

네트워크 프로젝트 채팅 프로그램

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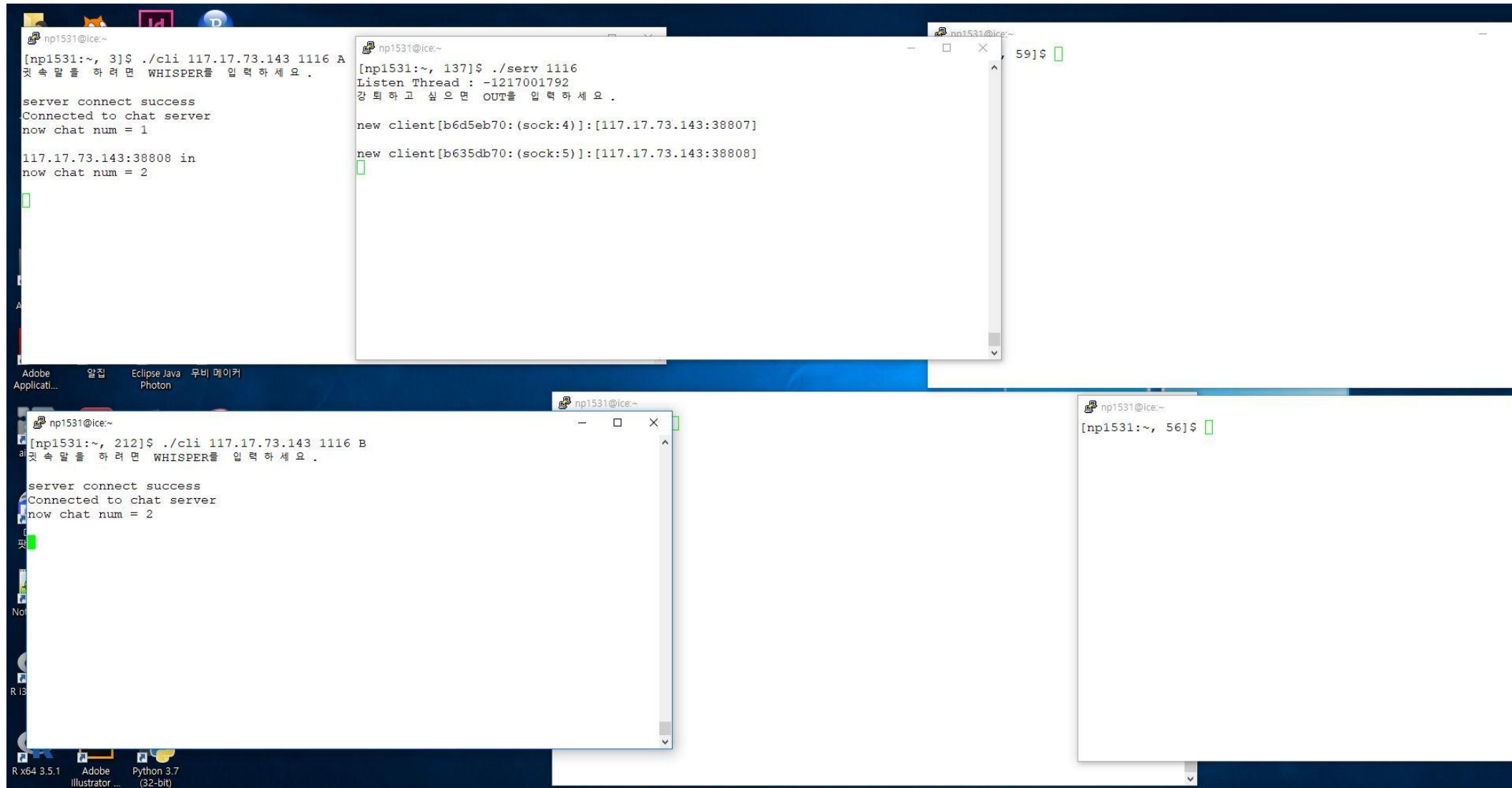
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1. 채팅프로그램 실행

1) 채팅 기능 - 클라이언트 접속



1) 채팅 기능- 5명 모두 서버 접속

```
np1531@ice:~  
[np1531:~, 3]$ ./cli 117.17.73.143 1116 A  
깃속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 1  
  
117.17.73.143:38808 in  
now chat num = 2  
  
117.17.73.143:32948 in  
now chat num = 3  
  
117.17.73.143:32949 in  
now chat num = 4  
  
117.17.73.143:32950 in  
now chat num = 5  
A  
[ ]  
  
np1531@ice:~  
[np1531:~, 137]$ ./serv 1116  
Listen Thread : -1217001792  
강퇴하고 싶으면 OUT를 입력하세요 .  
  
new client[b6d5eb70:(sock:4)]:[117.17.73.143:38807]  
  
new client[b635db70:(sock:5)]:[117.17.73.143:38808]  
  
new client[b595cb70:(sock:6)]:[117.17.73.143:32948]  
  
new client[b4f5bb70:(sock:7)]:[117.17.73.143:32949]  
  
new client[b455ab70:(sock:8)]:[117.17.73.143:32950]  
[ ]  
  
np1531@ice:~  
[np1531:~, 59]$ ./cli 117.17.73.143 1116 E  
깃속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 5  
[ ]  
  
np1531@ice:~  
[np1531:~, 212]$ ./cli 117.17.73.143 1116 B  
깃속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 2  
  
117.17.73.143:32948 in  
now chat num = 3  
  
117.17.73.143:32949 in  
now chat num = 4  
  
117.17.73.143:32950 in  
now chat num = 5  
B  
[ ]  
  
np1531@ice:~  
[np1531:~, 3]$ ./cli 117.17.73.143 1116 C  
깃속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 3  
  
117.17.73.143:32949 in  
now chat num = 4  
  
117.17.73.143:32950 in  
now chat num = 5  
C  
[ ]  
  
np1531@ice:~  
[np1531:~, 56]$ ./cli 117.17.73.143 1116 D  
깃속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 4  
  
117.17.73.143:32950 in  
now chat num = 5  
D  
[ ]
```

1) 채팅 기능- 클라이언트 대화

The image displays five terminal windows from a Linux environment, showing the execution of a chat application. The windows are titled 'np1531@ice:~'.

Top Left Window: Shows the server starting and accepting connections from 117.17.73.143:38808, 117.17.73.143:32948, 117.17.73.143:32949, and 117.17.73.143:32950. It then shows a client connection from 117.17.73.143:32950 sending 'hi'.

Top Middle Window: Shows the server starting and accepting connections from 117.17.73.143:38807, 117.17.73.143:38808, 117.17.73.143:32948, 117.17.73.143:32949, and 117.17.73.143:32950. It then shows a client connection from 117.17.73.143:32950 sending 'hi'.

Top Right Window: Shows the server starting and accepting connections from 117.17.73.143:38808, 117.17.73.143:32948, 117.17.73.143:32949, and 117.17.73.143:32950. It then shows a client connection from 117.17.73.143:32950 sending 'hi'.

Bottom Left Window: Shows the server starting and accepting connections from 117.17.73.143:32948, 117.17.73.143:32949, 117.17.73.143:32950, and 117.17.73.143:32950. It then shows a client connection from 117.17.73.143:32950 sending 'hi'.

Bottom Middle Window: Shows the server starting and accepting connections from 117.17.73.143:32949, 117.17.73.143:32950, 117.17.73.143:32950, and 117.17.73.143:32950. It then shows a client connection from 117.17.73.143:32950 sending 'hi'.

Bottom Right Window: Shows the server starting and accepting connections from 117.17.73.143:32950, 117.17.73.143:32950, 117.17.73.143:32950, and 117.17.73.143:32950. It then shows a client connection from 117.17.73.143:32950 sending 'hi'.

2) 귓속말 기능

```
np1531@ice:~  
[np1531:~, 137]$ ./serv 1116  
Listen Thread : -1217001792  
강퇴하고 싶으면 OUT을 입력하세요 .  
  
new client[b6d5eb70: (sock:4)]: [117.17.73.143:38807]  
new client[b635db70: (sock:5)]: [117.17.73.143:38808]  
new client[b595cb70: (sock:6)]: [117.17.73.143:32948]  
new client[b4f5bb70: (sock:7)]: [117.17.73.143:32949]  
new client[b455ab70: (sock:8)]: [117.17.73.143:32950]  
█
```

```
np1531@ice:~  
[np1531:~, 59]$ ./cli 117.17.73.143 1116 E  
귓속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 5  
  
hi  
  
[C]:hi  
117.17.73.143:32948  
  
WHISPER  
귓속말을 할 클라이언트를 입력하세요 : A  
귓속말 : gg  
█
```

```
np1531@ice:~  
117.17.73.143:38808 in  
now chat num = 2  
  
117.17.73.143:32948 in  
now chat num = 3  
  
117.17.73.143:32949 in  
now chat num = 4  
  
117.17.73.143:32950 in  
now chat num = 5  
  
[E]:hi  
117.17.73.143:32950  
  
[C]:hi  
117.17.73.143:32948  
  
>>E이 브낸 귓속말 : gg  
█
```

```
np1531@ice:~  
[np1531:~, 56]$ ./cli 117.17.73.143 1116 D  
귓속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 4  
  
117.17.73.143:32950 in  
now chat num = 5  
  
[E]:hi  
117.17.73.143:32950  
  
[C]:hi  
117.17.73.143:32948  
█
```

2) 귓속말 기능 – 귓속말 이후 채팅

```
np1531@ice:~  
[np1531:~, 137]$ ./serv 1116  
Listen Thread : -1217001792  
강퇴 하고 싶으면 OUT를 입력하세요 .  
  
new client[b6d5eb70:(sock:4)]:[117.17.73.143:38807]  
  
new client[b635db70:(sock:5)]:[117.17.73.143:38808]  
  
new client[b595cb70:(sock:6)]:[117.17.73.143:32948]  
  
new client[b4f5bb70:(sock:7)]:[117.17.73.143:32949]  
  
new client[b455ab70:(sock:8)]:[117.17.73.143:32950]  
]
```

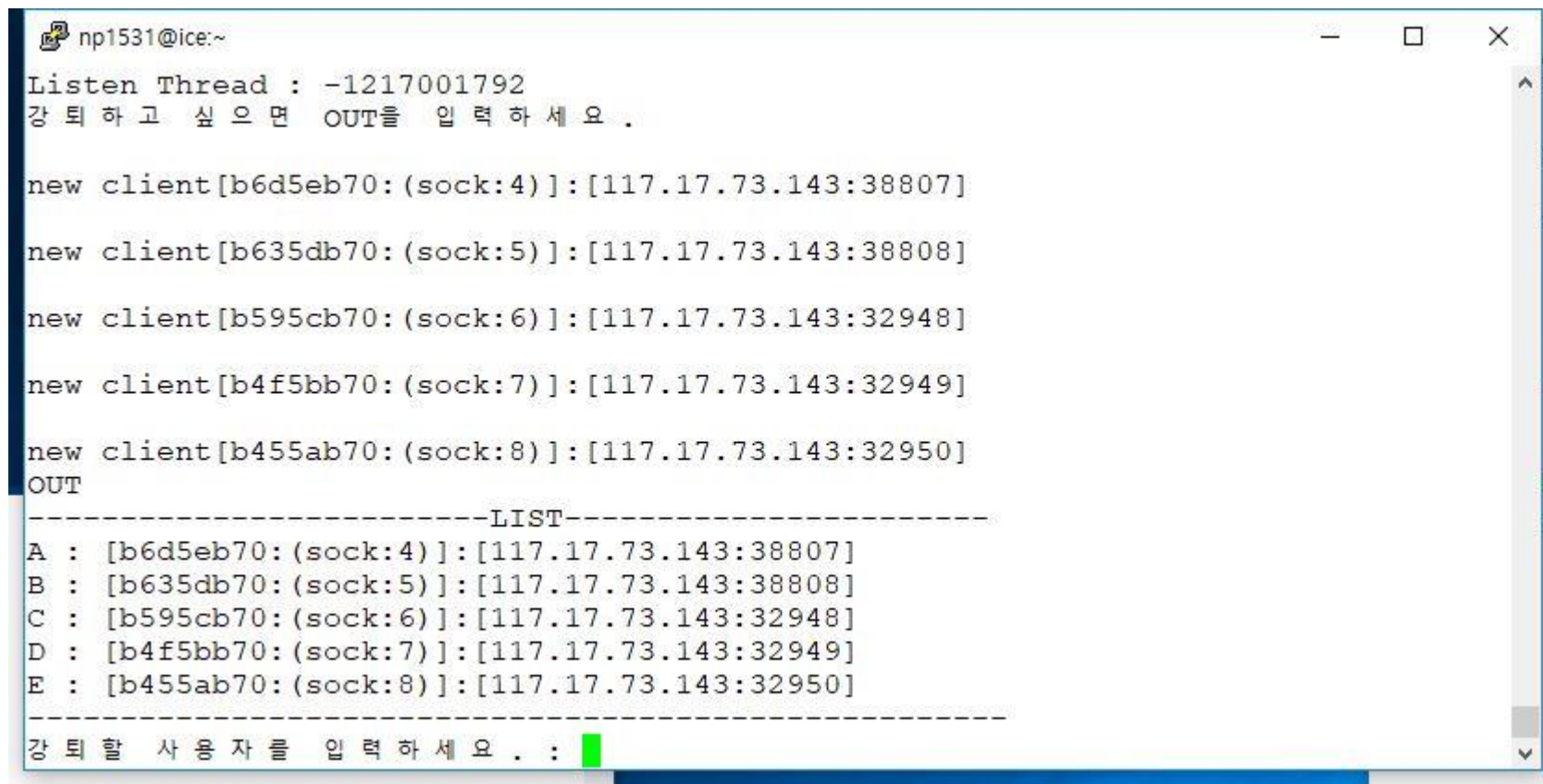
```
[np1531:~, 59]$ ./cli 117.17.73.143 1116 E  
귓속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 5  
  
hi  
  
[C]:hi  
117.17.73.143:32948  
  
WHISPER  
귓속말을 할 클라이언트를 입력하세요 : A  
귓속말 : gg  
gg  
]
```

```
np1531@ice:~  
  
117.17.73.143:32948 in  
now chat num = 3  
  
117.17.73.143:32949 in  
now chat num = 4  
  
117.17.73.143:32950 in  
now chat num = 5  
  
[E]:hi  
117.17.73.143:32950  
  
[C]:hi  
117.17.73.143:32948  
  
>>E이 보낸 귓속말 : gg  
  
[E]:gg  
117.17.73.143:32950  
]
```

```
[E]:hi  
117.17.73.143:32950  
  
hi  
  
[E]:gg  
117.17.73.143:32950
```

```
np1531@ice:~  
[np1531:~, 56]$ ./cli 117.17.73.143 1116 D  
귓속말을 하려면 WHISPER를 입력하세요 .  
  
server connect success  
Connected to chat server  
now chat num = 4  
  
117.17.73.143:32950 in  
now chat num = 5  
  
[E]:hi  
117.17.73.143:32950  
  
[C]:hi  
117.17.73.143:32948  
  
[E]:gg  
117.17.73.143:32950  
]
```


3) 서버의 강퇴 기능



```
np1531@ice:~
Listen Thread : -1217001792
강퇴하고 싶으면 OUT을 입력하세요.

new client[b6d5eb70:(sock:4)]:[117.17.73.143:38807]
new client[b635db70:(sock:5)]:[117.17.73.143:38808]
new client[b595cb70:(sock:6)]:[117.17.73.143:32948]
new client[b4f5bb70:(sock:7)]:[117.17.73.143:32949]
new client[b455ab70:(sock:8)]:[117.17.73.143:32950]
OUT
-----LIST-----
A : [b6d5eb70:(sock:4)]:[117.17.73.143:38807]
B : [b635db70:(sock:5)]:[117.17.73.143:38808]
C : [b595cb70:(sock:6)]:[117.17.73.143:32948]
D : [b4f5bb70:(sock:7)]:[117.17.73.143:32949]
E : [b455ab70:(sock:8)]:[117.17.73.143:32950]
-----
강퇴할 사용자를 입력하세요. : 
```

3) 강퇴 기능 - 해당 클라이언트 강퇴 후 메시지 전송

```
np1531@ice:~
new client[b635db70:(sock:5)]:[117.17.73.143:38808]
new client[b595cb70:(sock:6)]:[117.17.73.143:32948]
new client[b4f5bb70:(sock:7)]:[117.17.73.143:32949]
new client[b455ab70:(sock:8)]:[117.17.73.143:32950]
OUT
-----LIST-----
A : [b6d5eb70:(sock:4)]:[117.17.73.143:38807]
B : [b635db70:(sock:5)]:[117.17.73.143:38808]
C : [b595cb70:(sock:6)]:[117.17.73.143:32948]
D : [b4f5bb70:(sock:7)]:[117.17.73.143:32949]
E : [b455ab70:(sock:8)]:[117.17.73.143:32950]
-----
강퇴할 사용자를 입력하세요. : A
[117.17.73.143:38807] : out, now chat num = 4
user 4 is out

np1531@ice:~
117.17.73.143:32948 in
now chat num = 3

117.17.73.143:32949 in
now chat num = 4

117.17.73.143:32950 in
now chat num = 5

[E]:hi
117.17.73.143:32950

[C]:hi
117.17.73.143:32948

>>E이 보낸 귓속말 : gg

[E]:gg
117.17.73.143:32950

you out!!!

[np1531:~, 4]$

[E]:gg
117.17.73.143:32950

117.17.73.143:38807 out
now chat num = 4

np1531@ice:~
[ np1531:~, 59]$ ./cli 117.17.73.143 1116 E
귓속말을 하려면 WHISPER를 입력하세요.

server connect success
Connected to chat server
now chat num = 5

hi

[C]:hi
117.17.73.143:32948

WHISPER
귓속말을 할 클라이언트를 입력하세요 : A
귓속말 : gg
gg

117.17.73.143:38807 out
now chat num = 4

np1531@ice:~
[ np1531:~, 56]$ ./cli 117.17.73.143 1116 D
귓속말을 하려면 WHISPER를 입력하세요.

server connect success
Connected to chat server
now chat num = 4

117.17.73.143:32950 in
now chat num = 5

[E]:hi
117.17.73.143:32950

[C]:hi
117.17.73.143:32948

[E]:gg
117.17.73.143:32950

117.17.73.143:38807 out
now chat num = 4
```

2. 소스코드 분석

1) Server – main()

```
while(1){
    FD_ZERO(&read_fds);
    FD_SET(listen_sock, &read_fds);

    for(i=4; i<num_chat; i++)
        FD_SET(clisock_list[i], &read_fds);

    maxfdp1 = getmax() + 1;

    if(select(maxfdp1, &read_fds, NULL, NULL, NULL) < 0)
        errquit("select fail");

    if(FD_ISSET(listen_sock, &read_fds)){
        accp_sock = accept(listen_sock, (struct sockaddr *)&cliaddr, &clilen);
        if(accp_sock == -1)
            errquit("accept fail\n");
        p.s = accp_sock;
        bcopy((struct sockaddr_in *)&cliaddr, &(p.cliaddr), clilen);
        status = pthread_create(&tid, NULL, &addClient, (void *)&p);
        if(status != 0)
            thr_errquit("pthread create", status);
    }
}
```

1) Server – clientList()

```
int clientList()
{
    int i;
    int flag=0;

    printf("-----LIST-----\n");
    for(i=4; i<MAX_CHAT; i++){
        if(num_chat == 4){
            printf("삭제할 클라이언트가 없습니다\n");
            break;
        }
        if(clisock_list[i] == -1 || clisock_list[i] == 0)
            continue;

        printf("%s : [%x:(sock:%d)]:[%s:%s]\n",user[i],sock_map[i].thid,clisock_list[i],sock_map[i].ip_addr,sock_map[i].port);

        flag++;
    }
    printf("-----\n",flag);

    return flag;
}
```

```
recv(new_index,name,sizeof(name),0);
user[new_index] = name;
```

1) Server – outClient()

```
void *outClient(void *arg) {
    int sn, flag;
    char buf[MAX_BUFSZ], sbuf[MAX_BUFSZ];
    printf("강퇴하고 싶으면 OUT를 입력하세요 .\n");
    while(1) {
        char bufmsg[MAX_LINE];
        fgets(bufmsg, MAX_LINE, stdin);
        if(!strcmp(bufmsg, "\n")) continue;
        else if(!strcmp(bufmsg, "OUT\n")) {
            flag = clientList();
            if(flag == 0)
                continue;
            printf("강퇴할 사용자를 입력하세요 . : ");
            fgets(bufmsg, strlen(bufmsg), stdin);
            bufmsg[strlen(bufmsg)-1] = '\0';

            for(sn=4; sn<MAX_CHAT; sn++){
                if(!strcmp(user[sn], bufmsg))
                    break;
            }
            memset(sbuf, 0, sizeof(sbuf));
            if(sn <= MAX_CHAT && clisock_list[sn] != -1) {
                strcat(sbuf, "you out!!!\n");
                write(sn, sbuf, MAX_BUFSZ);
                removeClient(sn);
                memset(sbuf, 0, sizeof(sbuf));
                sprintf(sbuf, "user %d is out\n", sn);
                printf("%s\n", sbuf);
            }
            else
            {
                printf("Input Error\n");
                continue;
            }
        }
    }
}
```


1) Server – whisperTalk()

```
int whisperTalk(int sock)
{
    int i, wS;
    char Msg[MAX_BUFSZ], smsg[MAX_BUFSZ], wSock[5];
    char *msg;

    pthread_mutex_lock(&count_lock);

    read(sock, Msg, MAX_BUFSZ);
    strcpy(wSock, Msg);
    char *ptr = strtok(wSock, ">>");
    char wbuf[5];
    strcpy(wbuf, ptr);

    for(i=4; i<MAX_CHAT; i++){
        if(!strcmp(user[i], wbuf)){
            wS = i;
            break;
        }
    }
    msg = strstr(Msg, ">>");
    strcpy(smsg, msg);

    write(clisock_list[wS], smsg, MAX_LINE);

    memset(&smsg, 0, sizeof(smsg));
    memset(&Msg, 0, sizeof(Msg));
    memset(&wSock, 0, sizeof(wSock));

    pthread_mutex_unlock(&count_lock);
}
```

```
while(n = read(sock, buf, MAX_BUFSZ) > 0){
    if(strstr(buf, WHIS_STRING) != NULL){
        whisperTalk(sock);
        continue;
    }
}
```

2) Client – main()

```
puts("귓 속 말을 하려면 WHISPER를 입력하세요.");
puts("server connect success");
maxfdp1 = s + 1;
FD_ZERO(&read_fds);

sprintf(name, "%s", argv[3]);
send(s, name, strlen(name), 0);

strcpy(tbuf, ">>");
while(1) {
    FD_SET(0, &read_fds);
    FD_SET(s, &read_fds);
    if(select(maxfdp1, &read_fds, NULL, NULL, NULL) < 0)
        errquit("select fail");

    if(FD_ISSET(s, &read_fds)) {
        int nbyte;
        if((nbyte = recv(s, bufmsg, MAX_LINE, 0)) > 0) {
            strcpy(sbuf, bufmsg);
            if(strstr(sbuf, tbuf) != NULL) {
                bufmsg[nbyte-1] = 0;
                printf("\x1b[35m%s\n", bufmsg);
                continue;
            }
            bufmsg[nbyte-1] = 0;
            printf("\x1b[0m%s\n", bufmsg);
        }
        if(!strcmp(bufmsg, "you out!!!\n")) {
            close(s);
            exit(0);
        }
    }
}
```


2) Client – Whisper

```
void Whisper_talk(int s)
{
    char sock[5], talk[MAX_LINE], sTalk[MAX_LINE];
    char sbuf[MAX_LINE];
    int sendS, tlen;

    fprintf(stderr, "\033[32m");

    printf("귓 속 말 을 할 클 라이 언 트 를 입 력 하 세 요 : ");
    scanf("%s", sock);
    __fpurge(stdin);

    printf("귓 속 말 : ");
    fgets(sbuf, MAX_LINE, stdin);

    strncpy(talk, sock, 5);
    strcat(talk, ">>");
    strcat(sTalk, talk);
    strncpy(talk, name, 5);
    strcat(talk, "님 이 보 낸 귓 속 말 : ");
    strcat(sTalk, talk);
    strncpy(talk, sbuf, MAX_LINE);
    strcat(sTalk, talk);

    tlen = MAX_LINE + 23;
    sTalk[tlen] = 0;

    send(s, sTalk, tlen, 0);

    memset(&sock, 0, sizeof(sock));
    memset(&sTalk, 0, sizeof(sTalk));
    memset(&talk, 0, sizeof(talk));
    memset(&sbuf, 0, sizeof(sbuf));
    fprintf(stderr, "\033[1;0m");
}
```