



Intro to JavaScript

Data Boot Camp
Lesson 14.1



Class Objectives

By the end of today's class you will be able to:



Understand JavaScript variables, data types, and statements.



Grasp basic JavaScript control flow (functions, loops, if/else statements).



Familiarize with JavaScript arrays.



Use and create functions in JavaScript, including built-in functions.



Instructor Demonstration

A Quick Intro to JavaScript

A Quick Intro to JavaScript

Hello
new language!



A Quick Intro to JavaScript

JavaScript fundamentals:



Arrays



Conditionals



Loops



Functions



Objects



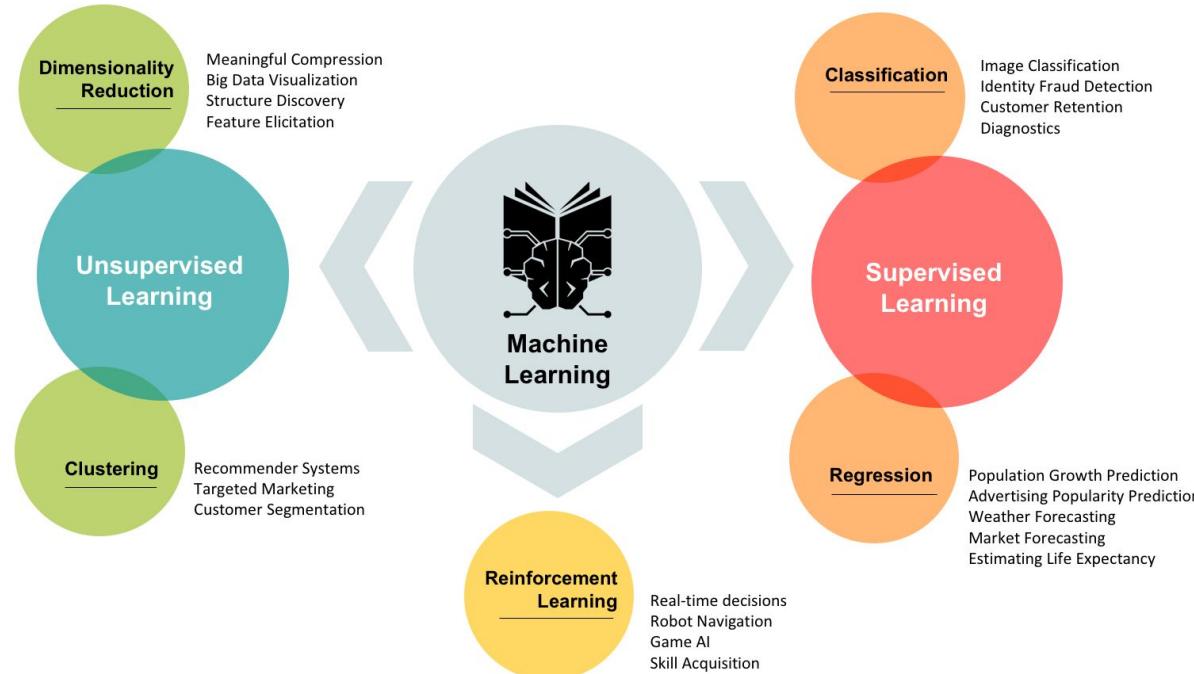


JavaScript

IoT & the Cloud

A Quick Intro to Javascript

Machine Learning in the Browser



How to Learn JavaScript

Your Brain on JavaScript



A Quick Intro to JavaScript

Advice: Start Sloooow...

and eventually, this will be you:



A Quick Intro to JavaScript

Talk to us if you need extra help!



A Quick Intro to JavaScript

General Tips

Review Immediately:
We'll be building upon these concepts quickly. The firmer your grasp now, the better off you'll be.

Redo the Exercises in Class:
Don't just reread! Actually spend the time to redo them from scratch on your own.

Get Help:
Come to office hours. Ask conceptual questions. Ask specific questions. Just keep asking questions!

Don't Be Afraid:
You will get this. It will take time, but you will get this. Just keep at it. Patience will pay off.





Instructor Demonstration
Running JavaScript

Running JavaScript

- JavaScript is known to be the language of the web, hence is associated with HTML, or inside HTML.
- The code is placed between a pair of `script` tags.
- The `console.log()` function prints out a message to a web browser's built-in console.



```
!<!DOCTYPE html>
<html lang="en">
  <head>
    <title></title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link href="css/style.css" rel="stylesheet">
  </head>
  <body>

    <script type="text/javascript">

      console.log("My script is stored within the HTML!")

    </script>

  </body>
</html>
```

Running JavaScript

- `src="app.js"`

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <title></title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width,
      initial-scale=1">
  </head>
  <body>

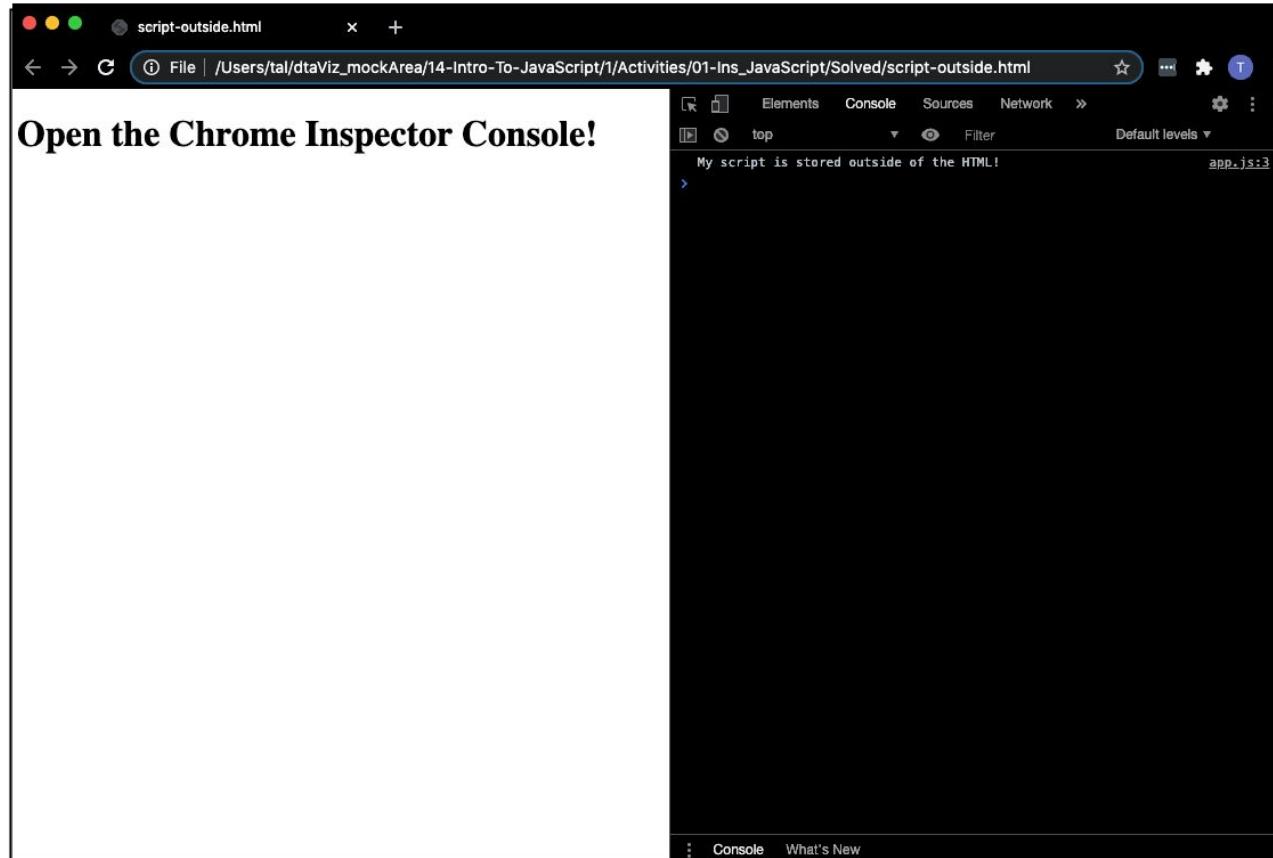
    <script type="text/javascript" src="app.js"></script>

  </body>
</html>
```

- `app.js`

```
// This code will run when linked to in HTML
console.log("My script is stored outside of the HTML!")
```

Running JavaScript





Everyone Do: From Python to JavaScript

In this activity, everyone will work our way through some of the introductory Python scripts and translate them into JavaScript code.

Suggested Time:
25 Minutes

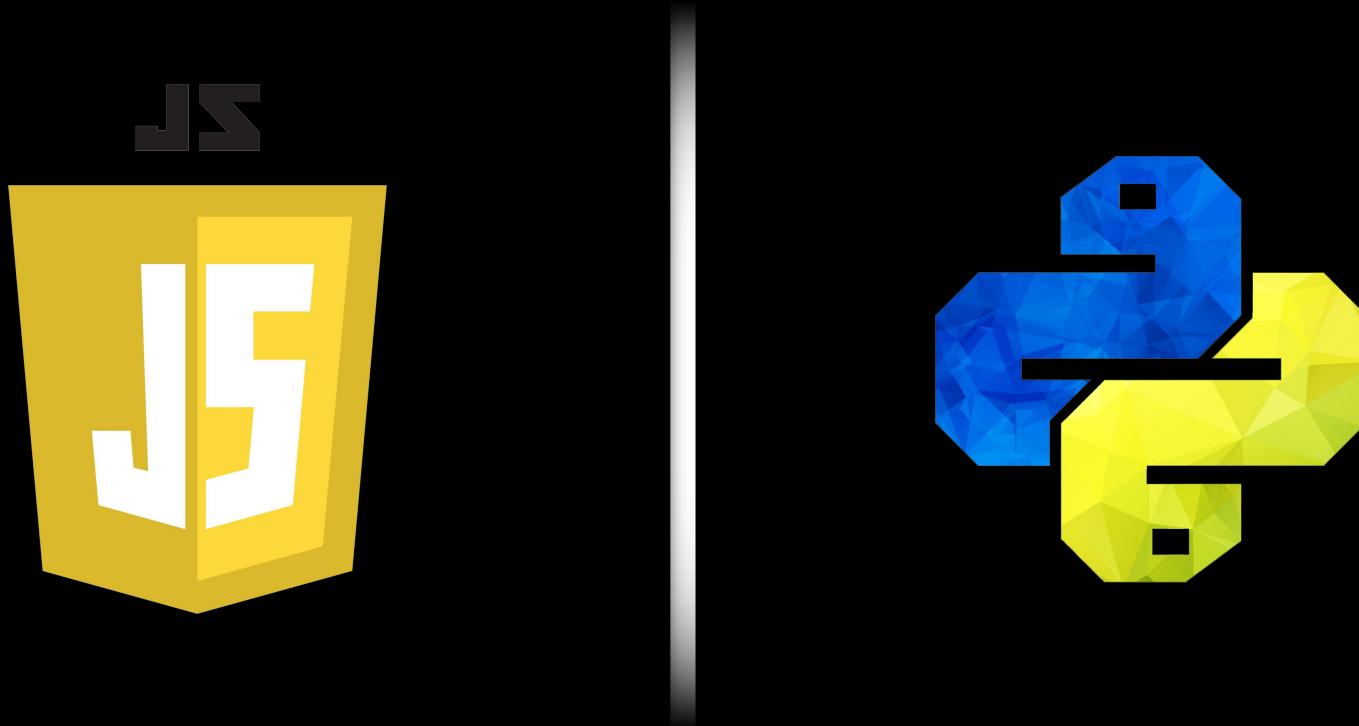


**FEW THINGS
TO NOTE
BEFORE OUR
ACTIVITY**



Everyone Do: From Python to JavaScript

JavaScript and Python are logically and syntactically similar.



Everyone Do: From Python to JavaScript

Variable:

```
var <variable Name> = <Value>;
```

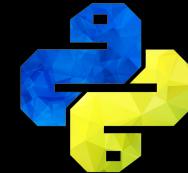


```
<variable Name> = <Value>
```



```
var name = "Mad Max";
```

```
name = "Mad Max"
```



Everyone Do: From Python to JavaScript

Booleans:

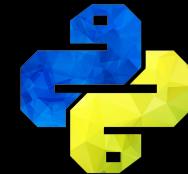
```
var <variable Name> = true;
```



```
<variable Name> = True
```

```
var satisfied = true;
```

```
satisfied = True
```



Everyone Do: From Python to JavaScript

String Template + note:

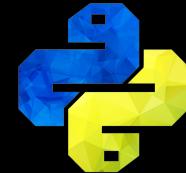
// JavaScript template literal

`console.log(`Hello ${name}!`);`



Python f-string

`print(f"Hello, {name}!")`



Everyone Do: From Python to JavaScript

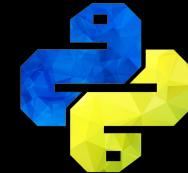
String format converted into numeric format:

// parseInt() function

int() function

```
var weeklyWage = hourlyWage * parseInt(weeklyHours);
```

```
weekly_wage = hourly_wage * int(weekly_hours)
```



<Time to Code>



**FEW THINGS
TO NOTE
BEFORE OUR
SECOND LIVE
CODE**



Everyone Do: From Python to JavaScript

Curly braces, === vs. Whitespace, indentation and ==

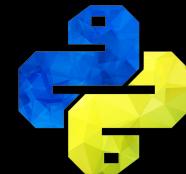
```
// Check is one value is equal  
// to another
```

```
# Check is one value is equal to  
# another
```

```
if (x === 1) {  
    console.log("x is equal to 1");  
}
```



```
if x == 1:  
    print("x is equal to 1")
```



Everyone Do: From Python to JavaScript

Conditionals

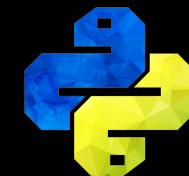
// &&

```
if (x === 1 && y === 10) {  
    console.log("Both values  
returned true");  
}
```



and

```
if x == 1 and y == 10:  
    print("Both values  
returned true")
```



Everyone Do: From Python to JavaScript

Conditionals

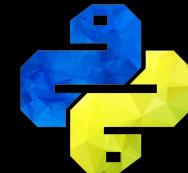
// ||

```
if (x < 45 || y < 5) {  
    console.log("One or the other  
statements were true");  
}
```



or

```
if x < 45 or y < 5:  
    print("One or the other  
statements were true")
```



Everyone Do: From Python to JavaScript

Conditionals

// Nested if...else if...else

```
if (y < 5) {  
    console.log("x is less than 10 and y is less than 5");  
}  
else if (y === 5) {  
    console.log("x is less than 10 and y is equal to 5");  
}  
else {  
    console.log("x is less than 10 and y is greater than  
5");  
}
```

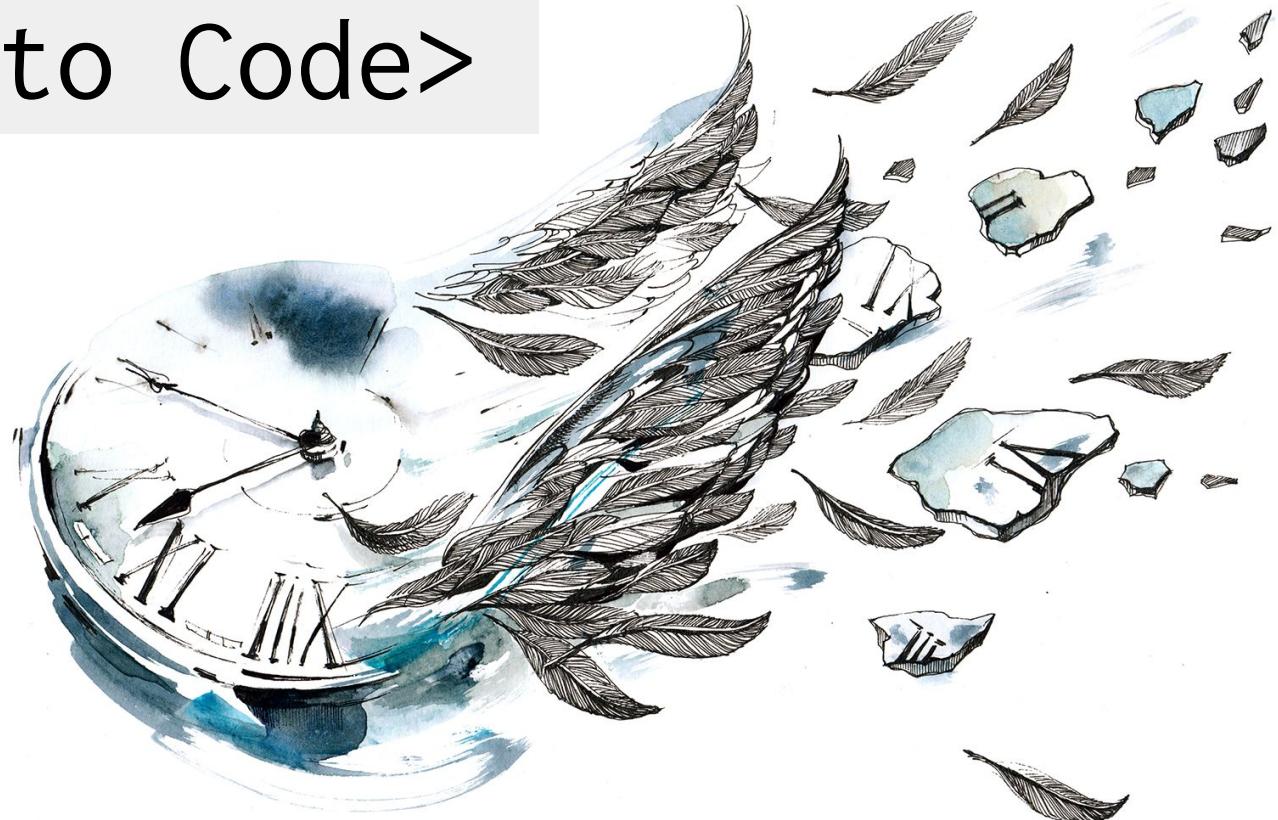


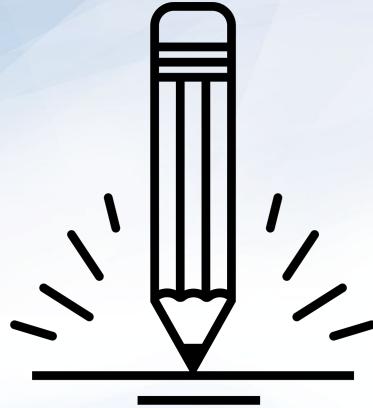
Nested if...elif...else NESTED

```
if x < 10:  
    if y < 5:  
        print("x is less than 10 and y is less than  
5")  
    elif y == 5:  
        print("x is less than 10 and y is equal to  
5")  
    else:  
        print("x is less than 10 and y is greater  
than 5")
```



<Time to Code>





Activity: Javascript Loan Approver

In this activity, you and your partner will use JavaScript to make a loan decision for a variety of conditions.

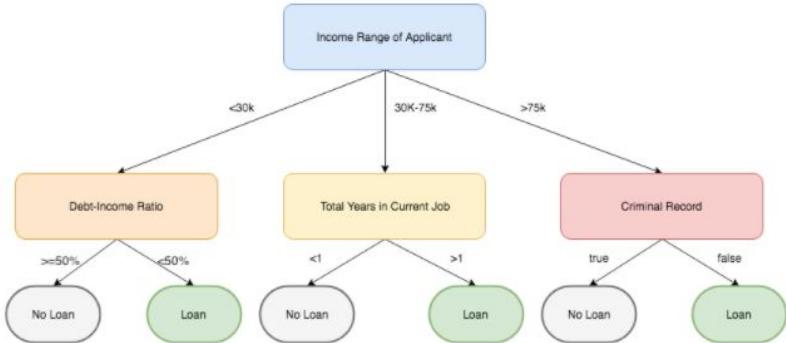
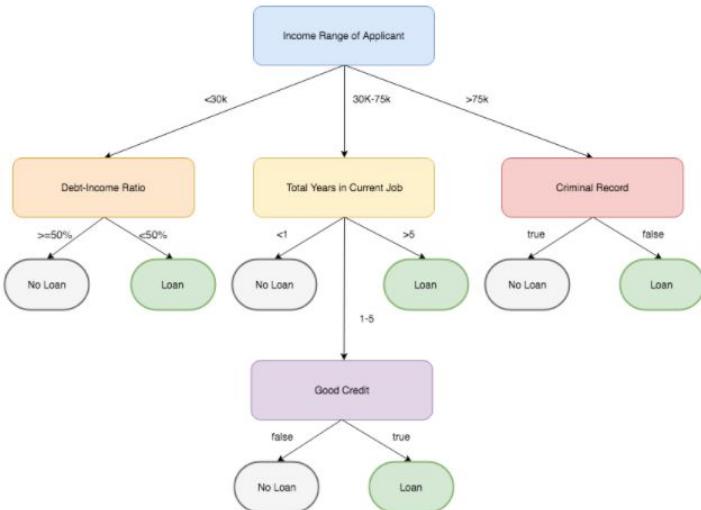
Suggested Time:
10 Minutes



Javascript Loan Approver

Instructions:

- Use the starter files and complete the logic to calculate a loan decision.
- Use the decision tree (right) to code the JavaScript conditional statements needed to make a loan decision.



- **Bonus:**
 - Use the advanced decision tree and write the logic to make a loan decision.
- **Hints:**
 - Start at the top of the tree and write the `if, else if, else` statement for income level. Then, fill in each of those with the `if, else` statements needed for the final decisions.
 - Consider writing the code in Python first and then translate it to JavaScript.





Time's Up! Let's Review.



Everyone Do: JavaScript Arrays

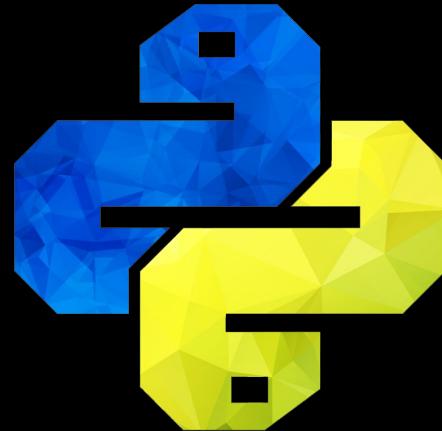
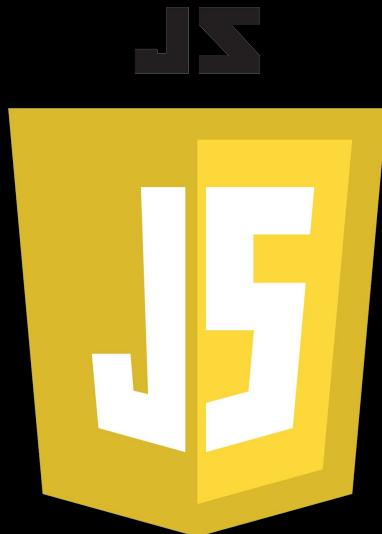
In this activity, we will be introduced to arrays in JavaScript.

Suggested Time:
15 Minutes



Everyone Do: JavaScript Arrays

JavaScript **arrays** are pretty similar to Python **lists**.



Everyone Do: JavaScript Arrays

Arrays:

JavaScript array



```
var lettersArray = ["a", "b", "c", "d"];
```

index



```
var firstLetter = lettersArray[0];  
var secondLetter = lettersArray[1];
```

a

b

Everyone Do: JavaScript Arrays

Arrays:

.push()

```
lettersArray.push("e");
```

```
var letterArray = ["a", "b", "c", "d",  
"e"];
```

.slice()

```
var slicedArray1 = lettersArray.slice(1);  
// Return the first three items of an  
array  
  
var slicedArray2 = lettersArray.slice(0,  
3);  
// Return the second and third items of an  
array  
  
var slicedArray3 = lettersArray.slice(1,  
3);
```

Everyone Do: JavaScript Arrays

Arrays:

.join()



```
var joinedArray = lettersArray.join(", ");
```

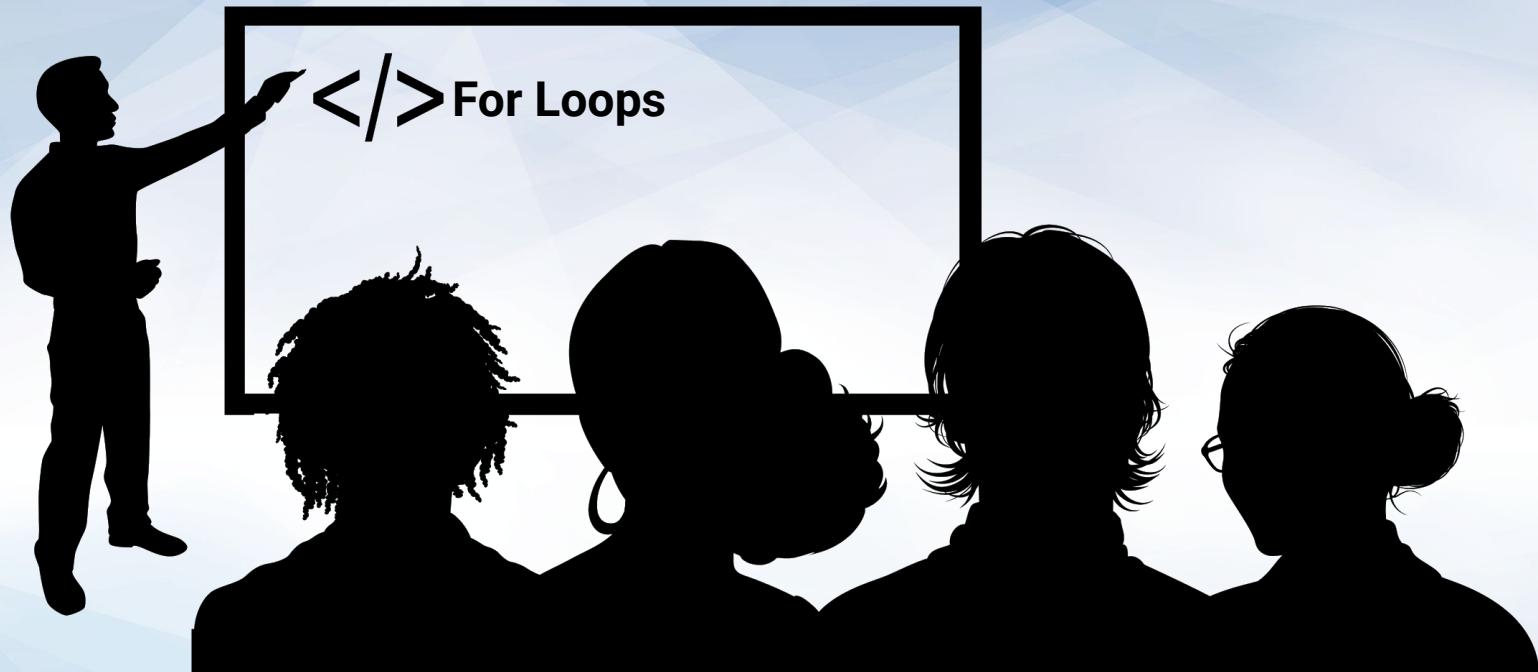
.split()



```
var soundArray = soundOfMusic.split(" ");
```

<Time to Code>





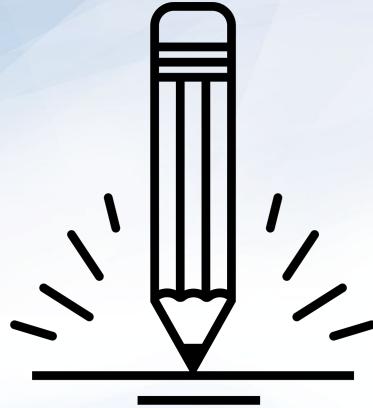
Instructor Demonstration
For Loops

For Loops

- `for` loops in JavaScript.

→ Start
→ End condition
→ Increment

```
for (var i = 0; i < 10; i++) {  
    console.log("Iteration #", i);  
}
```



Activity: Movie Scores

In this activity, you will use conditionals and loops to iterate through an array of movie scores and sort scores into new arrays by their values.

Suggested Time:
20 Minutes



Movie Scores

Instructions:

- Given a list of movie scores, determine how many good, ok and bad movies were there.
 - Create a for loop to go through the `movieScore` list.
 - Add scores over 7 to the `goodMovies` array.
 - Add scores between 5 and 7 to the `okMovies` array.
 - Add the rest of the scores to the `badMovies` array.
 - Also, calculate the average rating for all of the movies.
 - Finally, print out how many good, ok and bad movies there were and what the overall total score was.
-
- **Hints:**
 - You will need to research how to push elements to an empty array.
 - Check your slack for the [documentation](#) to find the length of the array.



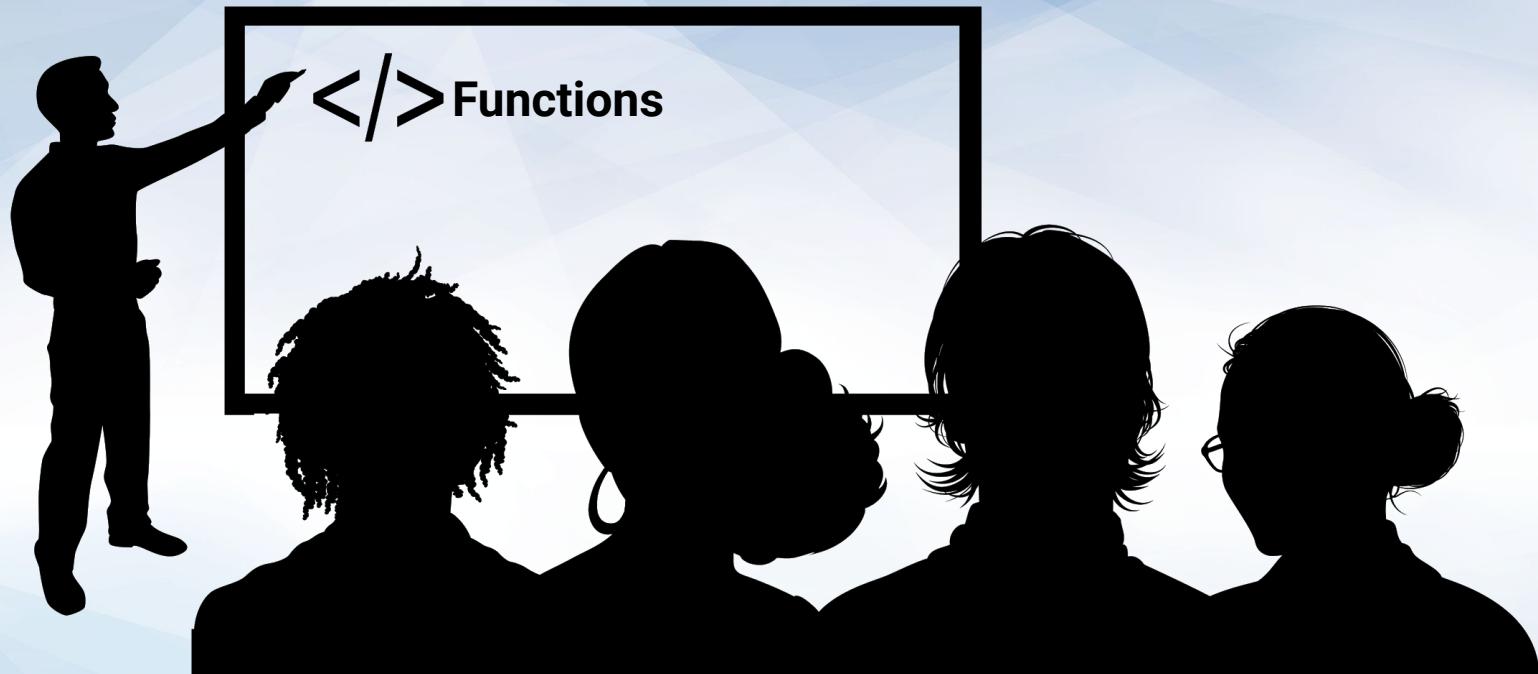


Time's Up! Let's Review.



Break

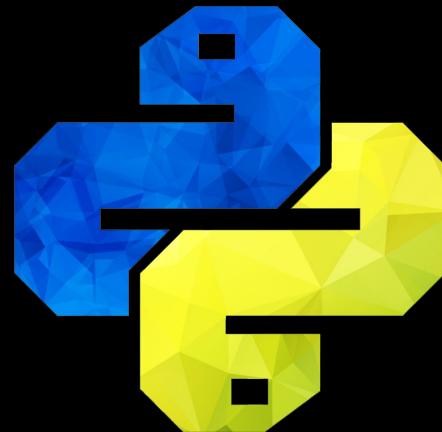




Instructor Demonstration Functions

Everyone Do: JavaScript Arrays

Comparing functions in **JavaScript** and **Python**.



Functions

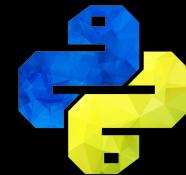
function

```
function printHello() {  
    console.log("Hello there!");  
}
```



def

```
def print_hello():  
    print("Hello there!")
```



Functions

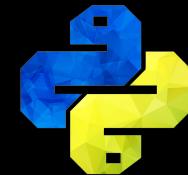
function

```
printHello();  
console.log(addition(44, 50));
```



def

```
print_hello()  
addition(44, 50):
```



Functions

// Accepts a parameter and iterates through an array

```
function listLoop(userList) {  
    for (var i = 0; i < userList.length; i++) {  
        console.log(userList[i]);  
    }  
}  
  
var friends = ["Sarah", "Greg", "Cindy",  
"Jeff"];  
  
listLoop(friends);
```



Takes in a list and loops through

```
def list_loop(user_list):  
    for i in user_list:  
        print(i)
```



Functions

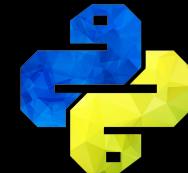
```
// Functions can call other  
functions
```

```
function doubleAddition(c, d) {  
    var total = addition(c, d) * 2;  
  
    return total;  
}  
  
// Log results of doubleAddition function  
  
console.log(doubleAddition(3, 4));
```



```
# Uses a previous declared  
function
```

```
def double_addition(c, d):  
    total = addition(c, d) * 2  
  
    return total
```



Functions

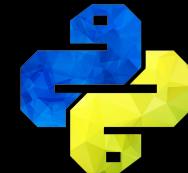
// JavaScript built in
functions

```
var longDecimal = 112.34534454;  
var rounded Decimal = Math.floor(longDecimal);  
console.log(rounded Decimal);
```



Python built in function for
rounding

```
long_decimal = 112.34534454  
rounded_decimal = round(long_decimal)  
print(rounded_decimal)
```



<Time to Code>





Activity: Statistics Functions

In this activity, you will create functions that returns statical values from any given array of data.

Suggested Time:
20 Minutes



Movie Scores

Instructions:

- Using the movie array from earlier as a starting point, create functions that will return statistical values from any given array of data.
 - Create functions that will find the following:
 - Mean
 - Variance
 - Standard Deviation
 - Each function should `console.log` both the name of the statistic used and its value. For example "The Mean is: 33.3".
 - The functions should be able to take any array of numbers and return the statistical value.
 - After you have the functions working with movie data set run them on the following additional data points:
 - `monthlyAvgRainFall = [3.03, 2.48, 3.23, 3.15, 4.13, 3.23]`
 - `mileRunTimes = [5.06, 4.54, 5.56, 4.40, 7.10]`
- **Hints:**
- Use the Javascript Math library to handle calculations needing exponents or square roots.
 - Check your slack to refresh how to calculate [variance](#) and [standard deviation](#).





Time's Up! Let's Review.

A close-up photograph of a baby with light blue eyes and a wide-open mouth, appearing surprised or excited. The baby is wearing a bright pink, puffy jacket. The background is a dark, textured surface covered in numerous small water droplets, suggesting a window pane after rain. The lighting is soft, highlighting the baby's face and the texture of the water droplets.

What?
Homework?