

2 - Basic Javascript

Instructions

- Each individual instruction or step is known as statement. Each statement ends with semicolon.
- JavaScript is case sensitive.

① Variable declaration

Var quantity ;
variable keyword variable name or identifier

→ Camel case writing is preferred in javascript
UserName ✓ not User-nameX

② assigning variable

quantity = 3 ;

③ writing strings

They should be in one line

eg

~~(X)~~ "See our upcoming range" " see our ~~(X)~~ upcoming range"

④ Boolean

here booleans are
true , false .

⑤ Rules for variable name

- ⑥ name must start with letter, \$ or underscore not with no.
- ⑦ All variables are case sensitive
- ⑧ use of camelcase writing is preferred

⑥ Array declaration & some extra

Var colors;

colors = ["white", "black", "blue"]

or as

var colors = new Array('white', 'black', 'blue')
 Keyword

→ array can store even different data types

4

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• to retrieve data use item() method

eg colors.item(0); etc

or colors[0]

• length of array

colors.length;

• To update any value

eg in place of blue we want green

so colors[2] = "green"

(7) Operations on String

- ① can add no. to string
12 + 'Ivy road'

- ② no other operation inspite '+' can be done on this string.
it returns NaN (not a number)

④ DATA TYPES :-

undefined, Null, boolean, String, symbol
number and objects.

⑤ Uninitialized Variables :-

they have initial value of undefined
रविवार 6
If we do mathematical operation on an undefined variable your result will be NaN which means Not a Number

⑥ strict equality ($= = =$)

$3 == '3'$ True (sees only value)

$3 = = = '3'$ false (sees value & type)

3. FUNCTIONS, METHODS

8 OBJECTS

1) Function declaration :-

```
function sayHello()
```

```
{
```

```
    document.write('Hello');
```

```
}
```

→ function can be called before it is declared. This still works because the interpreter runs through script before executing each statement.

b) when requires parameters parameters

```
function getArea(width, height) {
```

```
    return width * height;
```

8

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2) Calling fn

```
getArea(3, 5);
```

ex. $a=3 \quad b=5$
 $getArea(a, b);$

3) Getting multiple values

out of a function → using array

```
function getSize(width, height, depth) {
```

```
    var area = width * height;
```

```
    var volume = width * height * depth;
```

```
    var sizes = [area, volume];
```

```
    return sizes;
```

```
var areaOne = getSize(3, 2, 3)[0];
```

→ area

```
var volumeOne = getSize(3, 2, 3)[1];
```

→ volume

4 Immediately invoked function Expressions (IIFE)

```
var area = (function() {
```

```
    var width = 3;
```

```
    var height = 2;
```

```
    return width * height;
```

```
}());
```

↓ → grouping operators → ensures interpreter
final parentheses treats this as an expression

- tells interpreter to call fn immediately
- document.write(area)

5 OBJECTS ↗

Objects group together a set of variables & functions to create a model of something you would recognize from real world.

→ If a variable is part of object it becomes property

→ In an object fn becomes → methods

→ Name of property & methods is called key

eg ↗ object

```
var hotel = {
```

name : 'Radisson',

rooms : 50, booked : 25,

key ↗ gym : true,

check Availability : function() {

return this.rooms - this.booked;

```
}
```

] Properties

] Method

- this → keyword is used to indicate that it is using the rooms & booked properties of this object

6 Accessing an object and DOT notation

2 ways to access properties & methods

- 1) DOT notation
- 2) Square brackets

1) DOT NOTATION

12 शनिवार

var hotelName = hotel.name;

var roomsFree = hotel.checkAvailability();

↓
member
operator

2) Square brackets

var hotelName = hotel["name"];

7 Creating an object :

Construction notation

Using new keyword & object constructor

eg

var hotel = new Object();

hotel.name = "Quay"

hotel.rooms = 40;

hotel.booked = 25;

hotel.checkAvailability = function() {

return this.rooms - this.booked;

}

(*) to iterate all keys of an object

```
→ for (let user in users) {  
    console.log(user);  
}
```

18] Updating an object

1) To change do

```
hotel.name = 'Park'
```

If name property was not present in hotel object then it will be added in object.

or by

```
hotel['name'] = 'Park';
```

2) To delete a property

```
delete hotel.name
```

3) to clear a property

```
hotel.name = ;
```

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14

19] Creating many objects:

Construction notation

When want several objects represent similar thing

```
function Hotel(name, rooms, booked) {
```

```
    this.name = name;
```

```
    this.rooms = rooms;
```

```
    this.booked = booked;
```

```
}
```

To access

```
var quayHotel = new Hotel('Quay', 40, 25);
```

To add new function

```
* Hotel.prototype.info = function () {
```

```
    return this.name + ' has ' + this.rooms + ' booked';
```

* Object.keys (name) $\xrightarrow{\text{return}}$ Array of its keys
Object name ['Palash', 'Raj', 'Ramu']
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15

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* Object.values (object-name)
 \rightarrow Array of values.

10 Object containing array

```
var costs = {  
    room 1 : items [420, 20, 10],  
    room 2 : items [460, 20, 20],  
    room 3 : items [230, 0, 0],  
    room 4 : items [620, 150, 60]  
}
```

To access

```
costs.room1.items[0];
```

11 object in array

```
var costs = [ { accm: 420, food: 40, phone: 10 },  
             { accm: 460, food: 20, phone: 20 },  
             { accm: 230, food: 0, phone: 0 } ]
```

16 बुधवार

To access

```
costs[2].phone
```

12 Built in object Model

① Browser object Model \rightarrow contains objects that model things like browser history & device's screen

② Global Javascript Model \rightarrow eg dates & times

③ Document object Model \rightarrow object to create/refer of current page

for any doubt see

↓ w3 school

JS Browser DOM

Reference w3school
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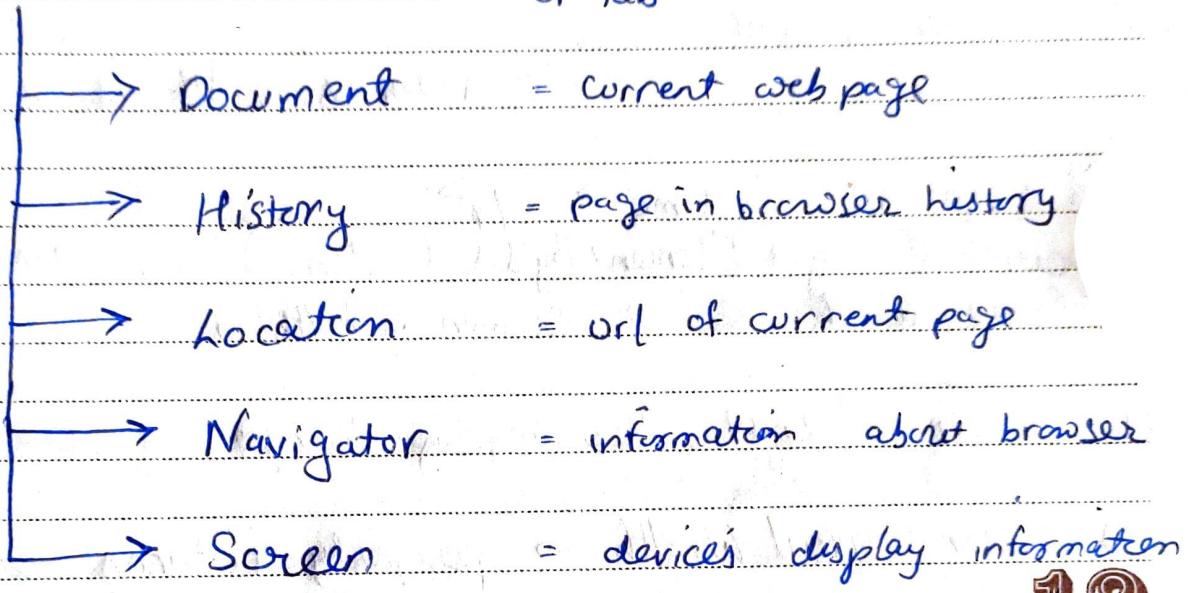
17

I JS Browser DOM

(13) Browser Object Model (कंपनी w3school ✓)

it creates a model of browser tab or window

Window

= Current browser window
or tab

eg

`window.print();` → to print dialog box

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18

`window.screen.width;` → let you find width of device's screen in pixels.

note → `window.document.getElementById("header")`
 is same as
`document.getElementById("header")`

- other `window.open()` → open new window
- `window.close()` → close current window
- `window.moveTo()` → move the current window
- `window.resizeTo()` → resize current window

Inheritance class Animal:

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```
class Dog extends Animal {  
    speak() {  
        console.log('Bark');  
    }  
}
```

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19

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b) Window Screen

The window screen object can be written without window prefix

i) Screen .width or window .screen .width

→ returns width of visitors screen in px

eg

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

document .get ElementById ("demo") .innerHTML =
"Screen width is " + screen .width ;

ii) Screen .height → Display height of screen in px

iii) Screen .availWidth → property returns width of

20 रविवार visitors screen in pixels minus interface features like taskbar.

iv) Screen .availHeight .

c) window .location or .location

i) window .location .href → returns href(URI) of current

ii) window .location .hostname → returns domain name of web host

iii) location .pathname → return path & filename of current both way page

iv) window .location .protocol → return web protocol used http:// or https://

v) window .location .assign → loads new document

eg. `window.location.assign("https://www.w3schools.com")`
so on calling it it opens this page

④ Window History

- ① `history.back()` → same as clicking back in browser
(used to make back button)
- ② `history.forward()` → same as clicking forward in browser

⑤ JS Navigator → contains info about visitors browser

- ① Cave (no use)

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⑥ JS popup alert

JS has 3 kind of popup boxes

- ① Alert box ② Confirm box ③ Prompt box

1) Alert box → `alert("I am alert box")`

2) Confirm box is used when we want to verify or accept something
if user click "ok" box returns true & if user click cancel it return false

eg <button onclick="func()"> Click Me </button>
 <p id="demo"></p>

```

function func() {
  var txt;
  if (confirm("press a button")) {
    txt = "You pressed OK!";
  } else {
    txt = "You pressed cancel";
  }
  document.getElementById("demo").innerHTML = txt;
}

```

24

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3) Prompt box

is often used if you want user to input a value before entering a page
 OK or Cancel after input.

Syntax

`prompt ("someText", "defaultText")`

> Constructor method to make object

`const square = new Polygon(3, 4);`

```

class Polygon {
  constructor(h, w) {
    this.height = h;
    this.width = w;
  }
  getArea() {
    return this.height * this.width;
  }
}

```

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१	२				
३	४	५	६	७	८
९	१०	११	१२	१३	१४
१५	१६	१७	१८	१९	२०
२१	२२	२३	२४	२५	२६
२७	२८	२९	३०		

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25

① To change image on click

<button onclick="document.getElementById('myImage').src = 'pic_bulbon.gif'> Turn on </button>

we use .src.

② ARRAY

cars = ["BMW", "Audi"]

document.write(typeof cars); → object

To add loop & make in a list

<script>

var fruits, text,flen,i;
fruits = ["Banana", "orange", "Apple"];

flen = fruits.length;

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26

text = "";

for (i=0 ; i < flen ; i++)

{ text += "" + fruits[i] + ""; }

text += "";

document.write(text)

- 1) Banana
- 2) Orange
- 3) Apple

* to find element & its location

return index of 'Pulash' in A

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| रवि. | सोम. | मंगल. | बुध. | गुरु. | बुक. | शुक्र. |
|------|------|-------|------|-------|------|--------|
| 30 | 31 | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | | | | | | |

27

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• array methods

(a) toString()

convert array to string with () ()

(b) join()

also convert array to string but can specify separator

cars.join(" * ");

print this → BMW * Audi * Saab .

(c) pop()

remove last element of array & return popped value

(d) shift()

removes first element of array & return it

28

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(e) unshift()

add new element to an array at beginning

(f) concat()

does not change existing array but returns new array

eg var num = [1, 2, 3] ;

var num2 = [5, 6, 7] ;

var x = num.concat(num2) ;

can merge more arrays also

var x = num.concat(num1, num2) ;

can even do

var x = num.concat([5, 3, 9]) ;

(g) push()

add item at end

return x.push([1, 2, 3])

index at which is added

★ spread operator (...) to copy full array

eg. let A = [1, 2, 3] ; let B = [] ;
 फरवरी 1 शनि 1 2
 3 4 5 6 7 8 9
 10 11 12 13 14 15 16
 17 18 19 20 21 22 23
 24 25 26 27 28

B = [...A] so B = [1, 2, 3]

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Also to concatenate B = ['Palash', 9, ...A, "wore", true] मंगलवार 29

• slice Method

make a new array with piece

eg var fruits = ["A", "B", "C", "D", "E"] ;
 var citrus = fruits.slice(1, 3)

→ [B, C, D]

if var citrus = fruits.slice(1) → [B, C, D, E]

① Array Sort

returns sorted array car3.sort()

sort() → change given array.

① sort()

sorts array in alphabetical order

② reverse()

reverse array

* use sort() for strings only

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30

• To find highest max num

Math.max.apply(null, [1, 2, 3])
 or arr

or Math.max.apply(1, 2, 3)

same for min

→ map method()

• it creates new array by performing fn on each array element.

• does not change original array.

→ fn takes 3 arguments

item value, item index, array itself.

```
var num1 = [45, 4, 9, 16];
var num2 = num1.map(myFun);

function myFun(value, index, array) {
    return value * 2;
}
```

so num2 → [90, 8, 18, 32]

can give any name (as num1 is there above)

→ filter () method

creates new array that passes a test

eg

```
var num = [45, 9, 16, 20]
```

```
var over18 = num.filter(myFun);
```

```
function myFun(value, index, array) {
    return value > 18;
}
```

• in place of filter if every

so checks either all values pass a test or not

• in place of filter if some()

so check any value pass a test or not

• if find()

so return value of first element that passes test

• Iterate over an Array (eg)

```
vara = ['one', 'two', 'three']
for (let e of a) {
    console.log('e:', e);
}
```

String

Var x = "John Doe"; or as var n = new String("John");
↓ type string ↓ type object

• String length (.length)

Var p = "ABC DEF";

Var l = p.length;

Q. Var x = new String ("John");

Var y = new String ("John");

x == y → is false because x & y are different objects

① finding string in a string (indexof())

this method return index of first occurrence of शनिवार
specified text in a string.

Var str = "What a great place";

Var pos = str.indexOf("great"); → 8

2

② (last) indexof()

returns index of last occurrence of specified text in string

Both indexof() & lastindexof() returns -1 if text is not found.

Both methods accept a second parameter as starting position for search

Var pos = str.indexOf("great", 3); → 8

③ Search()

Same like indexof() but can not take 2nd argument

④ Slice method (slice (start, end))

Start \rightarrow included end \rightarrow excluded

var str = "Peach is great";

var res = str.slice(7, 11); \rightarrow is g (x not include)

- If parameter is negative so counted from back

var str = "Apple, Banana, kiwi";

var res = str.slice(-12, -6); \rightarrow Banana

- if you omit second parameter, method will slice out rest of string

var res = str.slice(7);

⑤ Substring (start, end)

Same as slice but negative index not accepted

4

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⑥ substr (start, length)

Similar to slice but second parameter specifies length of extracted part

var res = str.substr(7, 6); \rightarrow Banana

- if you omit second parameter, whole length is sliced

⑦ Replacing string content (replace ())

replace specified value to another value in string.

var str = "Please visit Microsoft!";

var n = str.replace("Microsoft", "W3 schools");

is new string with replacement. this not change string str. it replaces only the first match.

• it is case sensitive so can't remove MICROSOFT.

to replace case insensitivity, use regular expression with flag (insensitive)

eg str = "Please visit Microsoft!";
var n = str.replace("MICROSOFT", "W3Schools"); X
var n = str.replace(/MICROSOFT/i, "W3 Schools"); ✓

- To replace all matches use a regular expression with flag (global match):

str = "Please visit Microsoft & not Microsoft!";
var n = str.replace(/Microsoft/g, "W3Schools");

- converting to Upper & Lower case

toUpper Case(); toLower Case();
var txt = "Hello World";
var txt1 = txt.toUpper Case();

- concat() method

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6

joins two or more string
eg var text1 = "Hello";
var text2 = "World";
var text3 = "text1.concat(" ", text2);

All string methods return a new string not modify original string
formally said: strings are immutable.

- string.trim()

removes whitespace from both sides of string
var str = "Hello World!";
alert(str.trim()); → Hello World!

⑪ charAt() method

returns character at specified index.

eg var str = "Hello World";
str.charAt(0); → H

can even do

⑫ []
str[0]; → H

⑬ Converting String to an Array split method

eg var txt = "a, b, c, d, e";

8 var arr = txt.split(",");
शुक्रवार → arr = {a, b, c, d, e}
arr[0] arr[1] arr[4]

can do

→ txt.split(" ");
txt.split("l");

④ to split into characters

* var txt = "Hello";
var arr = txt.split("");
arr = {H, e, l, l, o};

can use regex

str.split(/\w/);

① sort array of strings based on string length

$x = ["abedf", "abc", "acde"]$

want $\rightarrow x = ["abc", "abde", "abedf"]$

so

$x.sort(function(a, b) { return a.length - b.length});$

Udemy course

- To write code
can do in chrome → $\text{ctrl} + \text{shift} + \text{I}$
then go to Sources
then \Rightarrow
go to snippets
+ New snippets & code

Prompt

like alert ()
`prompt ("type your name");`
do keep it
var your name = prompt ("type your name");

12

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// set is also present in javascript

// count a number of occurrence of x in array

```
const result = arr.filter(i ⇒ i === x).length;  
console.log(result)
```