

Conditional Statements and Looping in JavaScript

Module 3 - Introduction to If - Else If Statement in JavaScript

The if...else if statement in JavaScript is used to test multiple conditions in sequence. When a condition is true, the corresponding block of code is executed, and the rest of the conditions are ignored. If none of the conditions are true, an optional else block can handle the default case.

Syntax

```
if (condition1) {  
    // Code block to execute if condition1 is true  
} else if (condition2) {  
    // Code block to execute if condition2 is true  
} else if (condition3) {  
    // Code block to execute if condition3 is true  
} else {  
    // Code block to execute if none of the conditions are true  
}
```

How it Works

- First Condition: The if statement checks condition1. If true, the block inside if runs, and the rest is skipped.
- Additional Conditions: If condition1 is false, it moves to the next else if condition.
- Default Case: If none of the conditions are true, the else block executes.

Solved Example 1: Using if - Else if with initializing a variable

Ques: Write a JavaScript program that assigns a grade to a student based on their marks. Follow these conditions:

- If the marks are 90 or above, the grade should be "A+".
- If the marks are 80 or above but less than 90, the grade should be "A".
- If the marks are 70 or above but less than 80, the grade should be "B".
- If the marks are 60 or above but less than 70, the grade should be "C".
- If the marks are less than 60, the grade should be "F".

Instructions

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- ICSE
- NTSE
- Banking & Insurance
- Central Govt. Service
- State Govt. Services
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- Initialize a variable marks with a value (e.g., 85).
- Add background-color: #f0f8ff
- Use an if...else if statement to check the conditions and determine the grade.
- Print the appropriate grade to the console using document.write().










Solution:

```
<!DOCTYPE html>
<html>
<head>
  <title>Student Grading System</title>
</head>
<body style="background-color: #f0f8ff;" <!-- Light blue background -->
  <script type="text/javascript">
    // Initialize marks variable
    var marks = 85; // You can change this value to test different outputs

    // Determine the grade using if...else if statement
    if (marks >= 90) {
      document.write("<h2>Grade: A</h2>");
    } else if (marks >= 80) {
      document.write("<h2>Grade: A</h2>");
    } else if (marks >= 70) {
      document.write("<h2>Grade: B</h2>");
    } else if (marks >= 60) {
      document.write("<h2>Grade: C</h2>");
    } else {
      document.write("<h2>Grade: F</h2>");
    }
  </script>
</body>
</html>
```

Grade: A

**When Marks = 85
using If - Else If**

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Solved Example 2: Create a JavaScript Program to Calculate Student Grades Dynamically using If - Else If statement

Ques: Write an HTML document with JavaScript that performs the following actions:

- Sets the background color of the webpage to a light cyan shade (#10f5e7).
- Prompts the user to enter their marks using a prompt() dialog box.
- Converts the entered marks into a number and validates if it is a valid input.
- Determines the grade based on the following conditions:
 - If marks are 90 or above, display: Grade: A+
 - If marks are 80 or above but less than 90, display: Grade: A
 - If marks are 70 or above but less than 80, display: Grade: B
 - If marks are 60 or above but less than 70, display: Grade: C
 - If marks are less than 60, display: Grade: F
- If the user enters an invalid value (e.g., text or leaves it blank), display: Please enter a valid number for marks!

Instructions:

- Use an if...else if statement to implement the logic for grade calculation.
- Display the output dynamically on the webpage using document.write().

Solution:

```
<!DOCTYPE html>
<html>
<head>
  <title>Student Grade Calculator</title>
</head>
<body style="background-color: #10f5e7;" > <!-- Light Cyan Shade -->
  <script type="text/javascript">
    // Prompt the user to enter their marks
    var marks = prompt("Enter your marks:");

    // Convert the input to a number
    marks = Number(marks);

    // Check if the input is a valid number
    if (isNaN(marks)) {
      document.write("<h2>Please enter a valid number for marks!</h2>");
    } else {
      // Determine the grade using if...else if statements
```

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```

if (marks >= 90) {
    document.write("<h2>Grade: A+</h2>");
} else if (marks >= 80) {
    document.write("<h2>Grade: A</h2>");
} else if (marks >= 70) {
    document.write("<h2>Grade: B</h2>");
} else if (marks >= 60) {
    document.write("<h2>Grade: C</h2>");
} else {
    document.write("<h2>Grade: F</h2>");
}
}
</script>
</body>
</html>
    
```

Sample Outputs:

- User enters 95: Displays Grade: A+
- User enters 75: Displays Grade: B
- User enters 50: Displays Grade: F
- User enters a non-numeric value: Displays Please enter a valid number for marks!

isNaN() in Java Script

In JavaScript, isNaN() is a built-in function used to determine whether a value is not a number (NaN stands for "Not-a-Number"). Here's how it works:

Explanation of isNaN()

- The function checks if the value passed to it is not a valid number.
- If the value is not a number, it returns true.
- If the value is a valid number, it returns false.

Why Use isNaN()?

When taking input from the user (e.g., using prompt()), the input is always a string. Before performing calculations or comparisons, you need to check if the input can be safely converted to a number. This is where isNaN() comes in.

Assignment

Unsolved Questions: Using Initialization

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Ques 1: Check Age Category Write a JavaScript program that initializes a variable age with a value. Use if...else if statements to categorize the age into:

 CBSE

- If the age is below 13, display "Child".
- If the age is between 13 and 19 (inclusive), display "Teenager".
- If the age is between 20 and 60 (inclusive), display "Adult".
- If the age is above 60, display "Senior Citizen".
- Display the output on the webpage using document.write().

 ICSE

Ques 2: Determine Season Based on Month Write a JavaScript program that initializes a variable month with a numeric value (1 for January, 2 for February, etc.). Use if...else if to determine the season:

 NTSE

- If the month is 12, 1, or 2, display "Winter".
- If the month is 3, 4, or 5, display "Spring".
- If the month is 6, 7, or 8, display "Summer".
- If the month is 9, 10, or 11, display "Autumn".
- Use document.write() to display the result.

 Banking & Insurance

Unsolved Questions: Using prompt()

 Central Govt. Service

Ques 1: Grade Calculation Create a JavaScript program where the user is prompted to enter their marks using prompt(). Use if...else if to determine the grade:

 State Govt. Services

- Marks 90 and above: "Grade A+"
- Marks 80-89: "Grade A"
- Marks 70-79: "Grade B"
- Marks 60-69: "Grade C"
- Below 60: "Fail"
- Display the result using document.write().

 LAW Entrance

Ques 2: Check Electricity Tariff Write a JavaScript program where the user is prompted to enter the number of units consumed (electricity usage). Use if...else if to calculate the charges based on:

 MBA Entrance

- Units <= 100: Rate is 5/unit.
- Units > 100 and <= 300: Rate is 8/unit.
- Units > 300: Rate is 10/unit.
- Display the total cost using document.write().

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