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**JavaScript Conditional Statements Exercises**

**Introduction** Before starting the exercises, you might want to review the basics of JavaScript conditional statements: [JavaScript Conditional Statements](https://www.w3schools.com/js/js_if_else.asp)

**Easy Exercises (1-20)**

1. Write an if statement that checks if a variable age is greater than or equal to 18. If true, set a variable canVote to true.
   * Hint: Use the greater than or equal to operator (>=).
   * [Learn more about comparison operators](https://www.w3schools.com/js/js_comparisons.asp)
2. Create an if-else statement that checks if a variable temperature is less than 0. If true, set a variable weather to "freezing". Otherwise, set it to "not freezing".
   * Hint: Use the less than operator (<).
   * [Learn more about if-else statements](https://www.w3schools.com/js/js_if_else.asp)
3. Write an if-else statement that checks if a variable score is greater than or equal to 60. If true, set a variable result to "pass". Otherwise, set it to "fail".
   * Hint: Use the greater than or equal to operator (>=).
   * [Learn more about comparison operators](https://www.w3schools.com/js/js_comparisons.asp)
4. Create an if-else if-else statement that checks a variable grade. If it's greater than or equal to 90, set letterGrade to "A". If it's greater than or equal to 80, set it to "B". Otherwise, set it to "C".
   * Hint: Use multiple else if statements for different grade ranges.
   * [Learn more about else if statements](https://www.w3schools.com/js/js_if_else.asp)
5. Write an if statement that checks if a variable number is even. If true, set a variable isEven to true.
   * Hint: Use the modulus operator (%) to check for even numbers.
   * [Learn more about the modulus operator](https://www.w3schools.com/js/js_arithmetic.asp)
6. Create an if-else statement that checks if a variable year is divisible by 4. If true, set a variable isLeapYear to true. Otherwise, set it to false.
   * Hint: Use the modulus operator (%) to check divisibility.
   * [Learn more about the modulus operator](https://www.w3schools.com/js/js_arithmetic.asp)
7. Write an if-else statement that checks if a variable hour is less than 12. If true, set a variable period to "AM". Otherwise, set it to "PM".
   * Hint: Use the less than operator (<).
   * [Learn more about comparison operators](https://www.w3schools.com/js/js_comparisons.asp)
8. Create an if-else if-else statement that checks a variable dayNumber (1-7). Set dayName to the corresponding day of the week.
   * Hint: Use multiple else if statements for different day numbers.
   * [Learn more about else if statements](https://www.w3schools.com/js/js_if_else.asp)
9. Write an if statement that checks if a variable name is an empty string. If true, set a variable hasName to false.
   * Hint: Compare the string to an empty string ("").
   * [Learn more about string comparison](https://www.w3schools.com/js/js_comparisons.asp)
10. Create an if-else statement that checks if a variable amount is greater than 1000. If true, set a variable shipping to 0. Otherwise, set it to 5.
    * Hint: Use the greater than operator (>).
    * [Learn more about comparison operators](https://www.w3schools.com/js/js_comparisons.asp)
11. Write an if-else statement that checks if a variable password is equal to "secret123". If true, set a variable isLoggedIn to true. Otherwise, set it to false.
    * Hint: Use the strict equality operator (===).
    * [Learn more about equality operators](https://www.w3schools.com/js/js_comparisons.asp)
12. Create an if-else if-else statement that checks a variable month (1-12). Set season to "Winter", "Spring", "Summer", or "Fall" based on the month.
    * Hint: Group months into seasons using else if statements.
    * [Learn more about else if statements](https://www.w3schools.com/js/js_if_else.asp)
13. Write an if statement that checks if a variable income is greater than 50000 and a variable creditScore is greater than 700. If both are true, set a variable loanApproved to true.
    * Hint: Use the AND operator (&&) to combine conditions.
    * [Learn more about logical operators](https://www.w3schools.com/js/js_comparisons.asp)
14. Create an if-else statement that checks if a variable age is less than 18 or greater than 65. If true, set a variable discount to 0.2. Otherwise, set it to 0.
    * Hint: Use the OR operator (||) to combine conditions.
    * [Learn more about logical operators](https://www.w3schools.com/js/js_comparisons.asp)
15. Write an if-else statement that checks if a variable number is between 1 and 10 (inclusive). If true, set a variable inRange to true. Otherwise, set it to false.
    * Hint: Use the AND operator (&&) to combine two comparisons.
    * [Learn more about logical operators](https://www.w3schools.com/js/js_comparisons.asp)
16. Create a switch statement that checks a variable dayNumber (1-7) and sets dayName to the corresponding day of the week.
    * Hint: Use a switch statement with cases for each day number.
    * [Learn more about switch statements](https://www.w3schools.com/js/js_switch.asp)
17. Write a switch statement that checks a variable grade (A, B, C, D, F) and sets description to a corresponding message (e.g., "Excellent", "Good", etc.).
    * Hint: Use a switch statement with cases for each grade letter.
    * [Learn more about switch statements](https://www.w3schools.com/js/js_switch.asp)
18. Create an if-else statement that checks if a variable number is positive, negative, or zero. Set a variable sign accordingly.
    * Hint: Use nested if-else statements or else if statements.
    * [Learn more about nested if statements](https://www.w3schools.com/js/js_if_else.asp)
19. Write an if-else statement that checks if a variable year is a century year (ending with 00) and divisible by 400. If true, set isCenturyLeapYear to true. Otherwise, set it to false.
    * Hint: Use the modulus operator (%) and the AND operator (&&).
    * [Learn more about logical operators](https://www.w3schools.com/js/js_comparisons.asp)
20. Create a switch statement that checks a variable month (1-12) and sets daysInMonth to the correct number of days for that month (assuming a non-leap year).
    * Hint: Use a switch statement with cases for each month number.
    * [Learn more about switch statements](https://www.w3schools.com/js/js_switch.asp)

**More Difficult Exercises (21-30)**

1. Write nested if-else statements that check if a variable number is positive, negative, or zero, and then check if it's even or odd. Set variables sign and parity accordingly.
   * Hint: Use nested if-else statements and the modulus operator (%).
   * [Learn more about nested if statements](https://www.w3schools.com/js/js_if_else.asp)
2. Create nested if-else statements that check a variable score and a variable attendance. Set grade based on the score, but lower it by one level if attendance is less than 80%.
   * Hint: Use nested if-else statements with multiple conditions.
   * [Learn more about nested if statements](https://www.w3schools.com/js/js_if_else.asp)
3. Write an if-else statement that checks if a year is a leap year. A year is a leap year if it's divisible by 4, except for century years, which must be divisible by 400 to be a leap year.
   * Hint: Use multiple conditions with logical operators (&&, ||).
   * [Learn more about logical operators](https://www.w3schools.com/js/js_comparisons.asp)
4. Create a nested if-else statement that categorizes a person based on their age and employment status. Use variables age and isEmployed to determine if someone is a "Student", "Employed Adult", "Unemployed Adult", or "Retiree".
   * Hint: Use nested if-else statements with multiple conditions.
   * [Learn more about nested if statements](https://www.w3schools.com/js/js_if_else.asp)
5. Write a switch statement with fall-through cases that categorizes a variable month into seasons, where some months can belong to multiple seasons.  
   Hint: Use fall-through cases in a switch statement.  
   [Learn more about switch statements](https://www.w3schools.com/js/js_switch.asp)
6. Create an if-else statement that determines the quadrant (1, 2, 3, or 4) of a point on a coordinate plane, given variables x and y for the coordinates.  
   Hint: Use nested if-else statements to check the signs of x and y.  
   [Learn more about nested if statements](https://www.w3schools.com/js/js_if_else.asp)
7. Write nested if-else statements that determine the state of water (solid, liquid, or gas) based on temperature and pressure variables.  
   Hint: Use nested if-else statements with multiple conditions.  
   [Learn more about nested if statements](https://www.w3schools.com/js/js_if_else.asp)
8. Create a switch statement that calculates the number of days in a month, considering leap years. Use variables month and isLeapYear.  
   Hint: Use a switch statement with a special case for February.  
   [Learn more about switch statements](https://www.w3schools.com/js/js_switch.asp)
9. Write an if-else statement that determines if three numbers can form a triangle. Use variables a, b, and c for the side lengths.  
   Hint: Check if the sum of any two sides is greater than the third side.  
   [Learn more about logical operators](https://www.w3schools.com/js/js_comparisons.asp)
10. Create nested if-else statements that calculate the roots of a quadratic equation (ax^2 + bx + c = 0) based on the discriminant. Use variables a, b, and c for the coefficients.  
    Hint: Use nested if-else statements to handle different cases (two real roots, one real root, or no real roots).  
    [Learn more about nested if statements](https://www.w3schools.com/js/js_if_else.asp)

## **Ternary Operator Exercises (31-32)**

1. Use the ternary operator to check if a variable number is even or odd. Set a variable parity to "even" or "odd" accordingly.  
   Hint: Use the modulus operator (%) with the ternary operator.  
   [Learn more about the ternary operator](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Operators/Conditional_Operator)
2. Use the ternary operator to check if a variable age is greater than or equal to 18. Set a variable canVote to true or false accordingly.  
   Hint: Use a comparison with the ternary operator.  
   [Learn more about the ternary operator](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Operators/Conditional_Operator)

Remember to test your code with different input values to ensure your conditional statements work correctly!