

Hepsiba Devara

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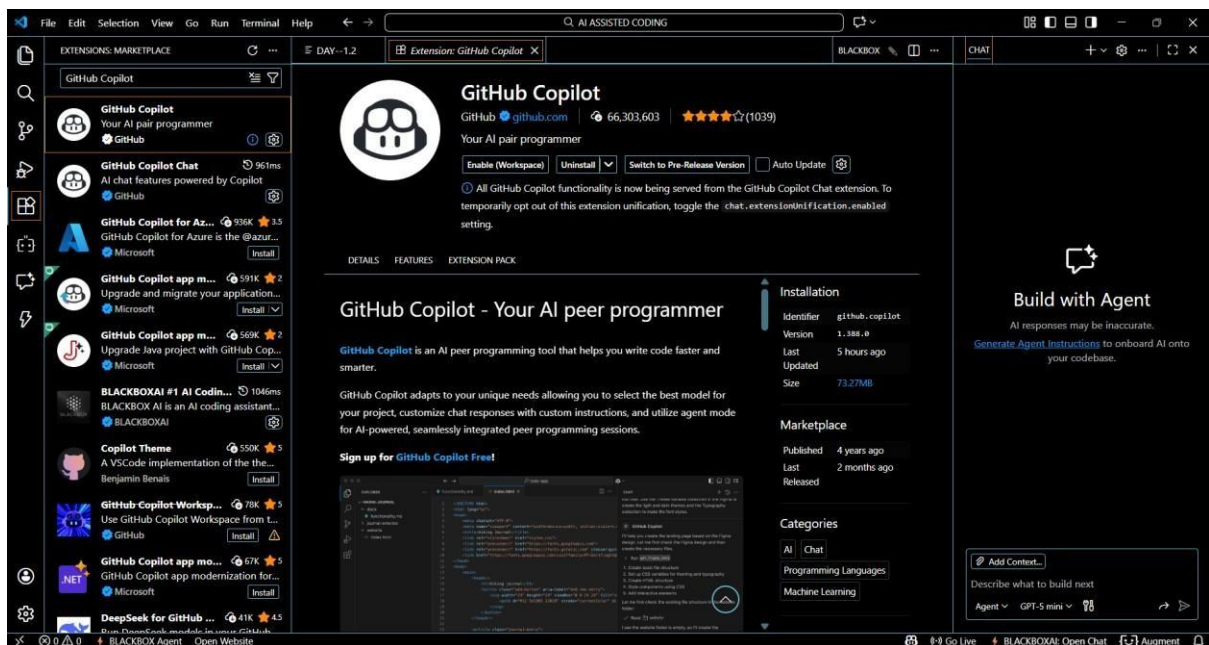
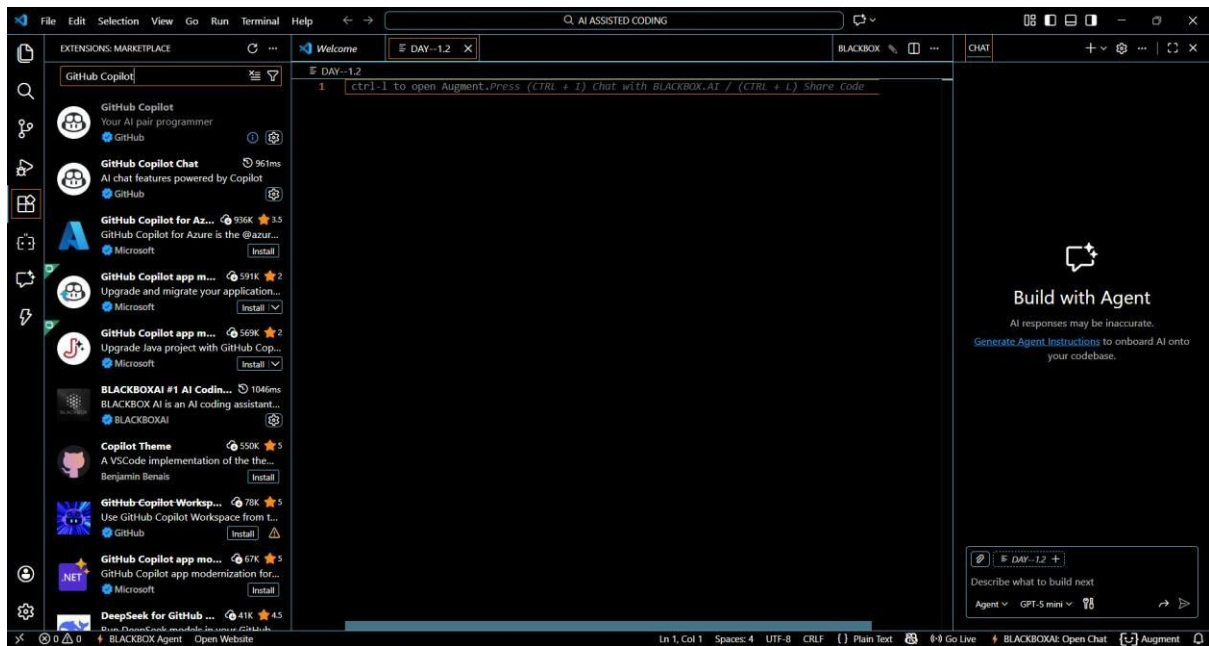
Lab 1.5: AI-Assisted Coding using GitHub Copilot

Task 0: Environment Setup

Steps:

1. Install **Visual Studio Code**
2. Open VS Code → Extensions
3. Search **GitHub Copilot**
4. Click **Install**
5. Sign in with GitHub account
6. Enable Copilot suggestions





Explanation: GitHub Copilot was installed and configured in Visual Studio Code by signing in with a GitHub account. This enables AI-based code suggestions directly inside the editor, helping developers write code faster and more efficiently.

Task 1: String Reversal Without Functions

Prompt:

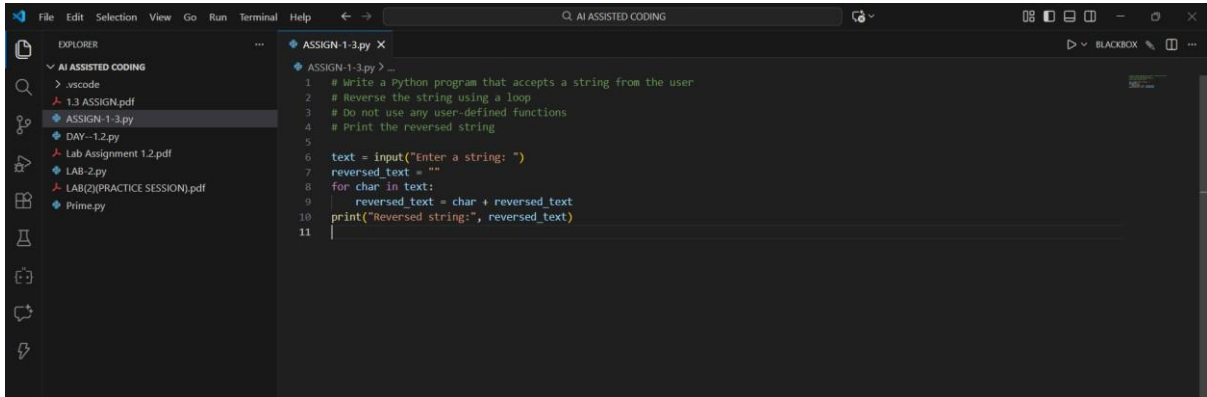
Write a Python program that accepts a string from the user

Reverse the string using a loop

Do not use any user-defined functions

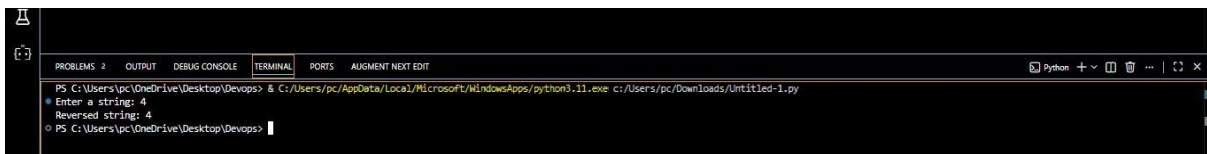
Print the reversed string

###CODE:

A screenshot of the Visual Studio Code editor interface. The Explorer sidebar on the left shows a project named 'AI ASSISTED CODING' with files like '.vscode', '1.3 ASSIGN.pdf', 'ASSIGN-1.3.py', 'DAY-1.2.py', 'Lab Assignment 1.2.pdf', 'LAB-2.py', 'LAB(2)(PRACTICE SESSION).pdf', and 'Prime.py'. The main editor window is open to 'ASSIGN-1.3.py' and contains the following Python code:

```
1 # Write a Python program that accepts a string from the user
2 # Reverse the string using a loop
3 # Do not use any user-defined functions
4 # Print the reversed string
5
6 text = input("Enter a string: ")
7 reversed_text = ""
8 for char in text:
9     reversed_text = char + reversed_text
10 print("Reversed string:", reversed_text)
11
```

OUTPUT:

A screenshot of the terminal window in VS Code. The terminal shows the command prompt 'PS C:\Users\pc\OneDrive\Desktop\Devops>' followed by the execution of a Python script. The output is as follows:

```
PS C:\Users\pc\OneDrive\Desktop\Devops> & C:/Users/pc/AppData/Local/Microsoft/WindowsApps/python3.11.exe c:/Users/pc/Downloads/Untitled-1.py
Enter a string: 4
Reversed string: 4
PS C:\Users\pc\OneDrive\Desktop\Devops>
```

Explanation: In this task, GitHub Copilot generated Python code to reverse a string using a loop without defining any functions. The logic was written directly in the main program, demonstrating basic procedural programming.

Task 2: Code Optimization & Readability

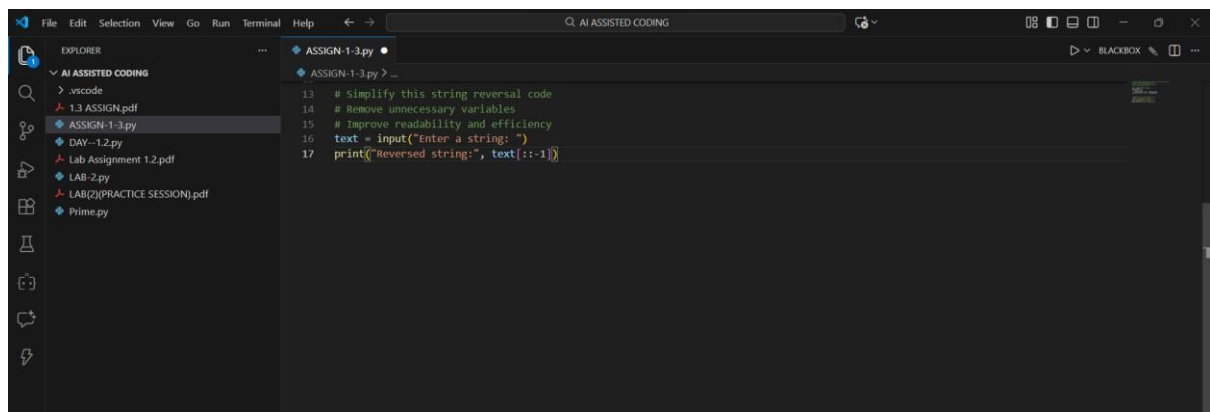
Prompt:

Simplify this string reversal code

Remove unnecessary variables

Improve readability and efficiency

###CODE:



OUTPUT:



Explanation: The Copilot-generated code was optimized by simplifying the logic and removing unnecessary variables. The improved version produces the same output with better readability and reduced code complexity.

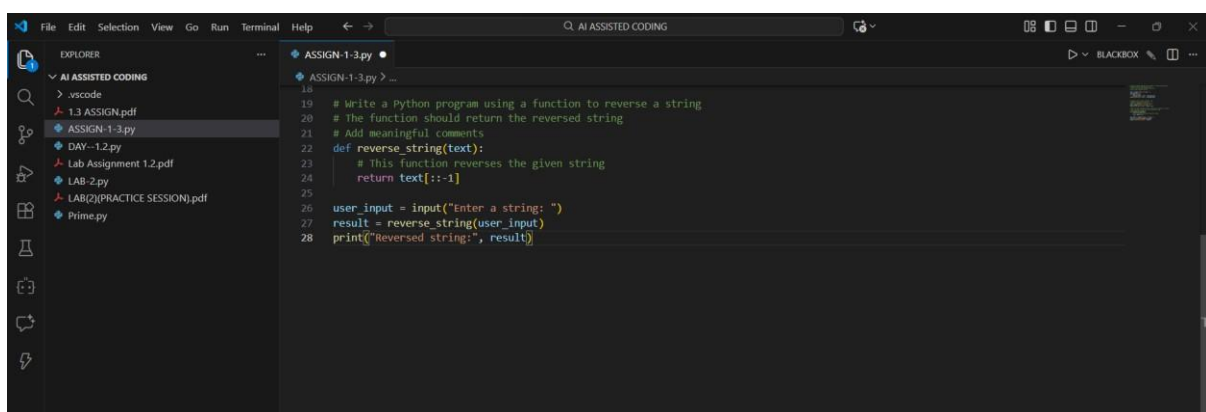
Task 3: String Reversal Using Functions

Prompt:

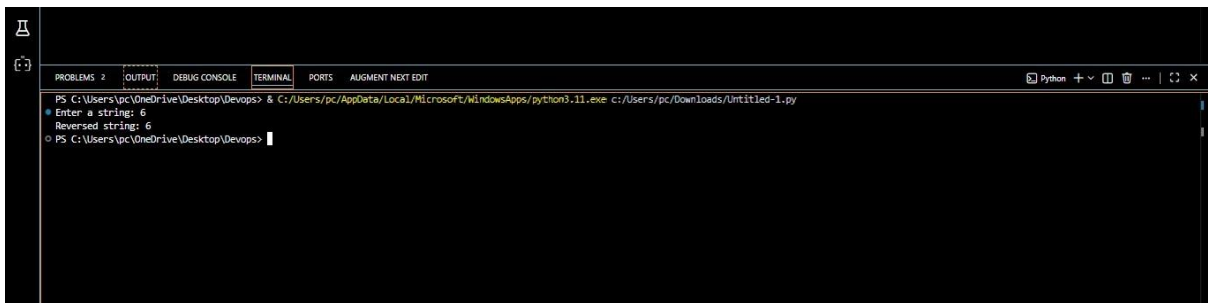
Write a Python program using a function to reverse a string

The function should return the reversed string

Add meaningful comments ###CODE:



OUTPUT:



```
PS C:\Users\pc\OneDrive\Desktop\Devops> & C:/Users/pc/AppData/Local/Microsoft/WindowsApps/python3.11.exe c:/Users/pc/Downloads/Untitled-1.py
Enter a string: 6
Reversed string: 6
PS C:\Users\pc\OneDrive\Desktop\Devops>
```

Explanation: GitHub Copilot was used to create a modular program using a user-defined function to reverse a string. This approach improves reusability, clarity, and makes the code easier to maintain.

Task 4: Procedural vs Modular Comparison

Step 1: Prompt:

Compare string reversal programs with and without functions

Discuss clarity, reusability, debugging, and scalability

Step 2: Answer (Analysis Output)

Feature	Without Function	With Function
Code clarity	Medium	High
Reusability	Low	High
Debugging	Difficult	Easy
Large applications	Not suitable	Suitable

Explanation: A comparison was made between function-based and nonfunction-based programs. The analysis shows that modular code is more reusable, easier to debug, and better suited for large-scale applications.

Task 5: Loop vs Built-in Reversal

Step 1: Loop-Based Prompt

Write a Python program to reverse a string using a loop

Do not use slicing or built-in methods **###CODE:**

The screenshot shows the VS Code editor with a file explorer on the left containing files like 1.3 ASSIGN.pdf, ASSIGN-1-3.py, DAY-1.2.py, Lab Assignment 1.2.pdf, LAB-2.py, LAB(2)(PRACTICE SESSION).pdf, and Prime.py. The main editor window displays the code for ASSIGN-1-3.py, which is a Python program to reverse a string using a loop. The code is as follows:

```
32
33 # Write a Python program to reverse a string using a loop
34 # Do not use slicing or built-in methods
35 text = input("Enter a string: ")
36 rev = ""
37 for i in range(len(text)-1, -1, -1):
38     rev += text[i]
39 print("Reversed string:", rev)
40
```

OUTPUT:

The screenshot shows the VS Code terminal window with the following output:

```
PS C:\Users\pc\OneDrive\Desktop\Devops> & C:/Users/pc/AppData/Local/Microsoft/WindowsApps/python3.11.exe c:/Users/pc/Downloads/Untitled-1.py
Enter a string: 6
Reversed string: 6
PS C:\Users\pc\OneDrive\Desktop\Devops>
```


Step 2: Built-in Prompt

Write a Python program to reverse a string using slicing ###CODE:

The screenshot shows the VS Code editor with a file explorer on the left containing files like 1.3 ASSIGN.pdf, ASSIGN-1-3.py, DAY-1.2.py, Lab Assignment 1.2.pdf, LAB-2.py, LAB(2)(PRACTICE SESSION).pdf, and Prime.py. The main editor window displays the code for ASSIGN-1-3.py, which is a Python program to reverse a string using slicing. The code is as follows:

```
41 # Write a Python program to reverse a string using slicing
42 text = input("Enter a string: ")
43 print("Reversed string:", text[::-1])
44
```

OUTPUT:



The image shows a screenshot of a Visual Studio Code (VS Code) terminal window. The terminal is running a Python script. The prompt is 'PS C:\Users\pc\OneDrive\Desktop\Devops>'. The command entered is '& C:/Users/pc/AppData/Local/Microsoft/WindowsApps/python3.11.exe c:/Users/pc/Downloads/Untitled-1.py'. The output shows 'Enter a string: 24' followed by 'Reversed string: 42'. The terminal window has a dark theme and a sidebar on the left with icons for Explorer, Search, and Run and Debug. The top of the window shows the VS Code interface with tabs for PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL, PORTS, and AUGMENT NEXT EDIT. The terminal window title bar indicates it is running Python.

```
PS C:\Users\pc\OneDrive\Desktop\Devops> & C:/Users/pc/AppData/Local/Microsoft/WindowsApps/python3.11.exe c:/Users/pc/Downloads/Untitled-1.py
Enter a string: 24
Reversed string: 42
PS C:\Users\pc\OneDrive\Desktop\Devops>
```

Explanation: Two different string reversal approaches were generated using Copilot: loop-based and built-in slicing. Both methods have the same time complexity, but the built-in approach is more concise and readable.