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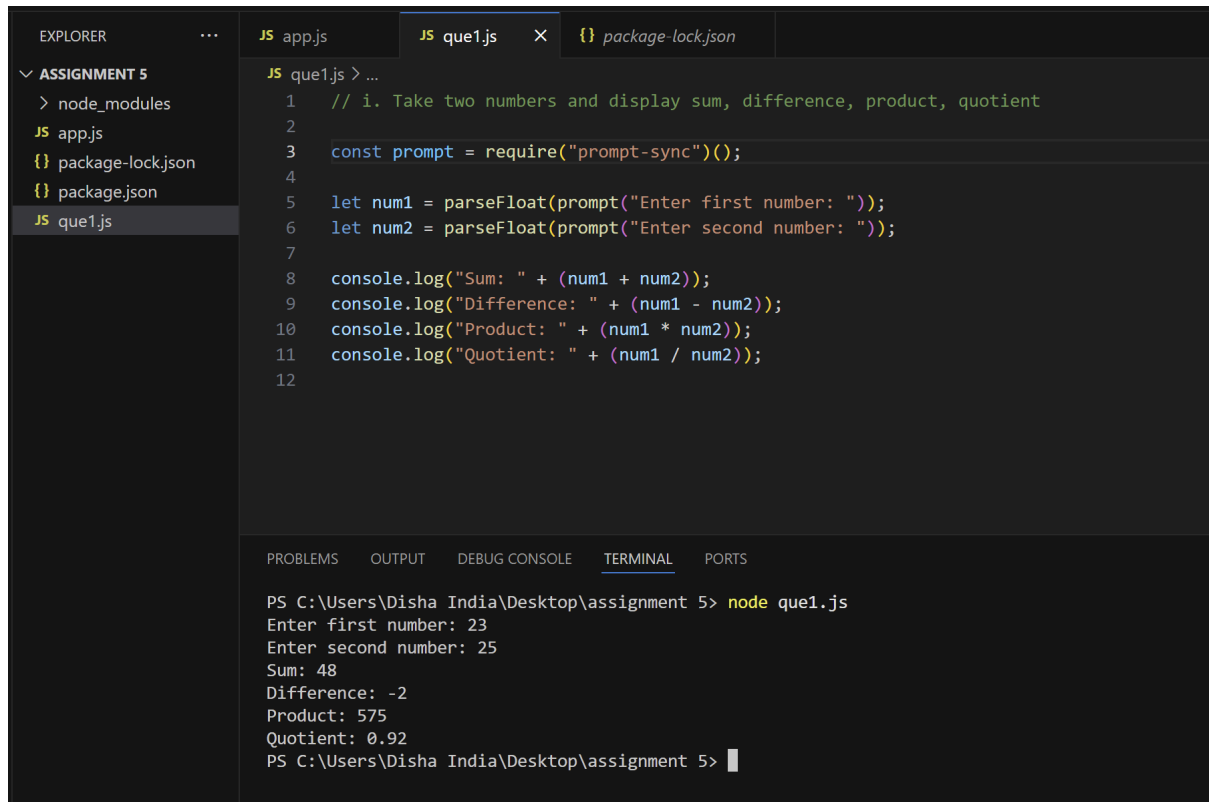
Roll number: 102495003

Operating Systems Lab Assignment 4

Title: Java script and Node.js

Que. 1. i. Write a JavaScript program to take two numbers as input from user and display their sum, difference, product, and quotient.

Ans.



The screenshot shows a VS Code editor with a file explorer on the left containing 'node_modules', 'app.js', 'package-lock.json', 'package.json', and 'que1.js'. The main editor displays 'que1.js' with the following code:

```
1 // i. Take two numbers and display sum, difference, product, quotient
2
3 const prompt = require("prompt-sync")();
4
5 let num1 = parseFloat(prompt("Enter first number: "));
6 let num2 = parseFloat(prompt("Enter second number: "));
7
8 console.log("Sum: " + (num1 + num2));
9 console.log("Difference: " + (num1 - num2));
10 console.log("Product: " + (num1 * num2));
11 console.log("Quotient: " + (num1 / num2));
12
```

The terminal at the bottom shows the command 'node que1.js' being executed, with the following output:

```
PS C:\Users\Disha India\Desktop\assignment 5> node que1.js
Enter first number: 23
Enter second number: 25
Sum: 48
Difference: -2
Product: 575
Quotient: 0.92
PS C:\Users\Disha India\Desktop\assignment 5>
```

Que. 2. ii. Write a JavaScript program to create an array of 5 numbers and: Find the largest and smallest number. Sort the array in ascending and descending order.

Ans.

```
JS que2.js > [?] numbers
1 // ii. Array operations
2 let numbers = [34, 1, 78, -5, 23, 112];
3 let largest: number
4 let largest = Math.max(...numbers);
5 let smallest = Math.min(...numbers);
6
7 console.log("Numbers: ", numbers);
8 console.log("Largest: " + largest);
9 console.log("Smallest: " + smallest);
10
11 console.log("Ascending: " + [...numbers].sort((a, b) => a - b));
12 console.log("Descending: " + [...numbers].sort((a, b) => b - a));
13
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\Disha India\Desktop\assignment 5> node que2.js
Numbers: [ 34, 1, 78, -5, 23, 112 ]
Largest: 112
Smallest: -5
Ascending: -5,1,23,34,78,112
Descending: 112,78,34,23,1,-5
PS C:\Users\Disha India\Desktop\assignment 5> |
```

Que. 3. iii. Create a simple form with fields for name, email, and age. Write JavaScript to validate that:

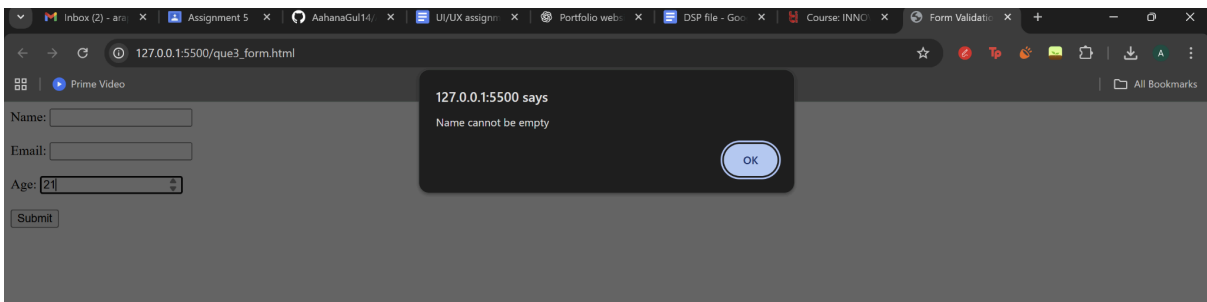
The name field is not empty.

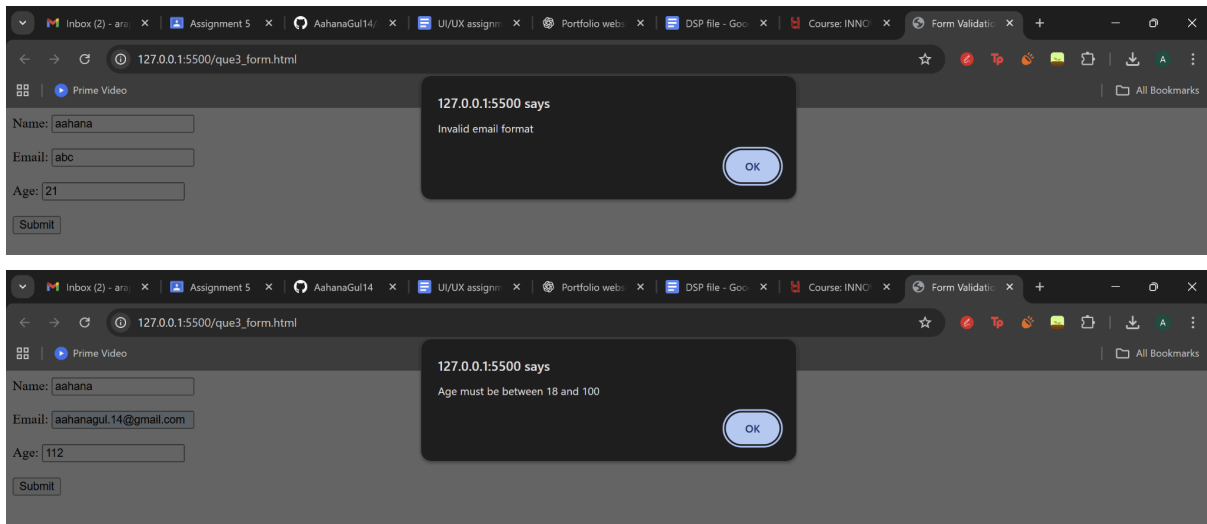
The email is in the correct format.

The age is between 18 and 100.

Ans.

```
<> que3_form.html > ...
1  <!DOCTYPE html>
2  <html>
3  <head>
4  | <title>Form Validation</title>
5  </head>
6  <body>
7  | <form onsubmit="return validateForm()">
8  |   Name: <input type="text" id="name"><br><br>
9  |   Email: <input type="text" id="email"><br><br>
10 |   Age: <input type="number" id="age"><br><br>
11 |   <button type="submit">Submit</button>
12 | </form>
13
14 <script>
15   function validateForm() {
16     let name = document.getElementById("name").value;
17     let email = document.getElementById("email").value;
18     let age = parseInt(document.getElementById("age").value);
19
20     if (name.trim() === "") {
21       alert("Name cannot be empty");
22       return false;
23     }
24     let emailPattern = /^[^ ]+@[^ ]+\.[a-z]{2,3}$/;
25     if (!email.match(emailPattern)) {
26       alert("Invalid email format");
27       return false;
28     }
29     if (isNaN(age) || age < 18 || age > 100) {
30       alert("Age must be between 18 and 100");
31       return false;
32     }
33     alert("Form submitted successfully!");
34     return true;
  }
```





Que.4. iv. Write a JavaScript program to create an object representing a student (with properties like name, age, grades) and perform the following operations:
Add a new property class.
Update the student's grade.
Display all the student's information.

Ans.

```

JS app.js JS que1.js JS que2.js <> que3_form.html JS que4.js X {} package-lock.json
JS que4.js > student > grades
1 // iv. Student object
2 let student = {
3   name: "Aahana Gul Raparia",
4   age: 20,
5   grades: "A"
6 };
7
8 student.class = "12th";
9 student.grades = "A+";
10 console.log("Student Info:");
11 for (let key in student) {
12   console.log(key + ": " + student[key]);
13 }
14

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

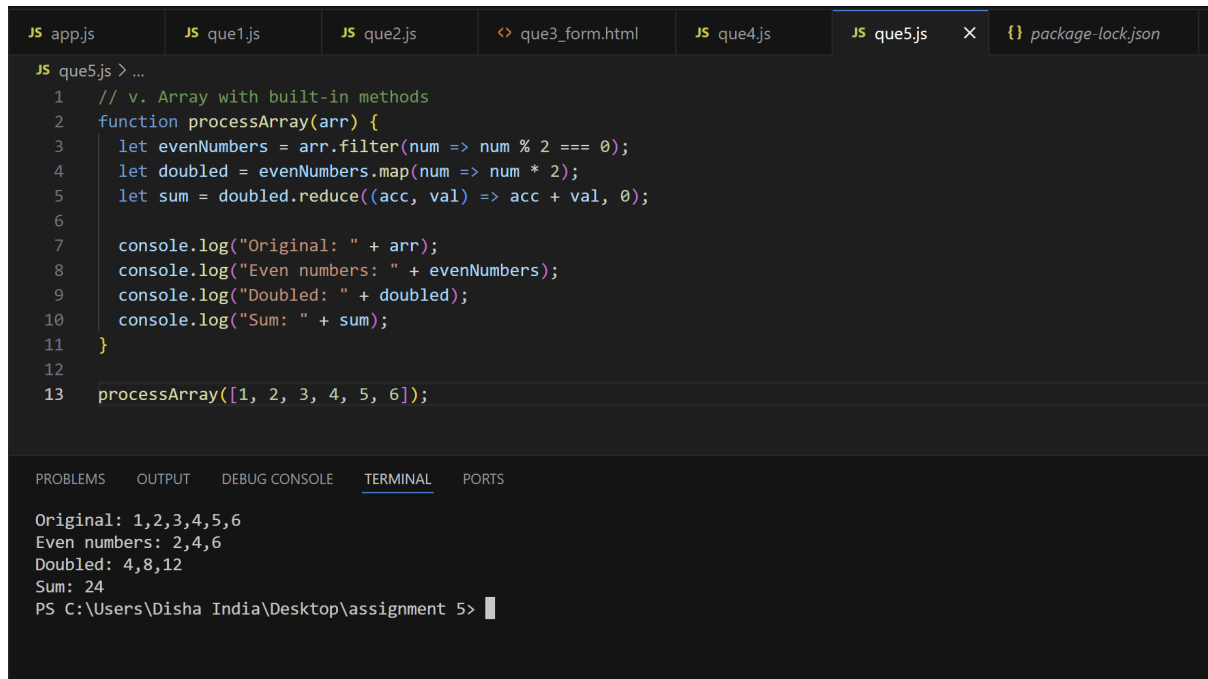
Node.js v22.19.0
PS C:\Users\Disha India\Desktop\assignment 5> node que4.js
Student Info:
name: Aahana Gul Raparia
age: 20
grades: A+
class: 12th
PS C:\Users\Disha India\Desktop\assignment 5>

```

Que.5. v. Create a function that takes an array of numbers and uses the array's built-in methods (like

map(), reduce(), and filter()) to:
Remove all odd numbers.
Multiply the remaining numbers by 2.
Find the sum of the resulting numbers.

ans.



```
JS app.js JS que1.js JS que2.js <> que3_form.html JS que4.js JS que5.js X {} package-lock.json
JS que5.js > ...
1 // v. Array with built-in methods
2 function processArray(arr) {
3   let evenNumbers = arr.filter(num => num % 2 === 0);
4   let doubled = evenNumbers.map(num => num * 2);
5   let sum = doubled.reduce((acc, val) => acc + val, 0);
6
7   console.log("Original: " + arr);
8   console.log("Even numbers: " + evenNumbers);
9   console.log("Doubled: " + doubled);
10  console.log("Sum: " + sum);
11 }
12
13 processArray([1, 2, 3, 4, 5, 6]);
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Original: 1,2,3,4,5,6
Even numbers: 2,4,6
Doubled: 4,8,12
Sum: 24
PS C:\Users\Disha India\Desktop\assignment 5> |