

JAVASCRIPT DEVELOPMENT

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HELLO!

- 1. Pull changes from the svodnik/JS-SF-8-resources repoto your computer:
 - Open the terminal
 - cd to the JSD/JS-SF-8-resources directory
 - Type git pull and press return
- In your code editor, open the following folder: JSD/JS-SF-8-resources/02-data-types-loops/ starter-code

JAVASCRIPT DEVELOPMENT

JATA TYPES

LEARNING OBJECTIVES

At the end of this class, you will be able to

- Describe the concept of a data type and how it relates to variables.
- Declare, assign to, and manipulate data stored in a variable.
- Create arrays and access values in them.
- Run basic JavaScript code on the command line using Node.

AGENDA

- Data types
- Variables
- Arrays

WEEKLY OVERVIEW

WEEK 2

The Command Line / Data Types

WEEK 3

Loops & Conditionals / Functions & Scope

WEEK 4

Slackbot Lab / Objects & JSON

EXIT TICKET QUESTIONS

- 1. Git push, pull, and commit
- 2. Git pull vs fetch
- 3. I already have a [username].github.io repo and website. Options?
- 4. Still having SSH key difficulty
- 5. What does Initializing a repository mean?
- 6. What happens when your local repo conflicts with the remote repo and vice versa?
- 7. GitHub forks & branches
- 8. Can I move a repo once I've cloned it on my local machine?

ACTIVITY — WARMUP



TYPE OF EXERCISE

Turn & Talk

EXECUTION

2 min

- 1. Suppose a friend moved and was giving you new contact information. With a partner, discuss how you would detect an error in each of the following. (What kind of data should each contain?)
 - Street address
 - City
 - State
 - → Zip
 - Phone

THE DATA TYPE IDENTIFIES THE KIND OF DATA

"I just pushed my changes to the repo."

string

"red", "orange", "yellow", "green", "blue", "violet" array

42

number

STRINGS

```
"a"
```

"satisfied"

"none of the above"

"Touch my hair. It's real. (Donald Trump, June 18, 2015)"

NUMBERS

1.5

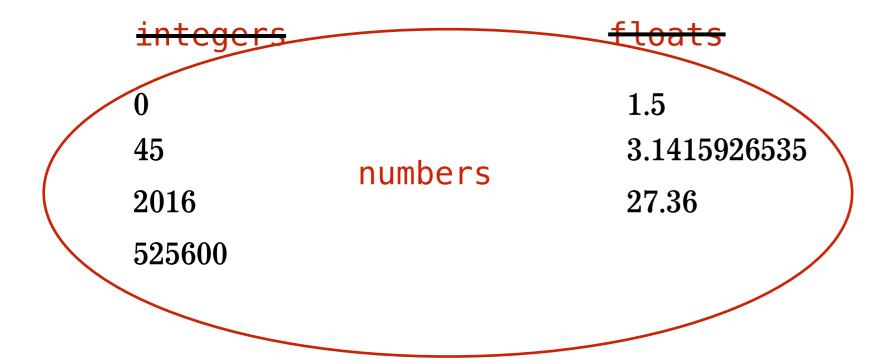
3.1415926535

27.36

45

525600

SOME LANGUAGES TREAT INTEGERS AND FLOATS AS SEPARATE TYPES, BUT NOT JAVASCRIPT



WORKING WITH DATA IN JAVASCRIPT

library of objects

```
Array()
```

Date()

Math()

•••

DOM manipulation

create elements

place elements in the browser window

respond to user events

language elements

operators

statements

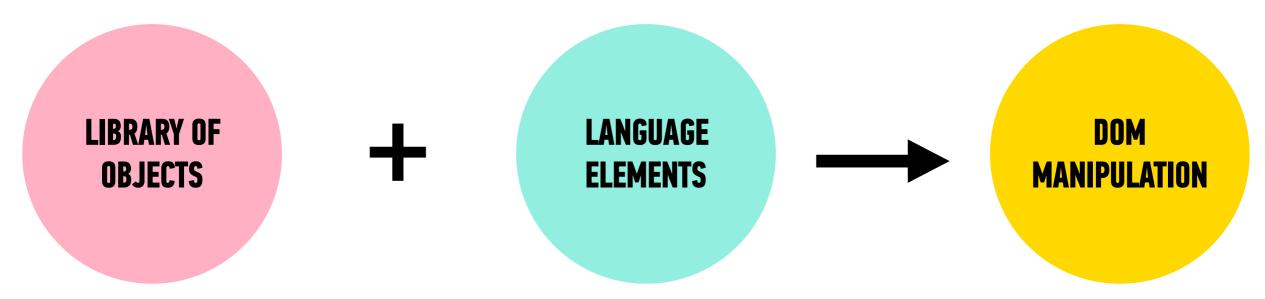
```
function
```

for

return

•••

WORKING WITH DATA IN JAVASCRIPT



Array() Date() Math()

Operators (+ - * / % ...)

Statements for function return

change properties of elements in the browser window

place elements in the

browser window

create elements

respond to user events

IDENTIFYING DATA TYPE

- typeof() function
- Returns a string naming the data type of the data you pass to it
- Syntax:
 - typeof(data), where data is a number, string, or other data

```
typeof(5)

typeof('Chill')

typeof('['red','green','blue']')

"array"
```

ARITHMETIC OPERATORS

- + add (also concatenates strings)
- subtract
- * multiply
- / divide
- % modulus (remainder)

SPECIAL NUMBER OPERATORS

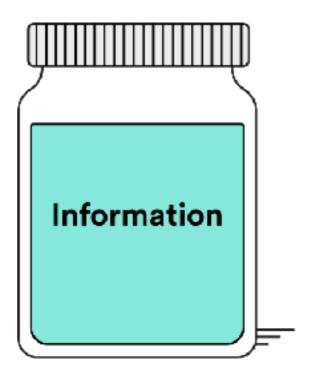
The Math object provides methods for additional operations

<pre>Math.pow(m,n)</pre>	Returns m to the power of n
Math.sqrt(n)	Returns the square root of n
Math.random()	Returns a random number between 0 (inclusive) and 1 (exclusive)
Math.floor(n)	Returns largest integer less than or equal to n
Math.ceil(n)	Returns smallest integer greater than or equal to n

WARIABLES

WHAT ARE VARIABLES?

- We can tell our program to remember (store) values for us to use later on.
- The 'container' we use to store the value is called a variable



DECLARING A VARIABLE

let age = 29;

VARIABLE CONVENTIONS

RULES:

- 1. Should be "camel case" First word starts with a lowercase letter and any following words start with an uppercase letter.
- 2. Names can only contain: letters, numbers, \$ and _
- 3. No dashes, no periods.
- 4. Cannot start with a number
- 5. Case sensitive number of students is not the same as number Of Students



Guideline: Names should be descriptive:



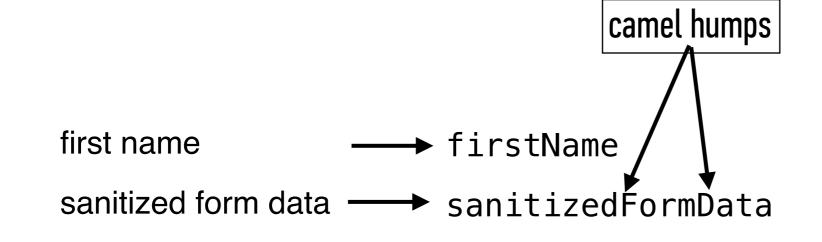
let lastName = "Vodnik";

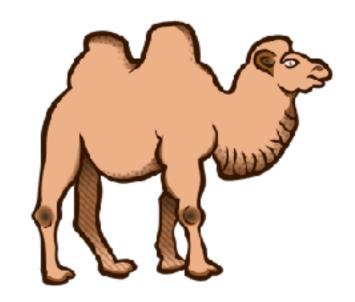


let x = "Vodnik";

CAMEL CASE

- Use when creating a name based on multiple words
- Remove spaces, then capitalize the first letter of the second and subsequent words





JAVASCRIPT — UPDATING THE VALUE OF A VARIABLE

Declaring a variable:

Update the value of the variable:

KEYWORDS FOR DECLARING VARIABLES

keyword	when will we learn it?
let	We will use let today
var	We will learn about var
const	and const next week

Printing text out for our own inspection

```
console.log("Hello!");
```

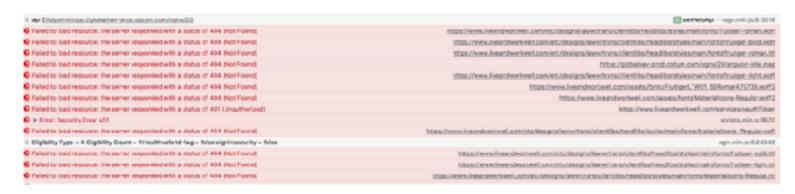
Printing a variable value out for our own inspection

```
console.log(age);
```

THE COMMAND LINE

When do you use console.log?

- When you are developing a program and need help figuring out what's going on (aka debugging)
- When you want to print things to the command line





browser developer tools

KNOW YOUR EQUAL SIGNS

```
assigns value on right to object on leftevaluates whether values on left and right are the same
```

let minutes = 17;

```
> minutes === 10
< false</pre>
```

COMPOUND OPERATORS

+=	adds a number to a variable and assigns the new value to the same variable
-=	subtracts a number from a variable and assigns the new value to the same variable
++	adds 1 to a value
	subtracts 1 from a value

TRANSFORMING A VALUE INTO A STRING

- toString() function
- Returns the original value as a string
- Syntax:
 - data.toString(), where data is the name of a variable

JS BASICS

QUIZ

```
"Bill" = let name;
```

```
let name = "Bill";
```

let total score = 20;

let totalScore = 20;

let fullName = Suzie Smith;

```
let fullName = "Suzie Smith";
```

Let fullName = "Bill Smith";

```
let fullName = "Bill Smith";
```

```
let score = "5";
score += "6";
```

ACTIVITY — VARIABLES & DATA TYPES



KEY OBJECTIVE

Describe the concept of a "data type" and how it relates to variables.

TYPE OF EXERCISE

Turn & Talk

EXECUTION

1 min

- 1. Describe variables. Explain why we would want to use variables in our programs.
- 2. What are the three data types in JS? Can you think of an example of each?

• An array is a collection of data that you can use efficiently

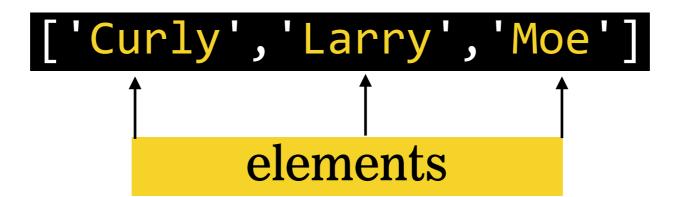
```
['Curly','Larry','Moe']
```

An array is enclosed in square brackets []

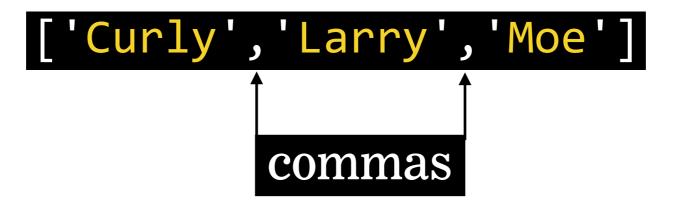
```
['Curly','Larry','Moe']

square brackets
```

- Each item in an array is called an element
- An element can be any data type



Elements are separated by commas



ARRAYS

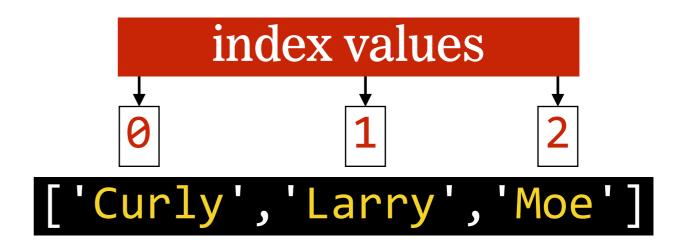
- An array is similar in concept to a list
- Good for storing, enumerating, and quickly reordering data

- Curly
- Larry
- Moe

```
['Curly','Larry','Moe']
```

ARRAY INDEX

- Each array element is assigned an **index**, which is a number used to reference that element
- Index starts at 0



ARRAY INDEX

The final index value is always the length of the array minus 1

```
['Curly','Larry','Moe']
```

```
Array length 3
- 1
Final index value 2
```

LENGTH PROPERTY

- length property is a number 1 greater than the final index number
- length !== number of elements in the array

```
['Curly','Larry','Moe']
```

```
Final index 2
+ 1

Value of length property 3
```

ARRAY HELPER METHODS

ARRAY HELPER METHODS

toString()	Returns a single string consisting of the array elements converted to strings and separated by commas
<pre>join()</pre>	Same as toString(), but allows you to pass a custom separator as an argument
pop()	Removes and returns the item at the end of the array
<pre>push(item1,, itemN)</pre>	Adds one or more items to the end of the array
reverse()	Reverses the array
shift()	Removes and returns the item at the start of the array
unshift(item1,, itemN)	Adds one or more items to the start of the array

WHY IS THIS AD FUNNY?



ARRAY ITERATOR METHODS

forEach()	Executes a provided function once per array element
every()	Tests whether all elements in the array pass the test implemented by the provided function
some()	Tests whether some element in the array passes the text implemented by the provided function
filter()	Creates a new array with all elements that pass the test implemented by the provided function
map()	Creates a new array with the results of calling a provided function on every element in this array

console.log() vs return

console.log()

VS



- Write a value at any point in a program to the browser console
- Helpful for developer in debugging
- Not seen by user or used by app

- Sends a value back wherever the current statement was triggered
- Can use a function to get a value and then use that value elsewhere in your app
- Does not appear in the console unless you're executing commands there

ARRAYS LAB

LEARNING OBJECTIVES: REVIEW

- Describe the concept of a data type and how it relates to variables.
- Declare, assign to, and manipulate data stored in a variable.
- Create arrays and access values in them.
- Run basic JavaScript code on the command line using Node.

Next class preview: Loops & Conditionals

- Build iterative loops using while, do/while, for, and forEach statements.
- Iterate over and manipulate values in an array.
- Use Boolean logic to combine and manipulate conditional tests.
- Use if/else conditionals to control program flow based on Boolean tests.
- Differentiate among true, false, truthy, and falsy.

Exit Tickets!