**Basics**

**Functions**

Console.log(); Basically prints to system.

You can create functions in two different methods.

function name() { }

let name = () => {}

let name = param => condition; also works in one line when you only have one param.

Parameters are attributes of functions that will use its values within the function. Located within ()

let myName = “Bruh Moment”

let name = (myName) => {

console.log(myName);

}

name(); This works because myName is global and can be used from every function.

name(myName); Also works;

can also set a default value

let name = (myName = “Guest”) => {} and will run “Guest” if myName is undefined;

**Return**

By default, even if a function runs correctly, it needs a return value so it will take that as the result of running the function

let myName = “Bruh Moment”

let name = (myName) => {

return myName ? true : false;

}

This will tell the system that the function will give the value of true;

let name = myName => myName ? true: false; also works

**Methods**

.length() takes the value of the string’s length and return a number.

.toUpperCase() changes string to all uppercase letters

.startsWith() checks the value of the first letter and the inputted value to check true or false

.trim() removes whitespace.

[**Math Methods**](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Math)

Math.random() takes a random value between 0 to 1. Multiply for bigger pool of numbers

Math.floor() rounds the number down to the nearest whole number.

Math.ceil() rounds the number up to the nearest whole number.

**Data Types**

Number: Any numeric value including those with decimals

String: A group of characters surrounded by quotes

Boolean: Data type that has only two values, true or false\

Null: Data type that has a value of null aka absence of a value.

Undefined: Data type that is similar to Null.

Symbol: Unique identifiers

Object: Collections of related data.

Variables: Stored data we created and define them with unique names

const is the static variable when you just want to keep it the same throughout the system.

let is the dynamic variable when you want to change the value through the system.

Don’t use var.

When we want to add a variable to a string to put on console.log, we can either use + or ${} using ``

console.log(“Bruh” + bruh) or console.log(`Bruh ${bruh}.`);

[**Arrays**](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array)

Arrays consists of a list of elements in a single variable. Needs to include [] and separate items with ,

let array = [“One”, “Two”, “Three”];

When referencing an element of an array, start with 0 and then add one for each proceeding element.

let array = [“One”, “Two”, “Three”]; Then it means array[2] = Three;

Nested arrays are basically arrays that can be nested.

let array[1, [2, 3]];

array[1] = [2, 3] array[1][1] = 3

**Ops**

.join() will take every element of an array and form a single string statement

let array = [“One”, “Two”, “Three”];

array.join(“ ”);

Will result array reading as “One Two Three”

.push() allows us to add values to existing arrays

let array = [“One”, “Two”, “Three”]; array.push(“Four”);

Results in array = [“One”, “Two”, “Three”, “Four”];

.pop() is the opposite of .push where it would take out the right most element out of the array.

array.pop() will result in array to remove “Four”.

.shift() is similar to .pop, except it takes out the left most element out of the array.

.unshift() is the opposite of .shift, where it would add an element to the left side of the array.

.slice() can take up to two values to shorten the array.

let array = [“One”, “Two”, “Three”]; array.push(“Four”);

array.slice(0, 2) will return an array = [“One”, “Two”];

.splice() takes 3 values and it is used to replace elements in the array in a group

let array = [“One”, “Two”, “Three”];

array.splice(0, 3, “Four”) will result in starting at index 0, removing 3 elements, and replaced

array = [“Four”];

.indexOf() finds the index number of an element in an array

array.indexOf(“Three”) will equal 2.

**Objects**

Objects exist where they are written as such,

let bruh = {

name: “Bruh”,

occupation: “Moment”

};

Where typing bruh.name will return “Bruh”; bruh[“name”] also works.

delete is a command that will basically delete the property of the object

delete bruh.name will remove “Bruh” as a prop.

You can also create functions within the object by stating the name and adding () {}

let bruh = {

name: “Bruh”,

occupation: “Moment”,

sayBruh() {

console.log(“I said bruh”)

},

};

and running bruh.sayBruh() should work.

Nested objects also exist

let bruh = {

name: “Bruh”,

occupation: “Moment”,

sayBruh () {

console.log(“I said bruh”)

},

yeet: {

“yeet”: “Yeet”

}

};

bruh[yeet].yeet should return “Yeet”

**Pass by Reference**

Essentially you can run functions to change the values of Objects

let bruh = {

name: “Bruh”,

occupation: “Moment”,

sayBruh () {

console.log(“I said bruh”)

},

yeet: {

“yeet”: “Yeet”

}

};

const changeBruh = (obj) => {

obj.name = “Dab”,

obj.dab = “Dab More”

}

changeBruh(bruh) will result bruh.name = “Dab” and add a prop called dab.

**For loop using objects**

Objects can be used in stuff like for loops, when it iterates through the nested objects.

let vocabulary = {

bruh: {

definition: “To say something is bruh.”

},

dab: {

definition: “A form of motion to dab on them”

},

yeet: {

definition: “A battlecry revolving around yeet”

}

}

for (let i in vocabulary) {

console.log(vocabulary[i].definition)

}

This will log the 3 definitions of the vocabulary list.

**This**

It is a self-referencing keyword when using an object’s function to reference the object

let bruh = {

name: “Bruh”,

occupation: “Moment”,

sayBruh () {

console.log(“I said bruh”)

},

yeet: {

“yeet”: “Yeet”

}

changeBruh() {

this.name = “Dab”,

}

};

running bruh.changeBruh() will change bruh.name

**Get and return**

get is used to retrieve certain values of the object and return a signal that indicates if the information is there or not

let bruh = {

name: “Bruh”,

occupation: “Moment”,

sayBruh () {

console.log(“I said bruh”)

},

yeet: {

“yeet”: “Yeet”

}

get changeBruh() {

if (this.name && this.occupation) {

return true;

}

else return false;

}

};

**Set**

Set is used when you want to reset a value into an exist value

let user = {

username: “default”,

password: “123456789”,

set nameChange(newName) {

if (typeof newAge === “string”) {

this.username = newname;

}

else console.log(“Need letters.”)

},

}

**Using functions to create obj props**

Further more, we can create properties of an object with a function

const account = (username, password, zipcode, country) => {

return {

username,

password,

zipcode,

country

}

}

user.account(bruh, moment, 99999, USA) would create an account with those info.

**Destructured Assignment**

Instead of doing stuff like

const username = account.username

You can easily extract the info doing

const {username, password, zipcode, country} = account. To get more info, faster.

console.log(`username: ${username} password: ${password}`)

**Object Methods**

Objects.keys(obj) basically returns an array containing all the props of the obj

Objects.entries(obj) basically returns a nested array containing all the props and their values of the obj

Object.assign({prop: statement}, obj) Basically adds a prop with a value into the obj.

**Arithmetic operators**

Basic arithmetic includes (+, -, \*, /, and %)

% represents remainder of two numbers dividing.

You can also use = as a += such as w +=1 aka w = w + 1;

When using counters you can use ++ or -- to increment or decrement a value

w++ aka w+=1

**Other operators**

typeof checks inputted value’s data type.

**Conditional statements**

if () is a statement that asks if the condition is occurs. If the condition does happen, then an action will take place.

if (1 < 2) {

console.log(“True”);

}

if else () is a statement that is asked if the if statement is not true.

else is the final conditional statement when the if statement and every other if else statements are false.

Essentially runs when the whole procedure is false.

**“False” terms**

Whenever a value is being checked for either true or false, it will not be false unless it is equal to 0, an empty string, equal to null, equal to undefined, or equal to NaN.

0, “”, null, undefined, NaN

**Comparison Operators**

Helps checks the relation between two objects in a condition.

<, >, <=, >=, ===, and !== are the basic ones.

=== means that it is equal to while !== means it is not equal to

1 === 2 will run false and 1 !== 2 will run true

**Logical Operators**

logical operators are used to check two separate statements in a single condition

&& aka AND checks if both statements are true

|| aka OR checks if either one of the statements are true

! aka NOT will reverse if the statement is true/false

(1 === 1 && 1 > 2) will return false

(1 === 1 || 1 > 2) will return true

(!1 === 1) will return false

**Creating “Default” values**

Assume we are creating finding a username from our database, if the username doesn’t exist, then we treat the person as a “Guest”

This can be achieved by using the || such as the following.

let username = null;

let name = username || “Guest”

In this instance since username is null, it will make name be defined as “Guest”

**Ternary Operator**

This exists when you want to write an if, else statement in one line.

By utilizing ? and : we are able to achieve this in one line.

if (1 > 2) {

console.log(“Impossible”);

}

else {

console.log(“Naw duh”);

}

(1 > 2) ? console.log(“Impossible”) : console.log(“Naw duh”);

**Switch**

switch() is used as an alternative to using if else statements for easier syntax to read.

You would define the condition and then state what happens when a case happens. If all fails, it will be defined in the default section.

let number = 4;

switch (number) {

case 1:

console.log(“This is 1”);

break;

case 2:

console.log(“This is 2”);

break;

case 3:

console.log(“This is 3”);

break;

default:

console.log(“This is an unknown number”);

break;

}

**Loops**

break; will cause a loop to stop.

**For Loops**

for loops are loops that need 3 expressions to function. An initializer, a condition, and a counter.

let bruh = [1, 2, 3, 4]

for (let i = 0; i < bruh.length; i++) {

console.log(bruh[i]);

}

Basically puts the value of 1 – 4 in the console on separate lines.

Nested for loop is basically a for loop within a for loop.

let bruh = [1, 2, 3, 4]

for (let i = 0; i < bruh.length; i++) {

for (let j = 0; j < bruh.length; j++) {

console.log(bruh[i] + bruh[j]);

}

}

**While Loops**

While loop is basically, if this condition is still valid, then I will keep running.

let bruh = 0;

while (bruh < 5) {

bruh++;

} //Runs until bruh is equal to 5;

do while is the very similar to a regular while loop, except it will execute the code within do, before checking the while condition.

let bruh = 5;

do {

bruh++;

}

while (bruh < 5); // bruh will = 6 since it executes the do regardless of while condition.

**Iterators**

**For each Loops**

for each loops are different to where you would execute the same code for every element in an array.

It can be written in two ways;

const array = [1, 2, 3, 4];

array.forEach(function(numbers) {

console.log(numbers);

});

array.forEach(numbers => console.log(numbers));

**.map()**

.map it basically takes an array, executes the code, and then returns a new array with the updated information.

const array = [1, 2, 3, 4];

const arrayMax = array.map(numbers => {return numbers \* 10});

// arrayMax = [10, 20, 30, 40];

**.filter()**

Basically map, except it is used to check conditionals and create a new array through filtering.

const array = [1, 10, 100, 1000]

const bigNumbers = array.filter(numbers => {

return numbers > 10;

})

// bigNumbers = [100, 1000]’

**.findIndex()**

Basically will return the index of the first element that matches a condition

const array = [1, 2, 3, 4]

const two = array.findIndex(number => {

return (number > 1 && number < 3);

})

// two = [2];

**.reduce()**

Basically takes an array of data and turn it into a single element. It takes two params and take a second argument to serve as a “initial value”

const array= [1, 2, 3, 4]

const added= array.reduce((total, number) => {

return (number + total);

}, 1000)

// basically returns as 1 + 2 + 3 + 4 + 1000 = 1010

.some()

Basically checks the if the condition of some element in the array is true

.every() checks the if the condition of every element in the array is true

**Errors**

SyntaxError: Basically typo in code

ReferenceError: Would basically refer to saying the used variable doesn’t exist or is not referenced properly.

TypeError: The use of the variable is not used correctly. You cannot use a string variable in a method that only takes number params.

**Codecademy examples**

.sort()

const speciesArray = [ {speciesName:'shark', numTeeth:50}, {speciesName:'dog', numTeeth:42}, {speciesName:'alligator', numTeeth:80}, {speciesName:'human', numTeeth:32}];

const sortSpeciesByTeeth = arr => arr.sort((speciesObj1, speciesObj2) => speciesObj1.numTeeth > speciesObj2.numTeeth)