# TCP Socket을 이용한 Chat Program 작성

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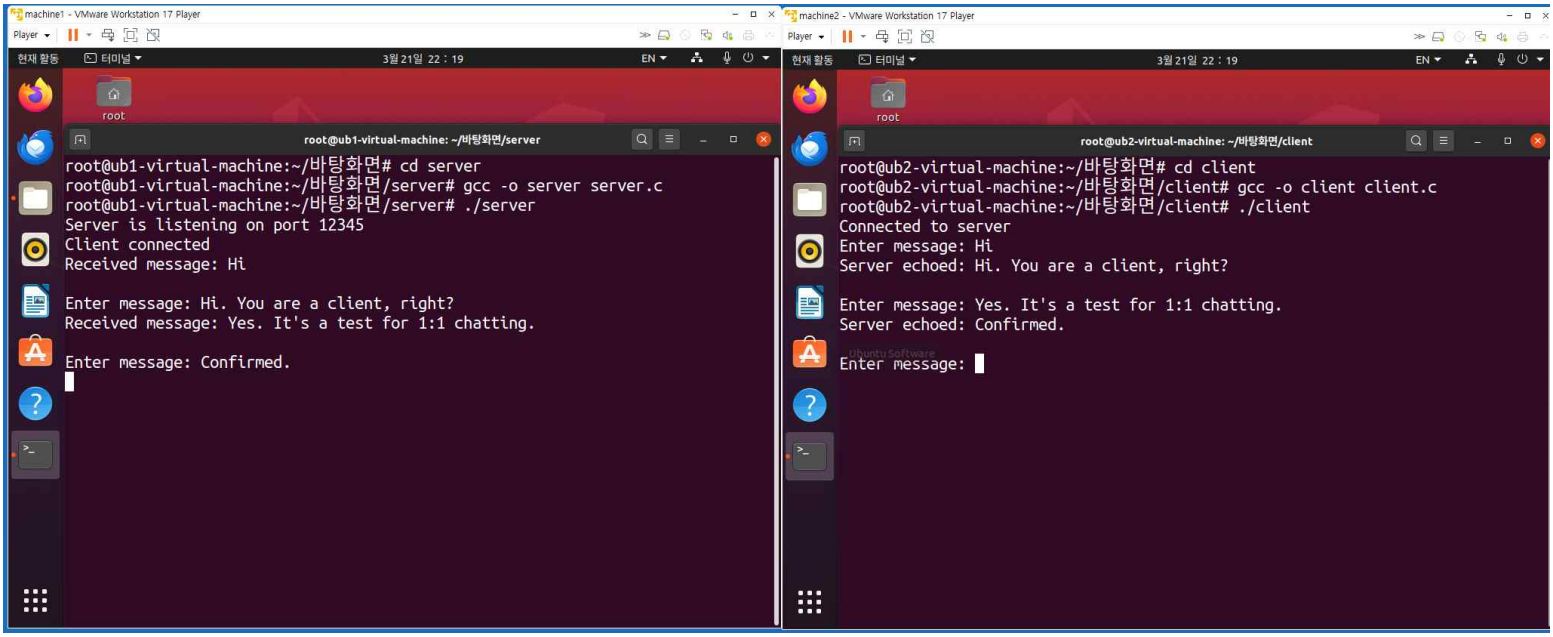
1. 채팅 프로그램 실행 결과



2. Source Code

(1) Server

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <arpa/inet.h>
#define PORT 12345
#define BUFFER_SIZE 1024
int main() {
    int server_socket, client_socket;
    struct sockaddr_in server_addr, client_addr;
    socklen_t addr_len = sizeof(client_addr);
    char buffer[BUFFER_SIZE];
    // Create socket
    server_socket = socket(AF_INET, SOCK_STREAM, 0);
    if (server_socket == -1) {
        perror("Error creating socket");
        exit(EXIT_FAILURE);
    }
    // Bind
    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("Error binding");
        exit(EXIT_FAILURE);
    }
    // Listen
    if (listen(server_socket, 5) == -1) {
        perror("Error listening");
        exit(EXIT_FAILURE);
    }
    printf("Server is listening on port %d\n", PORT);
    // Accept connection
    client_socket = accept(server_socket, (struct sockaddr *)&client_addr,
&addr_len);
    if (client_socket == -1) {
        perror("Error accepting connection");
        exit(EXIT_FAILURE);
```

```
    }
    printf("Client connected\n");
    while (1) {
        // Receive message from client
        ssize_t recv_len = recv(client_socket, buffer, BUFFER_SIZE, 0);
        if (recv_len <= 0) {
            perror("Error receiving data");
            break;
        }
        buffer[recv_len] = '\0'; // Null-terminate the received data
        printf("Received message: %s\n", buffer);
                // Allow server to send message
        printf("Enter message: ");
        fgets(buffer, BUFFER_SIZE, stdin);
        ssize_t sent_len = send(client_socket, buffer, strlen(buffer), 0);
        if (sent_len == -1) {
            perror("Error sending data");
            break;
        }
    }
    // Close sockets
    close(client_socket);
    close(server_socket);
    return 0;
}
```

(2) Client

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <arpa/inet.h>
#define SERVER_IP "192.168.111.100"
#define PORT 12345
#define BUFFER_SIZE 1024
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("Error creating socket");
        exit(EXIT_FAILURE);
    }
    // Set server address
    server_addr.sin_family = AF_INET;
    server_addr.sin_addr.s_addr = inet_addr(SERVER_IP);
    server_addr.sin_port = htons(PORT);
    // Connect to server
    if (connect(client_socket, (struct sockaddr *)&server_addr, sizeof(server_addr))
== -1) {
        perror("Error connecting to server");
        exit(EXIT_FAILURE);
    }
    printf("Connected to server\n");
    while (1) {
        // Send message to server
        printf("Enter message: ");
        fgets(buffer, BUFFER_SIZE, stdin);
        ssize_t sent_len = send(client_socket, buffer, strlen(buffer), 0);
        if (sent_len == -1) {
            perror("Error sending data");
            break;
        }
                // Receive message from server
        ssize_t recv_len = recv(client_socket, buffer, BUFFER_SIZE, 0);
```

```
        if (recv_len <= 0) {
            perror("Error receiving data");
            break;
        }
        buffer[recv_len] = '\0'; // Null-terminate the received data
        printf("Server echoed: %s\n", buffer);
    }
    // Close socket
    close(client_socket);
    return 0;
}
```