Girls Code Club
Functions

REVIEW

We've learned a lot so far in Girls Code Club! Because of this, we'll start off today's session with some review.

What were the rubber duckies for?

What is debugging?

How did debugging get its name?

What is a data type?

What kinds of data types have we used so far?

What's a variable, and how do I write it?

My array is called **fruits**. What is **fruits[3]**?

How do I get the banana?

What is an example of personal information you should not put online?

Why did we create usernames?

What is your favorite Thanksgiving food?

MATH

Today, we're learning about math and functions! You can do both in code, and quite a few of you have already said that you're doing something very similar in math... and that's right! Things you can do in both math and code:

- Addition
- Subtraction
- Multiplication and division
- Variables
- Functions
- Equations

What is PEMDAS in math?

The order in which math is completed in an equation.
P - parenthesis
E - exponent
M - multiplication
D - division
A - addition
S - subtraction

GROUP EXERCISE: What is the value of **2 + 10 X 2**?

We, as humans, can read this equation and process it in our brains in any order. We're able to understand that multiplication happens first, due to PEMDAS, so we can multiply first and then add, despite those actions happening from right to left.

Computers always read LEFT => RIGHT. So, the computer would return **24**.
We can fix this by adding parenthesis! The parenthesis help a computer to understand what actions need to happen together before moving on.

MATH: EXERCISE

Don't know how to multiply yet, that's okay! All of these examples multiple by TWO, which just means that you add the number to itself. For example, 10 X 2 is 10 + 10.

5 + 10

What is the normal math answer?

_____

How would a computer answer?

_____

5 + 10 X 2

What is the normal math answer?

_____

How would a computer answer?

_____

5 + (10 X 2)

What is the normal math answer?

_____

How would a computer answer?

_____

10 X 2 + 10

What is the normal math answer?

_____

How would a computer answer?

_____

1 + 5 + 2 X 5

What is the normal math answer?

_____

How would a computer answer?

_____

1 + 5 + (2 X 5)

What is the normal math answer?

_____

How would a computer answer?

_____

FUNCTIONS

A function is a chunk of code that you can use over and over again, instead of writing it out a bunch of times! They also allow coders to break down their problem or logic into smaller groups, that can be easier to understand.

A function accomplishes something. Each function will have **one single goal**. For example, if my function's goal is to find the distance between myself and [Lindsay/Sarah], that function should not also return my favorite flavor of ice cream. Those are two totally different things.

My First Function: JavaScript

```
function myFunction() {
    console.log("Hello from function")
}

myFunction()
```

Solve Math: JavaScript

```
function solveMath(multiplier) {
    return 5 * multiplier
}

var answer = solveMath(3)
console.log(answer)
```

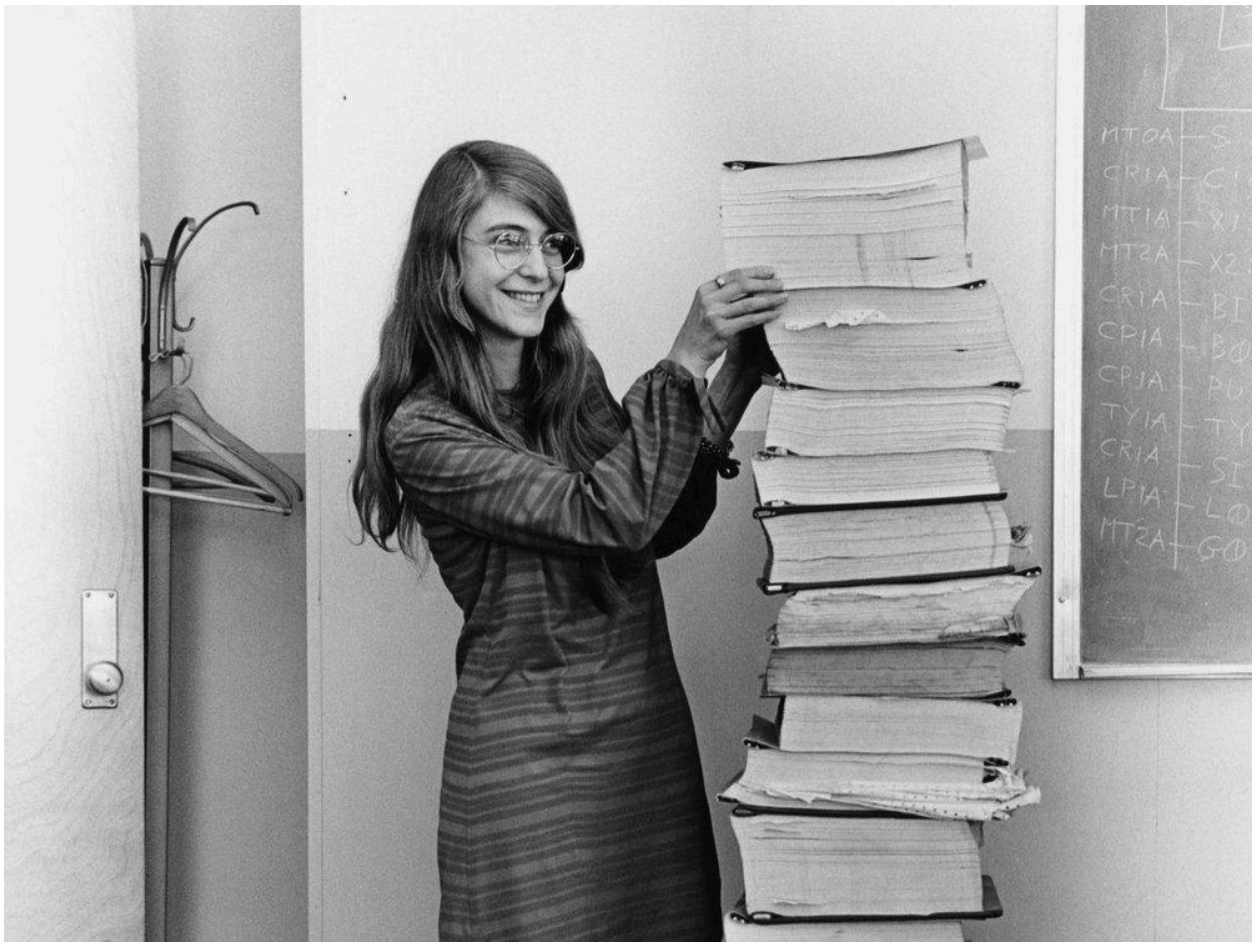
My First Function: Python

```
def my_function():
    print("Hello from function")

my_function()
```

Solve Math: Python

```
def solve_math(multiplier):
    return 5 * multiplier

answer = solve_math(3)
print(f'The answer is: {answer}')
```

SHERO #1: MARGARET HAMILTON



Rebel Girls Video: https://www.youtube.com/watch?v=wD7GmF2mzdc

What is something you liked or learned about Margaret Hamilton?

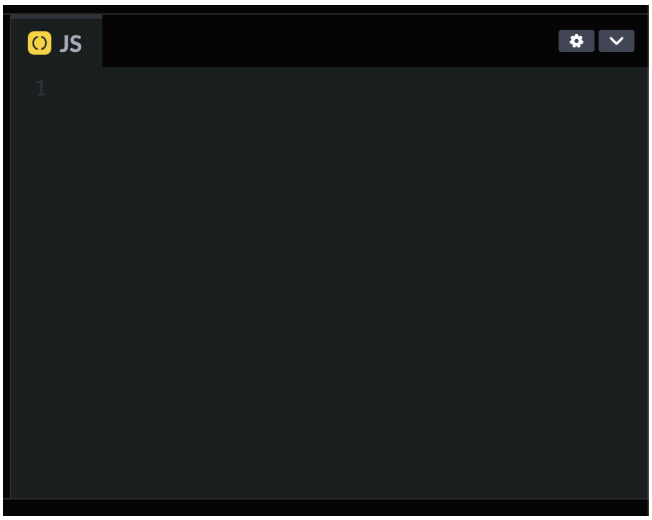
FUNCTION: EXERCISE

Type the following function in your editor. What is it doing?

Let's Practice! CodePen - JavaScript.

To practice **JavaScript**...

We're using the JavaScript editor! Shown below with the YELLOW icon.

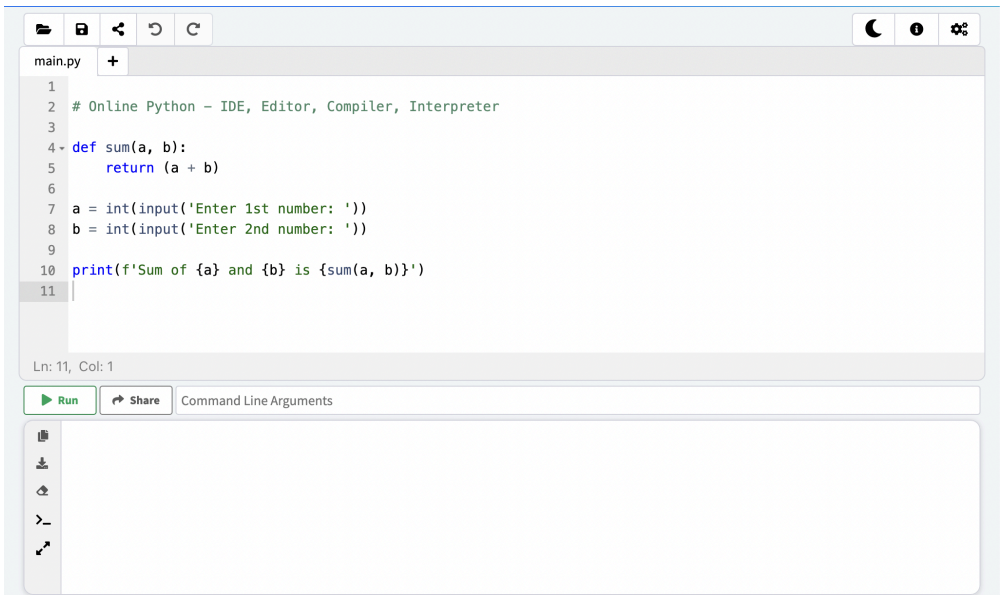


Let's Practice! CodePen - Python.

Using your **Python** code editor:

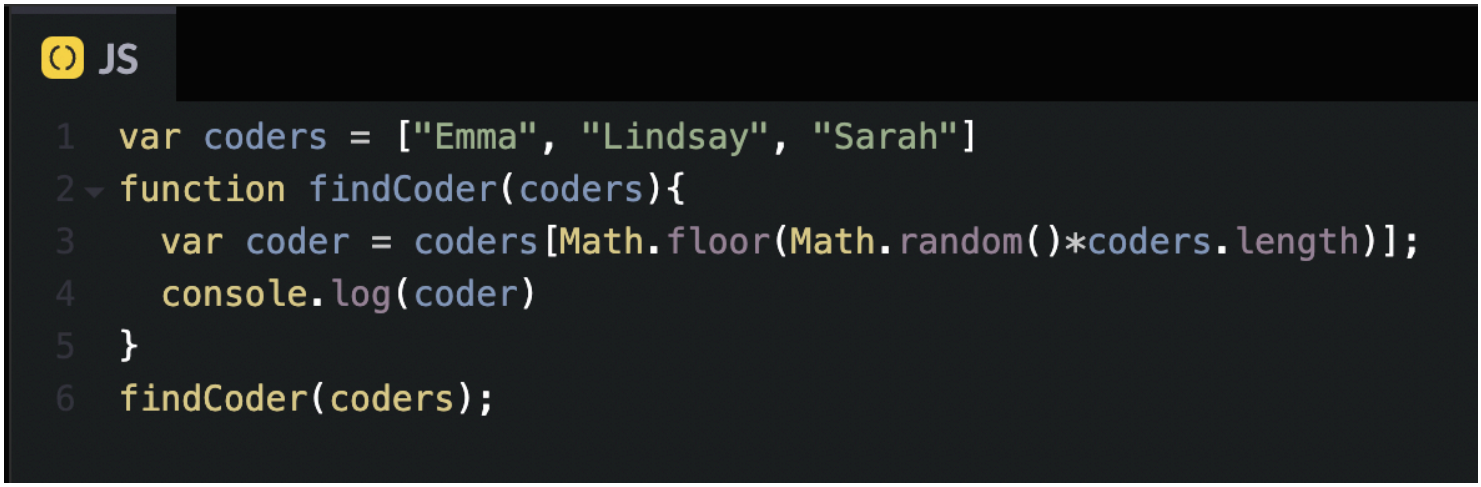
- In the "main.py" editor, delete everything.
- Click "Run" to see your changes.

This work will not be saved anywhere - it's just for the coders to practice with Python during the introductory course.



JavaScript Exercise #1

```
var coders = [“Emma”, “Lindsay”, “Sarah”, “Amanda”]
function findCoder(coders){
      var coder = coders[Math.floor(Math.random()*coders.length)];
      console.log(coder)
}
findCoder(coders)
```



Got your function working? What’s it doing? What happens if you run it again? **Click “SAVE” to save your code, and refresh the page.**

Update the **coders** variable to include the names of the coders at your table! Use the nametags if you’re unsure who is who. See if you can guess which name will randomly appear. Once everyone at the table has their code done, everyone run it at the same time and see how many people got your name!

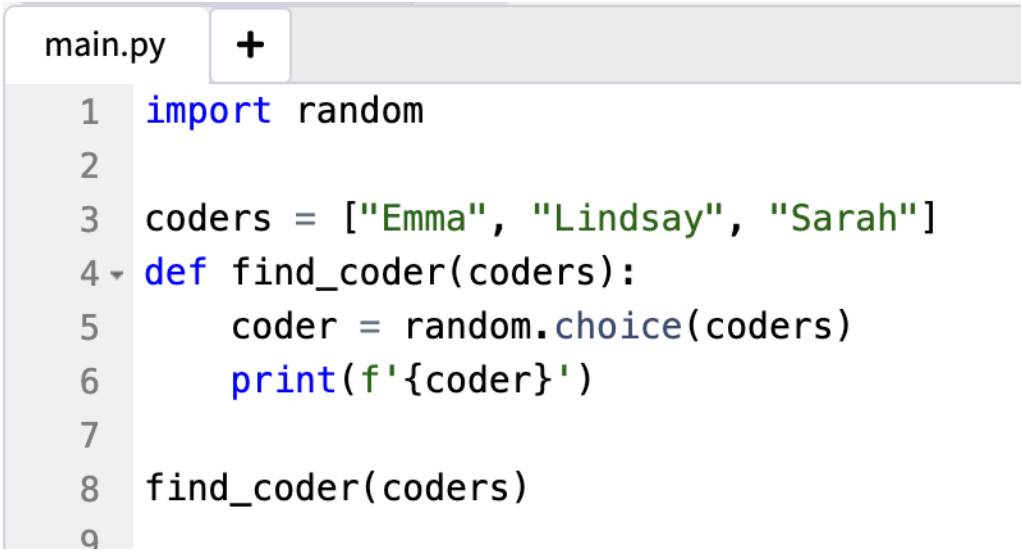
JavaScript Exercise #2 - Calculator

Create functions that add, subtract, multiply, and divide! Call them and pass parameters to make them work. Example:

```
function add(number1, number2){
    return number1 + number2
}
add(5,2)

function multiply(number1, number2){
    return number1 * number2
}
multiply(5,2)

function divide(number1, number2){
    return number1 / number2
}
divide(5,2)
```

Python Exercise #1

```
import random

coders = [“Emma”, “Lindsay”, “Sarah”, “Amanda”]
def find_coder(coders):
    coder = random.choice(coders)
    print(f’{coder}’)

find_coder(coders)
```



Got your function working? What’s it doing? What happens if you run it again? **Click “RUN”.** The function will work better if you have more items in the **coders** array!

Update the **coders** variable to include the names of the coders at your table! Use the nametags if you’re unsure who is who. See if you can guess which name will randomly appear.

Python Exercise #2 - Calculator

Create functions that add, subtract, multiply, and divide! Call them and pass parameters to make them work. Example:

```
def add(number1, number2):
    return number1 + number2
add(5,2)

def subtract(number1, number2):
    return number1 - number2
subtract(5,2)

def multiply(number1, number2):
    return number1 * number2
multiply(5,2)

def divide(number1, number2):
    return number1 / number2
divide(5,2)
```

YOU CANNOT DO THIS SECTION UNTIL COMPLETING ALL PREVIOUS EXERCISES. IF WORKING AHEAD, YOU MUST SHOW A COACH OR VOLUNTEER THAT YOU'VE CODED THROUGH EACH FUNCTION EXERCISE.

BUILD A GOOGLE LOGO

Who has used Scratch?

Scratch is a tool that let's you drag and drop colorful blocks of code. This code that you're working with is a bunch of FUNCTIONS. Each block performs an action, just like FUNCTIONS!

Editor - https://scratch.mit.edu/projects/177224273/#editor

Google logos are called **doodles**! These doodles are what you see instead of "Google" when you're doing something like a Google Search. Google uses scratch to create these logos. Each letter in the doodle is called a **sprite**.

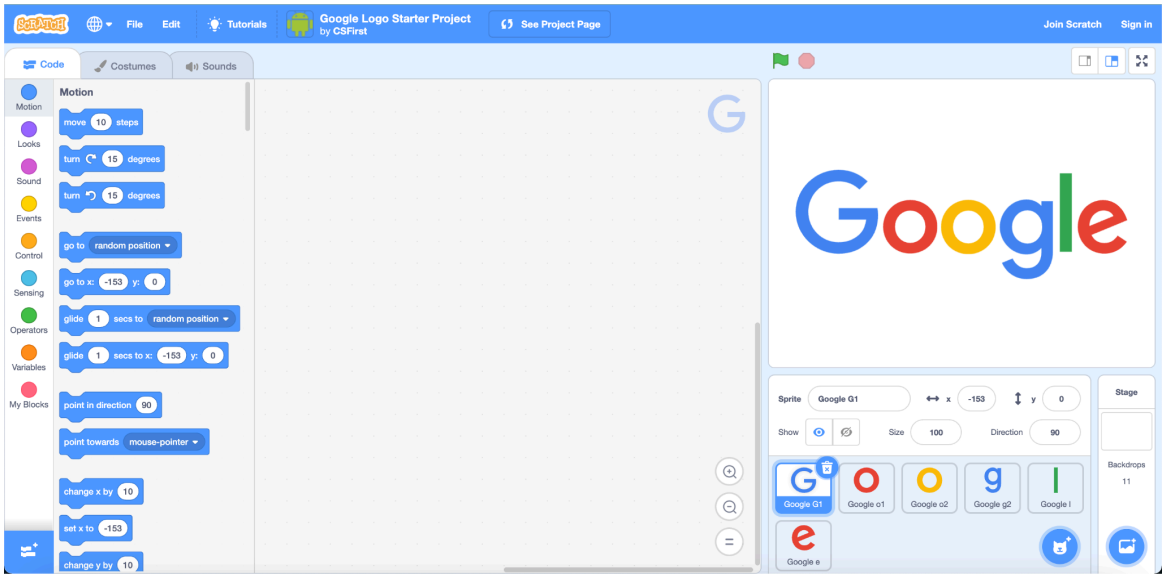
In the editor, you will be dragging and dropping scratch code from the left, to tell the program what you want each letter to do. You can also pick different costumes for each letter!

Username: **GirlC0dersRule**

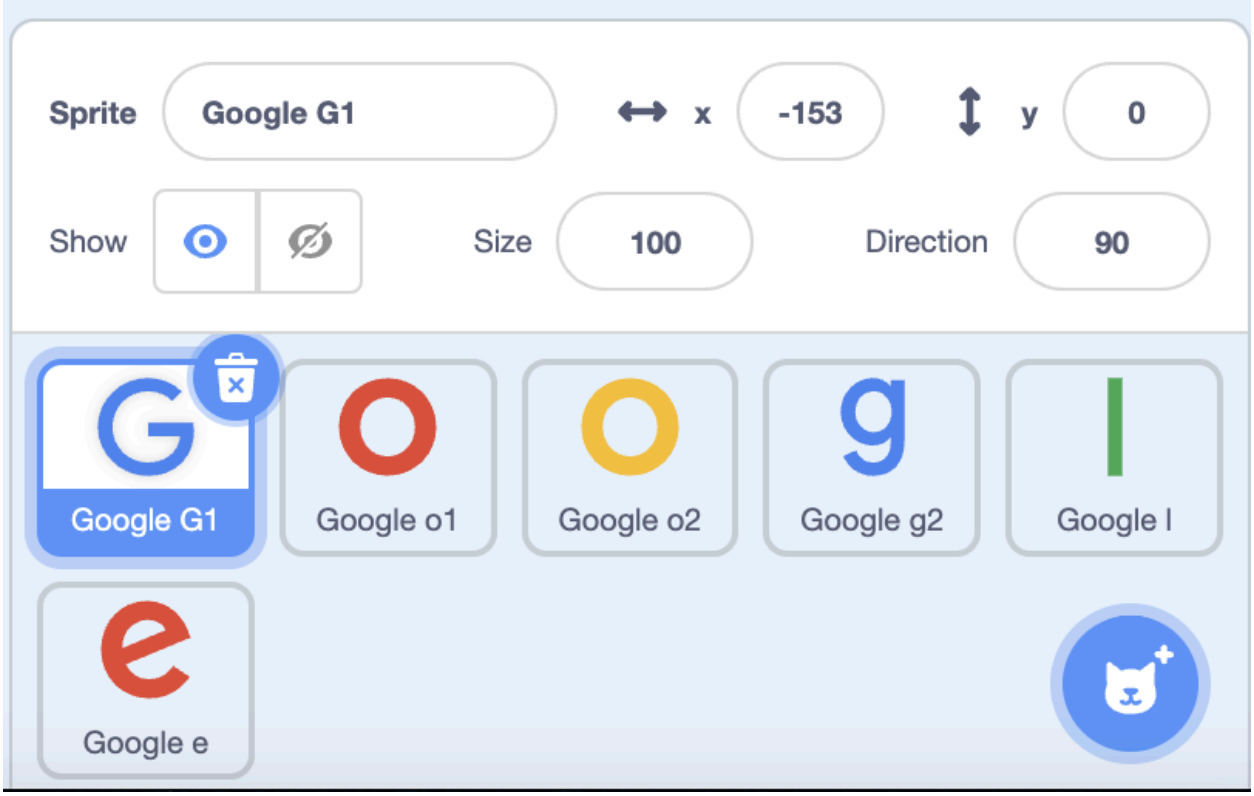
Note: The 0 is a ZERO.

Password: **LSF012208**

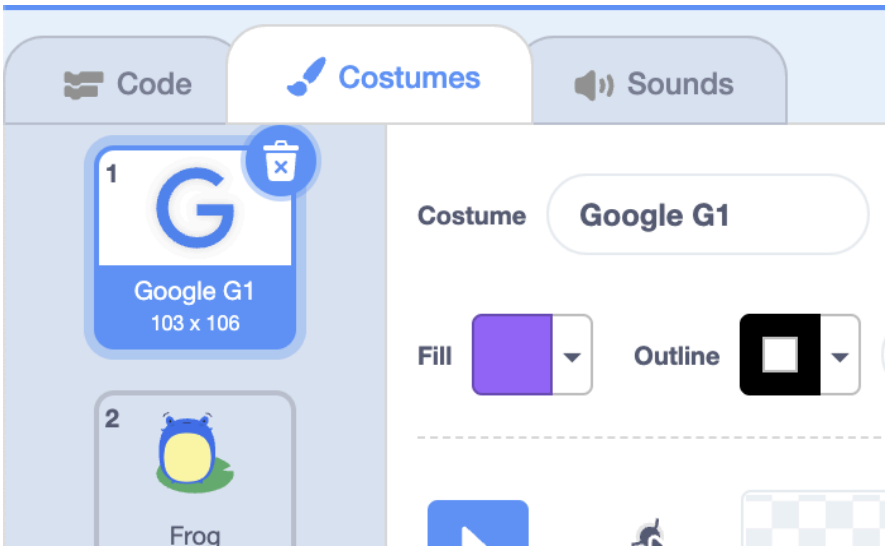
The editor! The code that you'll be working with is in the pane on the left.



In order to switch which letter you're working with, click on a different letter/sprite in the bottom right hand window. Be careful not to delete your sprite!



To get to each sprite's costume options, click the tab here (it's next to your code tab at the top):



Exercise #1: Change colors on click.

Video tutorial =>
https://csfirst.withgoogle.com/c/cs-first/en/create-your-own-google-logo/create-your-own-google-logo/extensions/change-color.html

Exercise #2: Make your own custom logo! Do whatever you want!