

CSE 1004

NETWORK AND COMMUNICATION



Assessment – 4

L23+L24 | PLBG17

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by

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PART 1**TCP Sockets Chat Application (Server & Client) using C****SERVER:**

```
#include<stdio.h>
#include<netinet/in.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netdb.h>
#include<stdlib.h>
#include<string.h>
#define MAX 80
#define PORT 43454
#define SA struct sockaddr
void func(int sockfd)
{
    char buff[MAX];
    int n;
    for(;;)
    {
        bzero(buff,MAX);
        read(sockfd,buff,sizeof(buff));
        printf("From client: %s\t To client : ",buff);
        bzero(buff,MAX);
        n=0;
        while( (buff[n++]=getchar())!='\n');
        write(sockfd,buff,sizeof(buff));
        if(strncmp("exit",buff,4)==0)
        {
            printf("Server Exit...\n");break;
        }
    }
}
int main()
{
    int sockfd,connfd,len;
    struct sockaddr_in servaddr,cli;
    sockfd=socket(AF_INET,SOCK_STREAM,0);
    if(sockfd==-1)
    {
        printf("socket creation failed...\n");
        exit(0);
    }
    else
        printf("Socket successfully created..\n");
    bzero(&servaddr,sizeof(servaddr));
    servaddr.sin_family=AF_INET;
    servaddr.sin_addr.s_addr=htonl(INADDR_ANY);
    servaddr.sin_port=htons(PORT);
    if( (bind(sockfd, (SA*)&servaddr, sizeof(servaddr))) !=0)
    {
        printf("socket bind failed...\n");
        exit(0);
    }
    else
        printf("Socket successfully binded..\n");
    if( (listen(sockfd,5)) !=0)
    {
        printf("Listen failed...\n");exit(0);
    }
    else
        printf("Server listening..\n");
```

```
len=sizeof(cli);
connfd=accept(sockfd, (SA *)&cli, &len);
if(connfd<0)
{
    printf("server acccept failed...\n");
    exit(0);
}
else
    printf("server acccept the client...\n");
func(connfd);
close(sockfd);
}
```

CLIENT:

```
#include<stdio.h>
#include<netinet/in.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netdb.h>
#include<string.h>
#include<stdlib.h>
#define MAX 80
#define PORT 43454
#define SA struct sockaddr
void func(int sockfd)
{
    char buff[MAX];
    int n;
    for(;;)
    {
        bzero(buff, sizeof(buff));
        printf("Enter the string : ");
        n=0;
        while((buff[n++]=getchar())!='\n');
        write(sockfd, buff, sizeof(buff));
        bzero(buff, sizeof(buff));
        read(sockfd, buff, sizeof(buff));
        printf("From Server : %s", buff);
        if((strcmp(buff, "exit", 4))==0)
        {
            printf("Client Exit...\n");
            break;
        }
    }
}
int main()
{
    int sockfd, connfd;
    struct sockaddr_in servaddr, cli;
    sockfd=socket(AF_INET, SOCK_STREAM, 0);
    if(sockfd==-1)
    {
        printf("socket creation failed...\n");
        exit(0);
    }
    else
        printf("Socket successfully created..\n");
    bzero(&servaddr, sizeof(servaddr));
    servaddr.sin_family=AF_INET;
    servaddr.sin_addr=inet_addr("127.0.0.1");
    servaddr.sin_port=htons(PORT);
    if(connect(sockfd, (SA *)&servaddr, sizeof(servaddr))!=0)
    {

```

```

    printf("connection with the server failed...\n");
    exit(0);
}
else
    printf("connected to the server..\n");
func(sockfd);
close(sockfd);
}

```

OUTPUT:

```

shara-d@Rohans-Workstation: /mnt/c/users/shara/NetComm
shara-d@Rohans-Workstation:~$ cd /mnt/c/users/shara/NetComm
shara-d@Rohans-Workstation:/mnt/c/users/shara/NetComm$ gcc tcpserver.c -o tcpserver -lpthread
tcpserver.c: In function 'func':
tcpserver.c:18:9: warning: implicit declaration of function 'read'; did you mean 'fread'? [-Wimplicit-function-declaration]
   18 |         read(sockfd, buff, sizeof(buff));
      |         ^~~~~
      |         fread
tcpserver.c:23:9: warning: implicit declaration of function 'write'; did you mean 'fwrite'? [-Wimplicit-function-declaration]
   23 |         write(sockfd, buff, sizeof(buff));
      |         ^~~~~
      |         fwrite
tcpserver.c: In function 'main':
tcpserver.c:69:5: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
   69 |         close(sockfd);
      |         ^~~~~
      |         pclose
shara-d@Rohans-Workstation:/mnt/c/users/shara/NetComm$ ./tcpserver
Socket successfully created..
Socket successfully binded..
Server listening..
server accept the client...
From client: Hey there
    To client : Hi, How's it going?
From client: I'm pretty good, yeah. Oh btw, congratulations on your series D funding!
    To client : Thanks!
From client: Uhhun
    To client : So what are you upto these days?
From client: You know how it's been, the pandemic and all. Stuck in my home all day. You know that sensation of what people call the exact opposite of h
    To client : I know right!
From client: chal bye for now
    To client : C'ya man
From client: ye
    To client : exit
Server Exit...
shara-d@Rohans-Workstation:/mnt/c/users/shara/NetComm$

```

```

shara-d@Rohans-Workstation: /mnt/c/users/shara/NetComm
shara-d@Rohans-Workstation:~$ cd /mnt/c/users/shara/NetComm
shara-d@Rohans-Workstation:/mnt/c/users/shara/NetComm$ gcc tcpclient.c -o tcpclient -lpthread
tcpclient.c: In function 'func':
tcpclient.c:20:9: warning: implicit declaration of function 'write'; did you mean 'fwrite'? [-Wimplicit-function-declaration]
   20 |         write(sockfd, buff, sizeof(buff));
      |         ^~~~~
      |         fwrite
tcpclient.c:22:9: warning: implicit declaration of function 'read'; did you mean 'fread'? [-Wimplicit-function-declaration]
   22 |         read(sockfd, buff, sizeof(buff));
      |         ^~~~~
      |         fread
tcpclient.c: In function 'main':
tcpclient.c:44:30: warning: implicit declaration of function 'inet_addr' [-Wimplicit-function-declaration]
   44 |     servaddr.sin_addr.s_addr=inet_addr("127.0.0.1");
      |                               ^~~~~~
tcpclient.c:54:5: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
   54 |         close(sockfd);
      |         ^~~~~
      |         pclose
shara-d@Rohans-Workstation:/mnt/c/users/shara/NetComm$ ./tcpclient
Socket successfully created..
connected to the server..
Enter the string : Hey there
From Server : Hi, How's it going?
Enter the string : I'm pretty good, yeah. Oh btw, congratulations on your series D funding!
From Server : Thanks!
Enter the string : Uhhun
From Server : So what are you upto these days?
Enter the string : You know how it's been, the pandemic and all. Stuck in my home all day. You know that sensation of what people call the exact opposite of h
From Server : I know right!
Enter the string : chal bye for now
From Server : C'ya man
Enter the string : ye
From Server : exit
Client Exit...
*** stack smashing detected ***: terminated
Aborted (core dumped)
shara-d@Rohans-Workstation:/mnt/c/users/shara/NetComm$

```

PART 2**UDP Sockets Chat Application (Server & Client) using C****SERVER:**

```
#include<stdio.h>
#include<netinet/in.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netdb.h>
#include<string.h>
#include<stdlib.h>
#define MAX 80
#define PORT 43454
#define SA struct sockaddr
void func(int sockfd)
{
    char buff[MAX];
    int n, clen;
    struct sockaddr_in cli;
    clen=sizeof(cli);
    for(;;)
    {
        bzero(buff,MAX);
        recvfrom(sockfd,buff,sizeof(buff),0,(SA *)&cli,&clen);
        printf("From client %s To client",buff);
        bzero(buff,MAX);
        n=0;
        while((buff[n++]=getchar())!='\n');
        sendto(sockfd,buff,sizeof(buff),0,(SA *)&cli,clen);
        if(strncmp("exit",buff,4)==0){
            printf("Server Exit...\n");
            break;
        }
    }
}
int main()
{
    int sockfd;
    struct sockaddr_in servaddr;
    sockfd=socket(AF_INET,SOCK_DGRAM,0);
    if(sockfd==-1)
    {
        printf("socket creation failed...\n");
        exit(0);
    }
    else
        printf("Socket successfully created..\n");
    bzero(&servaddr,sizeof(servaddr));
    servaddr.sin_family=AF_INET;
    servaddr.sin_addr.s_addr=htonl(INADDR_ANY);
    servaddr.sin_port=htons(PORT);
    if((bind(sockfd,(SA *)&servaddr,sizeof(servaddr)))!=0)
    {
        printf("socket bind failed...\n");
        exit(0);
    }
    else
        printf("Socket successfully binded..\n");
    func(sockfd);close(sockfd);
}
```

CLIENT:

```
#include<sys/socket.h>
#include<netdb.h>
#include<string.h>
#include<stdlib.h>
#include<stdio.h>
#define MAX 80
#define PORT 43454
#define SA struct sockaddr
int main()
{
    char buff[MAX];
    int sockfd,len,n;
    struct sockaddr_in servaddr;
    sockfd=socket(AF_INET,SOCK_DGRAM,0);
    if(sockfd==-1)
    {
        printf("socket creation failed...\n");
        exit(0);
    }
    else
        printf("Socket successfully created..\n");
    bzero(&servaddr,sizeof(len));
    servaddr.sin_family=AF_INET;
    servaddr.sin_addr.s_addr=inet_addr("127.0.0.1");
    servaddr.sin_port=htons(PORT);
    len=sizeof(servaddr);for(;;)
    {
        printf("\nEnter string : ");
        n=0;
        while((buff[n++]=getchar())!='\n');
        sendto(sockfd,buff,sizeof(buff),0,(SA *)&servaddr,len);
        bzero(buff,sizeof(buff));
        recvfrom(sockfd,buff,sizeof(buff),0,(SA *)&servaddr,&len);
        printf("From Server : %s\n",buff);
        if(strncmp("exit",buff,4)==0)
        {
            printf("Client Exit...\n");
            break;
        }
    }
    close(sockfd);
}
```

OUTPUT:

```
shara-d@Rohans-Workstation: /mnt/c/users/shara/NetComm$ gcc udpserver.c -o udpserver -lpthread
udpserver.c: In function 'main':
udpserver.c:55:18: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
   55 |         func(sockfd);close(sockfd);
      |                        ^~~~~~
      |                        pclose
shara-d@Rohans-Workstation: /mnt/c/users/shara/NetComm$ ./udpserver
Socket successfully created..
Socket successfully binded..
From client Moshi moshi
To client How have you been?
From client I'm good, I'm good. How are you liking Japan so far?
To client Oh you know how it is, everything just works. I'm loving it, every tidsbits of bit.
From client Good for you
how it is, everything just works. I'm loving it, every tidsbits of bit.
To client Yeah, ig
From client exit
, ig
To clientexit
Server Exit...
shara-d@Rohans-Workstation: /mnt/c/users/shara/NetComm$
```

```
shara-d@Rohans-Workstation: /mnt/c/users/shara/NetComm$ gcc udpclient.c -o udpclient -lpthread
udpclient.c: In function 'main':
udpclient.c:24:30: warning: implicit declaration of function 'inet_addr' [-Wimplicit-function-declaration]
   24 |     servaddr.sin_addr.s_addr=inet_addr("127.0.0.1");
      |                               ^~~~~~
udpclient.c:41:5: warning: implicit declaration of function 'close'; did you mean 'pclose'? [-Wimplicit-function-declaration]
   41 |     close(sockfd);
      |     ^~~~~~
      |     pclose
shara-d@Rohans-Workstation: /mnt/c/users/shara/NetComm$ ./udpclient
Socket successfully created..

Enter string : Moshi moshi
From Server :  How have you been?

Enter string : I'm good, I'm good. How are you liking Japan so far?
From Server :  Oh you know how it is, everything just works. I'm loving it, every tidsbits of ±

Enter string : Good for you
From Server :  Yeah, ig

Enter string : exit
From Server :  exit

Client Exit...
shara-d@Rohans-Workstation: /mnt/c/users/shara/NetComm$
```