

1. Find the min and max element in the following array and switch their places. Print out the modified array in the console.

Input: [3, 500, 12, 149, 53, 414, 1, 19]

Output: [3, 1, 12, 149, 53, 414, 500, 19]

```
var array = [3, 500, 12, 149, 53, 414, 1, 19];
console.log(swapMinimumAndMaximumElement(array));

function swapMinimumAndMaximumElement(array) {
  var minElement = 9007199254740991; // max safe number in JavaScript
  var maxElement = -9007199254740991;

  var minIndex = 0;
  var maxIndex = 0;

  var newArray = [];

  for (var i = 0; i < array.length; i++) {
    var element = array[i];
    newArray[i] = element;

    if (element > maxElement) {
      maxElement = element;
      maxIndex = i;
    }

    if (element < minElement) {
      minElement = element;
      minIndex = i;
    }

    if (i === array.length - 1) {
      newArray[maxIndex] = minElement;
      newArray[minIndex] = maxElement;
    }
  }
}
```

```
    return newArray;
}
```

2. Use the following array to make a new one by dividing its values by two and adding 5. If a given element's value is 0, change it to 20.

Input: [3, 500, -10, 149, 53, 414, 1, 19]

Output: [6.5, 255, 20, 79.5, 31.5, 212, 5.5, 14.5]

```
var array = [3, 500, -10, 149, 53, 414, 1, 19];
console.log(computeArray(array, 2, 5, 20));

function computeArray(
    array,
    valueToDivide,
    valueToAdd,
    valueIfElementEqualsZero
) {
    var newArray = [];

    for (var i = 0; i < array.length; i++) {
        var element = array[i];
        element = element / valueToDivide + valueToAdd;

        if (element === 0) {
            element = valueIfElementEqualsZero;
        }

        newArray[i] = element;
    }

    return newArray;
}
```

3. Initialize two arrays. The first one should contain student names, the second one the number of points for each student. Display students' names with their corresponding grade. Use the following ranges:

51-60 -> 6,

61-70 -> 7,

71-80 -> 8,

81-90 -> 9,

91-100 -> 10.

Input : ["Micahel", "Anne", "Frank", "Joe", "John", "David", "Mark", "Bill"], [50, 39, 63, 72, 99, 51, 83, 59]

Output: Bill acquired 59 points and earned 6. Micahel acquired 50 points and failed to complete the exam.

```
var students = [
  "Micahel",
  "Anne",
  "Frank",
  "Joe",
  "John",
  "David",
  "Mark",
  "Bill"
];
var points = [50, 39, 63, 72, 99, 51, 83, 59];
var grades = printGrades(students, points);

console.log(grades);

function printGrades(students, points) {
  var outputMessage = "";

  for (var i = 0; i < students.length; i++) {
    var score = points[i];
    var roundedScore = (score - score % 10) / 10 + 1;
    var message =
      students[i] +
      " acquired " +
```

```

    score +
    " points and earned " +
    roundedScore +
    ".";
var failedMessage =
    students[i] +
    " acquired " +
    score +
    " points and failed to complete an exam.";

if (score > 50 && score < 61) {
    outputMessage += "\n" + message;
} else if (score > 60 && score < 71) {
    outputMessage += "\n" + message;
} else if (score > 70 && score < 81) {
    outputMessage += "\n" + message;
} else if (score > 80 && score < 91) {
    outputMessage += "\n" + message;
} else if (score > 90 && score <= 100) {
    outputMessage += "\n" + message;
} else {
    outputMessage += "\n" + failedMessage;
}
}

return outputMessage;
}

```

- Sort a previously defined array. Place its sorted values into a new array whose values are equivalent to the first array's values multiplied by 2.

Input: [13, 11, 15, 5, 6, 1, 8, 12]

Output: [2, 10, 12, 16, 22, 24, 26, 30]

```

var array = [13, 11, 15, 5, 6, 1, 8, 12];
array = sortArray(array, 2);

```

```

console.log(array);

function sortArray(array, multiplier) {
  var newArray = [];

  for (var i = 0; i < array.length - 1; i++) {
    var minIndex = i;
    var tempElementToSwap;

    for (var j = i + 1; j < array.length; j++) {
      var elementToCompareTo = array[j];

      if (elementToCompareTo < array[minIndex]) {
        minIndex = j;
      }
    }

    tempElementToSwap = array[i];
    array[i] = array[minIndex];
    array[minIndex] = tempElementToSwap;
  }

  for (var k = 0; k < array.length; k++) {
    newArray[k] = array[k] * multiplier;
  }

  return newArray;
}

```

- Sort a previously defined array in a descending order and display it in the console.

Input: [13, 11, 15, 5, 6, 1, 8, 12]

Output: [15, 13, 12, 11, 8, 6, 5, 1]

```

var array = [13, 11, 15, 5, 6, 1, 8, 12];
console.log(reverseSort(array));

function reverseSort(array) {
    var newArray = [];

    for (var i = array.length - 1; i > 0; i--) {
        var maxIndex = i;
        var tempElementToSwap;

        for (var j = i - 1; j >= 0; j--) {
            if (array[j] < array[maxIndex]) {
                maxIndex = j;
            }
        }

        tempElementToSwap = array[i];
        array[i] = array[maxIndex];
        array[maxIndex] = tempElementToSwap;
    }

    return array;
}

```

6. Write a program that uses a loop to add all the even numbers from 1 to 1000 and subtracts all the odd numbers 1 to 500 from the calculated sum. The result should then be multiplied by 12.5 and displayed in console.
Output: 2350000

```

console.log(addEvenAndSubstractOddNumbers(1000, 500, 12.5));

function addEvenAndSubstractOddNumbers(
    maxEvenNumber,
    maxOddNumber,

```

```

multiplyBy
) {
  var sum = 0;
  var largerIndex =
    maxEvenNumber >= maxOddNumber ? maxEvenNumber : maxOddNumber;

  for (var number = 1; number <= largerIndex; number++) {
    if (number % 2 === 0 && number <= maxEvenNumber) {
      sum += number;
    }
    if (number % 2 !== 0 && number <= maxOddNumber) {
      sum -= number;
    }
  }

  sum = sum * multiplyBy;

  return sum;
}

```

7. Define a 10 element array. Take the first two letters from every string (that has at least 2 letters) in the array and create a new string from them. Print it out in the console.

Input: ["M", "Anne", 12, "Steve", "Joe", "John", "David", "Mark", true, "A"]

Output: AnStJoJoDaMa

```

var names = [
  "M",
  "Anne",
  12,
  "Steve",
  "Joe",
  "John",
  "David",
  "Mark",
  true,

```

```

    "A"
];

console.log(getFirstNLetters(names, 2));

function getFirstNLetters(array, numberOfLetters) {
    var output = "";
    var tempNewElement = "";

    for (var i = 0; i < array.length; i++) {
        for (var j = 0; j < numberOfLetters; j++) {
            var letter = array[i][j];
            var isValidLetter = typeof letter === "string";
            if (!isValidLetter) {
                break;
            }
            tempNewElement += letter;
        }

        if (tempNewElement.length !== numberOfLetters) {
            tempNewElement = "";
        } else if (tempNewElement.length === numberOfLetters) {
            output += tempNewElement;
            tempNewElement = "";
        }
    }

    return output;
}

```

8. Write a program that takes a string and prints its characters out in reversed order in the console.

Input: Belgrade Institute of Technology

Output: ylgarE edutitsnI fo T ylonohceB


```

var message = "Belgrade Institute of Technology";
var reversedMessage = reverseString(message);

console.log(reversedMessage);

function reverseString(stringToReverse) {
  var outputMessage = "";
  var lastCharacterInString = stringToReverse.length - 1;

  for (var i = lastCharacterInString; i >= 0; i--) {
    var character = stringToReverse[i];
    outputMessage += character;
  }

  return outputMessage;
}

```

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9. Write a program that displays all the combinations of two numbers between 1 and 7. Don't display two of the same numbers at the same time. Display the number of possible combinations, as well. (E.g. (1,2),(2,1) is allowed, but not (1,1), (2,2)...).

```

var a = 1;
var b = 7;

var combinations = combineNonDuplicatePairs(a, b);

console.log(combinations);

function combineNonDuplicatePairs(intervalFrom, inetervalTo) {
  var combinations = [];
  var numberOfPairs = 0;

  for (var i = intervalFrom, iNew = 0; i <= inetervalTo; i++, iNew++) {
    for (var j = 1, jNew = 0; j <= inetervalTo; j++) {
      if (i !== j) {

```

```

        combinations[numberOfPairs] = [i, j];
        numberOfPairs++;
        jNew++;
    }
}
}

return combinations;
}

```

10. Write a program that checks if the entered number is a prime number (i.e. divisible only by 1 and by itself).

Input: 17 | 15

Output: true | false

```

var number = 11;

console.log(isPrime(number));

function isPrime(numberToCheck) {
    if (numberToCheck < 1) {
        return false;
    }

    for (var i = 2; i <= numberToCheck / 2; i++) {
        var isDivisible = numberToCheck % i === 0;
        if (isDivisible) {
            return false;
        }
    }

    return true;
}

```

11. Check if a given string is a palindrome (spaces are ignored).

Input: eye | Geek | a nut for a jar of tuna

Output: true | false | true

```
var string = "a nut for a jar of tuna";
console.log(isPalindrome(string));
function isPalindrome(stringToCheck) {
    var stringWithoutSpaces = removeSpaceCharacters(stringToCheck);

    for (var i = 0; i < stringWithoutSpaces.length / 2; i++) {
        if (
            stringWithoutSpaces[i] !==
            stringWithoutSpaces[stringWithoutSpaces.length - i - 1]
        ) {
            return false;
        }
    }

    return true;
}

function removeSpaceCharacters(string) {
    var newString = "";

    for (var i = 0; i < string.length; i++) {
        var character = string[i];
        if (character !== " ") {
            newString += character;
        }
    }

    return newString;
}
```

12. Write a program that calculates the greatest common divisor of two integers. Note: The greatest common divisor of two non-zero integers is the greatest positive number that divides both numbers with no remainder.

Input: 192 42 | 81 9

Output: 6 | 9

```
var a = 81;
var b = 9;

var gcd = findGcd(a, b);

console.log(gcd);

function findGcd(firstNumber, secondNumber) {
  var gcd = 1;

  for (var i = 1; i <= firstNumber && i <= secondNumber; i++) {
    if (firstNumber % i === 0 && secondNumber % i === 0) {
      gcd = i;
    }
  }

  return gcd;
}
```