



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 a positive integer N . Calculate the Fibonacci series till the number N . If N is a part of the series, include N as well.

Vorschläge anzeigen ▾



I'd be glad to help you with that! Here's an R code solution to calculate the Fibonacci series up to a given positive integer N :

Code-Snippet

```
fibonacci <- function(N) {  
  # Initialize the first two Fibonacci numbers  
  fib_seq <- c(0, 1)  
  
  # Generate the Fibonacci series until the last number is greater than  
  while (tail(fib_seq, 1) <= N) {  
    # Calculate the next Fibonacci number by adding the previous two  
    next_fib <- sum(tail(fib_seq, 2))  
    fib_seq <- c(fib_seq, next_fib)  
  }  
  
  # Return the Fibonacci series up to N, including N if it's part of the  
  return(fib_seq[fib_seq <= N])  
}  
  
# Example usage:  
N <- 15  
result <- fibonacci(N)  
print(result)
```

Verwende den Code [mit Vorsicht](#).



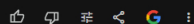
Explanation:

- fibonacci function:** This function takes a positive integer N as input and returns the Fibonacci series up to N .
- Initialization:** The first two Fibonacci numbers, 0 and 1, are initialized in the `fib_seq` vector.
- Fibonacci series generation:**
 - A `while` loop is used to generate the Fibonacci series until the last number exceeds N .
 - In each iteration, the next Fibonacci number is calculated by adding the previous two numbers using `sum(tail(fib_seq, 2))`.
 - The newly calculated number is appended to the `fib_seq` vector.
- Returning the result:**
 - The function returns the `fib_seq` vector, but only includes the elements that are less than or equal to N . This ensures that N is included in the result if it's part of the series.

Example usage:

- The code sets N to 15.
- The `fibonacci` function is called with N as input.
- The result, which is the Fibonacci series up to 15, is printed.

This code effectively calculates the Fibonacci series up to the given N , incorporating N if it's a part of the series.



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