

ChatGPT 4o

ChatGPT

GPTs erkunden

Heute

Fibonacci Series in R

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Fibonacci Series Calculation R

Juli

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Consider the following programming problem:

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.

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

Certainly! Below is an R solution for generating the Fibonacci series up to a given positive integer  $N$ , including  $N$  if it is part of the series.

```
r Code kopieren

# Function to generate Fibonacci series up to N
fibonacci_upto_n <- function(N) {
  if (N < 1) {
    return("N should be a positive integer")
  }

  # Initialize the first two Fibonacci numbers
  fib_series <- c(0, 1)

  # Continue adding Fibonacci numbers until the next number exceeds N
  while (TRUE) {
    next_fib <- tail(fib_series, 1) + tail(fib_series, 2)[1]

    if (next_fib > N) {
      break
    }

    fib_series <- c(fib_series, next_fib)
  }

  # Remove the initial 0 if the user only expects positive numbers
  fib_series <- fib_series[fib_series > 0]

  return(fib_series)
}

# Example usage:
N <- 21
fibonacci_upto_n(N)
```

#### Explanation:

- Initialization:** The Fibonacci series is initialized with the first two numbers, '0' and '1'.
- Looping:** The loop continues generating the next Fibonacci number by adding the last two numbers in the current series.
- Termination:** The loop breaks once the next Fibonacci number would exceed  $N$ .
- Final Output:** The function returns the Fibonacci series up to  $N$ , including  $N$  if it is part of the series.

#### Example:

If you run the code with `N <- 21`, the function will return:

```
r Code kopieren

[1] 1 1 2 3 5 8 13 21
```

This includes the Fibonacci numbers up to 21, with 21 included because it is part of the series.

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ChatGPT kann Fehler machen. Überprüfe wichtige Informationen.

