NETWORKING IN JAVA

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***Abstract*- This paper describes about Network programming using java. Networking is the practice of linking two or more computing devices together for the purpose of sharing data. Network programming basically uses the Client Server model. In Client-Server programming there are two different programs or process, one which initiates communication called Client process and other who is waiting for communication to start called Server process. Finally comparison between the Network programming using C language and Network Programming using Java is shown.**

***Index Terms* – Network Programming, java , client-server.**

I. INTRODUCTION

In today's world Internet is used by each and everybody. The internet is all about connecting machine together and communication. This is where Network Programming comes. Network programming allows Communication. It means it involves writing computer programs that communicate with other program across a computer network. Network program can do lots of work. A simple network Program can obtain information from many computers located all over the world. It can communicate with millions of people around the world. Network programming uses Client-Server model, so network programming is also Client-Server Programming. Where one program start the communication called client process or program and other who is waiting for communication to start called the server process or program. In the simplest case, Client program sends the request to the server. Server sends the response. Client then obtains the data from the server and displays it. Complex clients filter and reorganize data, repeatedly obtain changed data, send data to other people , and allows real time chatting, multiplayer gaming. Complex servers often do a lot of processing on the data before answering the question.

Java includes classes that help network program communicate with certain types of servers and process different types of data but not all the servers and data. So Java allows you to write protocol handlers to communicate with different server and process the data. The most exciting feature of Java is it contains an easy to use and cross platform model for communication which make network programming very easy to understand very quickly.

II. CLIENT-SERVER MODEL

Network programming uses Client-Server Model. Client program or process initiates the communication and servers are program or process who waits for communication to start. Some time program may be both a client and server. Here Client sends the request to which the server sends the response. Typically we have single server multiple client's model. The server does not need to know anything about client even that it exists or not. The client should always know something about the server atleast where it is located. The IP and Port number of the server is generally well known. So the client knows where to send the request. In Contrast the port number on client side is generally allocated automatically by the Kernel.

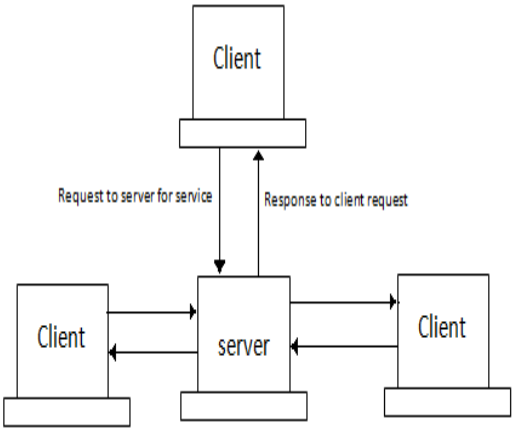

Figure 1: - Client-Server Model

In Client Server Program there are two principal programming models. They are Iterative Server model and Concurrent Server Model**.**

I) Iterative Server Model - In Iterative Server Model Only one request is processed at a time. In this listener and server portions of the application coexist and run as part of the same task. The server application holds the socket until all application processing has completed. In this client has to wait until server does not respond. It is Easy to build and it is mostly used when request can be completed in a small time. The problem with this client server model it causes unnecessary delay.

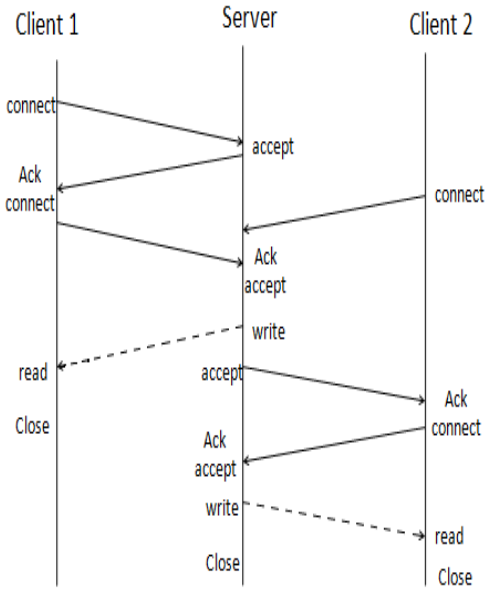

Figure 2:-Iterative server Model working

II) Concurrent Server Model - In Concurrent Server Model many request are processed at same time. In this the server role is to listen for service request from different host or clients. Once the request has been received the servers fork the child process to handle it and server goes back to listening to other request. In this new request can be processed while other request still being served. It gives better performance than Iterative server model. The disadvantage of this model is it is difficult to design and build.

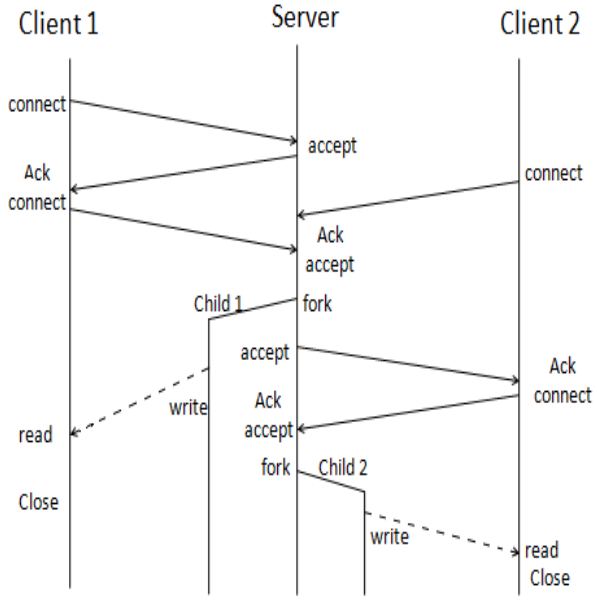

Figure 4:-Concurrent server model working

III. COMPARISON BETWEEN NETWORK PROGRAMMING IN JAVA AND NETWORK PROGRAMMING IN C

Network programming using C had some disadvantages due to which Network programming using Java is used. In Network programming in C writing the network program were Difficult to write also they were difficult to understand and they are length. Also C is not cross platform and it does not provide code portability. So writing a network program using c in Linux environment will not work in windows environment. It have less number of library file for network programming compare to java so writing network program is little bit difficult. It is difficult to send and receive data for communication compare to java. Also it does not provide so much security. In Programmer writing network program using C should have considerable knowledge of the system with which they are working with.

Network Programming using java have lots of advantages that why it is preferred over Network programming using C. Writing the network program in java is simpler and network programs are easy to understand and the programs are also small compare to network program written in C. Also Java is cross platform and support code portability. So Java network program written in java in Linux platform will work on windows platform. It has more library file for network programming compare to C so writing network program is simpler. It is easy to send and receive data for communication using java. Also it provides more security compared to C. It has SSL which can provide more security. In Network programming using java network intensive programs like web servers and clients, almost all the code handles data manipulation or the user interface. The part of the program that deals with the network is always short and small. In Network programming in java using socket we have different types of socket class for Client and different socket class for Server. At client side we use socket class and at server side we use Server Socket class. Another advantage is that java gives option of applet. In applet the code is not allowed any permanent access to the system. So code is executed but no damage to the system. It is also possible for applets to communicate across the internet but they are limited by security restriction. Network programming Using java we have Java Socket. Java socket has some Advantage and Disadvantage which are as follows:- Advantages:- 1) Java sockets are flexible and are more powerful. 2) Efficient Socket based programming can be easily implemented for general communication. 3) Java Socket causes low network traffic, if efficiently used. 4) Unlike html forms and CGI scripts that generate and transfer whole web pages for each new request can only send necessary information. 5) Java socket provides a simplified interface to native socket such as BSD and Winsock 2. 6) It hides much of the detail involved in traditional socket programming. Disadvantages:- 1) Security restriction are sometimes over bearing because a Java Applet running in a web browser is only able to establish Connection to the machine where it came from, and to nowhere else on the network Despite all the useful and helpful feature. 2) Socket based communication allows only to send packets of raw data between applications. Both the client-side and server-side have to provide mechanism to make the data useful in any way.

IV. CONCLUSION

This paper on Network programming in java describe in detail about concepts used in network programming in java. It describes about Java network Programming and its application. Network programming is Client server programming, so it describe about different client server model. Finally there is comparison of Network programming using Java and Network programming using C, provided the advantages and disadvantages of both. Network programming using Java have lots of advantage due to which it is preferred**.**

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