

## AI ASSISTED CODING

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### TASK 1

#### Task Description: AI-Assisted Code Review (Basic Errors)

- Write python program as shown below.
- Use an AI assistant to review and suggest corrections.

#### Given code:

```
def calcFact(n):
    result=1
    x=0
    for i in range(1,n):
        result=result*i
    return result

def main():
    num = 5
    FACT = calcFact(num)
    print("the factorial of",num,"is",FACT)
    t=10
    if FACT>10:
        print("BIG Number")
    else:
        print("small number")

main()
```

#### Prompt:

I am submitting a Python program for an AI-assisted code review. Please identify and correct basic syntax errors, logical mistakes, naming convention violations, and any inefficient code. Make sure the corrected version follows Python best practices (PEP 8), uses meaningful variable names, and removes unused or redundant code. Also, include comments explaining what was fixed.

#### Code Generated:

The screenshot shows the Visual Studio Code editor with a file named `TASK 1.py` open. The code defines a function `calc_fact(n)` to calculate the factorial of `n`. It initializes `result` to 1 and uses a `for` loop from 1 to `n` (inclusive) to calculate the factorial. The `main()` function sets `num` to 5, calls `calc_fact(num)`, and prints the result. It also checks if the factorial is greater than 10 and prints "BIG Number" or "small number" accordingly. The code is as follows:

```
1 def calc_fact(n):
2     # Initialize result to 1 (since factorial of 0 is 1)
3     result = 1
4     # Loop from 1 to n (inclusive)
5     for i in range(1, n + 1):
6         result = result * i
7     return result
8
9 def main():
10     num = 5
11     # Calculate factorial
12     fact = calc_fact(num)
13     print("The factorial of", num, "is", fact)
14     t = 10
15     # Check if factorial is greater than 10
16     if fact > t:
17         print("BIG Number")
18     else:
19         print("small number")
20
21 main()
```

## Output:

The screenshot shows the Visual Studio Code editor with the same `TASK 1.py` file. The terminal window at the bottom displays the output of the script. The command executed is `PS C:\B.TECH\AI LAB\10> & C:/Users/kamer/anaconda3/python.exe "c:/B.TECH/ AI LAB/10/TASK 1.py"`. The output is:

```
The factorial of 5 is 120
BIG Number
PS C:\B.TECH\AI LAB\10>
```

## Observations & Corrections:

1. The factorial calculation should start from 1, not 0, and should include `n` in the range.
2. The variable `x=0` is unused and can be removed.
3. The range in `for i in range(1, n):` should be `range(1, n+1)` to include `n`.
4. Variable names should be lowercase by convention (`FACT` → `fact`).
5. The indentation and structure can be improved for clarity.
6. Add comments for better understanding.

## TASK 2

### Task Description: Automatic Inline Comments

- Write the Python code for Fibonacci as shown below and execute.
- Ask AI to improve variable names, add comments, and apply PEP8 formatting (cleaned up).
- Students evaluate which suggestions improve readability most.

### Given Code:

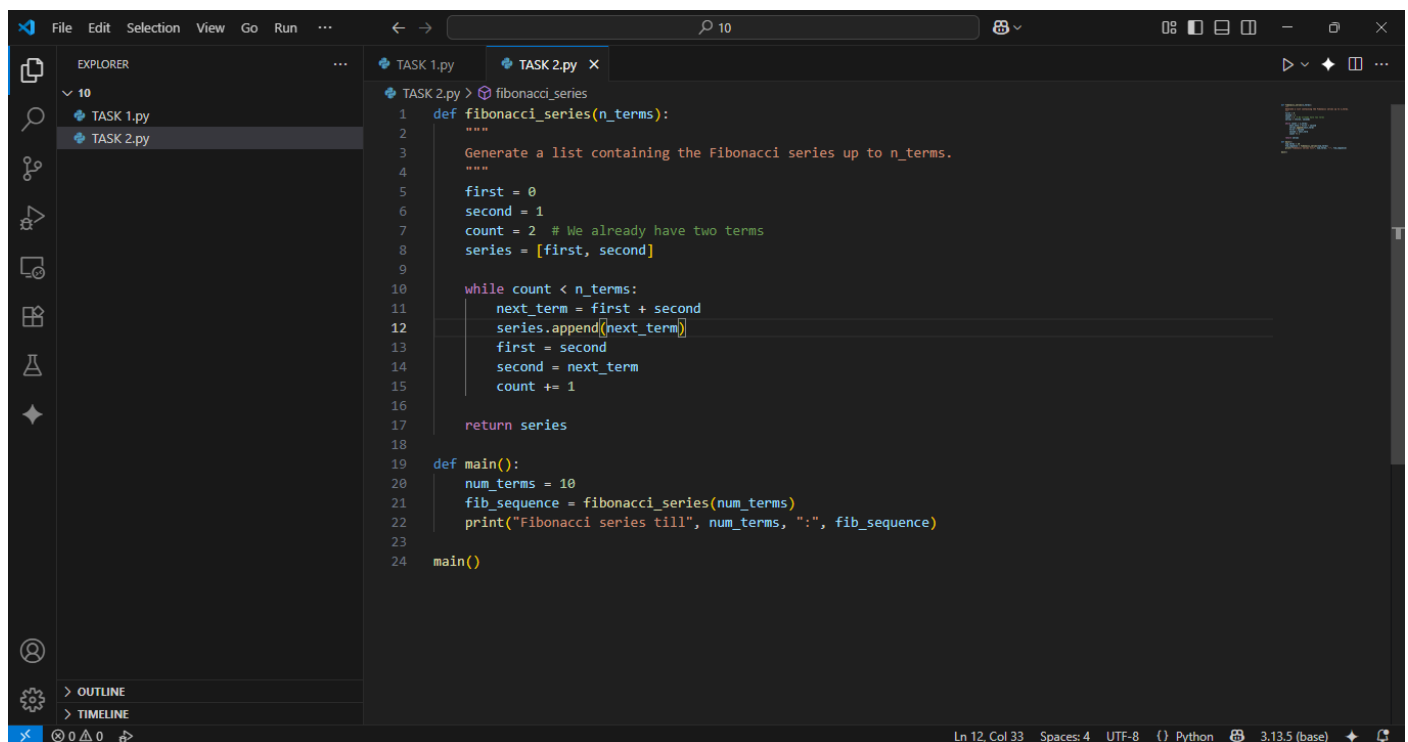
```
def f1(xX):
    a=0
    b=1
    c=2
    Zz=[a,b]
    while c<=xX:
        d=a+b
        Zz.append(d)
        a=b
        b=d
        c=c+1
    return Zz

def m():
    NN=10
    ans=f1(NN)
    print("fib series till",NN,":",ans)

m()
```

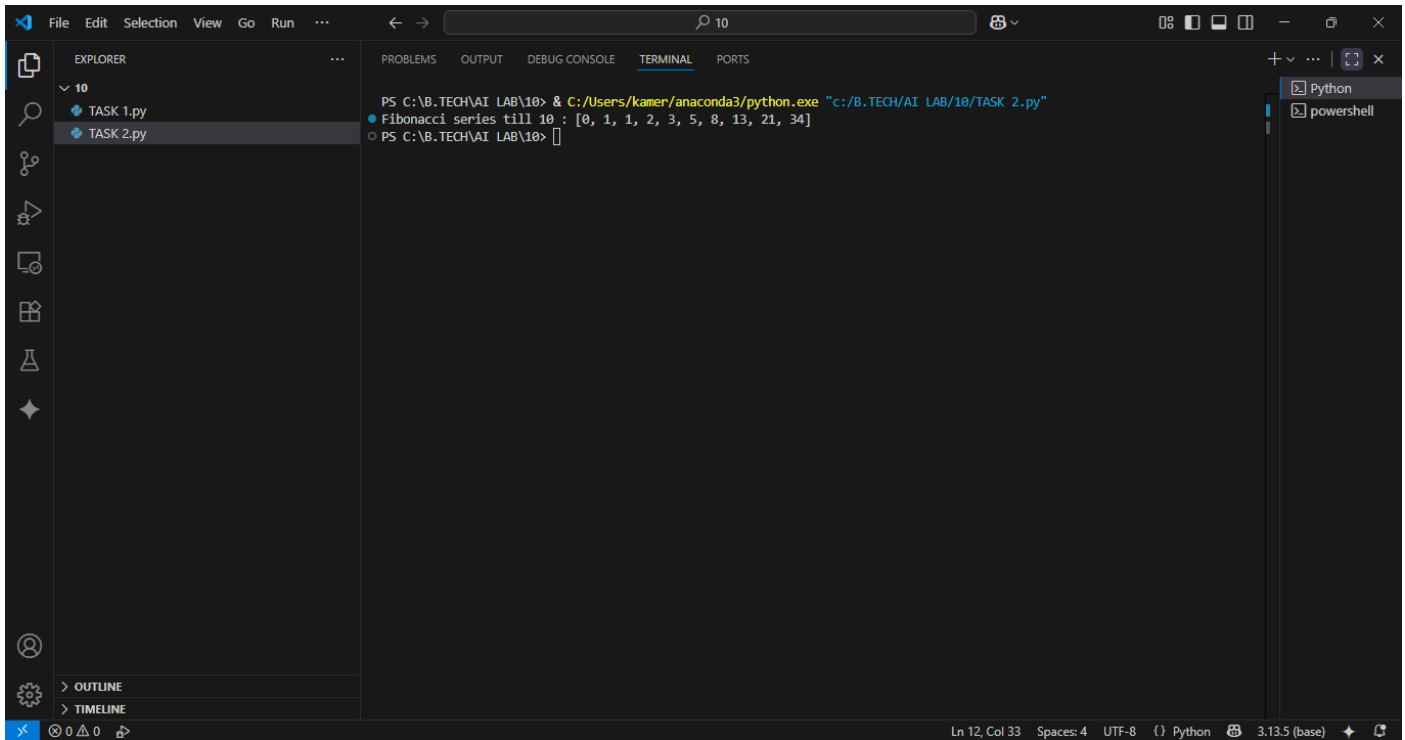
**Prompt:** Please review the following Python code for generating a Fibonacci series. Improve the variable names for clarity, add inline comments to explain the logic, and apply PEP8 formatting for better readability. Return a corrected and well-documented version of the code.

### Code Generated:



```
1 def fibonacci_series(n_terms):
2     """
3     Generate a list containing the Fibonacci series up to n_terms.
4     """
5     first = 0
6     second = 1
7     count = 2 # We already have two terms
8     series = [first, second]
9
10    while count < n_terms:
11        next_term = first + second
12        series.append(next_term)
13        first = second
14        second = next_term
15        count += 1
16
17    return series
18
19 def main():
20     num_terms = 10
21     fib_sequence = fibonacci_series(num_terms)
22     print("Fibonacci series till", num_terms, ":", fib_sequence)
23
24 main()
```

## Output:



The screenshot shows a Visual Studio Code interface with a terminal window open. The terminal displays the command to run a Python script and its output. The Explorer panel on the left shows two files: TASK 1.py and TASK 2.py. The Output panel shows the command: `PS C:\B.TECH\AI LAB\10> & C:/Users/kamer/anaconda3/python.exe "c:/B.TECH/AI LAB/10/TASK 2.py"`. The output of the script is: `Fibonacci series till 10 : [0, 1, 1, 2, 3, 5, 8, 13, 21, 34]`. The terminal prompt is `PS C:\B.TECH\AI LAB\10>`.

## Observations:

- Variable names are descriptive (n\_terms, first, second, series, etc.).
- Added a docstring and inline comments for clarity.
- PEP8 formatting: consistent indentation, spaces around operators, and lowercase function names.
- The code is easier to read and understand.

## Task 3

### Task Description:

- Write a Python script with 3–4 functions (e.g., calculator: add, subtract, multiply, divide).
- Incorporate manual docstring in code with NumPy Style
- Use AI assistance to generate a module-level docstring + individual function docstrings.
- Compare the AI-generated docstring with your manually written one.

