



JavaScript

Section 1 – Building block , I/O, Operators & Expressions

- Variable and Data Type
- Input and Output - prompt and alert, console environment,
- Initialization Constant Escape Sequence - var, let, const
- Arithmetic Operator , Relational and Logical Operator , = = =
- Increment & Decrement Operator , Assignment Operator
- Conditional Expression
- Precedence & Order of Evaluation
- Type Conversion
- **Functions** and Click Event, GetElementByID, innerHTML, innerText

Note : Complete all example and assignment using HTML input fields, button and other elements

*1. Write a program to print given format using **document.write** function.

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*2. Write a program to find out simple interest (SI).

*3. Write a program to find gross salary (Hint :-GS=BS+DA+TA).

*4. Write a program for swapping of two integer variables using third variable.

*5. Write a program for swapping of two integer variables Without using third variable.

*6. Write a program accepts a character and find out corresponding ASCII value.

*7. Write a program to print last digit of a given number.

*8. Write a program to calculate Compound Interest

*9. Write a program to swap two numbers.

#1. Write a program to find out square of given number

#2. Write a program to find out area of circle

#3. Write a program accept 5 subject marks (Hint P=67, C=87, M=90, H=98, E=88) and calculate total marks and percentage.

#4 Write a program accepts three numbers from user and calculate average of given three numbers.

#5. Write a program to accepts an amount in rupees (Hint Rs4567) and find out how many currency of Rs 2000 required. Also find remaining amount.

#6 Write a program to find power of a number using pow function

#7 Write a program to convert temperature from degree Fahrenheit to Celsius

#8 Write a program to convert days into years, weeks and months.

#9. Find sum of first , third and fifth digit of 6 digit number.

Section 2 – Flow Control (Conditional Statements)

- If
- If-Else
- Else-If
- Nested If-Else
- Ternary operator
- Switch

*1. Write a program to accepts a number from user and check given number is even or odd.

*2. Write a program to accepts two numbers from user and calculates first no is divisible by second or not.

*3. Write a program to accepts three numbers from user and calculate biggest number out of three numbers.

*4. Write a program to calculate whether character is in lowercase or uppercase.

*5. Write a program to input basic salary of an employee and calculate its Gross salary according to following:

Basic Salary \leq 10000 : HRA = 20%, DA = 80%

Basic Salary \leq 20000 : HRA = 25%, DA = 90%

Basic Salary $>$ 20000 : HRA = 30%, DA = 95%

Gross Salary = Basic Salary + HRA + DA

*6. Write a program to show day of week according to user input by using switch case.

*7. Write a program to perform all arithmetic operations according to user choice (for ex-for addition press '+'...) by using switch case.

*8. Write a program to find maximum between two numbers.

*9. Write a program to find maximum between three numbers using if-else and ternary operator.

*10. Write a program to calculate sum of digits of a number of three digit number using if-else

*11. Write a "Bonus Distribution Program" using logical operators. Bonus will be given to all those employees who have salary less than 20000 and tenure is more than 3 years.

*12 Write a code (using nested switch case) to suggest a diet plan (calories) to a consumer on behalf of inputs(gender and food time).

#1. Write a program that accepts the age of person, find out the person is eligible for voting or not.

#2. Write a program that accepts a number from user and find whether it is positive or negative or zero.

#3. Write a program to calculate whether year is leap year or not.

#4. Write a program that accepts five subjects' marks from user and calculate the total marks then calculate Percentage. Display message according to following condition:

Percentage ≥ 60 then print message Grade A

Percentage ≥ 50 then print message Grade B

Percentage ≥ 40 then print message Grade C

Percentage < 40 then print message Grade D

#5. Write a program for generating electricity Bill. Accept last month unit and current month unit from user, then calculate and print bill amount according to following condition:

0-150 charges 4 rs/unit

151-300 charges 6 rs/unit

301-500 charges 8rs/unit

>500 charges 10rs/unit

#6. Write a program to show name of month . Ask user to enter between 1 and 12. Use switch case.

#7. Write a program that accepts a character and check given character is vowel or not by using switch case.

#8. Write a program to check whether a number is even or odd using switch case.

#9. Write a program to find the greatest of four numbers entered by the user.

#10. Write a program to calculate the income tax of an employee.

The tax slabs according to annual salary are :

upto rs.300000 tax is 0%

from rs.300000 to rs. 500000 tax is 10%

from rs.500000 to rs. 1000000 tax is 15%

more than 100000 tax is 20%

Note: 250000 is exempted from tax criteria

#11. Write a code for call center (using nested switch case). E,g, 1 for prepaid, 2 for post paid. If 1 selected then show all the options for prepaid.

Section 3 – Flow Control(Loops)

- While Loop
- Do-While Loop
- Break & Continue
- For Loop

*1. Write a program to print “Code Better” five times by using loop.

*2. Write a program to print n natural number.

*3. Take any ten numbers from user and print sum and average of these numbers.

*4. Take any ten numbers from user and print sum and average of positive numbers.

- *5. Take the numbers from user (until ten +ve numbers entered by the user), and print sum and average of these numbers.
- *6. Write a program to calculate factorial of a given number.
- *7. Write a program to calculate sum of digits of a number.
- *8. Write a program to find out reverse of a given number.
- *9. Write a program that accepts a number from user and check given number is Armstrong number or not.
- *10. Write a program to find LCM of two numbers.
.e.g. LCM of 4 and 6 is 12
- *11. Write a program to find HCF of two numbers.
.e.g. HCF of 16 and 24 is 8
- #12. Write a program that accepts a number from user and check given number is prime number or not.
- #13. Print Fibonacci series upto n terms 0,1,1,2,3,5,8,.....

*12. Write a program to print given below patterns:

<pre>* * * * * * * * * * * * * * *</pre>	<pre>* * * * * * * * * *</pre>	<pre>A AB ABC ABCD ABCDE</pre>
<pre> * * * * * * * * * * * * * * * * * * * * *</pre>	<pre>* * * * * * * * * * * * * * * *</pre>	<pre>1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5</pre>

- #1. Write a program to calculate square of numbers between 1-10
- #2. Write a program to calculate cube of numbers between m and n. Ask user to enter value of m and n.
- #3. Write a program to print table of any given numbers. . e.g table of 5 is 5, 10, 15,....,50
- #4. Write a program that accepts a number from user and check given number is palindrome number or not. e.g palindrome number is 16761.
- #5. Write a program that accepts a number from user calculate factor of a given number.
.e.g. factors of 12 are 1,2,3,4,6,12
- #6. Write a program that accepts a number from user check given number is perfect number or not. A perfect number is whose sum of factors is wise of that numbers. e.g. factor of 6 are 1,2,3,6 then sum os 1+2+3+6=12
- #7. Write a program to accept N number from user and show how many number are even or odd.
- #8. Write a program to accept N number from user and check and print only Prime numbers.

#9. Write a program to accept N number from user and check and print only Armstrong numbers.

#10. Write a program to accept N number from user and check and print only palindrome numbers.

#11. Write a program to calculate sum of given series: $1-2+3-4+5-6+7-8+\dots+n$.

#12. Write a program to calculate sum of given series: $x + x^2 + x^3 + \dots + x^n$

#13. Write a program to print given below patterns:

1 12 123 1234	5 54 543 5432 54321	5 4 3 2 1 5 4 3 2 1 5 4 3 2 1 5 4 3 2 1 5 4 3 2 1	1 1 2 1 2 3 1 2 3 4 1 2 3 4 5
1 1 1 1 2 1 1 3 3 1 1 4 6 4 1	***** * * * * * * *****	* *	* *

#14. print first letter of your name using start pattern

Section 4 - Functions

- Function Types , Function Parameter, Function Declaration
- Call by value & Call by reference
- Scope, Visibility & Lifetime of Variable
- Recursion

*1. Write a program to find cube of any number using function.

*2. Write a program to check whether a number is even or odd using functions.

*3. Write a program to find sum of digits of a given number using recursion.

*4. Write a program to check whether a number is palindrome or not using recursion.

#1. Write a program to check the prime number using function with argument and no return type.

#2. Write a program to calculate factorial using function with argument and with return type.

#3. Write a program to print all even or odd numbers in given range using recursion.

#4. Write a program to find LCM of two numbers using recursion.

#5. Write a program to print all natural numbers between 1 to n using recursion.

Section 5 - Array

- 1-D Array
- Nested array
- Pass Array to Function, Return Array from function

*1. Write a program to read and print elements of array.

*2. Write a program to find sum of all array elements

*3. Write a program to find maximum and minimum element in an array

*4. Write a program to insert an element in an array.

*5. Write a program to add two matrices.

*6. Write a program to search an element in an array.

*7. Write a program to sort an array .

*8 Write a program to reverse elements of an array

#1. Write a program to count total number of even and odd elements in an array.

#2. Write a program to copy all elements from an array to another array.

#3. Write a program to count total number of duplicate elements in an array.#4.

Write a program to merge two array to third array.

#5. Write a program to sort array elements in ascending or descending order.

#6. Write a program to multiply two matrices.

#7. Write a program to check whether two matrices are equal or not.

#8. Create an array of size 3x10 containing multiplication tables of the numbers 2,7 and 9, respectively.

#9 Remove all duplicate occurring elements from array.

#10 Write a program to print words representation of entered number. e.g. if entered number is 245983 then result should be Two Lac Forty Five Thousand Nine Hundred Eighty Three

#11. Ask user to enter any four numbers between 1 to 9 and print all numbers made using combination of these four number. Do not repeat any digit in the same number.

#12. Find 2nd highest number from and 2nd minimum from array of n elements.

Section 6 - Strings and Date

- Declaring Strings in
- String Comparison
- String Functions
- Date and Formats, Date operations

*1. Write a program to find length of a string.

*2. Write a program to take two strings as input from the user. Confirm that the strings are equal.

*3. Write a program to find total number of alphabets, digits or special character in a string.

*4. Write a program to convert lowercase string to uppercase.

*5. Write a program to find reverse of a string.

#1. Write a program to convert string into lowercase without any library function.

#2. Write a program to accept a string and check if it is palindrome or not?

#3. Write a program to count total number of vowels and consonants in a string.

#4. Write a program to find first occurrence of a character in a given string.

#5. Write a program to toggle case of each character of a string.

Section 7 - Functions, Event and DOM

- Events : click, doubleclick, keyup, keydown, mouseover, mouseenter, mouseleave, load, blur, focus.
- Javascript validation - required, length, email, number, password, regular expression
- DOM Manipulation : createElement() , appendChild(), append() ,remove(), parentElement, getElementById(), getElementsByName(), getElementsByTagName(), getElementsByClassName()
- Form Tag and Submit event
- Event bubbling
- setInterval() , setTimeout(), clearInterval() , clearTimeout()

*1. Create Photo Gallery with add and delete images. All Images show in tables and in everytable row only have 5 columns.

*2. Create a slider with 10 images in javascript with next and previous button.

#1. Create a Calculator with HTML and Javascript without using eval function.

#2. Create a StopWatch in HTML and Javascript.

Section 8 - JS object and JSON

- Object
- Object Array
- JSON
- Local Storage

*1. Create a Student Management System to store , delete, update list records of student. Storerollno, name, course, semester , percentage

#1. Create BankAccount Management App to store , delete, update, list, deposit, withdraw,search records of Bank Account. Store accNo, customer name, balance, account type

Section 9 - Class and Object

- Javascript Object - Property , Methods, Prototype , Accessors
- Class and Object,Constructor
- Inheritance, Overriding

*1. Create a class Rectangle with three data member (length, breadth & area).

Now also create method members

- inputValue() - to take input for length and breadth from user.
- calculateArea() - to calculate area of rectangle.
- showArea() - to display the area of rectangle.

*2. Create a class DemoArithmetic with three data member that are firstNo, secondNo and result .

In this class also create following method:

- a. inputValue() - to take input value from user for firstNo and secondNo
- b. addition() - to perform addition operation and store in result var
- c. subtraction() - to perform subtraction operation and store in result var
- d. multiplication() - to perform multiplication operation and store in result var
- e. divide() - to perform divide operation and store in result var
- f. show() - display value of result variable.

- *3. Create a class Student with data member(stuName, stuId, stuPercentage) to store the information of student And also create following method:
- inputStuInformation() - to take information about student from user
 - outputStuInformation() - to display information of student
- *4. Create a class Addition with member function addition() with following given argument
- three float
 - array of integer
 - two integer
- *5. Create a class Student with data member (stuId ,stuName ,stuPer) by using following properties:
- Only parameterized constructor;
 - ShowStuInformation() method - display the information of student.
 - Create three student object and call ShowStuInformation method
- *6. Create class Employee with variables name, id, salary.
- Create default and parameterized Constructor.
 - Create Constructor for id and salary only.
 - Make name optional type.
- #1. Create class Farmer with variables (name, crop, earning).
- Create default and parameterized Constructor.
 - Create display function
 - Compare earnings of two Farmers and print name and crop of farmer who earns more.
- #2. Create class Circle with variable radius.
- Create default init to set radius=1.
 - Create parameterized Constructor.
 - Create display function to display radius and area.
 - Create function isBiggerThan(otherCircle) which return Boolean
 - Create Two objects and call all the above functions
- #3. Create class BankAccount with data members accountNo, name, balance.
- Create display() method.
 - Create another method deposit(amount:Float) which add amount value to balance
 - Create withdraw(amount:Float) method which subtract amount from balance.
 - Store 5 BankAccount Information in an Array and display all records. Ask user to select choice from below and perform operation
 - Display account detail by account number
 - Deposit amount in account by account number
 - Withdraw amount in account by account number
 - Delete account by account number.
- #4. Create class Student with variable (name, course, dateOfBirth)
- create SchoolStudent class with variable (fees) and inherit class Student
 - create CollegeStudent with variable(sem and fees) and inherit class Student
 - create class PGStudent with variable(mainSubject, percent) and inherit CollegeStudent

- add default and parameterized Constructor in all classes

#5. Create class Employee(id, name, salary) and add display function

- create class PartTimeEmployee with variable(hoursWorked , hourlyRate) and inherit class Employee. Add calculateSalary() function to calculate salary as salary = hourlyRate * hoursWorked

- create class FullTimeEmployee with variables(basic, da, pf) and Add calculateSalary() function to calculate salary as salary = basic + da - pf

- add default and parameterized Constructor in all classes

- Create a global function getTax(emp) which accept Employee object in argument and calculate and print income tax on employee salary(12.5% of salary)

- Also try to pass Objects of PartTimeEmployee and FullTimeEmployee to getTax() method

#6. Create class BankAccount with variables (accountNo, balance).

- Add default and parameterized init.
- Add display method
- Add depositAmount(a) method to increase balance
- Add withdrawAmount(a) to subtract from balance

Create class SavingAccount with variable(customerName, homeAddress) and Inherit class BankAccount.

- Add static variable minimumBalance.
- Add display method
- override withdrawAmount(a) to check minimumBalance

Create class CheckingAccount with variable(shopName, shopAddress) and Inherit class BankAccount.

- Add static variable overDraftLimit.
- Add display method
- override withdrawAmount(a) to check overDraftLimit

Create an Array of BankAccount type and append 3 objects of SavingAccount type and 4 objects of CheckingAccount Type with default data. Display all account information on screen

Section 10 - Advance Functions

- Anonymous Function and Arrow Function
- Async , Await, Promise, Callback
- Higher Order Functions : filter() , map() , reduce() , some() , every() , sort() , find()
- Closure and Curring
- Spread and Rest Operator
- Binding with function : bind() , call() , apply()
- Generators
- Fetch Function
- IIFE
- Debouncing
- Throttling
- Polyfills

- AJAX

- *1. Write an arrow function that takes two parameters `a`` and `b`` and returns their sum.
 - *2. Convert the following anonymous function into an arrow function: `function greet (name) {return "Hello," + name ;} ``.
 - *3. Write a function that simulates fetching data from an API using promises and `async/await``. Handle both success and error scenarios.
 - *4. Given an array of numbers, use `filter()`` to create a new array containing only the even numbers.
 - *5. Write a program that uses `map()`` to square each element of an array
 - *6. Calculate the sum of an array of numbers using `reduce()``.
 - *7. Check if any element in an array satisfies a given condition using `some()``.
 - *8. Sort an array of strings in alphabetical order using `sort()``.
 - *9. Find the first element in an array that is greater than 50 using `find()``.
 - *10. Given an array of objects representing products, use `filter()`` to find products under a certain price, and then use `map()`` to create a new array with just their names.
 - *11. Starting with an array of numbers, filter out the even numbers, square the remaining numbers using `map()``, and then calculate their sum with `reduce()``.
 - *12. Create a counter function that returns a new count each time it's called. Implement it using closure so that the count is preserved between calls.
 - *13. Implement a curried function `multiply`` that takes two arguments and returns their product. You should be able to call it like `multiply(2)(3)``.
 - *14. Given two arrays, `arr1`` and `arr2``, use the spread operator to create a new array that combines the elements from both arrays into a single array.
 - *15. Create a function that accepts any number of arguments using the rest operator and returns the sum of all the arguments.
 - *16. Use the `bind()`` method to create a new function from an existing function with a fixed context.
 - *17. Demonstrate the use of `call()`` and `apply()`` to invoke a function with a specific context and arguments.
 - *18. Build a generator function that yields the first N Fibonacci numbers.
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- #1. Create an anonymous function that checks if a given number is even and returns true if it is, otherwise false.
 - #2. Implement a function that takes a callback function as an argument and calls it after a specific time delay.
 - #3. Filter an array of strings to find words containing the letter 'a'.
 - #4. Use `map()`` to convert an array of Fahrenheit temperatures to Celsius.
 - #5. Given an array of names, create a new array of objects with a "name" property for each name.
 - #6. Use `reduce()`` to find the maximum number in an array of numbers.
 - #7. Check if any element in an array is negative using `some()``.
 - #8. Determine if all elements in an array are greater than 10 using `every()``.
 - #9. Sort an array of strings in ascending alphabetical order using `sort()``.
 - #10. Sort an array of objects by a specific property, such as "age."
 - #11. Find the first even number in an array of integers using `find()``.
 - #12. Use `find()`` to locate an object with a specific key-value pair in an array of objects.

- #13. Calculate the total price of items in a shopping cart array using `reduce()`. Each item in the cart has a "price" property.
- #14. Given an array of words, filter out words shorter than 5 characters, capitalize the remaining words using `map()`, and then join them into a single string.
- #15. Build a function that logs the timestamp of when it was last called. Ensure that the timestamp is stored within a closure.
- #16. Create a curried function `add` that takes three arguments and returns their sum. You should be able to call it like `add(2)(3)(4)`.
- #17. Write a function that takes any number of arguments and uses the spread operator to concatenate them into a single string.
- #18. Write a function that takes a string and uses the rest operator to split it into an array of characters.
- #19. Create an object with a `name` property and a function that prints "Hello, [name]!" Use the `bind()` method to bind the function to the object and call it.
- #20. Demonstrate the use of the `call()` method to concatenate two strings with a custom separator.
- #21. Create a generator that generates a sequence of even number

