

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 Python 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 a Python code that calculates the Fibonacci series up to a given positive integer `N`, including `N` if it's part of the series:

Python

```
def fibonacci_series(N):
    """Calculates the Fibonacci series up to N.

    Args:
        N: A positive integer.

    Returns:
        A list containing the Fibonacci numbers up to N.
    """

    fib_series = [0, 1] # Initialize the series with the first two terms
    while fib_series[-1] <= N:
        next_fib = fib_series[-1] + fib_series[-2]
        fib_series.append(next_fib)

    return fib_series

# Get the input from the user
N = int(input('Enter a positive integer: '))

# Calculate the Fibonacci series up to N
result = fibonacci_series(N)

# Print the result
print("Fibonacci series up to", N, ":", result)
```

Verwende den Code [mit Vorsicht](#).



Explanation:

#### 1. `fibonacci_series(N)` function:

- Takes a positive integer `N` as input.
- Initializes a list `fib_series` with the first two Fibonacci numbers (0 and 1).
- While the last element in `fib_series` is less than or equal to `N`:
  - Calculates the next Fibonacci number by adding the last two elements in `fib_series`.
  - Appends the calculated number to `fib_series`.
- Returns the `fib_series` list.

#### 2. User input:

- Prompts the user to enter a positive integer.
- Stores the entered value in the variable `N`.

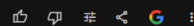
#### 3. Fibonacci series calculation:

- Calls the `fibonacci_series` function with the input value `N`.
- Stores the result (the Fibonacci series up to `N`) in the variable `result`.

#### 4. Output:

- Prints the Fibonacci series up to `N`, including `N` if it's part of the series.

This code effectively calculates the Fibonacci series up to the given number, ensuring that the series includes the input value if it's a Fibonacci number.



Prompt hier eingeben

