

Module 6) JAVASCRIPT BASIC & DOM

Q.1 What is JavaScript. How to use it?

Ans. JavaScript is a versatile, high-level programming language that is primarily used for web development.

To use JavaScript in web projects three main ways:

1. **Inline JavaScript:** Write JavaScript code directly within HTML tags using event attributes like onclick.
2. **Internal JavaScript:** Write JavaScript code within a <script> tag inside your HTML document.
3. **External JavaScript:** Write JavaScript code in a separate file with a .js extension and link it in your HTML document using the <script> tag with the src attribute.

Q.2 How many type of Variable in JavaScript?

Ans. In JavaScript, there are three types of variables based on their declaration keywords.

1. **var:** Function-scoped, hoisted, can be re-declared.
2. **let:** Block-scoped, not initialized on hoisting, cannot be re-declared in the same scope.
3. **const:** Block-scoped, not initialized on hoisting, must be assigned a value at declaration, cannot be re-assigned.

Q.3 Define a Data Types in js?

Ans. There are two type of data type

1 - Primitive Data Types.

-String,

-Number

-Boolean

-Undefined

-Null

-Symbol

-Bigint

2- Non-Primitive Data Types

-Object

-array

-function

Q.4 Write a mul Function Which will Work Properly When invoked With Following Syntax.

Ans.

```
function mul(a,b,c){  
    var multi=a*b*c;  
    return multi  
}  
document.write(mul(10,20,30))
```

Q.5 What the difference between undefined and undeclared in JavaScript?

Ans. undefined: A variable that has been declared but has not been assigned a value.

undeclared: A variable that has not been declared at all in the current scope.

Q.6 Using console.log() print out the following statement: The quote 'There is no exercise better for the heart than reaching down and lifting people up.' by John Holmes teaches us to help one another.

Ans. console.log("The quote 'There is no exercise better for the heart than reaching down and lifting people up.' by John Holmes teaches us to help one another.");

Q.7 Check if typeof '10' is exactly equal to 10. If not make it exactly equal?

```
Ans. var a = '10';  
  
var b = 10;  
console.log(typeof (a));  
console.log(typeof (b));  
console.log(a === b);  
  
let c = Number(a);  
console.log(typeof (c));  
console.log(b === c);
```

Q.8 Write a JavaScript Program to find the area of a triangle?

```
Ans. function tringlearea(base, height) {  
    var area = 0.5 * base * height;
```

```

        return area;

    }

    console.log(tringlearea(20, 20));

```

Q.9 Write a JavaScript program to calculate days left until next Christmas?

Ans.

```

Function to calculate the number of days left until next Christmas
// Function to calculate the number of days left until next Christmas
function daysUntilChristmas() {
    // Get the current date
    let currentDate = new Date();

    // Get the current year
    let currentYear = currentDate.getFullYear();

    // Create a new Date object for Christmas of the current year
    let christmasDate = new Date(currentYear, 11, 25); // Month is 0-based
    index (11 represents December)

    // If Christmas has already passed this year, set it to next year
    if (currentDate.getMonth() === 11 && currentDate.getDate()
        > 25) {
        christmasDate.setFullYear(currentYear + 1);
    }

    // Calculate the difference in milliseconds between the current date
    and Christmas
    let timeDiff = christmasDate.getTime() - currentDate.getTime();

    // Calculate the number of days left until Christmas
    let daysLeft = Math.ceil(timeDiff / (1000 * 3600 * 24));

    return daysLeft;
}

let daysLeft = daysUntilChristmas();
console.log("Days left until next Christmas:", daysLeft);

```

Q.10 What is Condition Statement?

Ans. A condition statement, often referred to in programming contexts, is a fundamental concept used to control the flow of execution in a program based on whether certain conditions are true or false. It typically involves the use of conditional expressions or statements that evaluate to true or false (Boolean values).

Q.11 Find circumference of Rectangle formula : $C = 4 * a$?

```
Ans. function calculate(b) {  
    var c = 4 * b;  
    return c;  
}  
let circumference = calculate(5)  
console.log(circumference);
```

Q.12 WAP to convert years into days and days into years?

Ans.

```
function convert(year, day) {  
    // Convert years to days  
    var yearsToDays = year * 365.25;  
    // Convert days to years  
    var daysToYears = day / 365.25;  
    return {  
        days: yearsToDays,  
        years: daysToYears  
    };  
}  
result = convert(2, 214);  
document.write(2 years is approximately ${ result.days.toFixed(2) } days.<  
br >);  
document.write(214 days is approximately ${ result.years.toFixed(2) }  
years.);
```

Q.13 Convert temperature Fahrenheit to Celsius? (Conditional logic Question)

```
Ans. function ftoc(fah) {  
    var cel = (5 / 9) * (fah - 32);  
    return cel;  
}  
var value = ftoc(68);  
console.log(value);
```

Q.14 Write a JavaScript exercise to get the extension of a filename.?

```
Ans. function fileex(filename) {  
    var part = filename.split('.');  
    var extension = part[part.length - 1];  
    return extension;  
}  
var filename1 = "script.js";  
var extension1 = fileex(filename1);  
console.log(extension1);
```

Q.15 What is the result of the expression (5 > 3 && 2 < 4)?

Ans. - (5 > 3) evaluates to true because 5 is indeed greater than 3.
- (2 < 4) also evaluates to true because 2 is less than 4.
- The && (logical AND) operator returns **true** if both of its operands are true, otherwise, it returns **false**.

Q.16 What is the result of the expression (true && 1 && "hello")?

Ans. hello is the result.

Q.17 What is the result of the expression true && false || false && true?

Ans. false || false.

Q.18 What is a Loop and Switch Case in JavaScript define that ?

Ans.

Loop:-

In JavaScript, a loop is a control structure that allows you to repeatedly execute a block of code as long as a specified condition is true.

Switch Case:-

In JavaScript, the switch statement is used to perform different actions based on different conditions. It evaluates an expression, and depending on the value of the expression, it executes the corresponding block of code.

Q.19 What is the use of is NaN function?

Ans. NaN function in JavaScript is used to determine whether a value is NaN (Not-a-Number) or not. NaN is a special value in JavaScript that represents the result of an invalid or undefined mathematical operation.

NaN function returns a Boolean value indicating whether the provided value is NaN. It can be used with various types of values, not just numbers.³

Q.20 What is the difference between && and || in JavaScript?

Ans. The main difference between the && (logical AND) and || (logical OR) operators in JavaScript lies in their behavior and the conditions under which they evaluate to true or false.

&& (Logical AND):

Requires both operands to be true.

|| (Logical OR):

Requires at least one operand to be true.

Q.21 What is the use of Void (0)?

Ans. The void keyword in JavaScript is used to evaluate an expression and then return undefined.

The most common use of void is in combination with the value 0 to create a self-executing anonymous function or to prevent a browser from navigating to a new page when clicking on a link.

Q.22 Check Number Is Positive or Negative in JavaScript?

Ans.

```
function checkNumber(number) { if (number > 0) {  
    console.log("The number is positive.");  
} else if (number < 0) {  
    console.log("The number is negative.");  
} else {  
    console.log("The number is zero.");  
}  
}
```

Q.23 Find the Character Is Vowel or Not ?

Ans. function isVowel(char) {

```
    return ['a', 'e', 'i', 'o', 'u'].indexOf(char.toLowerCase()) !== 1;  
}
```

// Example usage:

```
var character = prompt("Enter a character: ");  
if (character.length === 1 && character.match(/[a-zA-Z]/)) {  
    if (isVowel(character)) {  
        console.log(character + " is a vowel.");  
    } else {  
        console.log(character + " is not a vowel.");  
    }  
} else {  
    console.log("Please enter a single alphabetical character.");  
}
```

Q.23 Find the Character Is Vowel or Not ?

Ans.

```
function isVowel(char) {  
    return ['a', 'e', 'i', 'o', 'u'].indexOf(char.toLowerCase()) !== 1;
```

```
}
```

// Example usage:

```
var character = prompt("Enter a character: ");
```

```
if (character.length === 1 && character.match(/[a-zA-Z]/)) {    if (isVowel(character)) {  
    console.log(character + " is a vowel.");  
    } else {  
        console.log(character + " is not a vowel.");  
    }  
} else {  
    console.log("Please enter a single alphabetical character.");  
}
```

Q.24 Write to check whether a number is negative, positive or zero?

Ans.

```
function checkNumber(num) {  
    if (num > 0) {    return "Positive";  
} else if (num < 0) {    return  
"Negative";  
    } else {    return "Zero";  
    }  
}
```

Q.25 Write to find number is even or odd using ternary operator in JS?

Ans.

```
let userInput = prompt("Enter a number: ");  
let number = parseInt(userInput);  
let result = (number % 2 === 0) ? "Even" : "Odd";  
console.log(`The number is ${result}.`);
```

Q.26 Write find maximum number among 3 numbers using ternary operator in JS?

Ans. let num1 = parseFloat(prompt("Enter the first number: "));
let num2 = parseFloat(prompt("Enter the second number: "));
var num3 = parseFloat(prompt("Enter the third number: "));

```
var maxNumber = (num1 >= num2 && num1 >= num3) ? num1 :  
(num2 >= num1 && num2 >= num3) ? num2 : num3;
```

```
console.log(`The maximum number is: ${maxNumber}`);
```

Q.26 Write find maximum number among 3 numbers using ternary operator in JS?

Ans. let num1 = parseFloat(prompt("Enter the first number: "));
let num2 = parseFloat(prompt("Enter the second number: "));
let num3 = parseFloat(prompt("Enter the third number: "));
let minNumber = (num1 <= num2 && num1 <= num3) ? num1 :
 (num2 <= num1 && num2 <= num3) ? num2 : num3;
console.log(`The minumum number is: \${minNumber}`);

Q.28 Write to find the largest of three numbers in JS?

Ans.

```
let num1 = parseFloat(prompt("Enter the first number: ")); let num2 = parseFloat(prompt("Enter the  
second number: ")); let num3 = parseFloat(prompt("Enter the third number: "));
```

```
if (!isNaN(num1) && !isNaN(num2) && !isNaN(num3)) { var largestNumber;
```

```
    if (num1 >= num2 && num1 >= num3) { largestNumber = num1;  
    } else if (num2 >= num1 && num2 >= num3) { largestNumber = num2;  
    } else {  
        largestNumber = num3;  
    }
```

```
    console.log(`The largest number is: ${largestNumber}`);  
} else {  
    console.log("Invalid input. Please enter valid numbers.");  
}
```

Q.29 Write to show

i. Monday to Sunday using switch case in JS?

Ans.

```
let dayNumber = parseInt(prompt("Enter a number (1-7) representing a day of the week:"));
```

```
switch (dayNumber) {  case 1:
    console.log("Monday");

    break;
case 2:    console.log("Tuesday");
break;
case 3:
    console.log("Wednesday");
break;
case 4:    console.log("Thursday");
break;
case 5:    console.log("Friday");
break;
case 6:
    console.log("Saturday");
    break;
case 7:    console.log("Sunday");
break;
default:
    console.log("Invalid input. Please enter a number between 1 and 7.");
}
```

ii. Vowel or Consonant using switch case in JS?

Ans.

```
let character = prompt("Enter a single alphabet character:");
```

```
switch (character.toLowerCase()) {  case 'a':  case 'e':
case 'i':  case 'o':  case 'u':
    console.log("Vowel");    break;
default:
    console.log("Consonant");
}
```

Conditional looping logic Question

Q.21 What are the looping structures in JavaScript? Any one Example?

Ans.

In JavaScript, there are primarily three types of looping structures:

1. for loop: This is the most common type of loop used for iterating over a range of values. It consists of three parts: initialization, condition, and iteration statement.

Example:

javascript

```
for (let i = 1; i <= 5; i++) {  
    console.log(i); // Outputs 1, 2, 3, 4, 5  
}
```

2. while loop: This loop repeats a block of code as long as a specified condition is true.

Example:

```
let count = 0;  
  
while (count < 5) {  
    console.log(count); // Outputs 0, 1, 2, 3, 4  
    count++;  
}
```

3. do-while loop: This loop is similar to the while loop, but the condition is evaluated after executing the block of code, so the code block will always execute at least once.

Example:

javascript

```
let x = 1;  
do {
```

```
    console.log(x); // Outputs 1
    x++;
} while (x <= 0);
```

Each of these looping structures serves different purposes based on the specific needs of the iteration logic in your JavaScript code.

Q.22 Write a print 972 to 897 using for loop in JS?

Ans.

```
for (i = 972; i >= 897; i--) {
    console.log(i);
}
```

Q.23 Write to print factorial of given number?

Ans.

```
function factorial(n) {
    if (n < 0) {
        return "Factorial is not defined for negative numbers.";
    } else if (n === 0 || n === 1) {
        return 1;
    } else {
        let result = 1;
        for (let i = 2; i <= n; i++) {
            result *= i;
        }
        return result;
    }
}

let number = prompt("Enter a number to find its factorial:");
number = parseInt(number);

console.log(`Factorial of ${number} is ${factorial(number)}`);
```

Q.24 Write to print Fibonacci series up to given numbers?

Ans.

```
function generateFibonacci(limit) {

    let fibonacciSeries = [];

    let a = 0, b = 1;

    fibonacciSeries.push(a);
    fibonacciSeries.push(b);
```

```

    for (let i = 2; i < limit; i++) {
        let next = a + b;
        fibonacciSeries.push(next);
        a = b;
        b = next;
    }

```

Q.25 Write to print number in reverse order e.g.: number = 64728 ---> reverse =82746 in JS?

Ans.

```

function reverseNumber(number) {
    var numberString = number.toString();
    reversedString = ' ';
    for (var i = numberString.length - 1; i >= 0; i--) {
        reversedString =
            reversedString + numberString[i];
    }
    var reversedNumber = parseInt(reversedString);
    return reversedNumber;
}
var number = 64728;
console.log("Original number: " + number);
console.log("Reversed number: " + reverseNumber(number));

```

Q.26 Write a program make a summation of given number (E.g., 1523 Ans: - 11) in JS?

Ans.

```

var num = 1523;

function summ(num) {
    var sum = 0;
    var numstr = num.toString();

    for (var i = 0; i < numstr.length; i++) {
        sum += parseInt(numstr[i]);
    }
    return sum;
}
console.log(summ(num));

```

Q.27 Write a program you have to make a summation of first and last Digit. (E.g., 1234 Ans: - 5) in JS?

Ans.

Q.28 Use console.log() and escape characters to print the following pattern in JS?

1 1 1 1 1
2 1 2 4 8
3 1 3 9 27
4 1 4 16 64
5 1 5 25 125

Ans.

```
for (let i = 1; i <= 5; i++) {  
    let output = "";  
  
    // Inner loop for columns (1 to 4)  
    for (let j = 0; j <= 3; j++) {  
        // Calculate the power of j for i  
        let power = Math.pow(i, j);  
  
        // Append the calculated power to the output string  
        output += `${power} `;  
    }  
  
    // Prepend i to the beginning of the output string  
    output = `${i} ${output}`;  
  
    // Output each row  
    console.log(output.trim());  
}
```

Q.29 Use pattern in console.log in JS?

1)
1
1 0
1 0 1
1 0 1 0
1 0 1 0 1

```
for (var i = 1; i <= 5; i++) {  
    for (var j = 1; j <= i; j++) {  
        if (j % 2 !== 0) {  
            document.write("1 ");  
        }  
        else {  
            document.write("0 ");  
        }  
    }  
}
```

```

    }
  }
  document.write("<br>");
}

```

2)

A

BCD

EF

GHIJ

KLMNO

```

var currentCharCode = 65;
var pattern = [1, 3, 2, 4, 5];

for (var i = 0; i < pattern.length; i++) {
  for (var j = 0; j < pattern[i]; j++) {
    document.write(String.fromCharCode(currentCharCode) + " ");
    currentCharCode++;
  }
  document.write("<br>");
}

```

3)

1

2 3

4 5 6

7 8 9 10

11 12 13 14 15

```

for (var i = 1; i <= 5; i++) {
  for (var j = 1; j <= i; j++) {
    document.write(sum + " ");
    sum++;
  }
  document.write("<br>");
}

```

4)

*

* *

* * *

* * * *

* * * * *

```
for (var i = 1; i <= 5; i++) {  
    for (var j = 1; j <= i; j++) {  
        document.write("*" + " ");  
    }  
    document.write("<br>");  
}
```