Q.1 Write a JavaScript program to get an array from the user and return the:
a) Sum of all elements in the array using reduce()
b) Average of all elements in the array using reduce()

ANS:

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8">
<meta name="viewport" content="width=device-width, initial-scale=1.0">
<title>Array Operations</title>
<script>
  function calculate() {
    // Get the array from the user input
    let inputArray = document.getElementById('inputArray').value.split(',').map(Number);

    // Calculate the sum of all elements in the array using reduce()
    let sum = inputArray.reduce((accumulator, currentValue) => accumulator + currentValue, 0);

    // Calculate the average of all elements in the array using reduce()
    let average = sum / inputArray.length;

    // Display results
    document.getElementById('sumResult').innerHTML = "Sum: " + sum;
    document.getElementById('averageResult').innerHTML = "Average: " + average.toFixed(2);
  }
</script>
</head>
<body>
  <h2>Array Operations</h2>
  <p>Enter comma-separated numbers:</p>
  <input type="text" id="inputArray">
  <button onclick="calculate()">Calculate</button>
```

```
    <div id="sumResult"></div>

    <div id="averageResult"></div>

</body>

</html>
```

OOUTPUT

Array Operations

Enter comma-separated numbers:

12,13,23 Calculate

Sum: 48

Average: 16.00

Q.2 Write a JavaScript program to
a) Calculate grades on basis of marks
>90 = A
>80 = B
>70 = C
>60 = D
>50 = E
else = F
b) Map the grades of each student
c) Group students according to the grades they have received and display.

ANS:

```
<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Grade Calculator</title>

<script>

    // Function to calculate grade based on marks
```

```
function calculateGrade(marks) {
    if (marks > 90) {
        return 'A';
    } else if (marks > 80) {
        return 'B';
    } else if (marks > 70) {
        return 'C';
    } else if (marks > 60) {
        return 'D';
    } else if (marks > 50) {
        return 'E';
    } else {
        return 'F';
    }
}

// Function to map grades of each student
function mapGrades() {
    // Get student names and marks
    let students = document.getElementById('students').value.split('\n');
    let gradesMap = new Map();

    // Iterate through each student
    students.forEach(student => {
        let [name, marks] = student.split(',');
        marks = parseFloat(marks);

        // Calculate grade
        let grade = calculateGrade(marks);

        // Map grade to student
```

```
        if (gradesMap.has(grade)) {
            gradesMap.get(grade).push(name);
        } else {
            gradesMap.set(grade, [name]);
        }
    });

    // Display grouped students
    let resultDiv = document.getElementById('result');
    resultDiv.innerHTML = '';
    gradesMap.forEach((students, grade) => {
        resultDiv.innerHTML += `<h3>Grade ${grade}</h3><ul>`;
        students.forEach(student => {
            resultDiv.innerHTML += `<li>${student}</li>`;
        });
        resultDiv.innerHTML += `</ul>`;
    });
  }
</script>
</head>
<body>
  <h2>Grade Calculator</h2>
  <p>Enter student names and marks separated by comma (one per line):</p>
  <textarea id="students" rows="5" cols="30"></textarea>
  <button onclick="mapGrades()">Map Grades</button>
  <div id="result"></div>
</body>
</html>
```

OUTPUT:

Grade Calculator

Enter student names and marks separated by comma (one per line):

```
let students = [
{ name: "John", marks: “92” },
{ name: "Oliver", marks: “85” },
{ name: "Michael", marks: “79” },
{ name: "Dwight", marks: “95”},
{ name: "Oscar", marks: “64” },
{ name: "Kevin", marks: “48” },
];
```

Map Grades

Grade F

- let students = [
- { name: "John"
- { name: "Oliver"
- { name: "Michael"
- { name: "Dwight"
- { name: "Oscar"
- { name: "Kevin"
-];