1. ANDROID IMPLEMENTATION

The android app has been created in Android Studio.

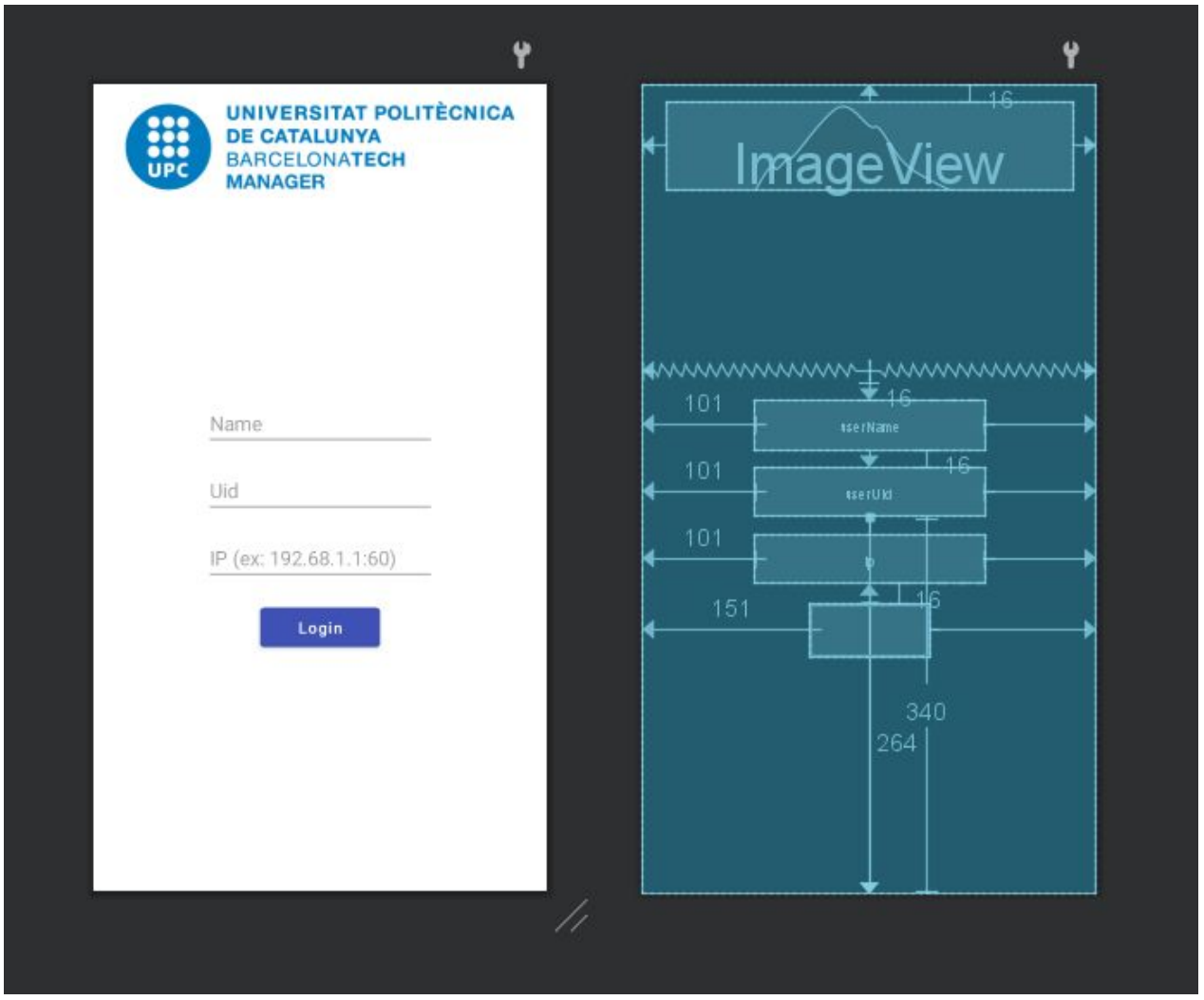
MainActivity.java

```
package com.example.upcmanager;

import androidx.appcompat.app.ActionBar;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.AsyncTask;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;

import org.json.JSONArray;
import org.json.JSONException;

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.URL;

public class MainActivity extends AppCompatActivity {

    private String query, ipAdress;
    private Intent intent;
    private TextView wrongMessage;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        getSupportActionBar().hide();
    }

    // La cridem quan apretem el botó Login
    public void Login(View view) {
        // Do something in response to button
        intent = new Intent(this, DisplayLoginActivity.class);

        EditText userName = (EditText) findViewById(R.id.userName);
        String name = userName.getText().toString();
        intent.putExtra("UPC_NAME", name);

        EditText userUid = (EditText) findViewById(R.id.userUid);
        String uid = userUid.getText().toString();

        EditText ip = (EditText) findViewById(R.id.ip);
        ipAdress = ip.getText().toString();
        intent.putExtra("ipAdress", ipAdress);
```

```
        wrongMessage = findViewById(R.id.wrongMessage);

        query = "students?student_id=" + uid + "&name=" + name;

        UserLoginTask mAuthTask = new UserLoginTask();
        mAuthTask.execute();
    }

    class UserLoginTask extends AsyncTask<String, String, String> {

        @Override
        protected void onPreExecute() {
        }

        @Override
        protected String doInBackground(String... params) {
            String res = "";
            try {
                URL url = new URL("http://" + ipAdress + "/" + query);
                HttpURLConnection con = (HttpURLConnection) url.openConnection();
                con.setRequestMethod("GET");
                BufferedReader in = new BufferedReader(
                        new InputStreamReader(con.getInputStream()));
                String inputLine;
                StringBuffer response = new StringBuffer();
                while ((inputLine = in.readLine()) != null) {
                    response.append(inputLine);
                }
                res = response.toString();

            } catch (Exception e) {
                e.printStackTrace();
            }
            return res;
        }

        @Override
        protected void onPostExecute(String res) {
            if (res.contains("name")) {
                wrongMessage.setText("");
                startActivity(intent);
            }
            else
                wrongMessage.setText("Name or uid not correct. Try again.");
        }
    }
}
```

activity_main.xml

Design



Code

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="?attr/colorOnPrimary"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/wrongMessage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="16dp"
        android:textColor="#F44336"
```

```
        app:layout_constraintBottom_toTopOf="@+id/userName"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

    <EditText
        android:id="@+id/userUid"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="101dp"
        android:layout_marginLeft="101dp"
        android:layout_marginEnd="101dp"
        android:layout_marginRight="101dp"
        android:layout_marginBottom="340dp"
        android:ems="10"
        android:hint="@string/userUid"
        android:inputType="textPersonName"
        android:textColorHighlight="#3F51B5"
        android:textColorLink="#3F51B5"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent" />

    <EditText
        android:id="@+id/ip"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="101dp"
        android:layout_marginLeft="101dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="101dp"
        android:layout_marginRight="101dp"
        android:layout_marginBottom="264dp"
        android:ems="10"
        android:hint="@string/ip"
        android:inputType="textPersonName"
        android:textColorHighlight="#3F51B5"
        android:textColorLink="#3F51B5"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/userUid"
        app:layout_constraintVertical_bias="0.0" />

    <EditText
        android:id="@+id/userName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="101dp"
        android:layout_marginLeft="101dp"
        android:layout_marginEnd="101dp"
        android:layout_marginRight="101dp"
        android:layout_marginBottom="16dp"
        android:ems="10"
        android:hint="@string/userName"
```

```
        android:inputType="textPersonName"
        android:textColorHighlight="#3F51B5"
        android:textColorLink="#3F51B5"
        app:layout_constraintBottom_toTopOf="@+id/userUid"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="109dp"
        android:layout_height="48dp"
        android:layout_marginStart="151dp"
        android:layout_marginLeft="151dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="151dp"
        android:layout_marginRight="151dp"
        android:hint="@string/button"
        android:onClick="Login"
        android:textColorHighlight="#3F51B5"
        android:textColorHint="#FFFFFF"
        android:textColorLink="#3F51B5"
        app:backgroundTint="#3F51B5"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/ip" />

    <ImageView
        android:id="@+id/imageView5"
        android:layout_width="368dp"
        android:layout_height="80dp"
        android:layout_marginTop="16dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:srcCompat="@drawable/upc" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

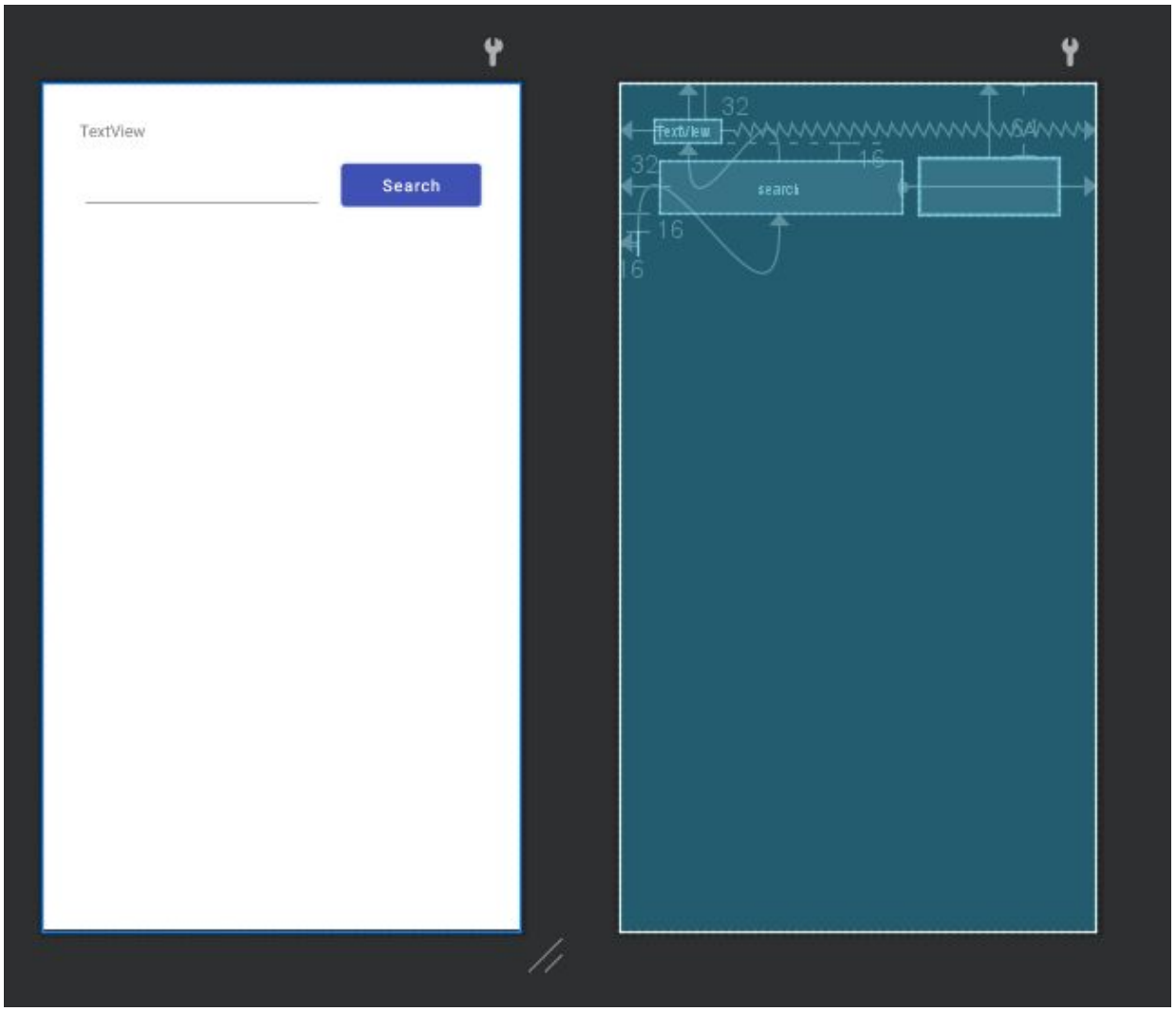
DisplayLoginActivity.java

```
package com.example.upcmanager;

import android.content.Intent;
import android.os.AsyncTask;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

import org.json.JSONArray;
import org.json.JSONException;

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.URL;

public class DisplayLoginActivity extends AppCompatActivity {

    private TextView searchMessage, resultSearch;
    private String query, table, ipAdress;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_display_login);

        getSupportActionBar().setHomeAsUpIndicator(R.drawable.upc_icon);// set
drawable icon
        getSupportActionBar().setDisplayHomeAsUpEnabled(true);

        // Get the Intent that started this activity and extract the string
        Intent intent = getIntent();
        String name = intent.getStringExtra("UPC_NAME");
        ipAdress = intent.getStringExtra("ipAdress");

        // Capture the layout's TextView and set the string as its text
        searchMessage = findViewById(R.id.searchMessage);
        resultSearch = findViewById(R.id.resultSearch);

        searchMessage.setText("Insert your search query");

        getSupportActionBar().setTitle(name);
    }

    public void searchBd(View view){
        EditText search = (EditText) findViewById(R.id.search);
        query = search.getText().toString();

        table = "";

        SearchTask mSearchTask = new SearchTask();
        mSearchTask.execute();
```

```
    }

    class SearchTask extends AsyncTask<String, String, String> {

        @Override
        protected void onPreExecute() {
        }

        @Override
        protected String doInBackground(String... params) {
            String res = "";
            try {
                URL url = new URL("http://" + ipAdress + "/" + query);
                HttpURLConnection con = (HttpURLConnection) url.openConnection();
                con.setRequestMethod("GET");
                BufferedReader in = new BufferedReader(
                        new InputStreamReader(con.getInputStream()));
                String inputLine;
                StringBuffer response = new StringBuffer();
                while ((inputLine = in.readLine()) != null) {
                    response.append(inputLine);
                }
                res = response.toString();

            } catch (Exception e) {
                e.printStackTrace();
            }
            return res;
        }

        @Override
        protected void onPostExecute(String res) {
            String str;
            if (table != "students") {
                try {
                    JSONArray jsn = new JSONArray(res);
                    if (jsn.toString().contains("[]")) {
                        searchMessage.setText("Invalid search query. Try again.");
                    } else {
                        searchMessage.setText("Insert your search query");
                    }
                    resultSearch.setText(jsn.toString());
                    System.out.println(res);

                } catch (JSONException e) {
                    searchMessage.setText("Invalid search query. Try again.");
                    e.printStackTrace();
                }
            }
        }
    }
}
```

activity_display_login.xml

Design



Code

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".DisplayLoginActivity">

    <Button
        android:id="@+id/searchButton"
        android:layout_width="121dp"
        android:layout_height="49dp"
        android:layout_marginStart="16dp"
        android:layout_marginLeft="16dp"
```

```
        android:layout_marginTop="64dp"
        android:layout_marginEnd="32dp"
        android:layout_marginRight="32dp"
        android:hint="@string/searchButton"
        android:onClick="searchBd"
        android:textColorHighlight="#3F51B5"
        android:textColorHint="#FFFFFF"
        android:textColorLink="#3F51B5"
        app:backgroundTint="#3F51B5"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toEndOf="@+id/search"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/search"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="32dp"
        android:layout_marginLeft="32dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="170dp"
        android:layout_marginRight="170dp"
        android:layout_marginBottom="16dp"
        android:ems="10"
        android:inputType="textPersonName"
        android:textColorHighlight="#3F51B5"
        android:textColorLink="#3F51B5"
        app:layout_constraintBottom_toTopOf="@+id/userUid"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/searchMessage" />

    <TextView
        android:id="@+id/searchMessage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:layout_marginLeft="16dp"
        android:layout_marginTop="32dp"
        android:text="TextView"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.045"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/resultSearch"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:layout_marginLeft="16dp"
        android:layout_marginTop="16dp"
        app:layout_constraintStart_toStartOf="parent"
```

```
        app:layout_constraintTop_toBottomOf="@+id/search" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

colors.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="grey_1">#1E1E1E</color>
    <color name="grey_2">#171717</color>
    <color name="blue_2">#097EDC</color>
    <color name="blue_1">#3F51B5</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
</resources>
```

strings.xml

```
<resources>
    <string name="app_name">UPC Manager</string>
    <string name="userName">Name</string>
    <string name="userUid">Uid</string>
    <string name="ip">IP (ex: 192.68.1.1:60)</string>
    <string name="button">Login</string>
    <string name="searchButton">Search</string>
</resources>
```

themes.xml

```
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Theme.UPCManager"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">
        <!-- Primary brand color. -->
        <item name="colorPrimary">@color/blue_2</item>
        <item name="colorPrimaryVariant">@color/blue_2</item>
        <item name="colorOnPrimary">@color/white</item>
        <!-- Secondary brand color. -->
        <item name="colorSecondary">@color/blue_1</item>
        <item name="colorSecondaryVariant">@color/blue_1</item>
        <item name="colorOnSecondary">@color/black</item>
        <!-- Status bar color. -->
        <item name="android:statusBarColor"
tools:targetApi="l">?attr/colorPrimaryVariant</item>
        <!-- Customize your theme here. -->
    </style>
</resources>
```

themes.xml (night)

```
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Theme.UPCManager"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">
        <!-- Primary brand color. -->
        <item name="colorPrimary">@color/grey_2</item>
        <item name="colorPrimaryVariant">@color/grey_2</item>
        <item name="colorOnPrimary">@color/grey_2</item>
        <!-- Secondary brand color. -->
        <item name="colorSecondary">@color/blue_1</item>
        <item name="colorSecondaryVariant">@color/blue_1</item>
        <item name="colorOnSecondary">@color/black</item>
        <!-- Status bar color. -->
        <item name="android:statusBarColor"
tools:targetApi="l">?attr/colorPrimaryVariant</item>
        <!-- Customize your theme here. -->
    </style>
</resources>
```

network_security_config.xml

```
<?xml version="1.0" encoding="utf-8"?>
<network-security-config>
    <base-config cleartextTrafficPermitted="true" />
    <domain-config cleartextTrafficPermitted="true">
        <domain includeSubdomains="true">192.168.1.79</domain>
    </domain-config>
</network-security-config>
```

Changes in servidor.php

From

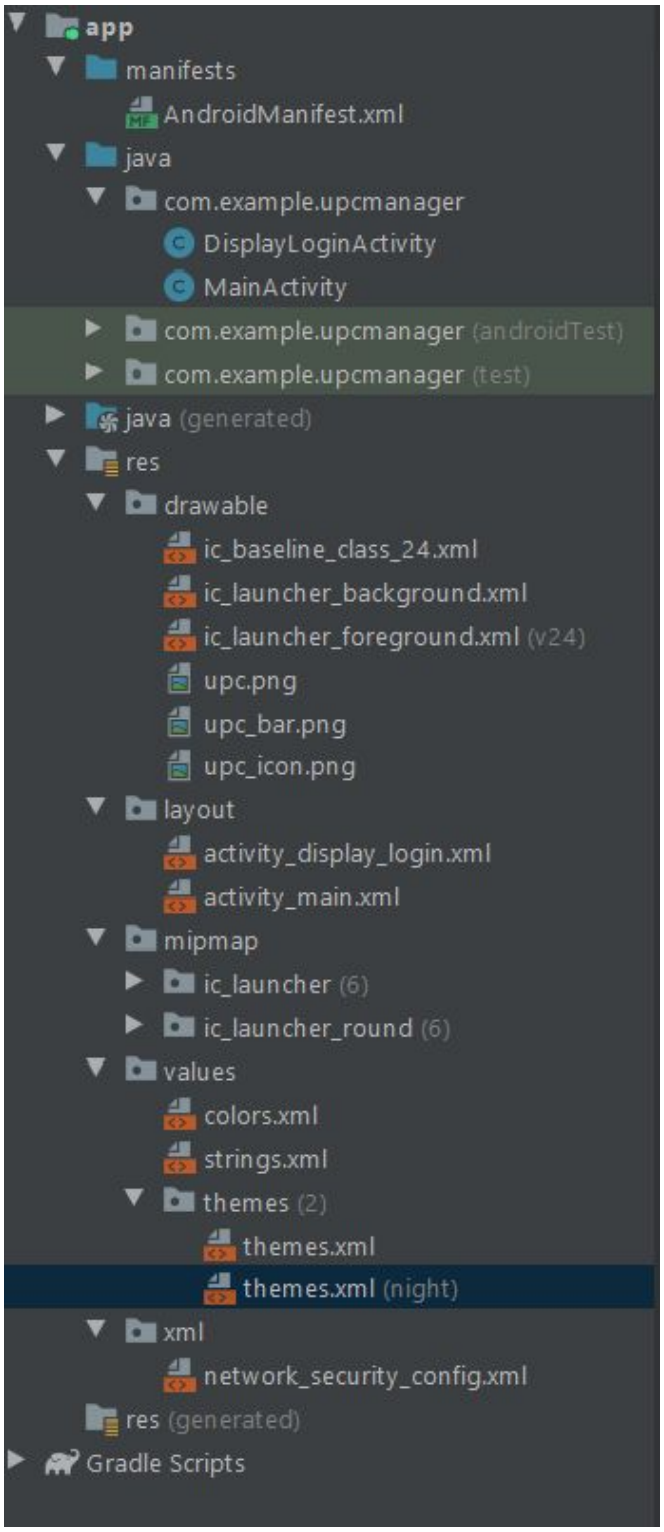
```
$result = mysqli_query($conn, "SELECT name FROM students WHERE student_id = '$student_id'");
```

To

```
if ($name!=NULL){
   $result = mysqli_query($conn, "SELECT name FROM students WHERE student_id = '$student_id' and name = '$name'");
} else {
   $result = mysqli_query($conn, "SELECT name FROM students WHERE student_id = '$student_id'");
}
```

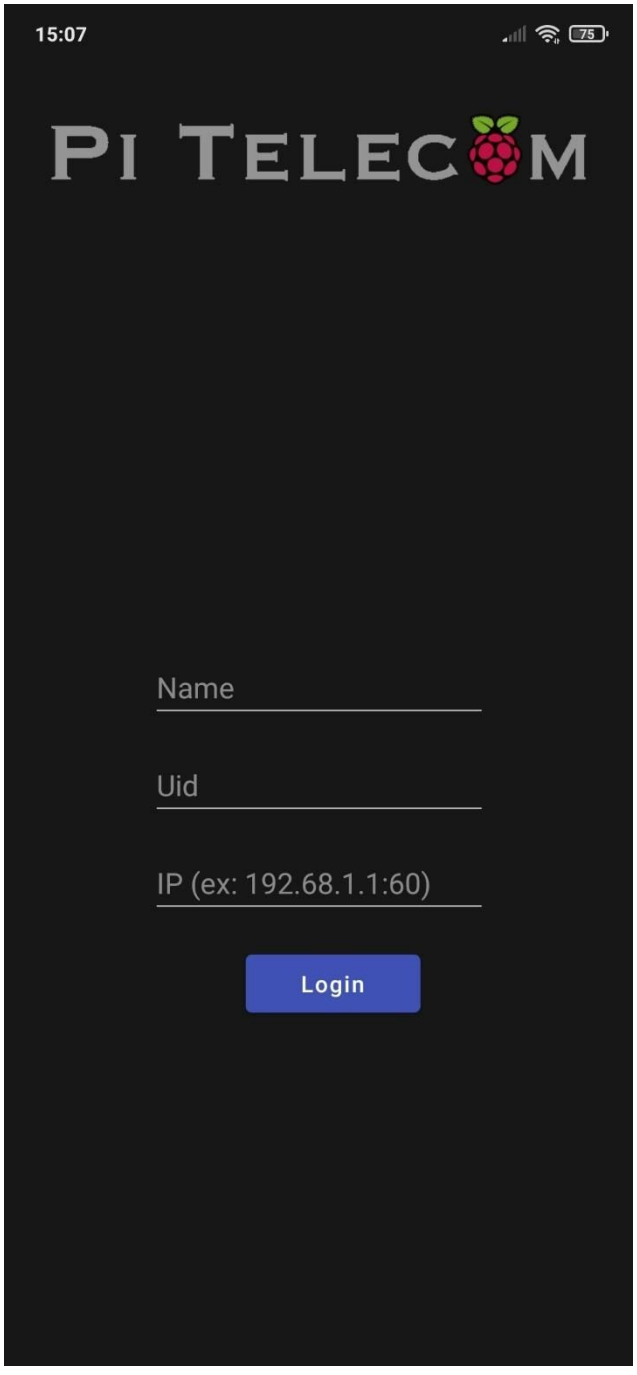
This is to make the android app work.

Project Structure

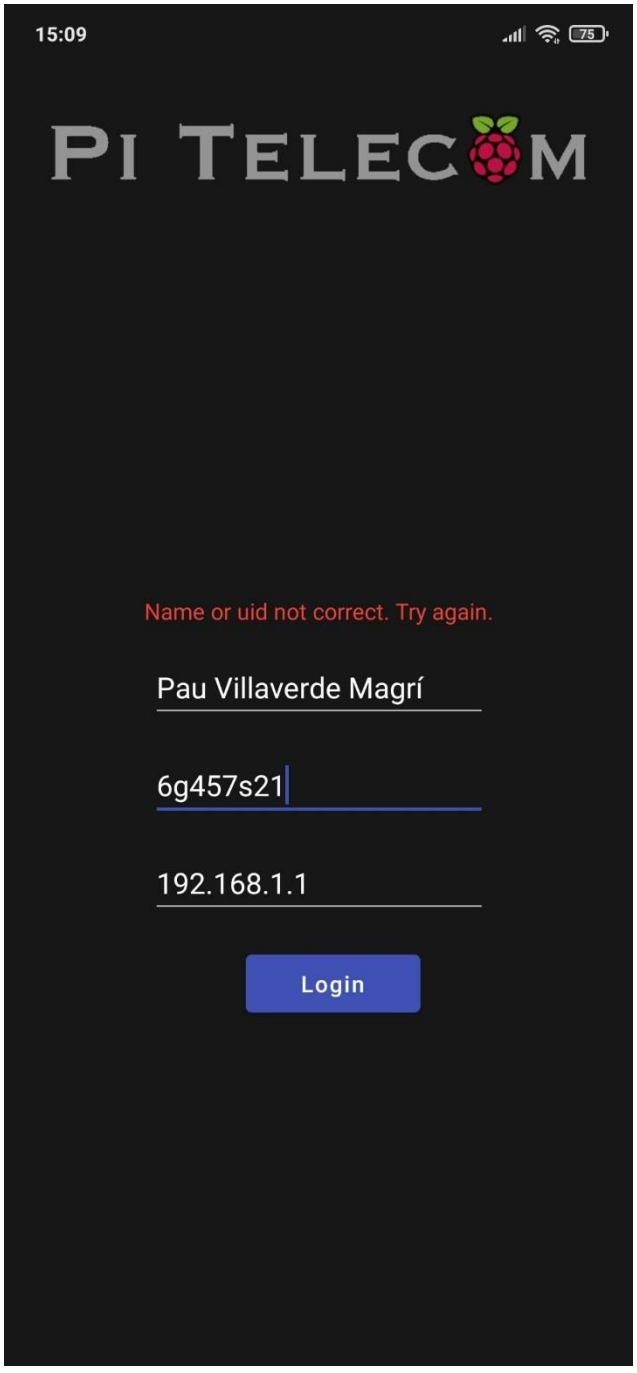


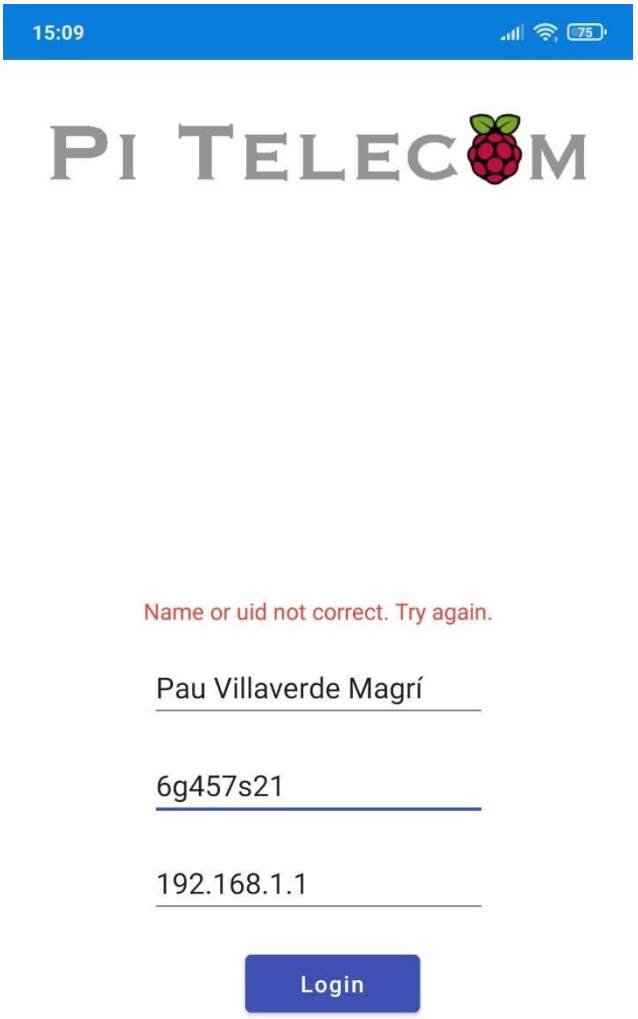
2. ANDROID CHARACTERIZATION

Interface of the app when opened. (dark theme vs light theme)

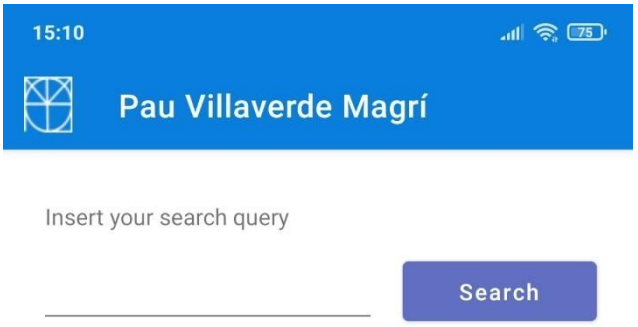


Interface of the app when login is not successful.

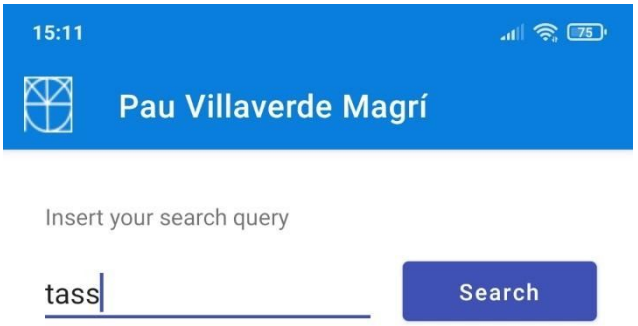




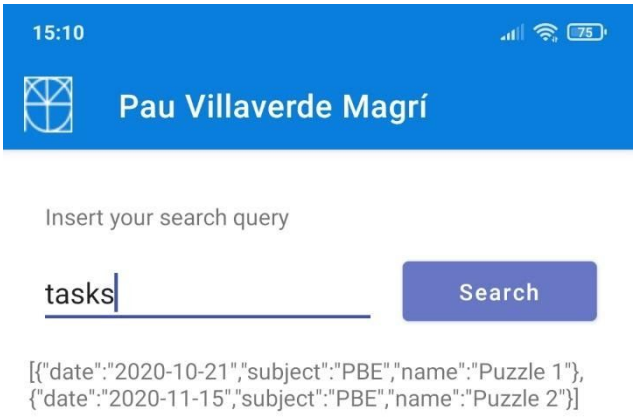
Interface of the app when login is successful.



Interface of the app when search is not successful.



Interface of the app when search is successful. (Not shown as table due to problems implementing it)



Queries work the same way both in the client and the android app.