

ChatGPT 4o

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Fibonacci Series Calculation

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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 Python language.

- To solve the problem of generating the Fibonacci series up to a given positive integer N , including N if it is part of the series, you can follow these steps:
1. Start with the first two Fibonacci numbers: 0 and 1.
 2. Continuously calculate the next Fibonacci number by adding the last two numbers in the series.
 3. Stop when the next Fibonacci number would exceed N .

Here's the Python code to achieve this:

```
python Code kopieren

def fibonacci_series_upto_n(N):
    # Initializing the first two Fibonacci numbers
    fib_series = [0, 1]

    # Generate Fibonacci numbers until the next number exceeds N
    while True:
        next_fib = fib_series[-1] + fib_series[-2]
        if next_fib > N:
            break
        fib_series.append(next_fib)

    # Handle the case when N is less than 1
    if N == 0:
        return [0]

    # Filter the series to only include numbers up to N
    return [num for num in fib_series if num <= N]

# Example usage:
N = 21
result = fibonacci_series_upto_n(N)
print(result)
```

Explanation:

- The function `fibonacci_series_upto_n(N)` calculates the Fibonacci series up to the given number N .
- It starts by initializing the series with `[0, 1]`.
- Then, it enters a loop where it calculates the next Fibonacci number as the sum of the last two numbers in the list.
- If the next Fibonacci number exceeds N , the loop breaks.
- Finally, the function returns the series with all numbers less than or equal to N .

Example Output:

If N is 21, the output would be:

```
python Code kopieren

[0, 1, 1, 2, 3, 5, 8, 13, 21]
```

This code efficiently generates the required Fibonacci sequence up to and including N if N is part of the series.



Sende eine Nachricht an ChatGPT

ChatGPT kann Fehler machen. Überprüfe wichtige Informationen.

