ASSIGNMENT-3

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Subject: Computer Network Lab

Dept: CSE

Year:3rd

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TCP TIME CLIENT SERVER PROGRAM

IN C

TCP DATETIME CLIENT SERVER PROGRAM

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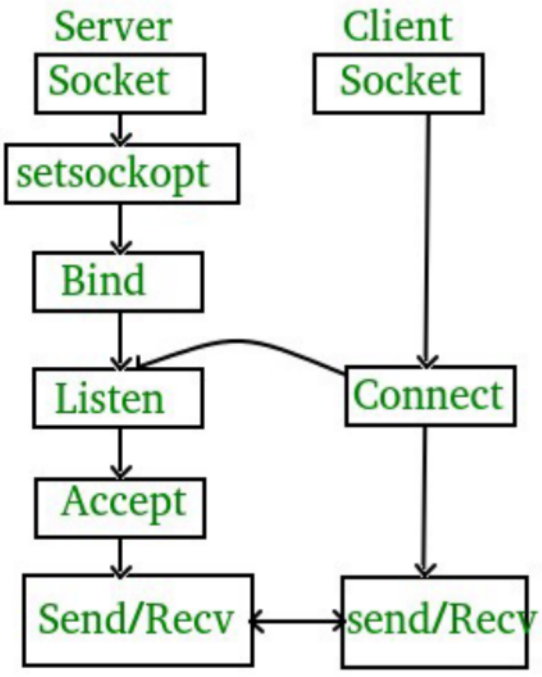
SYSTEM USED :
OPERATING SYSTEM : kali linux 2020.1
KERNEL: 4.19.153
GUI: DEFAULT XSESSION (XFCE4)
TEXT EDITOR :NANO

system owned and project done by :Sayantan Roy

TCP DATETIME CLIENT SERVER PROGRAM IN C

If we are creating a connection between client and server using TCP then it has few functionality like, TCP is suited for applications that require high reliability, and transmission time is relatively less critical. It is used by other protocols like HTTP, HTTPs, FTP, SMTP, Telnet. TCP rearranges data packets in the order specified. There is absolute guarantee that the data transferred remains intact and arrives in the same order in which it was sent. TCP does Flow Control and requires three packets to set up a socket connection, before any user data can be sent. TCP handles reliability and congestion control. It also does error checking and error recovery. Erroneous packets are retransmitted from the source to the destination.

The entire process can be broken down into following steps:



The entire process can be broken down into following steps:

TCP Server –

1.using **create()**, Create TCP socket.
2.using **bind()**, Bind the socket to server address.
3.using **listen()**, put the server socket in a passive mode, where it waits for the client to approach the server to make a connection
4.using **accept()**, At this point, connection is established between client and server, and they are ready to transfer data.
5.Go back to Step 3.

TCP Client –

1.Create TCP socket.
2.connect newly created client socket to server.

Arguments :

domain –Specifies the communication
domain (AF_INET for IPv4/ AF_INET6 for IPv6)

type –Type of socket to be created
(SOCK_STREAM for TCP / SOCK_DGRAM for UDP)

protocol –Protocol to be used by socket.
0 means use default protocol for the address family.

bind : assigns address to the unbound socket

sockfd –File descriptor of socket.

addr –Structure in which address to be binded to is specified

Functions:

socket(int domain, int type, int protocol)

Creates an unbound socket in the specified domain.
Returns socket file descriptor.

SERVERSIDE PROGRAM:

filename :tcpdatetimeserver.c

```
#include<sys/socket.h>
#include<stdio.h>
#include<string.h>
#include<time.h>
main( )
{
struct sockaddr_in sa;
struct sockaddr_in cli;int sockfd,conntfd;int len,ch;char str[100];
time_t tick;
sockfd=socket(AF_INET,SOCK_STREAM,0);
if(sockfd<0)
{
printf("error in socket\n");
exit(0);
}
else printf("Socket opened");
bzero(&sa,sizeof(sa));
sa.sin_port=htons(5600);
sa.sin_addr.s_addr=htonl(0);
if(bind(sockfd,(struct sockaddr*)&sa,sizeof(sa))<0)
{
printf("Error in binding\n");
}
else
printf("Binded Successfully");
listen(sockfd,50);
for(;;)
{
len=sizeof(ch);
conntfd=accept(sockfd,(struct sockaddr*)&cli,&len);
printf("Accepted");
tick=time(NULL);
```

```
snprintf(str,sizeof(str),"%s",ctime(&tick));
printf("%s",str);write(conntfd,str,100);
}
}
```

CLIENTSIDE PROGRAM:

filename:tcpdatetimeclient.c

```
include<netinet/in.h>
#include<sys/socket.h>
#include<stdio.h>
main()
{
struct sockaddr_in sa,cli;
int n,sockfd;
int len;char buff[100];
sockfd=socket(AF_INET,SOCK_STREAM,0);
if(sockfd<0){ printf("\nError in Socket");
exit(0);
}
else printf("\nSocket is Opened");
bzero(&sa,sizeof(sa));
sa.sin_family=AF_INET;
sa.sin_port=htons(5600);
if(connect(sockfd,(struct sockaddr*)&sa,sizeof(sa))<0)
{
printf("\nError in connection failed");
exit(0);
}
else
printf("\nconnected successfully");
if(n=read(sockfd,buff,sizeof(buff))<0)
{
printf("\nError in Reading");
exit(0);
}
```

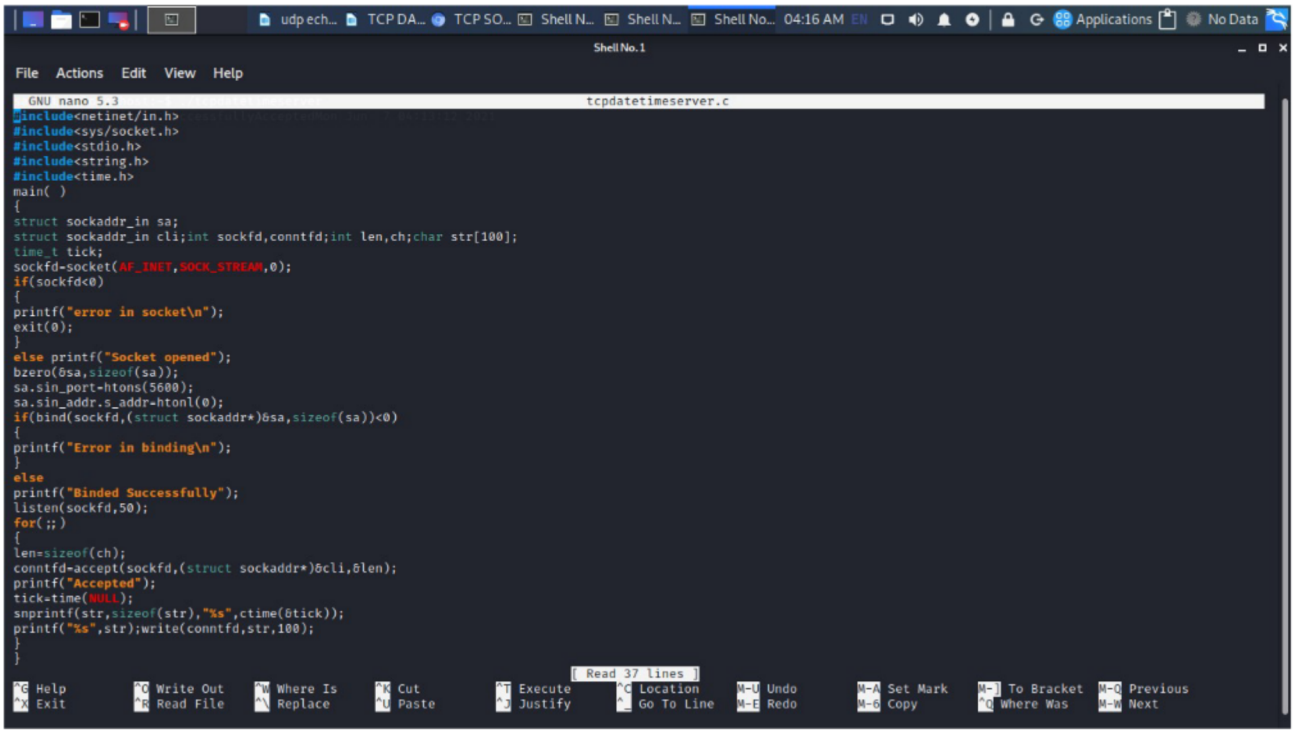
```
else
{printf("\nMessage Read %s",buff);
}}
```

output:

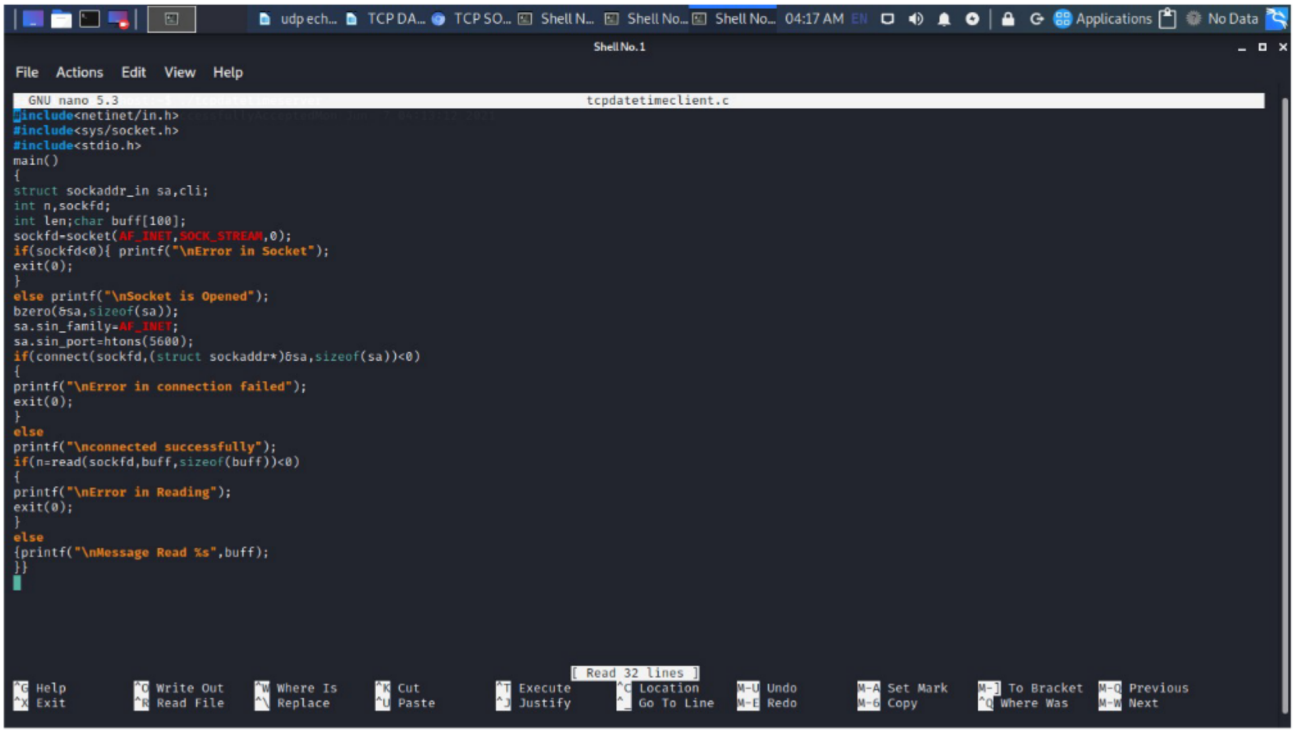
run:

```
gcc tcpdatetimeserver.c -o tcpdatetimeserver
gcc tcpdatetimeclient.c -o tcpdatetimeclient
```

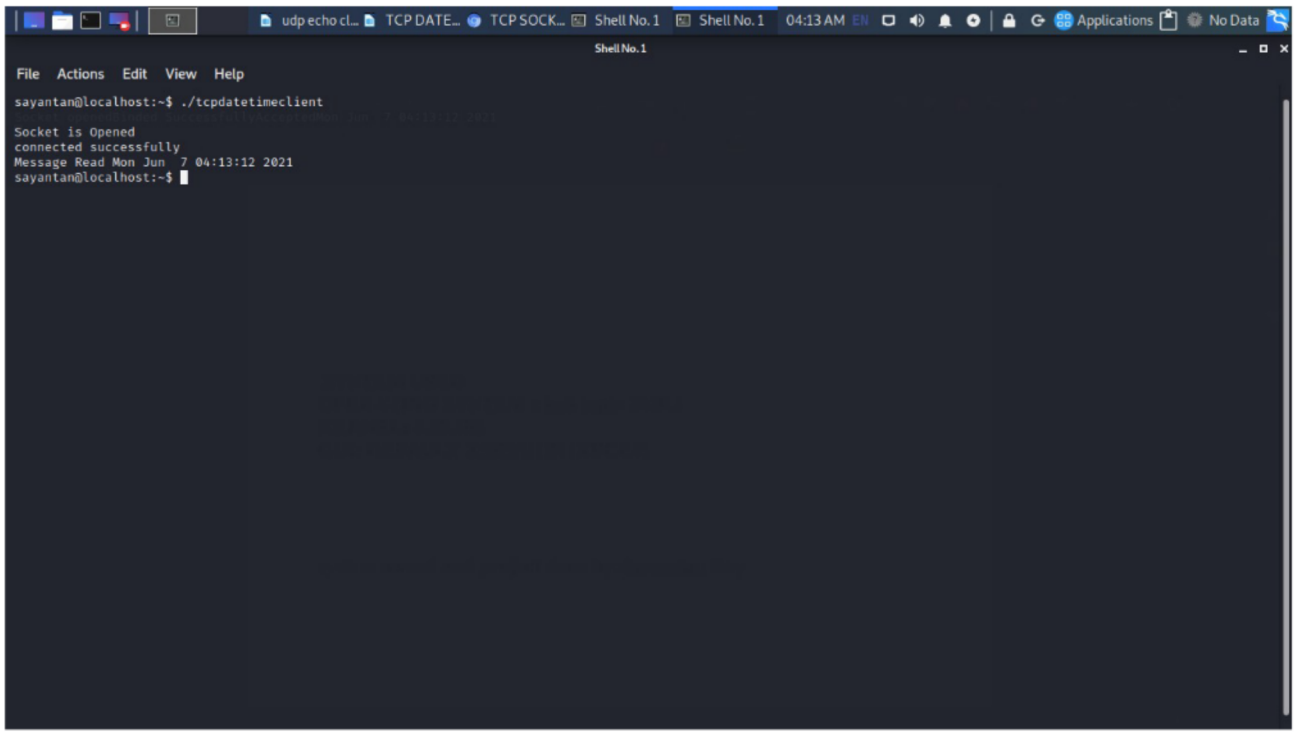
```
sayantan@localhost:~$ ./tcpdatetimeclient

Socket is Opened
connected successfully
Message Read Mon Jun  7 04:13:12 2021
sayantan@localhost:~$

sayantan@localhost:~$ ./tcpdatetimeserver
Socket openedBinded SuccessfullyAcceptedMon Jun  7 04:13:12 2021
```



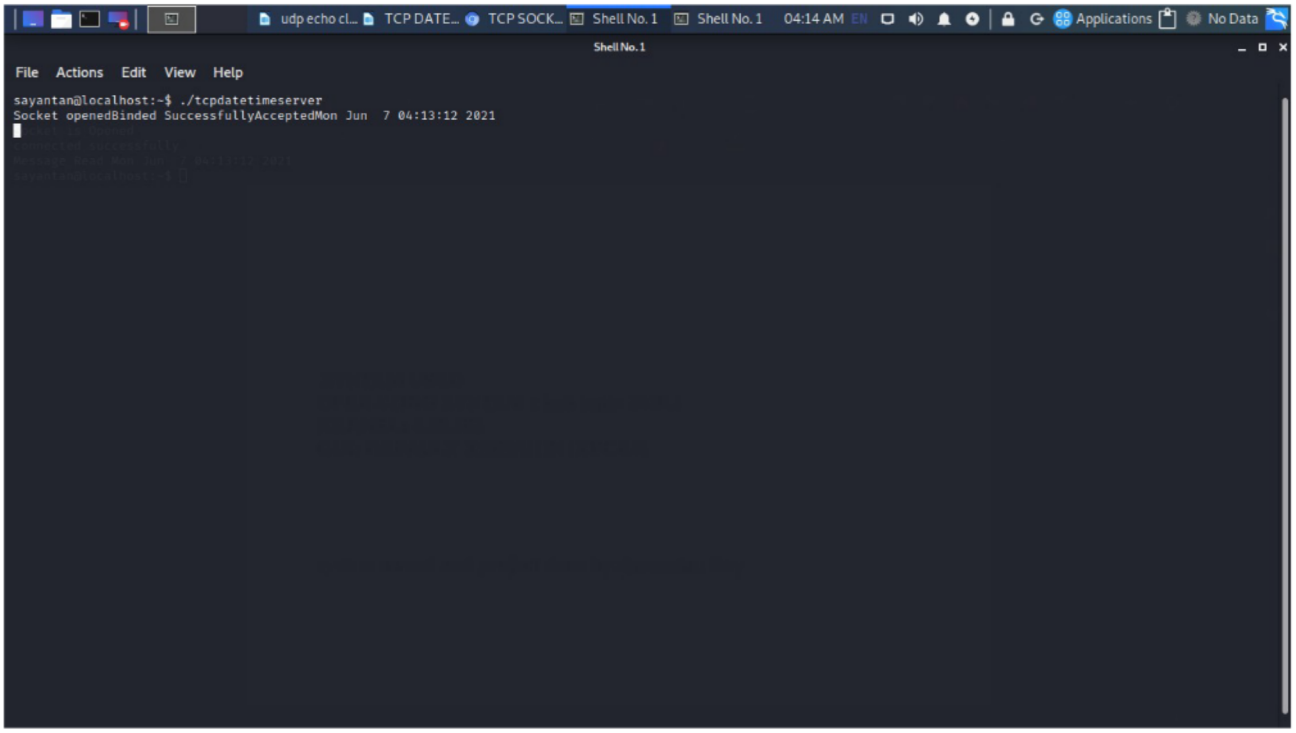
file:tcpdatetimeserver.c



file:tcpdatetimeclient.c



here the client is connected suceesfully and it sends time to the server



here the socket is binded sucessfully and it gets date &time from the client