**JS Operators**

**Assignment 1: Arithmetic Operators**

**Problem Statement:**  
Create a JavaScript program that demonstrates the use of arithmetic operators. Declare two numbers and then calculate and display the following:

* The sum, difference, product, division, remainder, and exponentiation result.
* Increment one of the numbers using the increment operator (++) and display its value.
* Decrement the second number using the decrement operator (--) and display its value.

### ****Assignment 2: Comparison Operators****

**Problem Statement:**  
Write a script where you compare two variables (one as a number and one as a string containing a similar numeric value). Using comparison operators, show the difference between equality (==) and strict equality (===) as well as their opposites. Also include a few examples with greater than, less than, greater than or equal to, and less than or equal to operators.

### ****Assignment 3: Assignment Operators****

**Problem Statement:**  
Design a program that initializes a variable with a number (e.g., total = 20). Then, using assignment operators, update this variable as follows:

1. Increase the variable by 5 using +=
2. Decrease the variable by 10 using -=
3. Multiply the resulting variable by 2 using \*=
4. Divide the resulting variable by 3 using /=
5. Finally, find the remainder when the variable is divided by 4 using %=  
   Display the value of the variable after each step.

### ****Assignment 4: Logical Operators****

**Problem Statement:**  
Develop a script where you define two boolean variables (for instance, isStudent and hasID). Then use logical operators (&&, ||, !) to determine:

* If both conditions are true (using &&).
* If at least one of the conditions is true (using ||).
* The negation of one of the conditions (using !).

Display the outcome of each logical operation.

### ****Assignment 5: Ternary Operator****

**Problem Statement:**  
Write a JavaScript code snippet that determines voting eligibility based on a variable age. Use the ternary operator (? :) to decide if the person can vote or not. For example, set an age and output "Yes" if the age is 18 or more, and "No" otherwise.

### ****Assignment 6: typeof Operator****

**Problem Statement:**  
Create several variables of different data types (e.g., a string, a number, a boolean, a null, and an undefined variable). Then, use the typeof operator to print the type of each variable.

### ****Assignment 7: instanceof Operator****

**Problem Statement:**  
Define a custom constructor function (for example, Student) that accepts a name as a parameter. Then, instantiate a new object from this constructor. Also, create an instance of a built-in object such as Date. Use the instanceof operator to verify the following conditions:

* The student object is an instance of Student.
* The date object is an instance of Date.
* The student object is also an instance of Object (explain why).
* Check and display the result of student instanceof Date (should be false).

### ****Project: Mini Student Profile Application****

**Problem Statement:**  
Combine all the above concepts by building a small JavaScript application that performs the following steps:

1. **Input Collection:**
   * Create variables that store a student's name (string), age (number), and marks (number).
2. **Type Verification:**
   * Use the typeof operator to display the data type for each of the above variables.
3. **Eligibility Check:**
   * Use a **ternary operator** to determine if the student is eligible to vote (i.e., age >= 18).
4. **Pass/Fail Check:**
   * Based on the marks, determine if the student passed (consider marks >= 35 as a pass) using logical operators and comparisons.
5. **Instance Check:**
   * Define a Student constructor and create an instance with the provided name.
   * Use the instanceof operator to confirm that the created object is indeed an instance of Student.
6. **Final Display:**
   * Print all results to the console.