# SR UNIVERSITY

# AI ASSIST CODING

## Lab-3.2

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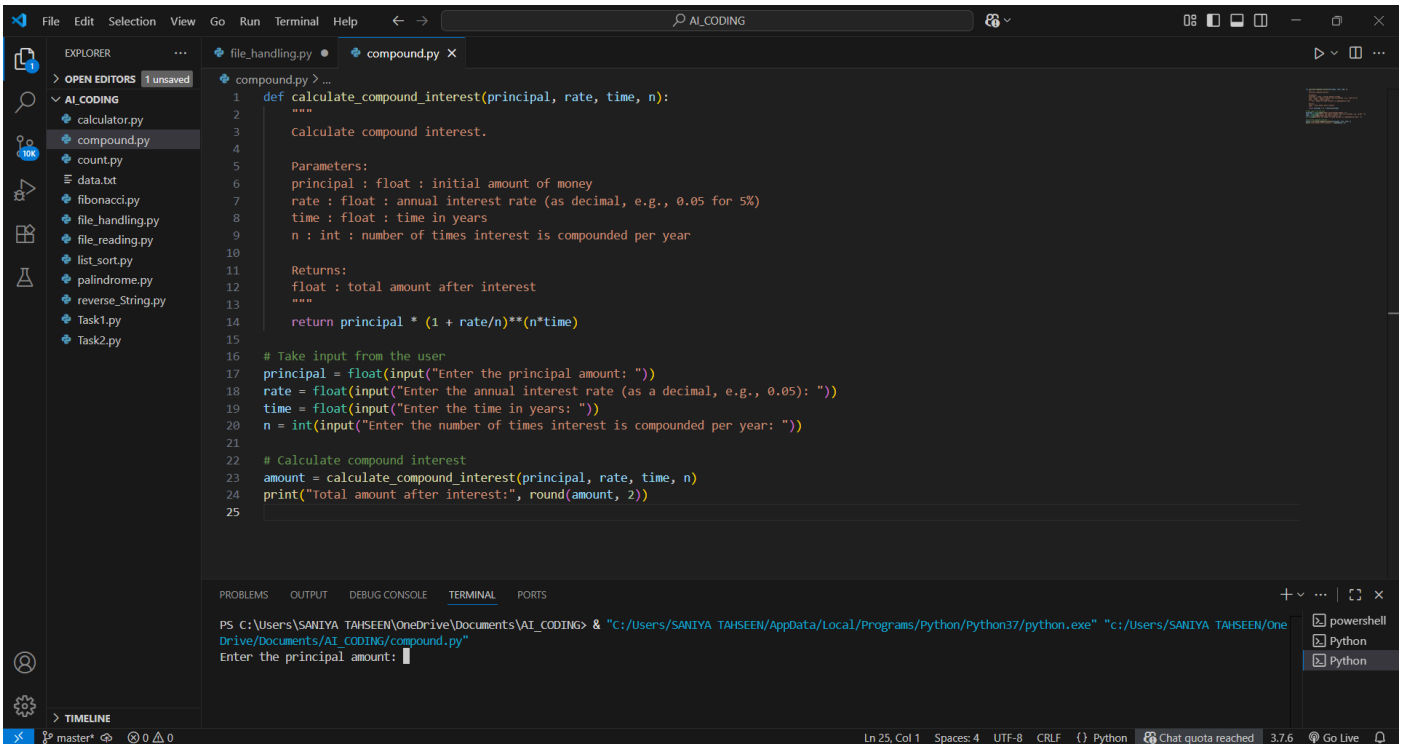
**BATCH:19**

## TASK #1:

## Prompt Used:

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

## Code Generated:




## Output After executing Code:

## Observations:

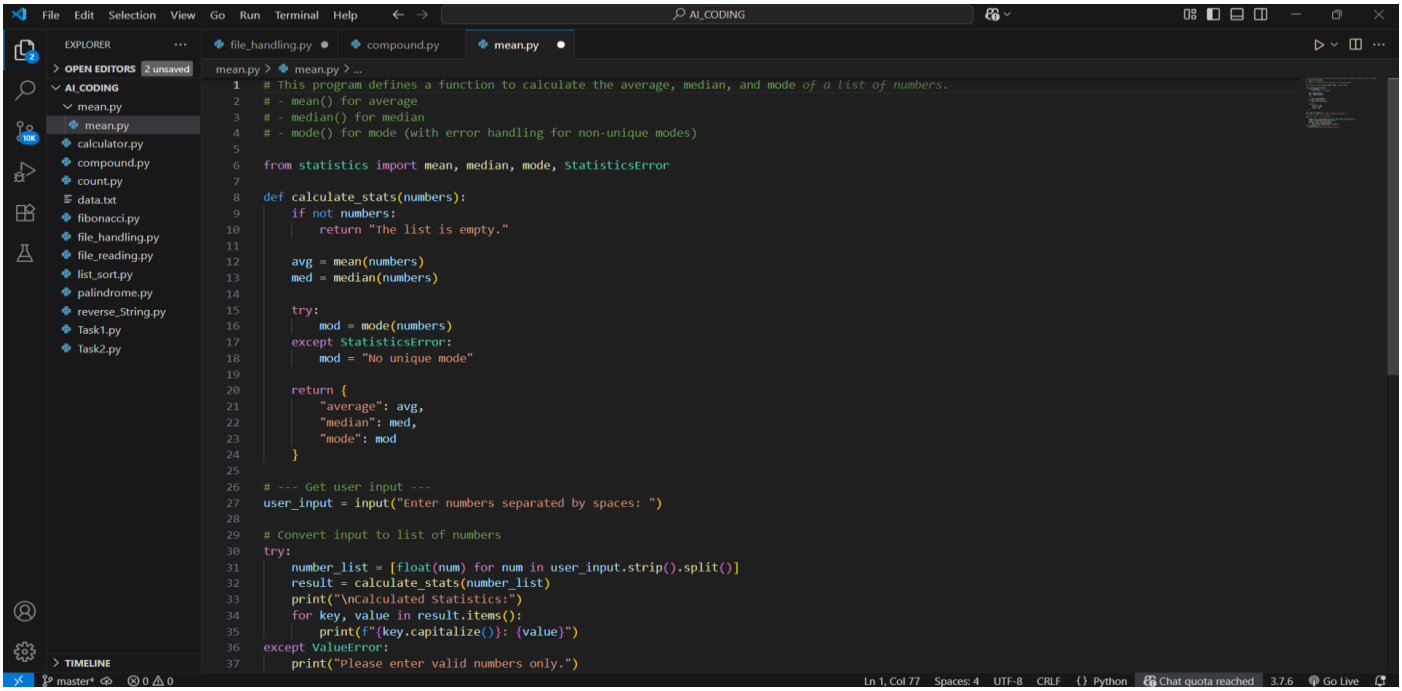
- The code correctly implements the compound interest formula using inputs (principal, rate, time, compounds per year) and returns the calculated final amount.
- The docstring explains the function with parameter details, return type, and an example, making the code clear and professional.

## TASK #2:

## Prompt Used:

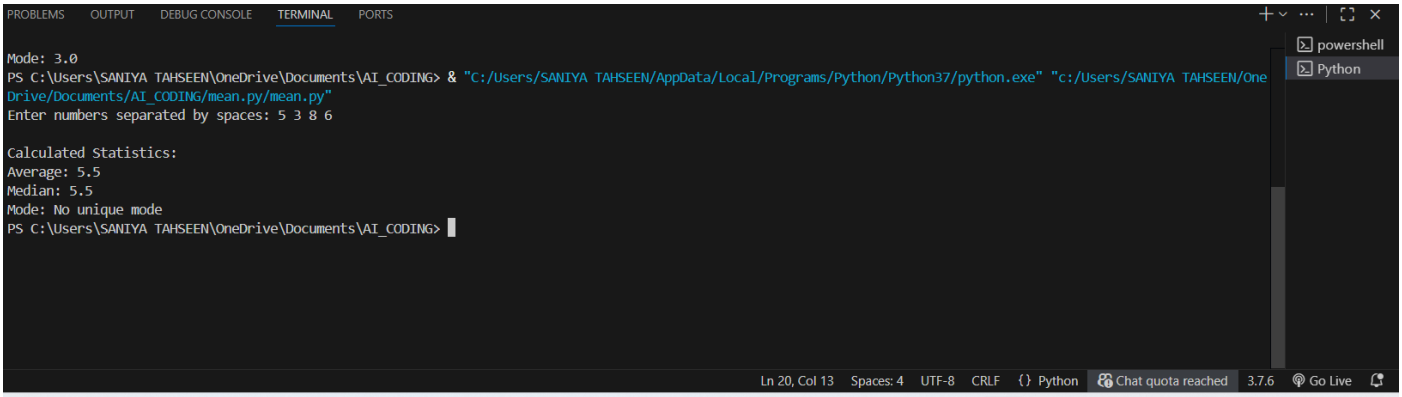
Do math stuff, then refine it to: # Write a function to calculate average, median, and mode of a list of numbers.

## Code Generated:



```python
# This program defines a function to calculate the average, median, and mode of a list of numbers.
# - mean() for average
# - median() for median
# - mode() for mode (with error handling for non-unique modes)

from statistics import mean, median, mode, StatisticsError

def calculate_stats(numbers):
    if not numbers:
        return "The list is empty."

    avg = mean(numbers)
    med = median(numbers)

    try:
        mod = mode(numbers)
    except StatisticsError:
        mod = "No unique mode"

    return {
        "average": avg,
        "median": med,
        "mode": mod
    }

# --- Get user input ---
user_input = input("Enter numbers separated by spaces: ")

# Convert input to list of numbers
try:
    number_list = [float(num) for num in user_input.strip().split()]
    result = calculate_stats(number_list)
    print("\nCalculated Statistics:")
    for key, value in result.items():
        print(f"{key.capitalize()}: {value}")
except ValueError:
    print("Please enter valid numbers only.")
```

## Output After executing Code:



```
Mode: 3.0
PS C:\Users\SANIYA TAHSEEN\OneDrive\Documents\AI_CODING> & "C:/Users/SANIYA TAHSEEN/AppData/Local/Programs/Python/Python37/python.exe" "c:/Users/SANIYA TAHSEEN/OneDrive/Documents/AI_CODING/mean.py/mean.py"
Enter numbers separated by spaces: 5 3 8 6

Calculated Statistics:
Average: 5.5
Median: 5.5
Mode: No unique mode
PS C:\Users\SANIYA TAHSEEN\OneDrive\Documents\AI_CODING>
```

## Observations:

- The program defines a function to calculate the average, median, and mode of a list of numbers using Python's built-in statistics functions: mean(), median(), and mode().
- A try-except block handles cases where there is no unique mode, preventing errors.

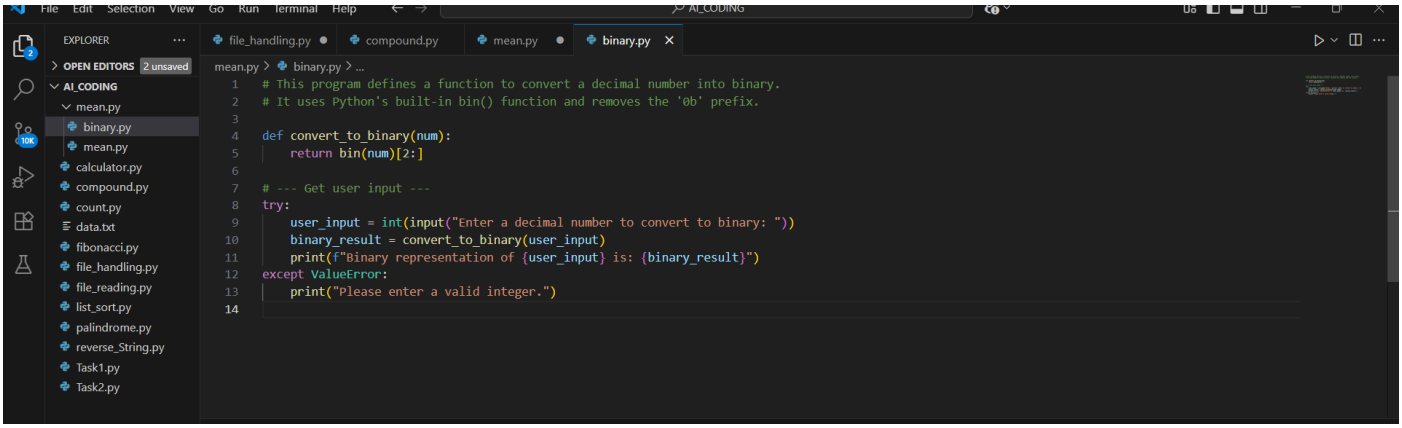
- User input is taken as a space-separated string, converted into floats, and results are displayed in a structured dictionary format.

## TASK #3:

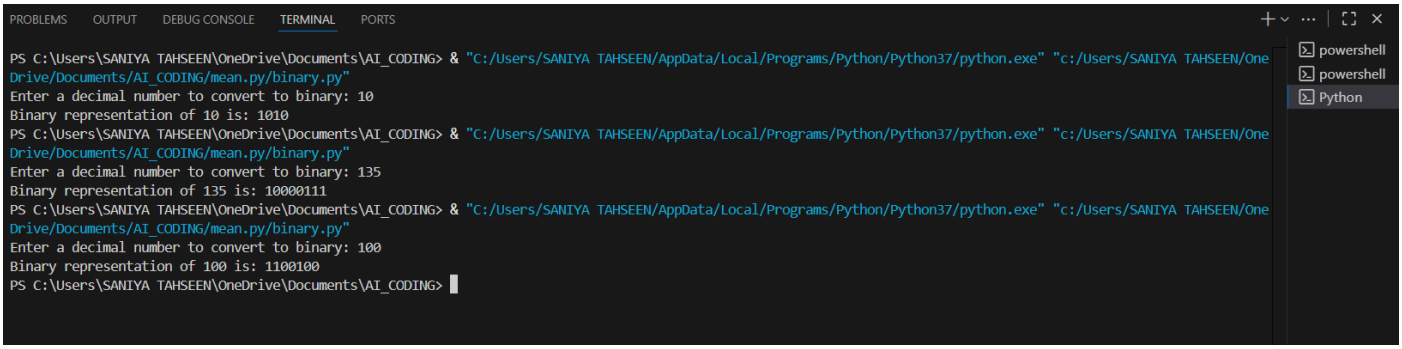
## Prompt Used:

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 Generated:




## Output After executing Code:




## Observations:

- bin(num) converts a decimal number to a binary string prefixed with '0b'.
- Using [2:] slices off the '0b' to return only the binary digits.
- The function uses a try-except block to check whether the user's input is a valid number and to handle errors if it is not.

## TASK #4:

## Prompt Used:

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

## Code Generated:

```python
# --- Hotel Billing System ---

# Menu with items and prices
menu = {
    "Burger": 120,
    "Pizza": 250,
    "Pasta": 180,
    "Coke": 50,
    "Coffee": 70
}

# Function to display menu
def display_menu():
    print("\n------ Hotel Menu ------")
    for item, price in menu.items():
        print(f"{item}: ₹{price}")
    print("------------------------")

# Function to calculate cost of selected item
def calculate_cost(item, quantity):
    return menu[item] * quantity

# Function to generate bill
def generate_bill(order):
    total = 0
    print("\n------ Final Bill ------")
    for item, qty in order.items():
        cost = calculate_cost(item, qty)
        print(f"{item} x {qty} = ₹{cost}")
        total += cost
    print("------------------------")
    print(f"Total Amount: ₹{total}")
    print("Thank you for visiting!")

# --- Main Program ---
display_menu()
```

## Output After executing Code:

```
PS C:\Users\SANIYA TAHSEEN\OneDrive\Documents\AI_CODING> & "C:/Users/SANIYA TAHSEEN/AppData/Local/Programs/Python/Python37/python.exe" "c:/Users/SANIYA TAHSEEN/OneDrive/Documents/AI_CODING/mean.py/bill.py"

------ Hotel Menu ------
Burger: ₹120
Pizza: ₹250
Pasta: ₹180
Coke: ₹50
Coffee: ₹70
------------------------

Enter item name (or 'done' to finish): pizza
Enter quantity for Pizza: 3

Enter item name (or 'done' to finish): coFfee
Enter quantity for Coffee: 1

Enter item name (or 'done' to finish): done

------ Final Bill ------
Pizza x 3 = ₹750
Coffee x 1 = ₹70
------------------------
Total Amount: ₹820
Thank you for visiting!
```

## Observations:

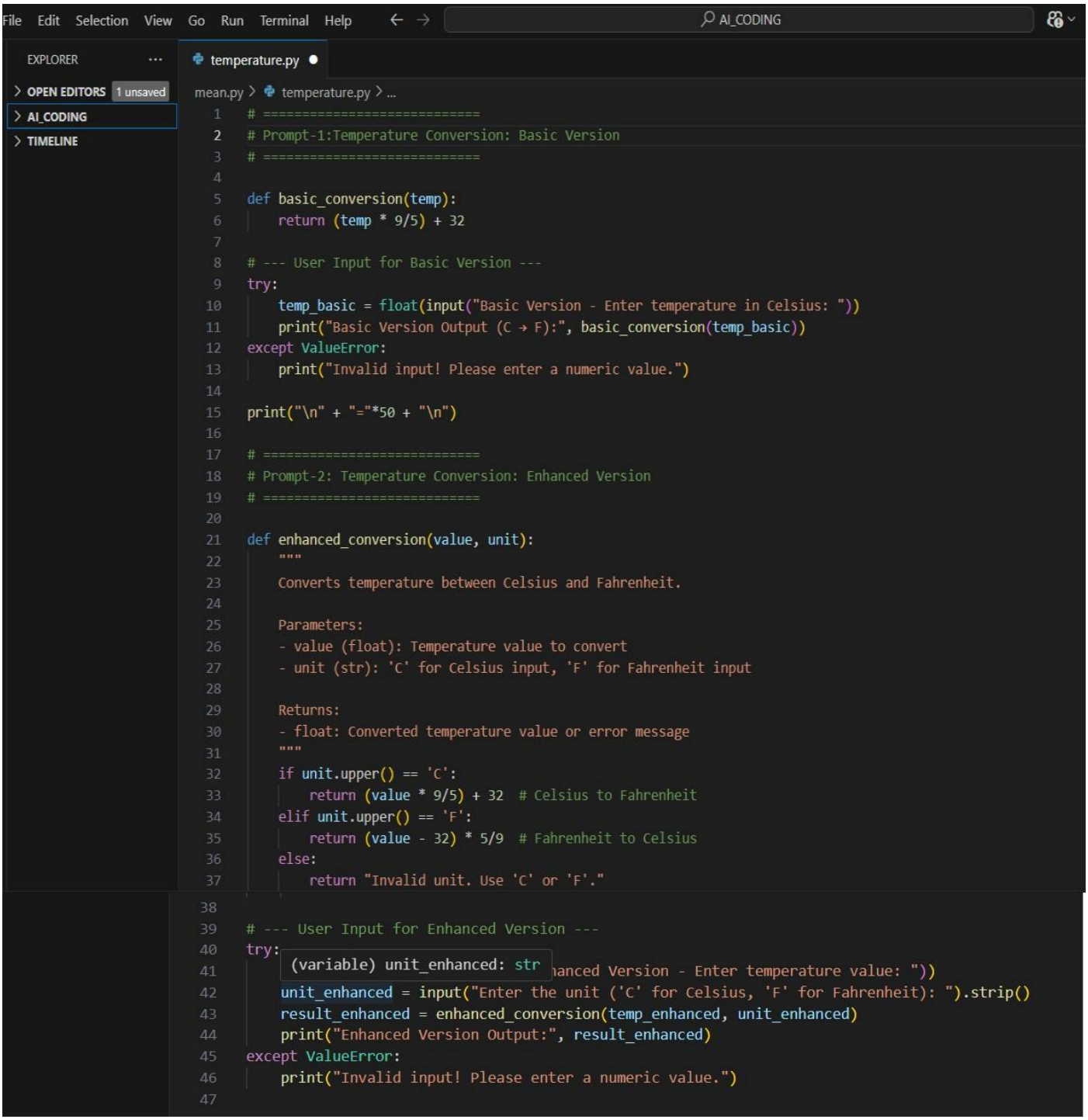
- The menu is stored as a dictionary with items as keys (capitalized) and their prices as values.
- User input is processed with .capitalize() so it matches the menu keys, making input case-insensitive for practical purposes.
- Separate functions are defined for repeated tasks like displaying the menu and generating the bill, ensuring code reusability.

## TASK #5:

## Prompt Used:

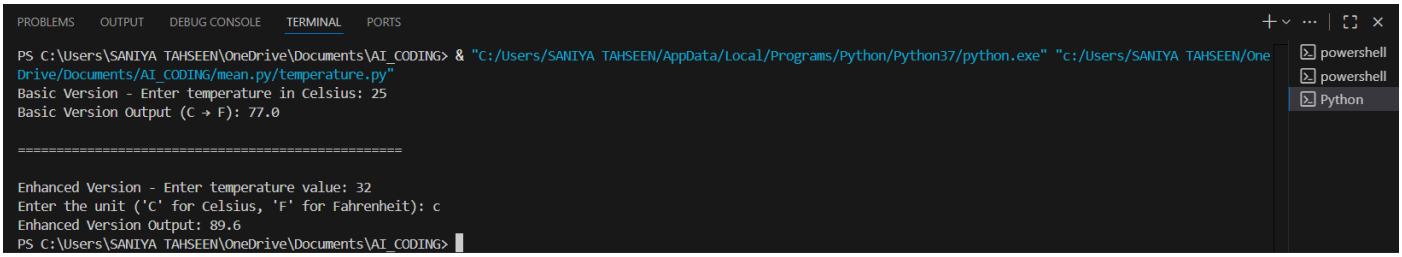
Analyzing Prompt Specificity: Improving Temperature Conversion Function with Clear Instructions

## Code Generated:



```python
# ============================
# Prompt-1:Temperature Conversion: Basic Version
# ============================

def basic_conversion(temp):
    return (temp * 9/5) + 32

# --- User Input for Basic Version ---
try:
    temp_basic = float(input("Basic Version - Enter temperature in Celsius: "))
    print("Basic Version Output (C → F):", basic_conversion(temp_basic))
except ValueError:
    print("Invalid input! Please enter a numeric value.")

print("\n" + "="*50 + "\n")

# ============================
# Prompt-2: Temperature Conversion: Enhanced Version
# ============================

def enhanced_conversion(value, unit):
    """
    Converts temperature between Celsius and Fahrenheit.

    Parameters:
    - value (float): Temperature value to convert
    - unit (str): 'C' for Celsius input, 'F' for Fahrenheit input

    Returns:
    - float: Converted temperature value or error message
    """
    if unit.upper() == 'C':
        return (value * 9/5) + 32  # Celsius to Fahrenheit
    elif unit.upper() == 'F':
        return (value - 32) * 5/9  # Fahrenheit to Celsius
    else:
        return "Invalid unit. Use 'C' or 'F'."

# --- User Input for Enhanced Version ---
try:
    (variable) unit_enhanced: str
    anced Version - Enter temperature value: "))
    unit_enhanced = input("Enter the unit ('C' for Celsius, 'F' for Fahrenheit): ").strip()
    result_enhanced = enhanced_conversion(temp_enhanced, unit_enhanced)
    print("Enhanced Version Output:", result_enhanced)
except ValueError:
    print("Invalid input! Please enter a numeric value.")
```

## Output After executing Code:



```
PS C:\Users\SANIYA TAHSEEN\OneDrive\Documents\AI_CODING> & "C:/Users/SANIYA TAHSEEN/AppData/Local/Programs/Python/Python37/python.exe" "c:/Users/SANIYA TAHSEEN/OneDrive/Documents/AI_CODING/mean.py/temperature.py"
Basic Version - Enter temperature in Celsius: 25
Basic Version Output (C → F): 77.0

==================================================

Enhanced Version - Enter temperature value: 32
Enter the unit ('C' for Celsius, 'F' for Fahrenheit): c
Enhanced Version Output: 89.6
PS C:\Users\SANIYA TAHSEEN\OneDrive\Documents\AI_CODING>
```

**Observations:**

Prompt-1: Temperature Conversion: Basic Version

- Handles only Celsius → Fahrenheit conversion
- Code is simple, minimal, and easy to follow
- No error handling

Prompt-2: Temperature Conversion: Enhanced Version

- Converts both Celsius ↔ Fahrenheit based on user input unit.
- Includes docstring, comments, and validation for invalid inputs.
- Robust, readable, and user-friendly.