

CHAUDHARY HAMDAN

1905387

Networks Lab 6

12/08/2021

1. Write a c program to create an UDP socket through which client will send the roll no of a student to the server . Then the server already stored 10 students information like name roll no and marks of 5 subjects . Then server will search the roll no in the student list .If it finds the roll no then it will send back the details of the student to the client . And if the roll no is not there , then it sends back " Student not found."

Code (server file):

```
/*  
** A datagram sockets "server" demo  
*/  
#include <stdio.h>  
#include <stdlib.h>  
#include <unistd.h>  
#include <errno.h>  
#include <string.h>  
#include <sys/types.h>  
#include <sys/socket.h>  
#include <netinet/in.h>  
#include <arpa/inet.h>  
#define MYPOR 4952  
#define MAXBUFL 200
```

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

```
int main()  
{
```

```

int sockfd;
struct sockaddr_in my_addr;
struct sockaddr_in their_addr;
socklen_t addr_len;
int rn;
struct student buf;
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;
}

int numbytes;

if ((sockfd = socket(AF_INET, SOCK_DGRAM, 0)) == -1) {
    perror("socket");
    exit(1);
}
my_addr.sin_family = AF_INET;
my_addr.sin_port = htons(MYPORT);
my_addr.sin_addr.s_addr = INADDR_ANY;

if (bind(sockfd, (struct sockaddr *)&my_addr, sizeof my_addr) == -1) {
    perror("bind");
    exit(1);
}
addr_len = sizeof their_addr;
if ((numbytes = recvfrom(sockfd, &rn, sizeof(rn), 0,
    (struct sockaddr *)&their_addr, &addr_len)) == -1) {
    perror("recvfrom");
    exit(1);
}
printf("got packet from %s\n", inet_ntoa(their_addr.sin_addr));
printf("packet is %d bytes long\n", numbytes);

printf("packet contains \"%d\"", rn);

int flag = 1;
for(a=0;a<10;a++) {
    if(arr[a].roll == rn) {
        buf = arr[a];
        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;
    }

    sendto(sockfd, &buf, sizeof(buf), 0, (struct sockaddr *)&their_addr,
    sizeof their_addr);

    close(sockfd);
    return 0;
}

```

Code (client file):

```

/*
** A datagram "client" demo
*/
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <errno.h>
#include <string.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <arpa/inet.h>
#include <netdb.h>
#define SERVERPORT 4952

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

int main()

```

```

{
    int sockfd;
    int buf;
    struct sockaddr_in their_addr;
    struct student rec;
    socklen_t addr_len;
    int numbytes;
    if ((sockfd = socket(AF_INET, SOCK_DGRAM, 0)) == -1) {
        perror("socket");
        exit(1);
    }
    their_addr.sin_family = AF_INET;
    their_addr.sin_port = htons(SERVERPORT);
    their_addr.sin_addr.s_addr = inet_addr("127.0.0.1");

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

    if ((numbytes = sendto(sockfd, &buf, sizeof(buf), 0,
        (struct sockaddr *)&their_addr, sizeof their_addr)) == -1)
    {
        perror("sendto");
        exit(1);
    }
    printf("sent %d bytes to %s\n", numbytes,
inet_ntoa(their_addr.sin_addr));

    recvfrom(sockfd, &rec, sizeof(rec), 0,
        (struct sockaddr *)&their_addr, &addr_len);

    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);
    return 0;
}

```

Output:

```

kiit@kiit-VirtualBox: ~/networks_lab/Lab_6
kiit@kiit-VirtualBox:~$ cd networks lab/
kiit@kiit-VirtualBox:~/networks_lab$ cd Lab_6
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$ gcc qlserver.c
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$ ./a.out
got packet from 127.0.0.1
packet is 4 bytes long
packet contains "5"
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$

kiit@kiit-VirtualBox:~/networks_lab/Lab_6
kiit@kiit-VirtualBox:~$ cd networks lab/
kiit@kiit-VirtualBox:~/networks_lab$ cd Lab_6
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$ gcc qlclient.c
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$ ./a.out
Enter roll to search: 5
sent 4 bytes to 127.0.0.1
Received Data, roll = 5, name = Name
Marks = 40, 41, 42, 43, 44
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$

```

2. WAP to create an UDP program through which client will send , few commands to the server . Server will respond accordingly. For e.g :
- 1- If client is sending "list" command, server will send back the list of file names present in the current working directory.
 - 2- If client is sending "retr-filename" command, server will send back the content of that file.

Code (server file):

```
/*
** A datagram sockets "server" demo
*/
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <errno.h>
#include <string.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <arpa/inet.h>
#include <dirent.h>
#define MYPOR 4952
#define MAXBUFL 200

int main()
{
    int sockfd;
    struct sockaddr_in my_addr;
    struct sockaddr_in their_addr;
    socklen_t addr_len;
    char com[30];
    char *rec[10];

    int numbytes;

    if ((sockfd = socket(AF_INET, SOCK_DGRAM, 0)) == -1) {
        perror("socket");
        exit(1);
    }
    my_addr.sin_family = AF_INET;
    my_addr.sin_port = htons(MYPOR);
    my_addr.sin_addr.s_addr = INADDR_ANY;

    if (bind(sockfd, (struct sockaddr *)&my_addr, sizeof my_addr) == -1) {
        perror("bind");
        exit(1);
    }
    addr_len = sizeof their_addr;
```

```

        if ((numbytes = recvfrom(sockfd, com, sizeof(com), 0,
                                (struct sockaddr *)&their_addr, &addr_len)) == -1) {
            perror("recvfrom");
            exit(1);
        }
        printf("got packet from %s\n", inet_ntoa(their_addr.sin_addr));
        printf("packet is %d bytes long\n", numbytes);
        printf("packet contains \"%s\"\n", com);

        if(strcmp(com, "list")) {
            DIR *d;
            struct dirent *dir;
            d = opendir(".");
            if (d)
            {
                int i=-1;
                while ((dir = readdir(d)) != NULL)
                {
                    i++;
                    printf("%s, ", dir->d_name);
                    rec[i] = (char *)dir->d_name;
                }
                closedir(d);
            }
        }
        sendto(sockfd, rec, sizeof(rec), 0, (struct sockaddr *)&their_addr,
        sizeof their_addr);

        close(sockfd);
        return 0;
    }

```

Code (client file):

```

/*
** A datagram "client" demo
*/
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <errno.h>
#include <string.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <arpa/inet.h>
#include <netdb.h>
#define SERVERPORT 4952

```

```

int main()
{
    int sockfd;
    struct sockaddr_in their_addr;

    socklen_t addr_len;
    int numbytes;
    char arg[30];

    if ((sockfd = socket(AF_INET, SOCK_DGRAM, 0)) == -1) {
        perror("socket");
        exit(1);
    }
    their_addr.sin_family = AF_INET;
    their_addr.sin_port = htons(SERVERPORT);
    their_addr.sin_addr.s_addr = inet_addr("127.0.0.1");

    printf("Enter a command: ");
    gets(arg);
    if ((numbytes = sendto(sockfd, arg, strlen(arg), 0,
        (struct sockaddr *)&their_addr, sizeof their_addr)) == -1)
    {
        perror("sendto");
        exit(1);
    }
    printf("sent %d bytes to %s\n", numbytes,
inet_ntoa(their_addr.sin_addr));

    char *rec[10][30];

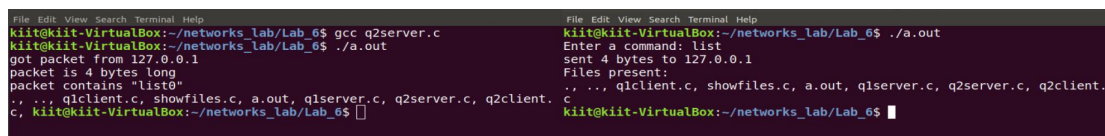
    recvfrom(sockfd, rec, sizeof(rec), 0,
        (struct sockaddr *)&their_addr, &addr_len);

    printf("Files present: \n");
    for(int i=0;i<10;i++) {
        printf("%s, ", rec[i]);
    }
    printf("\n");
    close(sockfd);

    return 0;
}

```

Output:



```

File Edit View Search Terminal Help
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$ gcc q2server.c
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$ ./a.out
got packet from 127.0.0.1
packet is 4 bytes long
packet contains "list"
.. .., qlclient.c, showfiles.c, a.out, qlserver.c, q2server.c, q2client.
c, kiit@kiit-VirtualBox:~/networks_lab/Lab_6$

File Edit View Search Terminal Help
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$ ./a.out
Enter a command: list
sent 4 bytes to 127.0.0.1
Files present:
.. .., qlclient.c, showfiles.c, a.out, qlserver.c, q2server.c, q2client.
c
kiit@kiit-VirtualBox:~/networks_lab/Lab_6$

```