1. Create package

2. Create file class ServerThread

```java
/*
 * To change this license header, choose License Headers in Project Properties.
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 * and open the template in the editor.
 */
package week7.chat.server;

import java.io.DataInputStream;
import java.io.DataOutputStream;
import java.io.IOException;
import java.net.Socket;
import java.util.Enumeration;
import java.util.Hashtable;
import java.util.Set;
import java.util.logging.Level;
import java.util.logging.Logger;

/**
 *
 * @author Jasman Pardede
 */
public class ServerThread extends Thread{
    private Hashtable<String, Socket> hashClient;
    private String namaClient;
    private DataInputStream input;
```

```java
    private DataOutputStream output;
    private String namaPenerima;
    private Enumeration allNamaClient;

    public ServerThread(String namaClient, Hashtable hashClient){
        this.namaClient = namaClient;
        this.hashClient = hashClient;
    }

    @Override
    public void run(){
        while(true){
            allNamaClient = hashClient.keys();
            while(allNamaClient.hasMoreElements()){
                namaClient = (String)allNamaClient.nextElement();
                Socket sockClient = hashClient.get(namaClient);
                try {
                    input = new DataInputStream(sockClient.getInputStream());
                    if(input.available()> 0){
                        String msg = input.readUTF();
                        String[] infoMsg = msg.split(":");
                        if(infoMsg.length==2){
                            sendMessagePrivate(infoMsg[0], infoMsg[1], namaClient);
                        }
                        else{
                            sendBroadCast(msg, namaClient);
                        }
                    }
                } catch (IOException ex) {
                    Logger.getLogger(ServerThread.class.getName()).log(Level.SEVERE, null, ex);
                }
            }
        }
    }

    private void sendBroadCast(String msg, String namaPengirim){
        allNamaClient = hashClient.keys();
        while(allNamaClient.hasMoreElements()){
            namaPenerima = (String)allNamaClient.nextElement();
//          System.out.println(msg + " Nama penerima pesan client : " + namaPenerima);
            if(!namaPenerima.equalsIgnoreCase(namaPengirim)){
                Socket sockClientPenerima = hashClient.get(namaPenerima);
                try {
                    output = new DataOutputStream(sockClientPenerima.getOutputStream());
                    output.writeUTF(namaPengirim + " ::> "+msg);
```

```java
                output.flush();
            } catch (IOException ex) {
                Logger.getLogger(ServerThread.class.getName()).log(Level.SEVERE, null, ex);
            }
        }
    }
}

    private void sendMessagePrivate(String msg, String namaPenerima, String namaPengirim){
        Socket sockClientPenerima = hashClient.get(namaPenerima);
        try {
            output = new DataOutputStream(sockClientPenerima.getOutputStream());
            output.writeUTF(namaPengirim + " ::> "+msg);
            output.flush();
        } catch (IOException ex) {
            Logger.getLogger(ServerThread.class.getName()).log(Level.SEVERE, null, ex);
        }
    }
}
```

3. Create file class MainServer

```java
/*
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 */
package week7.chat.server;

import java.io.DataInputStream;
import java.io.DataOutputStream;
import java.io.IOException;
import java.net.ServerSocket;
import java.net.Socket;
import java.util.Enumeration;
import java.util.Hashtable;
import java.util.Set;
import java.util.logging.Level;
import java.util.logging.Logger;

/**
 *
 * @author Jasman Pardede
 */
public class MainServerChat {
    private static ServerSocket sSock;
    private static Socket sockToNewClient;
```

```java
private static final int PORT = 9090;
private static DataInputStream inputNewClient;
private static DataOutputStream outputNewClient;
private static String namaNewClient;
private static Hashtable<String, Socket> hashClient;

public static void main(String[] args) {
    try {
        sSock = new ServerSocket(PORT);
        System.out.println("Server listening.....");
        hashClient = new Hashtable<>();
        while(true){
            sockToNewClient = sSock.accept();
            inputNewClient = new DataInputStream(sockToNewClient.getInputStream());
            outputNewClient = new DataOutputStream(sockToNewClient.getOutputStream());
            // ada client yang terkoneksi dan langsung mengirimkan nama client
            namaNewClient = inputNewClient.readUTF();
            sendInfoBroadCast(namaNewClient);
            hashClient.put(namaNewClient, sockToNewClient);
            ServerThread st = new ServerThread(namaNewClient, hashClient);
            st.start();
        }
    } catch (IOException ex) {
        Logger.getLogger(MainServerChat.class.getName()).log(Level.SEVERE, null, ex);
    }
}

private static void sendInfoBroadCast(String nama){
    Enumeration<String> allNamaClient = hashClient.keys();
    while(allNamaClient.hasMoreElements()){
        String namaPenerima = allNamaClient.nextElement();
        if(!namaPenerima.equalsIgnoreCase(nama)){
            Socket sockPenerima = hashClient.get(namaPenerima);
            DataOutputStream output;
            try {
                output = new DataOutputStream(sockPenerima.getOutputStream());
                output.writeUTF(nama+" connected!");
                output.flush();
            } catch (IOException ex) {
                Logger.getLogger(MainServerChat.class.getName()).log(Level.SEVERE, null, ex);
            }
        }

    }
}
```

```
        }

4.  Create file class ClientThread
    /*
     * To change this license header, choose License Headers in Project Properties.
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     * and open the template in the editor.
     */
    package week7.chat.client;

    import java.io.DataInputStream;
    import java.io.IOException;
    import java.net.Socket;
    import java.util.logging.Level;
    import java.util.logging.Logger;

    /**
     *
     * @author Jasman Pardede
     */
    public class ClientThread extends Thread{
        private Socket sockClient;
        private DataInputStream input;

        public ClientThread(Socket sockClient) {
            this.sockClient = sockClient;
        }

        @Override
        public void run(){
            try {
                while(true){
                    input = new DataInputStream(this.sockClient.getInputStream());
                    if(input.available() > 0){
                        String msg = input.readUTF();
                        System.out.println(msg);
                        System.out.print("cmd ::> ");
                    }
                }
            } catch (IOException ex) {
                Logger.getLogger(ClientThread.class.getName()).log(Level.SEVERE, null, ex);
            }
        }
```

```
        }
5.  Create file class MainFormClient
    /*
     * To change this license header, choose License Headers in Project Properties.
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     */
    package week7.chat.client;

    import java.io.DataInputStream;
    import java.io.DataOutputStream;
    import java.io.IOException;
    import java.net.Socket;
    import java.util.Scanner;
    import java.util.logging.Level;
    import java.util.logging.Logger;

    /**
     *
     * @author Jasman Pardede
     */
    public class MainClientChat {
        private static final int PORT = 9090;
        private static final String HOST = "localhost";
        private static Socket sock;
        private static DataOutputStream output;
        private static DataInputStream input;

        public static void main(String[] args) {
            try {
                sock = new Socket(HOST, PORT);
                System.out.println("Terhubung dengan server PORT " + sock.getPort());
                input = new DataInputStream(sock.getInputStream());
                output = new DataOutputStream(sock.getOutputStream());
                System.out.println("Masukkan nama Anda : ");
                Scanner scanner = new Scanner(System.in);
                String nama = scanner.nextLine();
                output.writeUTF(nama);
                ClientThread ct = new ClientThread(sock);
                ct.start();
                while(true){
                    System.out.print("cmd ::>");
                    scanner = new Scanner(System.in);
                    String msg = scanner.nextLine();
                    output.writeUTF(msg);
```

```java
            output.flush();
        }
    } catch (IOException ex) {
        Logger.getLogger(MainClientChat.class.getName()).log(Level.SEVERE, null, ex);
    }


    }

}
```