



Welcome!
Please sign in :)

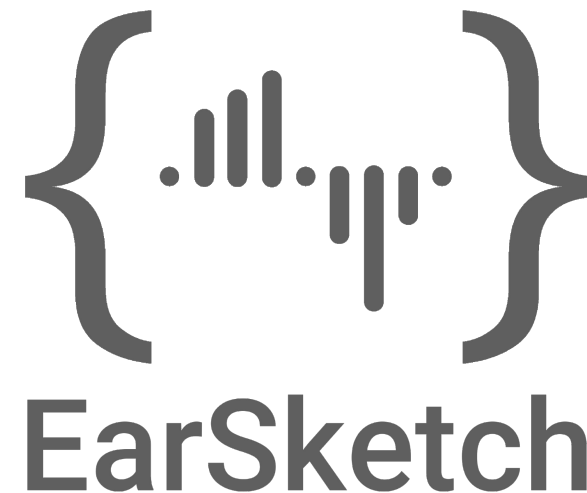




@EarSketch
@HipHopHigherEd
#NAFNEXT

EARSKETCH:

Make beats. Learn Code. Inspire Students.



CODEJAM:

Make Beats. Learn Code. Inspire Students.



Love Park

Web Developer
CEISMCM at Georgia Tech
love.park@ceismc.gatech.edu



Nisha Detchprohm

Research Engineer
CEISMCM at Georgia Tech
nisha.detchprohm@ceismc.gatech.edu

INTRODUCTIONS:



Who's in the room?



- Grade level & Position & State
- If you could only listen to one song for the rest of your life, which song would you choose?
- What about EarSketch are you excited to learn?

AGENDA:

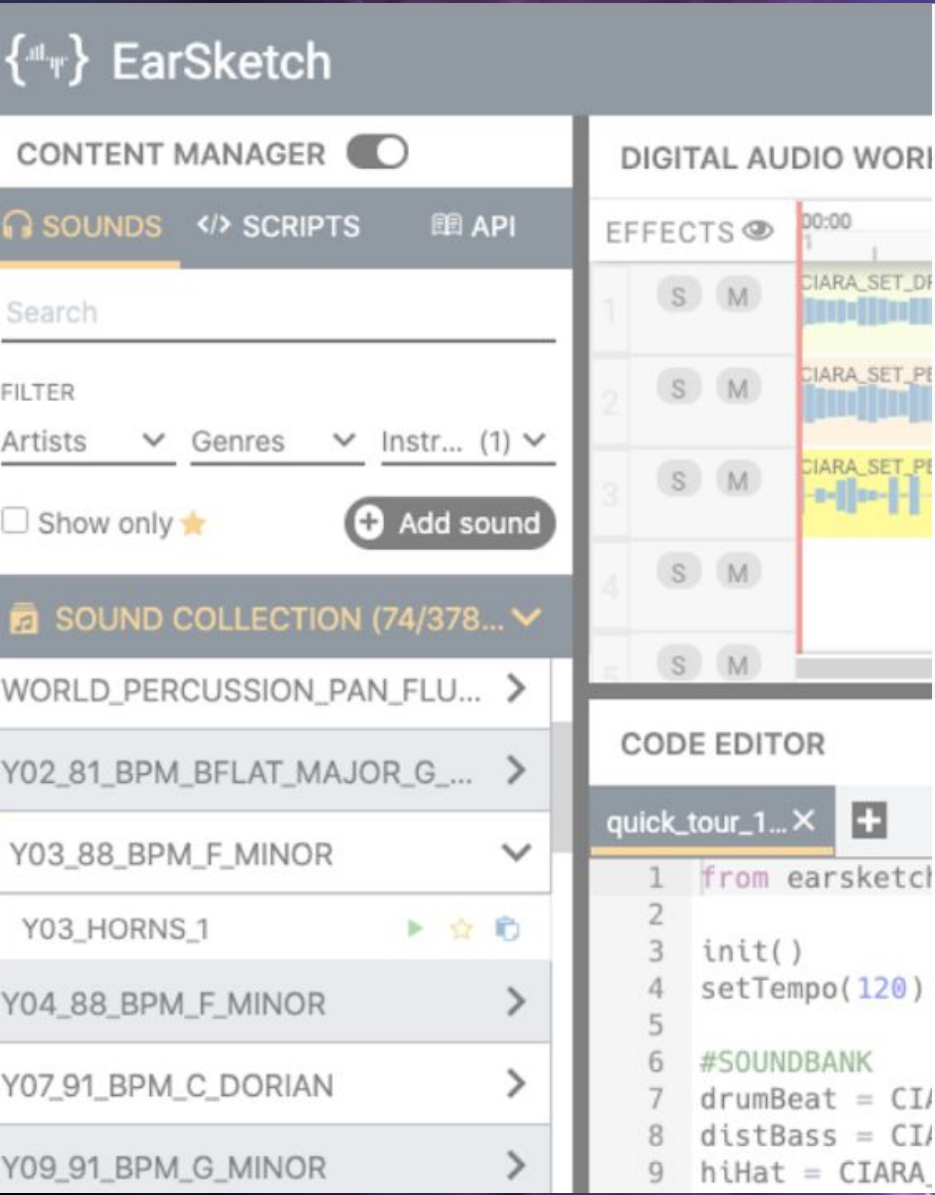
What will be covered in today's session?



- Introduction to EarSketch
- EarSketch Implementation
- Navigating EarSketch
- Teacher and Student Competition



Introduction to EarSketch



WHAT IS EARSKETCH?

Code-to-compose platform, where students can learn computer science by remixing sound stems

Created at **Georgia Tech**

ears sketch.gatech.edu

INTRODUCTION TO EARSKETCH



Remix samples using Python or JavaScript code editor



Translated into 6 languages: Spanish, French, Hebrew, Arabic, Ojibwe and Inuktitut



4000+ loop sound library (or upload and use your own)



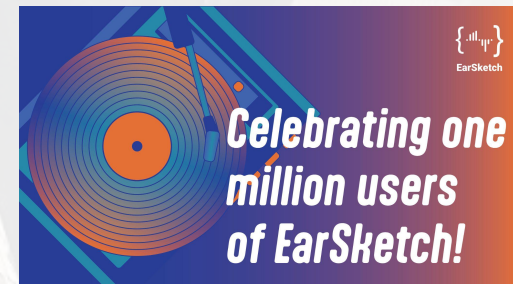
Free



Multi-track digital audio workstation

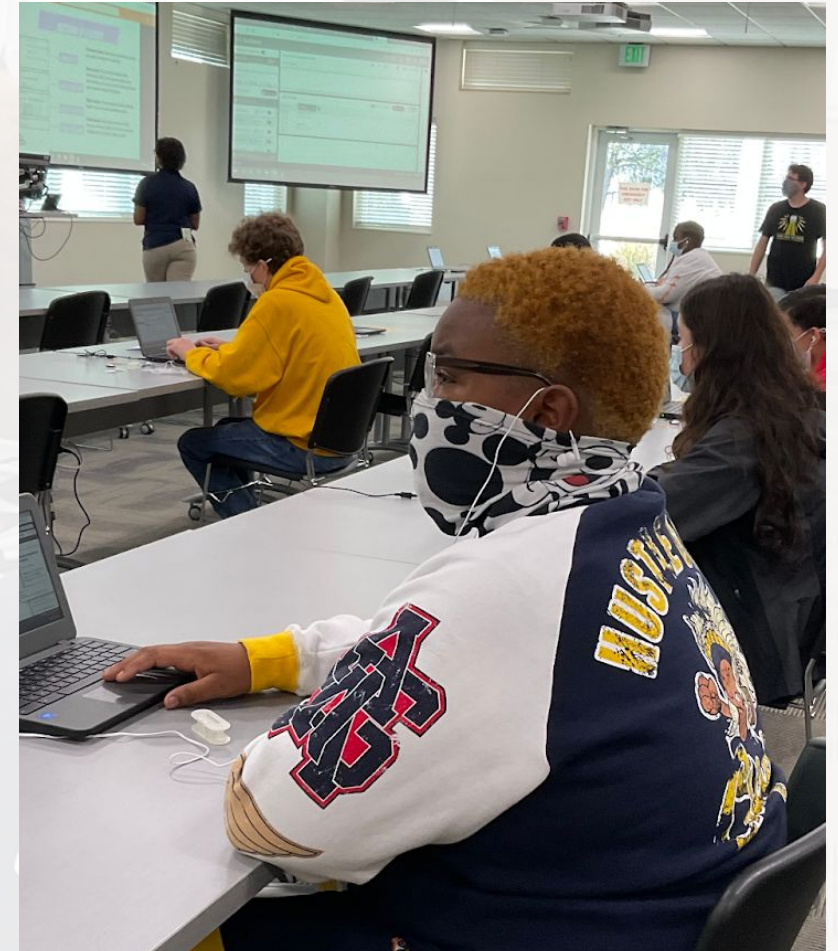


Web-based with no software downloads
Runs in Chrome, Safari, and Firefox



MUSIC + CODE

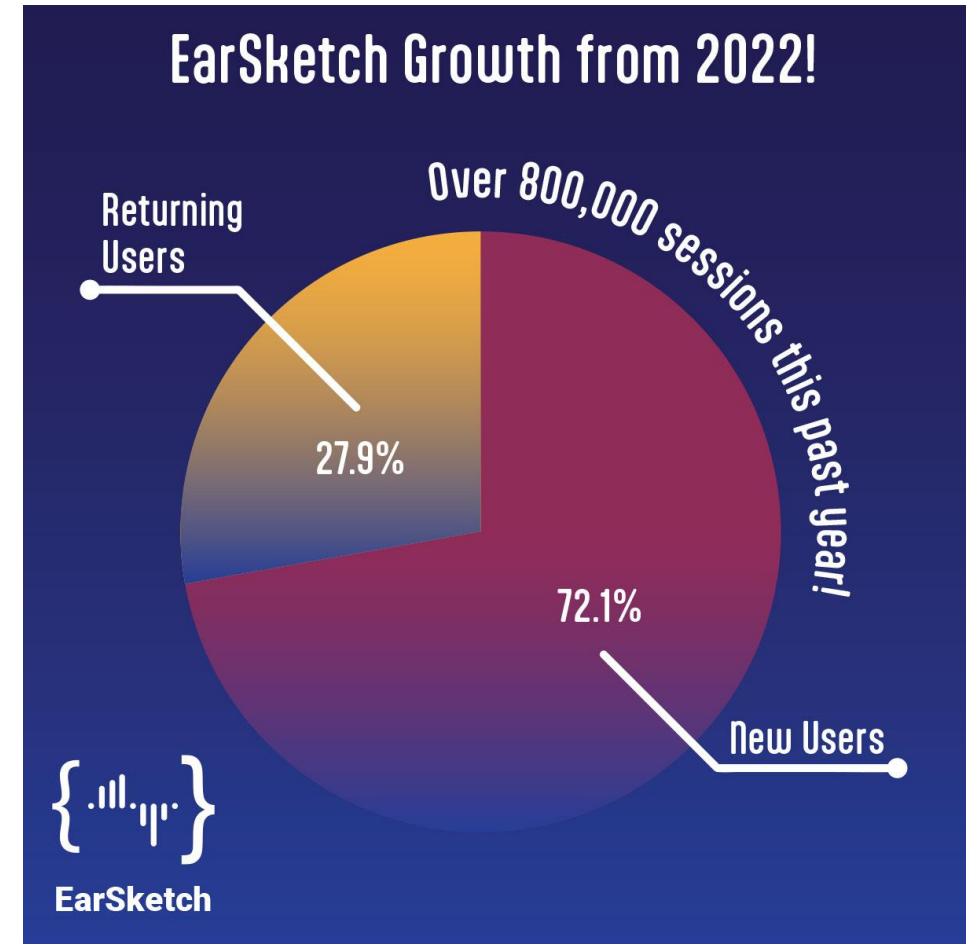
- ✓ Music and computing have similar computational constructs: *looping, sequence, conditionals*
- ✓ Authentic application of programming and career connections
- ✓ Building on student interest and passions to engage all students in computing education
- ✓ Increases intention to persist in computing especially among women and underrepresented minorities



IMPACT

97 Countries serviced in 2022, including the U.S. and U.S. Territories

1 million users reached in 2022





"Through my journey in learning computer science, and coming across this competition. I learned that even if I can make it this far, others like me could do the same. There are intelligent people here who I know for sure can succeed in this field but they sell themselves short because they do not believe in themselves. **One day, I plan to change that by spreading the message that Computer Science can truly lead to equity. Anyone can learn it, and just as many can choose to create wonderful things that advance the world as we know it. I believe it can really level the playing field and make it so that anyone who has the opportunity to can succeed with it.** The world needs change, and the more humans of any kind we have in this field, the faster our diverse futuristic dreams can manifest together and become reality.



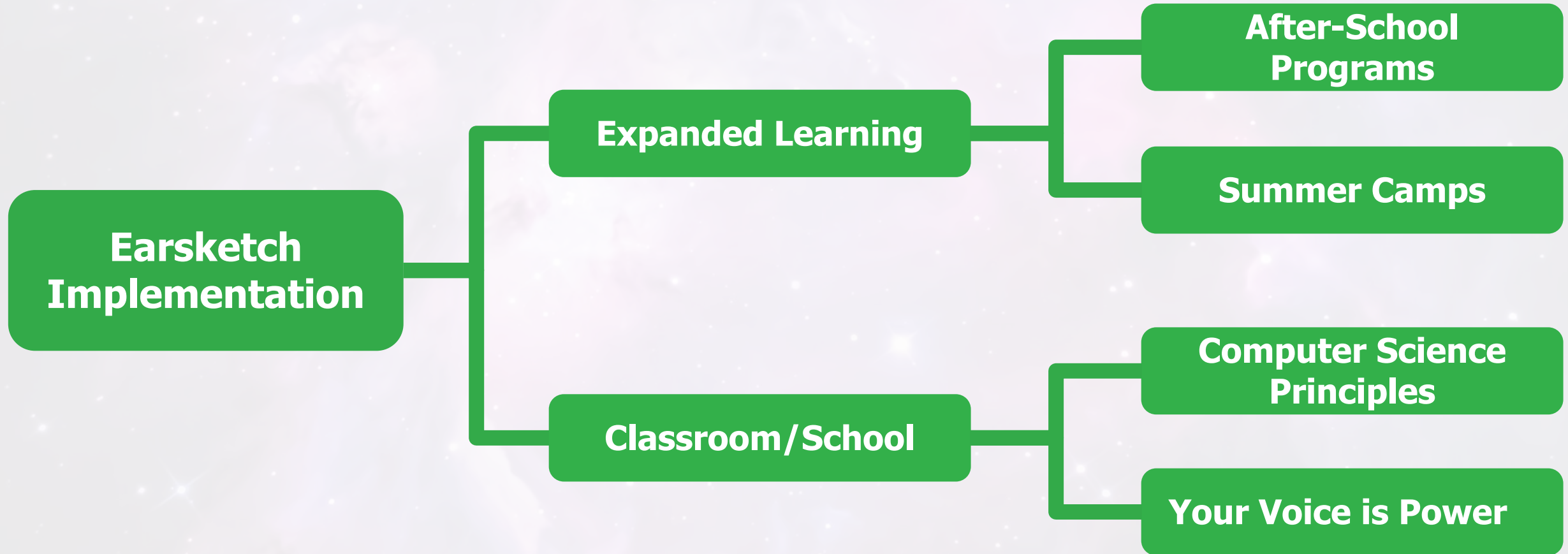
Listen to their song!

**- Paul C.
Simon A. Sanchez High School in Yigo, Guam
2022 Grand Prize Winner**



EarSketch Implementation

IMPLEMENTATION



EXPANDED LEARNING

Expanded Learning

After-School Programs

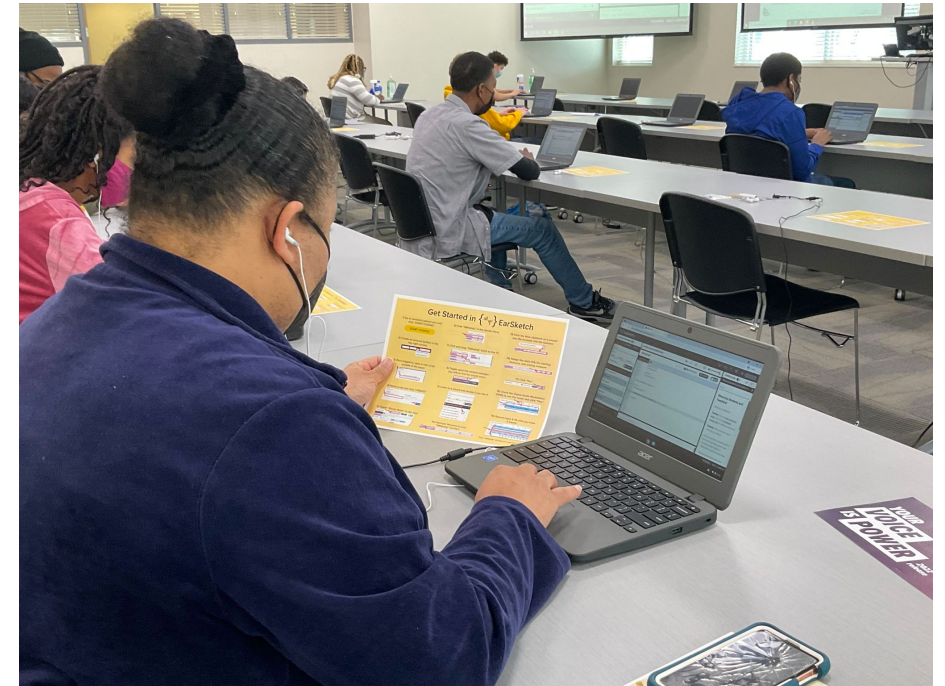
Summer Camps

Semester Long After-School Clubs - Remezcla

- Students become “code DJ’s” and work towards coding a song on EarSketch
- Badges at club check-points

After School / Saturday - Hackathons

- Zoom and F2F sessions
- Three -five hours of coding on EarSketch



EXPANDED LEARNING

Expanded Learning

After-School Programs

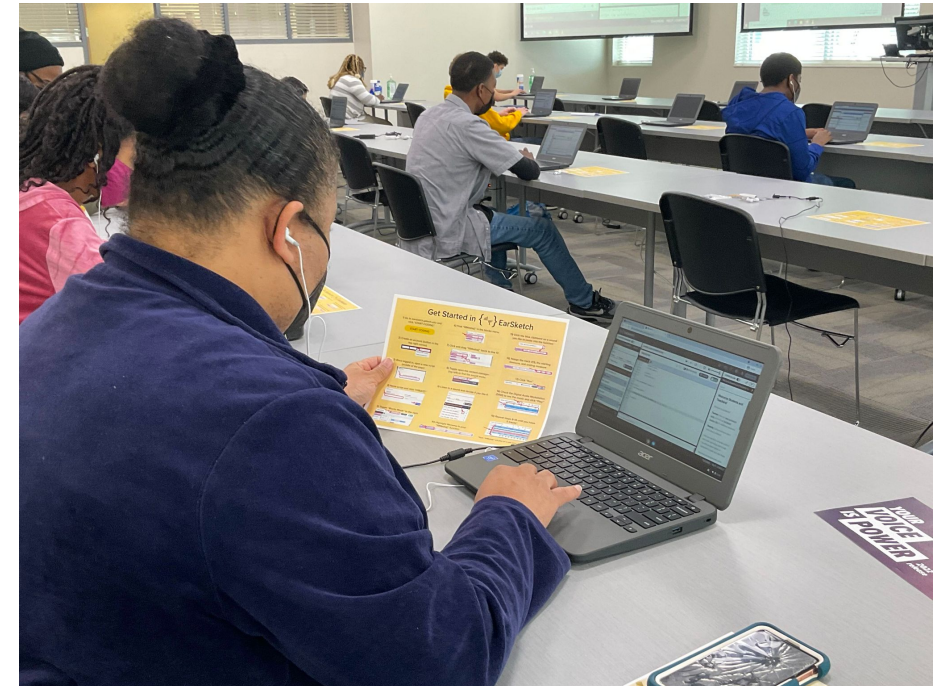
Summer Camps

Summer Camps

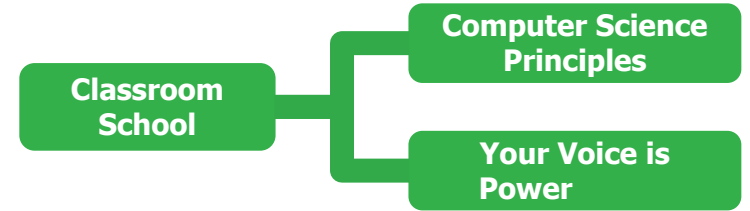
- High School and Middle School
- Focus on coding in Python and music production

Monthly Zoom EarSketch Jams

- Online with Black Girls Code



CLASSROOM LEARNING



Elementary	Middle School			High School			
5	6	7	8	9	10	11	12

Computer Science Principles (Regular and AP) >

Your Voice is Power >

Project STEM: Introduction to Computer Science >

Hour of Code >

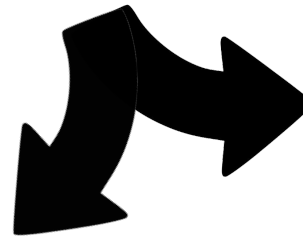
CAPACITY: Culturally Authentic Practice to Advance Computational Thinking in Youth >

CLASSROOM CURRICULUM

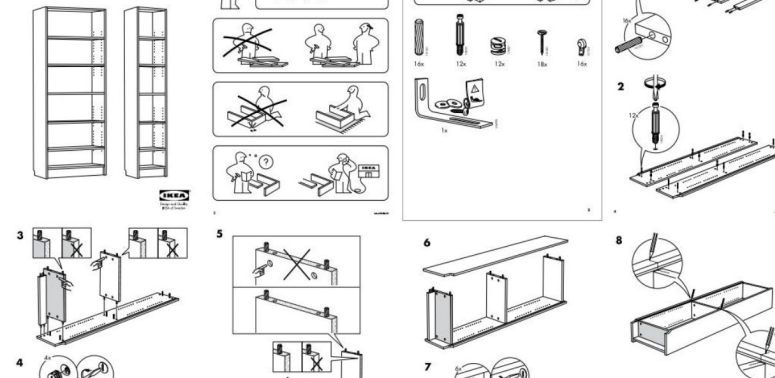
What is code?



Is this code?



BILLY



Step 1

Preheat the oven to 375 degrees F (190 degrees C).

Step 2

Stir flour, baking soda, and baking powder together in a small bowl.

Step 3

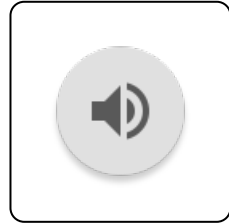
Beat sugar and butter together in a large bowl with an electric mixer until smooth. Beat in egg and vanilla. Gradually blend in flour mixture. Roll dough into walnut-sized balls and place 2 inches apart onto ungreased baking sheets.

Step 4

Bake in the preheated oven until edges are golden, 8 to 10 minutes. Cool on the baking sheets briefly before removing to a wire rack to cool completely.

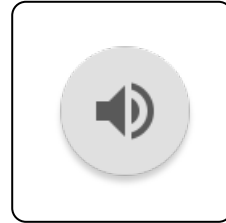
CLASSROOM CURRICULUM

Can you tell which artists are singing?



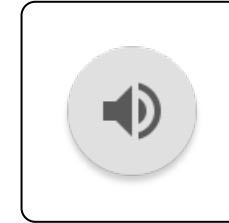
Artist A

Ciara
"Melanin"



Artist B

Common
"God is Love"



Artist C

Pharrell Williams
"Entrepreneur"

CLASSROOM CURRICULUM

Common Errors

Misspelling

feetMedia()

Case Sensitivity

FitMedia()

Parentheses

fitMedia(

Script Setup

Punctuation

, or ()

Table of Contents

Welcome Students and Teachers!

- Unit 1: Compose and Add Beats
- Unit 2: Loops, Effects, Mixing
- Unit 3: Structure your Songs

▼ Effects, Errors, and EarSketch Functions

- 10. Every Effect Explained in Detail
- 11. Every Error Explained in Detail

12. The EarSketch API

CLASSROOM CURRICULUM

Practice



Find the 5 errors in this code.

```
# Finding errors: Five errors below must be fixed

from earsketch import *
setTempo(88

fitMdia(HIPHOP_DUSTYGROOVEPART_001, 1, 1 9)
fitmedia(2, HIPHOP_DUSTYGROOVEPART_003, 1, 9)
```

Solution



Find the 5 errors in this code.

```
# Finding errors: Five errors below must be fixed

from earsketch import *
setTempo(88

fitMdia(HIPHOP_DUSTYGROOVEPART_001, 1, 1 9)
fitmedia(2, HIPHOP_DUSTYGROOVEPART_003, 1, 9)
```

Missing Parentheses

Misspelling of fitMedia

Missing Punctuation

Case Sensitivity

Sound and track Switched

TEACHER RESOURCES

teachers.ears sketch.org



Sign Up / Log In

EarSketch teachers ABOUT TEACH DISCOVER COMPETE CONTACT US FAQ

LEARN. TEACH. CODE.

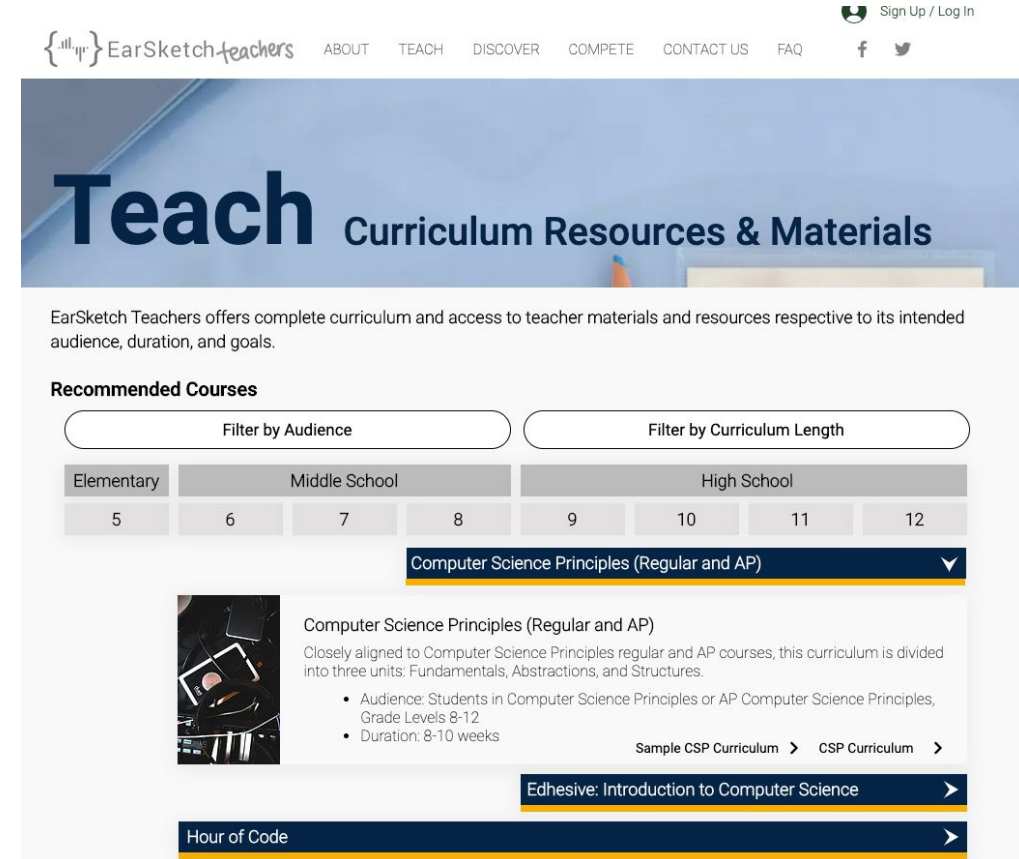
START DISCOVERING START TEACHING

Are you teaching remotely or in a socially-distanced classroom?

EarSketch only requires a computer and internet access. Additionally, our curriculum is easy to adapt for learning, remotely or in the classroom!

Explore Curriculum

500 K+ EarSketch Users 1,400+ teachers requested curriculum 50 states where EarSketch is used 100+ countries where EarSketch is used



Sign Up / Log In

EarSketch teachers ABOUT TEACH DISCOVER COMPETE CONTACT US FAQ

Teach Curriculum Resources & Materials

EarSketch Teachers offers complete curriculum and access to teacher materials and resources respective to its intended audience, duration, and goals.

Recommended Courses

Filter by Audience Filter by Curriculum Length

Elementary		Middle School				High School			
5	6	7	8	9	10	11	12		

Computer Science Principles (Regular and AP)

Computer Science Principles (Regular and AP)

Closely aligned to Computer Science Principles regular and AP courses, this curriculum is divided into three units: Fundamentals, Abstractions, and Structures.

- Audience: Students in Computer Science Principles or AP Computer Science Principles, Grade Levels 8-12
- Duration: 8-10 weeks

Sample CSP Curriculum > CSP Curriculum >

Edhesive: Introduction to Computer Science >

Hour of Code >



Navigating EarSketch

NAVIGATING EARSKETCH

The screenshot shows the EarSketch web application interface. At the top, the logo 'EarSketch' is on the left, and 'amazon future engineer CELEBRITY REMIX' is in the center. On the right, there are navigation icons and a user profile 'sgrossman2179'. Below the header, there are two main sections: 'CONTENT MANAGER' on the left and 'DIGITAL AUDIO WORKSTATION' on the right. The 'CONTENT MANAGER' has tabs for 'SOUNDS', 'SCRIPTS', and 'API', with 'SCRIPTS' selected. It includes a search bar, filter options (Owner, File Ty..., Sort By), and a list of 'MY SCRIPTS (394)' and 'SHARED SCRIPTS (620)'. The 'DIGITAL AUDIO WORKSTATION' features a 'CODE EDITOR' with a file named 'quick_tour_1...'. The code in the editor is as follows:

```
1 from earsketch import *
2
3 setTempo(120)
4
5 # Add Sounds
6 fitMedia(RD_UK_HOUSE_MAINBEAT_8 ▶, 1, 1, 5)
7 fitMedia(RD_POP_SYNTHBASS_6 ▶, 2, 1, 9)
8 fitMedia(YG_RNB_TAMBOURINE_1 ▶, 4, 1, 9)
9 fitMedia(YG_FUNK_CONGAS_3 ▶, 5, 1, 5)
10 fitMedia(YG_FUNK_HIHAT_2 ▶, 6, 5, 9)
11 fitMedia(RD_POP_TB303LEAD_3 ▶, 7, 5, 9)
12
13 # Effects fade in
14 setEffect(2, VOLUME,GAIN, -20, 1, 6, 5)
```

Below the code editor are 'SHARE' and 'RUN' buttons. A vertical 'CURRICULUM' sidebar is visible on the right side of the workstation.

CURRICULUM

PY

Welcome ▾

Search

Welcome to EarSketch!

In the following lessons, you will learn computer science and music technology side by side. You will use either Python or JavaScript, two of the most popular computer programming languages in the world, to create and remix music that is unique to you. Musicians and programmers write computer code to create new sounds, effects, and musical structures. Computer code enables you to design entirely new ways to create and perform music.



NAVIGATING EARSKETCH

Code Editor

Enter code in text or blocks

Workstation for students

Code in Python or JavaScript

CODE EDITOR



SHARE

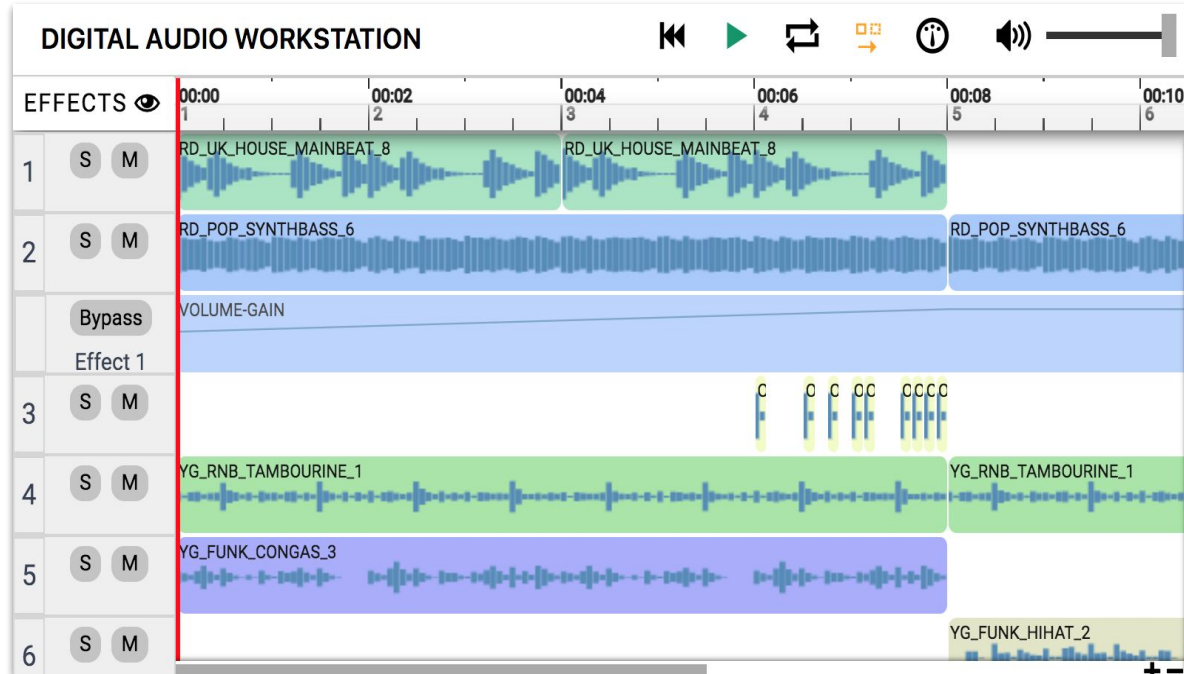
```
quick_tour_1... X +
1 from earsketch import *
2 setTempo(120)
3 # Add Sounds
4 fitMedia(RD_UK_HOUSE_MAINBEAT_8 ▶, 1, 1, 5)
5 fitMedia(RD_POP_SYNTHBASS_6 ▶, 2, 1, 9)
6 fitMedia(YG_RNB_TAMBOURINE_1 ▶, 4, 1, 9)
7 fitMedia
8 fitMedia
9 fitMedia
```

quick_tour_1... X +

EarSketch	Advanced
Variables	Logic
Operators	Control Flow

```
1 from earsketch import *
2
3 setTempo(120)
4
5 # Add Sounds
6 fitMedia(RD_UK_HOUSE_MAINBEAT_8, ▼1, ▼1, ▼
7 fitMedia(RD_POP_SYNTHBASS_6, ▼2, ▼1, ▼9)
8 fitMedia(YG_RNB_TAMBOURINE_1, ▼4, ▼1, ▼9)
9 fitMedia(YG_FUNK_CONGAS_3, ▼5, ▼1, ▼5)
10 fitMedia(YG_FUNK_HIHAT_2, ▼6, ▼5, ▼9)
11 fitMedia(RD_POP_TB303LEAD_3, ▼7, ▼5, ▼9)
12
```


NAVIGATING EARSKETCH



Digital Audio Workstation

Shows tracks and plays music

Solo or mute tracks

Isolate effects

NAVIGATING EARSKETCH

```
7 fitMedia(YG_RNB_TAMBOURINE_1 ▶, 4, 1, 9)
8 FitMedia(YG_FUNK_CONGAS_3 ▶, 5, 1, 5)
9 fitMedia(YG_FUNK_HIHAT_2 ▶, 6, 5, 9)
10 fitMedia(RD_POP_TB303LEAD_3 ▶, 7, 5, 9)
11
12 # Effects fade in
```

Running script...

Error message >> NameError: There is an error with a variable or function name that is not defined, name 'FitMedia' is not defined on line 8 [Click here for more information.](#)

```
fitMedia(YG_FUNK_CONGAS_3 ▶, 5, 1, 5)
```

Running script...

this is the beginning of my song

this is the end of my song

Script ran successfully

Console

Prints messages

Lists errors

Helpful for debugging

NAVIGATING EARSKETCH

CONTENT MANAGER

SOUNDS **</> SCRIPTS** **API**

Search

ARTISTS GENRES INSTRUMENTS KEYS

ALICIA KEYS CIARA COMMON DAKOTA BEAR

IRIZARRY Y CARABALLO JAYLI WOLF KHALID

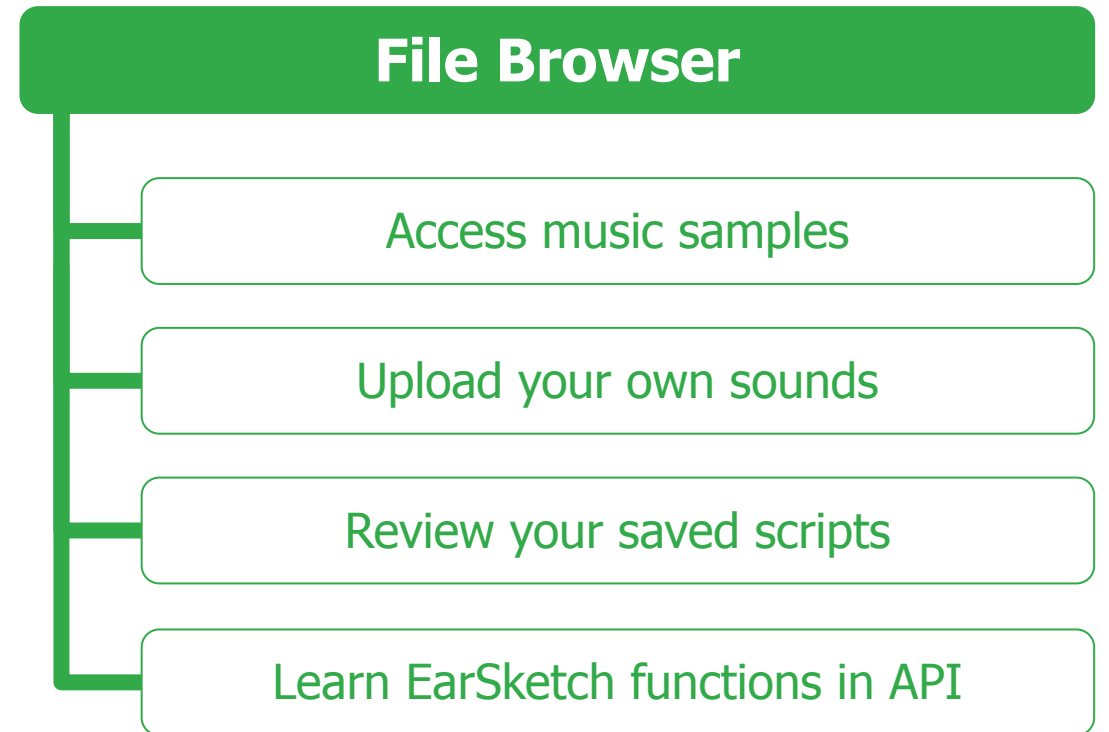
MILKNSIZZ PHARRELL RICHARD DEVINE

SAMIAN SGROSSMAN2179 TWIN FLAMES

YOUNG GURU

Show only ★ **+ Add sound**

4704 sounds



NAVIGATING EARSKETCH

Curriculum Icon

Self-guided student-facing curriculum

Summary & assessment questions
(end of each lesson)

Hour of Code tutorials

Reference Guides

CURRICULUM



PY

Welcome Students and Teachers! ▾

Table of Contents

Welcome Students and Teachers!

- ▶ Unit 1: Compose and Add Beats
- ▶ Unit 2: Loops, Effects, Mixing
- ▶ Unit 3: Structure your Songs
- ▶ Effects, Errors, and EarSketch Functions
- ▶ Optional: To Learn More!
- ▶ Hour of Code with EarSketch
- ▶ Your Voice is Power
- ▶ Archived Curriculum (2015-2020)

Create Your EarSketch Account

Go to: ears sketch.gatech.edu

Click:
(top right)

START CODING

Click:
(pop up window)

Skip

Click:
(top right)

Create / Reset Account

START CODING

```
CODE EDITOR
quick_tour_1... X
1 from earsketch import *
2
3 setTempo(120)
4
5 # Add Sounds
6 fitMedia(RD_UK_HOUSE_MAINBEAT_8 ▶, 1, 1, 5)
7 fitMedia(RD_POP_SYNTHBASS_6 ▶, 2, 1, 9)
8 fitMedia(YG_RNB_TAMBOURINE_1 ▶, 4, 1, 9)
9 fitMedia(YG_FUNK_CONGAS_3 ▶, 5, 1, 5)
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11 fitMedia(RD_POP_TB303LEAD_3 ▶, 7, 5, 9)
12
13 # Effects fade in
14 setEffect(2, VOLUME, GAIN, -20, 1, 6, 5)
```

Import Sample Code:
b.gatech.edu/4bncRUJ



Teacher and Student Competition

TEACHER COMPETITION

SUMMER 2024 TEACHER CONFERENCE COMPETITION

How will you get them dancing in the halls from Day 1?

Code one song in EarSketch that will serve as your TEACH TO THE BEAT song for your students to jam to the first week of class

Submit by Monday, July 22nd @ 11:00PM CT to compete in the Teacher Competition. Winners will receive an Amazon Gift Card.

PRIZES

Best Overall \$100 AGC
Creativity in Code \$100 AGC
Honorable Mention \$25 AGC

teachers.ears sketch.org/teach-to-the-beat

STUDENT COMPETITION

BACK TO SCHOOL BEATS COMPETITION

How will you get them dancing in the halls from Day 1?

Code one song in EarSketch that will serve as your BACK TO SCHOOL BEATS for your students to jam to the first week of class

Submit by Monday, September 30th @ 11:00PM CT to compete for Amazon Gift Cards and Headphones

PRIZES

1st Place: \$500 AGC

2nd Place: \$250 AGC

3rd Place: \$100 AGC

Honorable Mentions: \$25 AGC

teachers.earsketch.org/compete

THANK YOU FOR JOINING US! VISIT OUR BOOTH!



Contact us at escomp@gatech.edu

teachers.earsketch.org



Follow us on X and tweet this session with
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[#NAFNEXT](https://twitter.com/NAFNEXT)

DON'T FORGET

to Complete this Session Evaluation!

Session Code:

#XXXXX

