

1. Variables

Declare three variables: `name` (a `String`), `age` (an `int`), and `isStudent` (a `bool`). Initialize them with appropriate values. Print a sentence that includes all three variables in the following format:

"My name is Hasan, I am 25 years old, and it is true that I am a student."

2. Variable Types

Declare two variables: one as a `double` and one as an `int`. Perform the following:

- Add them together.
 - Convert the `double` to an `int` and multiply them.
 - Print both the addition and multiplication results.
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3. Arithmetic Operators

Given two integer variables `a` and `b`, calculate and print:

- The sum
 - The difference
 - The product
 - The quotient (handle division by zero)
 - The remainder (modulus)
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4. Type Conversion

Declare a variable `distance` of type `String` that holds a numerical value in kilometers (e.g., `"5.5"`). Convert the string to a `double` and then convert the distance to meters. Print the result in meters.

5. Logical Operations

Given two boolean variables `isMember` and `hasDiscount`, write a program to:

- Check if a user is eligible for a discount. The user is eligible if they are either a member (`isMember == true`) or they have a discount code (`hasDiscount == true`), but **not both**.
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6. Comparison Operators

Write a program that asks the user to input two numbers. Compare the two numbers using comparison operators (`==`, `!=`, `>`, `<`, `>=`, `<=`) and print the results of each comparison.

7. Increment and Decrement Operators

Write a program that asks the user for an integer. Use both pre-increment and post-increment operators to demonstrate how the value of the integer changes. Do the same with decrement operators.

8. Compound Assignment Operators

Create a program that initializes a variable `score = 50`. Use the following compound operators (`+=`, `-=`, `*=`, `/=`, `%=`) to adjust the score:

- Add 10
- Subtract 5
- Multiply by 2
- Divide by 4
- Find the modulus with 6

Print the value of `score` after each operation.

9. Swapping Variables Without a Temporary Variable

Write a program that swaps the values of two variables `a = 10` and `b = 20` without using a third, temporary variable. Print the values of `a` and `b` after the swap.

10. Simple Calculator with User Input

Create a basic calculator that:

1. Asks the user to input two numbers.
2. Asks the user to choose an operation (+, -, *, /).
3. Perform the selected operation and print the result.

11. `var` Keyword

Problem:

Declare a variable using `var` and assign an integer value to it. Then, try to reassign it with a value of a different type, such as a string. What happens? Print the result of each assignment and observe the behavior.

12. `dynamic` Keyword

Problem:

Declare a variable using `dynamic` and assign a `String` value to it. Then, reassign it with an integer value and perform a basic arithmetic operation. Finally, reassign it with a boolean value and print the result for each assignment.

13. `final` Keyword

Problem:

Declare a variable using `final` and assign it a value. Then, try to reassign a new value to the same variable. What happens? Print the initial value and observe the behavior when attempting to reassign.

14. `const` Keyword

Problem:

Declare a `const` variable to store the value of π (3.1416). Try to change its value and observe what happens. Then, declare a `const` list of integers and try to modify the list by adding or removing elements. What happens? Explain the behavior.

15. Difference Between `final` and `const`

Problem:

Write a program to demonstrate the difference between `final` and `const`. Declare two variables—one using `final` and one using `const`—inside a function. Assign values to both. Try to change the value of each inside the function and print the results. Explain the difference in behavior between the two.