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#include<stdio.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<netdb.h>
#include<string.h>
#include<unistd.h>

int t=1;

void error(char *msg)
{
    perror(msg);
    exit(0);
}

int main()
{
    int sockfd,n,sl,ch;
    char fname[20];
    struct sockaddr_in serv_addr;
    struct hostent *server;
    char host[20],buffer[256],buf[2000];
    int portno;

    printf("\n*****Client :*****\n");
    bzero(host,20);
    printf("\nEnter \n0 for local host, Otherwise type ip address of server :\n ");
    scanf("%s",host);

    if(strcmp(host,"0") == 0 )
        strcpy(host,"127.0.0.1");

    printf("\nEnter port no Ex : 5000 ");
    scanf("%d",&portno);

    printf("\nClient:Enter filename : ");
    scanf("%s",fname);

    //1.Socket

    sockfd=socket(AF_INET,SOCK_STREAM,0);

    if(sockfd<0)
        error("\nerror opening socket\n");

    server=gethostbyname(host);

    if(server==NULL)
    {
        fprintf(stderr,"\nerror,no such host\n");
        exit(0);
    }

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    }

    bzero((struct sockaddr_in *)&serv_addr,sizeof(serv_addr));
    serv_addr.sin_family=AF_INET;
    bcopy((char *)server->h_addr,(char *)&serv_addr.sin_addr.s_addr,server->h_length);
    serv_addr.sin_port=htons(portno);

    //2.Connect

    if(connect(sockfd,(struct sockaddr *)&serv_addr,sizeof(serv_addr))<0)
        error("\nerror connecting");

    sl=strlen(fname);
    n=write(sockfd,fname,strlen(fname));
    if(n<0)
        error("\nclient:error writing to socket");
    bzero(buf,2000);
    printf("\nclient:From server following file contents are received :- \n\n\n");

    //3.Recieve

    while(1)
    {
        bzero(buf,2000);
        if ((n=recv(sockfd, buf, 100, 0)) == -1)
            perror("recv");
        if (n==0)
            break;
        puts(buf);
    }

    close(sockfd);
    exit(0);
}

```

```

#include<stdio.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<unistd.h>
#include <termios.h>

```

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void error(char *msg)
{
    perror(msg);
    exit(1);
}

```

```

int main()

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```

{
    int sockfd,newsockfd,portno,clilen,n,slen,pid;
    char buffer[256],c[200];
    char fname[20];

    struct sockaddr_in serv_addr,cli_addr;
    FILE *fptr;
    printf("\nEnter server port number : Ex: 5000 ");
    scanf("%d",&portno);

    //1.Socket Creation

    sockfd=socket(AF_INET,SOCK_STREAM,0);

    if(sockfd<0)
        error("\nERROR opening socket");

    //2.SetSockOpt

    bzero((char *)&serv_addr,sizeof(serv_addr));
    serv_addr.sin_family=AF_INET;
    serv_addr.sin_addr.s_addr=INADDR_ANY;
    serv_addr.sin_port=htons(portno);

    //3.Bind

    if(bind(sockfd,(struct sockaddr *)&serv_addr,sizeof(serv_addr))<0)
        perror("\nERROR in binding");
    perror("\nNow server is up wating for client");

    //4.Listen

    listen(sockfd,5);
    clilen=sizeof(cli_addr);

    while(1)
    {
        //5.Accept

        newsockfd=accept(sockfd,(struct sockaddr *)&cli_addr,&clilen);

        printf("\n New client requested it sockfd = %d",newsockfd);
        bzero(fname,20);
        close(sockfd);
        n=read(newsockfd,fname,20);
        printf("\nn Requesting file content %s ",fname);
        slen=strlen(fname);
        if(n<0)
            error("\nERROR reading from socket");
        fptr=fopen(fname,"r");
        if(fptr==NULL)

```

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{
    printf("\nSERVER:file not found");
    bzero(buffer,20);
    strcpy(buffer,"file not found....");

    //6.Send

    if(send(newsockfd, buffer, strlen(buffer), 0) == -1)
        perror("send");
    close(newsockfd);
    fclose(fptr);
    exit(0);
}

printf("\nserver : Following information is send back to client :- \n\n\n");

while(!feof(fptr))
{
    fgets(buffer,79,fptr);

    //6.Send
    if(send(newsockfd, buffer, strlen(buffer),0) == -1)
        perror("send");
    puts(buffer);
}

printf("\nserver :file contents are transfered");
fclose(fptr);
close(newsockfd);
printf("\nserver :Process is going to terminate\n");
exit(0);
}
return 0;
}

```

Enter server port number : Ex: 5000 6000

Now server is up waiting for client: Success

New client requested it sockfd = 4

n Requesting file content tcp.sh

server : Following information is send back to client :-

Enter msg : helloworld

Enter len : 3

Frames Created are:

Sequence_No	Random_No	Length	Packet
1	83	2	he
2	77	2	ll
3	93	2	ow
4	86	1	o
5	49	2	rl
6	62	2	d

Frames Received as :

Sequence_No	Random_No	Length	Packet
5	49	2	rl
6	62	2	d
2	77	2	ll
1	83	2	he
4	86	1	o
3	93	2	ow

Frames re-constructed

Receiver End :

Sequence_No	Random_No	Length	Packet
1	83	2	he
2	77	2	ll
3	93	2	ow
4	86	1	o
5	49	2	rl
6	62	2	d

Received message = helloworld

*****Client :*****

Enter

0 for local host, Otherwise type ip address of server :

0

Enter port no Ex : 5000 6000

Client:Enter filename : tcp.sh

client:From server following file contents are received :-

Sequence_No	Random_No	Length	Packet
1	83	2	he
2	77	2	ll
3	93	2	ow
4	86	1	o
5	49	2	rl
6	62	2	d

Frames Received as :

Sequence_No	Random_No	Length	Packet
5	49	2	rl
6	62	2	d
2	77	2	ll
1	83	2	he
4	86	1	o
3	93	2	ow

Frames re-constructed

Receiver End :

Sequence_No	Random_No	Length	Packet
1	83	2	he
2	77	2	ll
3	93	2	ow
4	86	1	o
5	49	2	rl
6	62	2	d

Received message = helloworld