JavaScript

Q. What is JavaScript?

* JavaScript is a light weight / text-based programming language.
* It is most well known as scripting language for Web pages.

* What can we do with JS?
  * Web development
  * Mobile application development
  * Game development

Firefox uses SpiderMonkey JS engine.
Chrome uses V8 JS engine.

Adding JS in Code

- You can add JS code in HTML document by using the HTML <script> tag that wraps around JavaScript code.

The <script> tag can be used in the <head> or <body> section in the HTML.

Example

```
<html>
  <head>
    ____________
    ____________
  </head>
  <body>
      <script scr = "index.js"> </script>
  </body>
</html>
```

You will have to create a javascript file with .js extension.

Variables

A variable is a container for storing data (storing data values).

4 ways to declare a Javascript Variable:

* Using var
* using let
* Using const
* we can also declare a variable without using any keyword.

Ex

```
var x = 5;
let y = 6;
Z = 10;
```

When to use "const" ?

When we declare any value with "const" keyword then it means those value are constant and cannot be changed.

```
const price = 5;
```

```
let a = 5;          // number literal
let name = 'Rishabh';   // string literal
let status = true;      // boolean literal
```

Variable Naming Rules

⇒ Cannot be a reserved keyword.
⇒ Cannot start with a number.
⇒ Cannot contain space or '-'.
⇒ Should be meaningful.
⇒ Use camelcase. Ex- let arrName;

Primitive Types

In JavaScript there are 7 primitive data types:

* string — `let s = 'Rishabh';`
* number — `let n = 15;`
* bigint — It is a integer with arbitary precision.
* boolean — `let y = true;`
* undefined — `let a;`
* symbol — a data type whose instance are unique and immutable.
* null — `let z = null;`

Dynamic Typing

JavaScript has dynamic types. This means that the same variable can be used to hold different data types.

Ex
```
let n;      // undefind
let n = 5;  // a number
n = 'Rishabh'; // a string
```

Reference Types

* Objects
* Arrays
* Functions

Objects

A Javascript object is a collection of named values.

Object values are written as key : value pair.

Objects are variables too, but it contains multiple values.

Ex

```
let person = {
    fName : 'Rishabh',
    lName : 'Kushwaha',
    age : 20
};
```

Access in Objects

⇒ person.age

⇒ person['age']

Arrays

An array is a special variable, which can hold multiple values of multiple data types or of same type.

Ex

```
let name = ['Rishabh', 'Babbar', 'Lakshay'];

let person = ['Rishabh', 20, 'BCA'];
```

Operators

* Arithmetic
* Assignment
* Comparison
* Bitwise
* Logical

Arithmetic

+	Addition
-	Subtraction
*	Multiplication
**	Exponentiation
/	Division
%	Modulus
++	Increment
--	Decrement

Assignment

=	/=
+=	%=
-=	**=
*=	

Comparison

>	greater than	===	equal value & type
<	less than	!==	not equal value & type
>=	greater than equal to	!=	not equal
<=	less than equal to	==	equal to
?	ternary operator		

Logical

AND	&&
OR	||
NOT	!

Bitwise

Bitwise AND

Bitwise OR

Control Statements

* if-else
* switch

if -else

```
if (condition) {
    ======
}
```
} single

```
else if (condition) {
    ======
}
```
} multiple

```
else {
    ======
}
```
} single

Switch case

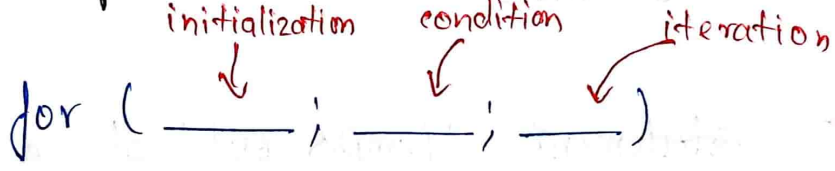
```
switch (expression) {
    case 0: [ ] ;
        break ;
    case : [ ] ;
        break ;
    default : [ ] ;
}
```

Loops

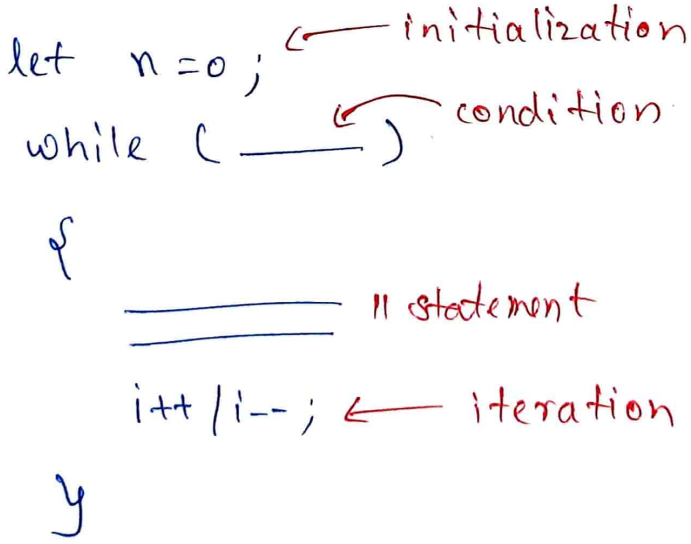
It is used when we want repeatition of task.

* for loop
* while loop
* do-while loop
* for-in loop
* for-of loop

For loop



While loop



Do-while loop

```
let i = 0;        <-- initialization
do
{
    ========      // statement
    ========
    ========
    i++;          <-- iteration
} while (___);    <-- condition
```

Break and Continue

The break statement "jumps out" of a loop.

The continue statement "jumps over" or "skip" one iteration in the loop.