Assignment Number: 1.5

NAME: N. Nanda Mukesh

H.T.NO: 2303A51410

BATCH: 24

Task 1: AI-Generated Logic Without Modularization (String Reversal Without Functions)

❖ Scenario

You are developing a basic text-processing utility for a messaging application.

❖ Task Description

Use GitHub Copilot to generate a Python program that:

➢ Reverses a given string

➢ Accepts user input

➢ Implements the logic directly in the main code

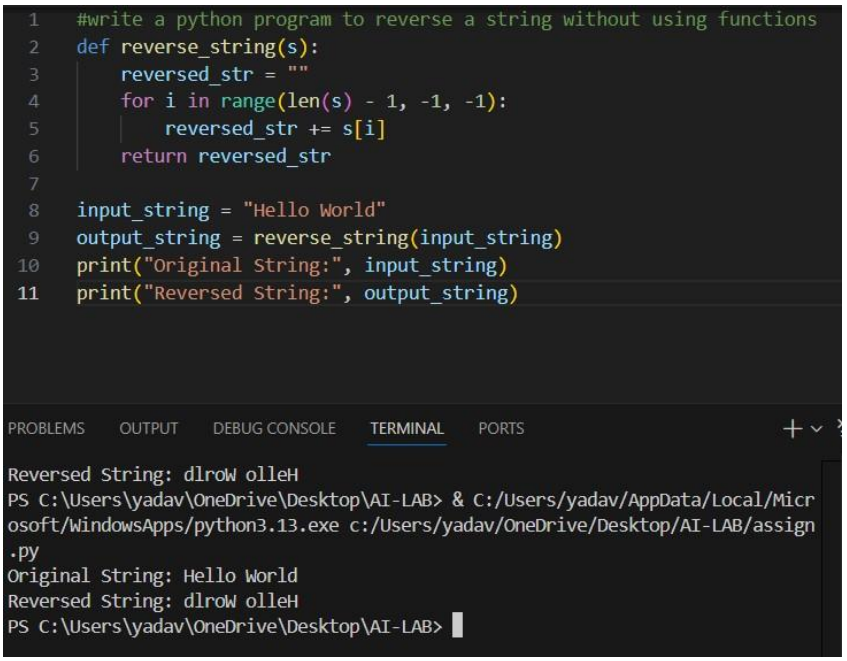
➢ Does not use any user-defined functions

❖ Expected Output

➢ Correct reversed string

➢ Screenshots showing Copilotgenerated code suggestions

➢ Sample inputs and outputs



Task 2: Efficiency & Logic Optimization (Readability Improvement)

❖ Scenario

The code will be reviewed by other developers.

❖ Task Description

Examine the Copilot-generated code from Task 1 and improve it by:

➢ Removing unnecessary variables

➢ Simplifying loop or indexing logic

➢ Improving readability

➢ Use Copilot prompts like:

▪ “Simplify this string reversal code” ▪

“Improve readability and efficiency”

Hint:

Prompt Copilot with phrases like

“optimize this code”, “simplify logic”, or “make it more readable”

❖ Expected Output

➢ Original and optimized code versions

➢ Explanation of how the improvements reduce time complexity

```
16  # optimize this string reversal code and improve readability and efficienc
17  def reverse_string_optimized(s):
18      return s[::-1]
19  input_string = "Hello World"
20  output_string = reverse_string_optimized(input_string)
21  print("Original String:", input_string)
22  print("Reversed String:", output_string)
23
24
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

osoft/WindowsApps/python3.13.exe c:/Users/yadav/OneDrive/Desktop/AI-LAB/assign
.py
Original String: Hello World
Reversed String: dlroW olleH
PS C:\Users\yadav\OneDrive\Desktop\AI-LAB>
```

Task 3: Modular Design Using AI Assistance (String Reversal Using Functions)

❖ Scenario

The string reversal logic is needed in multiple parts of an application.

❖ Task Description

Use GitHub Copilot to generate a function-based Python program that:

➢ Uses a user-defined function to reverse a string

➢ Returns the reversed string

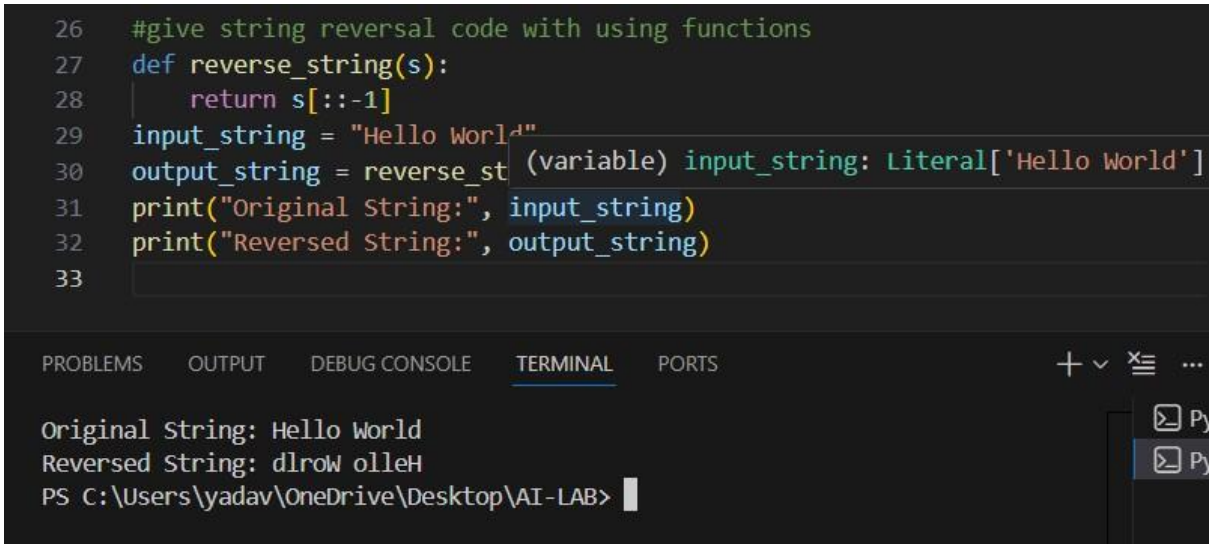
➢ Includes meaningful comments (AI-assisted)

❖ Expected Output

➢ Correct function-based implementation

➢ Screenshots documenting Copilot's function generation

➢ Sample test cases and outputs



Task 5: AI-Generated Iterative vs Recursive Fibonacci Approaches (Different

Algorithmic Approaches to String Reversal)

❖ Scenario

Your mentor wants to evaluate how AI handles alternative logic paths.

❖ Task Description

Prompt GitHub Copilot to generate:

➢ A loop-based string reversal approach

➢ A built-in / slicing-based string reversal approach

❖ Expected Output

➢ Two correct implementations

➢ Comparison discussing:

▪ Execution flow

▪ Time complexity

▪ Performance for large inputs

▪ When each approach is appropriate

```python
#give different approaches to reverse a string like a loop based and buit
def reverse_string_loop(s):
    reversed_str = ""
    for i in range(len(s) - 1, -1, -1):
        reversed_str += s[i]
    return reversed_str
def reverse_string_slicing(s):
    return s[::-1]
input_string = "Hello World"
output_string_loop = reverse_string_loop(input_string)
output_string_slicing = reverse_string_slicing(input_string)
print("Original String:", input_string)
print("Reversed String using loop:", output_string_loop)
print("Reversed String using slicing:", output_string_slicing)
'''
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

Original String: Hello World
Reversed String using loop: dlroW olleH
Reversed String using slicing: dlroW olleH
PS C:\Users\yadav\OneDrive\Desktop\AI-LAB>
```