

# Server Side

Lets create a group chat application with java swing and rmi. Create 2 projects in eclipse.

## Project 1: ChatServer

### 1.) IChatClient

```
import java.rmi.Remote;
import java.rmi.RemoteException;

public interface IChatClient extends Remote {
    public void tell(String name) throws RemoteException;
    public String getName() throws RemoteException;
}
```

### 2.) IChatServer

```
import java.rmi.Remote;
import java.rmi.RemoteException;
import java.util.ArrayList;

public interface IChatServer extends Remote {
    public boolean login(IChatClient client) throws RemoteException;

    public void publish(String s) throws RemoteException;

    public ArrayList<IChatClient> getConnected() throws RemoteException;
}
```

### 3.) ChatServer

```
import java.rmi.RemoteException;
import java.rmi.server.UnicastRemoteObject;
import java.util.ArrayList;

public class ChatServer extends UnicastRemoteObject implements IChatServer {
    private static final long serialVersionUID = 4705993250126188735L;
    private ArrayList<IChatClient> v = new ArrayList<IChatClient>();

    public ChatServer() throws RemoteException {
    }

    public boolean login(IChatClient client) throws RemoteException {
        System.out.println(client.getName() + " got connected....");
        client.tell("client connected");
        publish(client.getName() + " connected.");
        v.add(client);
    }
}
```

```
        return true;
    }

    public void publish(String s) throws RemoteException {
        System.out.println(s);
        for (int i = 0; i < v.size(); i++) {
            try {
                IChatClient tmp = (IChatClient) v.get(i);
                tmp.tell(s);
            } catch (Exception e) {
                e.printStackTrace();
            }
        }
    }

    public ArrayList<IChatClient> getConnected() throws RemoteException {
        return v;
    }
}
```

#### 4.) StartServer

```
import java.rmi.Naming;

public class StartServer {
    public static void main(String[] args) {
        try {
            // System.setSecurityManager(new RMISecurityManager());
            java.rmi.registry.LocateRegistry.createRegistry(1099);
            IChatServer server = new ChatServer();
            Naming.rebind("rmi://localhost:1099/chatserver", server);
            System.out.println("server ready.");
        } catch (Exception e) {
            e.printStackTrace();
        }
    }
}
```

## Client Side

### Project 2: ChatClient

Copy IChatClient.java and IChatServer.java from project 1 to project 2.

#### 1.) ChatClient.java

```
import java.rmi.RemoteException;
import java.rmi.server.UnicastRemoteObject;
```

```
public class ChatClient extends UnicastRemoteObject implements IChatClient {
    private String name;
    private ChatUI ui;

    public ChatClient(String n) throws RemoteException {
        name = n;
    }

    public void tell(String st) throws RemoteException {
        System.out.println(st);
        ui.writeMsg(st);
    }

    public String getName() throws RemoteException {
        return name;
    }

    public void setGUI(ChatUI t) {
        ui = t;
    }
}
```

## 2.) ChatUI.java

```
import java.awt.BorderLayout;
import java.awt.GridLayout;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.rmi.Naming;
import java.util.ArrayList;

import javax.swing.DefaultListModel;
import javax.swing.JButton;
import javax.swing.JFrame;
import javax.swing.JLabel;
import javax.swing.JList;
import javax.swing.JOptionPane;
import javax.swing.JPanel;
import javax.swing.JScrollPane;
import javax.swing.JTextArea;
import javax.swing.JTextField;
import javax.swing.border.EmptyBorder;

public class ChatUI {
    private ChatClient client;
    private IChatServer server;

    public void doConnect() {
        if (connect.getText().equals("Connect")) {
            if (name.getText().length() < 2) {
                JOptionPane
```

```
        .showMessageDialog(frame, "You need to type a
name.");
        return;
    }
    if (ip.getText().length() < 2) {
        JOptionPane.showMessageDialog(frame, "You need to type an
IP.");
        return;
    }
    try {
        client = new ChatClient(name.getText());
        client.setGUI(this);
        server = (IChatServer)
Naming.lookup("rmi://localhost/chatserver");
        server.login(client);
        updateUser(server.getConnection());
        connect.setText("Disconnect");
    } catch (Exception e) {
        e.printStackTrace();
        JOptionPane.showMessageDialog(frame,
            "ERROR, we wouldn't connect....");
    }
} else {
    updateUser(null);
    connect.setText("Connect");
}
}

public void sendText() {
    if (connect.getText().equals("Connect")) {
        JOptionPane.showMessageDialog(frame, "You need to connect
first.");
        return;
    }
    String st = tf.getText();
    st = "[" + name.getText() + "] " + st;
    tf.setText("");
    // Remove if you are going to implement for remote invocation
    try {
        server.publish(st);
    } catch (Exception e) {
        e.printStackTrace();
    }
}

public void writeMsg(String st) {
    tx.setText(tx.getText() + "\n" + st);
}

public void updateUser(ArrayList<IChatClient> users) {
```

```
        DefaultListModel<String> listModel = new DefaultListModel<String>();
        if (users != null)
            for (int i = 0; i < users.size(); i++) {
                try {
                    String tmp = ((IChatClient) users.get(i)).getName();
                    listModel.addElement(tmp);
                } catch (Exception e) {
                    e.printStackTrace();
                }
            }
        list.setModel(listModel);
    }

    public static void main(String[] args) {
        System.out.println("Hello World !");
        ChatUI c = new ChatUI();
    }

    // User Interface code.
    public ChatUI() {
        frame = new JFrame("Group Chat");
        JPanel main = new JPanel();
        JPanel top = new JPanel();
        JPanel cn = new JPanel();
        JPanel bottom = new JPanel();
        ip = new JTextField();
        tf = new JTextField();
        name = new JTextField();
        tx = new JTextArea();
        connect = new JButton("Connect");
        JButton bt = new JButton("Send");
        list = new JList();
        main.setLayout(new BorderLayout(5, 5));
        top.setLayout(new GridLayout(1, 0, 5, 5));
        cn.setLayout(new BorderLayout(5, 5));
        bottom.setLayout(new BorderLayout(5, 5));
        top.add(new JLabel("Your name: "));
        top.add(name);
        top.add(new JLabel("Server Address: "));
        top.add(ip);
        top.add(connect);
        cn.add(new JScrollPane(tx), BorderLayout.CENTER);
        cn.add(list, BorderLayout.EAST);
        bottom.add(tf, BorderLayout.CENTER);
        bottom.add(bt, BorderLayout.EAST);
        main.add(top, BorderLayout.NORTH);
        main.add(cn, BorderLayout.CENTER);
        main.add(bottom, BorderLayout.SOUTH);
        main.setBorder(new EmptyBorder(10, 10, 10, 10));
        // Events
        connect.addActionListener(new ActionListener() {
```

```
        public void actionPerformed(ActionEvent e) {
            doConnect();
        }
    });
    bt.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
            sendText();
        }
    });
    tf.addActionListener(new ActionListener() {
        public void actionPerformed(ActionEvent e) {
            sendText();
        }
    });
    frame.setContentPane(main);
    frame.setSize(600, 600);
    frame.setVisible(true);
}

JTextArea tx;
JTextField tf, ip, name;
JButton connect;
JList list;
JFrame frame;
}
```

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