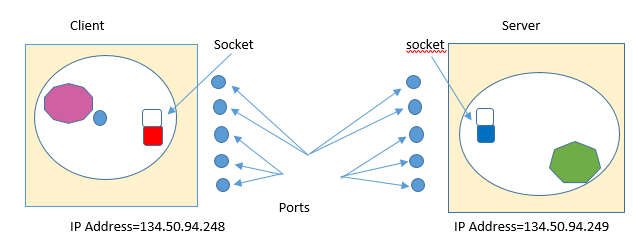
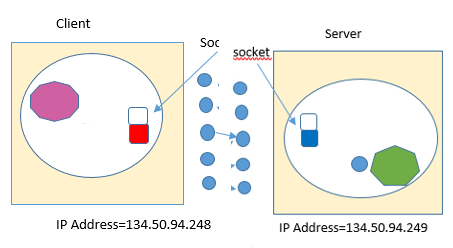
What is Socket programming?

Socket is an endpoint of a 2-way communication between programs running on the network.

\*\* How socket works?





Why socket required?

* When we desire a communication between two applications possibly running on different machines,we need sockets.
* To build any network Application

i.e-Web browsers,FTP etc….

What is socket address?

IP address(192.68.21.3) – It is used for host to host connection.

Port number(80) – it is used for the process to process communication in the network.

\*\* They are created socket address(192.68.21.3:80)

What is Socket programming?

Socket programming is a way of connecting two nodes on a network to communicate with each other.

Which functions are used for socket programming?

The main functions in <sys/socket.h>are:

* socket()
* bind()
* listen()
* connect()
* accept()
* send()/recv()/read()/write()/sendto()/recvfrom()
* close()

Categorized function between Server and client.

Client Server

Client function Server function

Socket

Connect() bind()

Listen()

Accept()

Send()/recv()/sendto()/recvfrom()

Close()

System function for socket programming

user-1 user-2

Socket() 1 endpoint for communication 2

Bind() 1 2

Connect() 1 2

Listen() 1 2

Accept() 1 2

Send/recv() 1 exchange the data 2

Close() 1 end of communication 2

Socket():- socket()- A connection Endpoint

Purpose:- It creates socket

|  |  |
| --- | --- |
| Family | description |
| AF\_INET | IPV4 |
| AF\_INET6 | IPV6 |

Syntax:- int socket(int family,int type,int protocol)

|  |  |
| --- | --- |
| Type | Description |
| SOCK\_STREAM | Stream Socket |
| SOCK\_DGRAM | Datagram Socket |

|  |  |
| --- | --- |
| Type | Description |
| IPPROTO\_TCP | TCP Protocol |
| IPPROTO\_UDP | UDP Protocol |

Example:-

int socket(AF\_INET,SOCK\_STREAM,0)

Bind():-

Bind()- Attaching to an IP and Port.

Purpose:- Attach itself to a specific port and IP address.

Syntax:-

int bind(int sockfd,struct sockaddr \*serv\_addr,int addrlen)

sockfd=socket descriptor returned by socket()

serv\_addr=It contains server IP address and port.

Addrlen= length of the address in bytes.

Example:-

Struct sockaddr\_in serv\_addr;

Serv\_addr.sin\_family=AF\_INET;

Connect():-

Connect()- connect to a server port.

Purpose:-Connect to a server port.

Syntax: int connect(int sockfd,struct sockaddr \*serv\_addr,int addrlen)

Listen():-

Listen():- Wait for a connection

Purpose:- The server process calls listen to tell the kernel to initialize a wait queue of connections for this socket.

Syntax: int listen(int sockfd,int backlog)

sockfd=socket descriptor returned by socket()

backlog=Maximum length of the pending connections queue.

Example:- int listen(sockfd,10);

It means this will allow a maximum of 10 connections to be in pending state.

Accept():-

Accept():- A new connection.

Purpose:- accept new connections from new clients

Syntax: int accept(int sockfd,struct sockaddr \*cli\_addr,int addrlen)

Sockfd=socket descriptor returned by socket()

Cli\_addr=will hold the new client’s information when accept returns.

Addrlen=size of client address

How many types of socket?

socket

stream socket datagram socket

Characteristics of stream socket :-

Reliable & Error free service, sequencial packet delivered.

Characteristics of Datagram socket:-

Unreliable & best effort service, packet may arrive of order.

What is protocol?

Protocol is a set of rules,which are used in digital communication to connect network devices and exchange information between them.

TCP/IP Protocol:-

TCP stands for transmission control protocol where as IP stands for internet protocol.It is used to transfer the data over the internet,it devides the data into small packets and sends it to the destination through the network.

UDP:-

UDP stands for User Dayagram Protocol. It is an unreliable and connection less protocol so, in order to send data from one machine to another machine we did not establish any connection in compare to TCP/IP Protocol.