

School of Computer Science and Artificial Intelligence

Lab Assignment # 1.2

Program : B. Tech (CSE)
Specialization :
Course Title : AI Assisted coding
Course Code :
Semester : II
Academic Session : 2025-2026
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Enrollment No. : 2403A51L05
Batch No. : 51
Date : 06-01-2026

#Task1

Write a python program for palindrome without using function

The screenshot shows a code editor interface with a dark theme. The left sidebar displays a file tree with several Python files: Welcome, palindrome.py, AUIASSTEDCODING, Batch_51_Naniprasad_2403A51L11_AIAC_Ald, factorial.py, first.py, and palindrome.py. The main editor window contains the following Python code:

```
#task-1
#write a python program using without using function
n=int(input())
temp=n
rev=0
while n!=0:
    rem=n%10
    rev=rev*10+rem
    n/=10
if temp==rev:
    print("(rev) is palindrome")
else:
    print("(rev) is not palindrome")
```

On the right side of the editor, there is a "Build with Agent" feature with a message: "AI responses may be inaccurate. Generate Agent Instructions to onboard AI onto your codebase." Below the editor, the system taskbar shows various icons and the date/time: 14°C Sunny, 0 0, Python 3.13.2, 09:34, 09-01-2026.

Output:

```

PROBLEMS PORTS TERMINAL OUTPUT DEBUG CONSOLE
PS C:\Users\nanip\OneDrive\Desktop\AIAssistedCoding> & C:/Users/nanip/AppData/Local/Programs/Python/Python33/python.exe c:/users/nanip/OneDrive/Desktop/AIAssistedCoding/palindrome.py
121
True
PS C:\Users\nanip\OneDrive\Desktop\AIAssistedCoding> & C:/Users/nanip/AppData/Local/Programs/Python/Python33/python.exe c:/users/nanip/OneDrive/Desktop/AIAssistedCoding/palindrome.py
121
True
PS C:\Users\nanip\OneDrive\Desktop\AIAssistedCoding>

```

Ln 78, Col 32 Spaces: 4 UTF-8 Python 3.13.7

15°C Sunny

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:
 - $\text{rem} = \text{n} \% 10$
 - This gives the rightmost digit of n.
6. Append digit to reversed number:
 - $\text{rev} = \text{rev} * 10 + \text{rem}$
 - Shifts existing digits in rev left and adds the new last digit.
7. Remove last digit from n:
 - $\text{n} // 10$
 - 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.

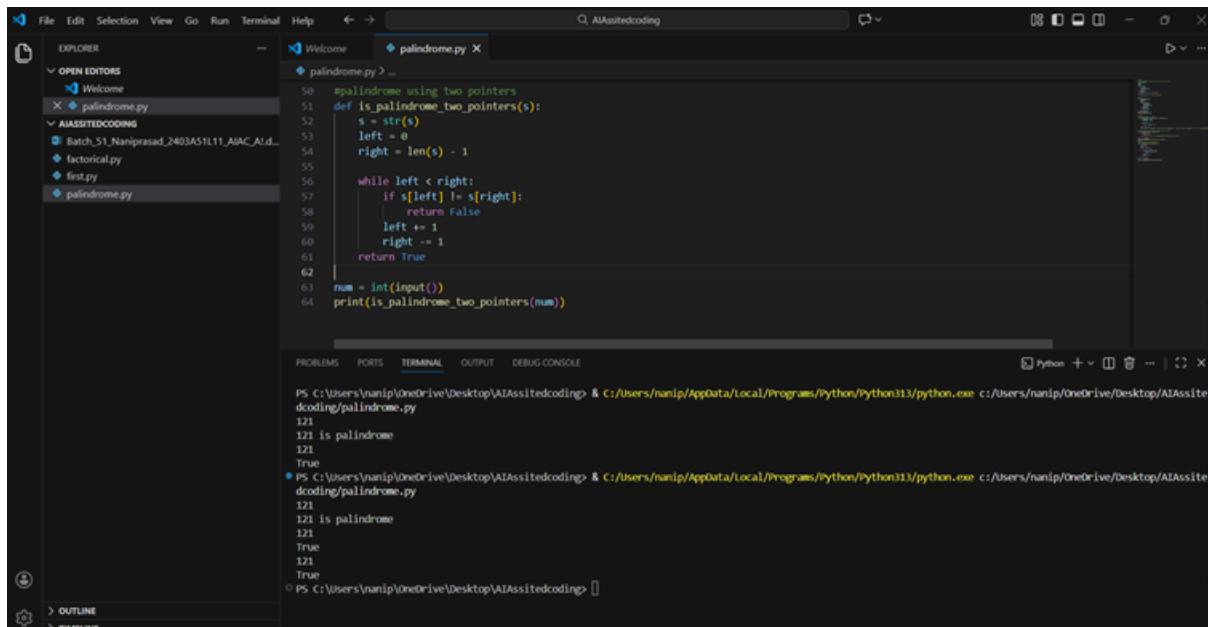
- Otherwise, it's not a palindrome.

10.Output result:

- Print “rev is palindrome” if equal, else “rev is not palindrome”.

#Task2:

Write optimal solution for palindrome solution



```

File Edit Selection View Go Run Terminal Help ← → Q AIAssitedcoding
EXPLORER OPEN EDITORS Welcome palindrome.py
AIASSITEDCODING
Batch_51_Naniprasad_2403AS1L11_AIAC_Ald...
factorial.py
first.py
palindrome.py
palindrome.py > ...
50 #palindrome using two pointers
51 def is_palindrome_two_pointers(s):
52     s = str(s)
53     left = 0
54     right = len(s) - 1
55
56     while left < right:
57         if s[left] != s[right]:
58             return False
59         left += 1
60         right -= 1
61     return True
62
63 num = int(input())
64 print(is_palindrome_two_pointers(num))

```

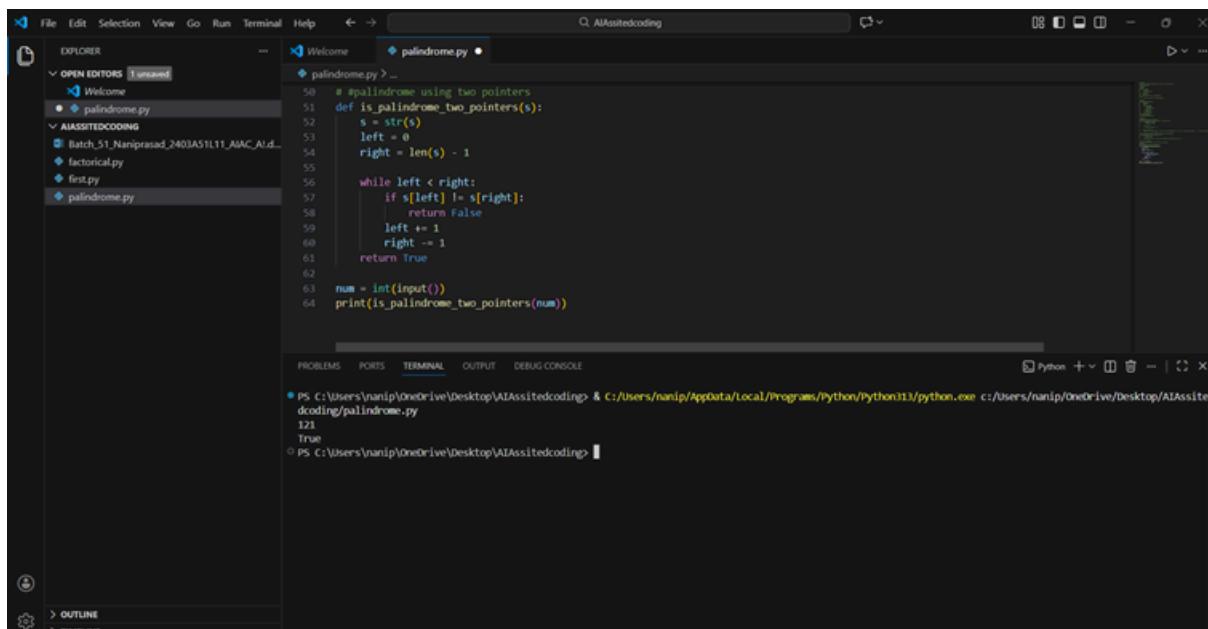
PROBLEMS PORTS TERMINAL OUTPUT DEBUG CONSOLE

PS C:\Users\nanip\OneDrive\Desktop\AIAssitedcoding> & C:/Users/nanip/AppData/Local/Programs/Python/Python313/python.exe c:/Users/nanip/OneDrive/Desktop/AIAssitedcoding/palindrome.py

121
121 is palindrome
121
True
● PS C:\Users\nanip\OneDrive\Desktop\AIAssitedcoding> & C:/Users/nanip/AppData/Local/Programs/Python/Python313/python.exe c:/Users/nanip/OneDrive/Desktop/AIAssitedcoding/palindrome.py

121
121 is palindrome
121
True
121
True
● PS C:\Users\nanip\OneDrive\Desktop\AIAssitedcoding>

Output:



```

File Edit Selection View Go Run Terminal Help ← → Q AIAssitedcoding
EXPLORER OPEN EDITORS 3 unsaved
Welcome palindrome.py
AIASSITEDCODING
Batch_51_Naniprasad_2403AS1L11_AIAC_Ald...
factorial.py
first.py
palindrome.py
palindrome.py > ...
50 #palindrome using two pointers
51 def is_palindrome_two_pointers(s):
52     s = str(s)
53     left = 0
54     right = len(s) - 1
55
56     while left < right:
57         if s[left] != s[right]:
58             return False
59         left += 1
60         right -= 1
61     return True
62
63 num = int(input())
64 print(is_palindrome_two_pointers(num))

```

PROBLEMS PORTS TERMINAL OUTPUT DEBUG CONSOLE

● PS C:\Users\nanip\OneDrive\Desktop\AIAssitedcoding> & C:/Users/nanip/AppData/Local/Programs/Python/Python313/python.exe c:/Users/nanip/OneDrive/Desktop/AIAssitedcoding/palindrome.py

121
True
○ PS C:\Users\nanip\OneDrive\Desktop\AIAssitedcoding>

Explanation:

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

```

File Edit Preferences View Run Tools Terminal Help ← →
Q AIAssistedCoding
File Edit Selection View Go Run Terminal Help ← →
Q Welcome
palindrome.py
1. #Task2
2. def palindrome(num):
3.     temp=num
4.     rev=0
5.     while num!=0:
6.         res=num%10
7.         rev=rev*10+res
8.         num//=10
9.     if temp==rev:
10.        return True
11.    return False
12. num=int(input())
13. print(palindrome(num))

```

Output:

```

File Edit Selection View Go Run Terminal Help ← →
Q AIAssistedCoding
File Edit Selection View Go Run Terminal Help ← →
Q Welcome
palindrome.py
1. #Task2
2. def palindrome(num):
3.     temp=num
4.     rev=0
5.     while num!=0:
6.         res=num%10
7.         rev=rev*10+res
8.         num//=10
9.     if temp==rev:
10.        return True
11.    return False
12. num=int(input())
13. print(palindrome(num))

PS C:\Users\nanip\OneDrive\Desktop\AIAssistedCoding> & c:/users/nanip/appdata/local/programs/python/python311/python.exe
e c:/users/nanip/OneDrive/Desktop/AIAssistedCoding/palindrome.py
121
121 is palindrome
121
True
PS C:\Users\nanip\OneDrive\Desktop\AIAssistedCoding>

```

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

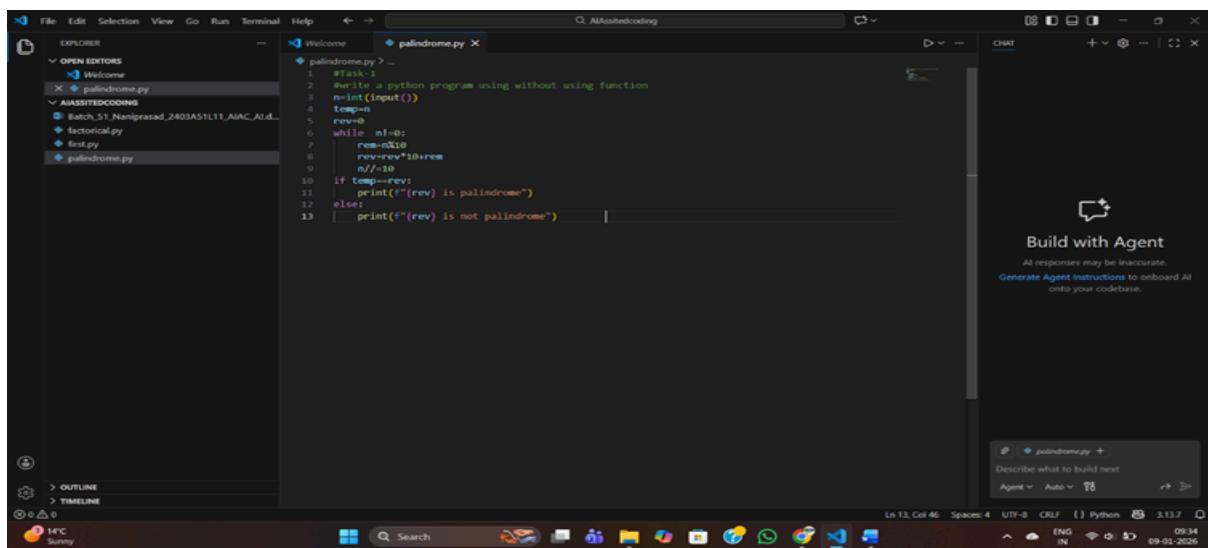
- Loop ends → rev = 121
-
- Compare: temp == rev → 121 == 121 → True
- Output: True

If input is 123:

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

#Task4:

Write Python program with using function and without using function



```

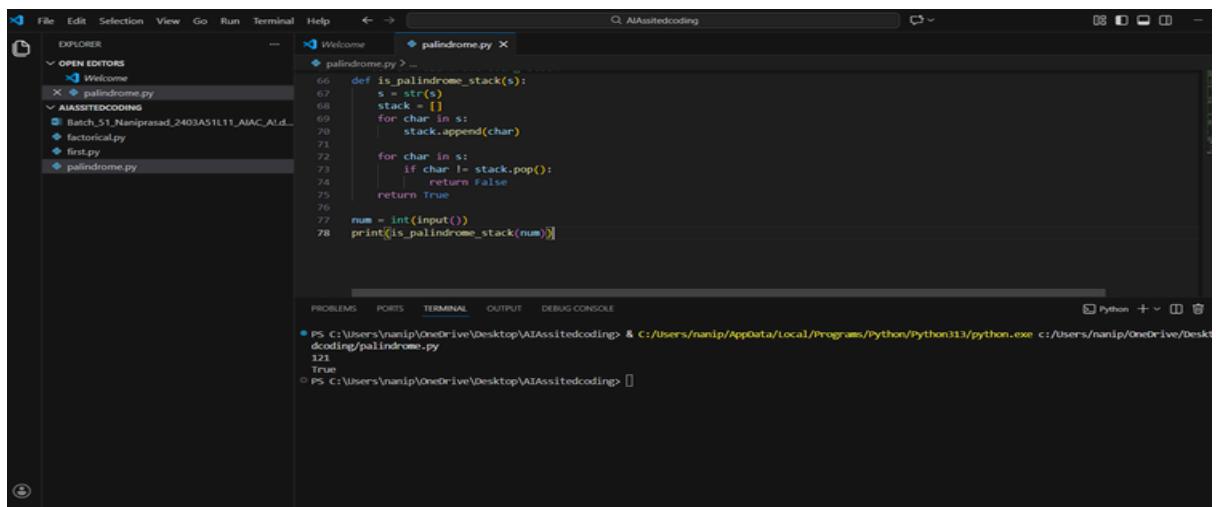
File Edit Selection View Go Run Terminal Help <- > AIAssistedcoding
OPEN EDITORS
  Welcome
  palindrome.py
  AIASSISTEDCODING
    Batch_51_Naniprasad_2403A51L11_AIAC_Atl...
    factorial.py
    first.py
    palindrome.py
EXPLORER
OUTLINE
TIMELINE
14°C Sunny
Build with Agent
All responses may be inaccurate.
Generate Agent Instructions to onboard AI onto your codebase.
Ln 13, Col 46 Spaces: 4 UTF-8 CR/LF Python 3.13.7 09:34 09-01-2025
Describe what to build next
Agent v Auto v 78

```

```

#Task4 -
#write a python program using without using function
n=int(input())
temp=n
rev=0
while n!=0:
    rem=n%10
    rev=rev*10+rem
    n/=10
if temp==rev:
    print("(rev) is palindrome")
else:
    print("(rev) is not palindrome")

```



```

File Edit Selection View Go Run Terminal Help <- > AIAssistedcoding
OPEN EDITORS
  Welcome
  palindrome.py
  AIASSISTEDCODING
    Batch_51_Naniprasad_2403A51L11_AIAC_Atl...
    factorial.py
    first.py
    palindrome.py
EXPLORER
PROBLEMS PORTS TERMINAL OUTPUT DEBUG CONSOLE
PS C:\Users\nanip\OneDrive\Desktop\AIAssistedcoding> & C:/Users/nanip/AppData/Local/Programs/Python/Python313/python.exe c:/Users/nanip/OneDrive/Desktop\coding/palindrome.py
121
True
PS C:\Users\nanip\OneDrive\Desktop\AIAssistedcoding> []

```

```

def is_palindrome_stack(s):
    s = str(s)
    stack = []
    for char in s:
        stack.append(char)

    for char in s:
        if char != stack.pop():
            return False
    return True

num = int(input())
print(is_palindrome_stack(num))

```

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).

The screenshot shows a Visual Studio Code (VS Code) interface. The left sidebar (EXPLORER) lists several files: Welcome, palindrome.py, AIAssistedCoding, Batch_S1_Namiprasad_2403A51L11_AIAC_Ald., factorial.py, first.py, and palindrome.py. The main editor area displays a Python script named palindrome.py:

```
66 def is_palindrome_stack(s):
67     s = str(s)
68     stack = []
69     for char in s:
70         stack.append(char)
71
72     for char in s:
73         if char != stack.pop():
74             return False
75
76     return True
77
78 num = int(input())
79 print(is_palindrome_stack(num))
```

The bottom right corner shows the status bar with "Python" selected, along with other icons and text.

#Task5:

Write python program for palindrome using recursion

The screenshot shows a Visual Studio Code (VS Code) interface. The top menu bar includes File, Edit, Selection, View, Go, Run, Terminal, Help, and a search bar with the text 'Q AIAssistedCoding'. The left sidebar has sections for EXPLORER, OPEN EDITORS (1 unused), and a list of files including 'palindrome.py' (marked with a blue dot), 'Welcome', 'palindrome.py > ...', 'Batch_51_Naniprasad_2403A51L11_AIAC_Ald...', 'factorial.py', 'first.py', and 'palindrome.py' again. The main editor area displays a Python script named 'palindrome.py'. The code defines two functions: a recursive function 'is_palindrome_recursive' and a string reversal based function 'is_palindrome_recursive_str'. It also includes a check function 'is_palindrome' that converts input to an integer and calls the recursive function.

```
16 def palindrome(num):
17     return True
18
19     return False
20
21 num=int(input())
22 print(palindrome(num))
23
24 #Task-3
25 #palindrome using recursion|
26 def is_palindrome_recursive(num, original=None):
27     if original is None:
28         original = num
29
30     if num == 0:
31         return original == 0
32
33     rem = num % 10
34     return rem == (original % (10 ** len(str(original)))) // (10 ** (len(str(original)) - 1)) and is_palindrome_recursive(num // 10,
35
36     # Alternative simpler approach using string reversal
37     def is_palindrome_recursive_str(s):
38         if len(s) <= 1:
39             return True
40
41         return s[0] == s[-1] and is_palindrome_recursive_str(s[1:-1])
42
43 num = int(input())
44 print(is_palindrome_recursive(str(num)))
```

Output:

The screenshot shows a Visual Studio Code (VS Code) interface. The top menu bar includes File, Edit, Selection, View, Go, Run, Terminal, Help, and a set of icons for file operations. The left sidebar has sections for EXPLORER, OPEN EDITORS, and ASSISTED CODING, with 'palindrome.py' listed under OPEN EDITORS. The main editor area contains the following Python code:

```
palindrome.py >
14     def palindrome(num):
15         return True
16     return False
17     num=int(input())
18     print(palindrome(num))
19
20 #Task 3
21 #Palindrome using recursion
22 def is_palindrome_recursive(num, original=None):
23     if original is None:
24         original = num
25
26     if num == 0:
27         return original == 0
28
29     rem = num % 10
30     return rem == (original % (10 ** len(str(original)))) // (10 ** (len(str(original)) - 1)) and is_palindrome_recursive(num // 10, original)
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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.