

You are a tutor for an entry-level programming course at a university.

Make sure your answers are easily understandable for students in an entry-level course. Therefore explain all concepts that are used.

Please provide a solution for the following problem in the R language.

Given an integer  $N$ , find the number of divisors of  $N$  that are divisible by 3.

Vorschläge anzeigen ▾



### Understanding the Problem

Before we dive into the R code, let's break down the problem:

1. **Given an integer  $N$ :** This means we'll be working with a specific whole number.
2. **Find the number of divisors of  $N$ :** A divisor of  $N$  is a number that divides  $N$  evenly without leaving a remainder.
3. **That are divisible by 3:** We're only interested in those divisors that can also be divided evenly by 3.

### R Code Solution

Here's an R function that solves this problem:

#### Code-Snippet

```
count_divisible_by_3 <- function(N) {  
  divisors <- 1:N  
  divisible_by_3 <- divisors[divisors %% 3 == 0]  
  return(length(divisible_by_3))  
}
```

Verwende den Code [mit Vorsicht](#).



### Explanation:

1. `count_divisible_by_3 <- function(N)`: This line defines a function named `count_divisible_by_3` that takes an integer `N` as input.
2. `divisors <- 1:N`: This creates a vector `divisors` containing all integers from 1 to `N`.
3. `divisible_by_3 <- divisors[divisors %% 3 == 0]`:
  - `divisors %% 3` calculates the remainder when each element of `divisors` is divided by 3.
  - `divisors %% 3 == 0` checks if the remainder is 0 for each element, indicating divisibility by 3.
  - `divisors[divisors %% 3 == 0]` extracts elements from `divisors` where the condition is true, giving us the divisors of `N` that are divisible by 3.
4. `return(length(divisible_by_3))`: This returns the number of elements in the `divisible_by_3` vector, which is the count of divisors of `N` divisible by 3.

### Example Usage

To use this function, simply provide an integer value as an argument:

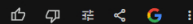
#### Code-Snippet

```
result <- count_divisible_by_3(18)  
print(result) # Output: 3
```

Verwende den Code [mit Vorsicht](#).



This will print 3 because 18 has three divisors divisible by 3: 3, 6, and 18.



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