



DAILY PROGRAMMING CHALLENGE



Count the Number of Divisors of a Number

Given a positive integer N , your task is to find the total number of divisors (factors) of N . A divisor of N is any integer that divides N without leaving a remainder.

A divisor of a number is any integer that divides the number evenly (i.e., without a remainder). For example, for $N = 12$, its divisors are 1, 2, 3, 4, 6, 12, so the total number of divisors is 6.

Input:

- A single integer N , where $1 \leq N \leq 10^9$

Output:

- An integer representing the total number of divisors of N .

Examples:

- Example 1
Input: $N = 12$
Output: 6
Explanation: The divisors of 12 are 1, 2, 3, 4, 6, and 12.

Constraints:

- $1 \leq N \leq 10^9$
- The time complexity should be efficient enough to handle large values of N .

Test Cases:

1. Input: $N = 18$
Output: 6
2. Input: $N = 29$
Output: 2
3. Input: $N = 100$
Output: 9
4. Input: $N = 1$
Output: 1
5. Input: $N = 997$
Output: 2



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Edge Cases:

1. N is 1: The only divisor of 1 is itself, so the output should be 1.
2. N is a prime number: If N is prime, the divisors are 1 and N itself, so the output should be 2.
3. N is a perfect square: For numbers like 36, where the square root (6) appears as a divisor, ensure that it is counted only once.
4. N is very large: Ensure the algorithm efficiently handles large numbers up to 10^9