TCP Client-Server Program to Check if a Given String is a Palindrome

A Palindrome is a word, phrase, or sequence that reads the same backward as forward, e.g., "madam" or "nurses run".

TCP Client-Server Program

Client and server configuration in which a client connects transmits a string to the server, and the server displays the original string and sends a confirmation to the client through socket connection whether the string is a palindrome or not.

Input − WOW

Output − Palindrome

Input − soap

Output − Not Palindrome

How Does It Work?

- First, establish a client-server connection.

- After the connection is established, the client utilizes the **send** system function to deliver the user input string to the server.

- The server will wait for a string supplied by the client on the client-side.

- The **reading system call** is used by the server to read the string.

- After that, the server determines whether or not the string is a palindrome and returns the confirmation to the client.

Compiling

- Run the server application as a GCC server first.

```
server./server c −o
```

- Run the GCC client program on a different terminal.

```
client./client c -o
```

- The client's string is being awaited by the server software.

- Client-side, enter the string.

- The original string will be printed by the server software.

- The result will be printed by the client software.

TCP Server

```c
#include <arpa/inet.h>
#include <netinet/in.h>
#include <stdio.h>
#include <string.h>
#include <sys/socket.h>
#include <sys/stat.h>
#include <sys/types.h>
main(){
    struct sockaddr_in client, server;
    int s1, n, sock, g, j, left, right, flag;
    char b11[20], b2[10], b3[10], b4[10];

    s1 = socket(AF_INET, SOCK_STREAM, 0);
    server.sin_family = AF_INET;
    server.sin_port = 20000;
    server.sin_addr.s_addr = inet_addr("127.0.0.1");
    bind(s1, (struct sockaddr*)&server, sizeof server);
    listen(s1, 1);
    n = sizeof client;
    sock = accept(s1, (struct sockaddr*)&client, &n);
    for (;;) {
        recv(sock, b11, sizeof(b1), 0);

        printf("The string received is:%s", b11);
        if (strlen(b11) == 0)
            flag = 1;
        else {
            left = 0;
            right = strlen(b11) - 1;
            flag = 1;
            while (left < right && flag) {
```

Client

```c
#include <arpa/inet.h>
#include <netinet/in.h>
#include <stdio.h>
#include <string.h>
#include <sys/socket.h>
#include <sys/stat.h>
#include <sys/types.h>
```

```c
main(){
    struct sockaddr_in client;
    int s, flag;
    char buffer[20];
    s = socket(AF_NET, SOCK_STREAM, 0);
    client.sin_family = AF_NET;
    client.sin_port = 20000;
    client.sin_addr.s_addr = inet_addr("127.0.0.1");
    connect(s, (struct sockaddr*)&client, sizeof client);
    for (;;) {
        printf("Enter a string to check palindrome: ");
        scanf("%s", buffer);

        printf("Client: %s", buffer);
        send(s, buffer, sizeof(buffer), 0);
        recv(s, &flag, sizeof(int), 0);

        if (flag == 1) {
            printf("Server: The string is Palindrome.");
            break;
        }
        else {
            printf("Server: The string isn't a palindrome.");
```