CHAUDHARY HAMDAN
1905387
Networks Lab 4
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1. Write a program to create a TCP socket through which client will send roll no of a student to the server, the server has previously stored Name, Roll No and avg marks of 5 subjects of 10 students. Now server will search that roll no. , If roll no. matches with any student, server will send all the information of that student to the client. Client will display student info. Else server will send Student Not Found..

Code (server file):

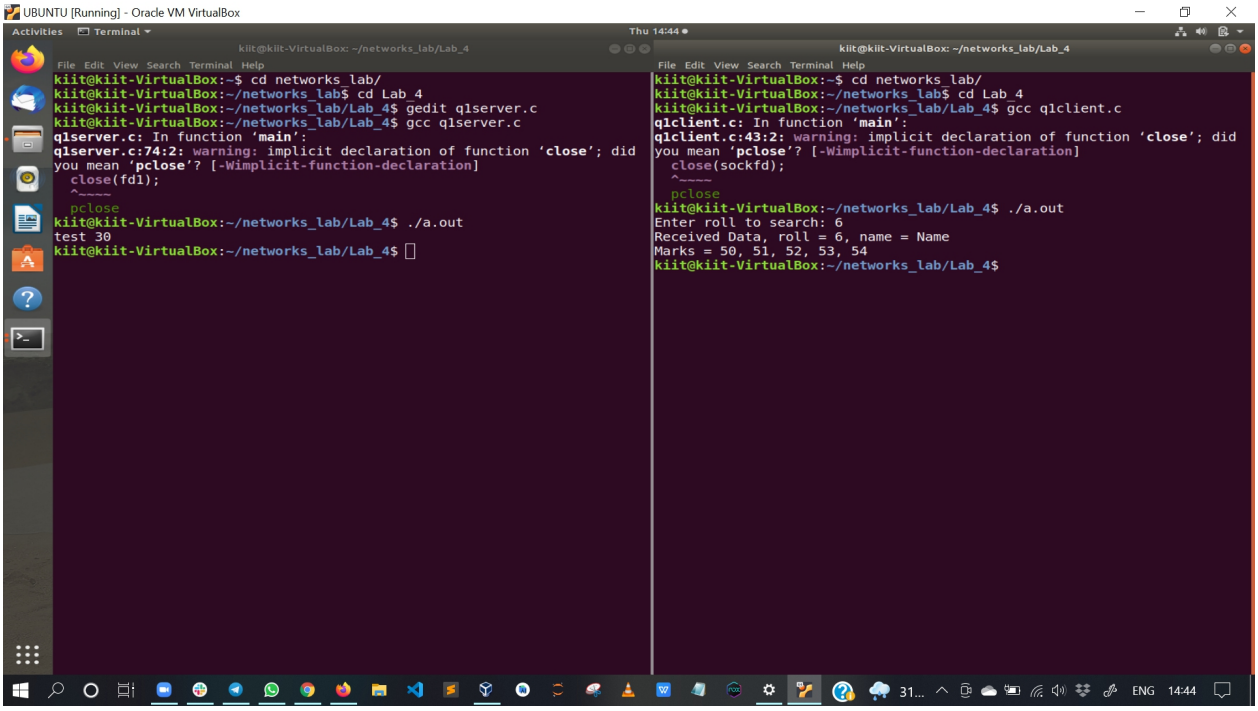
```
#include<stdio.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<arpa/inet.h>
#include<fcntl.h>
#include<string.h>


struct student {
        int roll;
        char name[10];
        int marks[5];
};


int main()
{
        int sockfd, fd1, fd2, length, i;
        int rn;
        struct student buf;
        struct sockaddr_in sa_addr, cl_addr;

        sockfd = socket(AF_INET, SOCK_STREAM, 0);

        sa_addr.sin_family = AF_INET;
        sa_addr.sin_addr.s_addr = INADDR_ANY;
        sa_addr.sin_port = htons(6000);
        memset(sa_addr.sin_zero, '\0', sizeof sa_addr.sin_zero);
```

```
        i = bind(sockfd, (struct sockaddr *)&sa_addr, sizeof(sa_addr));
        printf("test %d%d\n", sockfd, i);

        listen(sockfd, 5);

        struct student arr[10];
        int a;
        for(a=0;a<10;a++) {
                arr[a].roll = a+1;
                strcpy(arr[a].name,"Name");
                int aa;
                for(aa=0;aa<5;aa++)
                        arr[a].marks[aa] = (a*10)+aa;
        }



        length = sizeof(cl_addr);
        fd1 = accept(sockfd, (struct sockaddr *) &cl_addr, &length);

        recv(fd1, &rn, sizeof(int), 0);
        int flag = 1;
        for(a=0;a<10;a++) {
                if(arr[a].roll == rn) {
                        buf = arr[a];
                        send(fd1, &buf, sizeof(struct student), 0);
                        flag = 0;
                        break;
                }
        }

        if(flag) {
                buf.roll = -1;
                strcpy(buf.name, "Not Found");
                int aa;
                for(aa=0;aa<5;aa++)
                        buf.marks[aa] = -1;
                send(fd1, &buf, sizeof(struct student), 0);
        }


        close(fd1);

}
```

Code (client file):

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

struct student {
        int roll;
        char name[10];
        int marks[5];
}


main()
{
        int i, sockfd;
        int buf;
        struct student rec;
        struct sockaddr_in sa_addr;
        sockfd = socket(AF_INET, SOCK_STREAM, 0);


        sa_addr.sin_family = AF_INET;
        sa_addr.sin_addr.s_addr = inet_addr("127.0.0.1");
        sa_addr.sin_port = htons(6000);
        memset(sa_addr.sin_zero, '\0', sizeof sa_addr.sin_zero);

        i = connect(sockfd, (struct sockaddr *)&sa_addr, sizeof(sa_addr));

        printf("Enter roll to search: ");
        scanf("%d", &buf);

        send(sockfd, &buf, sizeof(int), 0);

        recv(sockfd, &rec, sizeof(struct student), 0);

        printf("Received Data, roll = %d, name = %s\n", rec.roll, rec.name);
        printf("Marks = %d, %d, %d, %d, %d\n", rec.marks[0], rec.marks[1],
rec.marks[2], rec.marks[3], rec.marks[4]);


        close(sockfd);


}
```

Output:


UBUNTU [Running] - Oracle VM VirtualBox
Activities
Terminal
Thu 14:44
kiit@kiit-VirtualBox: ~/networks_lab/Lab_4
File Edit View Search Terminal Help
kiit@kiit-VirtualBox:~$ cd networks_lab/
kiit@kiit-VirtualBox:~/networks_lab$ cd Lab_4
kiit@kiit-VirtualBox:~/networks_lab/Lab_4$ gedit q1server.c
kiit@kiit-VirtualBox:~/networks_lab/Lab_4$ gcc q1server.c
q1server.c: In function 'main':
q1server.c:74:2: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
close(fd1);
^~~~~
pclose
kiit@kiit-VirtualBox:~/networks_lab/Lab_4$ ./a.out
test 30
kiit@kiit-VirtualBox:~/networks_lab/Lab_4$
kiit@kiit-VirtualBox: ~/networks_lab/Lab_4
File Edit View Search Terminal Help
kiit@kiit-VirtualBox:~$ cd networks_lab/
kiit@kiit-VirtualBox:~/networks_lab$ cd Lab_4
kiit@kiit-VirtualBox:~/networks_lab/Lab_4$ gcc q1client.c
q1client.c: In function 'main':
q1client.c:43:2: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
close(sockfd);
^~~~~
pclose
kiit@kiit-VirtualBox:~/networks_lab/Lab_4$ ./a.out
Enter roll to search: 6
Received Data, roll = 6, name = Name
Marks = 50, 51, 52, 53, 54
kiit@kiit-VirtualBox:~/networks_lab/Lab_4$
ENG 14:44