CODE FOR CILENT

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <arpa/inet.h>
#include <sys/socket.h>
#include <pthread.h>
#include <time.h>

#define PORT 5555
#define BUFFER_SIZE 1024
#define TIMEOUT_SECONDS 10

char shared_resource[BUFFER_SIZE];
pthread_mutex_t lock = PTHREAD_MUTEX_INITIALIZER;

void *handle_client(void *arg) {
    int client_socket = *((int *)arg);
    char buffer[BUFFER_SIZE];
    time_t start_time, current_time;

    // Get the start time
    time(&start_time);
```

```
    while (1) {
        // Check if the time limit has been reached
time(&current_time);
        if (difftime(current_time, start_time) > TIMEOUT_SECONDS) {
            printf("Timeout reached. Closing connection.\n");
            break;
        }

        int bytes_received = recv(client_socket, buffer, BUFFER_SIZE, 0);
        if (bytes_received <= 0) {
            break;
        }
        buffer[bytes_received] = '\0';

        pthread_mutex_lock(&lock);
        strcpy(shared_resource, buffer);
        printf("Received message from client: %s\n", buffer);
        printf("Shared resource: %s\n", shared_resource);
        pthread_mutex_unlock(&lock);

        send(client_socket, buffer, strlen(buffer), 0);
    }
```

```
    close(client_socket);
    pthread_exit(NULL);
}

int main() {
    int server_socket, client_socket;
int server_socket, client_socket;
    struct sockaddr_in server_addr, client_addr;
    socklen_t client_addr_len = sizeof(client_addr);

    // Create socket
    server_socket = socket(AF_INET, SOCK_STREAM, 0);
    if (server_socket == -1) {
        perror("Socket creation failed");
        exit(EXIT_FAILURE);
    }

    // Bind socket
    server_addr.sin_family = AF_INET;
    server_addr.sin_addr.s_addr = htonl(INADDR_ANY);
    server_addr.sin_port = htons(PORT);
    if (bind(server_socket, (struct sockaddr *)&server_addr,
sizeof(server_addr)) == -1) {
        perror("Binding failed");
```

```
        exit(EXIT_FAILURE);
    }

    // Listen for connections
    if (listen(server_socket, 5) == -1) {
        perror("Listening failed");
        exit(EXIT_FAILURE);
    }
    printf("Server listening on port %d\n", PORT);
while (1) {
        // Accept client connection
        client_socket = accept(server_socket, (struct sockaddr
*)&client_addr, &client_addr_len);
        if (client_socket == -1) {
            perror("Acceptance failed");
            exit(EXIT_FAILURE);
        }
        printf("Connection accepted from %s:%d\n",
inet_ntoa(client_addr.sin_addr), ntohs(client_addr.sin_port));

        // Create a new thread to handle client
        pthread_t client_thread;
        if (pthread_create(&client_thread, NULL, handle_client,
&client_socket) != 0) {
            perror("Thread creation failed");
```

```
            exit(EXIT_FAILURE);
        }
    }

    close(server_socket);
    return 0;
}
```

CODE FOR SERVER

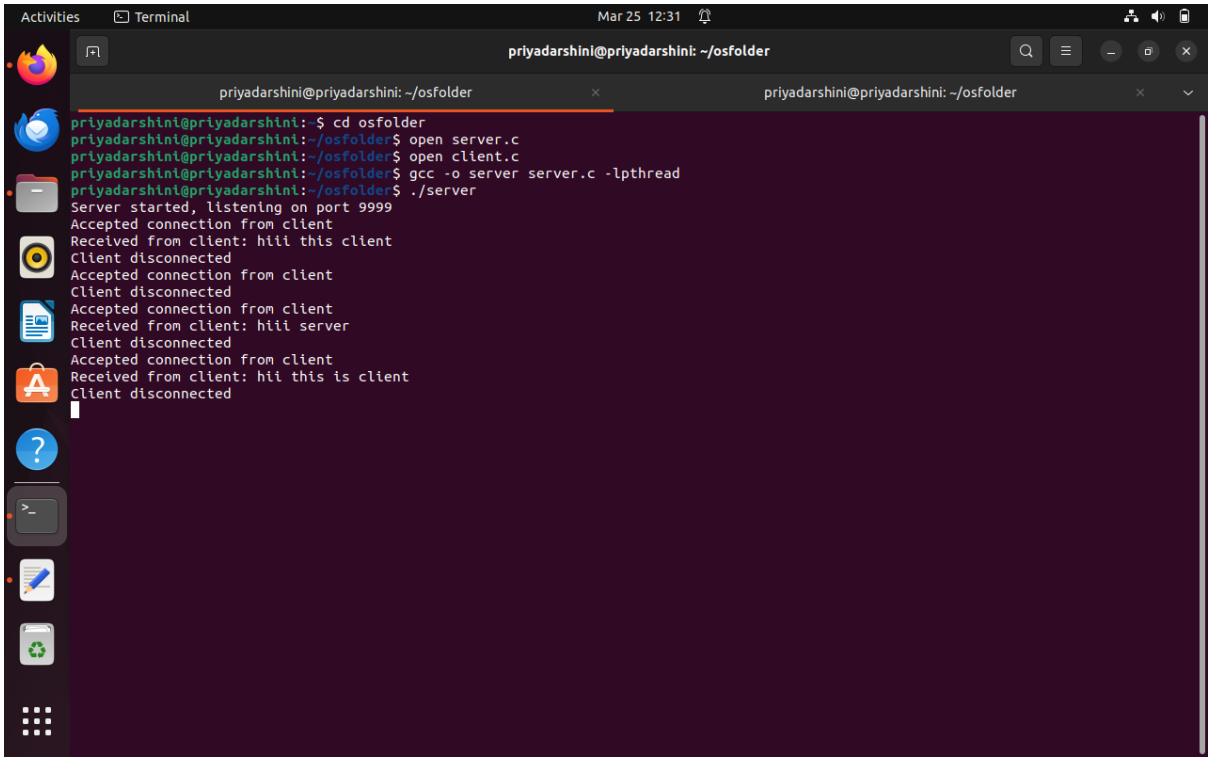
```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <arpa/inet.h>
#include <sys/socket.h>
#include <sys/select.h>

#define PORT 5555
#define BUFFER_SIZE 1024
#define TIMEOUT_SEC 5

int main() {
    int client_socket;
    struct sockaddr_in server_addr;
```

```
    char buffer[BUFFER_SIZE];

    // Create socket
    client_socket = socket(AF_INET, SOCK_STREAM, 0);
    if (client_socket == -1) {
        perror("Socket creation failed");
        exit(EXIT_FAILURE);
    }

    // Connect to server
    server_addr.sin_family = AF_INET;
    server_addr.sin_addr.s_addr = inet_addr("127.0.0.1");
  server_addr.sin_port = htons(PORT);
    if (connect(client_socket, (struct sockaddr *)&server_addr,
sizeof(server_addr)) == -1) {
        perror("Connection failed");
        exit(EXIT_FAILURE);
    }

    fd_set readfds;
    struct timeval timeout;
    int select_result;

    while (1) {
```

```
        // Clear the socket set
        FD_ZERO(&readfds);
        // Add client socket to the set
        FD_SET(client_socket, &readfds);

        // Set timeout
        timeout.tv_sec = TIMEOUT_SEC;
        timeout.tv_usec = 0;

        // Wait for socket activity with timeout
        select_result = select(client_socket + 1, &readfds, NULL, NULL,
&timeout);
        if (select_result == -1) {
            perror("Select error");
            break;
    } else if (select_result == 0) {
            printf("Timeout occurred. No response from server.\n");
            break;
        } else {
            if (FD_ISSET(client_socket, &readfds)) {
                // Send message to server
                printf("Enter message to send to server: ");
                fgets(buffer, BUFFER_SIZE, stdin);
                if (strcmp(buffer, "exit\n") == 0) {
```

```
            break;
        }
        send(client_socket, buffer, strlen(buffer), 0);

        // Receive response from server
        int bytes_received = recv(client_socket, buffer,
BUFFER_SIZE, 0);
        if (bytes_received <= 0) {
            printf("Connection closed by server.\n");
            break;
        }
        buffer[bytes_received] = '\0';
        printf("Received response from server: %s\n", buffer);
    }
  }
}

close(client_socket);
return 0;
}
```

OUTPUT FOR CILENT



OUTPUT FOR SERVER