Finolex Academy of Management and Technology, Ratnagiri

Department of Information Technology

Subject:	**Networking Lab (ITL401)**		
Class:	**SE IT / Semester – IV (CBCGS) / Academic year: 2017-18**		
Name of Student:	**Kazi Jawwad A Rahim**		
Roll No:	**28**	**Date of performance (DOP) :**	
Experiment No:	**12**	**Date of checking (DOC) :**	
Title: To implement Socket Programming with Java: UDP Client, UDP Server.			
Marks:		**Teacher's Signature:**	

1. Aim: To implement Socket Programming with Java: TCP Client, TCP Server.

2. Prerequisites:

Knowledge of

1. Java programming
2. TCP/IP

3. Hardware Requirements:

1. PC with minimum 2GB RAM

4. Software Requirements:

1. Linux (Ubuntu 10.04)/ Windows
2. Jdk installed

5. Learning Objectives:

1. To understand basic concepts of Socket Programming.
2. To be able to implement client server programming in java.
3. To understand basic java.net package features.

6. Course Objectives Applicable: LO 5

7. Program Outcomes Applicable: PO2, PO4

8. Program Education Objectives Applicable: 1, 3

UDP server code:

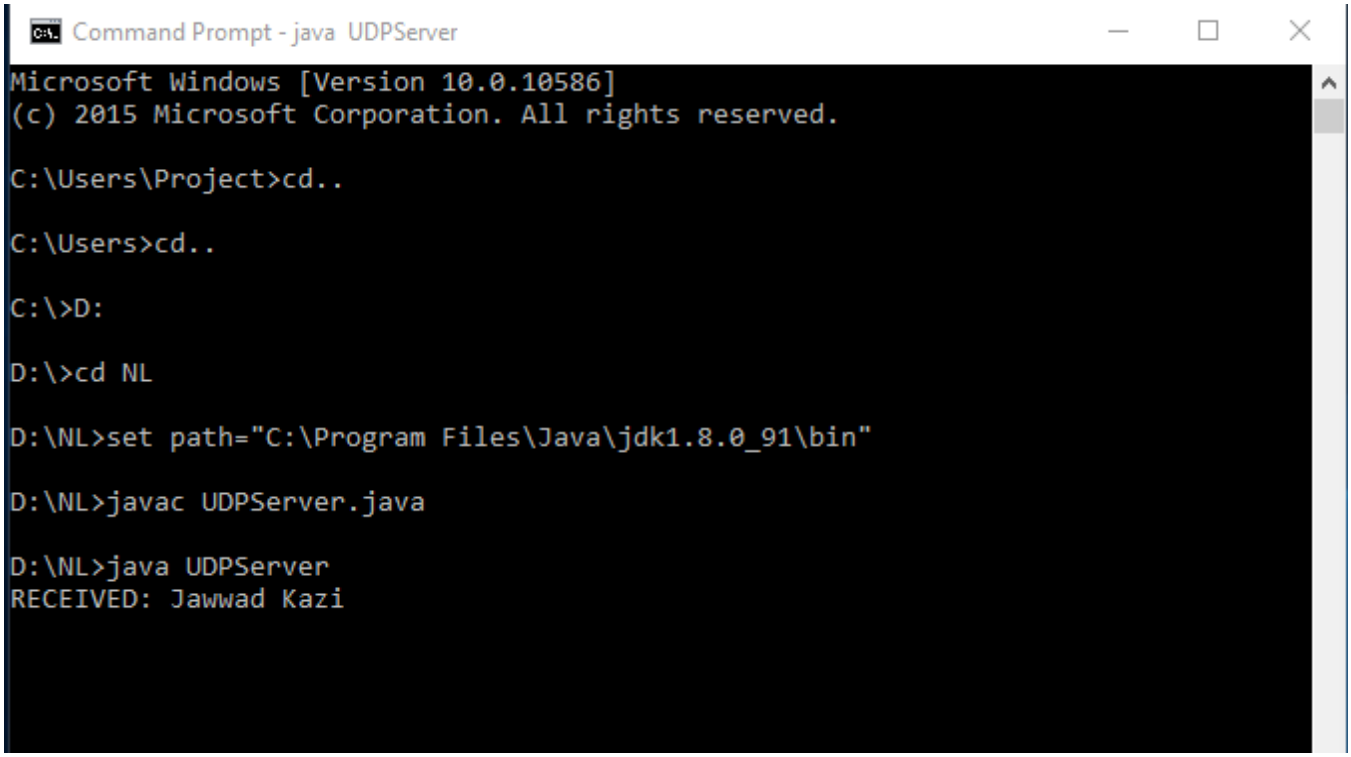
```
import java.io.*;
import java.net.*;
class UDPServer
{
  public static void main(String args[]) throws Exception
    {
      DatagramSocket serverSocket = new DatagramSocket(9876);
        byte[] receiveData = new byte[1024];
        byte[] sendData = new byte[1024];
        while(true)
          {
            DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);
            serverSocket.receive(receivePacket);
            String sentence = new String( receivePacket.getData());
            System.out.println("RECEIVED: " + sentence);
            InetAddress IPAddress = receivePacket.getAddress();
            int port = receivePacket.getPort();
            String capitalizedSentence = sentence.toUpperCase();
            sendData = capitalizedSentence.getBytes();
            DatagramPacket sendPacket =
            new DatagramPacket(sendData, sendData.length, IPAddress, port);
            serverSocket.send(sendPacket);
          }
    }
}
```

UDP client code:

```
import java.io.*;
import java.net.*;
class UDPClient
{
  public static void main(String args[]) throws Exception
  {
    BufferedReader inFromUser =
      new BufferedReader(new InputStreamReader(System.in));
    DatagramSocket clientSocket = new DatagramSocket();
    InetAddress IPAddress = InetAddress.getByName("localhost");
    byte[] sendData = new byte[1024];
    byte[] receiveData = new byte[1024];
    String sentence = inFromUser.readLine();
    sendData = sentence.getBytes();
    DatagramPacket sendPacket = new DatagramPacket(sendData, sendData.length, IPAddress, 9876);
    clientSocket.send(sendPacket);
    DatagramPacket receivePacket = new DatagramPacket(receiveData, receiveData.length);
    clientSocket.receive(receivePacket);
    String modifiedSentence = new String(receivePacket.getData());
    System.out.println("FROM SERVER:" + modifiedSentence);
    clientSocket.close();
  }
}
```

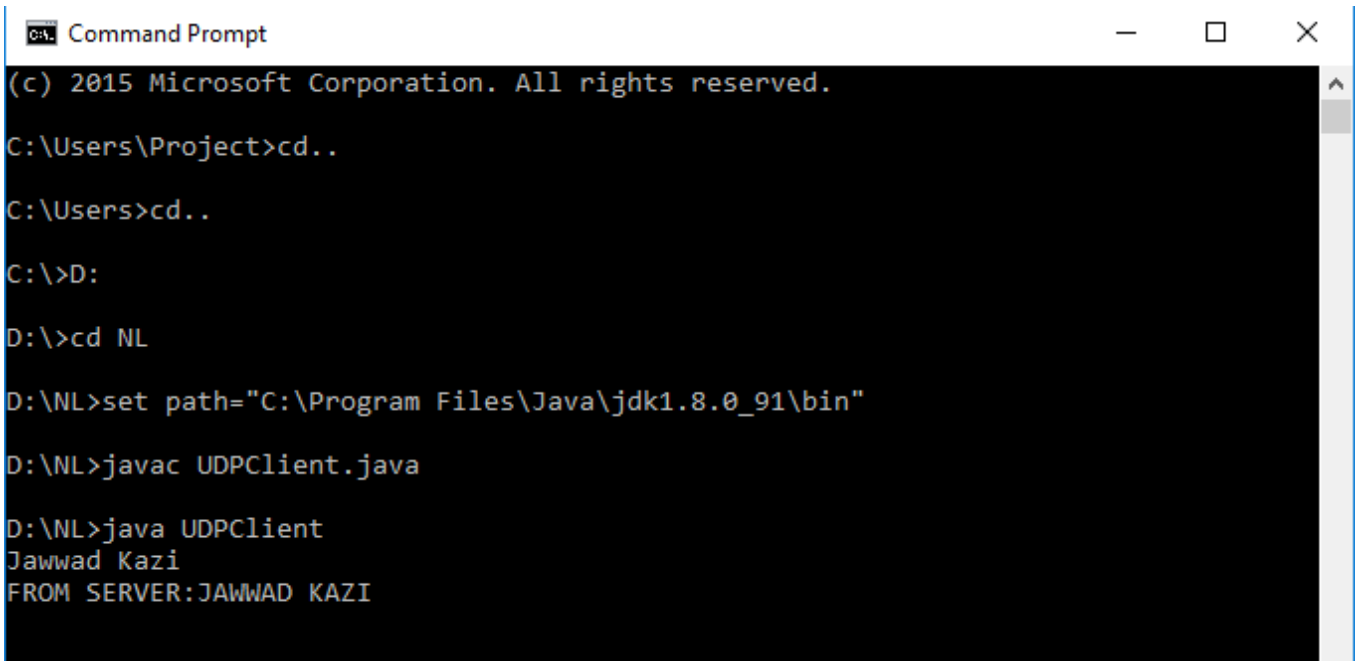
To run on Terminal or Command Prompt
Open two windows one for Server and another for Client

1. First run the Server application as,



Server Started
Waiting for a client …

2. Then run the Client application on another terminal as,



13. Experiment/Assignment Evaluation

SR	Parameters	Weight	Excellent	Good	Average	Poor	Not as per requirement
		Scale Factor ->	5	4	3	2	0
1	Technical Understanding	25					
2	Performance / Execution	25					
3	Question Answers	20					
4	Punctuality	20					
5	Presentation	10					
	Total out of 100 --> #(to be converted as per term-work evaluation applicable to the subject)		**∑ (Weight * Scale Factor)/5 = _____**				

References:

[1] Elliotte Rusty Harold, Java Network Programming, O'Reilly& Associates.

[2] Jan Graba, An Introduction to Network Programming with Java, Addison-Wesley

[3] http://www.kiv.zcu.cz/~ledvina/Knihovnicka/Sockets_Java.pdf

Viva Questions

1. What is Datagram?
2. Differentiate between TCP and UDP?
3. What is IP address?