

Date: 20/01/2024

NOTES

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JAVASCRIPT

INTRODUCTION

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JAVASCRIPT

- Javascript was invented by Brendan Eich in 1995.
- It was developed for Netscape 2, and became the ECMA-262 Standard in 1997.
- European Computer Manufacturers Association Ecma International (Formally European Computer Manufacturers Association) is an organization that develops standards in computer and technology.
- ES1 to ES5 (1997 to 2009)
- After that in 2015 (major changes to follow the rules and regulation) this is called Ecma Script / ES 2015 / ES6.
- ES6 is standard for javascript after that every year new changes came ES7, ES8, ES10 Etc.
- Js is a light weight object oriented programming language.
- Use in Form submit
- in client side validation
- Popup / events on click.
- Uses
 - client side execute / browsers (Js query, React Js, angular Js)
 - Website Server Side (Node js, Express Js)
 - Mobile Development (Hybrid App) (Framework for mobile app react native, Phone gap etc.
 - Software Development (Electron Js, Ex-visual studio / frameworks etc.

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Variables

- Variable is just like a container
- Variable is used to store information
- It reserves space in memory. Its data can vary but memory location will always remain the same.

Naming Variables in JavaScript

Rules.

- Variable's name can't be any keyword. eg. alert, prompt etc.
- Variable is case sensitive. Same name in capital and small letters are different. eg. Name or name (both are 2 different variables)
- Variables can consist of alphabet, number, dollar sign, and underscore.
- Variable name can't start with digit (number) its first letter. no space allowed.

As a good Programmer.

- Your variable name should match with its contents.
- When you want 2 words join in variable name, so first word start with small letter and second word start with capital letter.
- eg. fullName, rollNumber etc.

Types of Variable.

Var

(used before ECMAScript. this type of variable can be declare again and again in JS)

After ES6 in modern or advance JavaScript, these 2 keywords use for declaration variables.

DALMATIAN

• Let

(its value can change anytime in programming language and can declare and assign in 2 step.

eg. let name; (declare)
name = "hello"; (assignment)

• Const

- (it use for constant value eg Pi value). its value can't be changed. its value must be assigned at the time of declaration
eg. const name = "Hina"; (declare and assign in same sentence)

Comments in Js

- Single line: // let name = "Hina";
- Multi line: /* */

Variable Scope

1. Block Scope variable: if variable declare in block of code (in curly braces {})
It will alive only in block and will not be accessible after, curly braces.
2. Global Scope variable: these variables used globally in whole program.

Print / Display in Js

- On Browser: window.document.write("Hina")
- In Console: console.log("Hina")
- Popup: window.alert("Hina")

Taking Input from Users in Js.

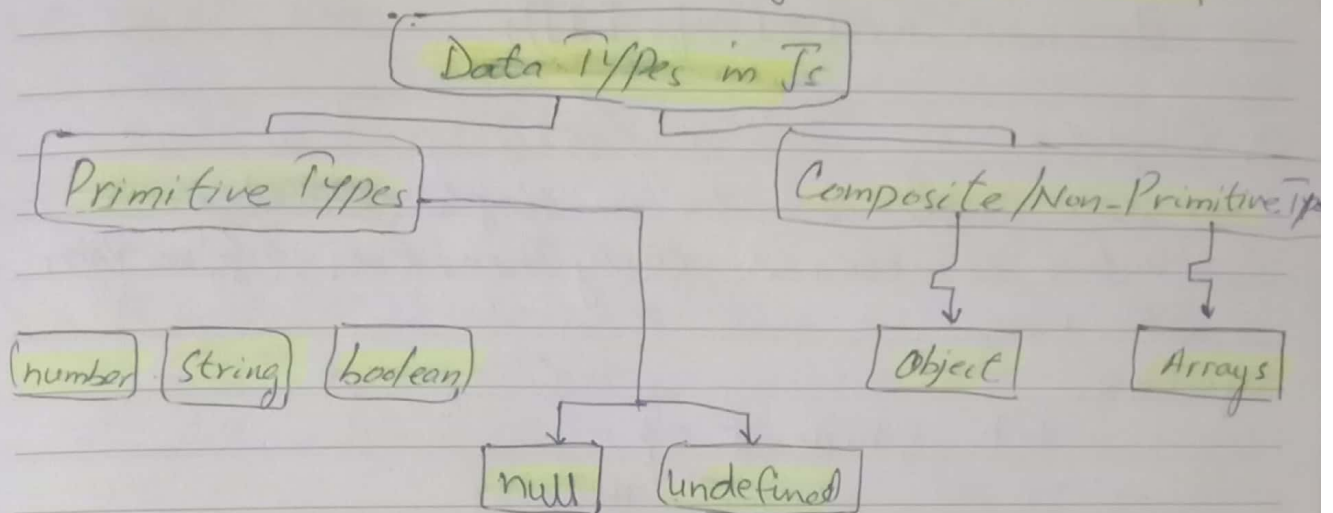
- Prompt: In Javascript, we use the prompt() function to ask the user for input. As a parameter, we input the next we want to display to the user. Once the user presses "Ok"

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The input value is returned. We typically store user input in a variable so that we can use the information in our programme.

let answer = Prompt("Do u want to send payment Y/n?:"); in answer variable value will be store and you can print it.

Variables & Datatypes in JavaScript



Also known as
Primitive / other Data types.

Primitive Data Types.

- | | |
|-----------------|-----------------------|
| • number | let rollNo = 56; |
| • String | let name = "Zais ha"; |
| • boolean | let is pass = true; |
| • undefined | let Percentage; |
| • Object / null | let class = null; |

Note.

To check data type
type of variables.

Non Primitive Data types

1. Array

- Store multiple value in single variable
- Variable written in square bracket `[]`

Syntax

```
let info = ["Hina", Computer];
console.log(info);
```

Print

```
document.write(info);
document.write(info[1]);
```

2. Object

- Store multiples value in single variable.
- Values written in curly brackets `{}` in pairs with keys.

Syntax

```
let student = {
  name: "Hina",
  rollno: 235,
  class: computer
}
```

Note:-Print

```
document.write(student);
document.write(student.rollno);
```

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Operators In Js

- Arithmetic operator
- Assignment operator
- Comparison operator
- Logical operator
- Conditional Operator

* Arithmetic Operator

Addition +

Subtraction -

Multiplication *

Division /

modulus / remainder %

Increment

Decrement $2 \times 2 \times 2$

Note:-

Unary Operators

Post increment $a++$

Pre increment $++a$

Post decrement $a--$

Pre decrement $--a$

* Assignment Operator (Assign Value)

=

$* = a = 2;$ left side = right

$+ = a + 4/2 = a + 4;$

$* = a - 4/a = a - 4;$

$* = * = a * 4/a = a * 4;$

$* = a * 4/a = a * 4;$

$\% a \% = 4/a = \% 4;$

Comparison Operation

$=$ (equal to) $==$ (equal to + same datatype)

$!=$ (not equal to) $!=$ (not equal to & datatype)

$>$ greater than

$>=$

$<$ less than

$<=$

Logical Operator

• logical AND $\&\&$ Condition 1 & Condition 2 all are

• logical OR $\|\|$

• logical NOT $!$

Note

Conditional Operator

if statement

if-else statement

if-else if statement

Ternary Operator

Condition? input : false

output

age > 18? "adult" : "not adult"

"not adult"

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Practice

- Get input from user a number and check and print it is even number or odd.
- Get input from user a number and check it is divisible by 3 or not and print it is divisible

let = num 40

let = result = num % 2 == 0 ?
"even" "odd"

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Template Literal / String Template

Template literal are a features in JavaScript that were introduced with ES6. They give you a more flexible and maintainable way of working with string in Javascript.

How to use template literal

- For next line `\n`
- For tab (space) `\t`
- For Print (in string) ```
- For write variable in string `${(variable name)}`
- For double quotation

Some String Properties and Methods

- let str1 = "I am learning js";
let str2 = "CSS"
let str3 = "html"
- Position / index start with 0 in String.
- to Find length `str.length`.
- to join string
`document.write(str1 + " " + str2) / (str1, " ", str2)`
- by concat()
`let str4 = str.concat(str2) / str.concat(str2, str3)`
`document.write(str4)`

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String

- String is a sequence of character. used to represent a text.
- It is primitive data type.
- We can create string by using template literals and in single and double quotation.

String Creation and manipulation

- `let str = "I am learning js";` // double.
- `let str = 'I am learning js';` // single.
- `let str = `I am learning string template`;` // literal (adjacent to ``` key in keyboard).

Let `str = "I am learning Javascript";`

- `str.trim()` to remove space from start and end.
- `str.trimStart()` //
- `str.trimEnd()` //
- `str.toUpperCase()` // Change in uppercase.
- `str.toLowerCase()` // Change in lowercase.
- `str.replace("Javascript", "html")` // search word and replace (Case sensitive)
- `str.includes("is")` // search word is / if not found return -1

Syntax

- normal string: `document.write("my roll no is", variable)`
- template literal: `document.write("my roll no is ${variable})`

String Manipulation

- `\n` use for print text in new line.
- `\t` use for spaces (tab) more than single space in text
- `\` use for single `'` in text
- `\"` use double quotation in string.

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Array (Primitive data types)

store multiple value in single variable.
Values written in square bracket. []

Switch statement

```
let reply = prompt("Do You want to continue")
switch reply
case 'y'
document.write("continue")
break;
case 'yes':
document.write("Continue")
break;
case 'N':
document.write("end")
break;
case 'no':
document.write("end")
break;
default
document.write("wrong input");
```

Loops

to execute a piece of code. again and again
finite loop and infinite loop.

Finite loop (ending point)

infinite (not end) memory full / computer hang.

For loop

1 is block scope variable. use for iteration /
counting (for (let i=1; i<=5; i++) // document.write(i))
First step initialization 2nd Condition check
jab tak condition true block of code execute
3rd Step updating

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Array (Primitive data types)

- Store multiples value in single variable.
- value written in square bracket `[]`
- values separated by comma.
- each position is called index
- each value call through index number start with 0 eg `arr[0]`, `arr[1]`

Syntax

```
let info = [5, 'hina', 'computer']; console.log(info);  
info = []; // to empty any array.
```

Properties and Method in Array

```
let book = ['Math', 'English', 'Urdu', 'Science', 'Physics'];
```

1. `book.length` // length of array.
2. `book.push('Chemistry');` // add word in array in the end
3. `book.unshift('Chemistry');` // add in start of array
4. `book.shift()` // remove a word from start.
5. `book.pop()` // to remove word from last and return updated array
6. `book.toString()` // Convert array in string
7. `book.concat(book)` // Join 2 or 3 array in new array don't change original array.

Click to add title

- `book.indexOf('Urdu');` // to find any word, position in array.
- `book.slice(start idx, end idx);` // don't change in original array
// return a slice piece of array.
- `book.splice(start idx, delcount, next);` // change original array
// add, remove and replace

• eg

```
let arr = [1, 2, 3, 4, 5, 6, 7];
```

```
arr.splice(2, 2, 55, 56); // 2 index per 3 // 3 and 4 remove //  
replace // them 55 and 56
```

```
arr.splice(3, 0, 44); // if you don't want to delete any item  
// 3 index per Joakar add 44
```

```
arr.splice(2, 3); // if you don't want add only delete item  
// 2 idx and item delete 3.
```

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For of / For in loop

- Print odd number of this array = [3, 4, 5, 6, 7, 8, 9] by using for of loop.
- Create an object and Print key and data with it by using for in loop.

While and Do while loop.

- Print sum of 1 to 20 number by using while loop and do while loop.
- Print country 10 to 1
- Print your name 20 time on screen.
- Print a table of any number by taking user input.

Function In Js.

A Javascript function is a block of code designed to perform a particular task.

A Javascript function is executed when something invokes it (calls it)

function definition/define

function fname()

{

block of codes

}

function fname(P1, P2)

{

document.write(P1 + P2)

}

function sum(P1, P2)

{

ans = P1 + P2;

return ans;

}

Function invoke
(call)

• fname();

fname(2, 3)

let ans = sum(2, 3);
console.log(ans);

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Arrow Function

Const fname = () => {
 block
 of
 code
}

fname ()