Write a code simulating PING and TRACEROUTE commands

Aim

To implement the simulation of PING and TRACEROUTE commands using Java.

(a)PING

ALGORITHM

```
Step 1: start the program.
Step 2: Include necessary package in java.
Step 3: To create a process object p to implement the ping command.
Step 4: declare one BufferedReader stream class object.
Step 5: Get the details of the server
        5.1: length of the IP address.
        5.2: time required to get the details.
        5.3: send packets, receive packets and lost packets.
        5.4: minimum ,maximum and average times.
Step 6: print the results.
Step 7: Stop the program
```

PROGRAM

Client:

```
import java.io.*;
import java.net.*;
import java.util.Calendar;
class pingclient
{
public static void main(String args[])throws Exception
{
String str;
int c=0;
long t1,t2;
Socket s=new Socket("127.0.0.1",5555);
DataInputStream dis=new DataInputStream(s.getInputStream());
PrintStream out=new PrintStream(s.getOutputStream());
while(c<4)
{
t1=System.currentTimeMillis();
str="Welcome to network programming world";
out.println(str);
System.out.println(dis.readLine());
t2=System.currentTimeMillis();
System.out.println(";TTL="+(t2-t1)+"ms");
c++;
}
s.close(); }
}
```

Server:

```
import java.io.*;
import java.net.*;
import java.util.*;
import java.text.*;
class pingserver
{
public static void main(String args[])throws Exception
{
ServerSocket ss=new ServerSocket(5555);
Socket s=ss.accept();
int c=0;
while(c<4)
{
DataInputStream dis=new DataInputStream(s.getInputStream());
PrintStream out=new PrintStream(s.getOutputStream());
String str=dis.readLine();
out.println("Reply from"+InetAddress.getLocalHost()+";Length"+str.length());
c++;
}
s.close();
}
}
```

OUTPUT

```
Enter the IP address to the ping:192.168.0.1
Pinging 192.168.0.1: with bytes of data =32
Reply from 192.168.0.11:bytes=32 time<1ms TTL =128
Reply from 192.168.0.11:bytes=32 time<1ms TTL =128
Reply from 192.168.0.11:bytes=32 time<1ms TTL =128
Reply from 192.168.0.11:bytes=32 time<1ms TTL =128
Ping statistics for 192.168.0.1
Packets: sent=4,received=4,lost=0(0% loss),approximate round trip time in milli seconds:
Minimum=1
ms,maximum=4ms,average=2ms
```

(b) TRACEROUTE

ALGORITHM

Step 1: Start the program.
Step 2: Include necessary package in java
Step 3: Make the traces on certain addresses
Step 4: Uses Runtime class and its associated functions
Step 5: Stop

PROGRAM

```
import java.io.*;
import java.net.*;
class TraceServer
{
public static void main(String args[])
{
try
{
String str;
System.out.print(" Enter the IP Address to be Traced : ");
BufferedReader buf1=new BufferedReader(new InputStreamReader(System.in));
String ip=buf1.readLine();
Runtime H=Runtime.getRuntime();
Process p=H.exec("tracert " + ip);
InputStream in=p.getInputStream();
BufferedReader buf2=new BufferedReader(new
InputStreamReader(in));
while((str=buf2.readLine())!=null)
{
System.out.println(" " + str);
}
}
catch(Exception e)
{
System.out.println(e.getMessage());
}
}
}
```

OUTPUT

```
D:\networks>javac TraceServer.java
D:\networks>java TraceServer
Enter the IP Address to be Traced : 172.20.1.20
Tracing route to hcet [172.20.1.20]
over a maximum of 30 hops:
  1     1 ms    <1 ms    <1 ms  hcet [172.20.1.20]
Trace complete.
```

RESULT

Thus the implementation for PING and TRACEROUTE has been done and verified successfully.