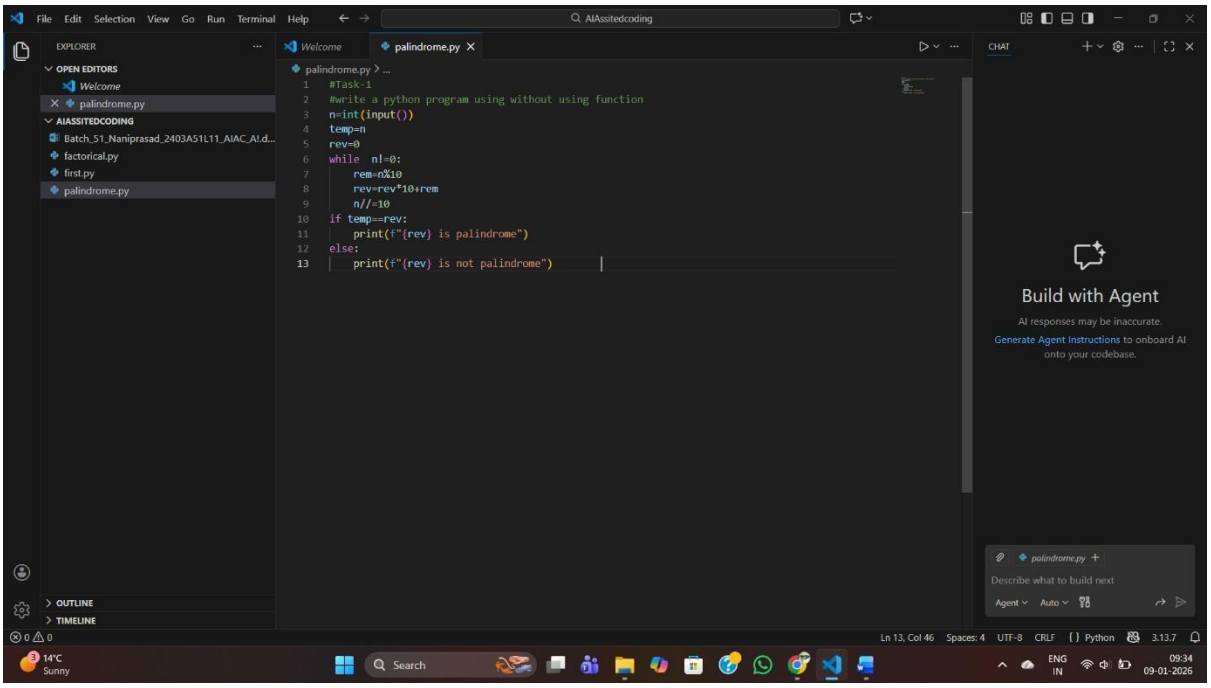
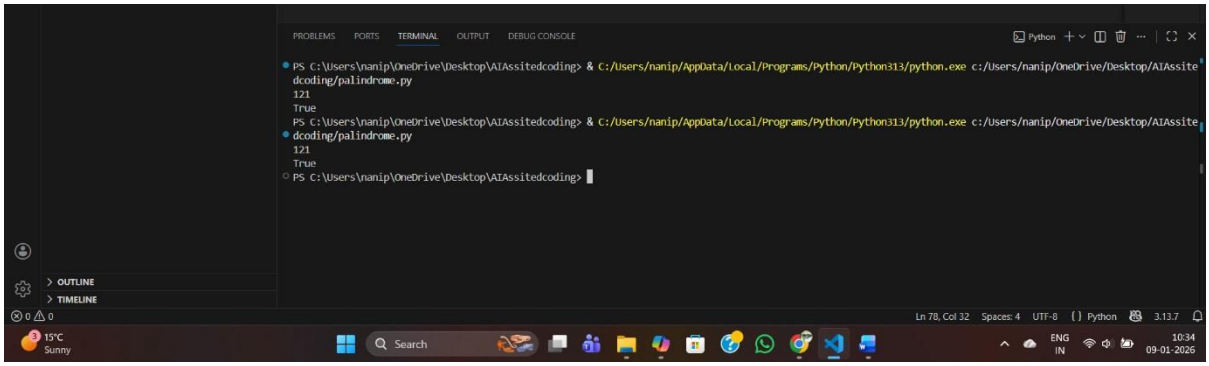
2403A51L37 batch-52

#Task1

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:

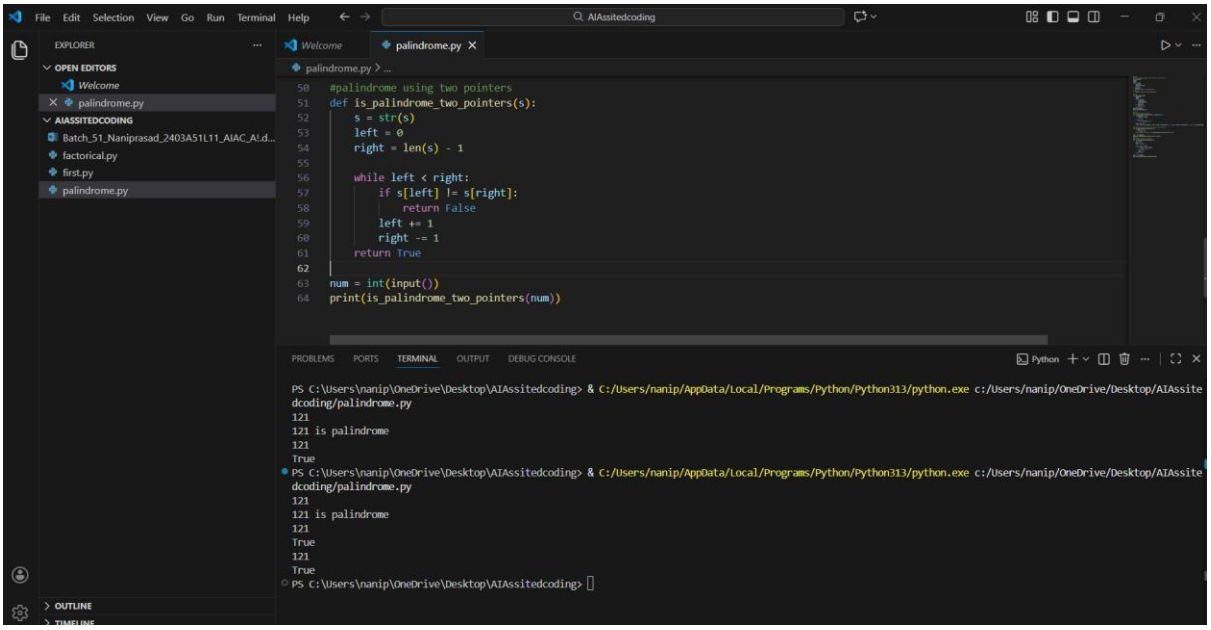
- If temp == rev, the original number reads the same backward → it's a palindrome.
- Otherwise, it's not a palindrome.

10.Output result:

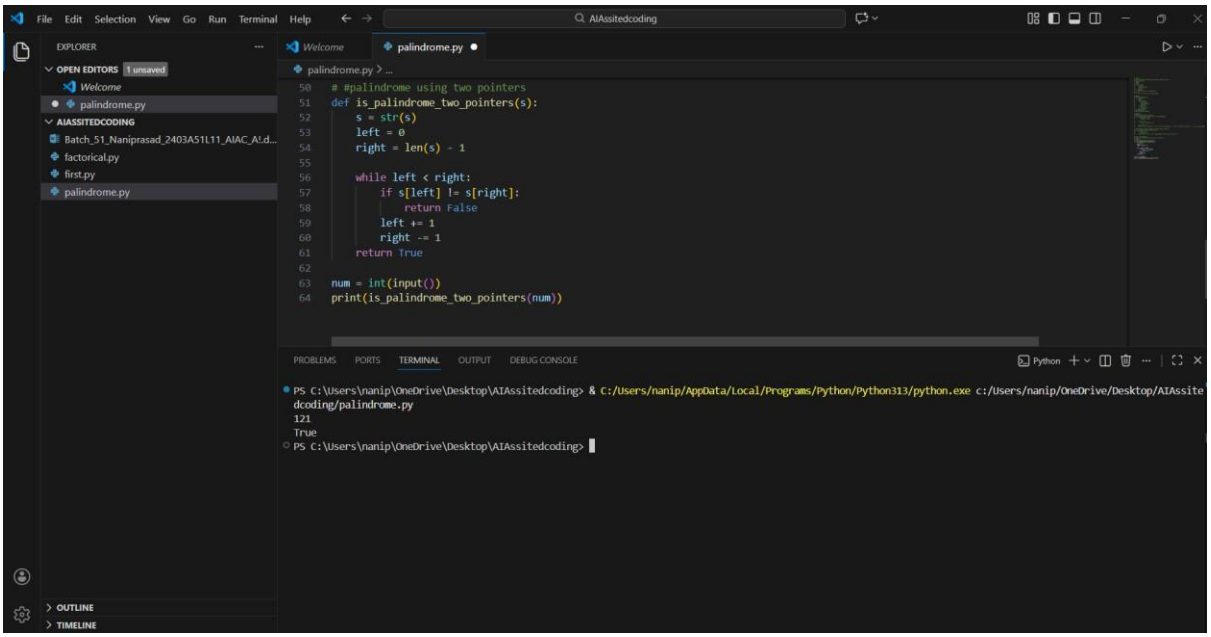
- Print "rev is palindrome" if equal, else "rev is not palindrome".

#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

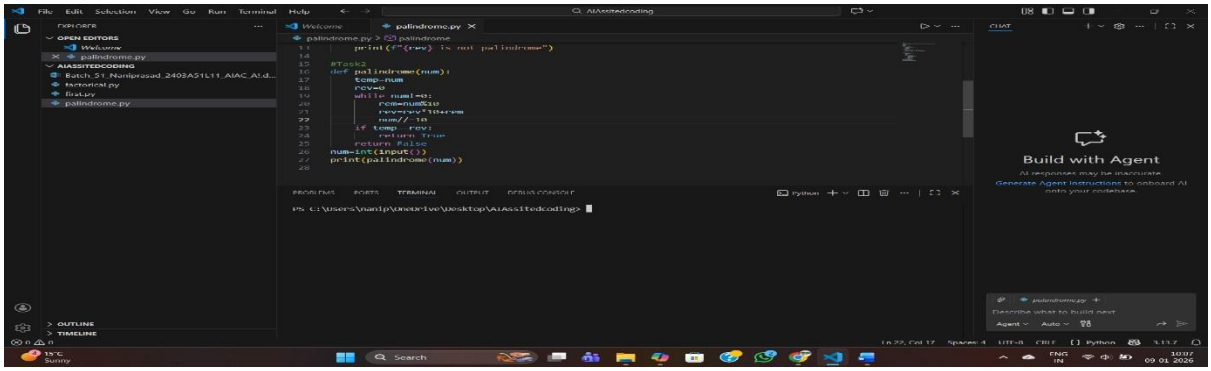
And first+=1

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

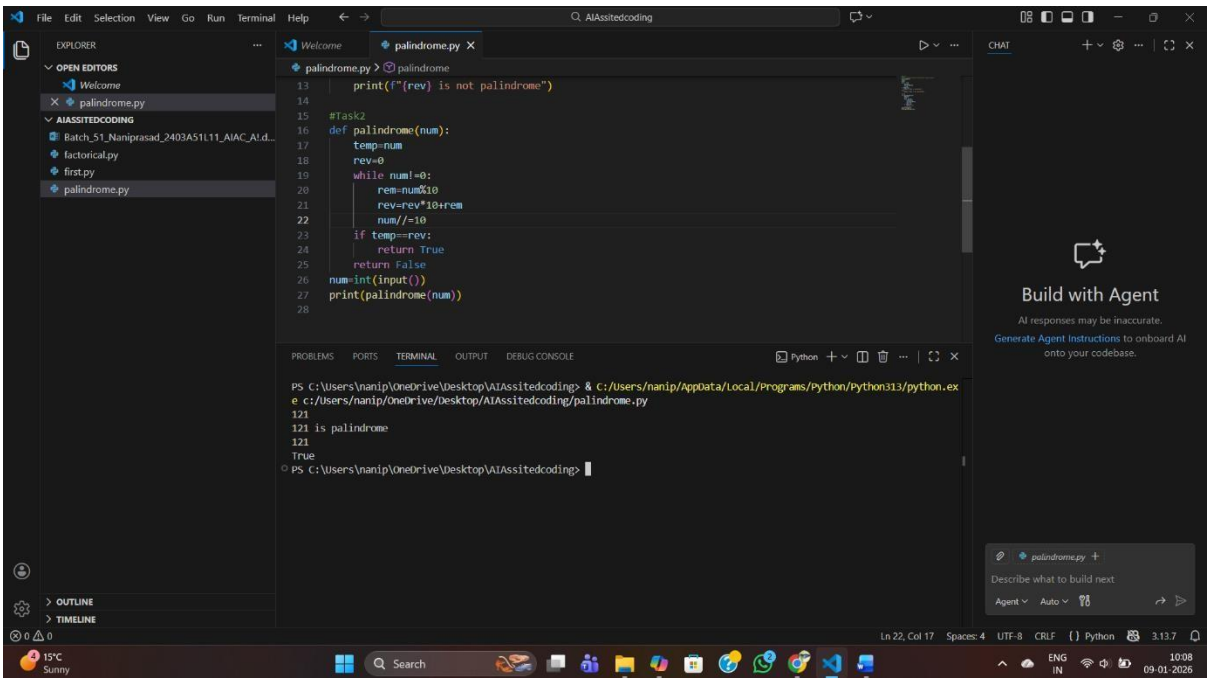
If not return False

#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.

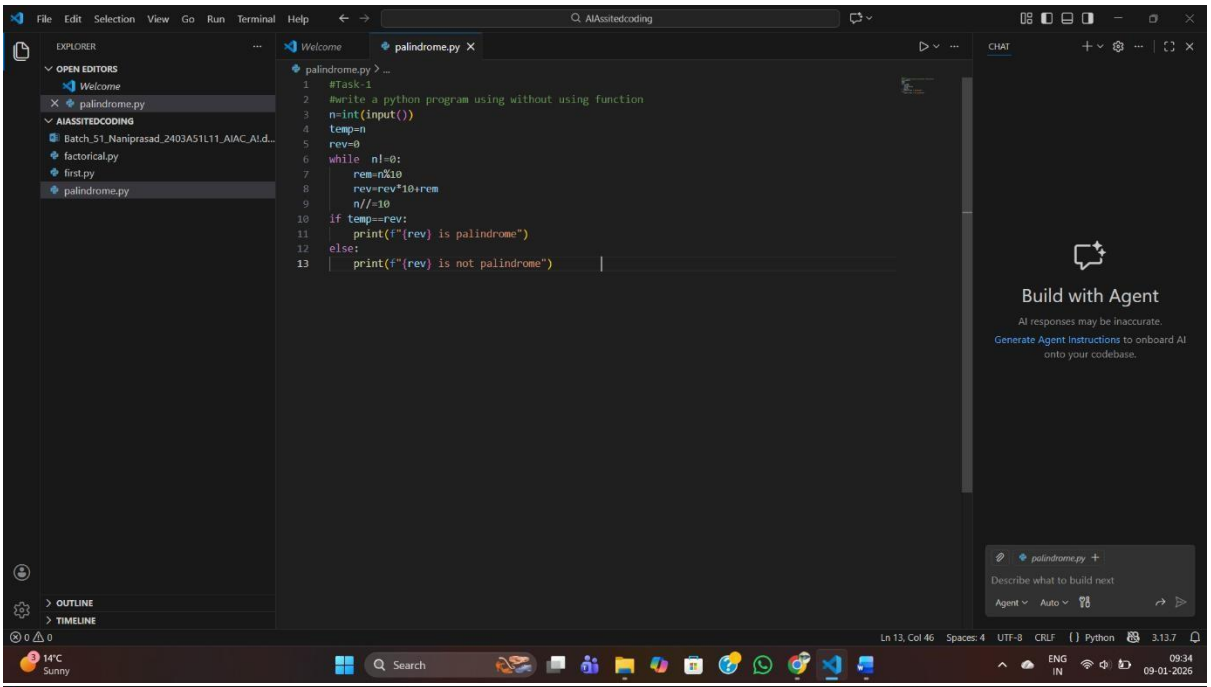
Main Program

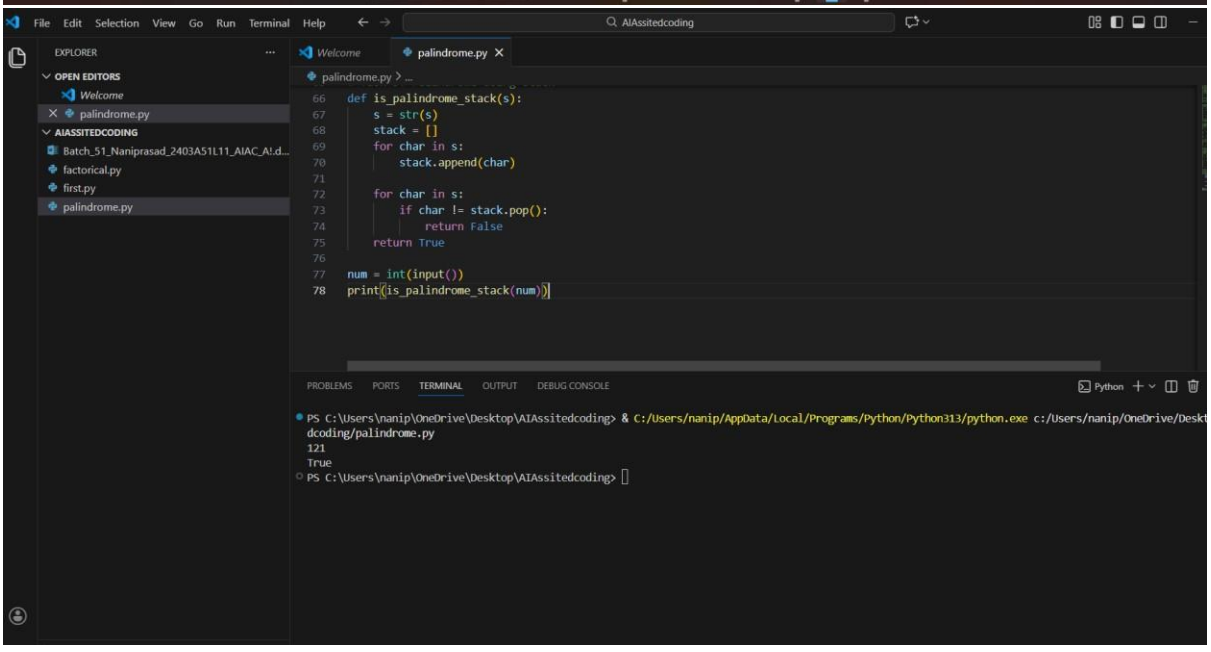
- num = int(input()) → take user input.
- print(palindrome(num)) → call the function and print the result (True or False). Example Walkthrough Suppose input is 121:
- temp = 121, rev = 0
- Loop:
    - Iteration 1: rem = 1, rev = 1, num = 12 ○ Iteration 2: rem = 2, rev = 12, num = 1
    - Iteration 3: 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:

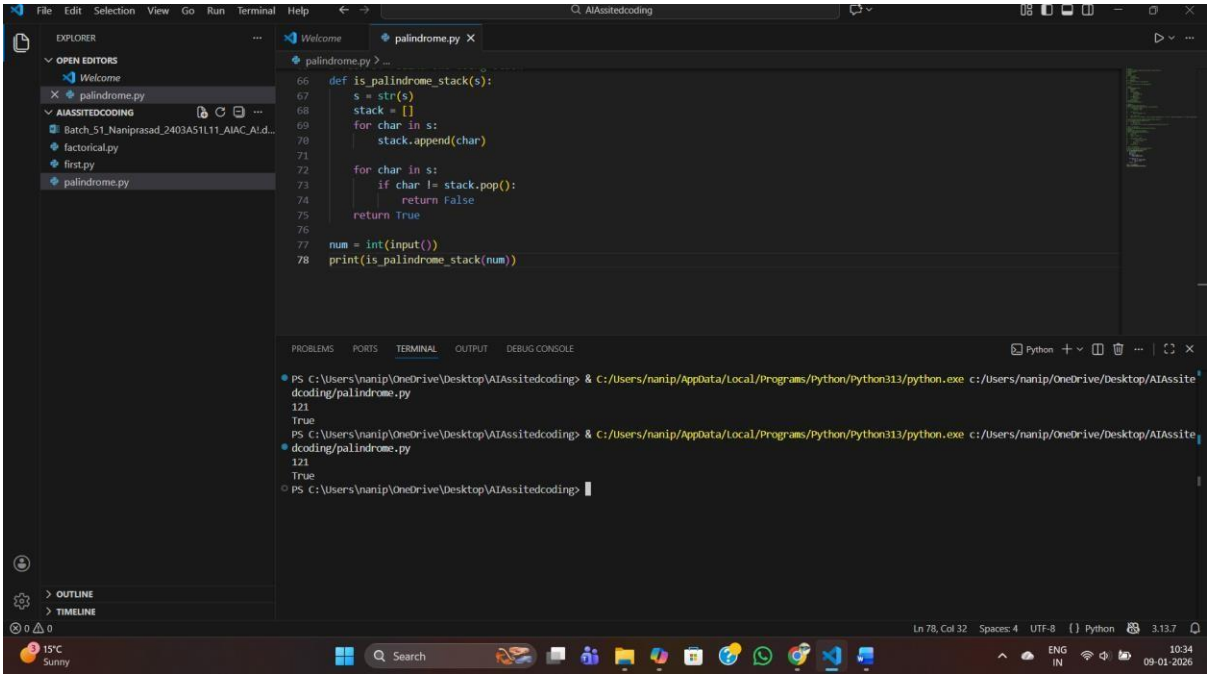
Step-by-Step

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.

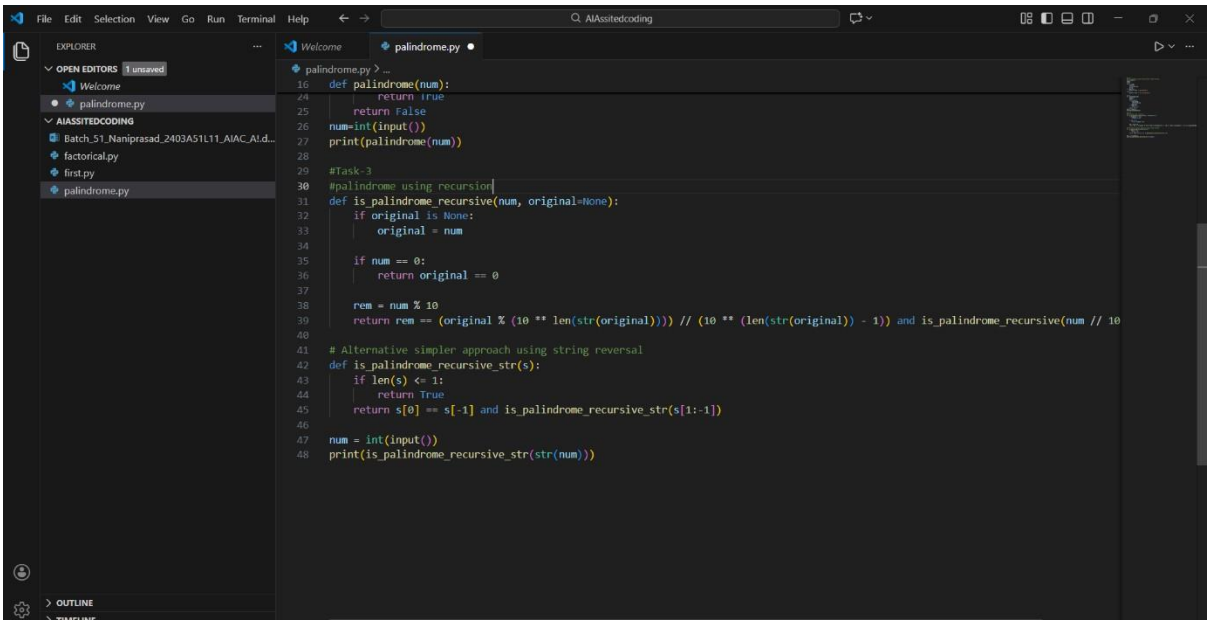
Step-by-Step

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).

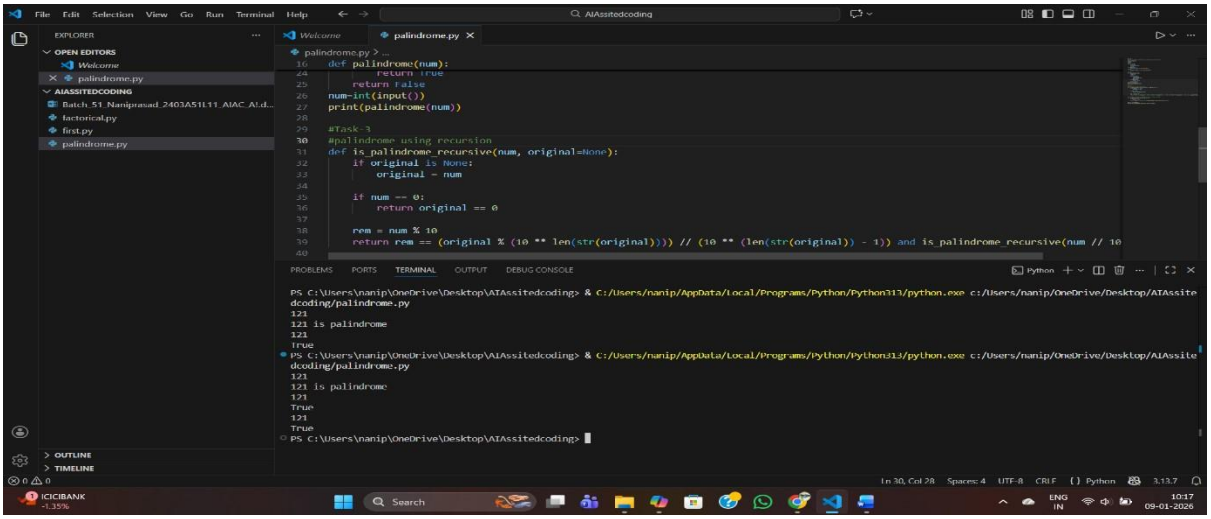


#Task5:

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.