JavaScript Operators and Control Structures

Task 1: Arithmetic Operators

1. Open a text editor and create a new HTML file.

2. Inside the <script> tag, write JavaScript code to declare two variables:

   ```
   var a = 15;
   var b = 5;
   ```

3. Perform the following operations and display the results using document.write():

   1. Addition

   2. Subtraction

   3. Multiplication

   4. Division

   5. Modulus

   6. Increment a and b

   7. Decrement a and b

4. Save and open the HTML file in a browser to view the results.

Task 2: Comparison and Logical Operators

1. Extend the previous script by adding comparison operations:

   ```
   document.write("a == b: " + (a == b) + "<br>");
   document.write("a != b: " + (a != b) + "<br>");
   document.write("a > b: " + (a > b) + "<br>");
   ```

2. Implement logical operations using &&, ||, and !.

3. Display the results in the browser.

Task 3: Conditional Statements

1. Write a JavaScript program to check if a user-provided number is positive, negative, or zero.

```javascript
var num = prompt("Enter a number:");
if (num > 0) {
    alert("Positive Number");
} else if (num < 0) {
    alert("Negative Number");
} else {
    alert("Zero");
}
```

2. Modify the program to use a switch statement to check a user-entered grade (A, B, C, D, F) and print feedback.

```javascript
var grade = prompt("Enter your grade (A-F):");
switch (grade) {
    case 'A': alert("Excellent"); break;
    case 'B': alert("Good"); break;
    case 'C': alert("Average"); break;
    case 'D': alert("Pass"); break;
    case 'F': alert("Fail"); break;
    default: alert("Invalid Grade");
}
```

Task 4: Looping Structures

1. Write a for loop to print numbers from 1 to 10.

```javascript
for (var i = 1; i <= 10; i++) {
    document.write(i + " ");
}
```

2. Implement a while loop to find the sum of numbers from 1 to N (user input).

```javascript
var n = prompt("Enter a number:");
var sum = 0, i = 1;
while (i <= n) {
```

```
        sum += i;
        i++;
    }
    alert("Sum: " + sum);
```

3. Use a do-while loop to keep asking the user for input until they enter a positive number.

```
    var num;
    do {
        num = prompt("Enter a positive number:");
    } while (num <= 0);
    alert("Thank you!");
```