, start, end-4)
```

Activity

Using this guide, create and call your own chorus() function.

Can you investigate what end-2 and end-4 does?

chorus(ciara, 12, 20)

Calling a function – calling the chorus twice

```
ciara_drum = CIARA_SET_DRUMBEAT_1
ciara_bass = CIARA_SET_BASSLINE_1
ciara_vox = CIARA_ROOTED_VOX_VERSE_1
ciara_perc = CIARA_SET_PERC_CLAP_1
ciara_kick = CIARA_SET_KICK_1
ciara_vox2 = CIARA_ROOTED_VOX_CHORUS
ciara_vox3 = CIARA_ROOTED_VOX_PRECHORUS_1
ciara_vox4 = CIARA_ROOTED_VOX_VERSE_2
ciara = [ciara_drum, ciara_bass, ciara_vox, ciara_perc,
ciara_kick, ciara_vox2, ciara_vox3, ciara_vox4]

def chorus(list,start,end):
  fitMedia(list[0], 1, start, end)
  fitMedia(list[1], 2, start, end-2)
  fitMedia(list[4], 3, start, end)
  fitMedia(list[5], 4, start, end-4)

#intro
fitMedia(ciara[0], 1, 1, 4)
fitMedia(ciara[1], 2, 2, 4)
fitMedia(ciara[3], 3, 2, 4)
```

```
#verse 1
fitMedia(ciara[0], 1, 4, 12)
fitMedia(ciara[1], 2, 4, 12)
fitMedia(ciara[2], 3, 4, 8)
fitMedia(ciara[6], 3, 8, 12)
fitMedia(ciara[4], 4, 4, 12)

#chorus
chorus(ciara, 12, 20)
```

Activity (pairs)

Discuss why it might not be suitable to use a function for repeating a verse twice?

```
#verse2
fitMedia(ciara[0], 1, 20, 28)
fitMedia(ciara[1], 2, 20, 28)
fitMedia(ciara[2], 3, 20, 24)
fitMedia(ciara[7], 3, 20, 28)
fitMedia(ciara[4], 4, 20, 28)

#chorus
chorus(ciara, 28, 36)
```

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Example solution

```
ciara_drum = CIARA_SET_DRUMBEAT_1
ciara_bass = CIARA_SET_BASSLINE_1
ciara_vox = CIARA_ROOTED_VOX_VERSE_1
ciara_perc = CIARA_SET_PERC_CLAP_1
ciara_kick = CIARA_SET_KICK_1
ciara_vox2 = CIARA_ROOTED_VOX_CHORUS
ciara_vox3 = CIARA_ROOTED_VOX_PRECHORUS_1
ciara_vox4 = CIARA_ROOTED_VOX_VERSE_2
ciara = [ciara_drum, ciara_bass, ciara_vox, ciara_perc, ciara_kick,
ciara_vox2, ciara_vox3, ciara_vox4]

def chorus(list,start,end):
  fitMedia(list[0], 1, start, end)
  fitMedia(list[1], 2, start, end-2)
  fitMedia(list[4], 3, start, end)
  fitMedia(list[5], 4, start, end-4)

#intro
fitMedia(ciara[0], 1, 1, 4)
fitMedia(ciara[1], 2, 2, 4)
fitMedia(ciara[3], 3, 2, 4)
```

```
#verse 1
fitMedia(ciara[0], 1, 4, 12)
fitMedia(ciara[1], 2, 4, 12)
fitMedia(ciara[2], 3, 4, 8)
fitMedia(ciara[6], 3, 8, 12)
fitMedia(ciara[4], 4, 4, 12)

#chorus
chorus(ciara, 12, 20)
```

```
#verse2
fitMedia(ciara[0], 1, 20, 28)
fitMedia(ciara[1], 2, 20, 28)
fitMedia(ciara[2], 3, 20, 24)
fitMedia(ciara[7], 3, 20, 28)
fitMedia(ciara[4], 4, 20, 28)

#chorus
chorus(ciara, 28, 36)
```

www.tiny.cc/yvipl6solution

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Share your message in the music

Using the share button, share your music with your peers.

Were they able to decode the message in your music?

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