

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 solution to calculate the Fibonacci series up to a given positive integer N :

Code-Snippet

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

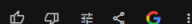
Verwende den Code [mit Vorsicht](#).



This code defines a function `fibonacci_series` that takes the positive integer N as input and returns the Fibonacci series up to that number. Here's a breakdown of the steps involved:

- 1. Initialize the sequence:** The function starts by creating a vector `fib_seq` and initializing it with the first two Fibonacci numbers, 0 and 1.
- 2. Iterate and calculate:** The code then enters a `while` loop that continues as long as the last number in the sequence is less than N . Inside the loop:
 - The next Fibonacci number is calculated by adding the previous two numbers using `sum(tail(fib_seq, 2))`.
 - The calculated number is appended to the `fib_seq` vector using `c(fib_seq, next_fib)`.
- 3. Return the result:** Once the loop finishes, the function returns the `fib_seq` vector, which contains the Fibonacci series up to N , including N if it's part of the series.

In the example usage, we set N to 15 and call the function `fibonacci_series(N)`. The result is printed, which will be the Fibonacci series up to 15, including 15.



Prompt hier eingeben



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