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Practical No. 02

1. Write a java program to implement a Server calculator using RPC concept. (Make use of datagram)

Program: Server.java package rpc;

```
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress;
import java.util.StringTokenizer;



public class Server {  private
DatagramSocket udpSocket;
   private int port;

   public Server(int port) {
this.port = port;
   }
   public static int addition(int num1,int num2)
   {
    return num1+num2;
   }
   public static int substraction(int num1,int num2)
   {
    return num1-num2;
   }
   public static int multiplication(int num1,int num2)
   {
    return num1*num2;
   }
   public static int division(int num1,int num2)
   {
    return num1/num2;
   }
```

```
   private void listen() {
try {
            DatagramSocket udpSocket = new DatagramSocket(port);
          System.out.println("Server started at " + InetAddress.getLocalHost());
          String msg;



            byte[] buf = new byte[1024];
            DatagramPacket packet = new DatagramPacket(buf, buf.length);

            // blocks until a packet is received
udpSocket.receive(packet);                  msg = new
String(packet.getData()).trim();

            StringTokenizer str=new StringTokenizer(msg,"-");
            int mthNo=Integer.parseInt(str.nextToken());
            int num1=Integer.parseInt(str.nextToken());
            int num2=Integer.parseInt(str.nextToken());
            int result;                 if(mthNo==1)
            {
                  result=addition(num1,num2);
    msg="Addition:"+result;
            }
if(mthNo==2)
            {
                  result=substraction(num1,num2);
    msg="substraction:"+result;
            }
if(mthNo==3)
{
                  result=multiplication(num1,num2);
    msg="multiplication:"+result;
```

```
                }
    if(mthNo==4)
                {
                        result=division(num1,num2);
        msg="division:"+result;
                }

                 System.out.println("Message from " + packet.getAddress().getHostAddress() +
    ": " + msg);

    }
          catch(Exception e) {
                System.out.println(e.getMessage());
          }
    finally {
                //udpSocket.close();
       }
      }

      public static void main(String[] args) {
    Server client = new Server(5000);
    client.listen();
      }

    }
```

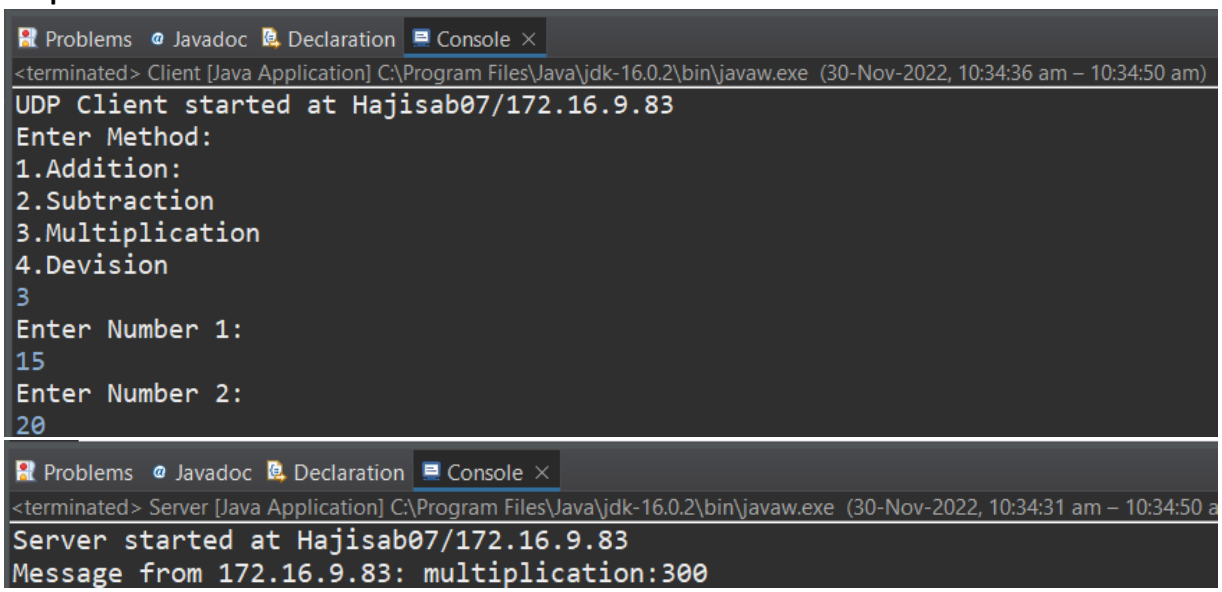
Client.java package

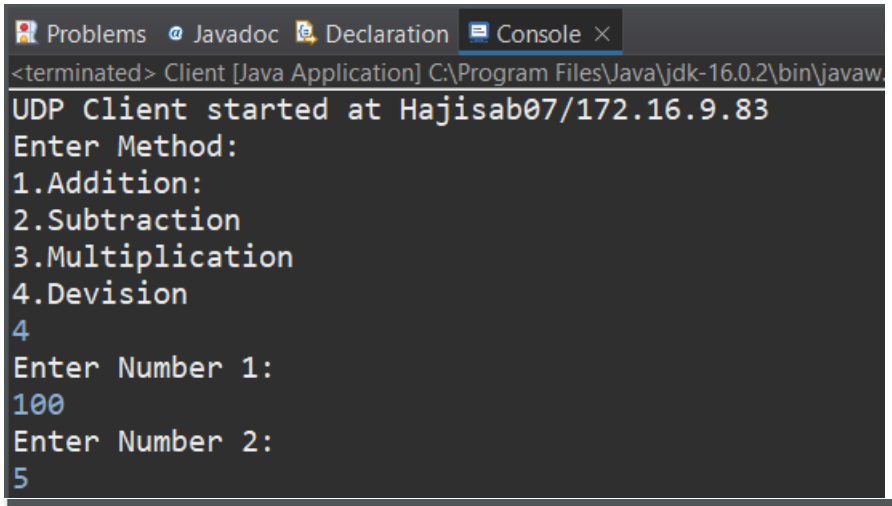
```
rpc;

import java.io.BufferedReader; import
java.io.InputStreamReader; import
java.net.DatagramPacket; import
java.net.DatagramSocket; import
```

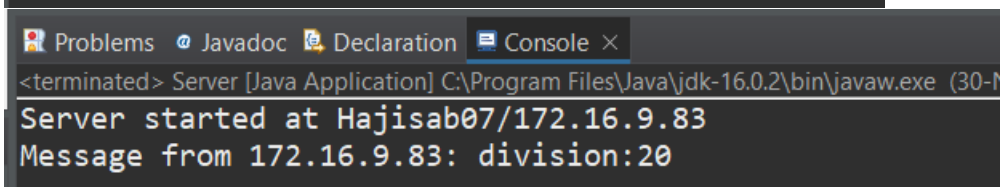
```
java.net.InetAddress; import
java.util.Scanner;


public class Client {
        DatagramSocket udpSocket;
   InetAddress serverAddress;
   int port;
   Scanner scanner;


   public Client(int port) {
this.port = port;
   }


   public void sendReq() {
      String in;
try {
        udpSocket = new DatagramSocket();
        InetAddress host = InetAddress.getLocalHost();      serverAddress
= InetAddress.getByName(host.getHostName());


            BufferedReader keyRead = new BufferedReader(new InputStreamReader(System.in));
            System.out.println("UDP Client started at " + InetAddress.getLocalHost());
            String paramlist="";
            System.out.println("Enter
Method:\n1.Addition:\n2.Subtraction\n3.Multiplication\n4.Devision");
      in = keyRead.readLine();          paramlist=paramlist+in+"-";
            System.out.println("Enter Number 1:");
      in = keyRead.readLine();
paramlist=paramlist+in+"-";
```

```
                System.out.println("Enter Number 2:");
        in = keyRead.readLine();
paramlist=paramlist+in;
        DatagramPacket p = new DatagramPacket(paramlist.getBytes(),
paramlist.getBytes().length, serverAddress, port);        udpSocket.send(p);


      }
      catch(Exception e) {
           System.out.println(e.getMessage());
                    }
   }

   public static void main(String[] args) {
Client sender = new Client(5000);
sender.sendReq();
   }

}
```

Output:







2) Write a java to implement a Date Time Server using RPC concept. (Make use of datagram)

Program:

Server.java package

rpcdatetime;

```
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress; import
java.time.LocalDateTime;


public class Server {
        private DatagramSocket udpSocket;
   private int port;


   public Server(int port) {
this.port = port;
   }
   public static LocalDateTime date()
   {
```

```
        return java.time.LocalDateTime.now();
    }

    private void listen() {
try {
                DatagramSocket udpSocket = new DatagramSocket(port);
              System.out.println("Server started at " + InetAddress.getLocalHost());
              LocalDateTime msg;



                byte[] buf = new byte[1024];
                DatagramPacket packet = new DatagramPacket(buf, buf.length);

                // blocks until a packet is received
udpSocket.receive(packet);

msg=date();
         System.out.println("Message from " + packet.getAddress().getHostAddress() + ": " +
msg);


        }
      catch(Exception e) {
        System.out.println(e.getMessage());
      }
        finally {
                //udpSocket.close();
        }
    }

    public static void main(String[] args) {
Server client = new Server(5000);
client.listen();
```

```
    }
}
```

Client.java package

```
rpcdatetime;

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.net.DatagramPacket;
import java.net.DatagramSocket;
import java.net.InetAddress; import
java.time.LocalDateTime; import
java.util.Scanner;

public class Client {
        DatagramSocket udpSocket;
    InetAddress serverAddress;
int port;
    Scanner scanner;

    public Client(int port) {
this.port = port;
    }

    public void sendReq() {
String in;      try {
        udpSocket = new DatagramSocket();
        InetAddress host = InetAddress.getLocalHost();
serverAddress = InetAddress.getByName(host.getHostName());

            BufferedReader keyRead = new BufferedReader(new
InputStreamReader(System.in));
```

```
            System.out.println("UDP Client started at " + InetAddress.getLocalHost());
            String paramlist="";
            DatagramPacket p = new DatagramPacket(paramlist.getBytes(),
paramlist.getBytes().length, serverAddress, port);          udpSocket.send(p);


      }
      catch(Exception e) {
         System.out.println(e.getMessage());
                  }
   }

   public static void main(String[] args) {
Client sender = new Client(5000);
sender.sendReq();
   }



}
```

Output: