Web Development with Javascript

Module 1

Intro to Javascript

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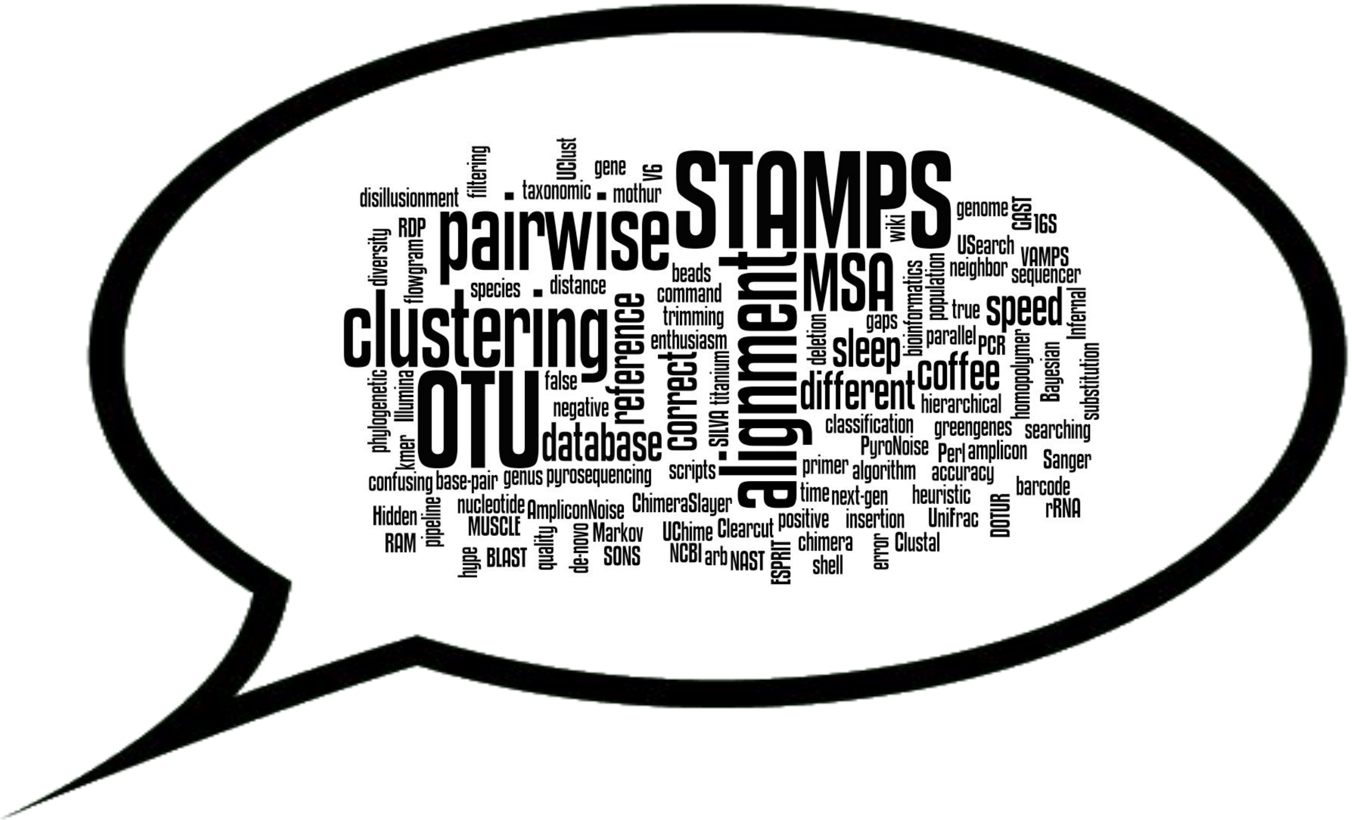
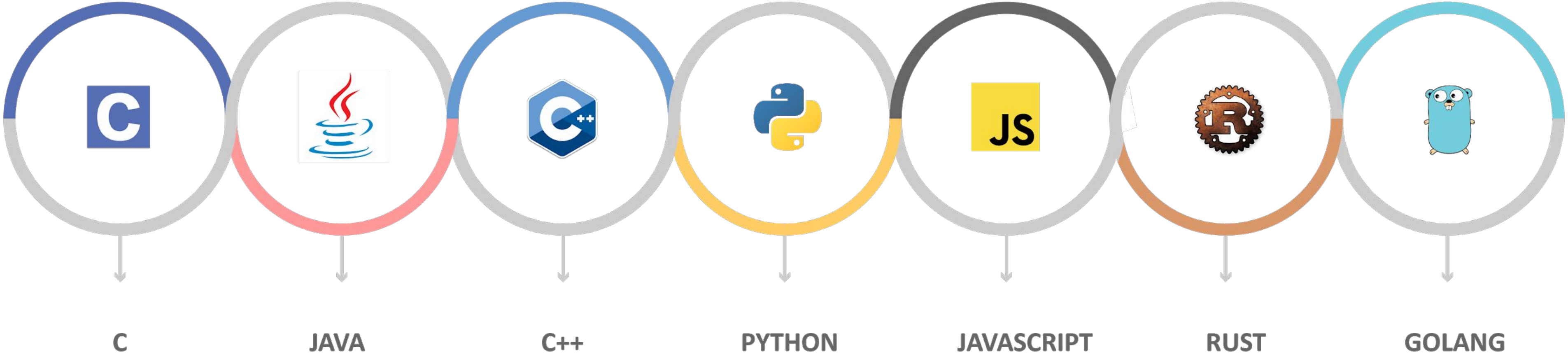
Objectives

What we'll do today

- Introduction to Javascript
- Javascript variables, data types, operators, console log
- Conditional Statements (If / else if / else)
- Looping Statements (For Loop / While loop)
- Popup Alerts (Alerts, Confirm Box, Prompts)
- Accessing from / Writing to HTML with Javascript



Concepts to remember


C

JAVA

C++

PYTHON

JAVASCRIPT

RUST

GOLANG

Programming Language

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Programming Language

- Allow us to give instructions to a computer in a language the computer understands.
- Just as many human-based languages exist, there are an array of computer programming languages that programmers can use to communicate with a computer.
- The portion of the language that a computer can understand is called a "binary." Translating programming language into binary is known as "compiling."

Source: *https://www.computerscience.org/resources/computer-programming-languages/*

```
<script>
if(age > 19){
    alert("Adult");
} else{
    alert("Teenager");
}
</script>
```

Javascript

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Javascript

- Programming language commonly used to create interactive effects within web browsers
- is a client-side programming language that runs inside a client browser and processes commands on a computer rather than a server. It is commonly placed into an HTML or ASP file. Despite its name, JavaScript is not related to Java.

Source: *https://www.computerscience.org/resources/computer-programming-languages/*

Javascript: Where is it Used?

- Web Development improvements
  - Javascript is a front-end web development framework. It is used to improve the interactions between the elements of the webpage and the user.
- Mobile Applications
  - Some applications in Apple or Android are made with the Javascript language.
- Making Robots!
  - Nowadays, there are lots of robots being made and one of the languages being used to do that is Javascript.

Capabilities of JavaScript

- Improve navigation within the website.
- Add special effects.
- Increased interactivity.

Variables

- Keywords used to store values that can be used for computation and be changed in value later on.

Data Types

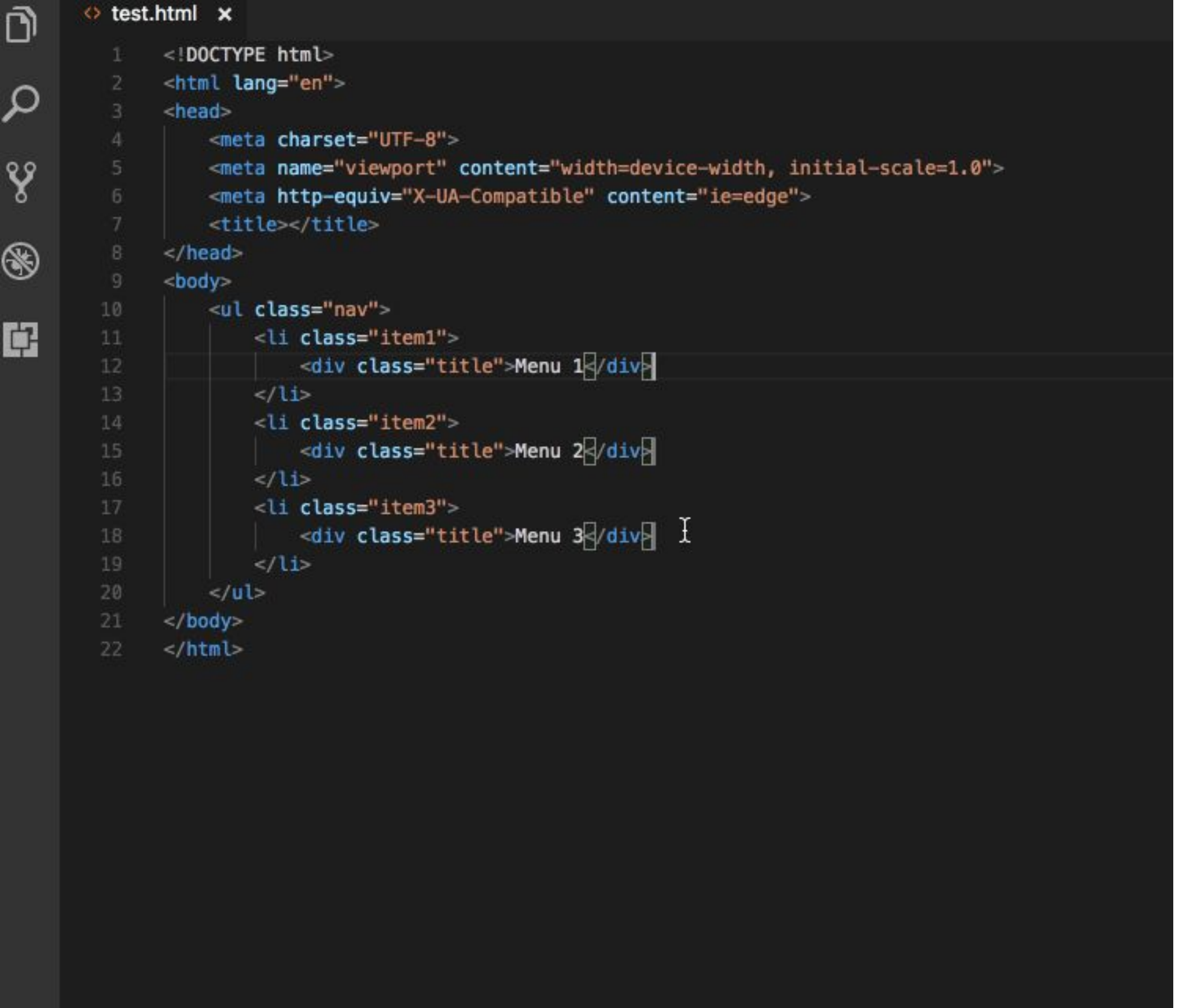
- Classification of data which tells the compiler or interpreter how the programmer intends to use the data.

Javascript: Operations

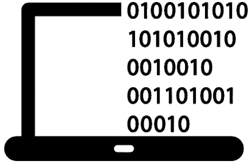
- Classification of data which tells the compiler or interpreter how the programmer intends to use the data.
- Different types:
  - Arithmetic Operators
  - Assignment Operators
  - Data Type Operators
  - Comparison Operators
  - Logical
  - Type
  - Bitwise

Javascript: Popup Alerts

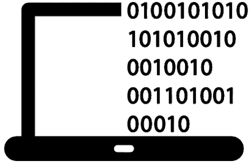
- Alerts that suddenly shows in the screen whenever an specific event happens



```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <meta http-equiv="X-UA-Compatible" content="ie=edge">
    <title></title>
</head>
<body>
    <ul class="nav">
        <li class="item1">
            <div class="title">Menu 1</div>
        </li>
        <li class="item2">
            <div class="title">Menu 2</div>
        </li>
        <li class="item3">
            <div class="title">Menu 3</div>
        </li>
    </ul>
</body>
</html>
```



Let’s start coding!



JS

Javascript Basics

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Javascript: Variables & Values

- **var** x, y, z; // How to declare variables
- x = 5; y = 6; // How to assign values
- z = x + y; // How to compute values

- **var** x = 5; y = 6; z = x+y; // One-line method

- console.log(z);// Displays the value of data or value of variable

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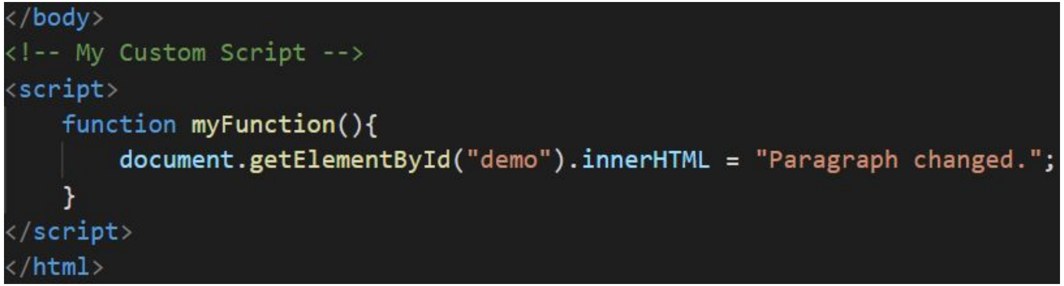
Javascript: Referencing

- Uses .js files
- Can be referenced in three ways
  - Javascript below closing body tag
  - Javascript inside html element event
  - External Javascript

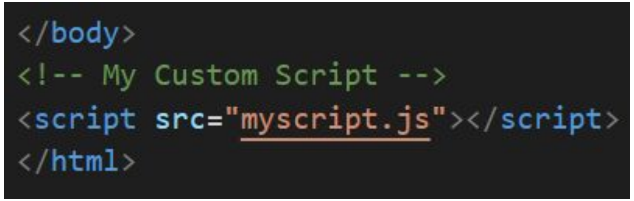
Javascript: Referencing

- Javascript inside head tag



```
</body>
<!-- My Custom Script -->
<script>
    function myFunction(){
        document.getElementById("demo").innerHTML = "Paragraph changed.";
    }
</script>
</html>
```

- External Javascript



```
</body>
<!-- My Custom Script -->
<script src="myscript.js"></script>
</html>
```

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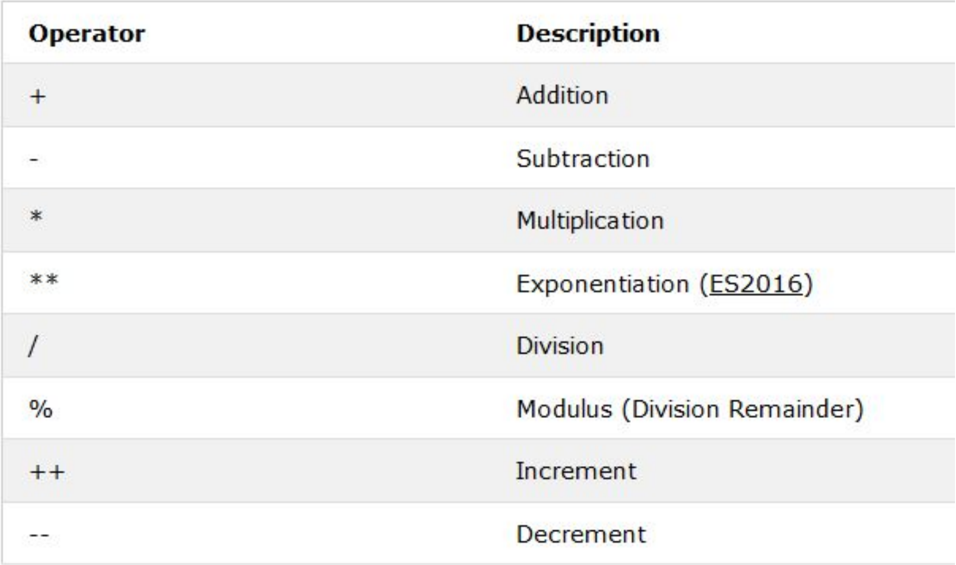
Javascript: Data Types

- **var** length = 20; // Number
- **var** firstName = "Mark"; // String
- **var** favorites = ["Chicken", "Hotdog", "Ice Cream"]; // Array
- **var** wholeName = {firstName:"Mark",lastName:"Reyes"}; // Object
- **var** isFalse = false; // Boolean

JS Operators: Arithmetic

- Arithmetic operators are used to perform arithmetic on numbers:



Operator	Description
+	Addition
-	Subtraction
*	Multiplication
**	Exponentiation (ES2016)
/	Division
%	Modulus (Division Remainder)
++	Increment
--	Decrement

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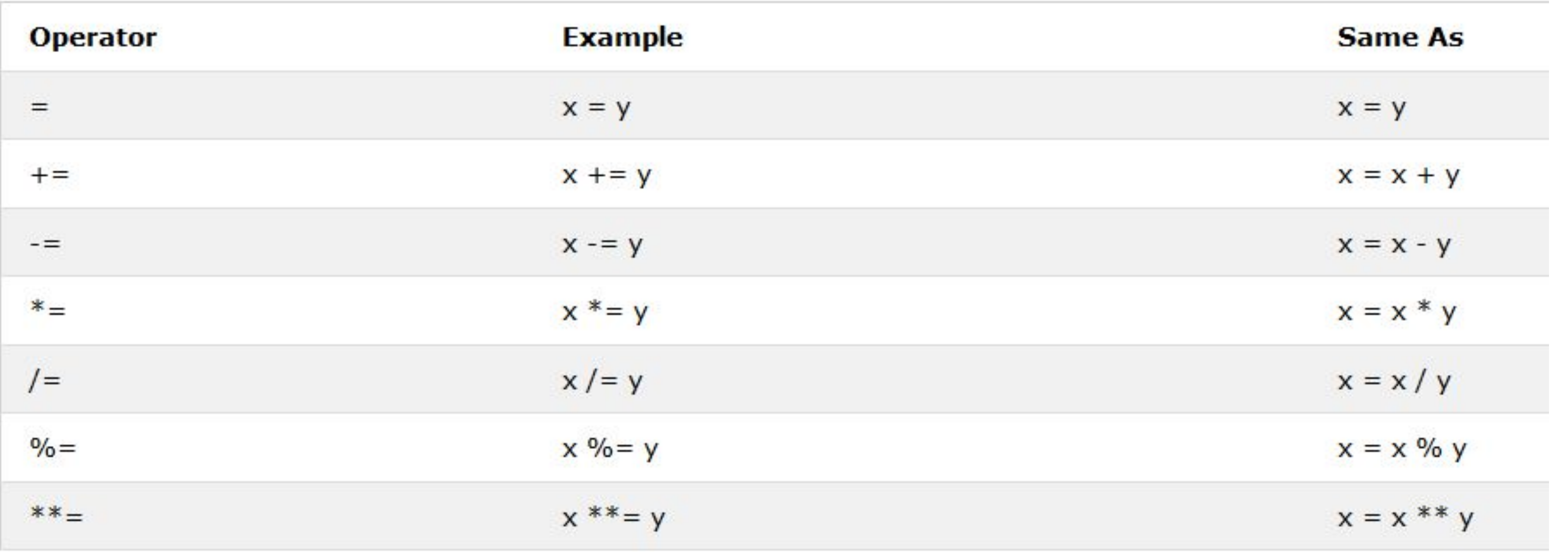
Source: *https://www.w3schools.com/js/js_operators.asp*

JS Operators: Assignment

- Assignment operators assign values to JavaScript variables.



Operator	Example	Same As
=	x = y	x = y
+=	x += y	x = x + y
-=	x -= y	x = x - y
*=	x *= y	x = x * y
/=	x /= y	x = x / y
%=	x %= y	x = x % y
**=	x **= y	x = x ** y

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Source: *https://www.w3schools.com/js/js_operators.asp*

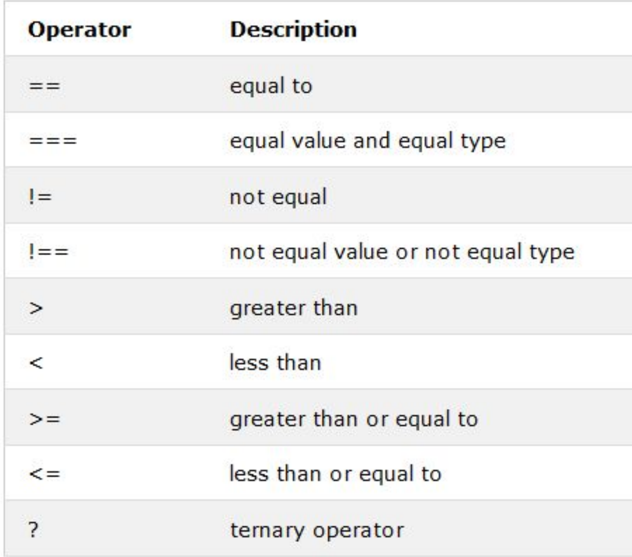
JS Operators: Data Types

- Concatenate (Combine) different data types
- Number to Number
  - **var** x = 5 + 5; // 10
- String to String
  - **var** str = “Hello ” + “Hi”; // “Hello Hi”
- Number to String
  - **var** comb = “Hello” + 5; // “Hello 5"

Source: *https://www.w3schools.com/js/js_operators.asp*

JS Operators: Comparison

- Comparison operators are used in logical statements to determine equality or difference between variables or values.
-



Operator	Description
==	equal to
===	equal value and equal type
!=	not equal
!==	not equal value or not equal type
>	greater than
<	less than
>=	greater than or equal to
<=	less than or equal to
?	ternary operator

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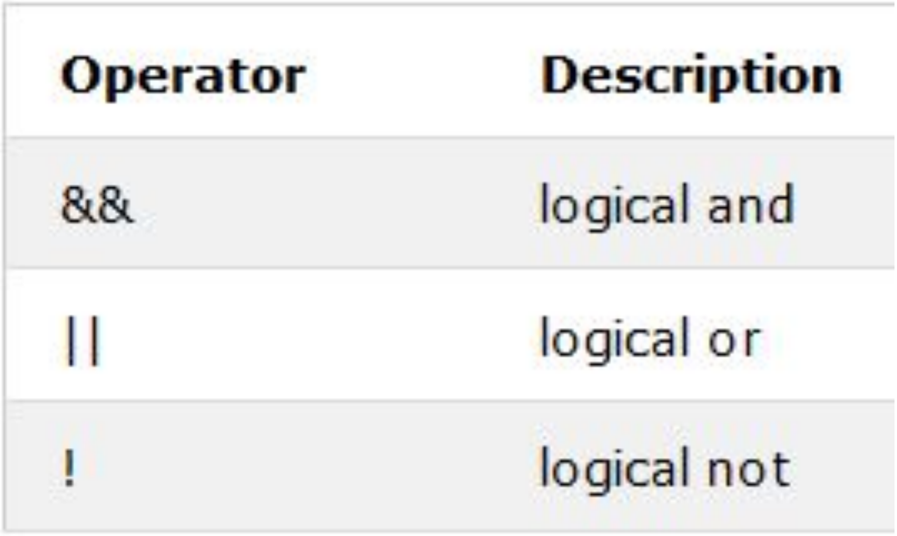
Source: *https://www.w3schools.com/js/js_operators.asp*

JS Operators: Logical

- Logical operators are used to determine the logic between variables or values.



Operator	Description
&&	logical and
||	logical or
!	logical not

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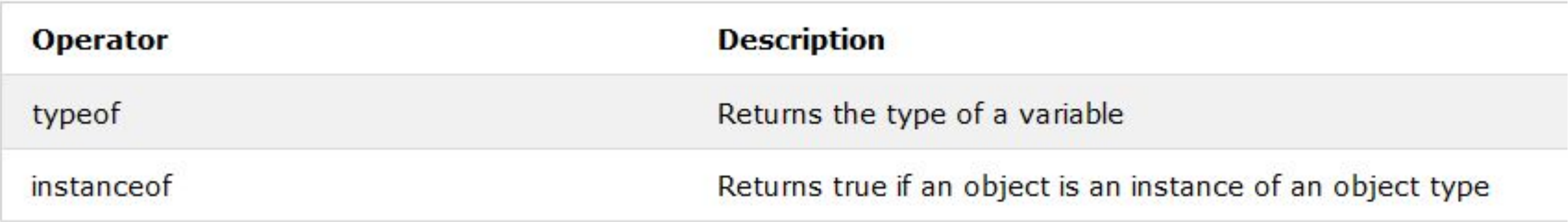
Source: *https://www.w3schools.com/js/js_operators.asp*

JS Operators: Type

- Type operators are used to determine the data type of a variable or a value



Operator	Description
typeof	Returns the type of a variable
instanceof	Returns true if an object is an instance of an object type

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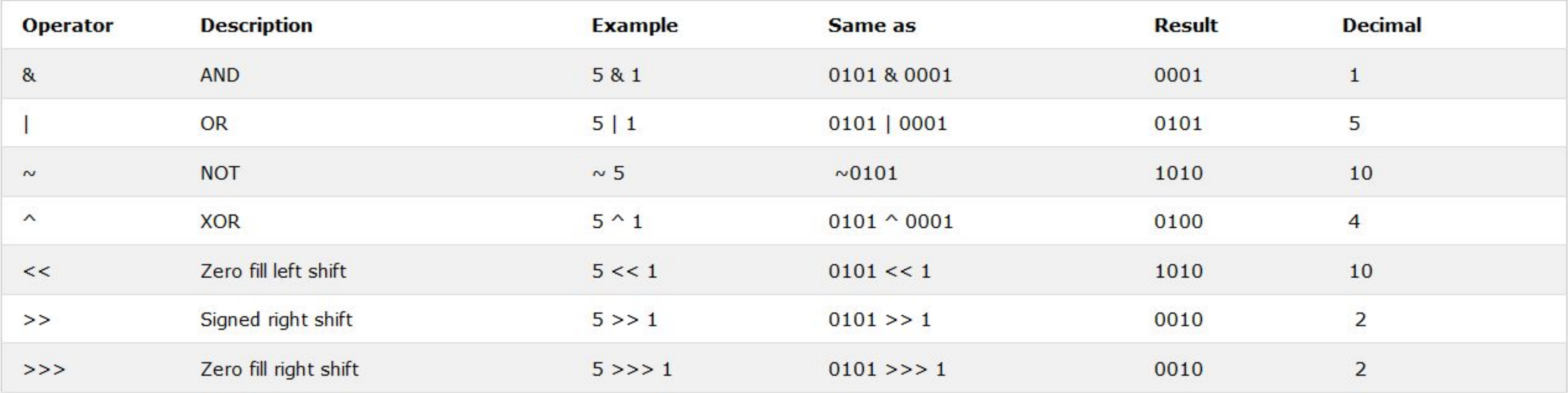
Source: *https://www.w3schools.com/js/js_operators.asp*

JS Operators: Bitwise

- Any numeric operand in the operation is converted into a 32 bit number. The result is converted back to a JavaScript number.



Operator	Description	Example	Same as	Result	Decimal
&	AND	5 & 1	0101 & 0001	0001	1
|	OR	5 | 1	0101 | 0001	0101	5
~	NOT	~ 5	~0101	1010	10
^	XOR	5 ^ 1	0101 ^ 0001	0100	4
<<	Zero fill left shift	5 << 1	0101 << 1	1010	10
>>	Signed right shift	5 >> 1	0101 >> 1	0010	2
>>>	Zero fill right shift	5 >>> 1	0101 >>> 1	0010	2

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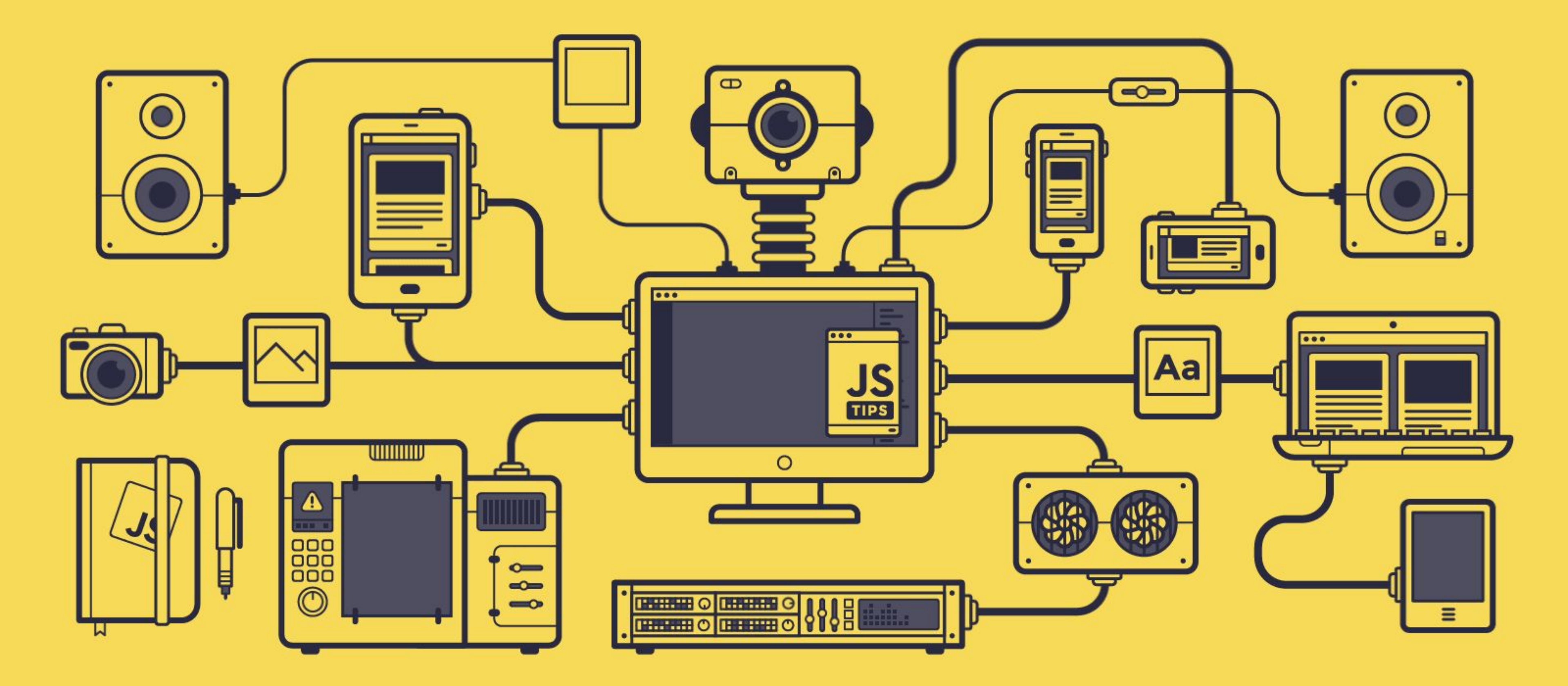
Source: *https://www.w3schools.com/js/js_operators.asp*



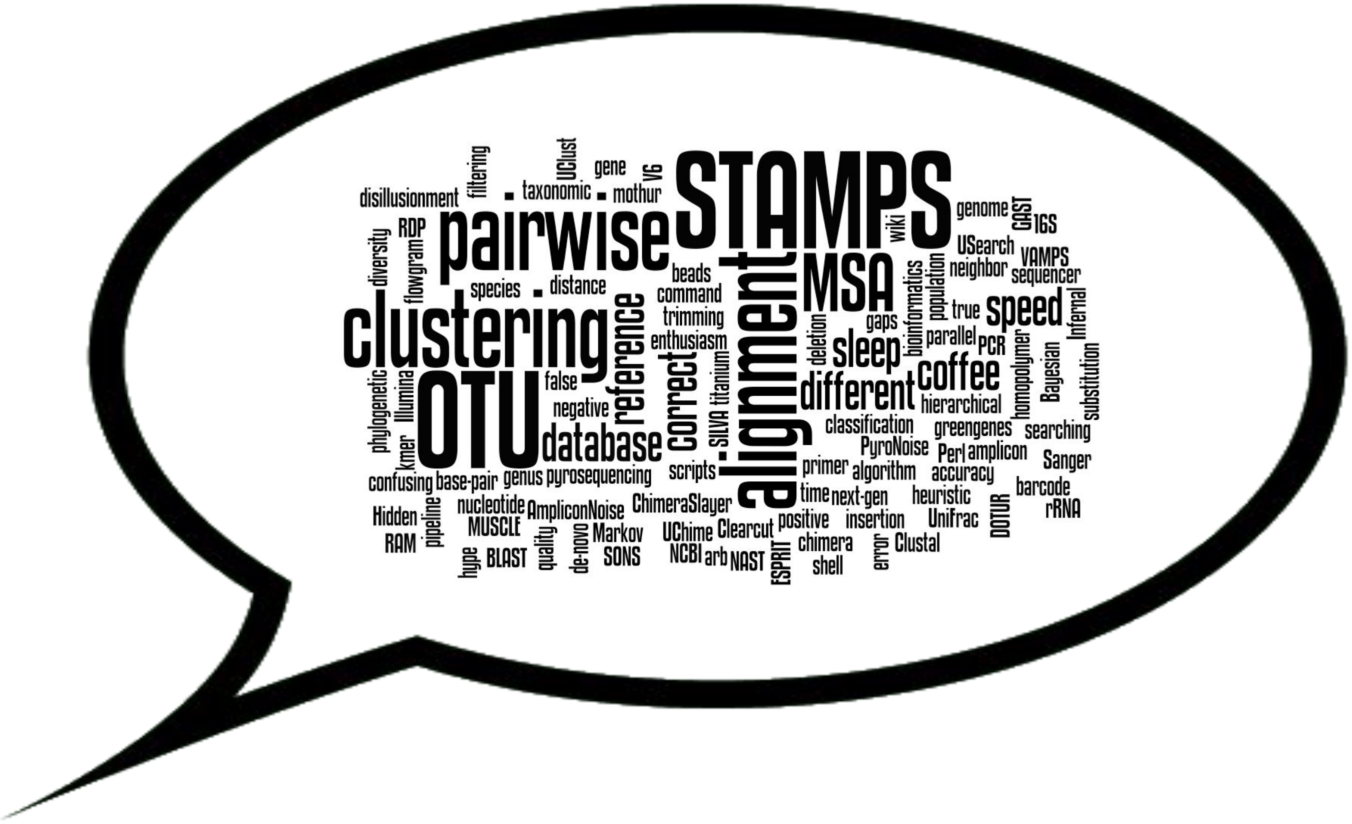
Try on your own

Activity 1

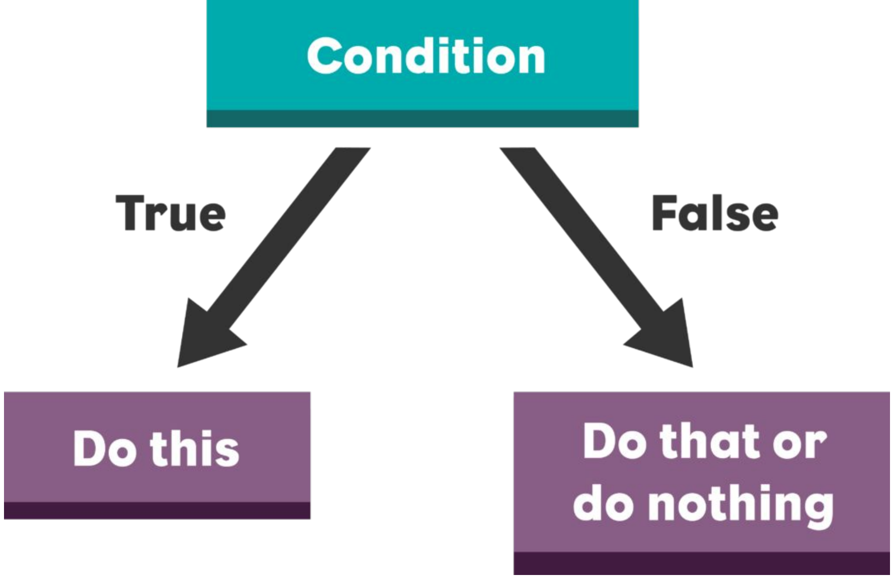
1. Open your folder (webdevJS_yourname)
2. Create HTML File webjs_11.html and webjs_11.js
3. Create the ff variables:
   a. Numbers
      i. length
      ii. width
      iii. height
   b. Strings
      i. color
      ii. shape

Activity 1

4. Inside the JS file:
    a. Solve the following and show the output in console.log
    b. Sum of length, width, height
    c. Product of width and height
    d. Difference of length and width
    e. Modulo of length and height
    f. Sum of color and length
    g. Sum of color and shape
    h. Sum of color and length and height (Specific order)
    i. Sum of width and height and shape (Specific order)



Concepts to remember



Conditional Statements

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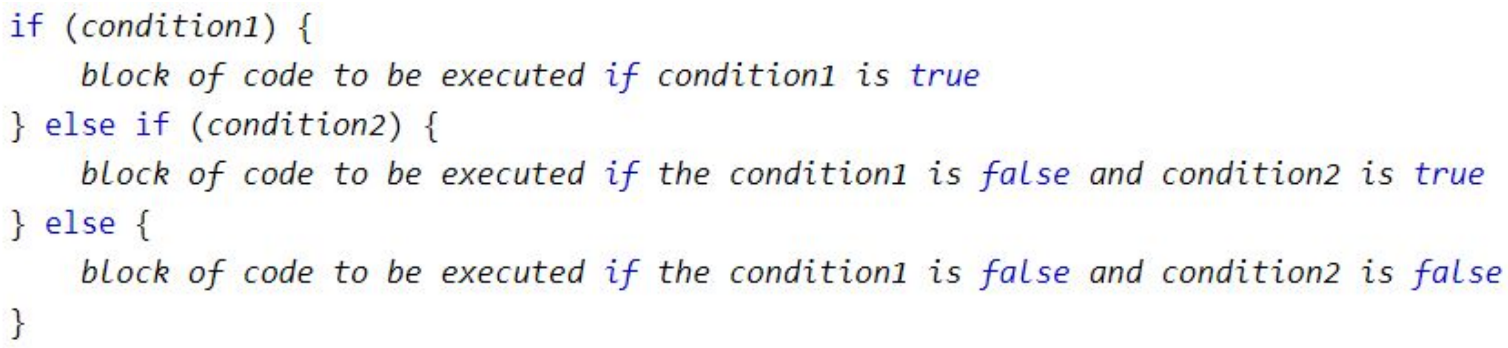
JS: Conditional statements

- If / else if / else - context
  - Use if to specify a block of code to be executed, if a specified condition is true
  - Use else to specify a block of code to be executed, if the same condition is false
  - Use else if to specify a new condition to test, if the first condition is false

JS: Conditional statements

- If / else if / else - pseudocode



```
if (condition1) {
    block of code to be executed if condition1 is true
} else if (condition2) {
    block of code to be executed if the condition1 is false and condition2 is true
} else {
    block of code to be executed if the condition1 is false and condition2 is false
}
```

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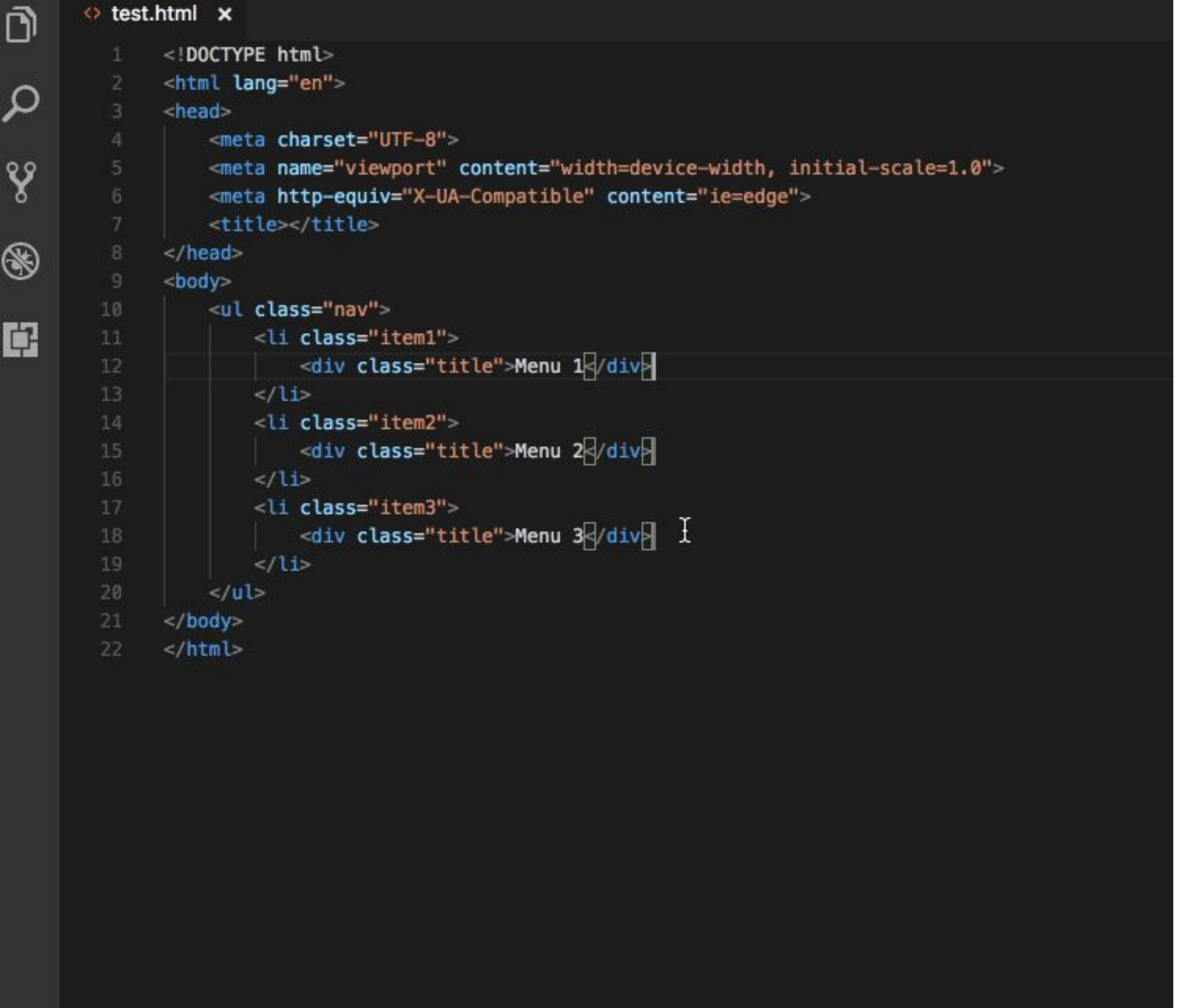
Let’s start coding!



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    <meta http-equiv="X-UA-Compatible" content="ie=edge">
    <title></title>
</head>
<body>
    <ul class="nav">
        <li class="item1">
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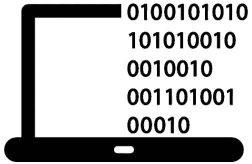
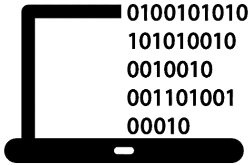
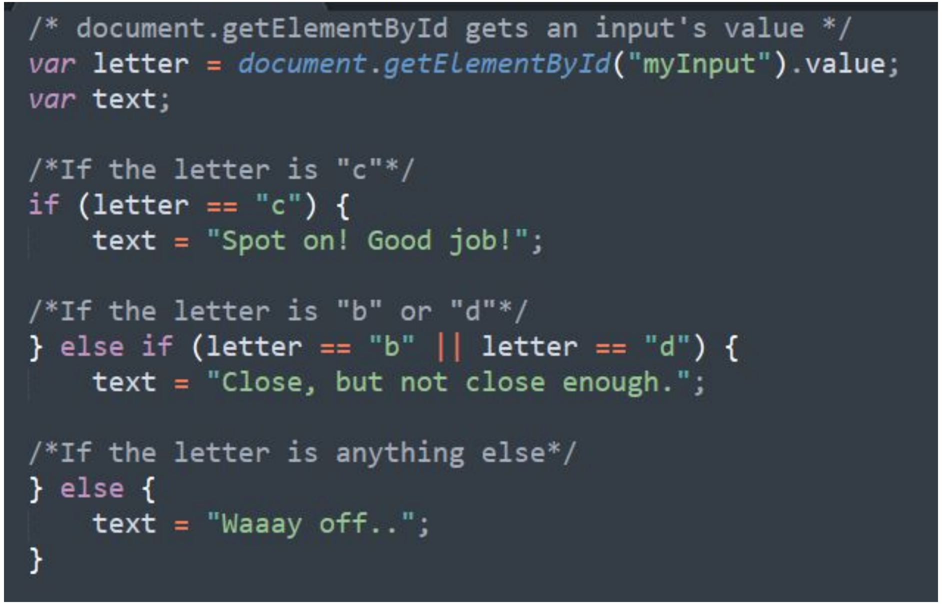
    </ul>
</body>
</html>
```





JS: Conditional statements

- If / else if / else - example

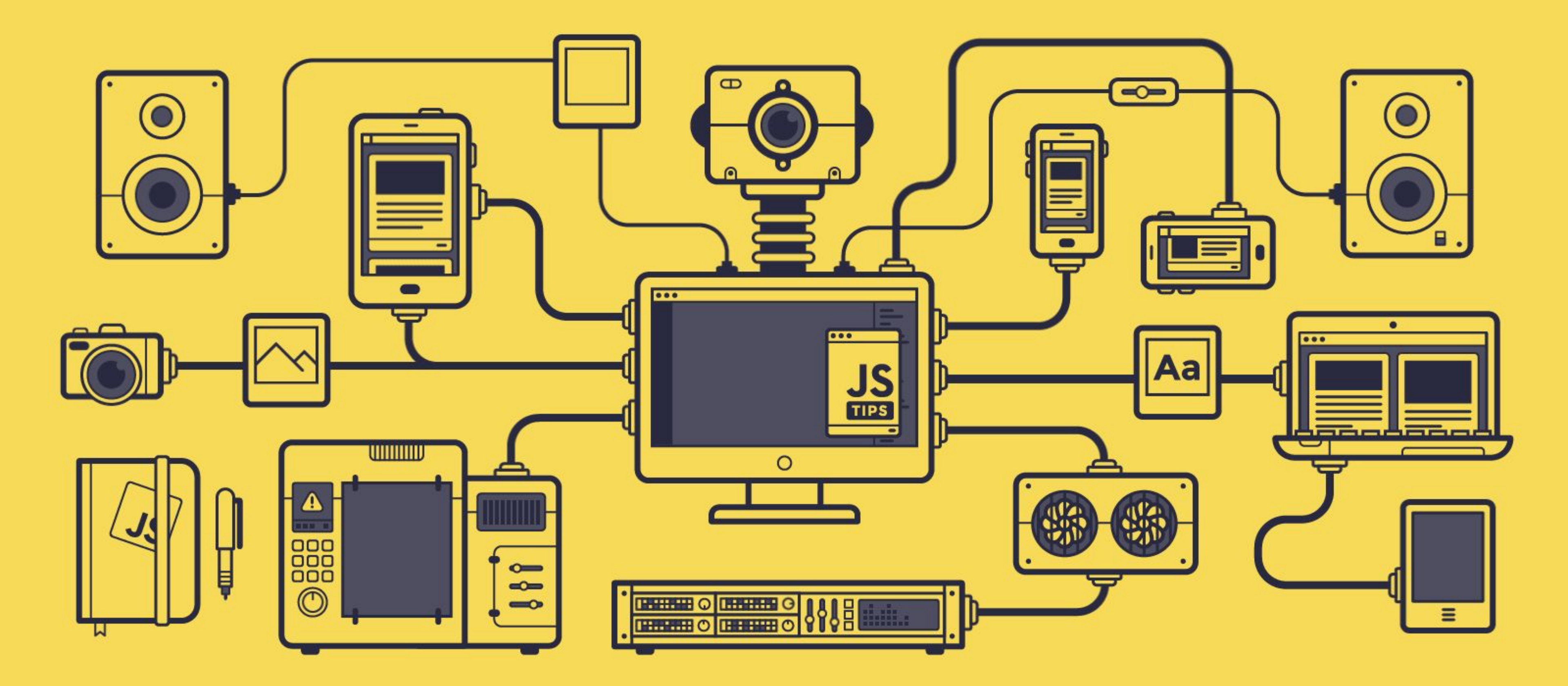


```
/* document.getElementById gets an input's value */
var letter = document.getElementById("myInput").value;
var text;

/*If the letter is "c"*/
if (letter == "c") {
    text = "Spot on! Good job!";

/*If the letter is "b" or "d"*/
} else if (letter == "b" || letter == "d") {
    text = "Close, but not close enough.";

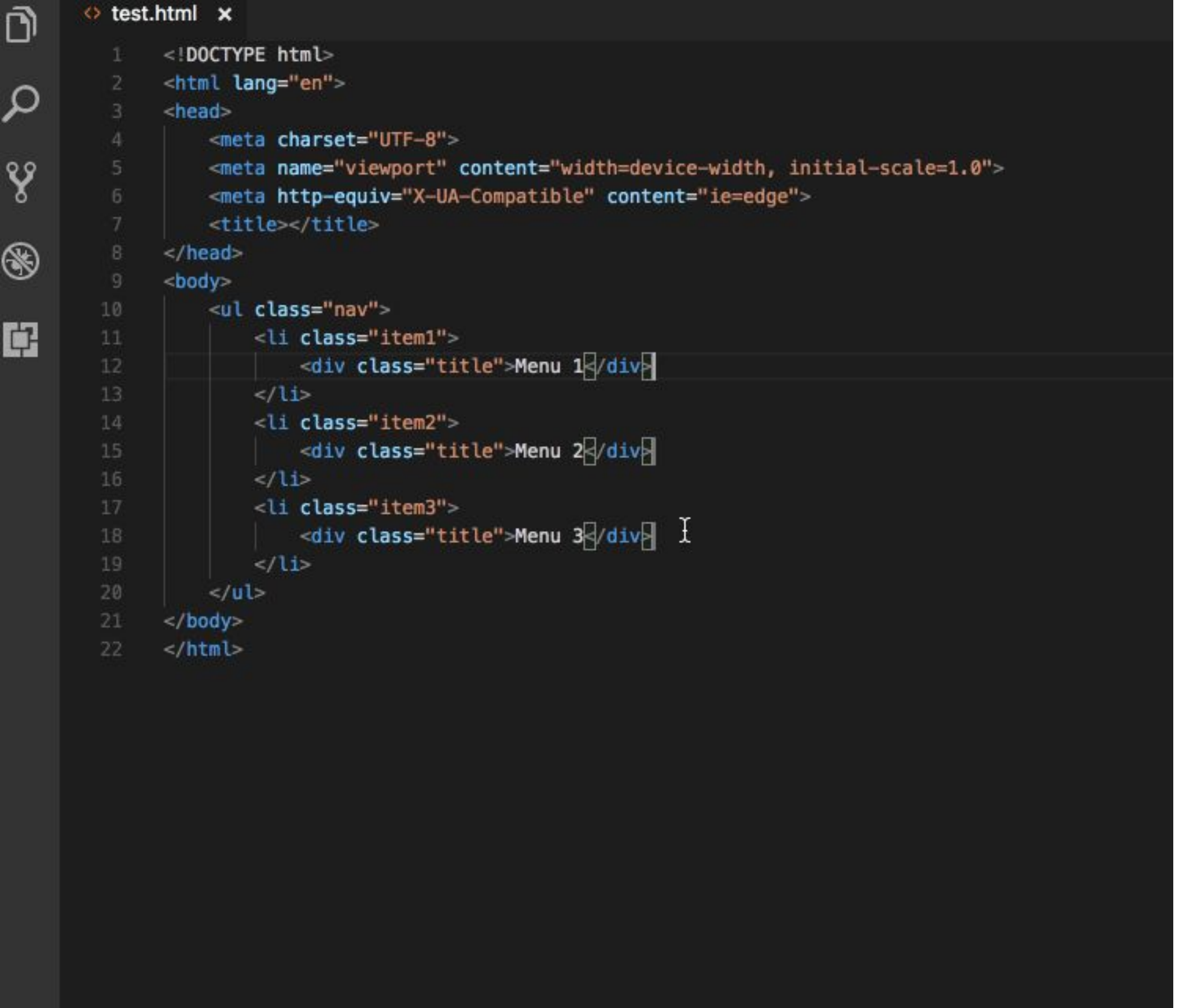
/*If the letter is anything else*/
} else {
    text = "Waaay off..";
}
```



Try on your own

Activity 2

1. Go to Documents.
2. Go to your folder named webdev03_yourname
3. Open the recently created file named webjs_11.html and webjs_11.js
4. Create a JavaScript program that computes for ff:
    a. If the **sum** of *remainder and product* of (length, width, height) is **greater** than the **product** of *sum and quotient* of (length, width, height), display in your console "**HIGH**", else display "**LOW**".



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<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <meta http-equiv="X-UA-Compatible" content="ie=edge">
    <title></title>
</head>
<body>
    <ul class="nav">
        <li class="item1">
            <div class="title">Menu 1</div>
        </li>
        <li class="item2">
            <div class="title">Menu 2</div>
        </li>
        <li class="item3">
            <div class="title">Menu 3</div>
        </li>
    </ul>
</body>
</html>
```
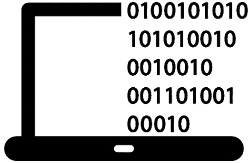
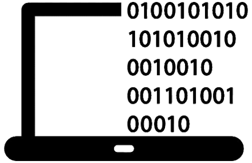



Let’s start coding!



Looping Statements
For / While

JS: For Loops

- For Loops – this loop is used when the code needs to execute a loop a specific number of times.

```
for (initialization; condition; increment){
    //code to execute
}
```

JS: While Loops

» While Loops – this loop is used when you the code executes a loop until a certain condition is met

```
initialization
while(condition){
    //code to execute
    increment
}
```

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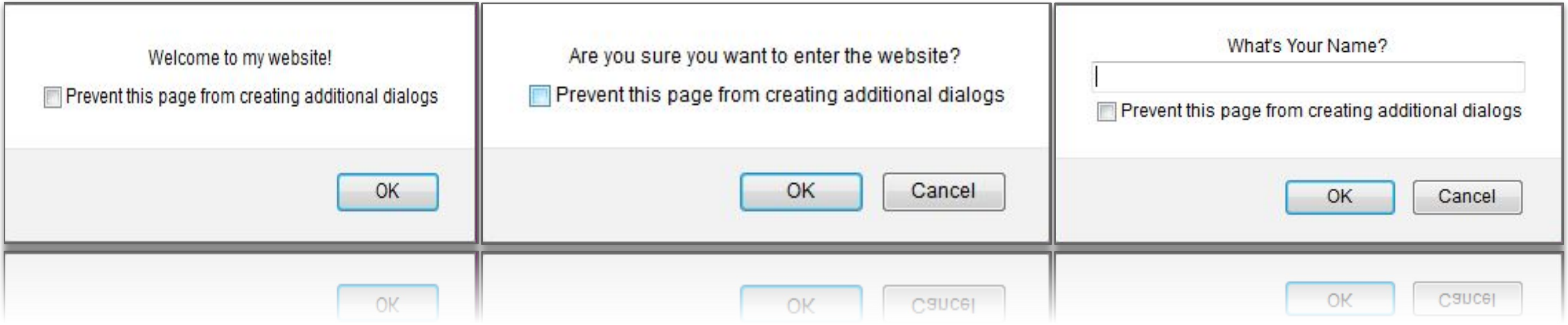


Welcome to my website!

□ Prevent this page from creating additional dialogs

Are you sure you want to enter the website?

□ Prevent this page from creating additional dialogs

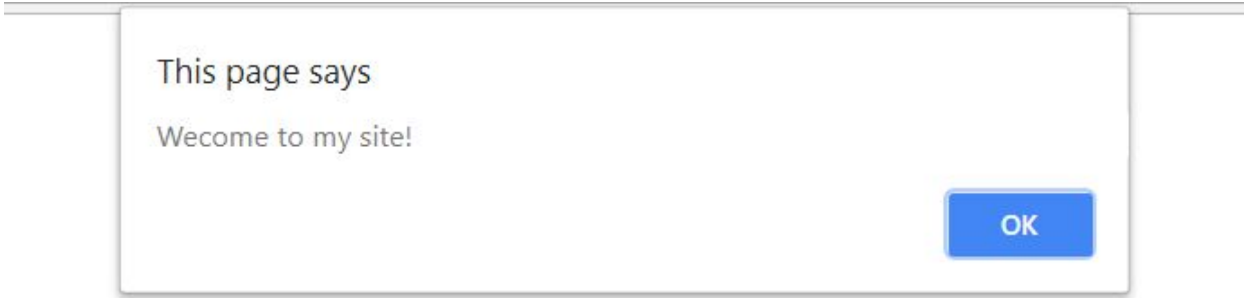
What's Your Name?

□ Prevent this page from creating additional dialogs

Popup Alerts
Alerts, Confirm Box, Prompt

JS: Alert

- When an alert box pops up, the user will have to click "OK" to proceed.

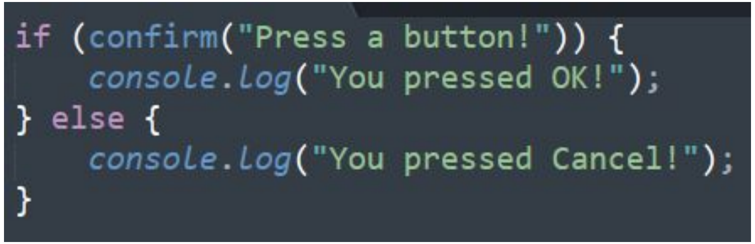


This page says

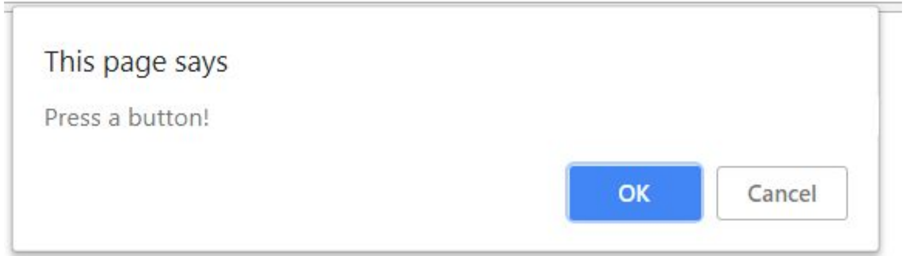
Wecome to my site!

JS: Confirm Box

- Often used if you want the user to verify or accept something.
- If the user clicks "OK", the box returns true. If the user clicks "Cancel", the box returns false.



```
if (confirm("Press a button!")) {
    console.log("You pressed OK!");
} else {
    console.log("You pressed Cancel!");
}
```

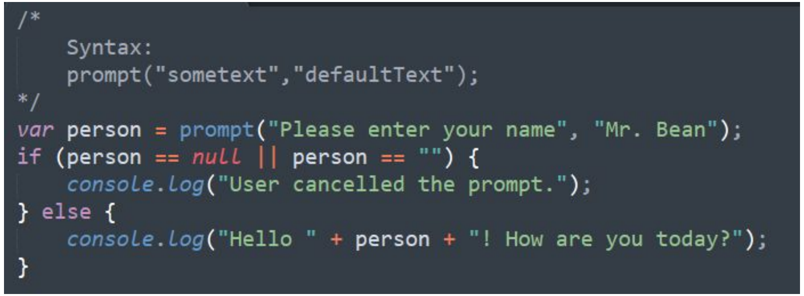


This page says

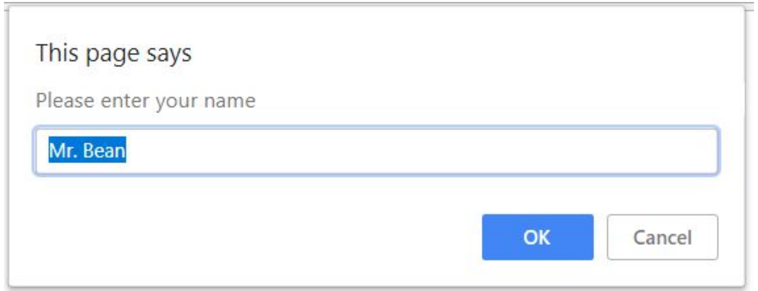
Press a button!

JS: Prompt Box

- Often used if you want the user to input a value before entering a page.
- If the user clicks "OK" the box returns the input value. If the user clicks "Cancel" the box returns null



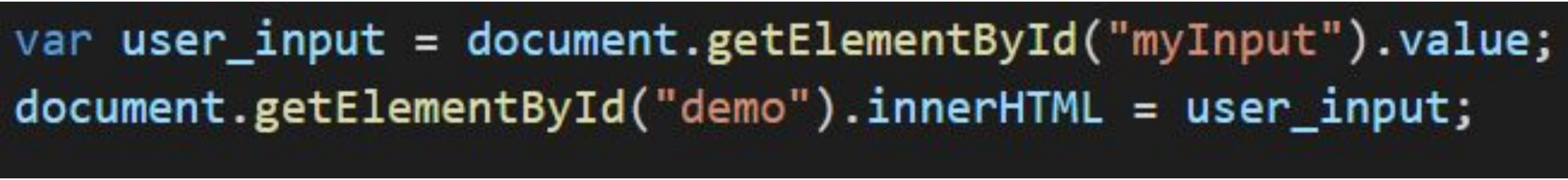
```
/*
    Syntax:
    prompt("sometext","defaultText");
*/
var person = prompt("Please enter your name", "Mr. Bean");
if (person == null || person == "") {
    console.log("User cancelled the prompt.");
} else {
    console.log("Hello " + person + "! How are you today?");
}
```



This page says

Please enter your name

Mr. Bean

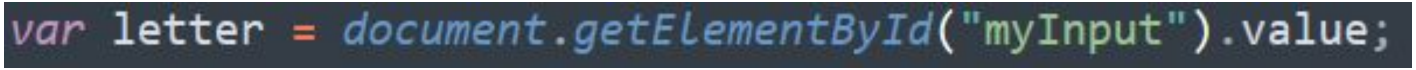


```
var user_input = document.getElementById("myInput").value;
document.getElementById("demo").innerHTML = user_input;
```

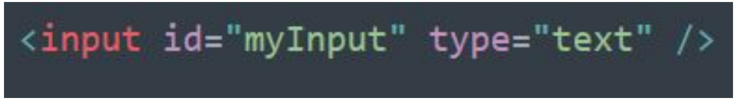
Accessing from HTML & Writing to HTML via JS

JS: Accessing from HTML

- Gets an element based on the supplied element value to be searched
  - getElementById(“<id>”)
  - getElementsByClassName(“<class>”)
  - getElementsByName(“<name>”)
  - getElementsByTagName(“<tag>”)



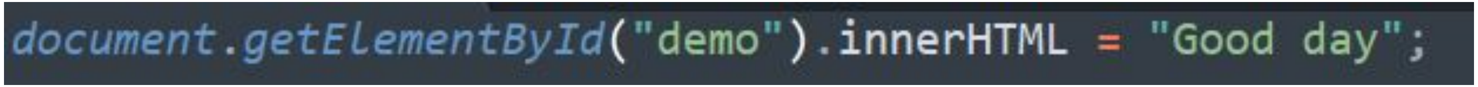
```
var letter = document.getElementById("myInput").value;
```



```
<input id="myInput" type="text" />
```

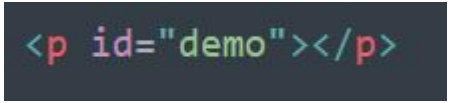
JS: Writing to HTML

- Assigns value to an element and places it inside the HTML tag

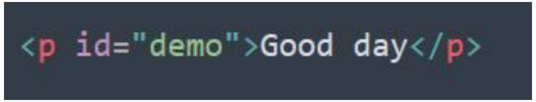


```
document.getElementById("demo").innerHTML = "Good day";
```

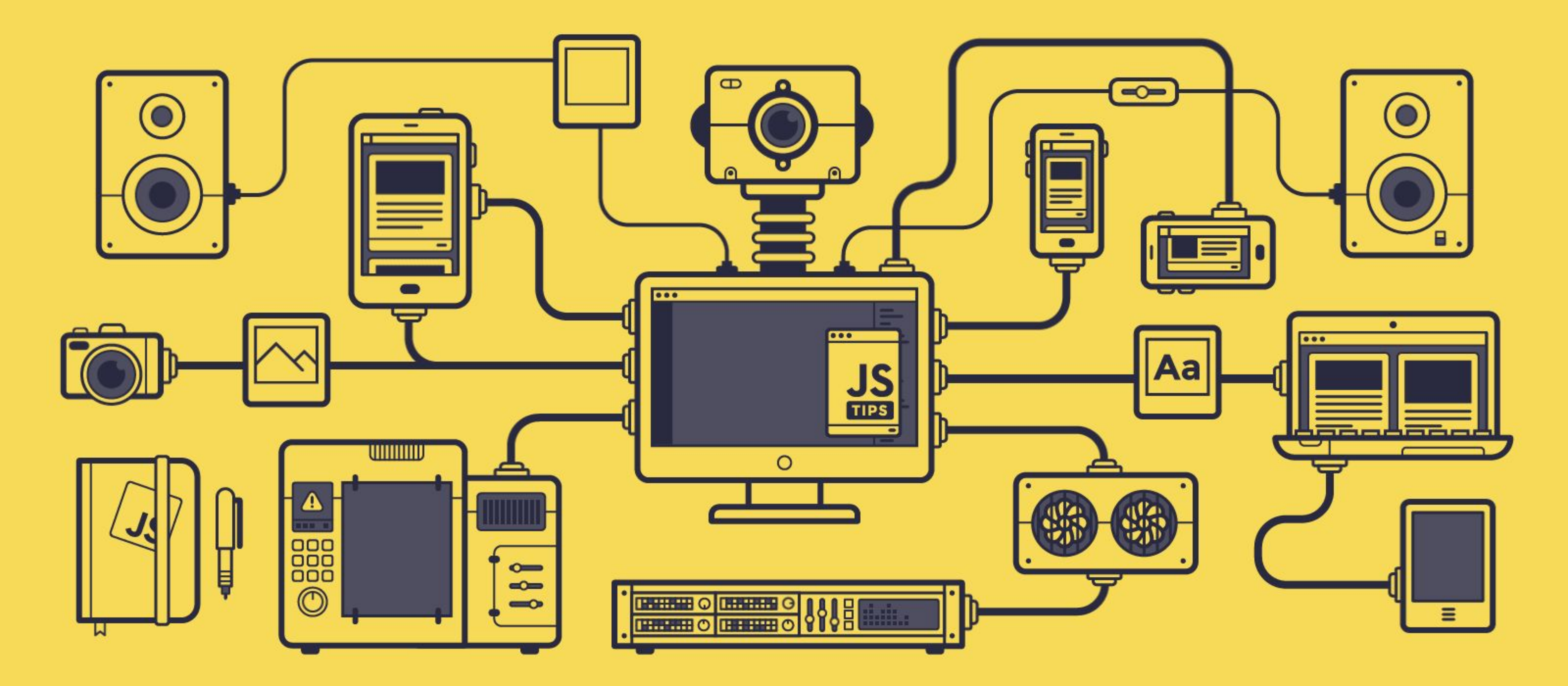
- The example above is assigned to HTML with id of demo:



```
<p id="demo"></p>
```



```
<p id="demo">Good day</p>
```



Try on your own

Daily Outputs

1. Go to your webdev folder.
2. Create files named web03_13.html and web03_13.js.
3. Open the files in Visual Studio Code.

Daily Outputs

4. Do the following:
    a. Create a website that accepts input from the user using prompt box then displays the accepted text
    b. Create a script that accepts 3 inputs using prompt box. Then, the website will display the sum and product of the numbers.
    c. Create a script that that takes the number of wins, draws and losses and calculates the number of points a football team has obtained so far. A win receives 3 points, a draw 1 point and a loss 0 points.

You finished today!

Good job! That was a lot, but you managed to finish it! See you again next meeting

The Coding School