{c}odeBetter
Rise above the rest

www.codebetter.in
+91 8823075444
+ 91 9993928766

401, Shekhar Central, Palasia Square, Indore, MP - 452001

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.
*
***
*****
******
****

*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 <= 10000 : HRA = 20%, DA = 80%
Basic Salary <= 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 unto n terms 0,1,1,2,3,5,8,……

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

* * * * * * * * * * * * * * *	* * * * * * * * * *	A AB ABC ABCD ABCDE

*
   * *
  * * *
 * * * *
* * * * * *
	* * * * *
	 * * * *
	  * * *
	   * *
	    *
		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

#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……n.

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

#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. substraction() - to perform substraction 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:
        a. inputStuInformation() - to take infromation about student from user
        b. outputStuInformation() - to display information of student
*4. Create a class Addition with member   function addition() with following given argument
        a. three float
        b array of integer
        c two integer

*5. Create a class Student with data member (stuId ,stuName ,stuPer)) by using following properties:
        a. Only parameterized constructor;
        b. ShowStuInformation() method - display the information of student.
        c. 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 perameterized   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
                  1. Display account detail by account number
                  2. Deposit amount in account by account number
                  3. Withdraw amount in account by   account number
                  4. 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 minimumBalannce.

     - 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

- Annonymous 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.

#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.