

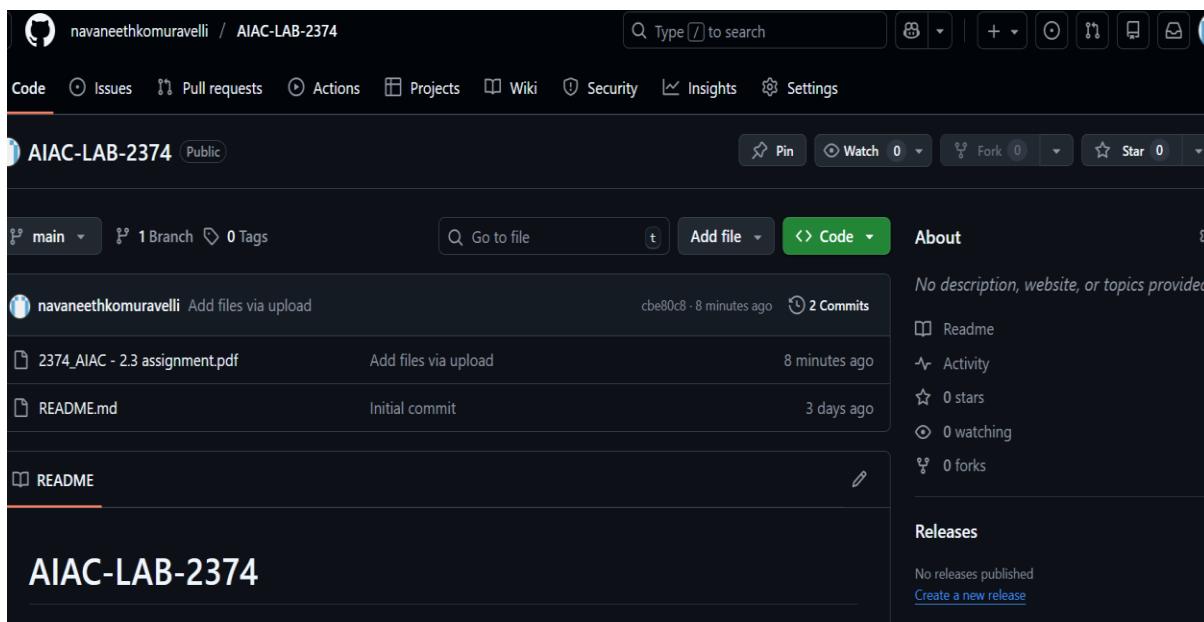
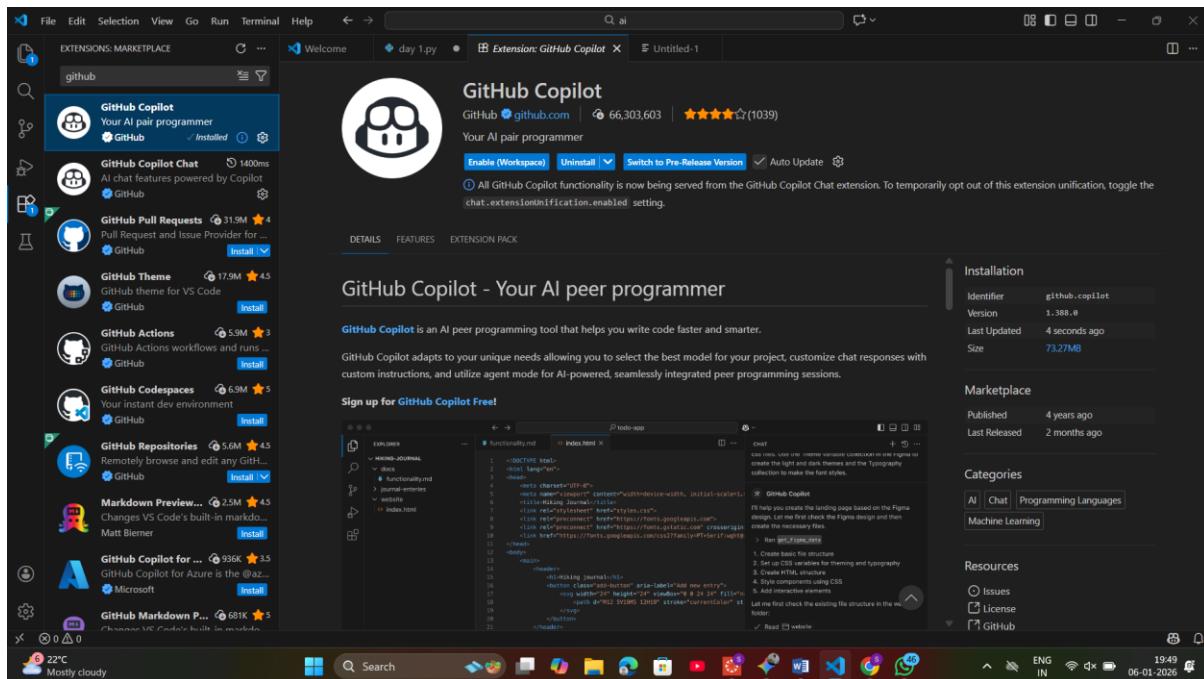
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Batch - 32

AI Assisted Coding

Task 0: Environment Setup:-



Task 1: Non-Modular Logic (Factorial):-

The screenshot shows the Microsoft Visual Studio Code interface. The Explorer sidebar on the left has a folder named 'HPC' containing 'lab1.py'. The code editor window displays a Python script named 'task1.py' with the following content:

```
C:\> Users > hp > OneDrive > Desktop > ai > task1.py ...
1 # Task 1: Procedural Factorial Implementation
2 num = int(input("Enter a number: "))
3 factorial = 1
4
5 if num < 0:
6     print("Factorial does not exist for negative numbers")
7 elif num == 0:
8     print("The factorial of 0 is 1")
9 else:
10    temp = num
11    while temp > 0:
12        factorial *= temp
13        temp -= 1
14    print(f"The factorial of {num} is {factorial}")
```

The terminal tab at the bottom shows the output of running the script:

```
Enter number: 5
Result: 120
PS C:\Users\hp\OneDrive\Desktop\HPC> ^C
PS C:\Users\hp\OneDrive\Desktop\HPC>
PS C:\Users\hp\OneDrive\Desktop\HPC> cd 'C:\Users\hp\OneDrive\Desktop\HPC'; & 'C:\Users\hp\AppData\Local\Microsoft\WindowsApps\python3.13.exe' 'C:\Users\hp\vscode\extensions\ms-python.debugger-2025.18.0-win32-x64\bundled\libs\debug\launcher' '62630' ... 'C:\Users\hp\OneDrive\Desktop\ai\task1.py'
PS C:\Users\hp\OneDrive\Desktop\HPC>
```

The status bar at the bottom right indicates the date and time as 07-01-2026.

This screenshot shows the Microsoft Visual Studio Code interface with the terminal tab active. The terminal output shows the execution of 'task1.py' and its result:

```
PS C:\Users\hp\OneDrive\Desktop\HPC & C:/Users/hp/AppData/Local/Microsoft/WindowsApps/python3.13.exe c:/Users/hp/OneDrive/Desktop/ai/task1.py
Enter a number: 5
Factorial is: 120
PS C:\Users\hp\OneDrive\Desktop\HPC>
```

Task 2: AI Code Optimization:-

The screenshot shows the Microsoft Visual Studio Code interface. The Explorer sidebar on the left has a folder named 'HPC' containing 'lab1.py'. The code editor window displays a Python script named 'task1.py' with the following content:

```
C:\> Users > hp > OneDrive > Desktop > ai > task1.py ...
1 # Task 2: Optimized Factorial
2 num = int(input("Enter a number: "))
3 factorial = 1
4
5 for i in range(1, num + 1):
6     factorial *= i
7
8 print(f"factorial: {factorial}")
```

The terminal tab at the bottom shows the output of running the script:

```
PS C:\Users\hp\OneDrive\Desktop\HPC & 'c:\Users\hp\AppData\Local\Microsoft\WindowsApps\python3.13.exe' 'c:\Users\hp\vscode\extensions\ms-python.debugger-2025.18.0-win32-x64\bundled\libs\debug\launcher' '56820' ... 'C:\Users\hp\OneDrive\Desktop\ai\task1.py'
Enter a number: 5
Factorial: 120
PS C:\Users\hp\OneDrive\Desktop\HPC>
```

The status bar at the bottom right indicates the date and time as 07-01-2026.

Task 3: Modular Design:-

The screenshot shows the Microsoft Visual Studio Code interface. In the center, there is a code editor window titled 'task1.py' containing the following Python code:

```

1 def calculate_factorial(n):
2     """Calculates the factorial of a given number iteratively."""
3     result = 1
4     for i in range(1, n + 1):
5         result *= i
6     return result
7
8 if __name__ == "__main__":
9     user_input = int(input("Enter number: "))
10    print(f"Result: {calculate_factorial(user_input)}")

```

Below the code editor, the terminal window shows the command line output:

```

PS C:\Users\hp\OneDrive\Desktop\VPC>
PS C:\Users\hp\OneDrive\Desktop\VPC> PS C:\Users\hp\OneDrive\Desktop\VPC> cd 'C:\Users\hp\OneDrive\Desktop\VPC' & 'C:\Users\hp\AppData\Local\Microsoft\WindowsApps\python3.11.exe' 'C:\Users\hp\.vscode\extensions\ms-python.python.debug-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '65497' ... 'C:\Users\hp\OneDrive\Desktop\ai\task1.py'
Enter number: 5
Result: 120
PS C:\Users\hp\OneDrive\Desktop\VPC>

```

The status bar at the bottom right indicates the file is saved as 'task1.py' and shows the current date and time as 07-01-2026.

Task 4: Comparative Analysis:-

Criteria	Procedural (Task 1 & 2)	Modular (Task 3)
Logic Clarity	Linear and straightforward for very small tasks but becomes "spaghetti code" as complexity grows.	High clarity; the mathematical logic is isolated from the input/output logic.
Reusability	None. To use the logic elsewhere, the code must be manually copied and pasted.	High. The function can be imported into other Python files or called multiple times in one script.
Debugging Ease	Difficult. Errors in logic are mixed with errors in user input handling.	Simple. You can test the function with specific values (Unit Testing) to ensure the math is correct.
Project Suitability	Suitable only for small, one-off scripts or prototypes.	Essential for enterprise-level, large-scale software development.
AI Dependency Risk	High. AI might generate redundant variables or inefficient loops in long scripts.	Low. AI is highly specialized and accurate when asked to write specific, single-purpose functions.

Task 5: Iterative vs Recursive Thinking:-

```
C:\> Users>hp>OneDrive>Desktop>ai> lab1.py > task1.py > factorial_iterative
1 def factorial_iterative(n):
2     res = 1
3     for i in range(2, n + 1):
4         res *= i
5     return res
6
7 def factorial_recursive(n):
8     if n == 0 or n == 1:
9         return 1
10    return n * factorial_recursive(n - 1)

Enter number: 5
Result: 120
PS C:\Users\hp\OneDrive\Desktop\HPC> ^C
PS C:\Users\hp\OneDrive\Desktop\HPC>
PS C:\Users\hp\OneDrive\Desktop\HPC> c; cd 'c:\Users\hp\OneDrive\Desktop\HPC'; & 'c:\Users\hp\AppData\Local\Microsoft\WindowsApps\python3.13.exe' 'c:\Users\hp\vscode\extensions\ms-python.python.debug-2025.18.0-win32-x64\bundled\libs\debugpy\launcher' '62630' '--' 'c:\Users\hp\OneDrive\Desktop\ai\task1.py'
PS C:\Users\hp\OneDrive\Desktop\HPC>
```

CHAT

CLARIFICATION ON PYTHON CODE REQUEST

python code

Asked for clarification on Python code request

I'd be happy to help! However, your request is unclear. Could you clarify what you'd like me to do?

For example:

- View existing code: Should I look at lab1.py or task1.py?
- Write new code: What should the code do?
- Fix/debug code: What problem needs fixing?
- Run code: Which file should I execute?
- Explain code: Which code would you like me to explain?

Please let me know what you're trying to accomplish:

task1.py +

Describe what to build next

Agent Auto 1540 07-01-2026