1.

var num1=prompt("enter the first number");

var num2=prompt("enter the second number");

num1=parseFloat(num1);

num2=parseFloat(num2);

var sum= num1+num2;

alert("the sum is"+num1+"and"+num2+"is:"+sum);

1b] const reverseNumber = num => {

  const reversed = parseFloat(num.toString().split('').reverse().join('')) \* Math.sign(num);

  return reversed;

}

// Example usage

const num = 12243;

const reversedNum = reverseNumber(num);

console.log(reversedNum); // Output: 34221

2a] function asyncFunction1() {

  return new Promise((resolve, reject) => {

    setTimeout(() => {

      console.log("Async Function 1 completed");

      resolve();

    }, 1000);

  });

}

function asyncFunction2() {

  return new Promise((resolve, reject) => {

    setTimeout(() => {

      console.log("Async Function 2 completed");

      resolve();

    }, 2000);

  });

}

function asyncFunction3() {

  return new Promise((resolve, reject) => {

    setTimeout(() => {

      console.log("Async Function 3 completed");

      resolve();

    }, 3000);

  });

}

asyncFunction1()

  .then(() => {

    return asyncFunction2();

  })

  .then(() => {

    return asyncFunction3();

  })

  .then(() => {

    console.log("All functions completed");

  })

  .catch((error) => {

    console.log(error);

  });

2b]

var number = prompt("Enter a number:");

number = parseInt(number);

if (number % 2 === 0) {

  alert(number + " is an even number.");

} else {

  alert(number + " is an odd number.");

}

3a] function countVowels(str) {

    var vowelCount = 0;

    var lowerCaseStr = str.toLowerCase();

    for (var i = 0; i < lowerCaseStr.length; i++) {

      if (lowerCaseStr[i] === 'a' || lowerCaseStr[i] === 'e' || lowerCaseStr[i] === 'i' || lowerCaseStr[i] === 'o' || lowerCaseStr[i] === 'u') {

        vowelCount++;

      }

    }

    return vowelCount;

  }

  var inputString = prompt("Enter a string:");

  var result = countVowels(inputString);

  alert("Number of vowels in the string: " + result);

3b] <!DOCTYPE html>

<html>

<head>

  <title>Sort Letters in Alphabetical Order</title>

</head>

<body>

  <h1>Sort Letters in Alphabetical Order</h1>

  <label for="input">Enter a string:</label>

  <input type="text" id="input">

  <button id="sortButton">Sort</button>

  <script>

    // Function to sort the letters in a string in alphabetical order

    function sortString() {

      // Get the input value

      var input = document.getElementById("input").value;

      // Split the string into an array of characters, sort them, and join them back into a string

      var sortedString = input.split('').sort().join('');

      // Display the sorted string in the console

      alert("Sorted String: " + sortedString);

    }

    // Get the sort button element

    var sortButton = document.getElementById("sortButton");

    // Attach an event listener to the sort button

    sortButton.addEventListener("click", sortString);

  </script>

</body>

</html>

4] <!DOCTYPE html>

<html>

<head>

  <title>Jump Search</title>

</head>

<body>

  <h1>Jump Search</h1>

  <label for="keyInput">Enter the key:</label>

  <input type="number" id="keyInput">

  <label for="numbersInput">Enter a list of numbers (comma-separated):</label>

  <input type="text" id="numbersInput">

  <button id="searchButton">Search</button>

  <script>

    // Function to perform Jump Search on a sorted array

    function jumpSearch(arr, key) {

      var n = arr.length;

      var step = Math.floor(Math.sqrt(n));

      var prev = 0;

      // Find the block where the key might be present

      while (arr[Math.min(step, n) - 1] < key) {

        prev = step;

        step += Math.floor(Math.sqrt(n));

        if (prev >= n) {

          return -1; // Key not found

        }

      }

      // Perform linear search within the block

      while (arr[prev] < key) {

        prev++;

        if (prev === Math.min(step, n)) {

          return -1; // Key not found

        }

      }

      // Check if the key is found

      if (arr[prev] === key) {

        return prev; // Key found at index prev

      }

      return -1; // Key not found

    }

    // Function to handle the search button click event

    function performSearch() {

      // Get the input values

      var key = parseInt(document.getElementById("keyInput").value);

      var numbersInput = document.getElementById("numbersInput").value;

      // Convert the comma-separated string to an array of numbers

      var arr = numbersInput.split(',').map(Number);

      // Perform Jump Search on the array

      var result = jumpSearch(arr, key);

      // Display the search result

      if (result === -1) {

        alert("Key not found.");

      } else {

        alert("Key found at index: " + result);

      }

    }

    // Get the search button element

    var searchButton = document.getElementById("searchButton");

    // Attach an event listener to the search button

    searchButton.addEventListener("click", performSearch);

  </script>

</body>

</html>

5] // Function to encrypt text using Caesar Cipher

function caesarCipherEncrypt(text, shift) {

    var encryptedText = "";

    // Loop through each character in the text

    for (var i = 0; i < text.length; i++) {

      var char = text[i];

      // Check if the character is a letter

      if (char.match(/[a-z]/i)) {

        var code = text.charCodeAt(i);

        // Encrypt uppercase letters

        if (code >= 65 && code <= 90) {

          char = String.fromCharCode(((code - 65 + shift) % 26) + 65);

        }

        // Encrypt lowercase letters

        else if (code >= 97 && code <= 122) {

          char = String.fromCharCode(((code - 97 + shift) % 26) + 97);

        }

      }

      encryptedText += char;

    }

    return encryptedText;

  }

  // Prompt the user to enter the input text

  var inputText = prompt("Enter the text to encrypt:");

  // Prompt the user to enter the shift pattern

  var shiftPattern = parseInt(prompt("Enter the shift pattern (a number between 1 and 25):"));

  // Encrypt the input text using the Caesar Cipher

  var encryptedText = caesarCipherEncrypt(inputText, shiftPattern);

  // Display the encrypted text using an alert

  alert("Encrypted Text: " + encryptedText);

6a] // Function to capitalize the first letter of each word in a string

function capitalizeFirstLetter(str) {

    var words = str.split(' ');

    // Loop through each word in the array

    for (var i = 0; i < words.length; i++) {

      var word = words[i];

      // Capitalize the first letter of the word

      var capitalizedWord = word.charAt(0).toUpperCase() + word.slice(1);

      // Replace the word with the capitalized version in the array

      words[i] = capitalizedWord;

    }

    // Join the words back into a string

    var capitalizedStr = words.join(' ');

    return capitalizedStr;

  }

  // Prompt the user to enter a string

  var inputString = prompt("Enter a string:");

  // Capitalize the first letter of each word in the string

  var capitalizedString = capitalizeFirstLetter(inputString);

  // Display the capitalized string using an alert

  alert("Capitalized String: " + capitalizedString);

6 b] a)onClick()

<!doctype html>

<html>

<head>

    <script>

    function hiThere() {

        alert('Hi there!');

    }

    </script>

</head>

<body>

    <button type="button" onclick="hiThere()">Click me event</button>

</body>

</html>

b)onMouseOver()

<!doctype html>

<html>

<head>

    <script>

    function hov() {

        let e = document.getElementById('hover');

        e.style.display='none'

    }

    </script>

</head>

<body>

    <div id="hover" onmouseover="hov()"

    style="background-color:green;height:200px;width:200px;">

    </div>

</body>

</html>

c)onMouseOut()

<!doctype html>

<html>

<head>

    <script>

    function out() {

        var e = document.getElementById('hover');

        e.style.display = 'none';

    }

    </script>

</head>

<body>

    <div id="hover" onmouseout="out()"

    style="background-color:green;height:200px;width:200px;">

    </div>

</body>

</html>

d)onChange()

<!doctype html>

<html>

<head></head>

<body>

    <input onchange="alert(this.value)" type="number">

</body>

</html>

e)onKeyDown()

<!DOCTYPE html>

<html>

<body>

<input type="text" id="demo" onkeydown="myFunction()">

<script>

function myFunction() {

  document.getElementById("demo").style.backgroundColor = "blue";

}

</script>

</body>

</html>

7] // Function to insert elements into an array using prompt

function insertElements() {

    var arr = [];

    var numElements = parseInt(prompt("Enter the number of elements to insert:"));

    for (var i = 0; i < numElements; i++) {

      var element = parseInt(prompt("Enter element " + (i + 1) + ":"));

      arr.push(element);

    }

    return arr;

  }

  // Function to perform binary search on a sorted array

  function binarySearch(arr, key) {

    var start = 0;

    var end = arr.length - 1;

    while (start <= end) {

      var mid = Math.floor((start + end) / 2);

      if (arr[mid] === key) {

        return mid; // Key found at index mid

      } else if (arr[mid] < key) {

        start = mid + 1;

      } else {

        end = mid - 1;

      }

    }

    return -1; // Key not found

  }

  // Insert elements into the array

  var array = insertElements();

  // Prompt the user to enter the key to search

  var key = parseInt(prompt("Enter the key to search:"));

  // Sort the array in ascending order

  array.sort(function(a, b) {

    return a - b;

  });

  // Perform binary search on the array

  var result = binarySearch(array, key);

  // Display the search result

  if (result === -1) {

    alert("Key not found.");

  } else {

    alert("Key found at index: " + result);

  }

8a] // Function to split a string into an array of words

function splitStringIntoArray(str) {

    // Use the split() method to split the string into an array

    var words = str.split(" ");

    return words;

  }

  // Prompt the user to enter a string

  var inputString = prompt("Enter a string:");

  // Split the string into an array of words

  var wordArray = splitStringIntoArray(inputString);

  // Display the array of words using console.log

  console.log("Array of Words:", wordArray);

8b] <!DOCTYPE html>

<html>

<head>

  <title>VTU USN Validation</title>

</head>

<body>

  <h1>VTU USN Validation</h1>

  <label for="usnInput">Enter VTU USN:</label>

  <input type="text" id="usnInput">

  <button id="validateButton">Validate</button>

  <script>

    // Function to validate VTU USN

    function validateUSN() {

      var usn = document.getElementById("usnInput").value;

      var pattern = /^1[Nv][Ts][0-9]{2}[A-Za-z]{2}[0-9]{3}$/;

      if (pattern.test(usn)) {

        alert("Valid USN");

      } else {

        alert("Invalid USN");

      }

    }

    // Get the validate button element

    var validateButton = document.getElementById("validateButton");

    // Attach an event listener to the validate button

    validateButton.addEventListener("click", validateUSN);

  </script>

</body>

</html>

9a ] // Function to find leap years in a given range

function findLeapYears(startYear, endYear) {

    var leapYears = [];

    for (var year = startYear; year <= endYear; year++) {

      if (year % 4 === 0 && (year % 100 !== 0 || year % 400 === 0)) {

        leapYears.push(year);

      }

    }

    return leapYears;

  }

  // Prompt the user to enter the range of years

  var startYear = parseInt(prompt("Enter the start year:"));

  var endYear = parseInt(prompt("Enter the end year:"));

  // Find the leap years in the given range

  var leapYearsInRange = findLeapYears(startYear, endYear);

  // Display the leap years

  if (leapYearsInRange.length === 0) {

    console.log("No leap years found in the given range.");

  } else {

    console.log("Leap years in the range " + startYear + " to " + endYear + ":");

    console.log(leapYearsInRange);

  }

9b ] // Create a new Set

var mySet = new Set();

// Add values to the Set

mySet.add(10);

mySet.add("Hello");

mySet.add(true);

mySet.add(10); // Adding duplicate value, which will be ignored

// Retrieve value from the Set

var value = "Hello";

if (mySet.has(value)) {

  console.log(value + " is present in the Set.");

} else {

  console.log(value + " is not present in the Set.");

}

// Iterate over the Set

console.log("Values in the Set:");

mySet.forEach(function(item) {

  console.log(item);

});

10 a] // Function to search and display the date within a string

function searchAndDisplayDate(str) {

    var dateRegex = /\d{2}\/\d{2}\/\d{4}/;

    var match = str.match(dateRegex);

    if (match) {

      alert("Date found: " + match[0]);

    } else {

      alert("No date found in the string.");

    }

  }

  // Prompt the user to enter a string

  var inputString = prompt("Enter a string:");

  // Search and display the date within the string

  searchAndDisplayDate(inputString);

10 b] // Create a new Map

var myMap = new Map();

// Add values to the Map

myMap.set("name", "John");

myMap.set("age", 30);

myMap.set("city", "London");

// Retrieve value from the Map using key

var key = "age";

if (myMap.has(key)) {

  var value = myMap.get(key);

  console.log("Value for key '" + key + "':", value);

} else {

  console.log("Key '" + key + "' not found in the Map.");

}

// Iterate over the Map

console.log("Entries in the Map:");

myMap.forEach(function(value, key) {

  console.log(key + ":", value);

});