*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*

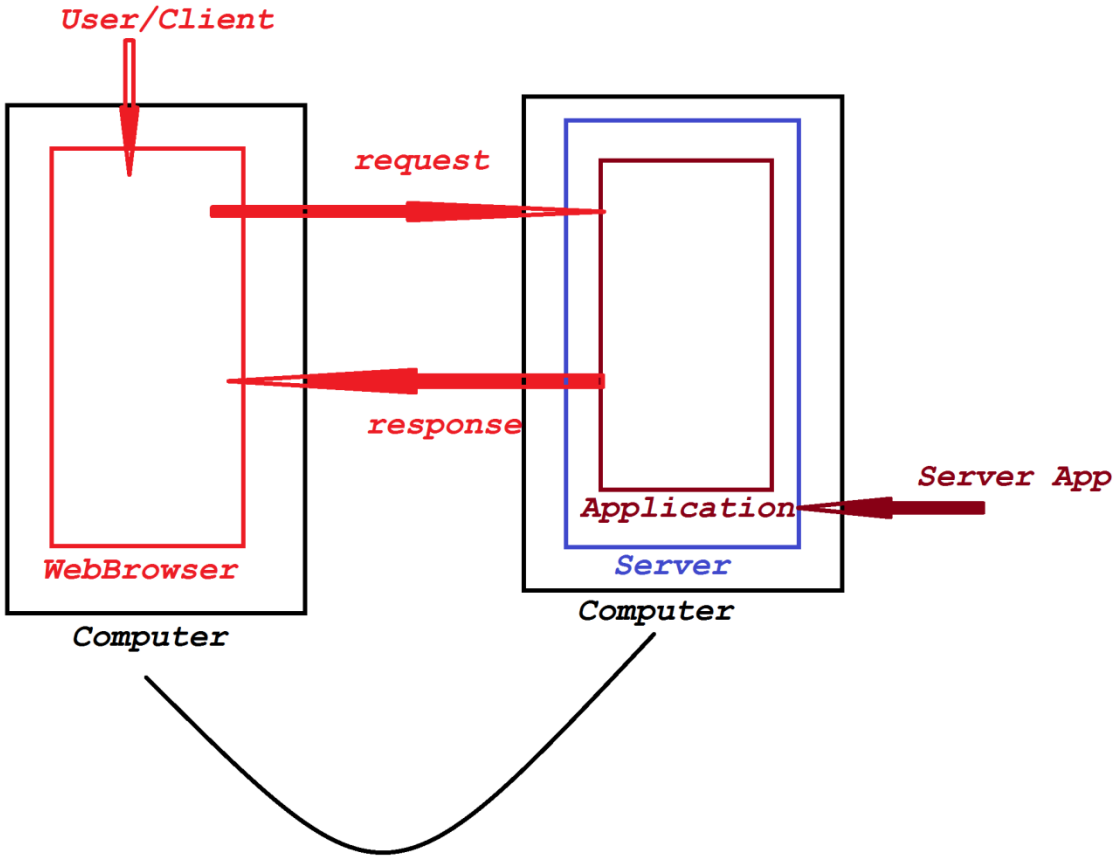
*response.*

*(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*

*==========*

*Note:*

*ISP - Interner Service Provider*

*==========*

*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*

*==========*

**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*

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*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()*

*==========*

*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);
}
}
}
```

==========

***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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