Turvash's Notes

7th February 2023

JavaScript - class 1

Javascript Basics :-

↳ Logic and Functionality.

What is JavaScript?

→ Light weight programming language & Scripting language use to implement the Behaviour of the website

History

→ Netscape navigator Founded Javascript (1994)
Firsty it was called Mocha., Then LiveScript then JavaScript

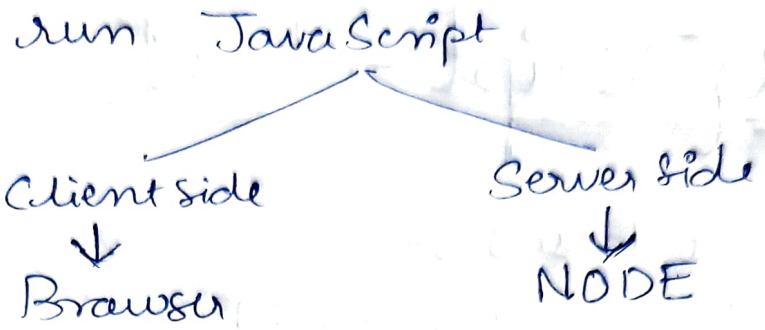
What can we do with JS :-

→ we can create web app / mobile app / network apps
→ CLI tools
→ Games

Client Side Scripting language executes on web browser.
The JS Engine (environment help to run JS code) in Chrome is called V8
Firefox → Spider Monkey

DONT GO IN DEPTH :)

Server side,
To run JavaScript outside the Browser
a C++ program added with JS
and NODE is invented (by Ryan Dahl)



Q) what is Server?
→ A computer which gives back data to client's computer when client Searches Something.

→ To Run in Browser :-
→ 'Inspect' in browser & go to 'Console' & then you can code :)

→ To Run in IDE :- (Code editor)
→ 1) VS code → Install
2) Node.js → Install

Adding JS in Code

use <Script> tag in HTML document.

ex:-
```
<Script>
    console.log("Namaste Duniya");
</Script>
```
→ to print or dock.

↑ used for client side Scripting

✓ We can add Script tag inside
- → Head tag
- → Body tag

Q) Best practice?

→ Best practice is to add in Body tag below of all the HTML codes. add Script in last of Body tag.

Why?

→ It will create Bug if added above in the body tag or in Head tag, First Script will run & can't able to parse that will cause error or Delay in execution.

✓ Comment in Javascript using Forward Slashes (//)

→ No significance in execution.

External JS

Due to Separation of concern, we will use external File for Javascript.

we create javascript File we use extension (.js)

Linking

< Script src = "index.js" > </Script>

To run js file using NODE :-

→ 1) VS code → view (top bar)

2) Open terminal.

3) then make sure you are inside your working Folder.

4) Command → node index.js.

(imp) ## Variables

named memory location is called Variable

✓ Creating variable in JS :- (var, let & const)

As it is dynamic typed language we no need to tell which data type to use, it automatically detects from the value.

Ex :- let a = 5 ~~(int)~~ (number)

let name = "Tuwash"; (String)

let status = true; (boolean)

let b = 12.5 (Float)

↑ Variable name

Let keyword

Var keyword

var a = 12,

var name = "Tuwash",

Let v/s Var

✓ difference is of Scope — Block / global

→ let is a block scope variable

```
{
    let a = 5;   (only be used inside this block)
}
```

eg:-

```
if (true)
{
    let a = 5
}
console.log(a);   (error)
```

Now

→ var is a global scope variable (anywhere in the code document)

→ let → redeclaration not allowed

→ var → redeclaration is allowed.

Const variable → Fixed value of Variable

Can't be changed

```
Const a = 5
a = 6   (updation not allowed)
```

No redeclaration

Variable Naming

Rules

- cannot be a reserved keyword (let if X)
- meaningful
- cannot start with number (1b X)
- no space use "_"
- camelCase (firstName)

primitive Types → defined data types

- String → ("Turwash")
- Number → (1, 2, 3, 4, 1.23, 5.64)
- Boolean → true or false.
- Undefined → (let a;) not defined
- null → empty variable (defined empty)

Dynamic typing.

↳ changing data type in JS

```
let a = 5;
a = 'Turwash';
console.log(a);
```

↳ Turwash printed

Reference Types (datatypes)

(1) Objects (multiple variables linked)
(2) Arrays (list of similar ~~datatypes~~ items (js))
(3) Functions

(1) Object :- (top level entity For multiple linked variables)

✓ let person = {
    firstName = 'Tuwash',
    age = 24
};

properties

TO Access :-
- dot Notation (person.age)
- Bracket Notation (person['age'])

(2) Arrays :-

↳ used to contain a list of items

✓ let names = ['love', 'rahul', 'sangram'];

TO Access :- ↓ indexes

0 → love
1 → rahul
2 → sangram

Indexes.

names[1] → rahul
names[0] → love

names[3] ?

names[3] = 'ramesh'; // value added
names[1] = 2 // updation overwrite

ECMA

ECMA is a standard of JavaScript
ECMA is an organisation which every year add updates in JavaScript.
ES6 → launched in 2015

Operators

(power)

(1) Arithmetic (+, −, *, /, %, **)
(2) Assignment (=, +=, −=, *=, /=, %=)
(3) Comparison (>, <, >=, <=, ===, !==)
(4) Ternary (condition) (condn ? val 1 : val 2)
(5) ~~Bitwise~~ Logical (AND, OR, NOT)
(6) Bitwise (Bitwise AND, Bitwise OR)

pre/post → Increment/decrement Operators

++x; → pre-increment

Firstly increment the value
Second, use the value

Ex:- let x = 10
console.log(++x);

11

eg:-
let a = 6
console.log(a++)

x++ → post increment Operator

First use the value
Second increment the value

6

Assignment

✓ $x = x + 5$ also $x += 5$

✓ $x = x * 3$ also $x *= 3$

Comparision

↳ answer will always be in True or False.

=== (strict equality) !== (not equal)

Equality

- == (loose equality)
- === (strict equality)

== v/s ===

== → loose equality, value is same or not

let num = 1

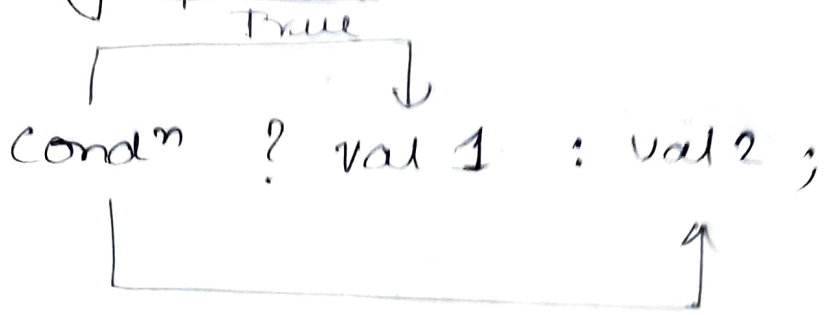
let str = '1' == gives true;

=== → strict equality, value + data is same or not

let num = 1

let str = '1' === gives False;

Ternary Operator :-



ex:- age = 27

let Status = (age >= 18) ? 'vote' : 'cant';

Logical operator

(And)

(condⁿ1 && condⁿ2 && condⁿ3)

if any condition is False
the entire False
All conditions have to be true

(OR)

(condⁿ1 || condⁿ2 || condⁿ3)

any condition is true
then True
all False then only
False.

(NOT) !

True → False

False → True

With Non Booleans (Logical Operator)

(true || false) → true

(true || true) → true

(false || false) → false

Now,

(falsy || 'love') → love

(true || 1 || 5) → 1

Concept of Falsy & Truthy:

Falsy
↓
undefined
null
0
false
''
NaN

Truthy
↓
anything that is not Falsy

truthy ✓
↓
(false || 'love')

* Short Circuiting Concept in OR

(false || 1 || 5)
↓
Finds truthy then stop execution and prints (1)

Bitwise Operator

Bits → 0 (False)

Bits → 1 (true)

Bitwise AND → &

Bitwise OR → |

&

A	B	O/P
0	0	0
0	1	0
1	0	0
1	1	1

|

A	B	O/P
0	0	0
0	1	1
1	0	1
1	1	1

Operator precedence

let c = a + b * d / c ;

which operator First ?

[use brackets to resolve problem of precedency.
let c = (a + ((b * d) / c))]

Control Statements :-

1) If - else
2) Switch

} two ways.

(1) if - else :- (if - elseif - else)

Single { if (condition) {
— —
}

Can be multiple { else if (condition) {
— —
}

Single { else {
— —
}

(2) Switch - case :-

Logic { input 1 → A
2 → B
3 → C

Syntax Switch Case :-

```
Switch (expression) {
    Case 1 : — —
      break;
    Case 2 : — —
      break;
      .
      .
    default : — —
}
```

break,
after executing the case breaks the Control Statement & will not execute further

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Loops :- (Repetition of task)

1) For loop
2) while loop
3) Do - while loop
4) what is an Infinite loop ?
5) for - in loop
6) For - of loop

(1) For loop

```
for (let i=0 ; i<5 ; i++)
      ↑          ↑     ↑
  initialisation  condition  updation
{
    console.log (i);
}
```

0 1 2 3 4

2) **While loop**

```
let i = 0;        <- initialization
while (condition)
{
  - - -
  i++;            <- updation.
}
```

3) **Do - while loop :-**

```
let i = 0
do
{
  - - -
  i++;
} while (i<10);
```

This executes atleast one Time condition is True or Not it executes one Time atleast.