[**Socket Programming (TCP) using C:**](https://vinodthebest.wordpress.com/2012/05/26/socket-programming-tcp-using-c/)

**Socket Programming:**  
-Minimum Requirement.  
-Linux OS [Lib. Header Files]  
-IP & Port No.-**Network –unique no-32-IPV4 (client and server iP address).Port-multiple services on server**, **connect to particular service-port no: needed**  
-Server & Client Concept. (one c file for client, c file for Server-execute first server, server waiting for request client send)

**Major steps.**  
**-Server:**=Create a socket with the socket ()  
=Bind the socket to an address using the bind().  
=Listen for connections with the listen().-server in first in listening mode  
=Accept a connection with the accept().//accept request  
=Send and receive data, use the read() and write() system calls.

**-Client:**  
=Create a socket with the socket()  
=Connect the socket to the address of the server using the connect() system call. ( requesting server for connection)  
=Send and receive data, use the read() and write() system calls.  
-Server coding.  
-Client coding.  
-Running.

Server :

/\* A simple server in the internet domain using TCP the port number is passed as an argument \*/

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

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

int main(int argc, char \*argv[]) /\*port no and ip address is sent argc(count),variables-argv\*/  
{

int sockfd, newsockfd, portno, clilen;  
char buffer[256];  
struct sockaddr\_in serv\_addr, cli\_addr;  
int n;

if (argc < 2)  
{  
fprintf(stderr,"ERROR, no port provided\n");  
exit(1);  
}

sockfd = socket(AF\_INET, SOCK\_STREAM, 0);/\*internet address(ip addr), TCP Stream, Socket address(according to system)\*/

if (sockfd < 0)  
{  
error("ERROR opening socket");  
}

bzero((char \*) &serv\_addr, sizeof(serv\_addr));//clearing server addr

portno = atoi(argv[1]);//stored in Argv, convert char to int

serv\_addr.sin\_family = AF\_INET; //ipaddress(address by automatically)  
serv\_addr.sin\_addr.s\_addr = INADDR\_ANY;  
serv\_addr.sin\_port = htons(portno); //int to network format

if (bind(sockfd, (struct sockaddr \*) &serv\_addr,sizeof(serv\_addr)) < 0)/\*combine sockfd with server address\*/  
{  
error("ERROR on binding");  
}

listen(sockfd,5);//5 clients handled by server(sockfd have all details)  
clilen = sizeof(cli\_addr);

newsockfd = accept(sockfd,(struct sockaddr \*) &cli\_addr, &clilen); /\*sever accept sockfd-new address is created and newsockfd\*/

if (newsockfd < 0)  
{  
error("ERROR on accept");  
}

bzero(buffer,256);// clear buffer

n = read(newsockfd,buffer,255);//read to buffer of size 255

if (n < 0)  
{  
error("ERROR reading from socket");  
}

printf("Here is the message: %s\n",buffer);

n = write (newsockfd,"I got your message",18);/\*all information in newsockfd,no of character\*/

if (n < 0)  
{  
error("ERROR writing to socket");  
}  
return 0;  
}

Client :

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

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

int main(int argc, char \*argv[])  
{  
int sockfd, portno, n;  
struct sockaddr\_in serv\_addr;  
struct hostent \*server;

char buffer[256];

if (argc < 3)/\* ./client.out local host(servers ip address) 4547   
{  
fprintf(stderr,"usage %s hostname port\n", argv[0]);   
exit(0);  
}

portno = atoi(argv[2]);

sockfd = socket(AF\_INET, SOCK\_STREAM, 0);

if (sockfd h\_addr,(char \*)&serv\_addr.sin\_addr.s\_addr,server->h\_length); // getting hostname in server

serv\_addr.sin\_port = htons(portno);

if (connect(sockfd,&serv\_addr,sizeof(serv\_addr)) < 0)  
{  
error("ERROR connecting");  
}  
printf("Please enter the message: ");  
bzero(buffer,256);  
fgets(buffer,255,stdin);//scanf can also used ,std input o/p,user to enter value  
n = write(sockfd,buffer,strlen(buffer));//write the value from buffer  
if (n < 0)  
{  
error("ERROR writing to socket");  
}  
bzero(buffer,256);  
n = read(sockfd,buffer,255);  
if (n < 0)  
{  
error("ERROR reading from socket");  
}  
printf("%s\n",buffer);

return 0;  
}

<https://vinodthebest.wordpress.com/category/c-programming/c-network-programming/>

**Compiling the program**- cc client.c –o client.out

cc server.c –o server.out

**running program** - run server first

./ server.out 4547

Open new terminal

./ client.out local host (ip addr) 4547

Please enter message: hello