Dt : 6/11/2023

Networking in Java:(Socket Programming in Java)

define Computer N/W?

=>The inter connection of autonomous computers is known as Computer N/W.

=>Based on number of nodes in the N/W,the N/Ws are categorized in to the following:

(1)LAN - Local Area N/W

(2)MAN - Metropolitan Area N/W

(3)WAN - Wide Area N/W

(4)WWW - World Wide Web

define WWW?

=>WWW is an UnLimited N/W holding UnLimited Nodes.

=>The Computers in the N/w are categorized into two types:

(1)Server Computers

(2)Client Computers

(1)Server Computers:

=>The computers which are holding Server Applications are known as Server Computers.

=>These Server Computers will accept the request and generate the

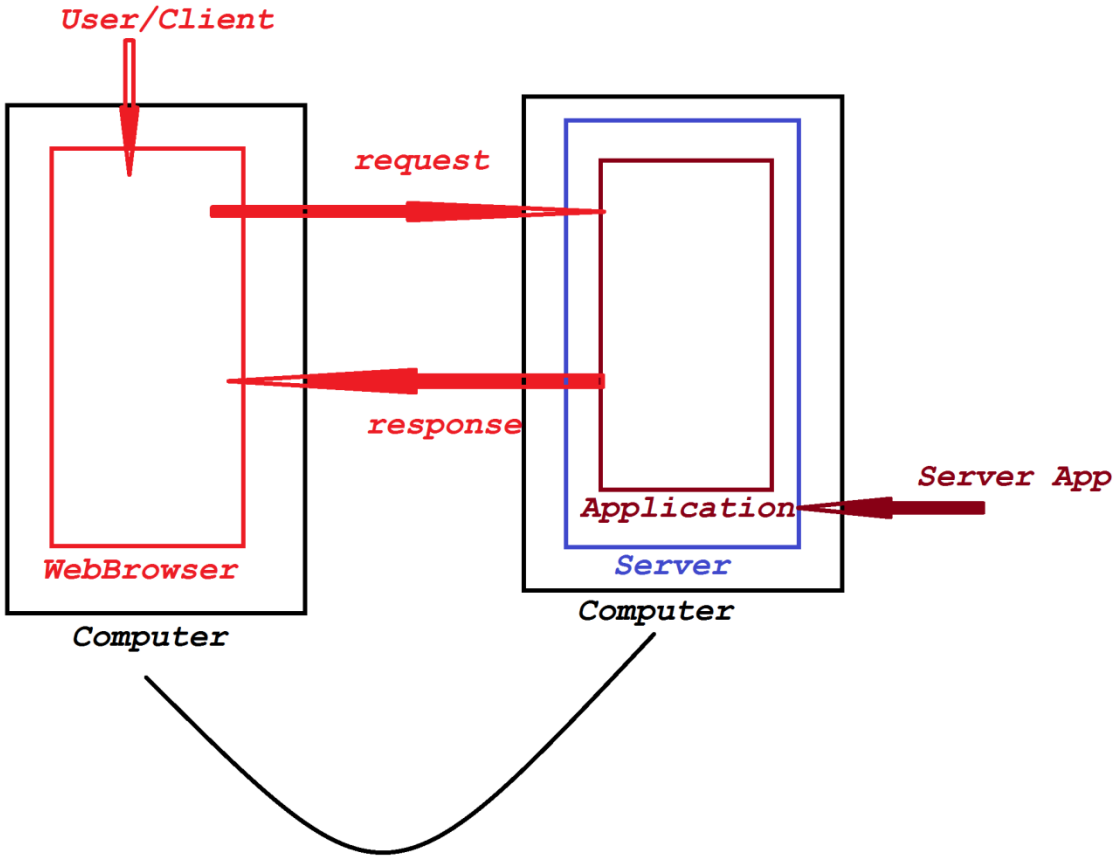
response.

(2)Client Computers:

=>The computers which are holding client applications are known as Client Computers

=>These Client Computers will generate request to Servers.

Diagram:



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define N/W protocol?:

=>The set-of-rules used by computers in the N/W is known as N/W protocol.

=>These N/w protocols are categorized into two types:

(1)Connection oriented protocols

(2)Connection less Protocols

(1)Connection oriented protocols:

=>In Connection Oriented Protocols the Sender will receive ack from Receiver.

Ex:

TCP/IP

(2)Connection less Protocols:

=>In Connection less protocols the Sender will not receive ack from Receiver.

Ex:

UDP

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define IP Address?

=>The Unique identification number used by computer in the N/W is known as IP Address.

=>we use this IP Address to identify the computer in the N/W.

=>Based on the range of IP Addresses the N/Ws are Classified

into the following:

class A - 1.0.0.0 to 126.255.255.254 (16 million)

class B - 128.1.0.1 to 191.255.255.254 (65000)

class C - 192.0.1.1 to 223.255.254.254 (254)

class D - 224.0.0.0 to 239.255.255.255(multicast)

class E - 240.0.0.0 to 254.255.255.255(future)

note:

127.0.0.0 loopback network

255.255.255.255 - default network

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Note:

ISP - Interner Service Provider

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Link-local IPv6 Address . . . . . : fe80::edd4:4f26:52ef:cdd7%5

IPv4 Address. . . . . : 192.168.29.117

Subnet Mask . . . . . : 255.255.255.0

Default Gateway . . . . . : 192.168.29.1

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**imp*

define Socket?

=>The logical connection established for communication is

known as Socket.

=>we use port number for Socket Connection.

Ex:

PortNo : 0 to 65535

The following are the reserved port numbers:

13 - date and time services

21 - FTP which transfers files

23 - Telnet,which provides remote login

25 - SMTP,which delivers mails

80 - HTTP,which transfers web pages

109 - POP,which access mail boxes

The following are the network classes from "java.net" package:

(1)Socket,ServerSocket - used for TCP/IP connection

(2)DatagramPacket,DatagramSocket - used for UDP connection

(3)URL,URIConnection - used for read-write data from the internet

(4)InetAddress - this class is used to get the IP Address and hostname of the computer.

Note:

The communication b/w two Java Appls running on two diff JVMs

can be established using 'Socket' and 'ServerSocket' classes.

=>The JVMs can be in same ComputerSystem or different

ComputerSystems.

(1)Socket,ServerSocket Classes:

methods of Socket class:

1. InputStream getInputStream()

2. OutputStream getOutputStream()

3. synchronized void close()

methods of ServerSocket class:

1. Socket accept()

2. synchronized void close()

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Program : Server.java

```
import java.io.*;
import java.net.*;
class Server
```

```
{
public static void main(String args[])
                throws IOException
{
ServerSocket ss=new ServerSocket(888);
Socket s=ss.accept();
System.out.println("connection established");
PrintStream ps=new PrintStream
        (s.getOutputStream());
DataInputStream br=new DataInputStream
                (s.getInputStream());
DataInputStream kb=
new DataInputStream(System.in);
while(true)
{
String str,str1;
while((str=br.readLine())!=null)
{
System.out.println(str);
str1=kb.readLine();
ps.println(str1);
}
```

```
ps.close();
br.close();
kb.close();
ss.close();
s.close();
System.exit(0);
}
}
}
```

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Program : Client.java

```
import java.io.*;
import java.net.*;
class Client
{
public static void main(String args[])
        throws IOException
{
Socket s=new Socket("localhost",888);
DataOutputStream dos=new DataOutputStream
        (s.getOutputStream());
DataInputStream br=new DataInputStream
```

```
                (s.getInputStream());
DataInputStream kb=new DataInputStream
                (System.in);
String str,str1;
while(!(str=kb.readLine()).equals("exit"))
{
dos.writeBytes(str+"\n");
str1=br.readLine();
System.out.println(str1);
}
dos.close();
br.close();
kb.close();
s.close();
}
}
```

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Note:

=>Execute above two programs in two differnt CommandPrompts.

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Summary:

1.Socket Programming

2.RPC/RMI

3.CORBA

4.WebServices

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