



## BCSE203E- Web Programming

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### Problem 1

Using JavaScript, given an unsorted array of integers, sort the array into a wave-like array. An array 'arr[0..n-1]' is sorted in wave form if  $arr[0] \geq arr[1] \leq arr[2] \geq arr[3] \leq arr[4] \geq \dots$

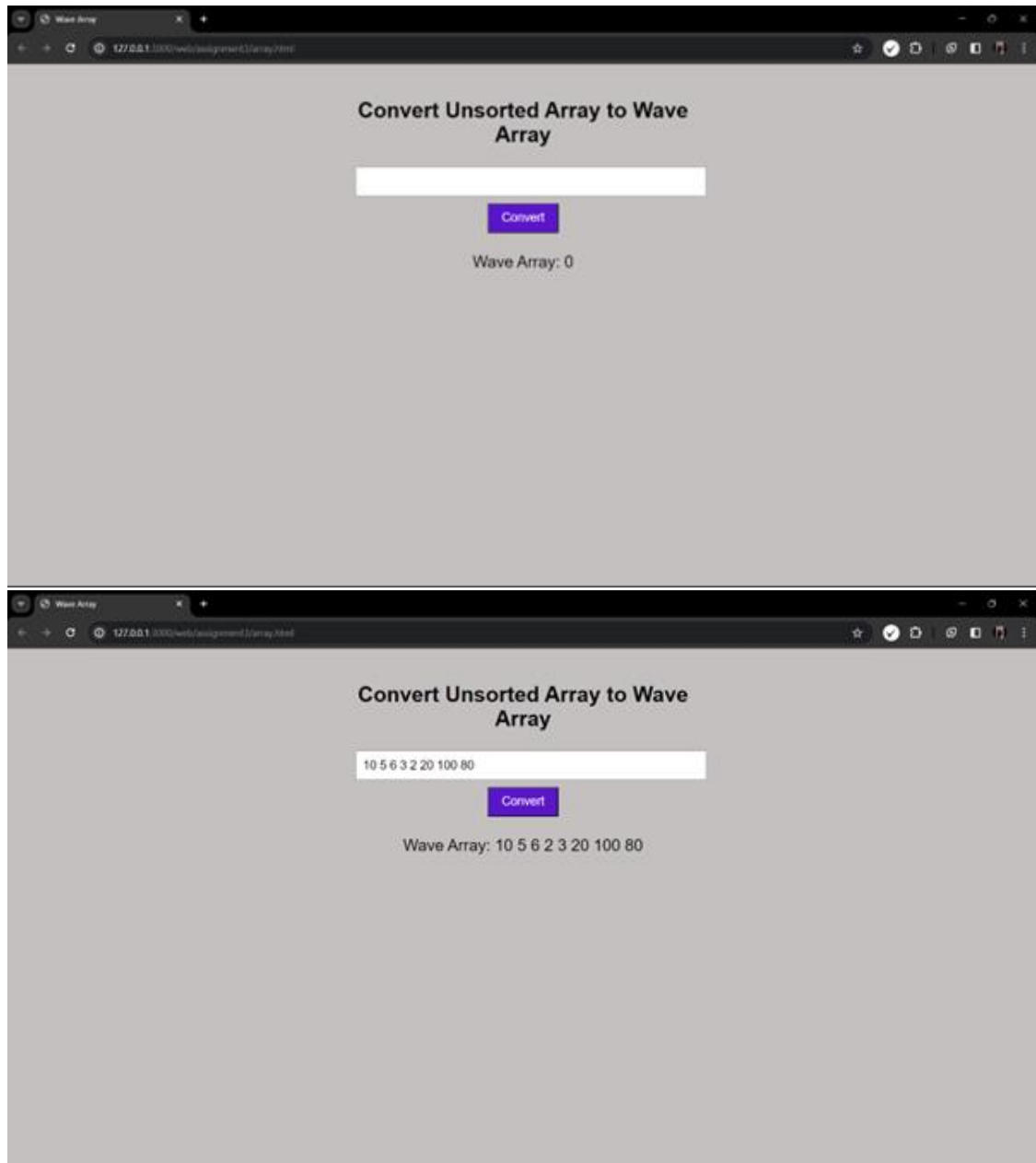
**Input:** arr[] = {10, 5, 6, 3, 2, 20, 100, 80}

**Output:** arr[] = {10, 5, 6, 2, 20, 3, 100, 80} OR {20, 5, 10, 2, 80, 6, 100, 3} OR

### CODE:

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4 <title>Wave Array</title>
5 <style>
6     body {
7         font-family: Arial, sans-serif;
8         background-color: #c4c0c0;
9         max-width: 500px;
10        margin: 0 auto;
11        text-align: center;
12    }
13    h1 {
14        margin-top: 50px;
15    }
16    form {
17        margin-top: 30px;
18    }
19    input[type="text"] {
20        padding: 10px;
21        font-size: 18px;
22        width: 100%;
23    }
24    button {
25        padding: 10px 20px;
26        font-size: 18px;
27        background-color: #5b16ca;
28        color: white;
29        margin-top: 10px;
30    }
31    #result {
32        margin-top: 30px;
33        font-size: 24px;
34    }
35 </style>
36 </head>
37 <body>
38 <h1>Convert Unsorted Array to Wave Array</h1>
39 <form id="array-form">
40 <input type="text" id="array-input" value="" />
41 <button type="button" id="convert-button">Convert</button>
42 </form>
43 <div id="result"></div>
44 <script>
45     document.getElementById('convert-button').addEventListener('click', function() {
46         var input = document.getElementById('array-input').value;
47         var arr = input.split(' ').map(Number);
48         var waveArray = convertToWaveArray(arr);
49         document.getElementById('result').innerText = 'Wave Array: ' + waveArray.join(' ');
50     });
51     function convertToWaveArray(arr) {
52         for (var i = 0; i < arr.length - 1; i += 2) {
53             if (i % 2 === 0) {
54                 if (arr[i] < arr[i + 1]) {
55                     swap(arr, i, i + 1);
56                 }
57             } else if (arr[i] < arr[i - 1]) {
58                 swap(arr, i, i - 1);
59             } else if (arr[i] < arr[i + 1]) {
60                 swap(arr, i, i + 1);
61             }
62         }
63         return arr;
64     }
65     function swap(arr, i, j) {
66         var temp = arr[i];
67         arr[i] = arr[j];
68         arr[j] = temp;
69     }
70 </script>
71 </body>
72 </html>
```

## OUTPUT:



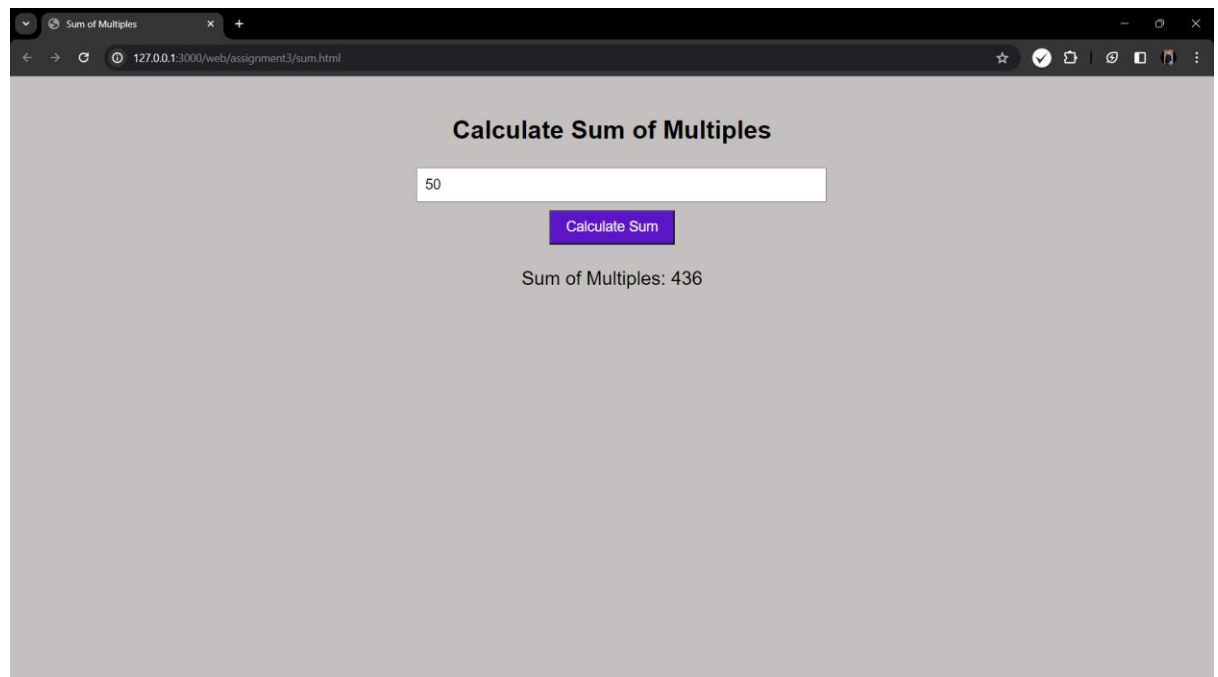
## Problem 2

Write a JavaScript function which Calculate the sum of multiples of 5 and 7 for a given limit.

CODE:-

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>Sum of Multiples</title>
5   <style>
6     body {
7       font-family: Arial, sans-serif;
8       background-color: #4c8c8d;
9       max-width: 500px;
10      margin: 0 auto;
11      text-align: center;
12    }
13    h1 {
14      margin-top: 50px;
15    }
16    form {
17      margin-top: 30px;
18    }
19    input[type="number"] {
20      padding: 10px;
21      font-size: 18px;
22      width: 100%;
23    }
24    button {
25      padding: 10px 20px;
26      font-size: 18px;
27      background-color: #5b16ca;
28      color: white;
29      margin-top: 10px;
30    }
31    #result {
32      margin-top: 30px;
33      font-size: 24px;
34    }
35  </style>
36 </head>
37 <body>
38   <h1>Calculate Sum of Multiples</h1>
39   <form id="limit-form">
40     <input type="number" id="limit-input" />
41     <button type="button" id="calculate-button">Calculate Sum</button>
42   </form>
43   <div id="result"></div>
44   <script>
45     document.getElementById('calculate-button').addEventListener('click', function() {
46       var limit = document.getElementById('limit-input').value;
47       var sum = calculateSumOfMultiples(limit);
48       document.getElementById('result').innerText = 'Sum of Multiples: ' + sum;
49     });
50
51     function calculateSumOfMultiples(limit) {
52       var sum = 0;
53       for (var i = 1; i <= limit; i++) {
54         if (i % 5 === 0 || i % 7 === 0) {
55           sum += i;
56         }
57       }
58       return sum;
59     }
60   </script>
61 </body>
62 </html>
```

OUTPUT:-



### Problem 3

Write a JavaScript function that reverses a number.

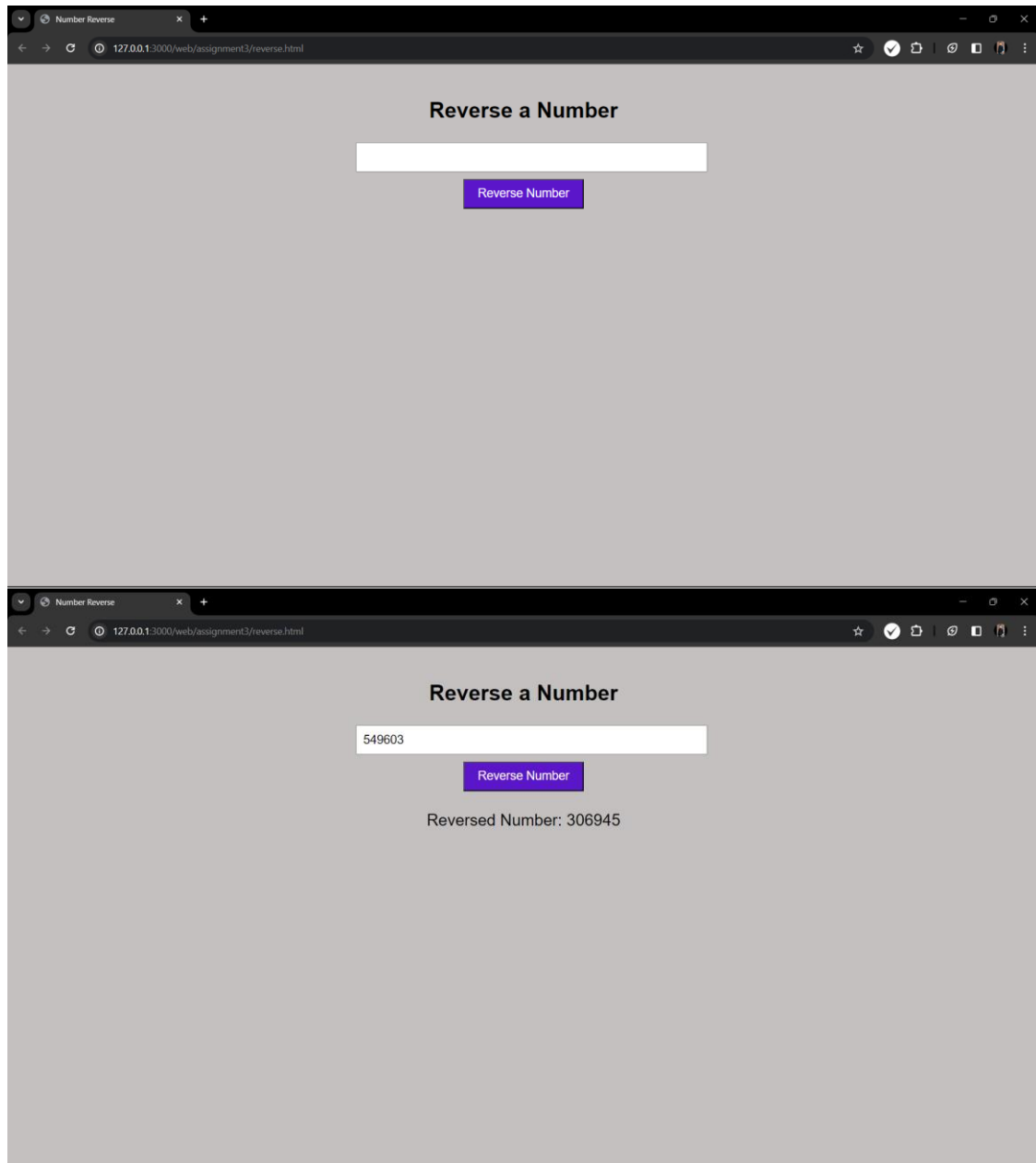
Example x = 32243;

Expected Output : 34223

#### CODE:-

```
1  <!DOCTYPE html>
2  <html>
3  <head>
4      <title>Number Reverse</title>
5      <style>
6          body {
7              font-family: Arial, sans-serif;
8              background-color: #c4c0c0;
9              max-width: 500px;
10             margin: 0 auto;
11             text-align: center;
12         }
13         h1 {
14             margin-top: 50px;
15         }
16         form {
17             margin-top: 30px;
18         }
19         input[type="number"] {
20             padding: 10px;
21             font-size: 18px;
22             width: 100%;
23         }
24         button {
25             padding: 10px 20px;
26             font-size: 18px;
27             background-color: #5b16ca;
28             color: #fff;
29             margin-top: 10px;
30         }
31         #result {
32             margin-top: 30px;
33             font-size: 24px;
34         }
35     </style>
36 </head>
37 <body>
38     <h1>Reverse a Number</h1>
39     <form id="number-form">
40         <input type="number" id="number-input" />
41         <button type="button" id="reverse-button">Reverse Number</button>
42     </form>
43     <div id="result"></div>
44     <script>
45         document.getElementById('reverse-button').addEventListener('click', function() {
46             var num = document.getElementById('number-input').value;
47             var reversedNum = reverseNumber(num);
48             document.getElementById('result').innerText = 'Reversed Number: ' + reversedNum;
49         });
50
51         function reverseNumber(num) {
52             return parseInt(num.toString().split('').reverse().join(''), 10);
53         }
54     </script>
55 </body>
56 </html>
```

## OUTPUT:-



## Problem 4 Design a web page to calculate the BMI of a person

← → ↻ file:///C:/Users/HP/Downloads/index (1).html

### Check your BMI

Enter your weight and height below to check your BMI results

Put your weight in here (KG)

And your height in here (CM)

Your BMI results will appear here

## CODE:-

```
1 <!DOCTYPE html>
2 <html>
3 <head>
4   <title>BMI Calculator</title>
5   <style>
6     body {
7       font-family: Arial, sans-serif;
8       background-color: #c4c0c0;
9       max-width: 500px;
10      margin: 0 auto;
11      text-align: center;
12    }
13    h1 {
14      margin-top: 50px;
15    }
16    form {
17      margin-top: 30px;
18    }
19    input[type="number"] {
20      padding: 10px;
21      font-size: 18px;
22      width: 100%;
23    }
24    button {
25      padding: 10px 20px;
26      font-size: 18px;
27      background-color: #5b16ca;
28      color: white;
29      margin-top: 10px;
30    }
31    #result {
32      margin-top: 30px;
33      font-size: 24px;
34    }
35  </style>
36 </head>
37 <body>
38   <h1>Check your BMI</h1>
39   <form id="bmi-form">
40     <input type="number" id="weight-input" placeholder="Put your weight in here (KG)" step="0.1" />
41     <input type="number" id="height-input" placeholder="And your height in here (CM)" step="0.1" />
42     <button type="button" id="calculate-button">Calculate BMI</button>
43   </form>
44   <div id="result"></div>
45   <script>
46     document.getElementById('calculate-button').addEventListener('click', function() {
47       var weight = document.getElementById('weight-input').value;
48       var height = document.getElementById('height-input').value;
49       var bmi = calculateBMI(weight, height);
50       var weightStatus = getWeightStatus(bmi);
51       document.getElementById('result').innerText = 'BMI: ' + bmi + ' - Weight Status: ' + weightStatus;
52     });
53     function calculateBMI(weight, height) {
54       height = height / 100; // convert height from CM to M
55       var bmi = weight / (height * height);
56       return parseFloat(bmi.toFixed(2));
57     }
58     function getWeightStatus(bmi) {
59       if (bmi < 18.5) {
60         return 'Underweight';
61       } else if (bmi >= 18.5 && bmi < 24.9) {
62         return 'Normal weight';
63       } else if (bmi >= 25 && bmi < 29.9) {
64         return 'Overweight';
65       } else {
66         return 'Obesity';
67       }
68     }
69   </script>
70 </body>
71 </html>
```

## OUTPUT:-

A screenshot of a web browser displaying a BMI Calculator. The browser's address bar shows the URL `127.0.0.1:3000/web/assignment3/body.html`. The page has a light gray background and the title "Check your BMI". There are two input fields: the first contains the number "69" and the second contains "175". Below these fields is a purple button labeled "Calculate BMI". Underneath the button, the text "BMI: 22.53 - Weight Status: Normal weight" is displayed.

A screenshot of the same BMI Calculator web application, but with different input values. The first input field now contains "89" and the second contains "180". The "Calculate BMI" button remains purple. The result displayed below the button is "BMI: 27.47 - Weight Status: Overweight".