# UI/UX SPECIALIST
# (UCS542)

## Submitted
## by


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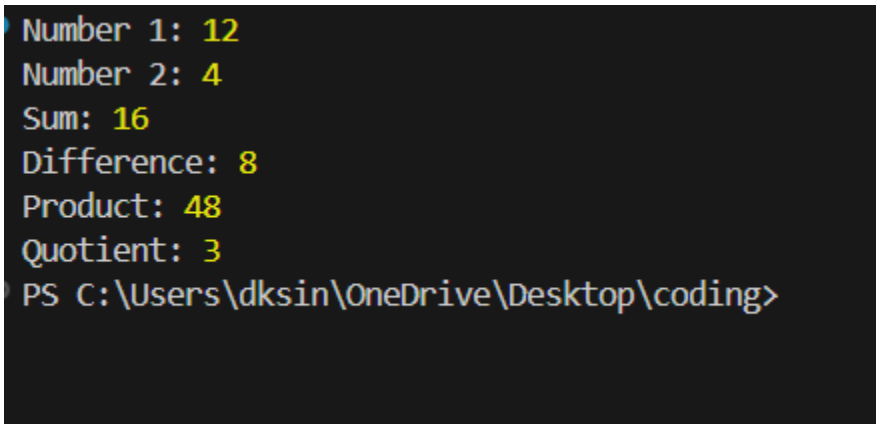
# Assignment 5

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

```
// Predefined numbers
let num1 = 12;
let num2 = 4;

// Calculations
let sum = num1 + num2;
let difference = num1 - num2;
let product = num1 * num2;
let quotient = num1 / num2;

// Display the results
console.log("Number 1:", num1);
console.log("Number 2:", num2);
console.log("Sum:", sum);
console.log("Difference:", difference);
console.log("Product:", product);
console.log("Quotient:", quotient);
```




**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.**

```javascript
// Create an array of 5 numbers
let numbers = [23, 7, 45, 12, 89];
console.log("Original Array:", numbers);

// Find largest and smallest manually
let largest = numbers[0];
let smallest = numbers[0];

for (let i = 1; i < numbers.length; i++) {
    if (numbers[i] > largest) {
        largest = numbers[i];
    }
    if (numbers[i] < smallest) {
        smallest = numbers[i];
    }
}

console.log("Largest Number:", largest);
console.log("Smallest Number:", smallest);

// Sort in ascending order using Selection Sort
let ascending = [...numbers];
for (let i = 0; i < ascending.length - 1; i++) {
    let minIndex = i;
    for (let j = i + 1; j < ascending.length; j++) {
        if (ascending[j] < ascending[minIndex]) {
            minIndex = j;
        }
    }
    // Swap
    let temp = ascending[i];
    ascending[i] = ascending[minIndex];
    ascending[minIndex] = temp;
}

console.log("Ascending Order:", ascending);

// Sort in descending order using Selection Sort
let descending = [...numbers];
for (let i = 0; i < descending.length - 1; i++) {
```

```
    let maxIndex = i;
    for (let j = i + 1; j < descending.length; j++) {
        if (descending[j] > descending[maxIndex]) {
            maxIndex = j;
        }
    }
    // Swap
    let temp = descending[i];
    descending[i] = descending[maxIndex];
    descending[maxIndex] = temp;
}

console.log("Descending Order:", descending);
```

```
Original Array: [ 23, 7, 45, 12, 89 ]
Largest Number: 89
Smallest Number: 7
Ascending Order: [ 7, 12, 23, 45, 89 ]
Descending Order: [ 89, 45, 23, 12, 7 ]
PS C:\Users\dksin\OneDrive\Desktop\coding>
```

**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.**

**HTML Code :**

```
<!DOCTYPE html>
<html>
<head>
    <title>Form Validation</title>
</head>
<body>
    <h2>Simple Form</h2>
    <form id="myForm" onsubmit="return validateForm()">
        <label for="name">Name:</label>
```

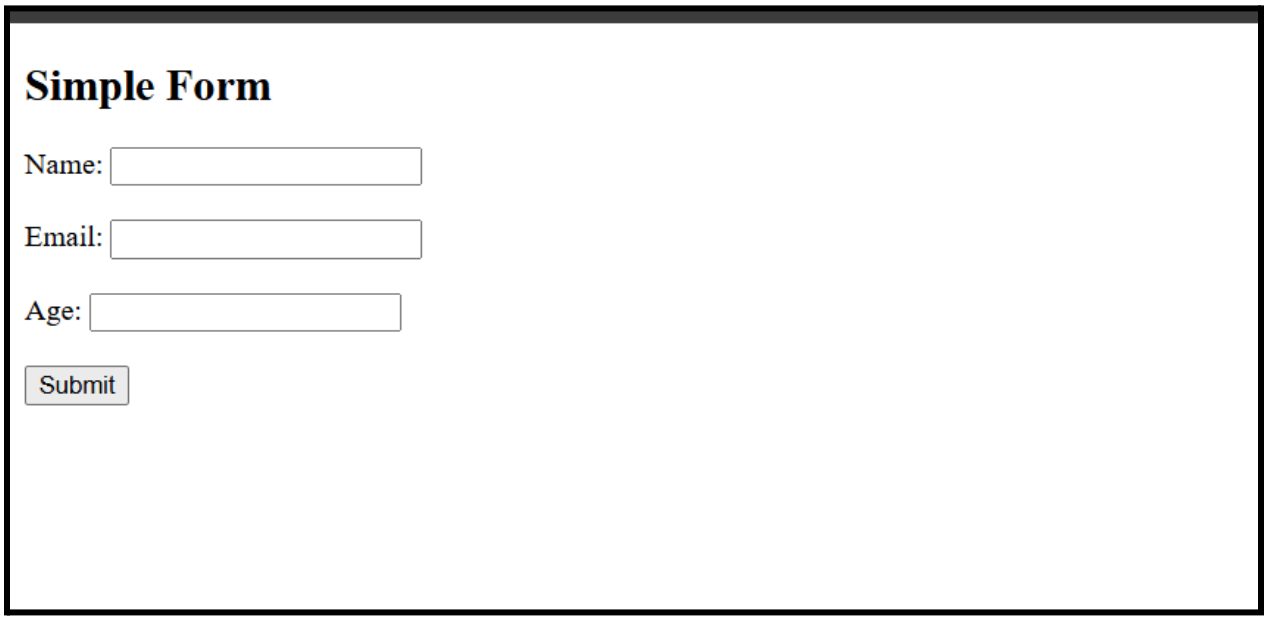
```
        <input type="text" id="name"><br><br>

        <label for="email">Email:</label>
        <input type="text" id="email"><br><br>

        <label for="age">Age:</label>
        <input type="text" id="age"><br><br>

        <button type="submit">Submit</button>
    </form>

    <p id="error" style="color:red;"></p>

    <!-- Linking external JavaScript file -->
    <script src="script.js"></script>
</body>
</html>
```

**JavaScript Code :**

```
function validateForm() {
    // Get values
    let name = document.getElementById("name").value.trim();
    let email = document.getElementById("email").value.trim();
    let age = document.getElementById("age").value.trim();
    let errorMsg = "";

    // Validate name
    if (name === "") {
        errorMsg += "Name cannot be empty.<br>";
    }

    // Validate email (just check for '@')
    if (!email.includes("@")) {
        errorMsg += "Email must contain '@' symbol.<br>";
    }

    // Validate age (must be a number between 18 and 100)
    let ageNum = parseInt(age);
```

```
    if (isNaN(ageNum) || ageNum < 18 || ageNum > 100) {
        errorMsg += "Age must be a number between 18 and 100.<br>";
    }

    // Display error messages if any
    document.getElementById("error").innerHTML = errorMsg;

    // If there are errors, prevent form submission
    return errorMsg === "";
}
```

**Output :**




**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.**

```
// Create a student object
let student = {
    name: "John Doe",
    age: 20,
    grades: 85
};
```

```
// Display original student information
console.log("Original Student Info:", student);

// Add a new property 'class'
student.class = "12th Grade";
console.log("After Adding Class:", student);

// Update the student's grade
student.grades = 90;
console.log("After Updating Grade:", student);

// Display all student's information
console.log("Final Student Information:");
for (let key in student) {
    console.log(key + ": " + student[key]);
}
```

**Output :**

```
Original Student Info: { name: 'John Doe', age: 20, grades: 85 }
After Adding Class: { name: 'John Doe', age: 20, grades: 85, class: '12th Grade' }
After Updating Grade: { name: 'John Doe', age: 20, grades: 90, class: '12th Grade' }
Final Student Information:
name: John Doe
age: 20
grades: 90
class: 12th Grade
PS C:\Users\dksin\OneDrive\Desktop\coding>
```

**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.**

```
// Function to process the array
function processArray(numbers) {
    // 1. Remove all odd numbers
    let evenNumbers = numbers.filter(num => num % 2 === 0);
```

```
    // 2. Multiply remaining numbers by 2
    let doubledNumbers = evenNumbers.map(num => num * 2);

    // 3. Find the sum of resulting numbers
    let sum = doubledNumbers.reduce((acc, num) => acc + num, 0);

    return sum;
}

// Example usage
let arr = [1, 2, 3, 4, 5, 6];
let result = processArray(arr);
console.log("Result:", result);
```

**Output :**