NETWORKING USING SOCKETS:

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1ST IMPLEMENTATION:

REGISTER USER USING SOCKETS

CLIENT SIDE:

```
package WebHost;
import TOOLS1.HintAreaField;
import TOOLS1.HintTextField;
import TOOLS1.PasswordPanel;
import TOOLS1.TemplateClass;
import TOOLS1.validateOps;
import com.github.lgooddatepicker.components.DatePicker;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.awt.font.TextAttribute;
import java.io.File;
import java.io.FileInputStream;
import java.io.FileNotFoundException;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.InputStream;
import java.io.ObjectOutputStream;
import java.io.OutputStream;
import java.io.Serializable;
import java.net.InetAddress;
import java.net.Socket;
import java.util.logging.Level;
import java.util.logging.Logger;
import javax.imageio.ImageIO;
import javax.swing.*;

public class Register extends JFrame implements ActionListener, Serializable {

    String userType, formType;

    static JLabel Signup, fName, lName, Age, Num, Mail, occupation,
DateOfBirth, Address, Gender, pass, cPass, healthLabel, dynamicLabel;

    static JTextField fNameField, lNameField, AgeField, NumberField, MailField,
healthField, dynamicField;

    PasswordPanel passwordField = new PasswordPanel();
    PasswordPanel cPasswordField = new PasswordPanel();

    static JComboBox occupationcombo, genderComboBox;
    static HintAreaField addressArea;
    static JButton signUpButton;
    static JScrollPane scrollPane;
```

```
JPanel innerBody = new JPanel(null);

static Object values[] = new Object[12];
static DatePicker date;

public Register(String userType, String formType) throws IOException {
   this.userType = userType;
   this.formType = formType;
   Container cc = getContentPane();

   JPanel header = TemplateClass.getHeader();
   JPanel body = TemplateClass.getBody();

   JPanel footer = TemplateClass.getFooter();

   cc.add(header, BorderLayout.NORTH);
   cc.add(body, BorderLayout.WEST);
   cc.add(footer, BorderLayout.SOUTH);

   Signup = new JLabel("   " + formType + "   ");
   fName = new JLabel("Firstname");
   lName = new JLabel("Lastname");
   Age = new JLabel("Age");
   Num = new JLabel("Number");
   Mail = new JLabel("Mail");
   Address = new JLabel("Address");
   Gender = new JLabel("Gender");
   occupation = new JLabel("Occupation");
```

```
        DateOfBirth = new JLabel("DateOfBirth");
        pass = new JLabel("Password");
        cPass = new JLabel("Confirm Password");
        healthLabel = new JLabel("Any Health conditions ?");
        dynamicLabel = new JLabel((userType.equals(Login.USER) ? "Goal" :
"Experience"));

        date = new DatePicker();
        date.setDateToToday();
        Gender = new JLabel("Gender");
        fNameField = new HintTextField("Enter your firstname");
        lNameField = new HintTextField("Enter your lastname");
        AgeField = new HintTextField("Enter the Age");
        NumberField = new HintTextField("Enter the Phone Number");
        MailField = new HintTextField("Enter the Mail-id");
        healthField = new HintTextField("Enter if any");
        dynamicField = new HintTextField(userType.equals(Login.USER) ? "Goal" :
"Experience:");

        scrollPane = new JScrollPane(innerBody,
JScrollPane.VERTICAL_SCROLLBAR_ALWAYS,
JScrollPane.HORIZONTAL_SCROLLBAR_NEVER);
        scrollPane.setBounds(100, 80, 600, 470);
        scrollPane.setViewportView(innerBody);
        body.add(scrollPane);

        occupationcombo = new JComboBox(new String[]{"Self-Employed",
"Student", "Private Sector", "Government Employee"});
        genderComboBox = new JComboBox<>(new String[]{"Male", "Female",
"Others"});
```

```
        addressArea = new HintAreaField("Enter the Address");
        signUpButton = new JButton(formType);


        Signup.setFont(new Font("Arial", Font.BOLD, 24));
        Signup.setBounds(310, 30, 200, 30);
        Signup = (JLabel) TemplateClass.formatFont(Signup,
TextAttribute.UNDERLINE_ON, 28);


        body.add(Signup);
        innerBody.add(fName);
        innerBody.add(fNameField);
        innerBody.add(lName);
        innerBody.add(lNameField);
        innerBody.add(Age);
        innerBody.add(AgeField);
        innerBody.add(Num);
        innerBody.add(NumberField);
        innerBody.add(Mail);
        innerBody.add(MailField);
        innerBody.add(occupation);
        innerBody.add(occupationcombo);
        innerBody.add(Gender);
        innerBody.add(genderComboBox);
        innerBody.add(Address);
        innerBody.add(addressArea);
        innerBody.add(DateOfBirth);
        innerBody.add(date);
        innerBody.add(pass);
        innerBody.add(passwordField);
        innerBody.add(cPass);
        innerBody.add(cPasswordField);
        innerBody.add(signUpButton);
        innerBody.add(healthLabel);
        innerBody.add(healthField);
        innerBody.add(dynamicLabel);
        innerBody.add(dynamicField);
        innerBody.setPreferredSize(new Dimension(600, 800));
        innerBody.setBackground(Color.LIGHT_GRAY);

        fName.setBounds(70, 50, 200, 50);
        fNameField.setBounds(70, 90, 200, 50);
        lName.setBounds(300, 50, 200, 50);
        lNameField.setBounds(300, 90, 200, 50);
        Age.setBounds(70, 140, 200, 50);
        AgeField.setBounds(70, 180, 200, 50);
        DateOfBirth.setBounds(300, 140, 200, 50);
        date.setBounds(300, 180, 200, 50);
        Num.setBounds(300, 230, 200, 50);
        NumberField.setBounds(300, 270, 200, 50);
        Mail.setBounds(70, 230, 200, 50);
        MailField.setBounds(70, 270, 200, 50);
        occupation.setBounds(300, 320, 200, 50);
        occupationcombo.setBounds(300, 360, 200, 50);
        Gender.setBounds(70, 320, 200, 50);
        genderComboBox.setBounds(70, 360, 200, 50);
```

```
    Address.setBounds(70, 410, 200, 50);
    addressArea.setBounds(70, 450, 430, 80);
    healthLabel.setBounds(70, 530, 200, 50);
    healthField.setBounds(70, 570, 200, 50);
    dynamicLabel.setBounds(300, 530, 200, 50);
    dynamicField.setBounds(300, 570, 200, 50);
    pass.setBounds(70, 620, 200, 50);
    passwordField.setBounds(70, 660, 200, 50);
    cPass.setBounds(300, 620, 200, 50);
    cPasswordField.setBounds(300, 660, 200, 50);
    signUpButton.setBounds(180, 730, 200, 50);

    setSize(800, 800);
    setLocationRelativeTo(null);
    setIconImage(ImageIO.read(new File("resource/yLogo.png")));
    setLayout(null);
    setResizable(false);
    setVisible(true);
    setDefaultCloseOperation(JFrame.DISPOSE_ON_CLOSE);
    signUpButton.addActionListener(this);

}

@Override
public void actionPerformed(ActionEvent e) {
    if (e.getSource() == signUpButton) {
        try {
            values = Register.getValues(passwordField.getpassword());
            if (checkValues(values)) {
                if
(passwordField.getpassword().equals(cPasswordField.getpassword())) {
                    if (validateOps.validatePassword(passwordField.getpassword())) {
                        if (validateOps.validateForm(values)) {
                            if (userType.equals(Login.USER)) {
                                startSerialize(new UserData(values));
                                writeToServer();
                                dispose();
                            }

                        } else {
                            JOptionPane.showMessageDialog(innerBody, "Enter valid
data to proceed");
                        }
                    } else {
                        JOptionPane.showMessageDialog(innerBody, "Password should
contain an uppercase,a lowercase,a number and a special character and 8
characters long");
                    }

                } else {

                    JOptionPane.showMessageDialog(innerBody, "Passwords do not
match");
                }
            } else {
                JOptionPane.showMessageDialog(innerBody, "Please complete the
form before trying again");
```

```
            }

        } catch (HeadlessException ex) {
            System.out.println(ex);
        }
    }

}

static void writeToServer() {
    try {
        Socket client = new Socket(InetAddress.getLocalHost(), 7000);
        File file = new File("Udata.blah");
        byte[] bytes = new byte[16 * 1024];
        InputStream in = new FileInputStream(file);
        OutputStream out = client.getOutputStream();

        int count;
        while ((count = in.read(bytes)) > 0) {
            out.write(bytes, 0, count);
        }
        out.close();
        in.close();
        client.close();
    } catch (Exception ex) {
        Logger.getLogger(Register.class.getName()).log(Level.SEVERE, null, ex);
    }
}
```

```
static void startSerialize(UserData usd) {
    try {
        FileOutputStream fout = new FileOutputStream("Udata.blah");
        ObjectOutputStream obout = new ObjectOutputStream(fout);
        obout.writeObject(obout);
        fout.close();
        obout.close();
    } catch (FileNotFoundException ex) {
        Logger.getLogger(Register.class.getName()).log(Level.SEVERE, null, ex);
    } catch (IOException ex) {
        Logger.getLogger(Register.class.getName()).log(Level.SEVERE, null, ex);
    }
}

static Object[] getValues(String pass) {
    Object values[] = new Object[12];
    values[0] = fNameField.getText();
    values[1] = lNameField.getText();
    values[2] = AgeField.getText();
    values[3] = date.getDate().toString();
    values[4] = MailField.getText();
    values[5] = NumberField.getText();
    values[6] = genderComboBox.getSelectedItem();
    values[7] = occupationcombo.getSelectedItem();
    values[8] = addressArea.getText();
    values[9] = healthField.getText();
    values[10] = dynamicField.getText();
```

```
        values[11] = pass;
        return values;
    }

    static boolean checkValues(Object values[]) {
        for (Object value : values) {
            String str = (String) value;
            if (str.isEmpty()) {
                return false;
            }
        }
        return true;
    }

    public static void main(String[] args) throws IOException {
        new Register(Login.USER, "Register");
    }
}
```

SERVER SIDE:

```
package TOOLS1;

import static TOOLS1.DbTools.getUserFromUserPool;
import WebHost.UserData;
import java.io.FileInputStream;
import java.io.FileNotFoundException;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.InputStream;
import java.io.ObjectInputStream;
import java.io.OutputStream;
import java.net.ServerSocket;
import java.net.Socket;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.PreparedStatement;
import java.sql.SQLException;
import java.sql.Statement;
import java.util.logging.Level;
import java.util.logging.Logger;

/**
 *
 * @author rajay
 */
public class RegisterServer {

    static private Connection connection;

    static public Connection getConnect() {

        try {
            connection =
DriverManager.getConnection("jdbc:mysql://localhost/gym31", "yogesh",
"java");
        } catch (SQLException ex) {
            System.out.println(ex);
        }
        return connection;

    }

    public static void ReadFromStream() {
        try {
            ServerSocket serverSocket = null;

            try {
                serverSocket = new ServerSocket(4444);
            } catch (IOException ex) {
                System.out.println("Can't setup server on this port number. ");
            }

            Socket socket = null;
            InputStream in = null;
            OutputStream out = null;

            try {
                socket = serverSocket.accept();
            } catch (IOException ex) {
                System.out.println("Can't accept client connection. ");
            }

            try {
                in = socket.getInputStream();
            } catch (IOException ex) {
                System.out.println("Can't get socket input stream. ");
            }

            try {
                out = new FileOutputStream("Udata2.blah");
            } catch (FileNotFoundException ex) {
                System.out.println("File not found. ");
            }

            byte[] bytes = new byte[16 * 1024];

            int count;
            while ((count = in.read(bytes)) > 0) {
                out.write(bytes, 0, count);
            }

            out.close();
            in.close();
            socket.close();
            serverSocket.close();
        } catch (IOException ex) {
            Logger.getLogger(RegisterServer.class.getName()).log(Level.SEVERE,
null, ex);
```

```
        }

    }


    public static boolean register_user(Object values[]) {

        try {

            Connection con =
DriverManager.getConnection("jdbc:mysql://localhost/gym31", "yogesh",
"java");

            Object poolValues[] = getUserFromUserPool(values);

            String query = ("insert into usertable
values(?,?,?,?,?,?,?,?,?,?,?,?,?,?,?)");

            PreparedStatement ps = con.prepareStatement(query);

            ps.setString(1, (String) poolValues[0]);

            ps.setString(2, (String) values[0]);

            ps.setString(3, (String) values[1]);

            ps.setInt(4, Integer.parseInt((String) values[2]));

            ps.setString(5, (String) values[3]);

            ps.setString(6, (String) values[4]);


            ps.setString(7, (String) values[5]);


            ps.setString(8, (String) values[6]);


            ps.setString(9, (String) values[7]);


            ps.setString(10, (String) values[8]);

            ps.setString(11, (String) values[9]);

            ps.setString(12, (String) values[10]);

            ps.setString(13, CryptUtility.encryptString((String) values[11]));
            ps.setString(14, (String) poolValues[1]);
            ps.setInt(15, (Integer) poolValues[2]);
            ps.executeUpdate();
            Statement st = connection.createStatement();
            st.execute("Delete from userpool where id='" + poolValues[0] + "'");
            return true;

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

    static Object[] getValues(UserData object) {
        Object values[] = new Object[12];
        values[0] = object.fname;
        values[1] = object.lname;
        values[2] = object.age;
        values[3] = object.date;
        values[4] = object.mail;
        values[5] = object.number;
        values[6] = object.gender;
        values[7] = object.occupation;
        values[8] = object.address;
        values[9] = object.health;
        values[10] = object.dynamicfield;
        values[11] = object.pass;
        return values;
    }

    public static void main(String[] args) {
        ReadFromStream();
        UserData object = null;
        try {

            // Reading the object from a file
            FileInputStream file = new FileInputStream("Udata2.blah");
            ObjectInputStream in = new ObjectInputStream(file);

            // Method for deserialization of object
            object = (UserData) in.readObject();

            in.close();
            file.close();
            System.out.println("Object has been deserialized\n"
                    + "Data after Deserialization.");

        } catch (Exception ex) {
            System.out.println("IOException is caught");
        }
        Object values[] = getValues(object);
        register_user(values);
    }
}
```

2ND IMPLEMENTATION

STREAM VIDEO FROM SERVER TO CLIENT USING SOCKETS

CLIENT SIDE:

```
package WebHost;


import java.awt.BorderLayout;

import java.awt.image.BufferedImage;

import java.io.ByteArrayInputStream;

import java.io.IOException;

import java.io.InputStream;

import java.net.InetAddress;

import java.net.Socket;

import java.net.UnknownHostException;

import java.nio.ByteBuffer;

import java.util.logging.Level;

import java.util.logging.Logger;

import javax.imageio.ImageIO;

import javax.swing.ImageIcon;
import javax.swing.JFrame;
import javax.swing.JLabel;

public class ClientSide extends Thread {

   JFrame frame = new JFrame("Client Side");
   JLabel label = new JLabel();

   @Override
   public void run() {
      synchronized (this) {
         try {
            System.out.println("client waiting for ack from server");
            this.wait(3000);
            System.out.println("Resumed");
         } catch (InterruptedException ex) {
            Logger.getLogger(ClientSide.class.getName()).log(Level.SEVERE, null, 
ex);
         }
         try {
            Socket client = new Socket(InetAddress.getLocalHost(), 7000);
            InputStream is = client.getInputStream();

            while (true) {
               byte[] size = new byte[10000];
               is.read(size);
               int arSize = ByteBuffer.wrap(size).asIntBuffer().get();
```

```
                byte[] image = new byte[arSize];
                is.read(image);
                BufferedImage bimage = ImageIO.read(new
ByteArrayInputStream(image));
                ImageIcon ico = new ImageIcon(bimage);
                label.setIcon(ico);


            }
        } catch (UnknownHostException ex) {
            Logger.getLogger(ClientSide.class.getName()).log(Level.SEVERE, null,
ex);
        } catch (IOException ex) {
            Logger.getLogger(ClientSide.class.getName()).log(Level.SEVERE, null,
ex);
        }
      }
    }
    public ClientSide() throws Exception {
      System.out.println("Creating Client and waiting");
      frame.setLayout(new BorderLayout());
      frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
      frame.add(label, BorderLayout.CENTER);
      frame.setLocationRelativeTo(null);
      frame.pack();
      frame.setResizable(true);
      frame.setSize(700, 600);
      frame.setVisible(true);
    }
}
```

SERVER SIDE

```
package WebHost;

import com.github.sarxos.webcam.Webcam;
import com.github.sarxos.webcam.WebcamResolution;
import java.awt.image.BufferedImage;
import java.io.ByteArrayOutputStream;
import java.io.IOException;
import java.io.OutputStream;
import java.net.ServerSocket;
import java.net.Socket;
import java.nio.ByteBuffer;
import java.util.logging.Level;
import java.util.logging.Logger;
import javax.imageio.ImageIO;

public class Serverside extends Thread {

   OutputStream os = null;
   ServerSocket server = null;

   public Serverside() throws Exception {
      System.out.println("Creating server and waiting");
   }

   public void startCam() throws IOException {
        synchronized (this) {
            this.server = new ServerSocket(7000);
            System.out.println("Created and Notifying client");
            this.notifyAll();
            System.out.println("Notified waiting for client");
            Socket client = server.accept();
            System.out.println("Connected....");
            os = client.getOutputStream();
            Webcam webcam = Webcam.getDefault();
            webcam.setViewSize(WebcamResolution.VGA.getSize());
            webcam.open();
            while (true) {

                BufferedImage bImg = webcam.getImage();
                ByteArrayOutputStream bos = new ByteArrayOutputStream();
                ImageIO.write(bImg, "jpg", bos);
                byte[] imageSize =
ByteBuffer.allocate(10000).putInt(bos.size()).array();
                this.os.write(imageSize);
                this.os.write(bos.toByteArray());
                this.os.flush();
            }
        }
    }

    @Override
    public void run() {
        try {
            this.startCam();
        } catch (IOException ex) {
            Logger.getLogger(ClientSide.class.getName()).log(Level.SEVERE, null,
ex);
        }
    }
}
```

WRAPPER CLASS

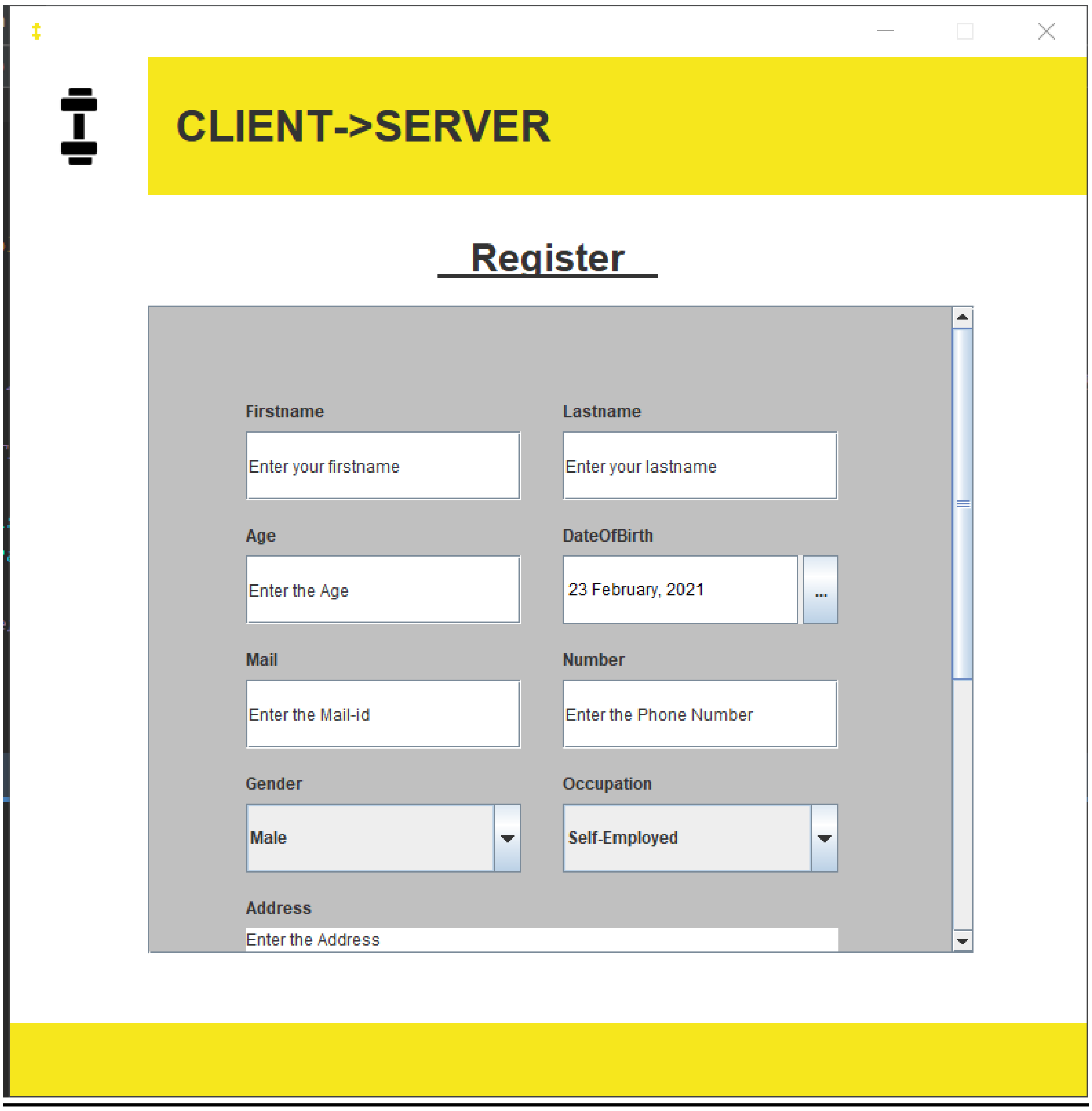
```
package WebHost;

import java.util.logging.Level;
import java.util.logging.Logger;

/**
 *
 * @author rajay
 */
public class Wrapper {

    public static void main(String[] args) {
        try {
            Thread t1 = new Thread(new Serverside());
            Thread t2 = new Thread(new ClientSide());
            t1.start();
            t2.start();
        } catch (Exception ex) {
            Logger.getLogger(Wrapper.class.getName()).log(Level.SEVERE, null, ex);
        }
    }
}
```

SCREENSHOTS



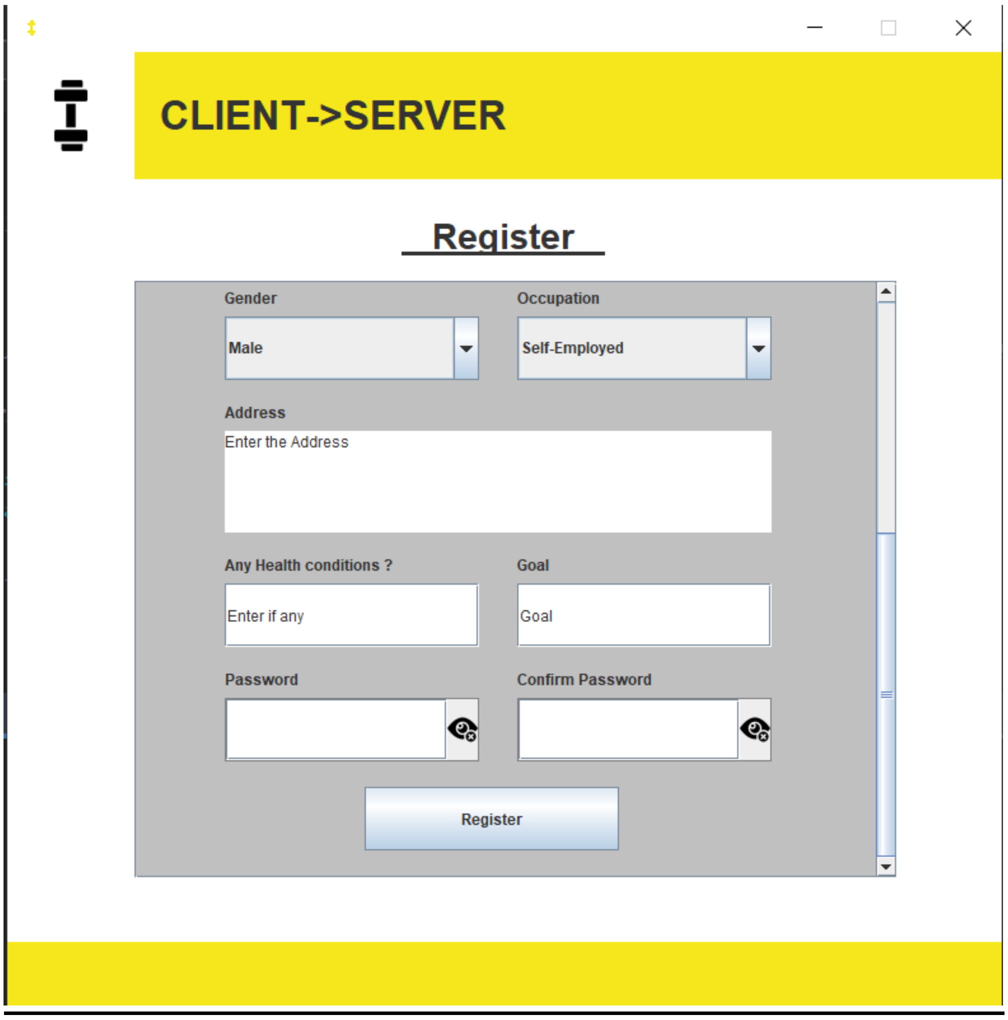
CLIENT->SERVER

Register

Firstname	Lastname
Enter your firstname	Enter your lastname
Age	DateOfBirth
Enter the Age	23 February, 2021
Mail	Number
Enter the Mail-id	Enter the Phone Number
Gender	Occupation
Male	Self-Employed

Address

Enter the Address



CLIENT->SERVER

Register

Gender: Male

Occupation: Self-Employed

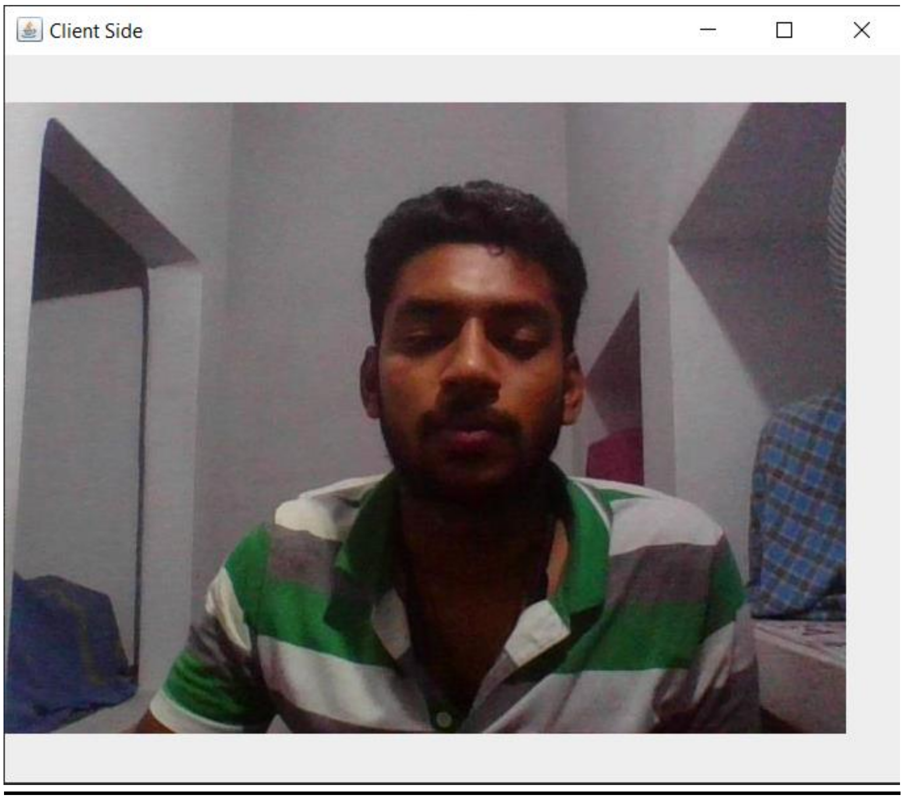
Address: Enter the Address

Any Health conditions ?: Enter if any

Goal: Goal

Password

Confirm Password



Client Side