Project 01

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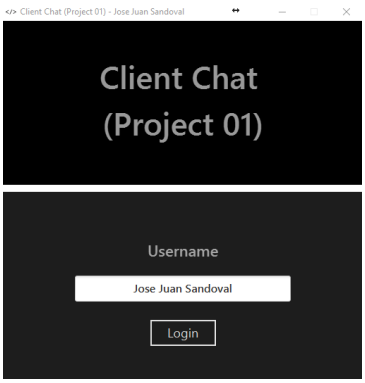
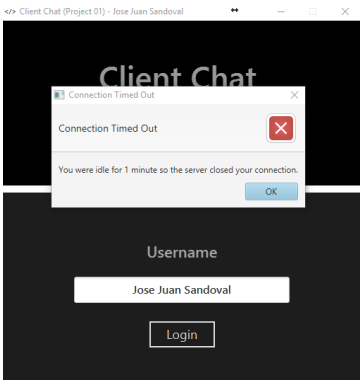
Link to Project: https://github.com/Juanchiselo/CS380/tree/master/Projects/Project%2001

Screen Shots





Java Code

ChatClient.java

```
package Project01;

import javafx.application.Application;
import javafx.application.Platform;
import javafx.fxml.FXMLLoader;
import javafx.scene.Scene;
import javafx.scene.image.Image;
import javafx.stage.Stage;
import java.io.*;
import java.net.Socket;
import java.net.UnknownHostException;

public class ChatClient extends Application
{
    private static Socket socket;
    public static Controller controller;
    public static Scene chatWindowScene;
    public static Scene chatLoginScene;
    public static Stage stage;

    /**
     * The overridden start() method belonging to the
     * Application class.
     * @param primaryStage
     * @throws Exception
     */
    @Override
    public void start(Stage primaryStage) throws Exception
    {
        // Loads the FXML for the Login Scene and creates the Scene.
        FXMLLoader loader = new
FXMLLoader(getClass().getResource("Layouts/ChatLoginLayout.fxml"));
        chatLoginScene = new Scene(loader.load(), 500, 500);

        // Loads the FXML for the Chat Scene and creates the Scene.
```

```
        loader = new FXMLLoader(getClass().getResource("Layouts/ChatWindowLayout.fxml"));
        chatWindowScene = new Scene(loader.load(), 1280, 720);

        // Saves a reference of the Controller object so
        // the Listener thread can access it.
        controller = loader.getController();

        // Saves a reference of the Stage object so
        // the Controller class can access it.
        // It also sets the stage.
        stage = primaryStage;
        stage.getIcons().add(new
Image(ChatClient.class.getResourceAsStream("Drawable/Icon.png")));
        stage.setTitle("Client Chat (Project 01) - Jose Juan Sandoval");
        stage.setResizable(false);
        stage.setScene(chatLoginScene);
        stage.show();
    }

    public static void main(String[] args)
    {
        launch(args);
        ListenerThread.endThread = true;
    }

    /**
     * Sends a message to the server.
     * @param message - The message to be sent.
     */
    public static void sendMessage(String message)
    {
        try
        {
            OutputStream outputStream = socket.getOutputStream();
            PrintStream out = new PrintStream(outputStream, false, "UTF-8");
            out.println(message);
        }
        catch (Exception e)
        {
            System.err.println(e.getMessage());

            // Updates the statusLabel GUI object with the
            // error message.
            Platform.runLater(() ->
                    controller.setStatus(e.getMessage()));
        }
    }

    /**
     * Connects the client to the server and
     * creates a Listener thread.
     */
    public static void connectToServer()
    {
        String hostName = "codebank.xyz";
        int portNumber = 38001;

        try
        {
            socket = new Socket(hostName, portNumber);
            ListenerThread.endThread = false;

            // Creates and starts a new thread to listen for messages.
            new ListenerThread(socket).start();
        }
        catch (UnknownHostException e)
        {
            System.err.println("ERROR: Unknown host " + hostName + ".");
        }
        catch (Exception e)
        {
```

```
            System.err.println("ERROR: Could not connect to " + hostName + ".");
        }
    }

    /**
     * Disconnects the client from the server.
     */
    public static void disconnectFromServer()
    {
        try
        {
            socket.close();
        }
        catch (IOException e)
        {
            System.err.println(e.getMessage());
        }
    }
}
```

ListenerThread.java

```
package Project01;

import javafx.application.Platform;
import java.io.*;
import java.net.Socket;

public class ListenerThread extends Thread
{
    public volatile static boolean endThread = false;
    private Socket socket = null;

    public ListenerThread(Socket socket)
    {
        super("Chat Listener Thread");
        this.socket = socket;
    }

    /**
     * The overridden run() function belonging to the Thread class.
     * This is what handles the communication between the server and the client.
     */
    public void run()
    {
        try
        {
            // Objects needed for receiving and reading the server's messages.
            String receivedMessage;
            InputStream inputStream = socket.getInputStream();
            InputStreamReader inputStreamReader = new InputStreamReader(inputStream, "UTF-8");
            BufferedReader in = new BufferedReader(inputStreamReader);

            // The main loop of execution.
            // This executes when the servers sends a message
            // and the thread has not received a flag to terminate.
            while((receivedMessage = in.readLine()) != null
                    && !endThread)
            {
                // NOTE: The variable sent to the
                // Application GUI thread has to be final.
                final String message = receivedMessage;

                // Displays the received messages.
                Platform.runLater(() ->
                        ChatClient.controller.setMessages(message));

                // Catches the Unavailable Username error thrown by the server.
                if(message.equals("Name in use."))
```

```
                {
                    Platform.runLater(() ->
                            ChatClient.controller.displayError("Unavailable Username",
                                    "The username you entered is already being used."));
                    endThread = true;
                }

                // Catches the Inactivity error thrown by the server.
                if(message.equals("Connection idle for 1 minute, closing connection."))
                {
                    Thread.sleep(5000);
                    Platform.runLater(() ->
                            ChatClient.controller.displayError("Connection Timed Out",
                                    "You were idle for 1 minute "
                                            + "so the server closed your connection."));
                    endThread = true;
                }
            }
            ChatClient.disconnectFromServer();
        }
        catch (IOException e)
        {
            System.err.println("ERROR: Connection lost with server.");
        }
        catch (Exception e)
        {
            System.err.println(e.getMessage());
        }
    }
}
```

Controller.java

```
package Project01;

import javafx.collections.FXCollections;
import javafx.collections.ObservableList;
import javafx.fxml.FXML;
import javafx.scene.control.*;

public class Controller
{
    @FXML private TextField messageTextField;
    @FXML private ListView<String> chatWindowListView;
    @FXML private Label statusLabel;
    @FXML private TextField usernameTextField;
    private ObservableList<String> messages = FXCollections.observableArrayList();

    /**
     * Switches between the Login and Chat windows.
     */
    public void switchWindows()
    {
        if(ChatClient.stage.getScene().equals(ChatClient.chatLoginScene))
        {
            ChatClient.stage.setScene(ChatClient.chatWindowScene);
            ChatClient.stage.setResizable(true);
        }
        else
        {
            ChatClient.stage.setScene(ChatClient.chatLoginScene);
            ChatClient.stage.setResizable(false);
        }
        ChatClient.stage.centerOnScreen();
    }

    /**
     * Logs in the user by connecting him/her to the server
     * and sends the username to the server.
```

```
     */
    public void login()
    {
        ChatClient.connectToServer();
        ChatClient.sendMessage(usernameTextField.getText());
        switchWindows();
    }

    /**
     * Logs out the user by disconnecting from the server
     * and returns him/her to the login screen.
     * It also notifies the Listener thread to terminate.
     */
    public void logout()
    {
        switchWindows();
        messages.clear();
        ListenerThread.endThread = true;
        ChatClient.disconnectFromServer();
    }

    /**
     * Displays error messages in the form of alerts.
     * @param title - The title of the alert.
     * @param errorMessage - The error message.
     */
    public void displayError(String title, String errorMessage)
    {
        logout();
        Alert alert = new Alert(Alert.AlertType.ERROR);
        alert.setTitle(title);
        alert.setHeaderText(title);
        alert.setContentText(errorMessage);
        alert.showAndWait();
    }

    /**
     * Sends a message to the server when the user
     * either clicks on the Send button or presses
     * the Enter key while the Message TextField is focused.
     */
    public void sendMessage()
    {
        String message = messageTextField.getText();

        // Trimming the message and checking if the
        // String is not empty after trimming it
        // prevents blank messages from being sent.
        if(!message.trim().isEmpty())
        {
            ChatClient.sendMessage(message);
            messageTextField.clear();
        }
    }

    /**
     * Displays the messages received from the server.
     * @param message - The last received message.
     */
    public void setMessages(String message)
    {
        messages.add(message);
        chatWindowListView.setItems(messages);
    }

    /**
     * Displays the status messages located in the status bar.
     * @param status - The status message.
     */
    public void setStatus(String status)
    {
```

```
        statusLabel.setText("Status: " + status + ".");
    }
}
```

ChatLoginLayout.fxml

```
<?xml version="1.0" encoding="UTF-8"?>

<?import javafx.scene.control.Button?>
<?import javafx.scene.control.Label?>
<?import javafx.scene.control.TextField?>
<?import javafx.scene.layout.BorderPane?>
<?import javafx.scene.layout.ColumnConstraints?>
<?import javafx.scene.layout.GridPane?>
<?import javafx.scene.layout.Pane?>
<?import javafx.scene.layout.RowConstraints?>

<BorderPane fx:id="borderPaneMain" maxHeight="-Infinity" maxWidth="-Infinity" minHeight="-
Infinity" minWidth="-Infinity" prefHeight="500.0" prefWidth="500.0" styleClass="background"
stylesheets="@../Styles/DarkTheme.css" xmlns="http://javafx.com/javafx/8.0.111"
xmlns:fx="http://javafx.com/fxml/1" fx:controller="Project01.Controller">


    <center>
        <GridPane prefHeight="579.0" prefWidth="500.0">
            <columnConstraints>
                <ColumnConstraints hgrow="SOMETIMES" maxWidth="1233.0" minWidth="10.0"
percentWidth="100.0" prefWidth="1100.0" />
            </columnConstraints>
            <rowConstraints>
            <RowConstraints maxHeight="320.6666564941406" minHeight="10.0" percentHeight="48.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
            <RowConstraints maxHeight="320.6666564941406" minHeight="10.0" percentHeight="2.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
            <RowConstraints maxHeight="320.6666564941406" minHeight="10.0" percentHeight="10.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
            <RowConstraints maxHeight="320.6666564941406" minHeight="10.0" percentHeight="10.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
                <RowConstraints maxHeight="320.6666564941406" minHeight="0.0"
percentHeight="15.0" prefHeight="89.33333587646484" vgrow="SOMETIMES" />
            <RowConstraints maxHeight="320.6666564941406" minHeight="10.0" percentHeight="10.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
            <RowConstraints maxHeight="320.6666564941406" minHeight="10.0" percentHeight="10.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
            </rowConstraints>
            <children>
                <GridPane alignment="CENTER" GridPane.rowIndex="4">
                    <columnConstraints>
                        <ColumnConstraints halignment="CENTER" hgrow="ALWAYS"
maxWidth="797.6666870117188" minWidth="10.0" percentWidth="60.0" prefWidth="730.0" />
                    </columnConstraints>
                    <rowConstraints>
                        <RowConstraints minHeight="10.0" prefHeight="30.0" vgrow="SOMETIMES" />
                    </rowConstraints>
                    <children>
                        <TextField fx:id="usernameTextField" alignment="CENTER" onAction="#login"
prefHeight="37.0" prefWidth="278.0" GridPane.halignment="CENTER" GridPane.valignment="CENTER" />
                    </children>
                </GridPane>
                  <Button fx:id="loginButton" mnemonicParsing="false" onAction="#login" style="-
fx-font-size: 18;" text="Login" GridPane.halignment="CENTER" GridPane.rowIndex="5"
GridPane.valignment="CENTER" />
            <Label style="-fx-font-size: 22;" text="Username" GridPane.halignment="CENTER"
GridPane.rowIndex="3" GridPane.valignment="BOTTOM" />
            <GridPane style="-fx-background-color: black;">
              <columnConstraints>
                <ColumnConstraints hgrow="SOMETIMES" minWidth="10.0" prefWidth="100.0" />
              </columnConstraints>
              <rowConstraints>
```

```
                <RowConstraints minHeight="10.0" prefHeight="30.0" vgrow="SOMETIMES" />
              </rowConstraints>
               <children>
                  <Label id="titleLabel" alignment="CENTER" prefHeight="151.0" prefWidth="309.0"
style="-fx-font-size: 45;" stylesheets="@../Styles/DarkTheme.css" text="Client Chat (Project 01)"
textAlignment="CENTER" wrapText="true" GridPane.halignment="CENTER" GridPane.valignment="CENTER"
/>
               </children>
            </GridPane>
            <Pane prefHeight="200.0" prefWidth="200.0" style="-fx-background-color: white;"
GridPane.rowIndex="1" />
            </children>
         </GridPane>
    </center>
</BorderPane>
```

ChatWindowLayout.fxml

```
<?xml version="1.0" encoding="UTF-8"?>

<?import javafx.geometry.Insets?>
<?import javafx.scene.control.Button?>
<?import javafx.scene.control.Label?>
<?import javafx.scene.control.ListView?>
<?import javafx.scene.control.TextField?>
<?import javafx.scene.layout.BorderPane?>
<?import javafx.scene.layout.ColumnConstraints?>
<?import javafx.scene.layout.GridPane?>
<?import javafx.scene.layout.HBox?>
<?import javafx.scene.layout.Pane?>
<?import javafx.scene.layout.RowConstraints?>

<BorderPane fx:id="borderPaneMain" maxHeight="-Infinity" maxWidth="-Infinity" prefHeight="720.0"
prefWidth="1280.0" styleClass="background" stylesheets="@../Styles/DarkTheme.css"
xmlns="http://javafx.com/javafx/8.0.111" xmlns:fx="http://javafx.com/fxml/1"
fx:controller="Project01.Controller">


   <bottom>
      <HBox alignment="CENTER_LEFT" style="-fx-background-color: black;"
BorderPane.alignment="CENTER">
            <Label fx:id="statusLabel" text="Status:">
               <padding>
                  <Insets bottom="5.0" left="5.0" right="5.0" top="5.0" />
               </padding>
            </Label>
      </HBox>
   </bottom>


   <center>
      <GridPane>
         <columnConstraints>
            <ColumnConstraints hgrow="SOMETIMES" maxWidth="1233.0" minWidth="10.0"
percentWidth="100.0" prefWidth="1100.0" />
         </columnConstraints>
         <rowConstraints>
            <RowConstraints maxHeight="320.6666564941406" minHeight="10.0" percentHeight="80.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
            <RowConstraints maxHeight="320.6666564941406" minHeight="10.0" percentHeight="2.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
            <RowConstraints maxHeight="320.6666564941406" minHeight="0.0" percentHeight="20.0"
prefHeight="89.33333587646484" vgrow="SOMETIMES" />
         </rowConstraints>
            <GridPane alignment="CENTER" GridPane.rowIndex="2">
              <columnConstraints>
                  <ColumnConstraints halignment="CENTER" hgrow="ALWAYS"
maxWidth="797.6666870117188" minWidth="10.0" percentWidth="5.0" prefWidth="730.0" />
                  <ColumnConstraints halignment="CENTER" hgrow="ALWAYS"
```

```
maxWidth="797.6666870117188" minWidth="10.0" percentWidth="90.0" prefWidth="730.0" />
                <ColumnConstraints halignment="CENTER" hgrow="ALWAYS"
maxWidth="901.3333129882812" minWidth="10.0" percentWidth="15.0" prefWidth="192.0" />
              </columnConstraints>
              <rowConstraints>
                <RowConstraints minHeight="10.0" prefHeight="30.0" vgrow="SOMETIMES" />
              </rowConstraints>
                  <TextField fx:id="messageTextField" onAction="#sendMessage" promptText="Type a
message here..." GridPane.columnIndex="1" GridPane.halignment="CENTER"
GridPane.valignment="CENTER" />
                  <Button fx:id="sendButton" mnemonicParsing="false" onAction="#sendMessage"
text="Send" GridPane.columnIndex="2" GridPane.halignment="CENTER" GridPane.valignment="CENTER" />
            </GridPane>
            <ListView fx:id="chatWindowListView" editable="true" prefHeight="200.0"
prefWidth="200.0" style="-fx-background-color: #3f3f3f;" />
         <Pane prefHeight="200.0" prefWidth="200.0" style="-fx-background-color: black;"
GridPane.rowIndex="1" />
      </GridPane>
   </center>
   <top>
      <Label onMouseClicked="#logout" style="-fx-font-size: 20;" text="Logout"
textAlignment="CENTER" BorderPane.alignment="CENTER_RIGHT">
         <padding>
            <Insets right="20.0" />
         </padding>
      </Label>
   </top>
</BorderPane>
```

DarkTheme.css

```
.background {
    -fx-background-color: #1d1d1d;
}

.label {
    -fx-font-size: 11pt;
    -fx-font-family: "Segoe UI Semibold";
    -fx-text-fill: white;
    -fx-opacity: 0.6;
}

.label-bright {
    -fx-font-size: 11pt;
    -fx-font-family: "Segoe UI Semibold";
    -fx-text-fill: white;
    -fx-opacity: 1;
}

.label-header {
    -fx-font-size: 32pt;
    -fx-font-family: "Segoe UI Light";
    -fx-text-fill: white;
    -fx-opacity: 1;
}

.table-view {
    -fx-base: #1d1d1d;
    -fx-control-inner-background: #1d1d1d;
    -fx-background-color: #1d1d1d;
    -fx-table-cell-border-color: transparent;
    -fx-table-header-border-color: transparent;
    -fx-padding: 5;
}

.table-view .column-header-background {
    -fx-background-color: transparent;
}
```

```
.table-view .column-header, .table-view .filler {
    -fx-size: 35;
    -fx-border-width: 0 0 1 0;
    -fx-border-color:
        transparent
        transparent
        derive(-fx-base, 80%)
        transparent;
    -fx-border-insets: 0 10 1 0;
}

.table-view .column-header .label {
    -fx-font-size: 20pt;
    -fx-font-family: "Segoe UI Light";
    -fx-text-fill: white;
    -fx-alignment: center-left;
    -fx-opacity: 1;
}

.table-view:focused .table-row-cell:filled:focused:selected {
    -fx-background-color: -fx-focus-color;
}

.split-pane:horizontal > * > .split-pane-divider {
    -fx-border-color: transparent #1d1d1d transparent #1d1d1d;
    -fx-background-color: transparent, derive(#1d1d1d,20%);
}

.split-pane {
    -fx-padding: 1 0 0 0;
}

.menu {
    -fx-text-fill: white;
}

.menu-bar {
    -fx-background-color: #1d1d1d;
    -fx-selection-bar: #1d1d1d;
}

.menu-bar .label {
    -fx-font-size: 12pt;
    -fx-font-family: "Segoe UI Light";
    -fx-text-fill: white;
    -fx-opacity: 0.9;
}

.text-field {
    -fx-font-size: 12pt;
    -fx-font-family: "Segoe UI Semibold";
}



/*
 * Metro style Push Button
 * Author: Pedro Duque Vieira
 * http://pixelduke.wordpress.com/2012/10/23/jmetro-windows-8-controls-on-java/
 */
.button {
    -fx-padding: 5 22 5 22;
    -fx-border-color: #e2e2e2;
    -fx-border-width: 2;
    -fx-background-radius: 0;
    -fx-background-color: #1d1d1d;
    -fx-font-family: "Segoe UI", Helvetica, Arial, sans-serif;
    -fx-font-size: 11pt;
    -fx-text-fill: #d8d8d8;
    -fx-background-insets: 0 0 0 0, 0, 1, 2;
}
```

```
.button:hover {
    -fx-background-color: #3a3a3a;
}

.button:pressed, .button:default:hover:pressed {
  -fx-background-color: white;
  -fx-text-fill: #1d1d1d;
}

.button:focused {
    -fx-border-color: white, white;
    -fx-border-width: 1, 1;
    -fx-border-style: solid, segments(1, 1);
    -fx-border-radius: 0, 0;
    -fx-border-insets: 1 1 1 1, 0;
}

.button:disabled, .button:default:disabled {
    -fx-opacity: 0.4;
    -fx-background-color: #1d1d1d;
    -fx-text-fill: white;
}

.button:default {
    -fx-background-color: -fx-focus-color;
    -fx-text-fill: #ffffff;
}

.button:default:hover {
    -fx-background-color: derive(-fx-focus-color,30%);
}

.scroll-pane > .viewport {
   -fx-background-color: transparent;
}
```