

# ASSIGNMENT – 3

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**BATCH NO : AIB03**

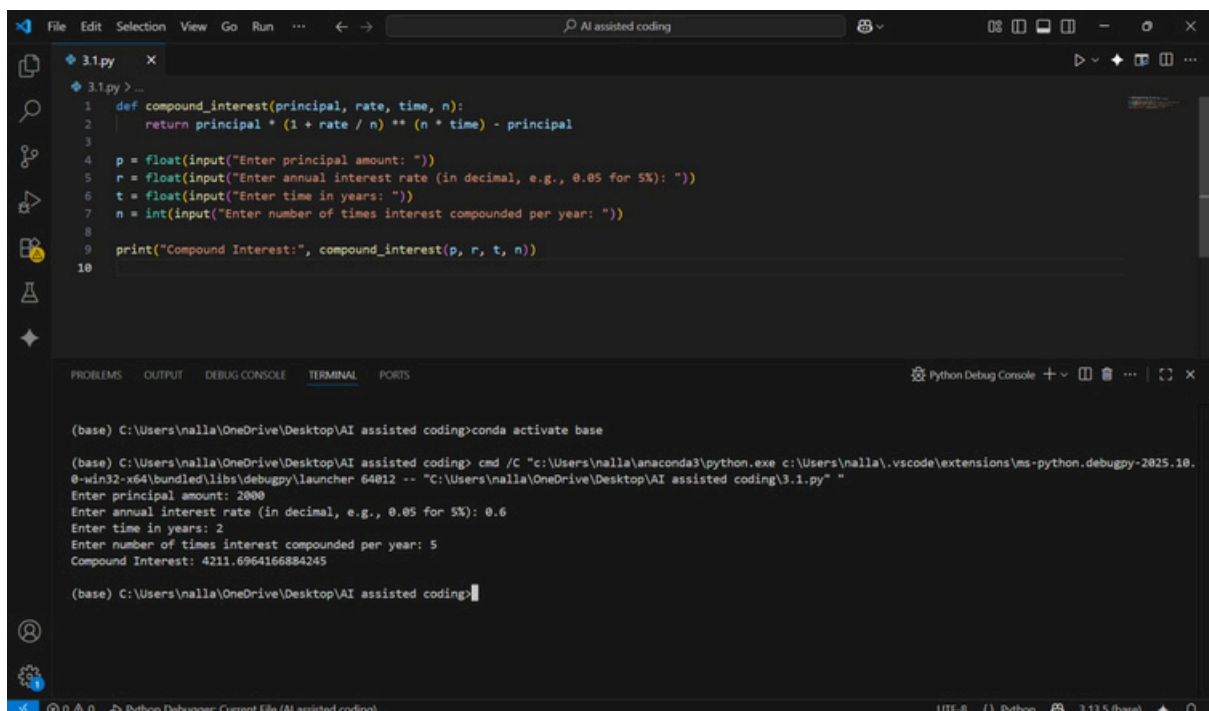
## **TASK 1 :**

Ask AI to write a function to calculate compound interest, starting with only the function name. Then add a docstring, then input-output example

### **PROMPT :**

write a function to calculate compound interest, starting with only the function name. Then add a docstring, then input-output example

### **CODE :**



```
File Edit Selection View Go Run ... AI assisted coding
3.1.py
1 def compound_interest(principal, rate, time, n):
2     return principal * (1 + rate / n) ** (n * time) - principal
3
4 p = float(input("Enter principal amount: "))
5 r = float(input("Enter annual interest rate (in decimal, e.g., 0.05 for 5%): "))
6 t = float(input("Enter time in years: "))
7 n = int(input("Enter number of times interest compounded per year: "))
8
9 print("Compound Interest:", compound_interest(p, r, t, n))
10

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Python Debug Console

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>conda activate base

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>cmd /C "C:\Users\nalla\anaconda3\python.exe c:\Users\nalla\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher 64012 -- "C:\Users\nalla\OneDrive\Desktop\AI assisted coding\3.1.py" "
Enter principal amount: 2000
Enter annual interest rate (in decimal, e.g., 0.05 for 5%): 0.6
Enter time in years: 2
Enter number of times interest compounded per year: 5
Compound Interest: 4211.6964166884245

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>
```

## **OBSERVATION :**

This program calculates the compound interest for a given principal amount. It defines a function `compound_interest(principal, rate, time, n)`

that uses the formula  $CI = P \times (1 + r/n)^n \cdot t - P$ , where  $P$  is the principal,  $r$  is the annual interest rate,  $t$  is the time in years, and  $n$  is the number of times interest is compounded per year. The program asks the user to enter these values and then calls the function to compute the compound interest. Finally, it prints the calculated compound interest.

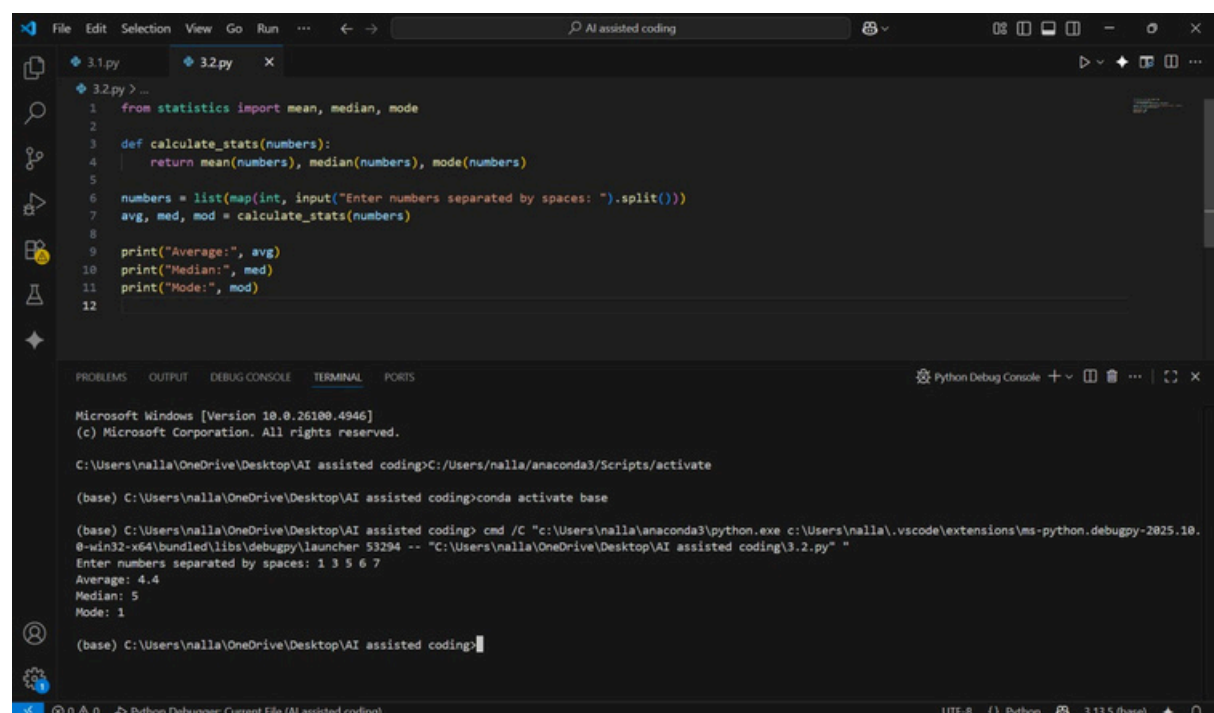
## TASK 2:

Do math stuff, then refine it to: # Write a function to calculate average, median, and mode of a list of numbers.

## PROMPT :

Do math stuff, then refine it to: # Write a function to calculate average, median, and mode of a list of numbers.

## CODE :



```
3.2.py > ...
1  from statistics import mean, median, mode
2
3  def calculate_stats(numbers):
4      return mean(numbers), median(numbers), mode(numbers)
5
6  numbers = list(map(int, input("Enter numbers separated by spaces: ").split()))
7  avg, med, mod = calculate_stats(numbers)
8
9  print("Average:", avg)
10 print("Median:", med)
11 print("Mode:", mod)
12
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

Python Debug Console

```
Microsoft Windows [Version 10.0.26100.4946]
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C:\Users\nalla\OneDrive\Desktop\AI assisted coding>C:/Users/nalla/anaconda3/Scripts/activate

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>conda activate base

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>cmd /C "c:\Users\nalla\anaconda3\python.exe c:\Users\nalla\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher 53294 -- "C:\Users\nalla\OneDrive\Desktop\AI assisted coding\3.2.py" "
Enter numbers separated by spaces: 1 3 5 6 7
Average: 4.4
Median: 5
Mode: 1

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>
```

## OBSERVATION :

This Python code calculates basic statistics—average, median, and mode—of a list of numbers entered by the user. It first imports mean,

median, and mode from the statistics module. The function `calculate_stats` takes a list of numbers and returns the mean, median, and mode. The program prompts the user to enter numbers separated by spaces, converts them into a list of integers, and passes the list to `calculate_stats`. It then prints the average, median, and mode of the entered numbers.

### ***TASK 3 :***

Provide multiple examples of input-output to the AI for `convert_to_binary(num)` function. Observe how AI uses few-shot prompting to generalize

**PROMPT :**

Provide multiple examples of input-output to the AI for `convert_to_binary(num)` function. Observe how AI uses few-shot prompting to generalize

**CODE :**

The screenshot shows the VS Code interface with a Python file named `3.3.py` open. The code defines a function `convert_to_binary` that takes a number and returns its binary representation as a string. The main part of the script prompts the user to enter a number, reads the input, and prints the binary result.

```

1 def convert_to_binary(num):
2     return bin(num).replace("0b", "")
3
4 num = int(input("Enter a number: "))
5 print("Binary:", convert_to_binary(num))
6

```

The terminal window at the bottom shows the execution of the script. It starts with the activation of the base environment, followed by running the script using `python.exe`. The user enters the number `52`, and the program outputs `Binary: 110100`.

```

Microsoft Windows [Version 10.0.26100.4946]
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C:\Users\nalla\OneDrive\Desktop\AI assisted coding>C:\Users\nalla\anaconda3\Scripts\activate

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>conda activate base

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding> cmd /C "c:\Users\nalla\anaconda3\python.exe c:\Users\nalla\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher 64174 -- "C:\Users\nalla\OneDrive\Desktop\AI assisted coding\3.3.py" "
Enter a number: 52
Binary: 110100

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>

```

**OBSERVATION :**

This Python code converts a decimal number entered by the user into its binary representation. It defines a function `convert_to_binary` that takes an integer `num` and uses the built-in `bin()` function to convert it to a binary string. The `bin()` function returns a string starting with "0b", so `.replace("0b", "")` removes this prefix. The program prompts the user to enter a number, calls `convert_to_binary` with this input, and prints the resulting binary value.

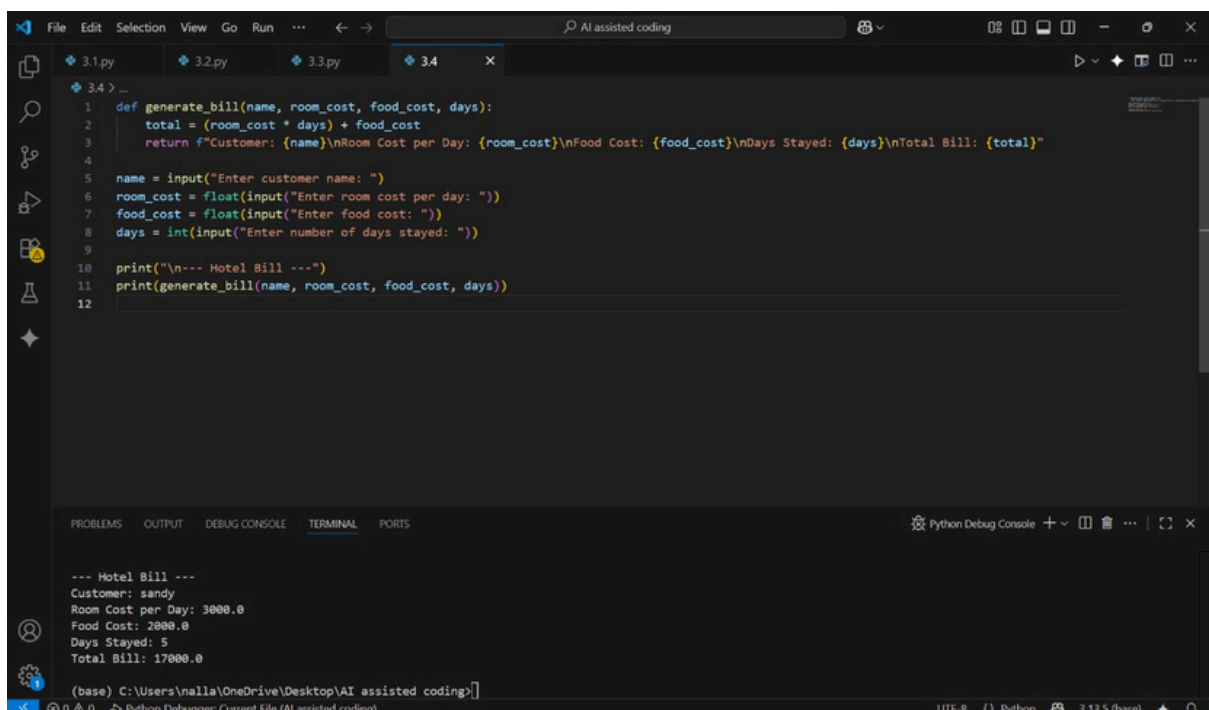
#### **TASK 4 :**

Create an user interface for an hotel to generate bill based on customer requirements

#### **PROMPT :**

Create an user interface for an hotel to generate bill based on customer requirements

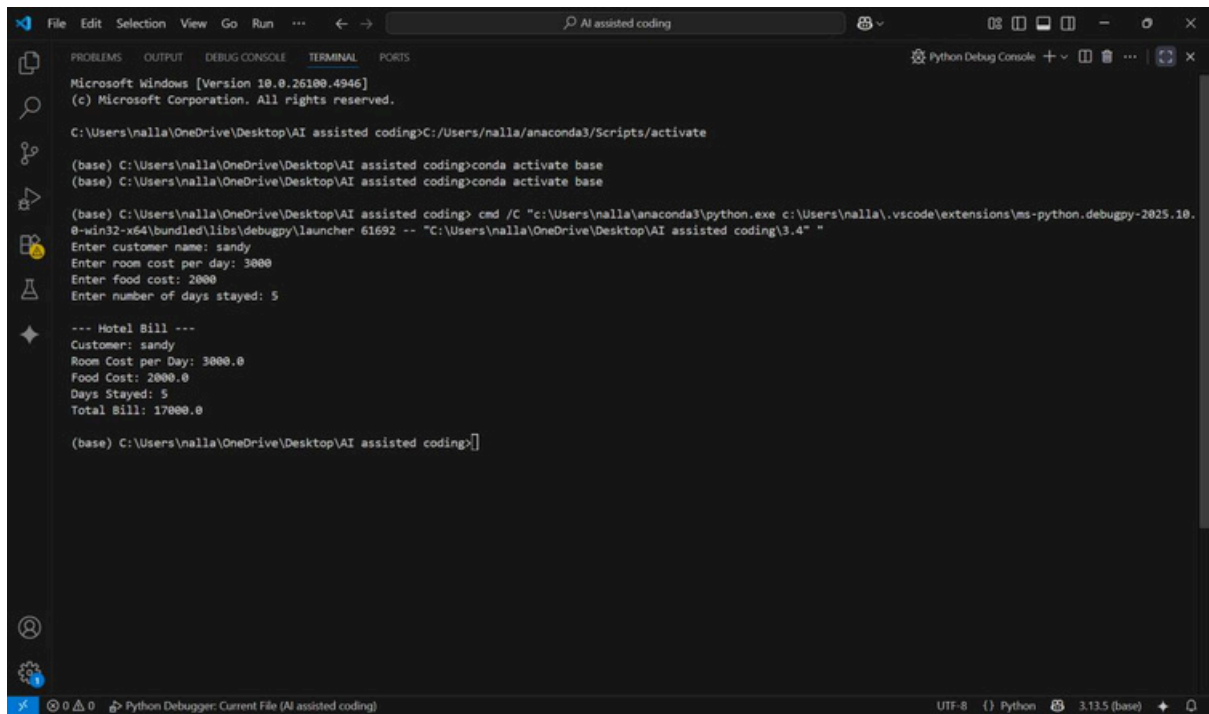
#### **CODE :**



```
File Edit Selection View Go Run ... AI assisted coding
3.1.py 3.2.py 3.3.py 3.4 x
3.4 > ...
1 def generate_bill(name, room_cost, food_cost, days):
2     total = (room_cost * days) + food_cost
3     return f"Customer: {name}\nRoom Cost per Day: {room_cost}\nFood Cost: {food_cost}\nDays Stayed: {days}\nTotal Bill: {total}"
4
5 name = input("Enter customer name: ")
6 room_cost = float(input("Enter room cost per day: "))
7 food_cost = float(input("Enter food cost: "))
8 days = int(input("Enter number of days stayed: "))
9
10 print("\n--- Hotel Bill ---")
11 print(generate_bill(name, room_cost, food_cost, days))
12

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python Debug Console
--- Hotel Bill ---
Customer: sandy
Room Cost per Day: 3000.0
Food Cost: 2000.0
Days Stayed: 5
Total Bill: 17000.0

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>
```



```
Microsoft Windows [Version 10.0.26100.4946]
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C:\Users\nalla\OneDrive\Desktop\AI assisted coding>C:\Users\nalla\anaconda3\Scripts\activate

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>conda activate base
(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>conda activate base

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>cmd /C "C:\Users\nalla\anaconda3\python.exe c:\Users\nalla\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher 61692 -- "C:\Users\nalla\OneDrive\Desktop\AI assisted coding\3.4" "
Enter customer name: sandy
Enter room cost per day: 3000
Enter food cost: 2000
Enter number of days stayed: 5

--- Hotel Bill ---
Customer: sandy
Room Cost per Day: 3000.0
Food Cost: 2000.0
Days Stayed: 5
Total Bill: 17000.0

(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>
```

## **OBSERVATION :**

This Python code generates a hotel bill for a customer. It defines a function `generate_bill` that takes the customer's name, room cost per day, food cost, and number of days stayed. Inside the function, it calculates the total bill by multiplying the room cost by the number of days and adding the food cost. It then returns a formatted string showing the customer's name, room cost, food cost, days stayed, and total bill. The program prompts the user to enter these details, calls `generate_bill` with the inputs, and prints the formatted hotel bill.

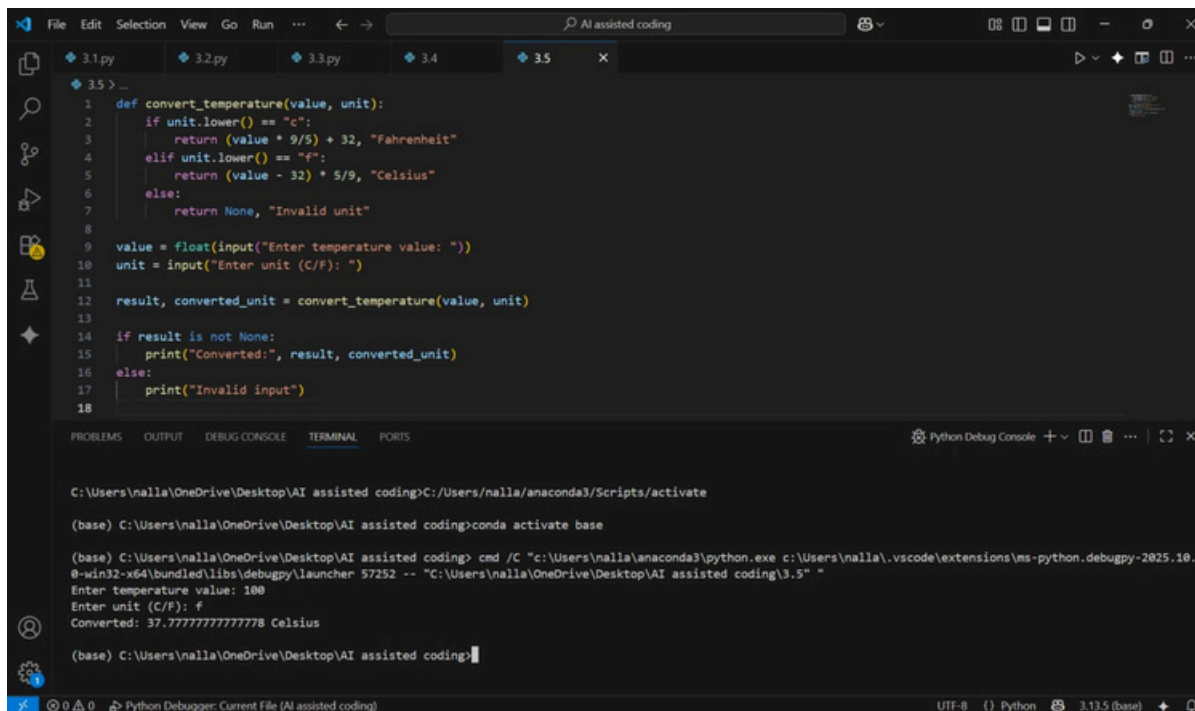
## **TASK 5 :**

Analyzing Prompt Specificity: Improving Temperature Conversion Function with Clear Instructions

## **PROMPT :**

Improving Temperature Conversion Function with Clear Instructions

## **CODE :**



```
1 def convert_temperature(value, unit):
2     if unit.lower() == "c":
3         return (value * 9/5) + 32, "Fahrenheit"
4     elif unit.lower() == "f":
5         return (value - 32) * 5/9, "Celsius"
6     else:
7         return None, "Invalid unit"
8
9 value = float(input("Enter temperature value: "))
10 unit = input("Enter unit (C/F): ")
11
12 result, converted_unit = convert_temperature(value, unit)
13
14 if result is not None:
15     print("Converted:", result, converted_unit)
16 else:
17     print("Invalid input")
18
```

```
C:\Users\nalla\OneDrive\Desktop\AI assisted coding>C:\Users\nalla\anaconda3\Scripts\activate
(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>conda activate base
(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding> cmd /C "c:\Users\nalla\anaconda3\python.exe c:\Users\nalla\.vscode\extensions\ms-python.debugpy-2025.10.0-win32-x64\bundled\libs\debugpy\launcher 57252 -- "C:\Users\nalla\OneDrive\Desktop\AI assisted coding\3.5" "
Enter temperature value: 100
Enter unit (C/F): f
Converted: 37.77777777777778 Celsius
(base) C:\Users\nalla\OneDrive\Desktop\AI assisted coding>
```

## **OBSERVATION:**

This Python code converts a temperature between Celsius and Fahrenheit. It defines a function `convert_temperature` that takes a numeric value and a unit ("C" for Celsius or "F" for Fahrenheit). If the unit is "C", it converts the value to Fahrenheit using the formula  $(C \times 9/5) + 32$ ; if the unit is "F", it converts to Celsius using  $(F - 32) \times 5/9$ . If the unit is invalid, it returns `None` and marks the unit as invalid. The program prompts the user to enter a temperature value and its unit, calls `convert_temperature`, and then prints the converted temperature with the corresponding unit, or an error message if the input was invalid.