Palindromic String Analyzer

Subject Name: C Programming

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Introduction

String manipulation is an important concept in C programming.

A palindrome is a string that reads the same forward and backward.

This project analyze strings by:

- Reversing them
- Checking whether they are palindromes

Problem Statement

To design a menu-driven C program that:

Accepts a string from the user

Reverses the string

Checks whether the string is a palindrome

Objectives

To understand string handling in C

To implement user-defined functions

To apply conditional statements and loops

To create a menu-driven program

Tools & Technologies Used

Programming Language: **C**

Compiler: **GCC Compiler**

Header Files Used:

stdio.h

string.h

Functions Used

reverseString()

- Reverses the input string

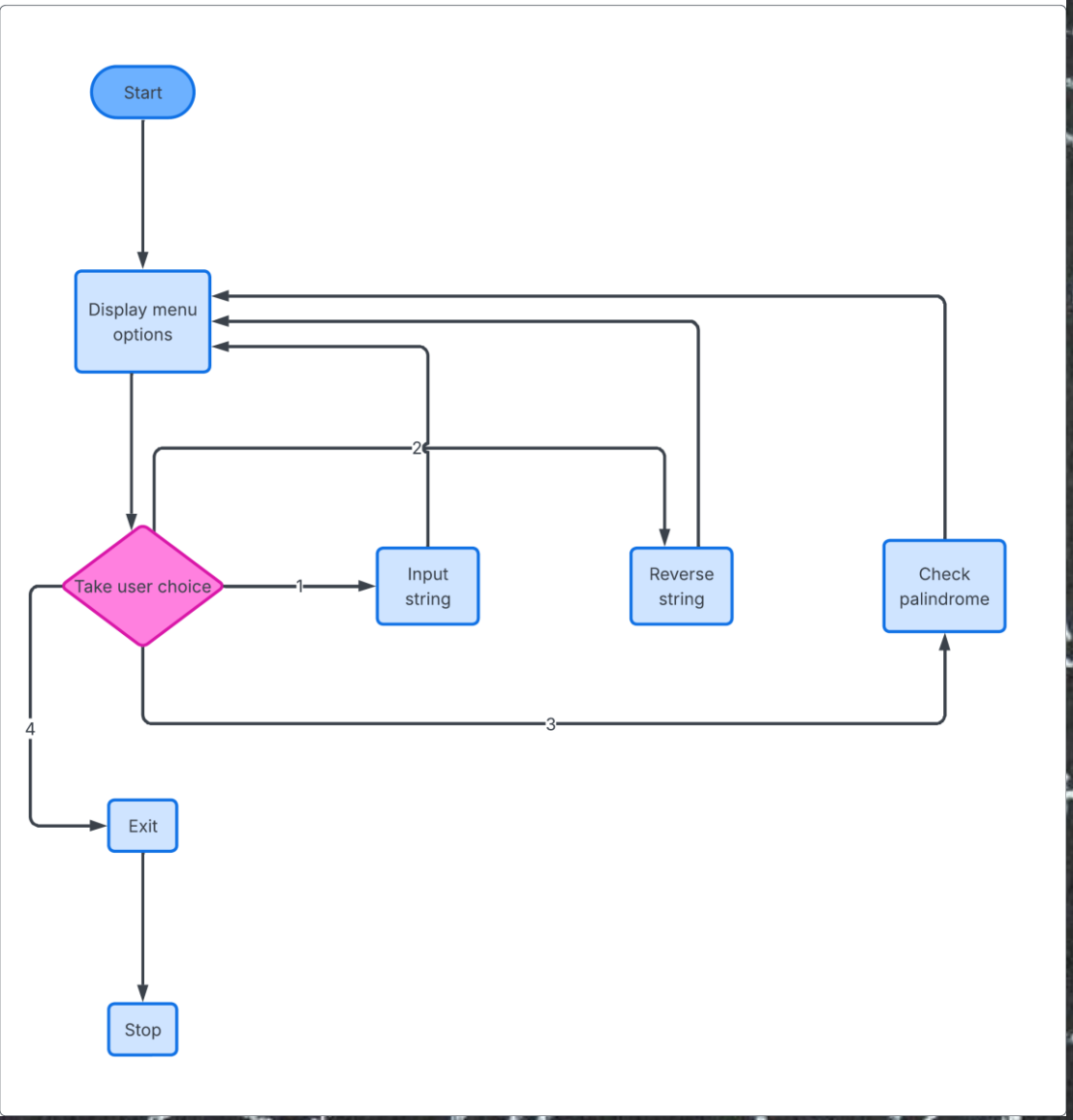
isPalindrome()

- Checks if the string is palindrome

main()

- Controls menu and program flow

User Interaction Flowchart



Algorithm

1. Start
2. Display menu options
3. Take user choice
4. If choice = 1 → Input string
5. If choice = 2 → Reverse string
6. If choice = 3 → Check palindrome
7. If choice = 4 → Exit
8. Stop

Program Working (Flow Explanation)

- User selects an option from the menu
- String is stored in an array
- Reverse function processes the string
- Palindrome function compares characters
- Result is displayed on screen

Source Code

project.c

project.c > reverseString(char [], char [])

```
36                  printf("Enter the string: ");
37                  gets(str);
38                  break;
39              case 2:
40                  reverseString(str, rev);
41                  printf("Reversed String: %s\n", rev
42                  break;
43              case 3:
44                  if (isPalindrome(str))
45                      printf("The string is a PALINDR
46                  else
47                      printf("The string is NOT a pal
48                  break;
49              case 4:
50                  printf("Exiting program...\n");
51                  break;
52              default:
53                  printf("Invalid choice! Try again.\
54          }
55      } while (choice != 4);
```

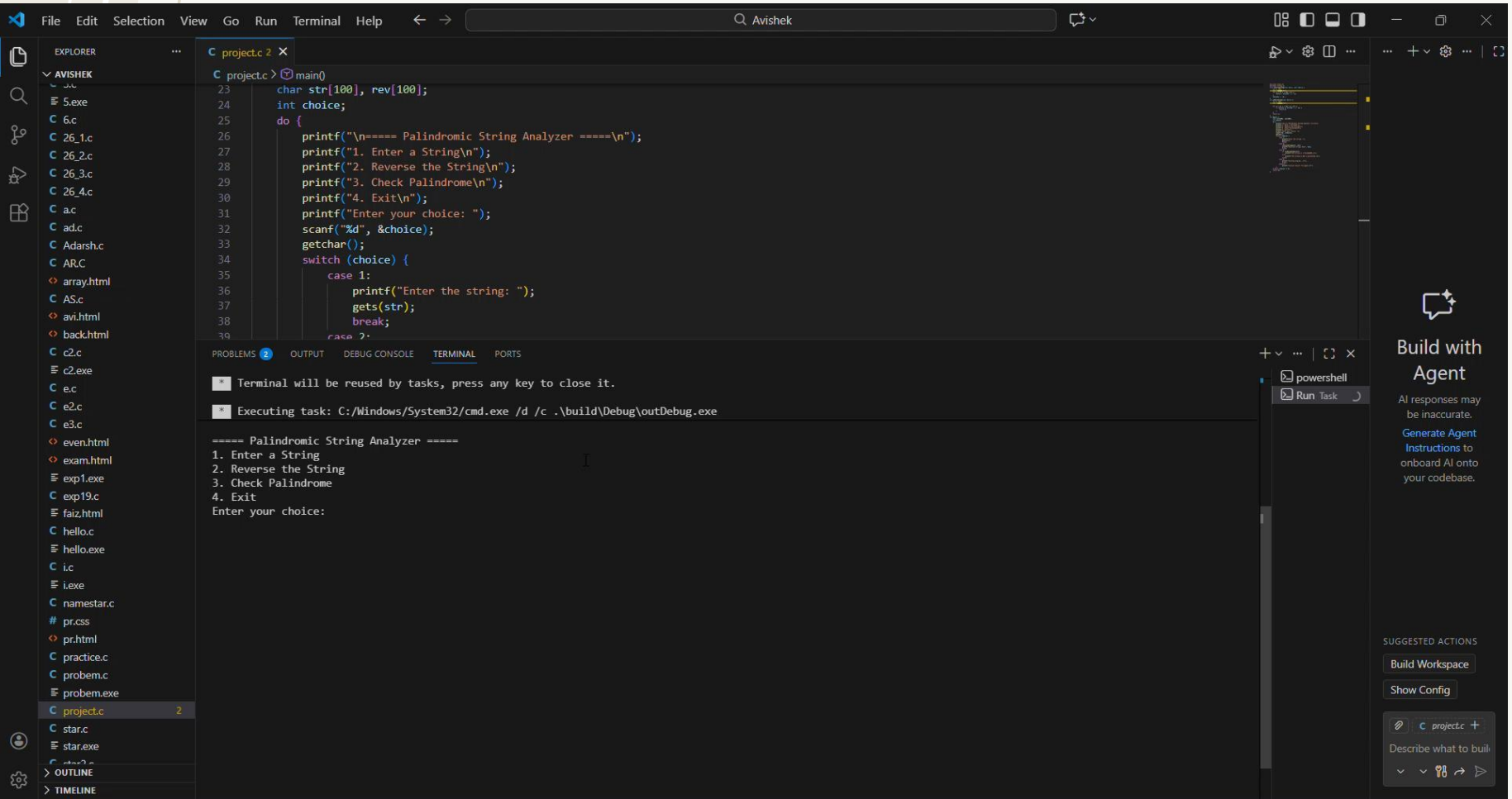
project.c

project.c > reverseString(char [], char [])

```
1   #include <stdio.h>
2   #include <string.h>
3   void reverseString(char str[], char rev[]) {
4       int i, len;
5       len = strlen(str);
6       for (i = 0; i < len; i++) {
7           rev[i] = str[len - i - 1];
8       }
9       rev[len] = '\0';
10  }
11  int isPalindrome(char str[]) {
12      int i, len;
13      len = strlen(str);
14
15      for (i = 0; i < len / 2; i++) {
16          if (str[i] != str[len - i - 1]) {
17              return 0;
18          }
19      }
20      return 1;
21  }
22  int main() {
23      char str[100], rev[100];
24      int choice;
25      do {
26          printf("\n===== Palindromic String Analyzer =====\n");
27          printf("1. Enter a String\n");
28          printf("2. Reverse the String\n");
29          printf("3. Check Palindrome\n");
30          printf("4. Exit\n");
31          printf("Enter your choice: ");
```

Sample Output

Menu display → String input → Reversed string output → Palindrome check result



Applications

TEXT PROCESSING SYSTEMS

DATA VALIDATION

LEARNING STRING CONCEPTS

INTERVIEW AND EXAM PRACTICE

BASIC COMPILER PROJECTS

Advantages

SIMPLE AND USER-FRIENDLY

MODULAR USING FUNCTIONS

IMPROVES UNDERSTANDING OF STRINGS

MENU-DRIVEN APPROACH

Limitations

Uses gets() (not secure)

Limited string size

Case-sensitive comparison

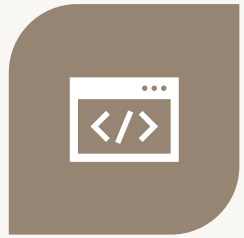
Special characters not handled

Future Scope

REPLACE GETS() WITH FGETS()

CASE-INSENSITIVE PALINDROME CHECK

SUPPORT FOR SENTENCES



GUI-BASED VERSION

Conclusion

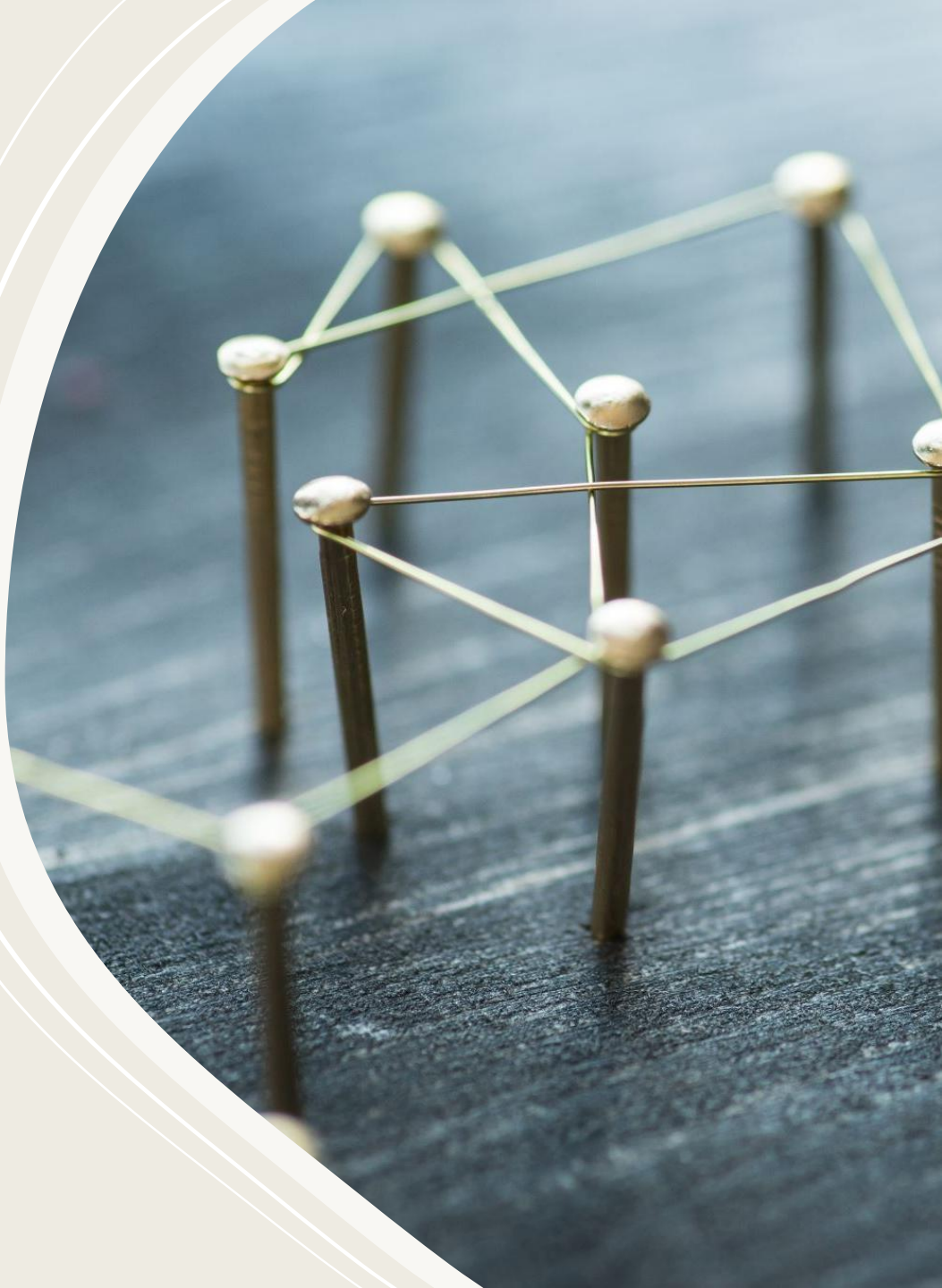
The project successfully demonstrates:

String manipulation

Function usage

Logical problem solving

It enhances understanding of core C concepts



Thank You

THANK YOU

ANY QUESTIONS?