UNIT 3 : JAVASCRIPT

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3.3 Javascript

3.3.1 Overview of Client and Server Side Scripting

3.3.2 Structure of Javascript

3.3.3 Data Types and Variables

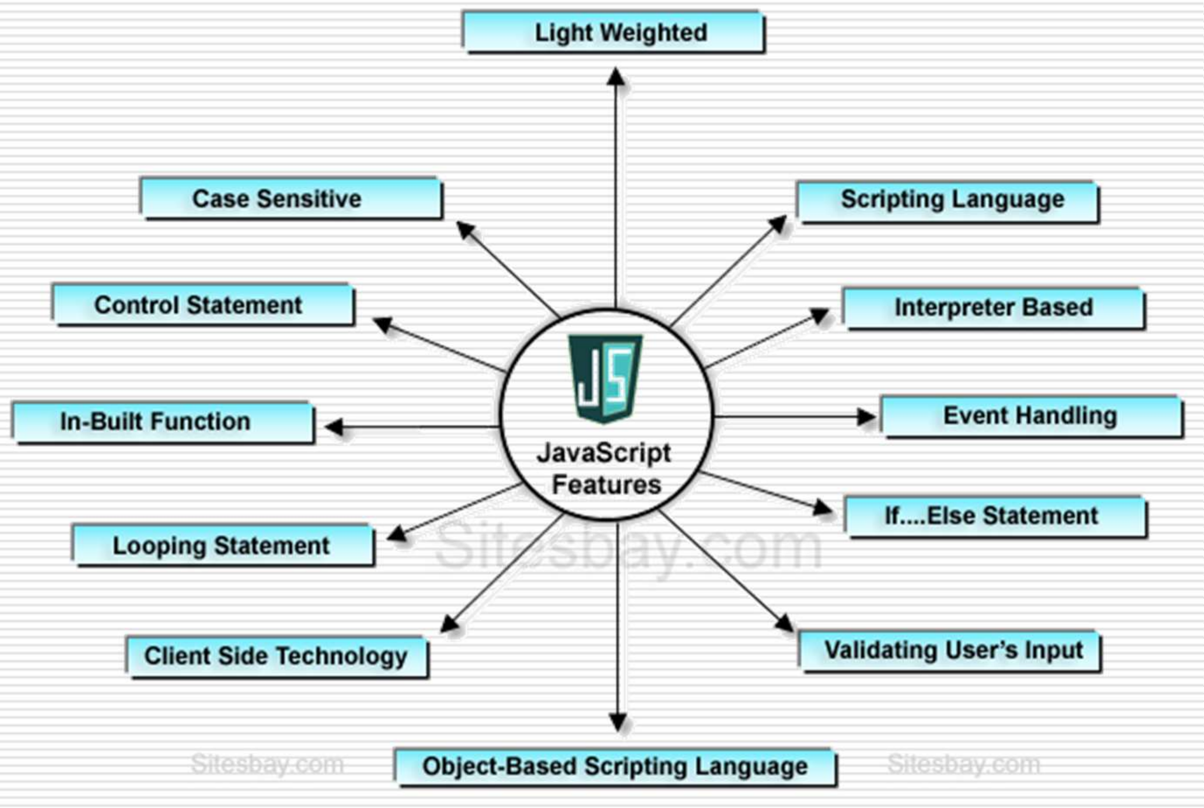
3.3.4 Operators

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

Javascript

- **JavaScript** was developed by **Brendan Eich** in **1995**, which appeared in Netscape, a popular browser of that time.
- The language was initially called LiveScript and was later renamed **JavaScript**.
- There are many programmers who think that **JavaScript** and Java are the same. In fact, **JavaScript** and Java are very much unrelated.

- JavaScript is a very powerful **client-side scripting language**. JavaScript is used mainly for enhancing the interaction of a user with the webpage.
- In other words, you can make your webpage more lively and interactive, with the help of JavaScript.
- JavaScript is also being used widely in game development and Mobile application development.


Light Weighted
Case Sensitive
Scripting Language
Control Statement
Interpreter Based
In-Built Function
JavaScript Features
Event Handling
If....Else Statement
Looping Statement
Client Side Technology
Validating User's Input
Object-Based Scripting Language

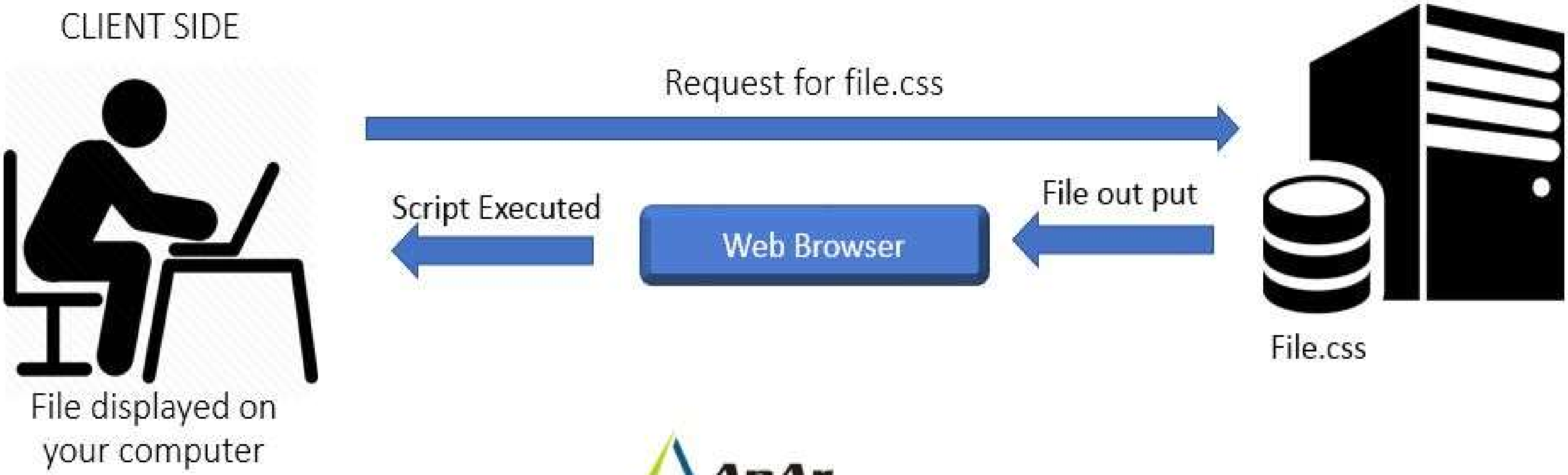
3.3.1 Overview of Client and Server Side Scripting

- A scripting or script language is a programming language for a special run-time environment that automates the execution of tasks; the tasks could alternatively be executed one-by-one by a human operator. Scripting languages are often interpreted.

Client Side Scripting

- **Client-side scripting**
- (embedded **scripts**) is code that exists inside the **client's** HTML page. This code will be processed on the **client** machine and the HTML page will NOT perform a PostBack to the web-**server**. Traditionally, **client-side scripting** is used for page navigation, data validation and formatting.

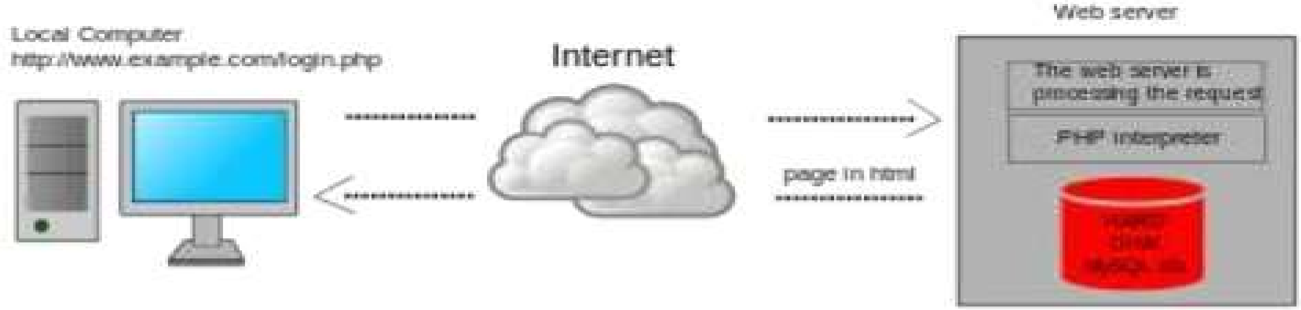
The process of client side scripting



Server Side Scripting

- Server-side scripting is a technique used in web development which involves employing scripts on a web server which produce a response customized for each user's request to the website. The alternative is for the web server itself to deliver a static web page.

SERVER SIDE SCRIPTING



3.3.2 Structure of Javascript

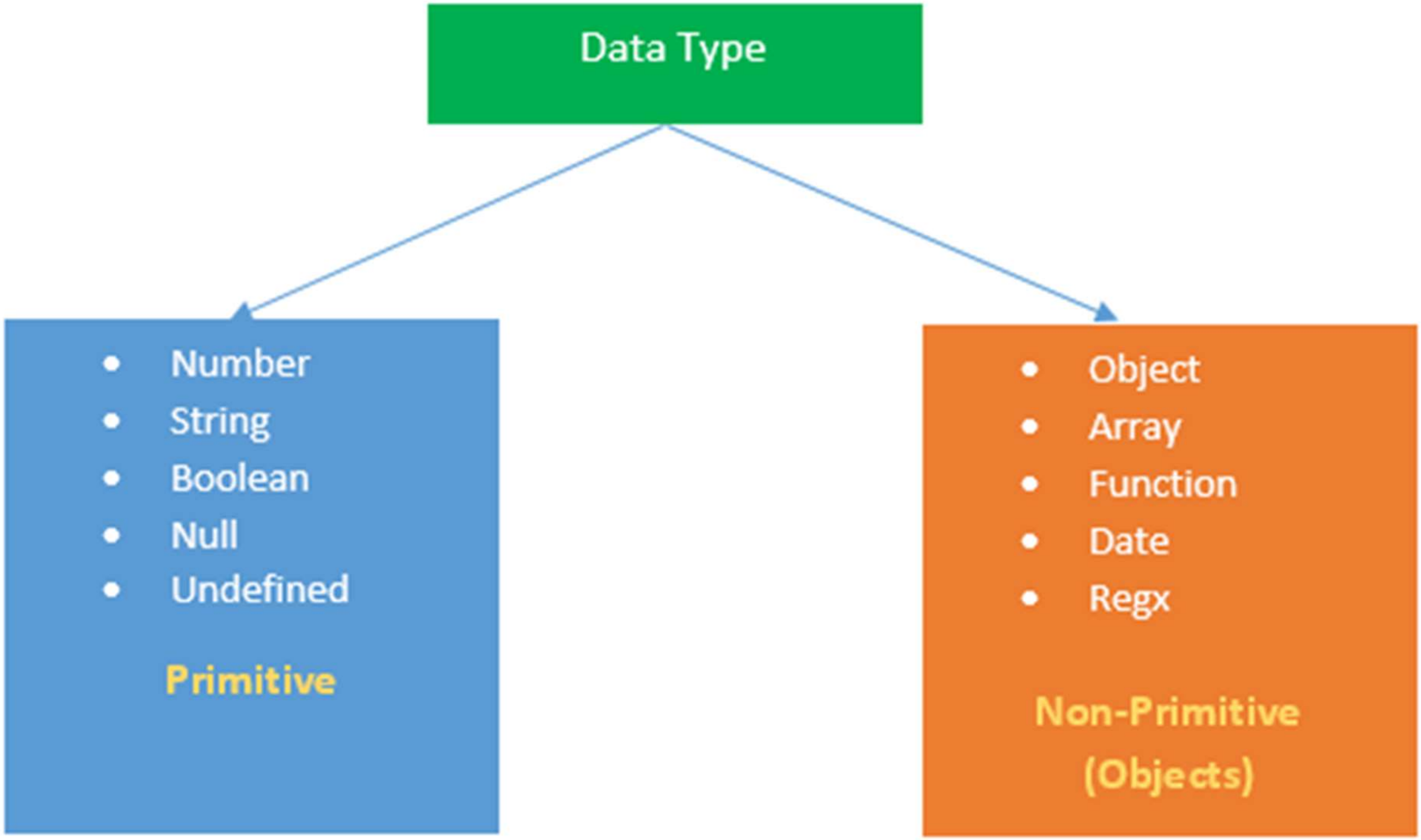
```
<HTML>
        <HEAD>
                <TITLE>JAVASCRIPT STRUCTURE</TITLE>
                <SCRIPT LANGUAGE="JAVASCRIPT">
                        //WRITE JAVASCRIPT CODE HERE
                </SCRIPT>
        </HEAD>
        <BODY>
                <FORM>

                </FORM>
        </BODY>
</HTML>
```

- Javascript is case sensitive language
- It is loosely typed language

Comments

- Single line Comment
  - // is used for Single Line Comment
- Multi line Comment
  - /* and */ is used for Multi Line Comment

3.3.3 Data Types and Variables



Data Type

- Number
- String
- Boolean
- Null
- Undefined

Primitive

- Object
- Array
- Function
- Date
- Regx

Non-Primitive (Objects)

JavaScript Data Type

Number:

- JavaScript has only one type of numbers.
- Numbers can be written with, or without decimals:
  - var x1 = 34.00; // Written with decimals
  - var x2 = 34; // Written without decimals

String:

- A string (or a text string) is a series of characters like “SYBCA THE GREAT CLASS".
- Strings are written with quotes. You can use single or double quotes:
  - var carName1 = "Volvo XC60";// Using double quotes
  - var carName2 = 'Volvo XC60'; // Using single quotes

Boolean:

- Booleans can only have two values: true or false.
  - var a=true;
  - var flag=false;

Null:

- In JavaScript null is "nothing". It is supposed to be something that doesn't exist.
- Unfortunately, in JavaScript, the data type of null is an object.
  - var a = null;

undefined:

- In JavaScript, a variable without a value, has the value undefined. The type is also undefined.
  - var car; // Value is undefined, type is undefined

Variables

- A **JavaScript variable** is simply a name of storage location.
- There are two types of variables in JavaScript : local variable and global variable.
- There are some rules while declaring a JavaScript variable (also known as identifiers).
  1. Name must start with a letter (a to z or A to Z), underscore(_), or dollar($) sign.
  2. After first letter we can use digits (0 to 9), for example value1.
  3. JavaScript variables are case sensitive, for example x and X are different variables.

- “var” is used to declare variable.
- Syntax :
  - var varname=value”;
- Example:
  - var n=10;
  - var s=“SYBCA”;
  - var flag=“true”;
  - var a=null;

3.3.4 Operators

1. Arithmetic Operator
2. Assignment Operator
3. Comparison Operator
4. Logical Operator
5. Conditional Operator
6. String Operator

1. Arithmetic Operator

Operator	Description
+	Addition
-	Subtraction
*	Multiplication
**	Exponentiation
/	Division
%	Modulus (Division Remainder)
++	Increment
--	Decrement

2. Assignment Operator

Operator	Example	Same As
=	x = y	x = y
+=	x += y	x = x + y
-=	x -= y	x = x - y
*=	x *= y	x = x * y
/=	x /= y	x = x / y
%=	x %= y	x = x % y
**=	x **= y	x = x ** y

3. Comparison Operator

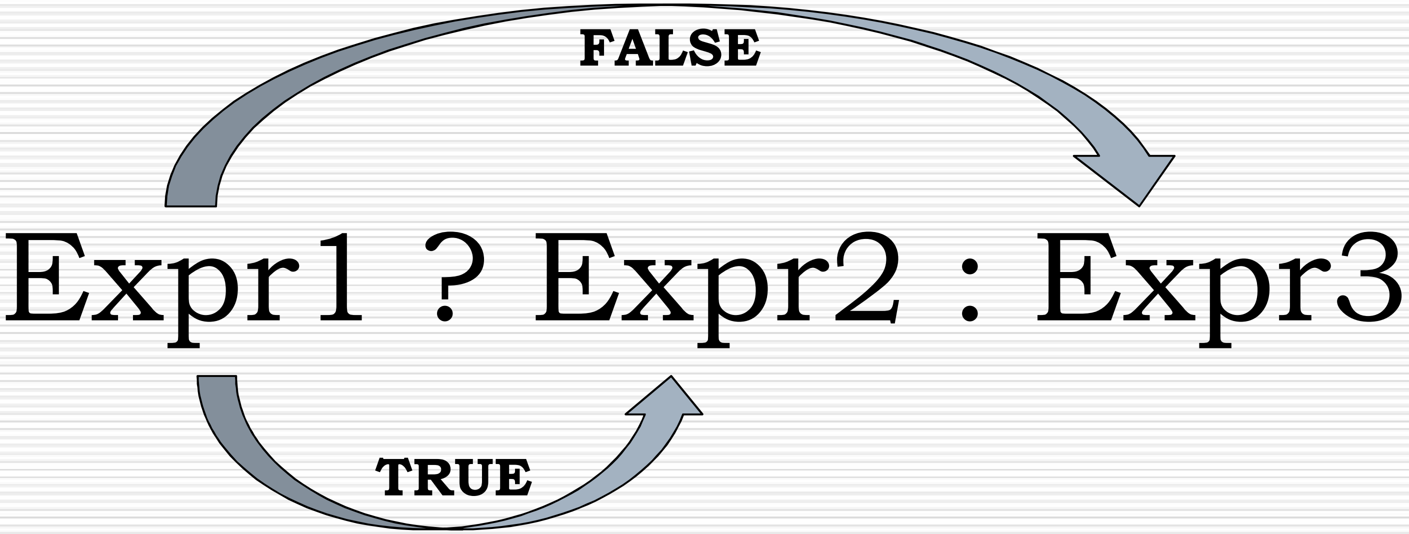
Operator	Description
==	equal to
===	equal value and equal type
!=	not equal
!==	not equal value or not equal type
>	greater than
<	less than
>=	greater than or equal to
<=	less than or equal to

4. Logical Operator

Operator	Description
&&	logical and
| |	logical or
!	logical not

5. Conditional Operator

- ? : Operator
- Also known as Ternary Operator



Expr1 ? Expr2 : Expr3

6. String Operator

- The + operator can also be used to add (concatenate) strings.

3.3.5 Control Structures

1. Branching
2. Looping
3. Jumping

Branching

- Simple if Statement
- if….else Statement
- Netsted if Statement
- Ladder if or elseif Statement
- Switch…case Statement

Looping

- Entry Control Loop
  - for loop
  - while loop
- Exit Control Loop
  - do…while Loop

Jumping

- goto Statement
- break
- continue

Dialogue Boxes

- In JavaScript you can create dialog boxes or popups to interact with the user.
- You can either use them to notify a user or to receive some kind of user input before proceeding.
  - Alert Dialogue Box
  - Confirmation Dialogue Box
  - Prompt Dialogue Box

1. Alert Dialogue Box

- An alert dialog box is mostly used to give a warning message to the users. For example, if one input field requires to enter some text but the user does not provide any input, then as a part of validation, you can use an alert box to give a warning message.
- Nonetheless, an alert box can still be used for friendlier messages. Alert box gives only one button "OK" to select and proceed.

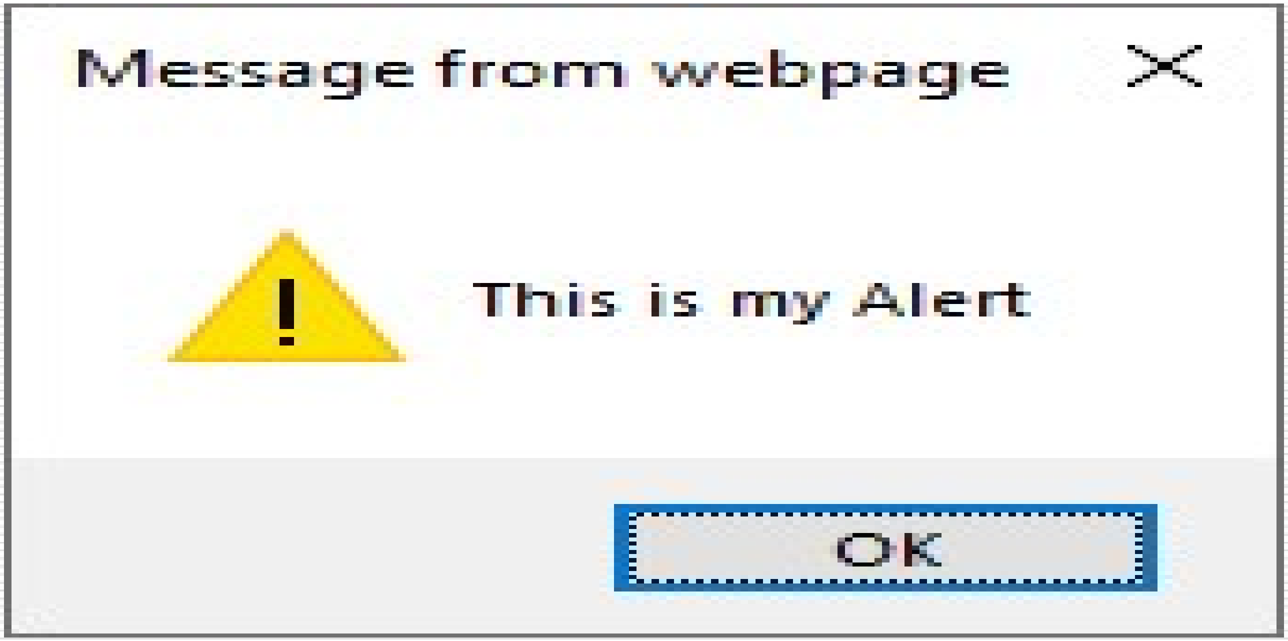
Syntax

- alert([Alert Message]);

Example

```
<HTML>
    <HEAD>
        <SCRIPT LANGUAGE="JAVASCRIPT">
            alert("This is my Alert");
        </SCRIPT>
    </HEAD>
    <BODY>

    </BODY>
</HTML>
```

Output



Message from webpage

This is my Alert

2. Confirmation Dialogue Box

- A confirmation dialog box is mostly used to take user's consent on any option. It displays a dialog box with two buttons: **OK** and **Cancel**.
- If the user clicks on the OK button, the window method **confirm()** will return true. If the user clicks on the Cancel button, then **confirm()** returns false.

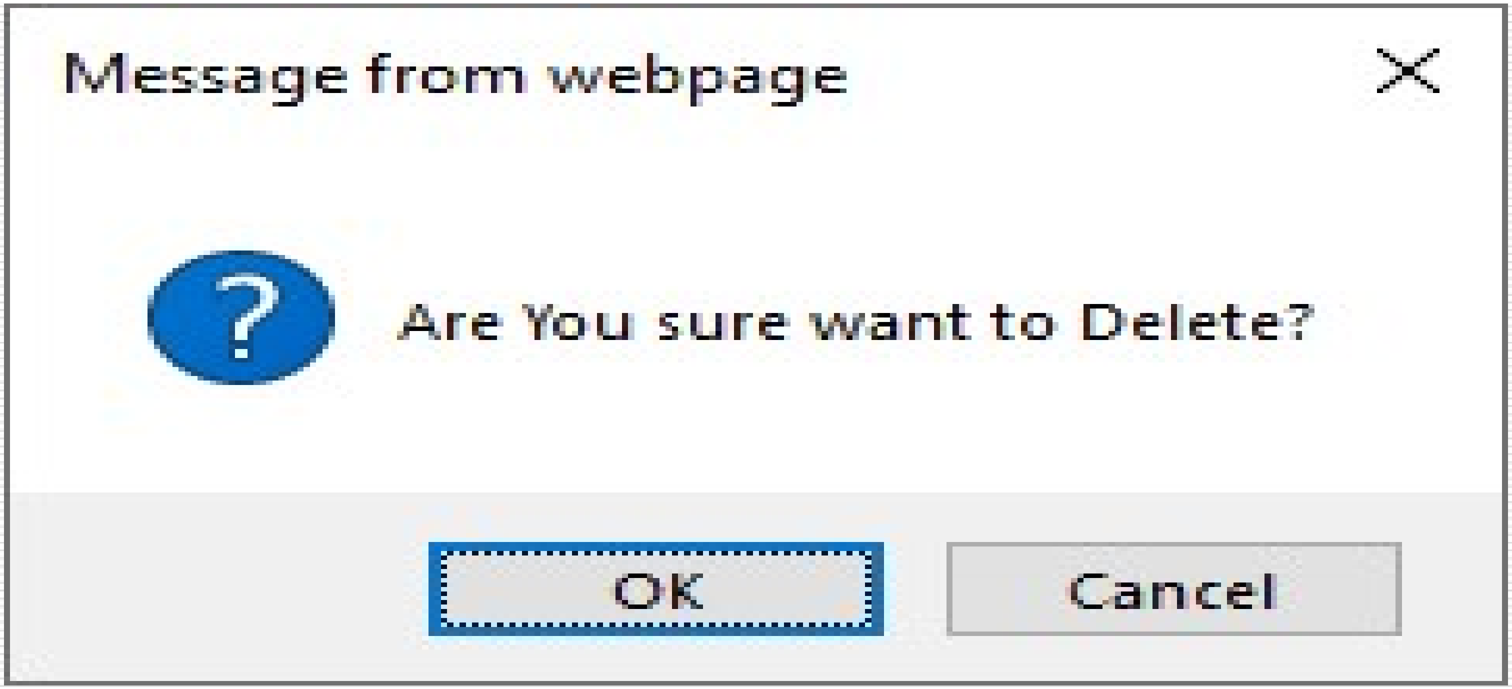
Syntax

- confirm([Message]);

Example

```
<HTML>
        <HEAD>
                <SCRIPT LANGUAGE="JAVASCRIPT">
                        confirm("Are You sure want to Delete?");
                </SCRIPT>
        </HEAD>
        <BODY>

        </BODY>
</HTML>
```

Output



Message from webpage

Are You sure want to Delete?

3. Prompt Dialogue Box

- The prompt dialog box is used to prompt the user to enter information. A prompt dialog box includes a text input field, an OK and a Cancel button.
- The prompt dialog box is very useful when you want to pop-up a text box to get user input. Thus, it enables you to interact with the user. The user needs to fill in the field and then click OK.

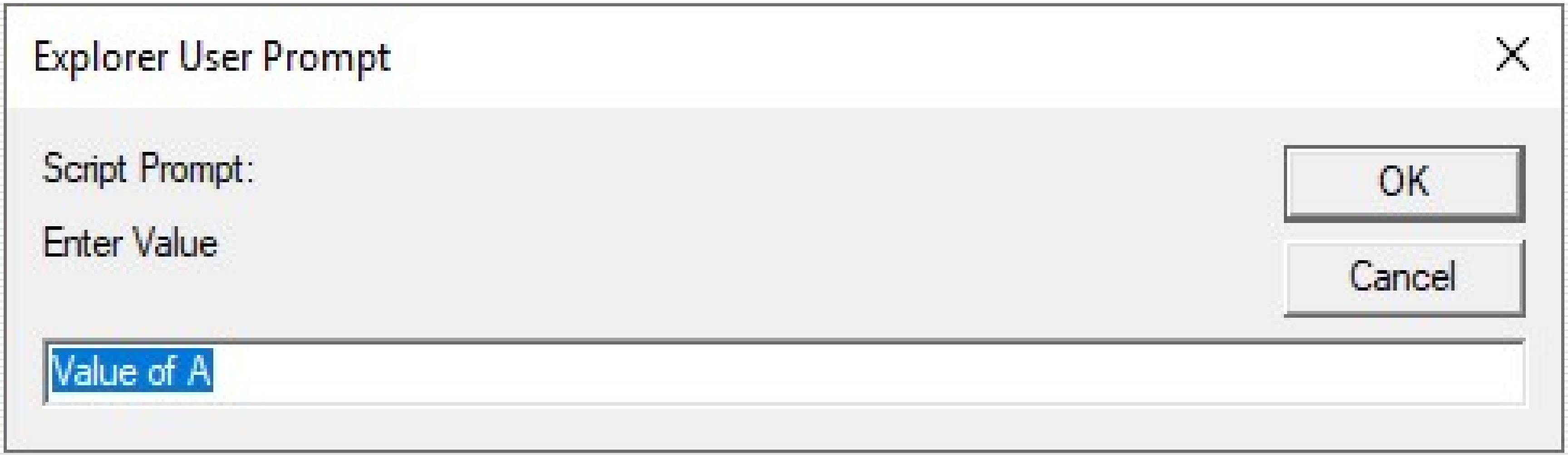
Syntax

- prompt([Message],Input Message);

Example

```
<HTML>
        <HEAD>
                <SCRIPT LANGUAGE="JAVASCRIPT">
                        var A=prompt("Enter Value","Value of A");
                        alert(A);
                </SCRIPT>
        </HEAD>
        <BODY>

        </BODY>
</HTML>
```

Output



Explorer User Prompt

Script Prompt:

Enter Value

Value of A

User Defined Functions

- 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).

- A JavaScript function is defined with the function keyword, followed by a name, followed by parentheses ().
- Function names can contain letters, digits, underscores, and dollar signs (same rules as variables).

```
function name(parameter1, parameter2, parameter3)
{
  // code to be executed
}
```

Categories of UDF

1. Without argument without return value
2. With argument without return value
3. Without argument with return value
4. With argument with return value
5. As a function Parameters

1. Without argument without return value

```
<HTML>
        <HEAD>
                <SCRIPT LANGUAGE="JAVASCRIPT">
                        function add()
                        {
                                var a=10,b=20;
                                var c=a+b;
                                alert(c);
                        }
                        add();
                </SCRIPT>
        </HEAD>
        <BODY>

        </BODY>
</HTML>
```

OUTPUT:

```
30
```

2. With argument without return value

```
<HTML>
        <HEAD>
                <SCRIPT LANGUAGE="JAVASCRIPT">
                        function add(a, b)
                        {
                                var c=a+b;
                                alert(c);
                        }
                        add(10,20);
                </SCRIPT>
        </HEAD>
        <BODY>

        </BODY>
</HTML>
```

OUTPUT:

30

3. Without argument with return value

```
<HTML>
        <HEAD>
                <SCRIPT LANGUAGE="JAVASCRIPT">
                        function add()
                        {
                                var a=10,b=20;
                                var c=a+b;
                                return c;
                        }
                        alert(add());
                </SCRIPT>
        </HEAD>
        <BODY>

        </BODY>
</HTML>
```

OUTPUT:

30

4. With argument with return value

```
<HTML>
    <HEAD>
        <SCRIPT LANGUAGE="JAVASCRIPT">
            function add(a,b)
            {
                var c=a+b;
                return c;
            }
            alert(add(10,20));
        </SCRIPT>
    </HEAD>
    <BODY>

    </BODY>
</HTML>
```

OUTPUT:

30

5. With Function Parameters