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| **TITLE:** **Develop and demonstrate JavaScript with POP-UP boxes and functions.** |

**AIM:** To demonstrate the functionalities of JavaScript using HTML and CSS.

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**Expected Outcome of Experiment:**

* Describe and utilize Javascript programming concepts such as variables, arrays, conditionals, and loops.
* Write and deploy Javascript code to solve practical web design problems.

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**Books/ Journals/ Websites referred:**

1. .

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**Problem Statement:**

**a) Input**: Click on Display Date button using onclick( ) function

**Output:** Display date in the textbox

**b) Input:** A number n obtained using prompt

**Output:** Factorial of n number using alert

c**) Write JavaScript to validate the following fields for the registration page**.

Name (Name should contain alphabets and the length should not be less than 6 characters).

Password (Password should not be less than 6 characters length).

E-mail id (should not contain any invalid and must follow the standard pattern

name@domain.com)

Phone number (Phone number should contain 10 digits only).

**Javascript Basic Concepts Learned With Syntax:**

**JavaScript Basic Concepts Learned With Syntax:**

**1. Variables and Data Types:**

**- Declaration:**

**let age = 25; // Number**

**let name = "John"; // String**

**let isStudent = true; // Boolean**

**let fruits = ["apple", "banana", "orange"]; // Array**

**let person = { name: "John", age: 30 }; // Object**

**2. Operators:**

**- Arithmetic Operators: +, -, \*, /, %**

**- Comparison Operators: ==, ===, !=, !==, <, >, <=, >=**

**- Logical Operators: && (AND), || (OR), ! (NOT)**

**- Assignment Operators: =, +=, -=, \*=, /=, %=**

**3. Conditional Statements:**

**- if statement:**

**if (condition) {**

**// code block**

**} else if (anotherCondition) {**

**// code block**

**} else {**

**// code block**

**}**

**- switch statement:**

**switch (expression) {**

**case value1:**

**// code block**

**break;**

**case value2:**

**// code block**

**break;**

**default:**

**// code block**

**}**

**4. Loops:**

**- for loop:**

**for (let i = 0; i < 5; i++) {**

**// code block**

**}**

**- while loop:**

**let i = 0;**

**while (i < 5) {**

**// code block**

**i++;**

**}**

**5. Functions:**

**- Declaration:**

**function greet(name) {**

**return "Hello, " + name + "!";**

**}**

**- Arrow function (ES6):**

**const greet = (name) => {**

**return "Hello, " + name + "!";**

**};**

**6. Arrays:**

**- Declaration:**

**let fruits = ["apple", "banana", "orange"];**

**- Accessing elements:**

**let firstFruit = fruits[0]; // apple**

**7. Objects:**

**- Declaration:**

**let person = {**

**name: "John",**

**age: 30,**

**isStudent: true**

**};**

**- Accessing properties:**

**let personName = person.name; // John**

**8. Event Handling:**

**- Adding event listener:**

**document.getElementById("myButton").addEventListener("click", function() {**

**// code block**

**});**

**Description of the application implemented with output**:

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**Post Lab Objective with Ans**

What are the possible ways to create objects in JavaScript?

**Ans:**

**Ways to Create Objects in JavaScript:**

* **Object Literal:** Objects can be created using object literals, which involve defining key-value pairs within curly braces **{}**. For example:

let person = {

name: "John",

age: 30,

city: "New York"

};

* **Using Constructor Functions:** Objects can be created using constructor functions, which are regular functions used to construct objects. This involves defining a function and then using the **new** keyword to create instances of the object. For example:

function Person(name, age, city) {

this.name = name;

this.age = age;

this.city = city;

}

let person1 = new Person("John", 30, "New York");

* **Using ES6 Classes:** With the introduction of ES6, classes can be used to create objects in JavaScript. Classes are a syntactical sugar over constructor functions. For example:

class Person {

constructor(name, age, city) {

this.name = name;

this.age = age;

this.city = city;

}

}

let person1 = new Person("John", 30, "New York");

What is the Difference between == and === operators?

**Ans:**

* **==** is the equality operator in JavaScript, which checks if the operands are equal after converting them to the same type.
* **===** is the strict equality operator, which not only checks if the operands are equal but also checks if they are of the same type.
* Example:

5 == "5"; // true (operands are coerced to the same type)

5 === "5"; // false (operands are not of the same type)

What is the difference between let and var?

**Ans:**

* **var** was traditionally used for variable declaration in JavaScript. It has function scope or global scope (if declared outside of any function), and variables declared with **var** are hoisted to the top of their scope.
* **let** was introduced in ES6 and is now the preferred way to declare variables. It has block scope (limited to the block in which it is defined), and variables declared with **let** are not hoisted.
* Example:

function example() {

if (true) {

var a = 5; // Variable declared with var

let b = 10; // Variable declared with let

}

console.log(a); // Output: 5 (var is function-scoped)

console.log(b); // ReferenceError: b is not defined (let is block-scoped)

}

**Date: 12/02/2024 Signature of faculty in-charge**