Introduction of JavaScript

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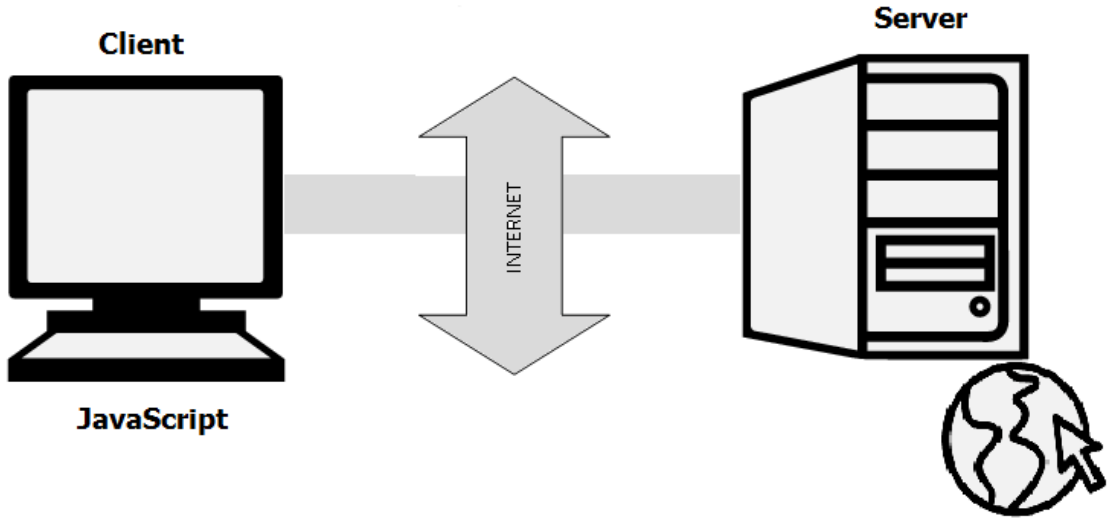
What is JavaScript?

- JavaScript is a very powerful **client-side scripting language** for web-based applications.
- JavaScript is mainly used to make interactive and dynamic webpage.



Javascript History

- In 1995, JavaScript was created by a Netscape developer **Brendan Eich**.
- The language initially called Mocha → LiveScript → JavaScript
- From 1997, JavaScript is officially maintained by ECMA (European Computer Manufacturers Association) as ECMAScript.
- ECMAScript 6 (or ES6) is the latest major version of the ECMAScript.

Q: Does Java and Javascript are same?
A: No

- JavaScript is mostly influenced by the programming language C.

Brendan Eich - Creator of JavaScript

Features of JavaScript

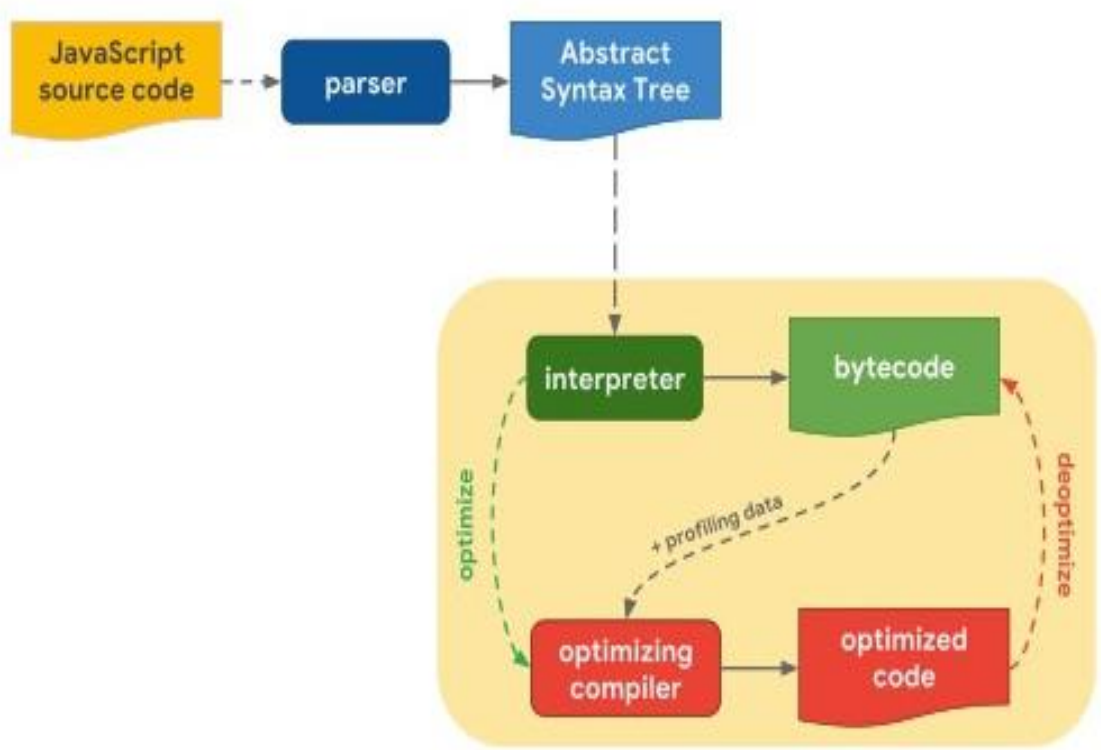
- Supports all popular web browsers
- Follows the syntax and structure of the C programming language
- Object-oriented programming language
- Light-weighted and interpreted language
- Case-sensitive language
- Run on several OS including Windows, Linux and MAC
- Good control to the users over the web browsers
- Full integration with HTML/CSS

Application of JavaScript

- JavaScript is used to create interactive websites.
- It is mainly used for:
  - Client-side validation
  - Dynamic drop-down menus
  - Displaying date and time
  - Displaying pop-up windows and dialog boxes
  - Displaying clocks
  - Perform and control transitions and animations

How to Run JavaScript?

- JavaScript code runs by web browser.
- Web browser has an embedded engine called as JavaScript Engine.
- **How dose JavaScript engine work?**



JavaScript engine working process

A Simple JavaScript Program

Program:

```
<script  type="text/javascript">
        document.write("Welcome to class of JavaScript");
</script>
```

1. **<script> …. </script> tags:** Indicates starting and ending of JavaScript
2. **<script type="text/javascript">:** Content type provides information to the browser
3. **document.write():** Display specified text on the page

Types of JavaScript

1. Internal JavaScript
2. External JavaScript
3. Inline JavaScript

Types of JavaScript

1. Internal JavaScript

- Embedding the JavaScript code between a pair of <script> and </script> tag
- **Example:**

```
<html>
<body>
   <script>
     document.write("Hello World!"); // Prints Hello World!
   </script>
</body>
</html>
```

- The <script> element can be placed in the <head> or <body> section of an HTML document.

Types of JavaScript

2. External JavaScript

- Place JavaScript code into a separate file with a .js extension
- Call that file in your document through the src attribute of the <script> tag
- <script src="external.js"></script>
- **Example**
- **Advantages of External JavaScript:**
  - Reusability
  - Code readability becomes easy
  - Time-efficient

Types of JavaScript

3. Inline JavaScript

- Place JavaScript code directly inside an HTML tag
- **Example:**

```
<body>
    <button onclick="alert('Hello World!')">Click Me</button>
</body>
```

JavaScript Variable

- Variable is used to store data.
- **Syntax:**

  Var variable_name = value;
- **Examples:**

  var n1 = 10;

  var _name="Jyoti";

- ES6 introduces two new keywords **let** and **const** for declaring variables.
- **Examples:**

  let name = "Jyoti patel“;

  const PI = 3.14; // Declaring constant

JavaScript Data Types

- JavaScript is a dynamic type language - don't need to specify type of the variable

- **Basic Data types:**
  - Primitive data type – String, Number, Boolean, Undefined, Null
  - Non-primitive (reference) data type – Object, Array

- Example:

```
var a = 40;          //number
var b = "Rahul"; //string
var c = true;      //boolean
var d;               //undefined
var e = {id:1021, name:"Ms. Shital Seth", salary:40000}  //object
var f = ["red", "green", "blue"] // array
```

JavaScript Operators

- JavaScript operators are symbols used to perform operations on operands.

- **Types of Operators:**
  - Arithmetic Operators - +, - , *, /, %, ++, --
  - Comparison (Relational) Operators - ==, ===, !=, >,>=,<,<=
  - Bitwise Operators - &, |, ^, ~, <<, >>
  - Logical Operators - &&, ||, !
  - Assignment Operators - =, +=, -=, *=, /=, %=
  - Special Operators - ?=, , , in, typeof

JavaScript Popup boxes

- Popup boxes are used to display the message or notification to the user.
- There are three types of pop up boxes in JavaScript
  - Alert Box
  - Confirm Box
  - Prompt Box

Alert Box

- An alert dialog box is mostly used to inform or alert the user by displaying some messages in a small dialogue box.
- User needs to press ok button for further process.
- **Syntax:** alert(“Some Message”)
- **Example:**

```
<script>
  function showAlert() {
    alert("Hi, this is an Alert box");
  }
</script>
<button onclick="showAlert()">Show Alert</button>
```

Confirm Box

- It is used to get the authorization or permission from the user.
- When a confirm box pops up, the user will have to click either "OK" or "Cancel" to proceed.
- If the user clicks "OK", the box returns true. If the user clicks "Cancel", the box returns false.
- **Syntax:** confirm(“Some Message")
- **Example:**

```
<script>
  function showConfirm() {
    var x;
    if (confirm("Press a button!") == true) {
      x = "OK pressed!";
    } else {
      x = "Cancel!";
```

Prompt Box

- It is used to take some input from user.
- User will see a prompt box with an input field and buttons "OK" or "Cancel" to proceed after entering an input value.
- **Syntax:** prompt(“Some Message“, Default Value)
- **Example:**

```
<script>
        function show() {
            var x=prompt("Enter Name");
            document.write("Welcome " + x);
        }
</script>
<button onclick=" show()">Click Here</button>
```

JavaScript Conditional Statements

- Conditional statements are used to decide the flow of execution based on different conditions.

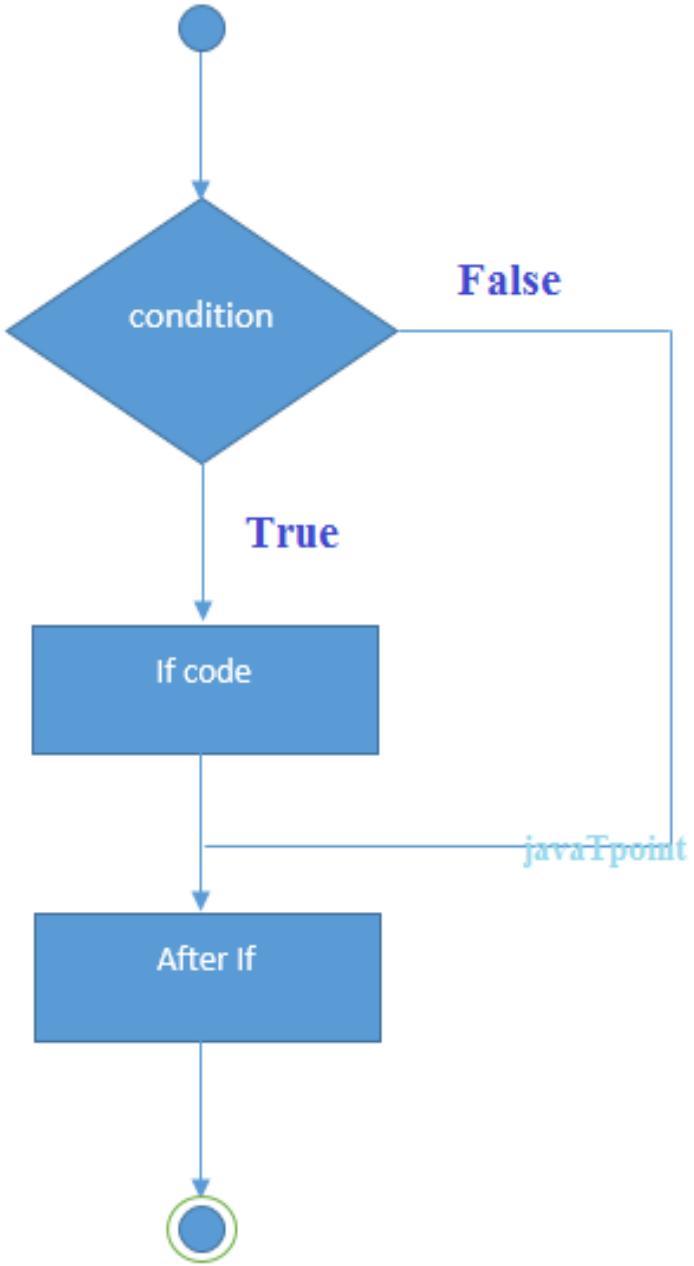
- Types of conditional statements:
  - If Statement
  - If else statement
  - if else if statement

If statement

- It evaluates the content only if condition is true.

- Syntax:

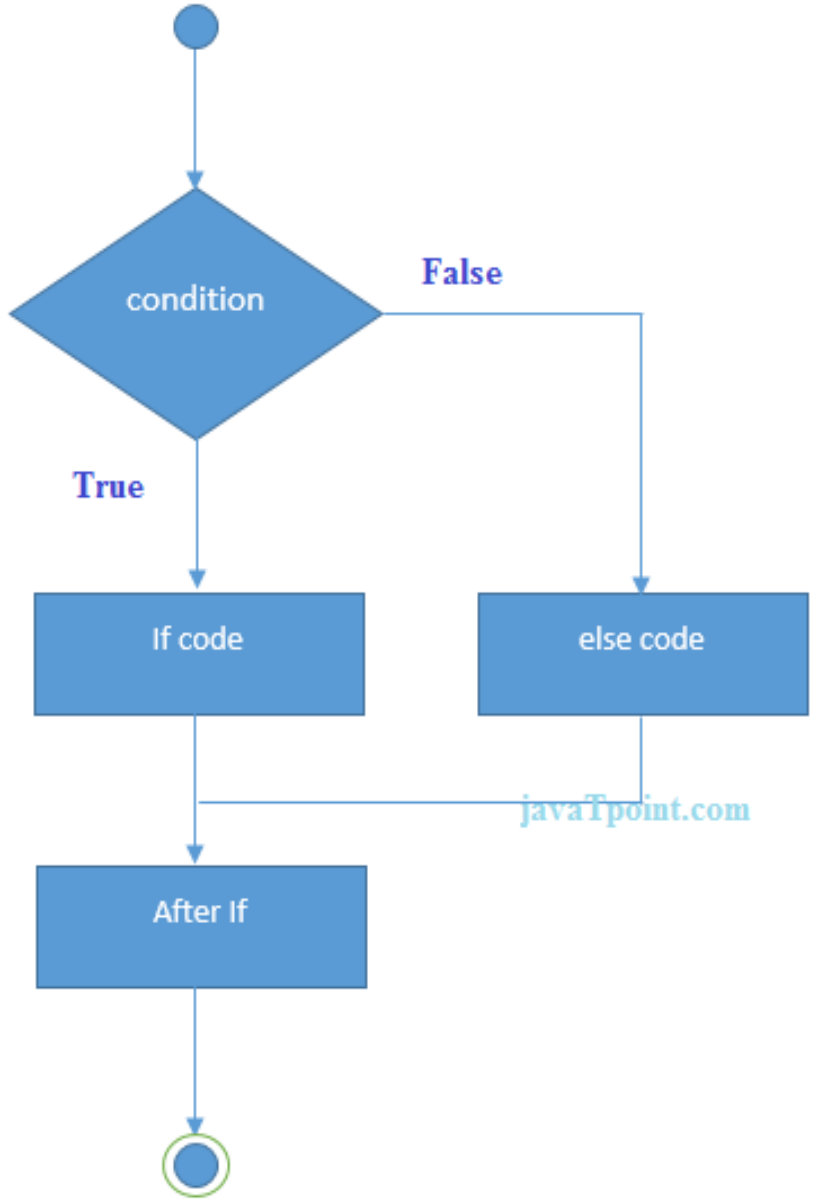
```
if(condition)
{
    //content to be executed if condition is true
}
```



If else statement

- It evaluates the content whether condition is true or false.
- Syntax:

```
if(condition)
{
    //content to be evaluated if condition is true
} else
 {
    //content to be evaluated if condition is false
}
```



If…else if statement

- It works for more than two conditions.
- It allows to make correct decision out of several conditions.
- **Syntax:**

```
if (condition 1) {
    Content to be executed if condition 1 is true
} else if (condition 2) {
    Content to be executed if condition 2 is true
} else if (condition 3) {
    Content to be executed if condition 3 is true
} else {
    Content to be executed if no condition is true
}
```

JavaScript BOM and DOM

- BOM: Browser Object Model
- DOM: Document Object Model

Thank you