SR UNIVERSITY

School of Computer Science and Artificial Intelligence

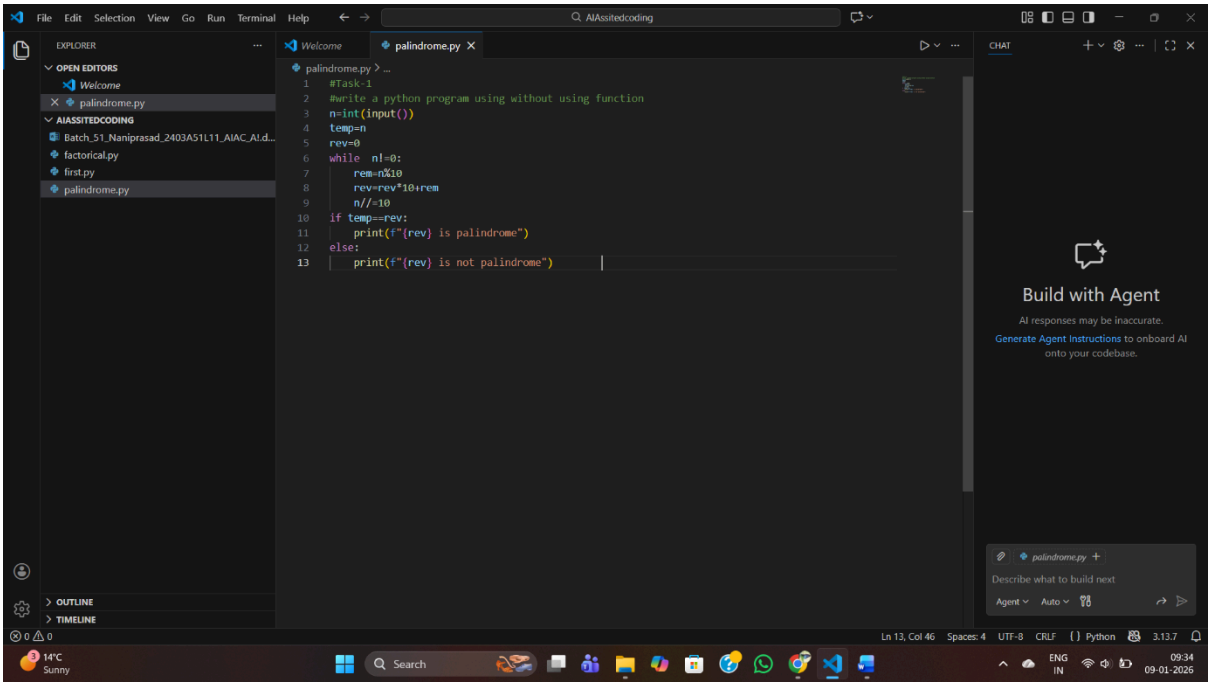
Lab Assignment # 1

Program	**: B. Tech (CSE)**
Specialization	**:**
Course Title	**: AI Assisted coding**
Course Code	**:**
Semester	**: II**
Academic Session	**: 2025-2026**
Name of Student	**: Bandi Vivek**
Enrollment No.	**: 2403A51L45**
Batch No.	**: 52**

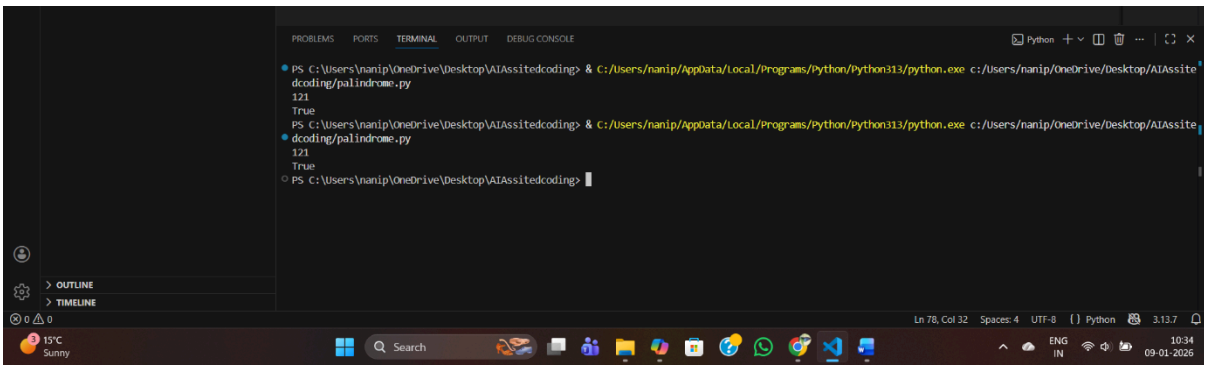
Submission Starts here :

Task 1

Write a python program for palindrome without using function



Output:



Palindrome check steps for the given code

1. Read input:
    - Take an integer from the user and store it in n.
2. Store original number:
    - Copy n into temp so you can compare later after reversing.
3. Initialize reverse:
    - Set rev = 0. This will be built digit by digit into the reversed number.
4. Loop until n becomes 0:
    - Keep extracting the last digit and removing it from n using integer division.
5. Extract last digit:
    - rem = n % 10
    - This gives the rightmost digit of n.
6. Append digit to reversed number:
    - rev = rev * 10 + rem
    - Shifts existing digits in rev left and adds the new last digit.
7. Remove last digit from n:
    - n //= 10
    - Drops the rightmost digit from n to process the next one.

8. **End of loop:**

- When n becomes 0, rev now holds the full reversed number.

9.Compare original with reversed:

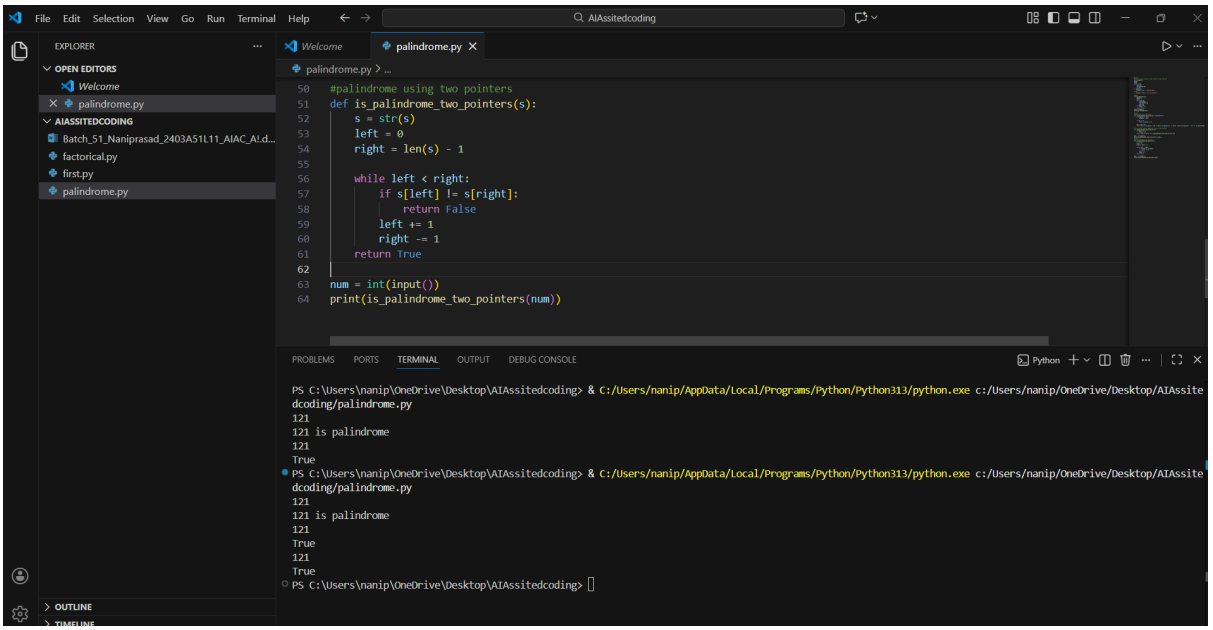
- If temp == rev, the original number reads the same backward → it's a palindrome.
- Otherwise, it's not a palindrome.

10.Output result:

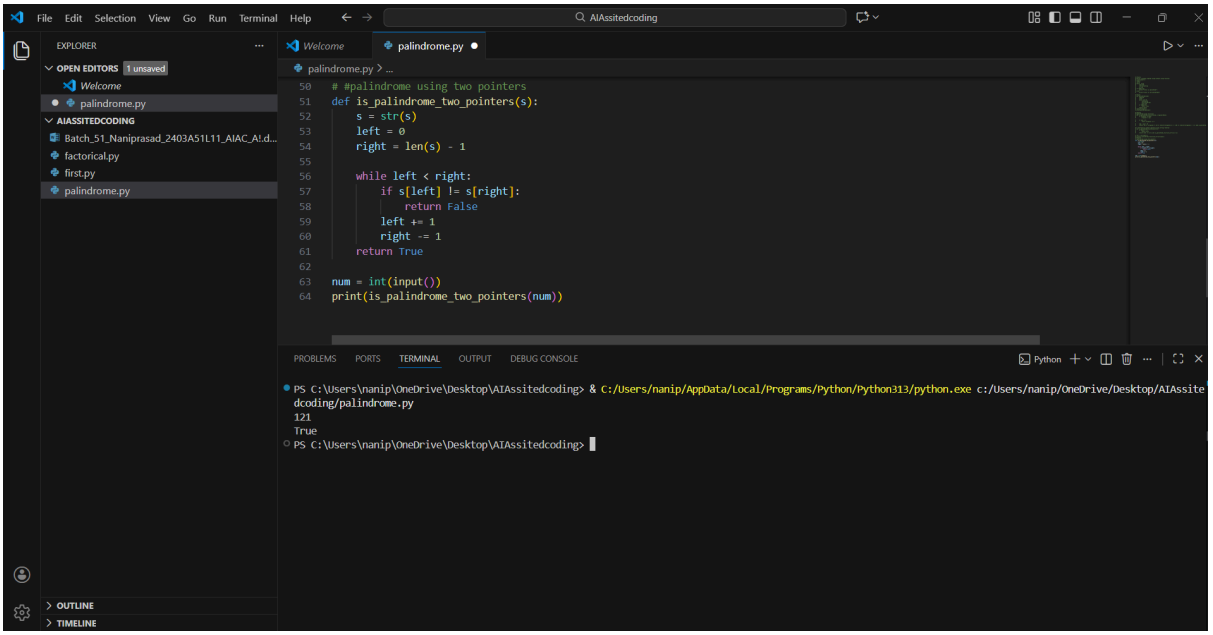
- Print "rev is palindrome" if equal, else "rev is not palindrome".

#Task2:

Write optimal solution for palindrome solution



Output:



Explaination:

Create function

Pass the input with some value

In two pointer if last and first value are equal then

Last-=1

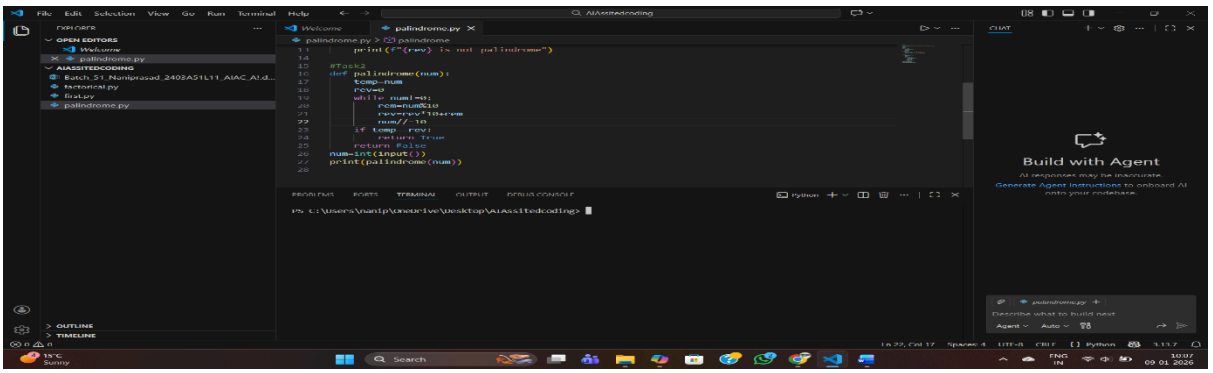
And first+=1

So if all index values are equal checking the last and first return True

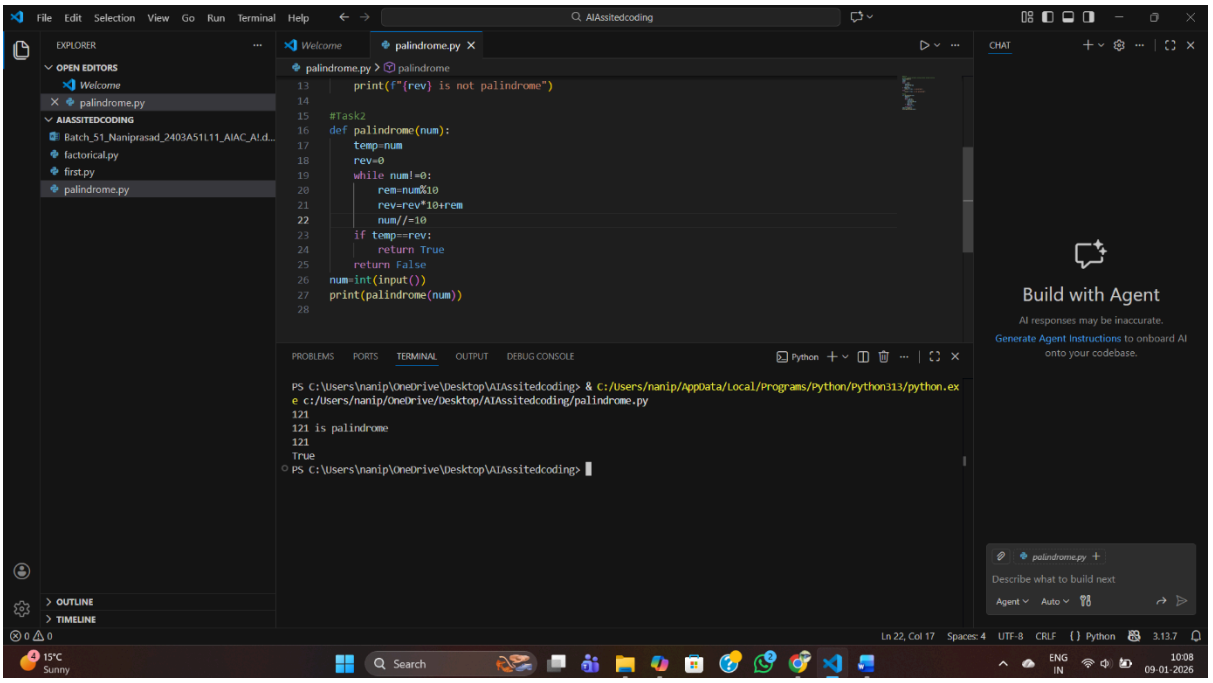
If not return False

#Task 3

Write python program for palindrome using function



Output:



Explaination:

Step-by-Step Explanation

1. Function Definition
    - def palindrome(num):
    - A function named palindrome is created that takes one argument num.
2. Store Original Number
    - temp = num
    - The original number is stored in temp so we can compare later.
3. Initialize Reverse
    - rev = 0
    - This variable will hold the reversed number.
4. Loop to Reverse Number
    - while num != 0: ⟶ keep looping until num becomes 0.
    - Inside the loop:

- rem = num % 10 → extract the last digit.
- rev = rev * 10 + rem → build the reversed number digit by digit.
- num //= 10 → remove the last digit from num.

5. Check Palindrome
    - After the loop ends, rev contains the reversed number.
    - Compare temp (original number) with rev.
    - If they are equal → return True.
    - Otherwise → return False.

🎬 **Main Program**

- num = int(input()) → take user input.
- print(palindrome(num)) → call the function and print the result (True or False).

Example Walkthrough

Suppose input is 121:

- temp = 121, rev = 0
- Loop:
    - Iteration 1: rem = 1, rev = 1, num = 12
    - Iteration 2: rem = 2, rev = 12, num = 1
    - Iteration 3: rem = 1, rev = 121, num = 0
- Loop ends → rev = 121
- Compare: temp == rev → 121 == 121 → True
- Output: True

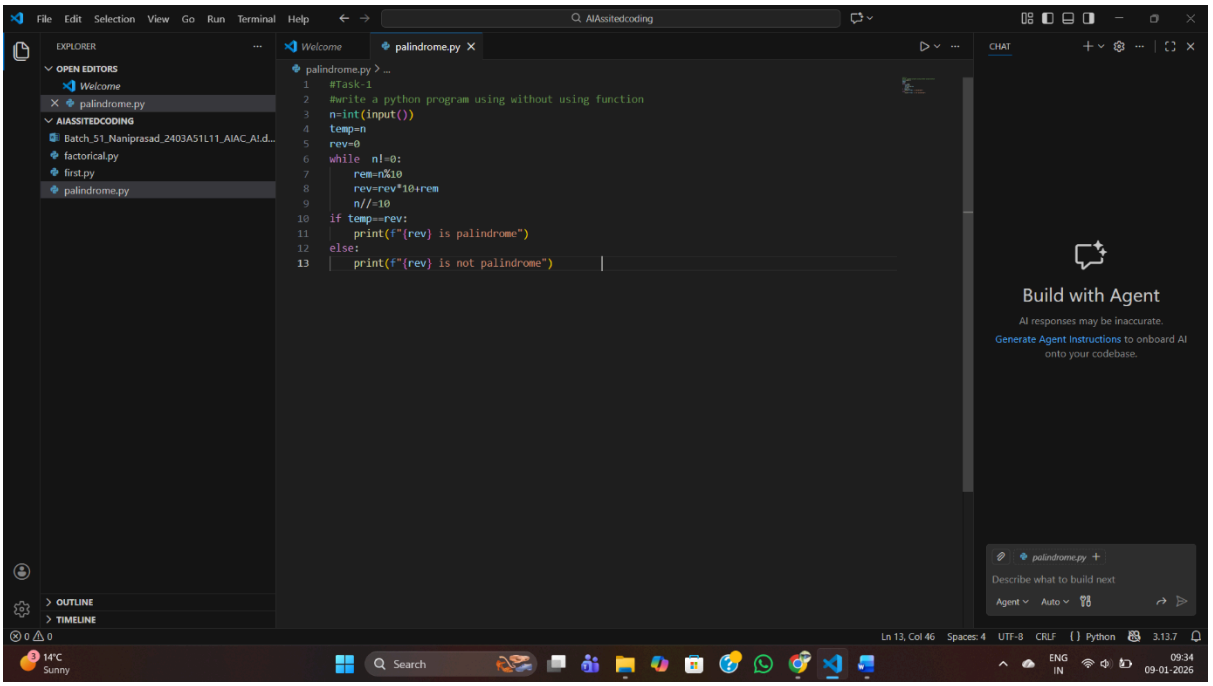
If input is 123:

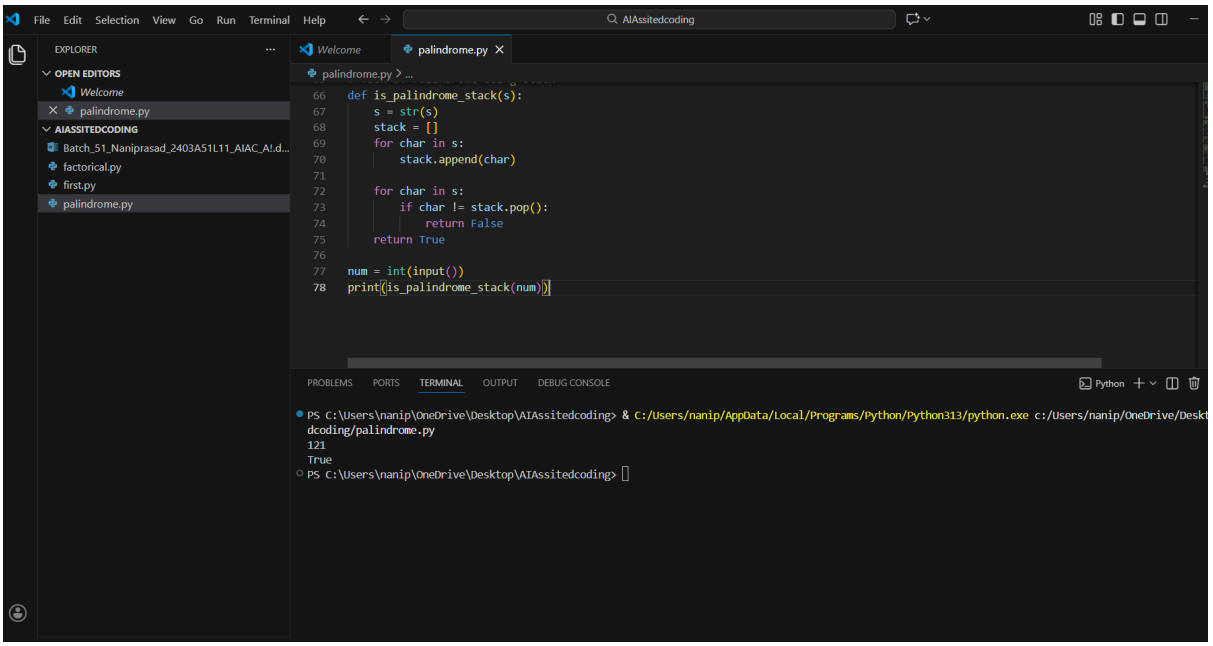
- Reverse becomes 321
- Compare: 123 != 321 → False

- Output: False

#Task4:

Write Python program with using function and without using function





Output:

Step-by-Step

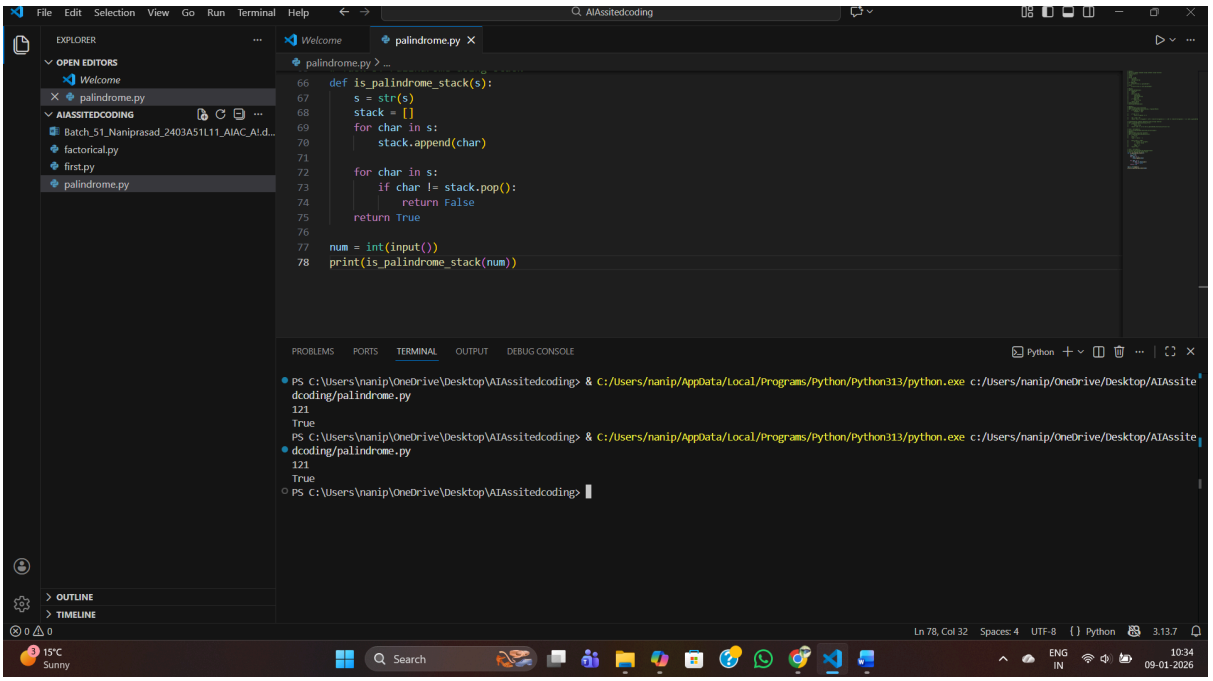
1. **Input**: User enters a number ⟶ stored in n.

2. **Save original**: temp = n keeps the original number safe.
3. **Reverse logic**:
    - Extract last digit using rem = n % 10.
    - Build reversed number: rev = rev * 10 + rem.
    - Remove last digit: n //= 10.
    - Repeat until n becomes 0.
4. **Compare**: If temp == rev, the number is palindrome.
5. **Output**: Prints directly whether palindrome or not.

Step-by-Step

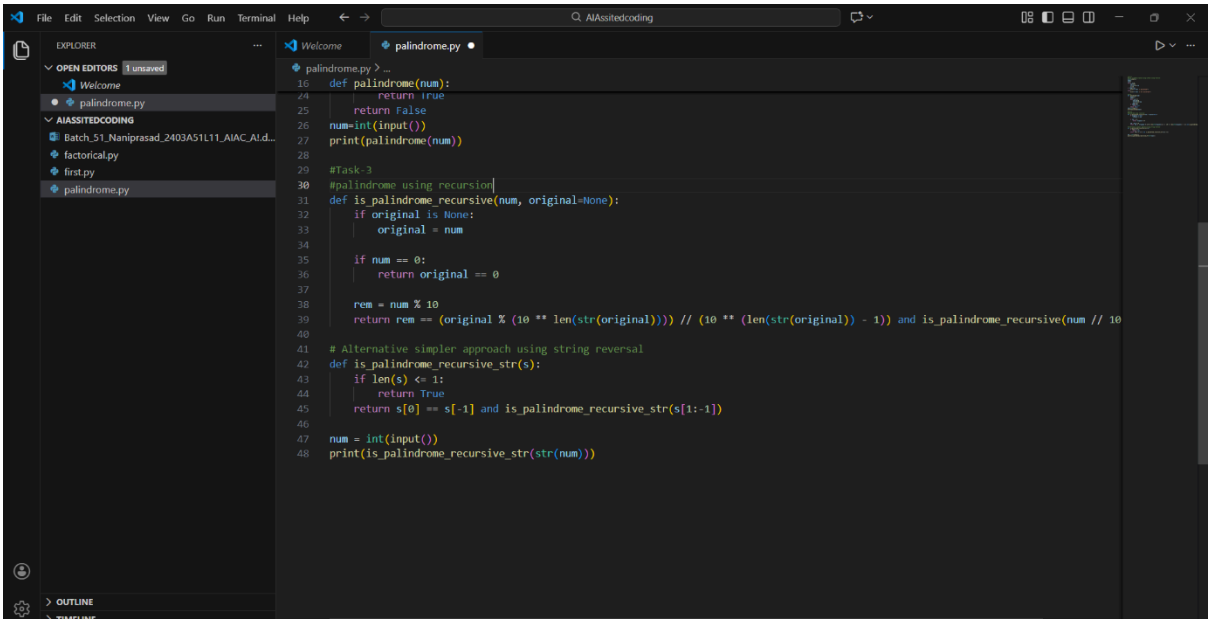
1. **Function defined**: palindrome(num) encapsulates the logic.
2. **Inside function**:
    - Store original number in temp.
    - Reverse the number using same loop logic.
    - Compare temp with rev.
    - Return True if palindrome, else False.
3. **Main program**:

- Take input from user.
- Call the function: palindrome(num).
- Print the returned result (True or False).

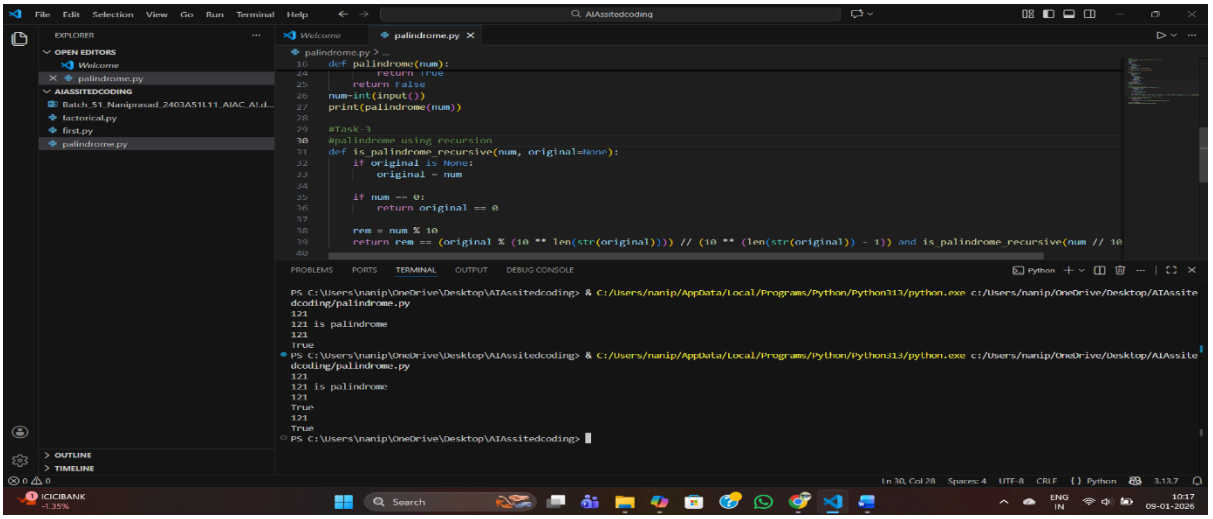


#Task5:

Write python program for palindrome using recursion



Output:



Step-by-Step Explanation

1. Convert number to string
    - str(num) turns the input number into a string.
    - Example: if user enters 121, then s = "121".
2. Recursive function logic
    - is_palindrome_recursive_str(s) checks if the string s is a palindrome.

3 **Execution Example: Input = 121**

- s = "121"
- Step 1: Compare "1" (first) and "1" (last) → equal → recurse on "2".
- Step 2: "2" has length 1 → base case → return True.
- Final result: True.