

Solution:

For this particular scenario, Approach 1 (utilizing a single `if` statement with the logical AND operator `&&`) is the optimal solution. Here's why:

Explanation of the Mechanism:

Direct and Clear Logic: The requirement for eligibility is that both conditions—being over 18 and having a premium membership—need to be satisfied. Using one `if` statement with `&&` makes this relationship explicit and clear, without any unnecessary complexity.

Efficient Execution: The `&&` operator ensures that if the first condition (age > 18) is false, the second condition (premium membership) isn't even evaluated, saving time through a process known as short-circuit evaluation.

Straightforward Code: This approach immediately expresses the intent of the logic in a simple, readable format, without redundant checks or excessive nesting.

Why This Approach Works:

Simplicity and Readability: The use of a single `if` statement reduces verbosity, making the code more approachable and easier to follow. It quickly communicates the eligibility check to any developer or reviewer.

Performance: Evaluating both conditions in a single line is efficient, especially when the logic is simple. There's no need to repeat the "Not eligible" message or introduce unnecessary layers of conditions, which can increase execution time and make the code harder to maintain.

In conclusion, Approach 1 is the preferred method due to its clear expression of the business logic, minimalistic design, and overall efficiency. It addresses the scenario effectively and concisely.

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