Practical 7

Create a Radio Button Group with Radio Button of Some/All Courses in your College and on selecting a particular course, the teacher-in-charge of that course should appear at the Bottom of Screen.

activity_main.xml

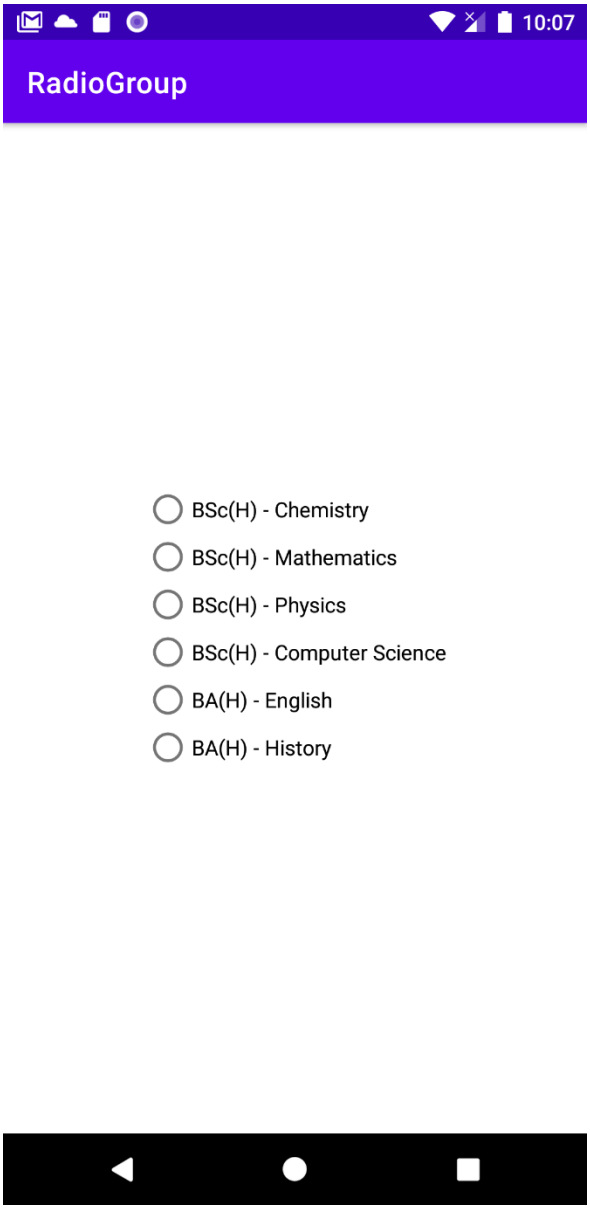
```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
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

    <RadioGroup
        android:id="@+id/CoursesGroup"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

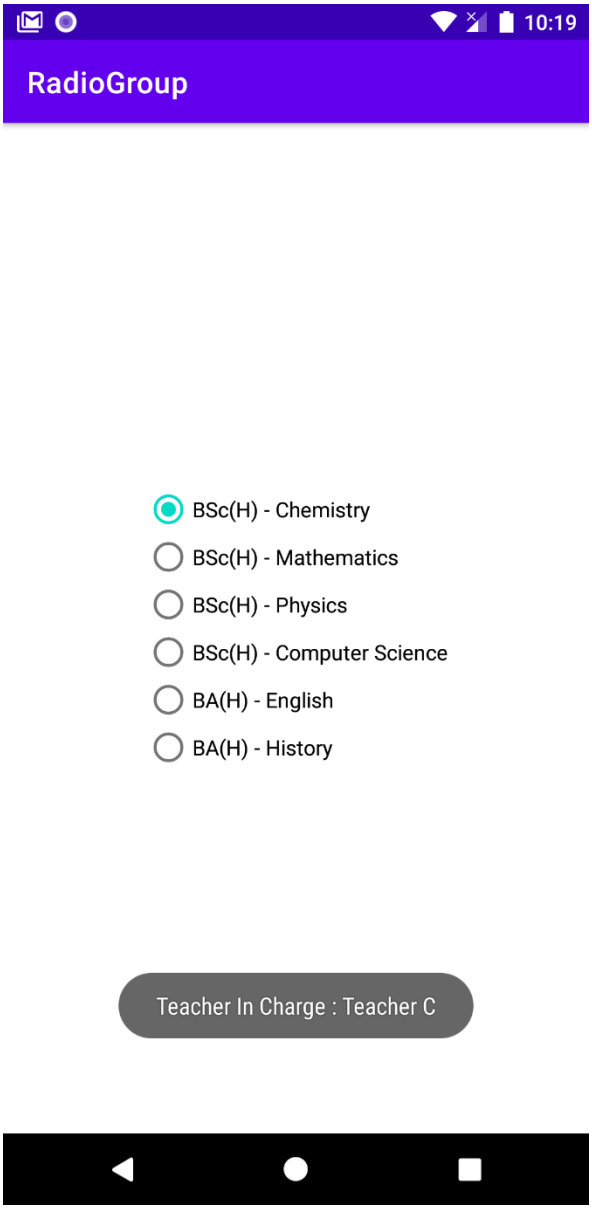
MainActivity.java

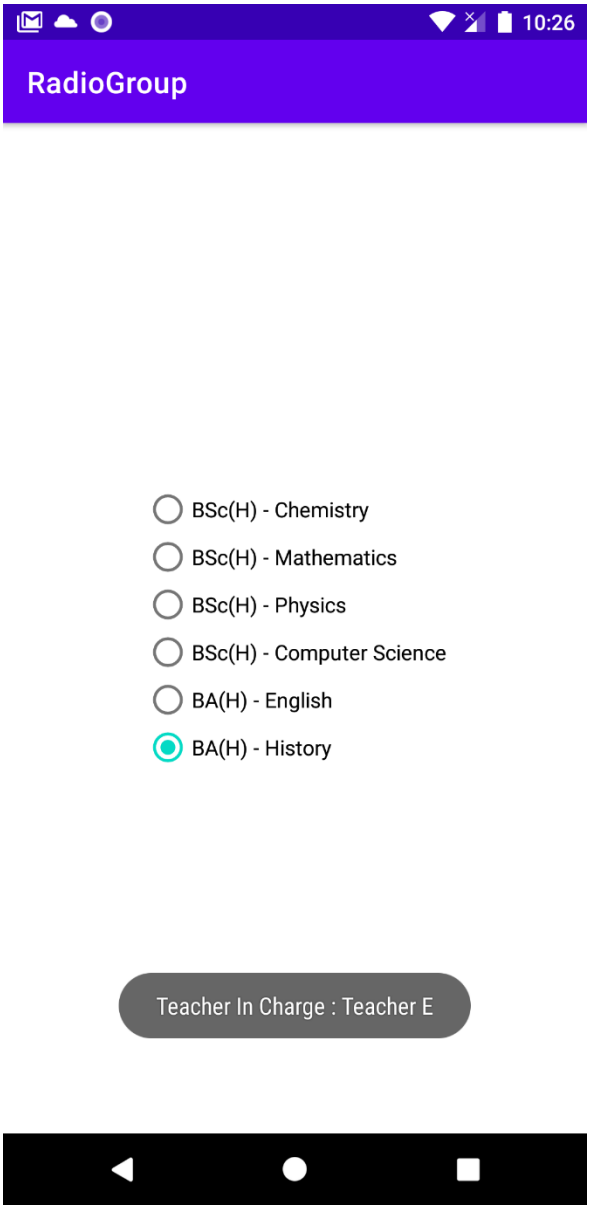
```
package com.example.radiogroup;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.Toast;

import java.util.HashMap;
import java.util.Map;

public class MainActivity extends AppCompatActivity {

    // Creating HashMap for adding Radio Button and for their onClick Responses
```

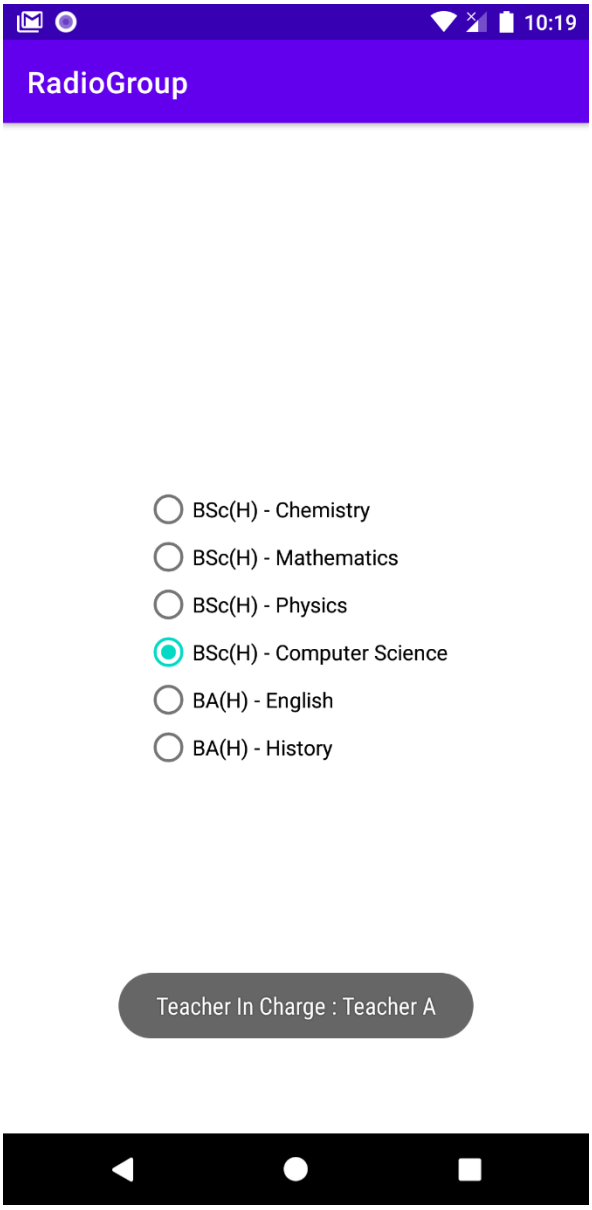
```
    HashMap<String,String> course_teacher = new HashMap<String, String>();
    RadioButton button;
    RadioGroup group;

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

        // Adding Data to HashMap
        course_teacher.put("BSc(H) - Computer Science","Teacher A");
        course_teacher.put("BSc(H) - Mathematics","Teacher B");
        course_teacher.put("BSc(H) - Chemistry","Teacher C");
        course_teacher.put("BA(H) - English","Teacher D");
        course_teacher.put("BA(H) - History","Teacher E");
        course_teacher.put("BSc(H) - Physics","Teacher F");

        // getting the RadioGroup View and Adding RadioButtons using the
course_teacher HashMap
        RadioGroup group = (RadioGroup)findViewById(R.id.CoursesGroup);
        for(Map.Entry<String,String> entry: course_teacher.entrySet()){
            button = new RadioButton(this);
            button.setText(entry.getKey());
            button.setChecked(false);
            button.setOnClickListener(this::onRadioButtonClicked);
            group.addView(button);
        }
    }

    // handling Click Events on Radio Button
    public void onRadioButtonClicked(View view) {
        String key = ((RadioButton)view).getText().toString();
        Toast.makeText(this, "Teacher In Charge : " + course_teacher.get(key),
Toast.LENGTH_SHORT).show();
    }
}
```

Output


10:07
RadioGroup
BSc(H) - Chemistry
BSc(H) - Mathematics
BSc(H) - Physics
BSc(H) - Computer Science
BA(H) - English
BA(H) - History


10:19
RadioGroup
BSc(H) - Chemistry
BSc(H) - Mathematics
BSc(H) - Physics
BSc(H) - Computer Science
BA(H) - English
BA(H) - History
Teacher In Charge : Teacher C


10:26
RadioGroup
BSc(H) - Chemistry
BSc(H) - Mathematics
BSc(H) - Physics
BSc(H) - Computer Science
BA(H) - English
BA(H) - History
Teacher In Charge : Teacher E


10:19
RadioGroup
BSc(H) - Chemistry
BSc(H) - Mathematics
BSc(H) - Physics
BSc(H) - Computer Science
BA(H) - English
BA(H) - History
Teacher In Charge : Teacher A

Practical 8

Create a list of all courses in your College and on selecting a particular course Parent Department and the Teacher-in-charge should appear at the bottom of the Screen

activity_main.xml

```
<?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=".MainActivity">

    <ListView
        android:id="@+id/listView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

list_view_element.xml

```
<?xml version="1.0" encoding="utf-8"?>
<TextView xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:textAlignment="center"
    android:padding="20dp"
    android:textAppearance="@color/black"
    android:textSize="20sp">
</TextView>
```

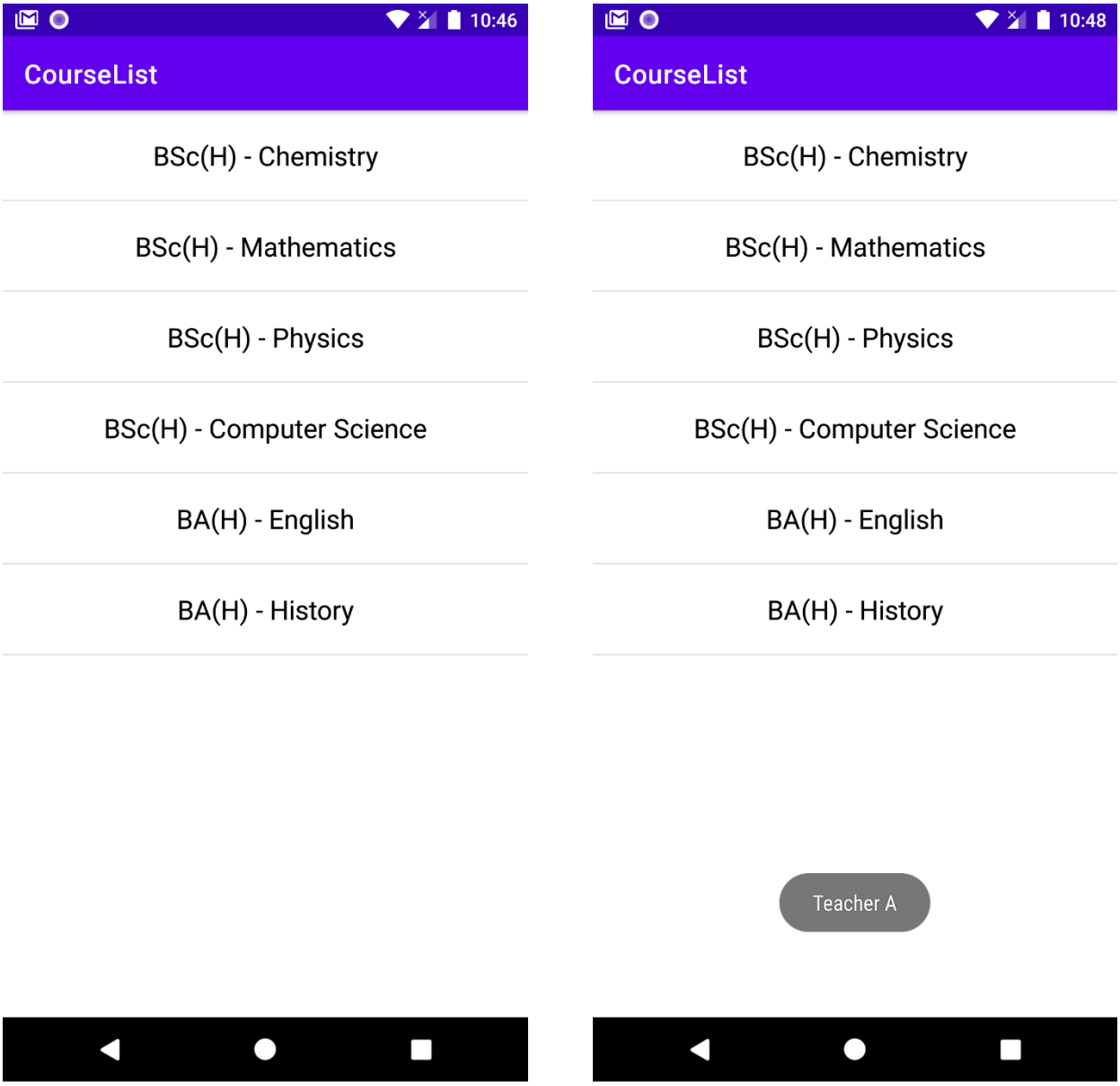
MainActivity.java

```
package com.example.courselist;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
```

```
import android.util.Log;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;
import java.lang.reflect.Array;
import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;
public class MainActivity extends AppCompatActivity {

    // Declaring the HashMap to store Data and ListView for Displaying Information
    ListView listView;
    HashMap<String,String>  course_teacher = new HashMap<String,String>();

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

        // Adding Data to HashMap
        course_teacher.put("BSc(H) - Computer Science","Teacher A");
        course_teacher.put("BSc(H) - Mathematics","Teacher B");
        course_teacher.put("BSc(H) - Chemistry","Teacher C");
        course_teacher.put("BA(H) - English","Teacher E");
        course_teacher.put("BA(H) - History","Teacher F");
        course_teacher.put("BSc(H) - Physics","Teacher G");

        //getting the ListView; Creating an Array Adapter and setting the adapter of
ListView View to the created ArrayAdapter
        listView = (ListView) findViewById(R.id.listView);
        List<String> courses = new ArrayList<String>();
        for (String i: course_teacher.keySet())
        {
            courses.add(i);
        }
        ArrayAdapter<String> adapter = new
ArrayAdapter<String>(this,R.layout.list_view_element ,courses);
        listView.setAdapter(adapter);

        // handling Click Event on List Items
        listView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view, int i,
long l) {
                String incharge =
course_teacher.get(((TextView)view).getText().toString());
                Toast.makeText(getApplicationContext(), incharge,
Toast.LENGTH_SHORT).show();
            }
        });
```

```
    }
}
```

Output



(Teacher A appears on clicking BSc(H) – Computer Science list item in List View)

Practical 9a

Create an Application with three buttons (with different color names) vertically aligned. On Selecting a Button, the Color of the Screen will change.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/layout"
    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=".MainActivity">

    <Button
        android:id="@+id/red"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="changeColor"
        android:text="@string/red"
        app:layout_constraintBottom_toTopOf="@+id/green"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/green"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="changeColor"
        android:text="@string/green"
        app:layout_constraintBottom_toTopOf="@+id/blue"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/red" />

    <Button
        android:id="@+id/blue"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="changeColor"
        android:text="@string/blue"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
```

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

strings.xml

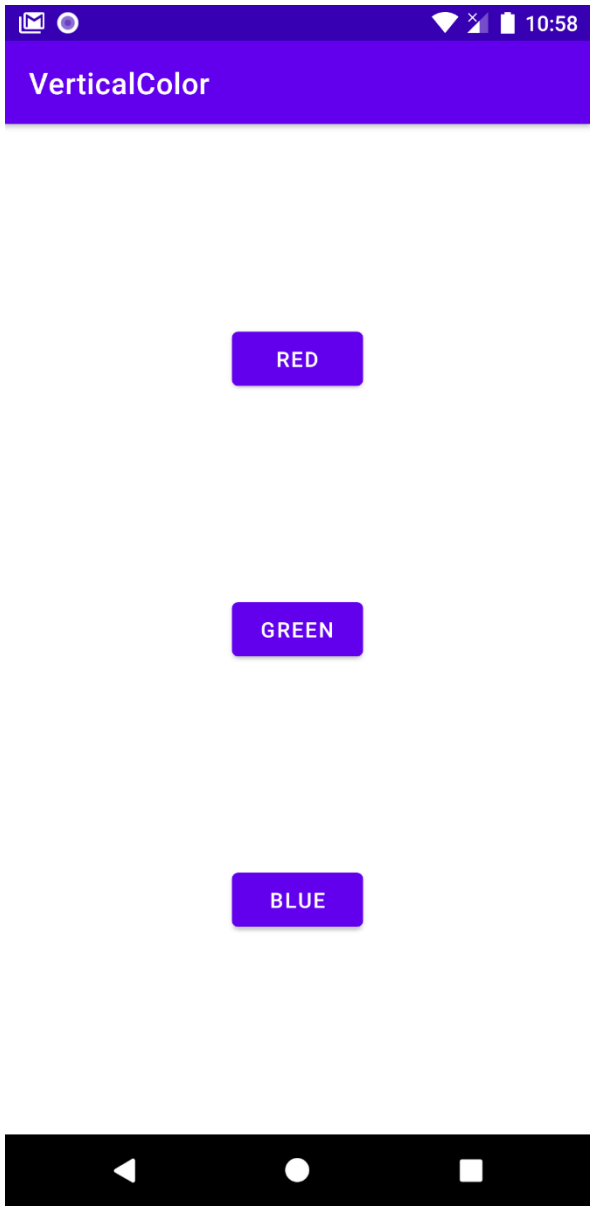
```
<resources>
    <string name="app_name">VerticalColor</string>
    <string name="red">Red</string>
    <string name="green">Green</string>
    <string name="blue">Blue</string>
</resources>
```

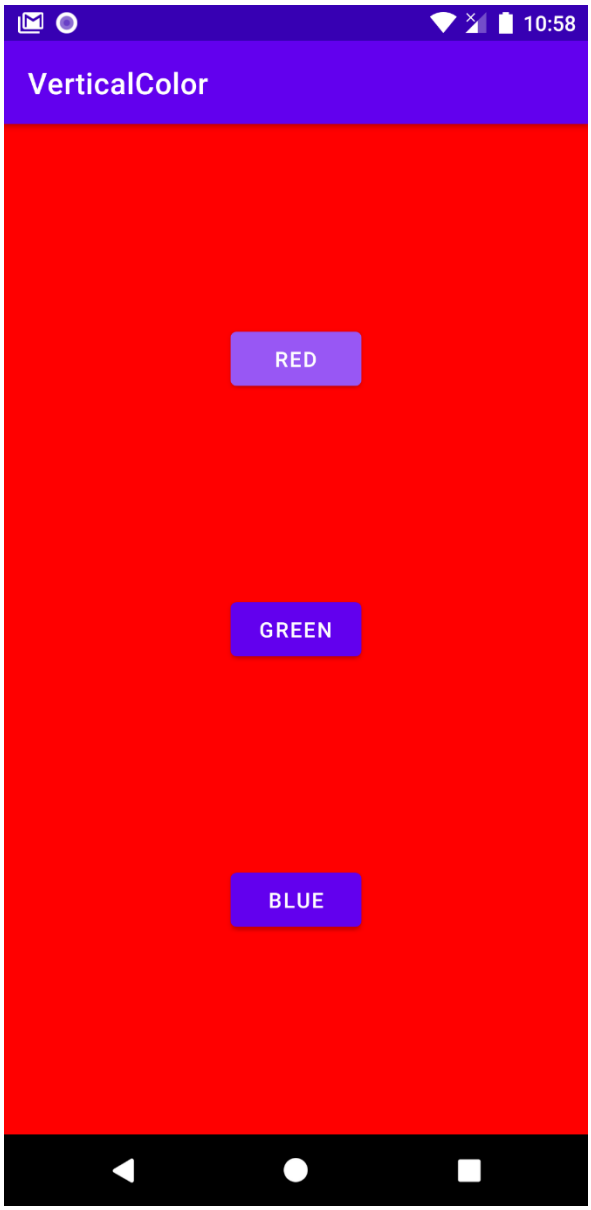
MainActivity.java

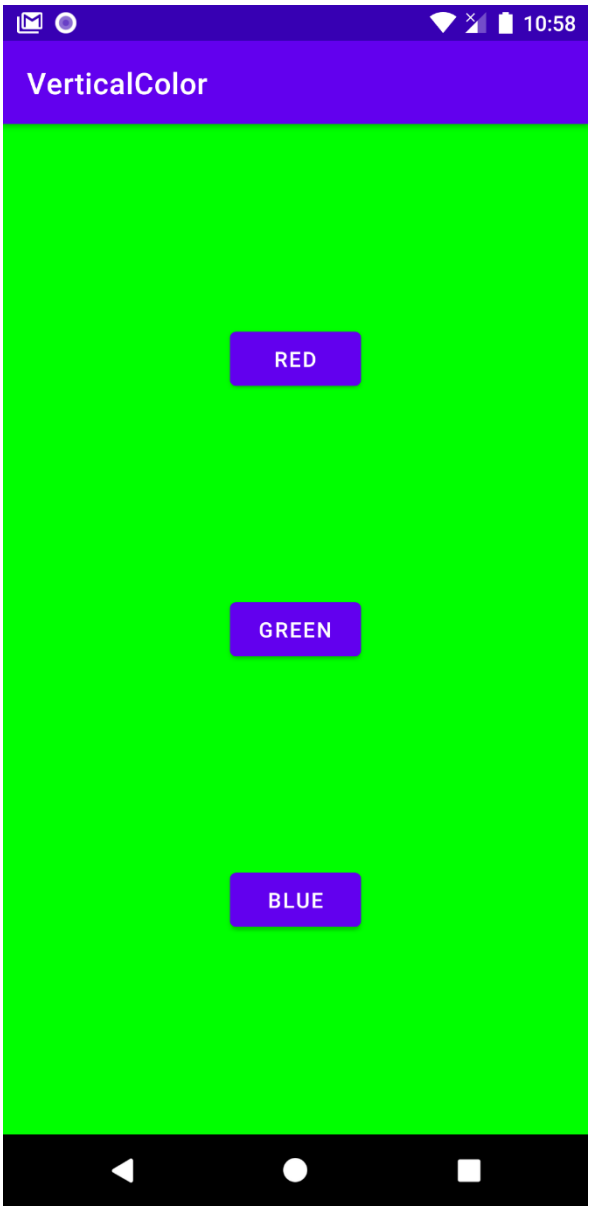
```
package com.example.verticalcolor;
import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

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

    public void changeColor(View view) {
        Button btn = (Button)view;
        ConstraintLayout layout = (ConstraintLayout)(findViewById(R.id.layout));
        String color = btn.getText().toString();
        switch (color)
        {
            case "Red":
                layout.setBackgroundColor(Color.RED);
                break;
            case "Green":
                layout.setBackgroundColor(Color.GREEN);
                break;
            case "Blue":
                layout.setBackgroundColor(Color.BLUE);
                break;
            default:
                break;
        }
```

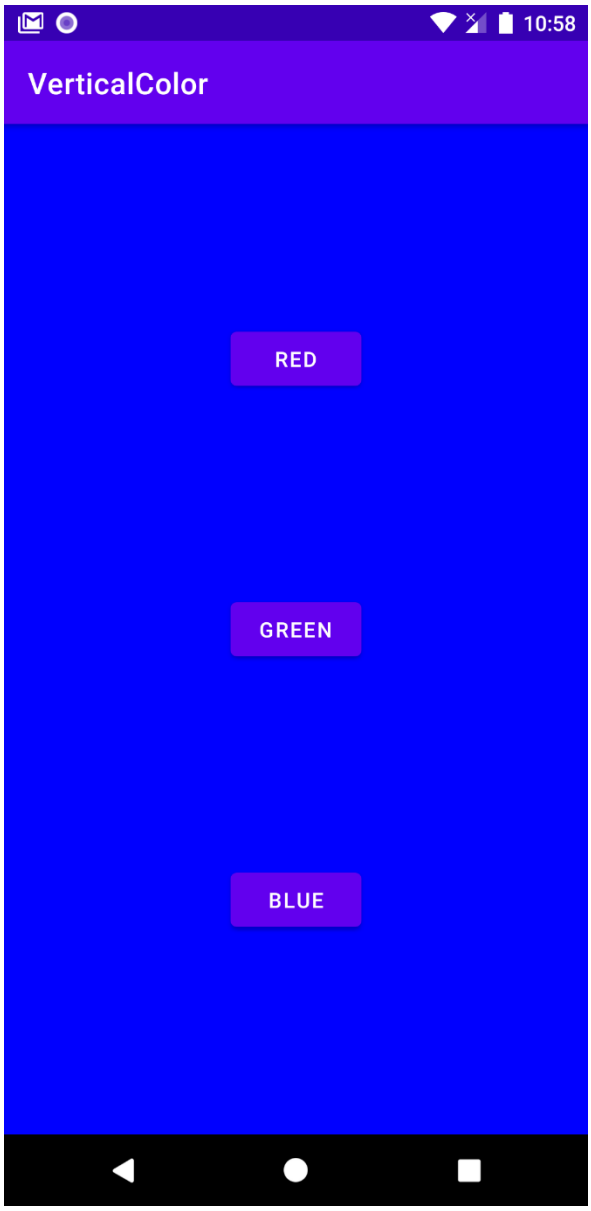
```
    }
}
```

Output


10:58
VerticalColor
RED
GREEN
BLUE


10:58
VerticalColor
RED
GREEN
BLUE


10:58
VerticalColor
RED
GREEN
BLUE


10:58
VerticalColor
RED
GREEN
BLUE

Practical 9b

Create an Application with three buttons (with different color names) horizontally aligned. On Selecting a Button, the Color of the Screen will change.

activity_main.xml

```
<?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:id="@+id/layout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/Red"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/red"
        android:onClick="changeColor"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/Green"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/Green"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/green"
        android:onClick="changeColor"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/Blue"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toEndOf="@+id/Red"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/Blue"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/blue"
        android:onClick="changeColor"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
```

```
        app:layout_constraintStart_toEndOf="@+id/Green"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

strings.xml

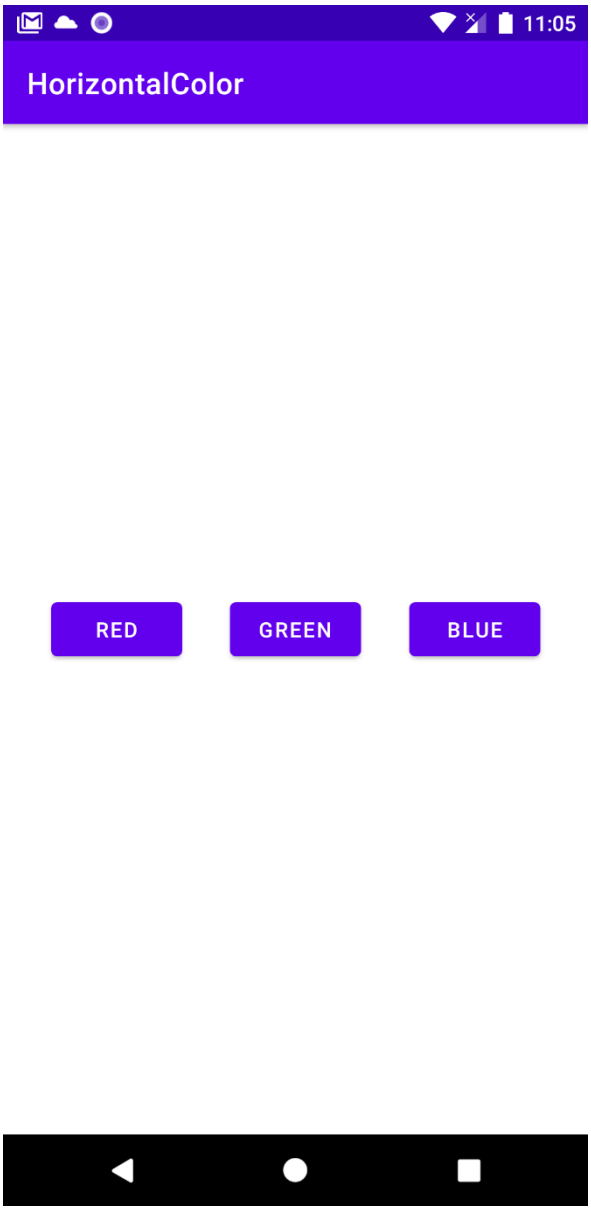
```
<resources>
    <string name="app_name">HorizontalColor</string>
    <string name="red">Red</string>
    <string name="green">Green</string>
    <string name="blue">Blue</string>
</resources>
```

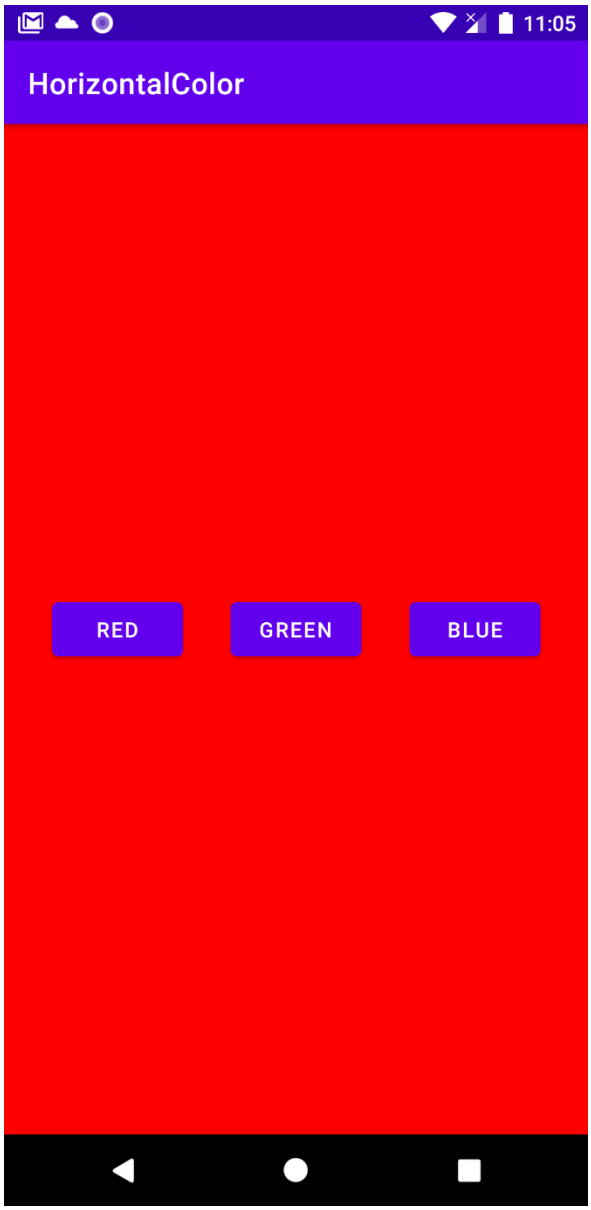
MainActivity.java

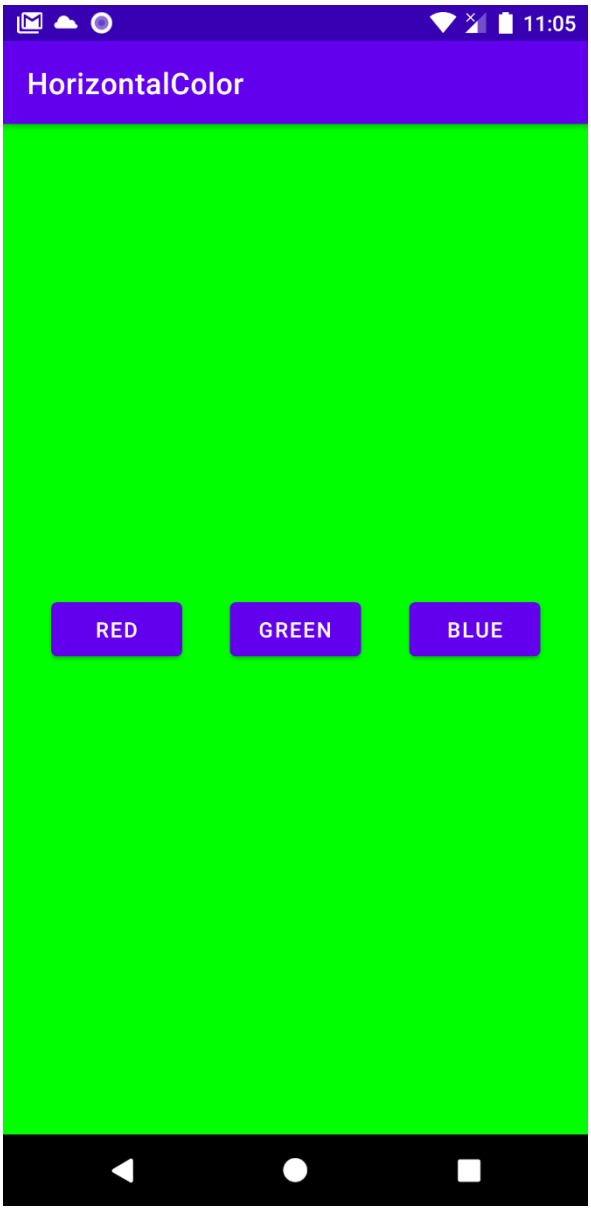
```
package com.example.horizontalcolor;
import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import androidx.constraintlayout.widget.ConstraintSet;
import android.graphics.Color;
import android.os.Bundle;
import android.text.Layout;
import android.util.Log;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

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

    public void changeColor(View view) {
        Button btn = (Button)view;
        ConstraintLayout layout = (ConstraintLayout)(findViewById(R.id.layout));
        String color = btn.getText().toString();
        switch (color)
        {
            case "Red":
                layout.setBackgroundColor(Color.RED);
                break;
            case "Green":
                layout.setBackgroundColor(Color.GREEN);
                break;
            case "Blue":
                layout.setBackgroundColor(Color.BLUE);
                break;
            default:
                break;
```

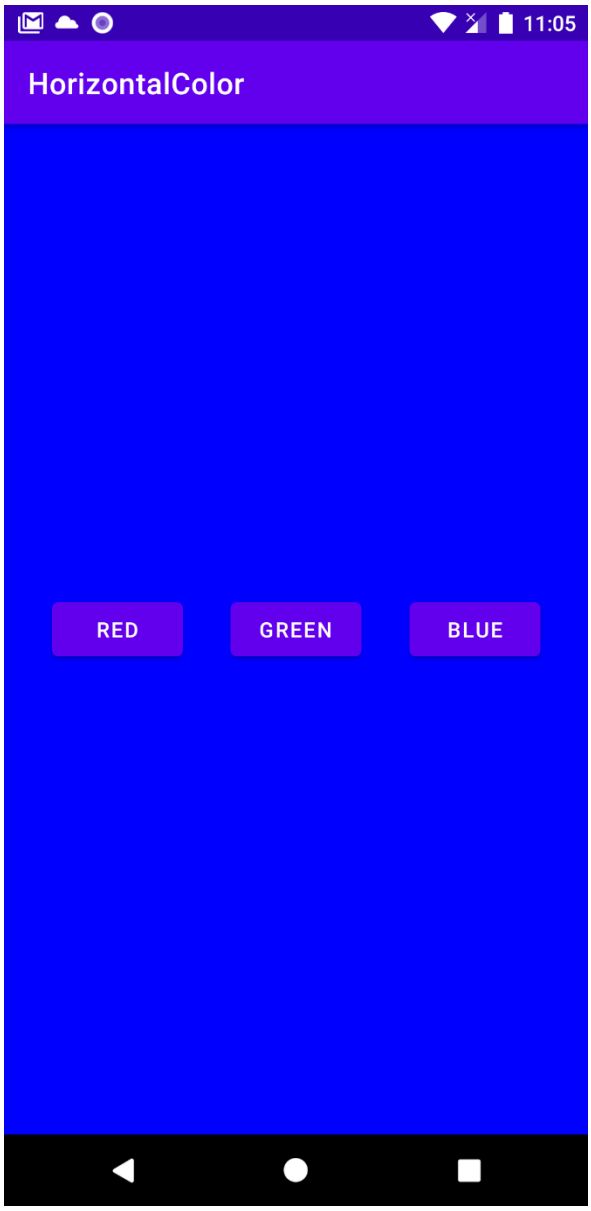
```
        }
    }
}
```

Output


11:05
HorizontalColor
RED
GREEN
BLUE


11:05
HorizontalColor
RED
GREEN
BLUE


11:05
HorizontalColor
RED
GREEN
BLUE


11:05
HorizontalColor
RED
GREEN
BLUE

Practical 10

Create a Login Application (Check Username and Password). On Successful Login Display the Message (“Welcome”)

activity_main.xml

```
<?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=".MainActivity">

    <EditText
        android:id="@+id/usernameEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:ems="10"
        android:hint="@string/username"
        android:inputType="textPersonName"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/passwordEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:ems="10"
        android:hint="@string/password"
        android:inputType="textPassword"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.502"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/usernameEditText" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="36dp"
        android:text="@string/login"
        android:onClick="login"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
```

```
        app:layout_constraintTop_toBottomOf="@+id/passwordEditText" />

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

strings.xml

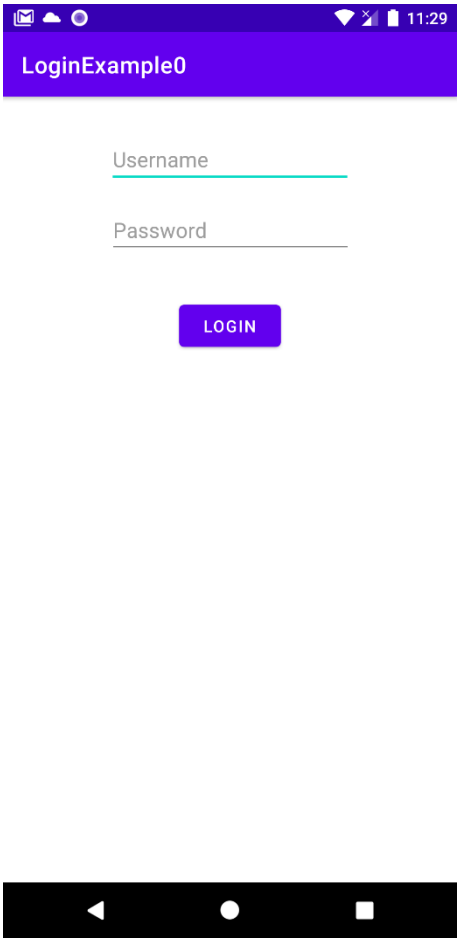
```
<resources>
    <string name="app_name">LoginExample0</string>
    <string name="login">LOGIN</string>
    <string name="password">Password</string>
    <string name="username">Username</string>
    <string name="USERNAME">USER</string>
    <string name="PASSWORD">PASSWORD</string>
    <string name="dialog_message">Welcome :)</string>
    <string name="dialog_title">SUCCESSFUL LOGIN</string>
</resources>
```

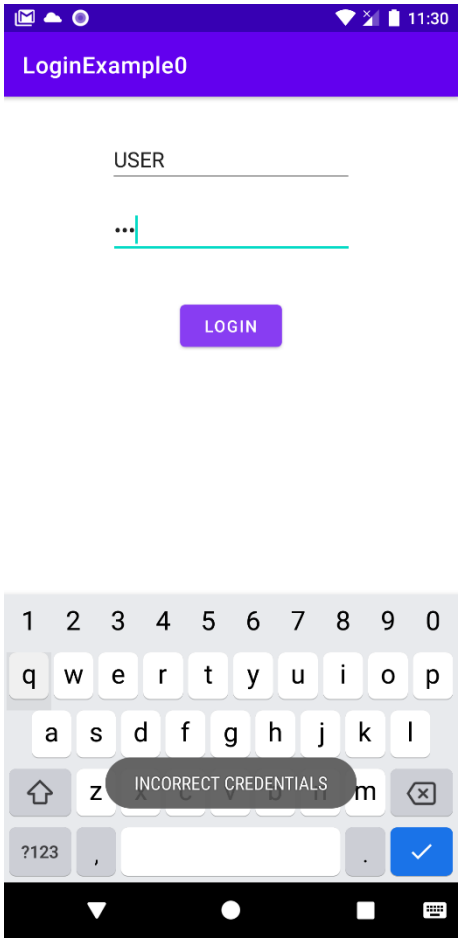
MainActivity.java

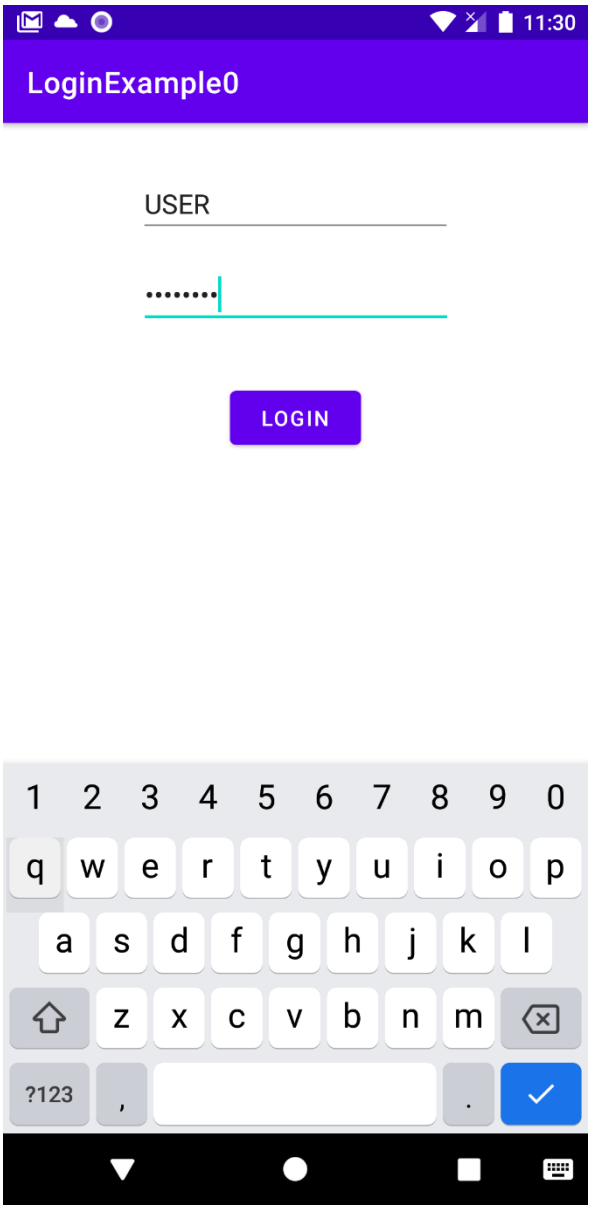
```
package com.example.loginexample0;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    // Get the Username and Password EditText Views
    EditText usernameEditText;
    EditText passwordEditText;

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

    public void login(View view) {
        // Getting Credentials
        usernameEditText = findViewById(R.id.usernameEditText);
        passwordEditText = findViewById(R.id.passwordEditText);
        String username = usernameEditText.getText().toString();
        String password = passwordEditText.getText().toString();
```

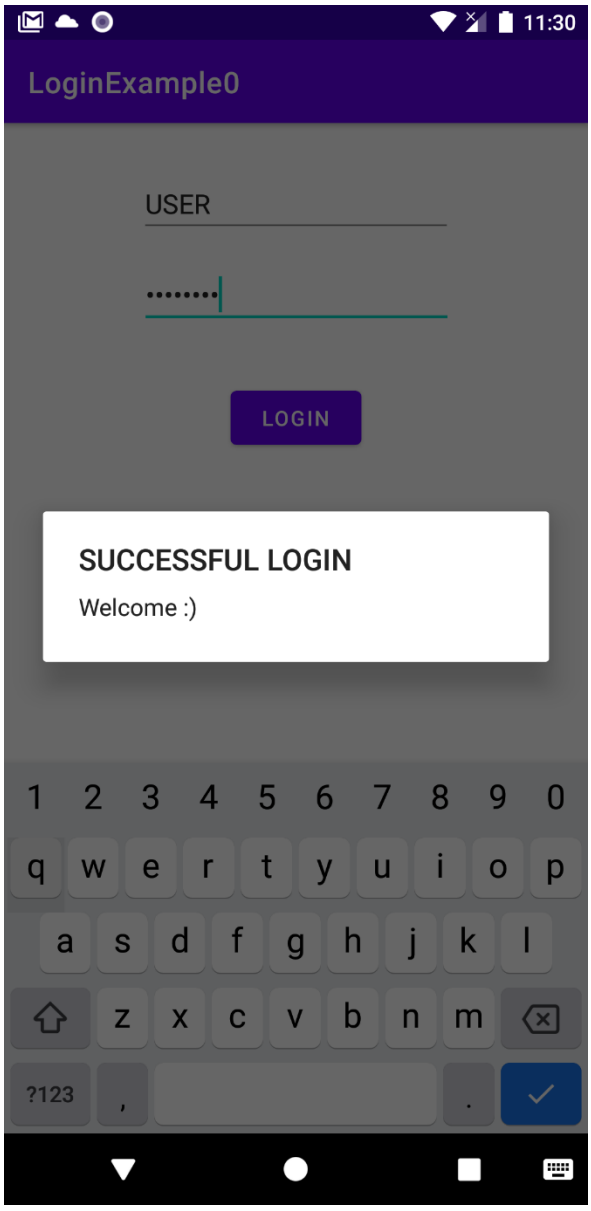
```
        if(username.equals(getResources().getString(R.string.USERNAME)) &&
password.equals(getResources().getString(R.string.PASSWORD))){

            // Creating an AlertDialog builder Object which will be used to Create
AlertDialog object
            AlertDialog.Builder builder = new AlertDialog.Builder(this);
            builder.setMessage(R.string.dialog_message);
            builder.setTitle(R.string.dialog_title);

            // Displaying the Dialog
            AlertDialog dialog = builder.create();
            dialog.show();
        }
        else
        {
            Toast.makeText(this, "INCORRECT CREDENTIALS", Toast.LENGTH_SHORT).show();
        }
    }
}
```

Output






11:30
LoginExample0
USER
LOGIN
1 2 3 4 5 6 7 8 9 0
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
?123


11:30
LoginExample0
USER
LOGIN
SUCCESSFUL LOGIN
Welcome :)
1 2 3 4 5 6 7 8 9 0
q w e r t y u i o p
a s d f g h j k l
z x c v b n m
?123

Practical 11

Create a Login Application (Check Username and Password). On Successful Login redirect to another Activity with a “Log Out” Button. On clicking the Log Out Button a Dialog appears with “OK” and “CANCEL” button. On Clicking the “OK” Button the User is redirected to Login Activity and on Clicking the “CANCEL” Button the User stays in the same Activity.

activity_main.xml

```
<?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=".MainActivity">

    <EditText
        android:id="@+id/usernameEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:ems="10"
        android:hint="@string/username"
        android:inputType="textPersonName"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/passwordEditText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:ems="10"
        android:hint="@string/password"
        android:inputType="textPassword"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.502"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/usernameEditText" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="36dp"
        android:text="@string/login"
```

```
        android:onClick="login"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/passwordEditText" />

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

activity_logged_in.xml

```
<?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=".LoggedIn">

    <Button
        android:id="@+id/logOut"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="logout"
        android:text="@string/logout"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.499" />

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

strings.xml

```
<resources>
    <string name="app_name">LoginExample</string>
    <string name="password">Password</string>
    <string name="username">Username</string>
    <string name="login">LOGIN</string>
    <string name="USERNAME">USER</string>
    <string name="PASSWORD">PASSWORD</string>
    <string name="logout">LOG OUT</string>
    <string name="dialog_message">Do You Want to Log Out ?</string>
    <string name="dialog_title">LOGOUT</string>
    <string name="OK">OK</string>
    <string name="CANCEL">CANCEL</string>
</resources>
```

MainActivity.java

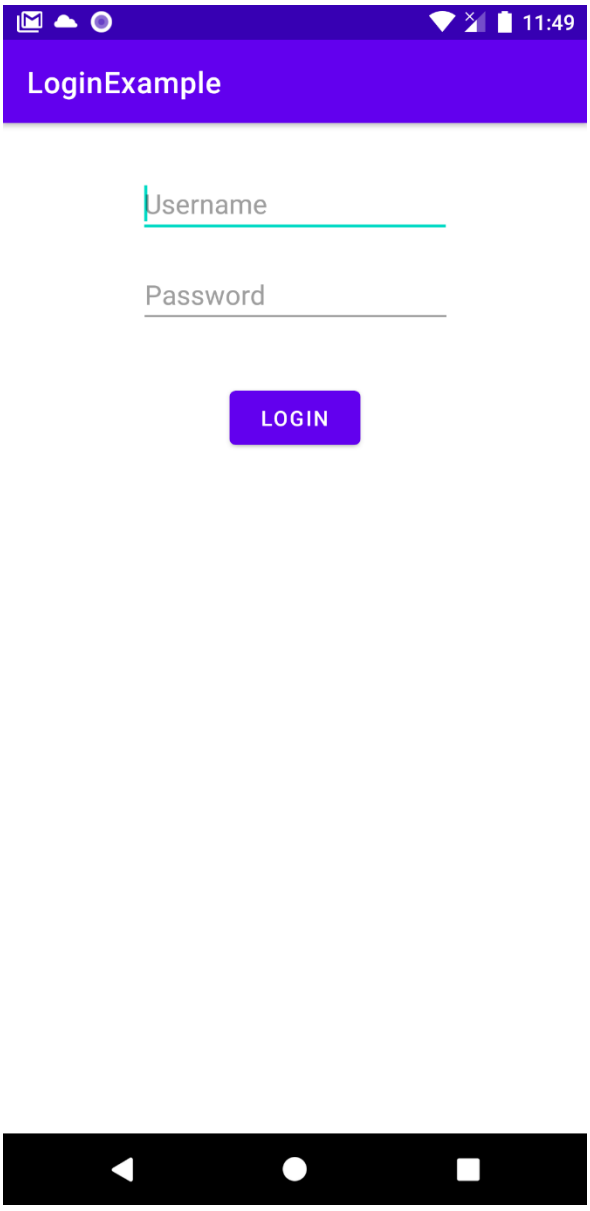
```
package com.example.loginexample;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    // Get the Username and Password from the EditText Views entered by the User
    EditText usernameEditText;
    EditText passwordEditText;

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

    public void login(View view) {
        // Getting Credentials
        usernameEditText = findViewById(R.id.usernameEditText);
        passwordEditText = findViewById(R.id.passwordEditText);
        String username = usernameEditText.getText().toString();
        String password = passwordEditText.getText().toString();

        // Validating the User Input
        if(username.equals(getResources().getString(R.string.USERNAME)) &&
password.equals(getResources().getString(R.string.PASSWORD))){
            Intent intent = new Intent(this,LoggedIn.class);
            startActivity(intent);
        }
        else{
            Toast.makeText(this, "INCORRECT CREDENTIALS", Toast.LENGTH_SHORT).show();
        }

    }
}
```

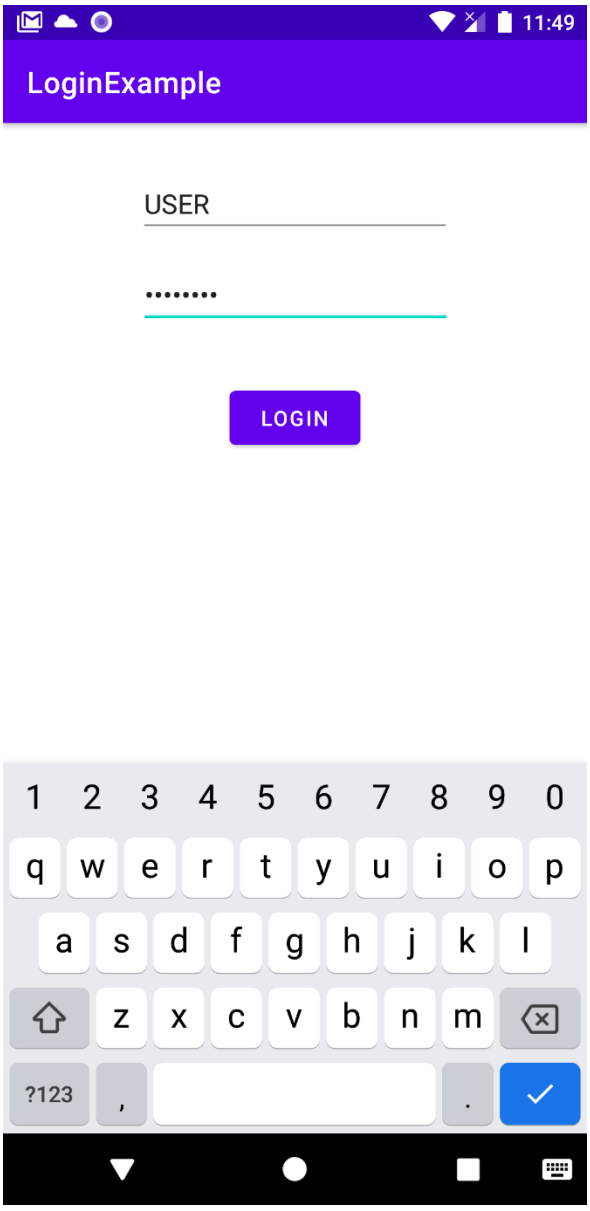
LoggedIn.java

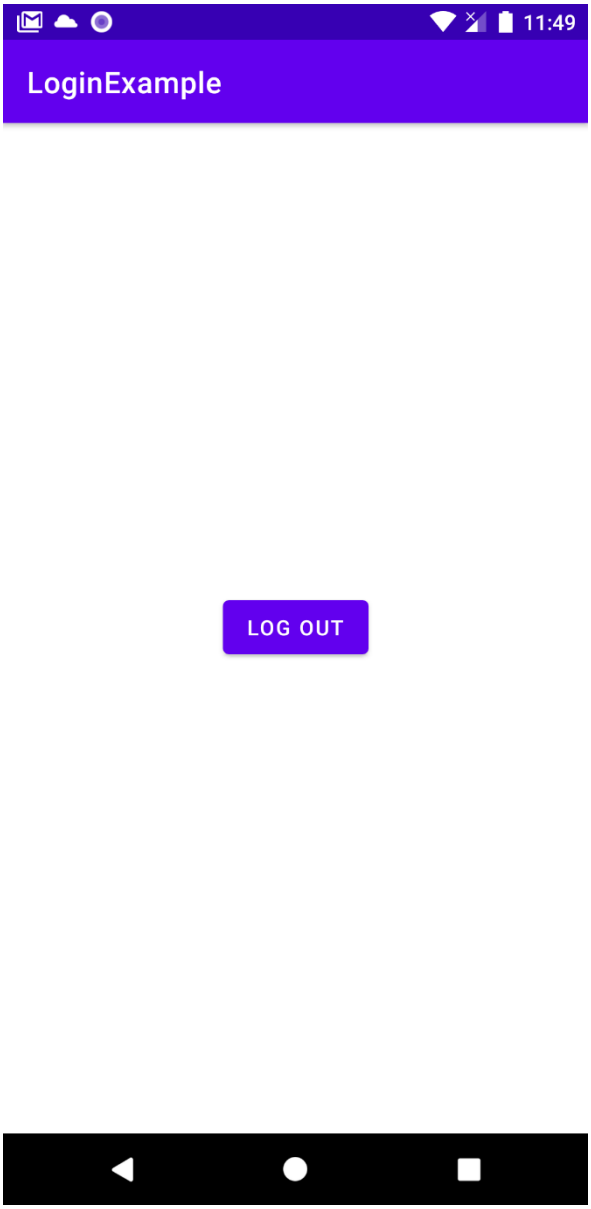
```
package com.example.loginexample;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
```

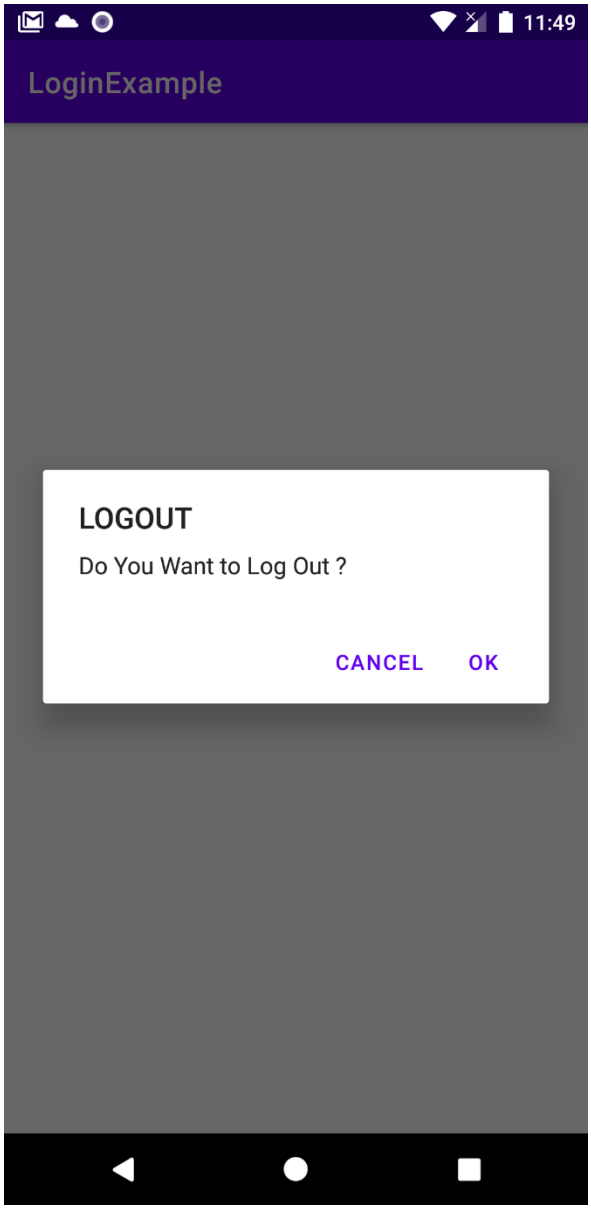
```
import android.content.DialogInterface;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Toast;

public class LoggedIn extends AppCompatActivity {

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

    public void logout(View view) {
        // Creating an AlertDialog builder Object which will be used to Create
AlertDialog object
        AlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setMessage(R.string.dialog_message);
        builder.setTitle(R.string.dialog_title);

        // Adding OK Button and handling its OnClick Event
        builder.setPositiveButton(R.string.OK, new DialogInterface.OnClickListener()
{
            @Override
            public void onClick(DialogInterface dialogInterface, int i) {
                Intent intent = new Intent(LoggedIn.this, MainActivity.class);
                intent.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP);
                startActivity(intent);
            }
        });

        // Adding CANCEL Button and handling its OnClick Event
        builder.setNegativeButton(R.string.CANCEL, new
DialogInterface.OnClickListener() {
            @Override
            public void onClick(DialogInterface dialogInterface, int i) {

Toast.makeText(getApplicationContext(),":)",Toast.LENGTH_SHORT).show();
            }
        });

        // Displaying the Dialog
        AlertDialog dialog = builder.create();
        dialog.show();
    }
}
```

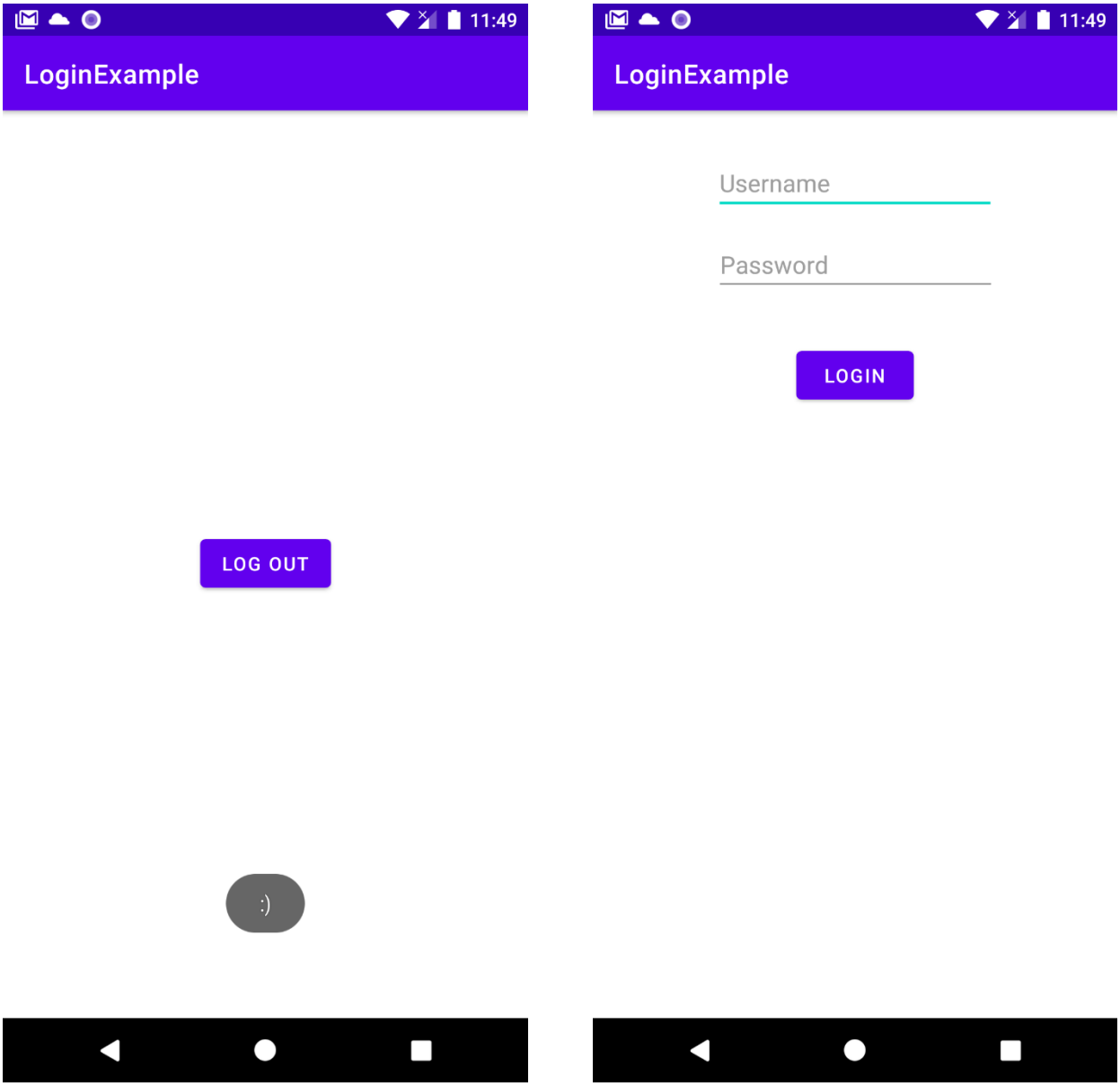
Output


11:49
LoginExample
Username
Password
LOGIN


11:49
LoginExample
USER
LOGIN


11:49
LoginExample
LOG OUT


11:49
LoginExample
LOGOUT
Do You Want to Log Out ?
CANCEL
OK



(Left: On clicking CANCEL; Right: On clicking OK)

Practical 12

Create an Application to perform Create, Insert, Update and Delete Operation on the SQLite Database.

activity_main.xml

```
<?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=".MainActivity">

    <Button
        android:id="@+id/add"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:text="@string/add"
        android:onClick="addNote"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <ListView
        android:id="@+id/notes"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_marginStart="8dp"
        android:layout_marginTop="32dp"
        android:layout_marginEnd="8dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/add" />

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

activity_add_note.xml

```
<?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=".AddNote">

    <EditText
        android:id="@+id/noteTitle"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="36dp"
        android:layout_marginTop="32dp"
        android:layout_marginEnd="36dp"
        android:ems="10"
        android:hint="@string/title"
        android:inputType="textPersonName"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="32dp"
        android:onClick="createNote"
        android:text="@string/add"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

    <LinearLayout
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="16dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="16dp"
        android:layout_marginBottom="8dp"
        android:orientation="vertical"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/noteTitle"
        app:layout_constraintVertical_bias="0.0">

        <EditText
            android:id="@+id/note"
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:layout_marginStart="8dp"
            android:layout_marginEnd="8dp"
            android:ems="10"
            android:gravity="start|top"
            android:hint="@string/noteHint"
            android:inputType="textMultiLine"
```

```
            android:scrollbarAlwaysDrawVerticalTrack="true" />
    </LinearLayout>

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

activity_view_note.xml

```
<?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=".ViewNote">

    <Button
        android:id="@+id/updateButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="36dp"
        android:onClick="updateNote"
        android:text="@string/updateButton"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/deleteButton"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent" />

    <Button
        android:id="@+id/deleteButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="36dp"
        android:backgroundTint="@android:color/holo_red_dark"
        android:onClick="deleteNote"
        android:text="@string/deleteButton"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toEndOf="@+id/updateButton" />

    <EditText
        android:id="@+id/toModifyNoteTitle"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="36dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="36dp"
        android:ems="10"
        android:hint="@string/title"
        android:inputType="textPersonName"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="32dp"
        android:layout_marginTop="16dp"
        android:text="@string/title"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="32dp"
        android:layout_marginTop="16dp"
        android:text="@string/note"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/toModifyNoteTitle" />

    <LinearLayout
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="32dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="32dp"
        android:layout_marginBottom="32dp"
        android:orientation="vertical"
        app:layout_constraintBottom_toTopOf="@+id/updateButton"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2">

        <EditText
            android:id="@+id/toModifyNote"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:ems="10"
            android:gravity="start|top"
            android:hint="@string/noteHint"
            android:inputType="textMultiLine"
            android:scrollbarAlwaysDrawVerticalTrack="true" />
    </LinearLayout>

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

strings.xml

```
<resources>
    <string name="app_name">sqlLiteExample</string>
    <string name="add">Add Note</string>
    <string name="title">Title</string>
    <string name="noteHint">Note...</string>
    <string name="deleteButton">DELETE</string>
    <string name="updateButton">UPDATE</string>
    <string name="note">Note</string>
</resources>
```

DatabaseHelper.java

```
package com.example.sqlliteexample;

import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;

import androidx.annotation.Nullable;

public class DatabaseHelper extends SQLiteOpenHelper {

    // Database Name and Version
    public static final String DB_NAME = "NOTES_DATABASE.DB";
    public static final int DB_VERSION = 1;

    // Table Name
    public static final String TABLE_NAME = "NOTES";

    // Table Columns
    public static final String _ID = "_id";
    public static final String TITLE = "title";
    public static final String NOTE = "note";

    // Queries for Creating and Deleting Table
    private static final String CREATE_TABLE = "CREATE TABLE " + TABLE_NAME + " (" +
_ID + " INTEGER PRIMARY KEY AUTOINCREMENT, " + TITLE + " TEXT, " + NOTE + " TEXT );";
    private static final String DELETE_TABLE = "DROP TABLE IF EXISTS " + TABLE_NAME;

    // constructor
    public DatabaseHelper(@Nullable Context context) {
        super(context, DB_NAME, null, DB_VERSION);
    }

    @Override
    public void onCreate(SQLiteDatabase sqLiteDatabase) {
        sqLiteDatabase.execSQL(CREATE_TABLE);
    }
```

```
    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int i, int i1) {
        sqLiteDatabase.execSQL(DELETE_TABLE);
        onCreate(sqLiteDatabase);
    }
}
```

DBManager.java

```
package com.example.sqlliteexample;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;

import java.sql.SQLDataException;

public class DBManager {

    // creating a DatabaseHelper Object
    private DatabaseHelper helper;

    Context context;
    private SQLiteDatabase database;

    // constructor
    public DBManager(Context c){
        context = c;
    }

    // opening the Database
    public DBManager open(){
        helper = new DatabaseHelper(context);
        database = helper.getWritableDatabase();
        return this;
    }

    // closing the Database
    public void close(){
        database.close();
    }

    // CRUD Operations
    // INSERT OPERATION
    public void insert(String title, String note){
        // Using ContentValue object to store values
        ContentValues values = new ContentValues();
        values.put(DatabaseHelper.TITLE, title);
        values.put(DatabaseHelper.NOTE, note);

        // Performing INSERT operation
```

```
        database.insert(DatabaseHelper.TABLE_NAME, null, values);
    }

    // READ/FETCH OPERATION
    public Cursor fetch(){
        // defining columns that needs to be fetched
        String[] columns = new String[]{DatabaseHelper._ID,
DatabaseHelper.TITLE,DatabaseHelper.NOTE};

        // Performing FETCH ALL and storing the result in Cursor Object
        Cursor cursor = database.query(DatabaseHelper.TABLE_NAME,
columns,null,null,null,null,null);

        // moving the cursor back to its start
        if(cursor != null){
            cursor.moveToFirst();
        }
        return cursor;
    }

    // to get a  Single Record
    public Cursor getNote(long _id){
        // defining columns that needs to be fetched
        String[] columns = new String[]{DatabaseHelper._ID,
DatabaseHelper.TITLE,DatabaseHelper.NOTE};

        // Performing FETCH ALL and storing the result in Cursor Object
        Cursor cursor = database.query(DatabaseHelper.TABLE_NAME,
columns,DatabaseHelper._ID + "=" + _id,null,null,null,null);

        return cursor;
    }

    // UPDATE OPERATION
    public int update(long _id, String title, String note){
        // Storing the new values in ContentValue Object
        ContentValues newValues = new ContentValues();
        newValues.put(DatabaseHelper.TITLE, title);
        newValues.put(DatabaseHelper.NOTE, note);

        // Performing UPDATE operation
        int i =
database.update(DatabaseHelper.TABLE_NAME,newValues,DatabaseHelper._ID + "="
+_id,null);
        return i;
    }

    // DELETE OPERATION
    public void delete(long _id){
        // Performing DELETE operation
        database.delete(DatabaseHelper.TABLE_NAME, DatabaseHelper._ID + "=" +_id,
null);
    }
}
```

MainActivity.java

```
package com.example.sqlliteexample;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.content.Context;
import android.content.Intent;
import android.database.Cursor;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.view.ViewGroup;
import android.widget.AdapterView;
import android.widget.CursorAdapter;
import android.widget.ListView;
import android.widget.SimpleCursorAdapter;
import android.widget.TextView;
import android.widget.Toast;

import java.sql.SQLDataException;

public class MainActivity extends AppCompatActivity {

    ListView listView;
    DBManager dbManager;
    SimpleCursorAdapter adapter;

    @SuppressLint("ShowToast")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // finding the List View and creating the dbManager Object
        listView = findViewById(R.id.notes);
        dbManager = new DBManager(this);

        // opening the Database and getting the Cursor
        dbManager.open();
        Cursor cursor = dbManager.fetch();

        // Checking if the Cursor is empty
        if(cursor.getCount() == 0){
            Toast.makeText(getApplicationContext(),"NO NOTES
SAVED",Toast.LENGTH_LONG);
        }

        // Populating the ListView with the obtained cursor
        final String[] from = new String[]{DatabaseHelper._ID, DatabaseHelper.TITLE};
        final int[] to = new int[]{ android.R.id.text1, android.R.id.text2 };
        adapter = new SimpleCursorAdapter(this, android.R.layout.simple_list_item_2,
cursor,from, to, 0);
```

```
        adapter.notifyDataSetChanged();
        listView.setAdapter(adapter);

        // OnClick Handler for ListView
        listView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view, int i,
long l) {
                String id = ((TextView)
view.findViewById(android.R.id.text1)).getText().toString();

                // Creating an Intent and Starting ViewNote Activity
                Intent intent = new Intent(getApplicationContext(), ViewNote.class);
                intent.putExtra("ID", id);
                startActivity(intent);
            }
        });
    }

    @Override
    protected void onDestroy() {
        dbManager.close();
        super.onDestroy();
    }

    // Going to AddNote Activity
    public void addNote(View view) {
        Intent intent = new Intent(this,AddNote.class);
        startActivity(intent);
    }
}
```

AddNote.java

```
package com.example.sqlliteexample;

import androidx.appcompat.app.AppCompatActivity;

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

public class AddNote extends AppCompatActivity {

    // Data Variables
    private EditText titleEditText;
    private EditText noteEditText;
    private DBManager dbManager;

    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_add_note);

        // Getting the Data Variables
        titleEditText = (EditText)findViewById(R.id.noteTitle);
        noteEditText = (EditText)findViewById(R.id.note);

        // Opening the Database
        dbManager = new DBManager(this);
        dbManager.open();
    }

    public void createNote(View view) {
        final String title = titleEditText.getText().toString();
        final String note = noteEditText.getText().toString();

        // Perfroming INSERT operation
        dbManager.insert(title, note);

        // Going Back to the Main Activity
        Intent main = new Intent(AddNote.this, MainActivity.class);
        main.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP);
        startActivity(main);
    }
}
```

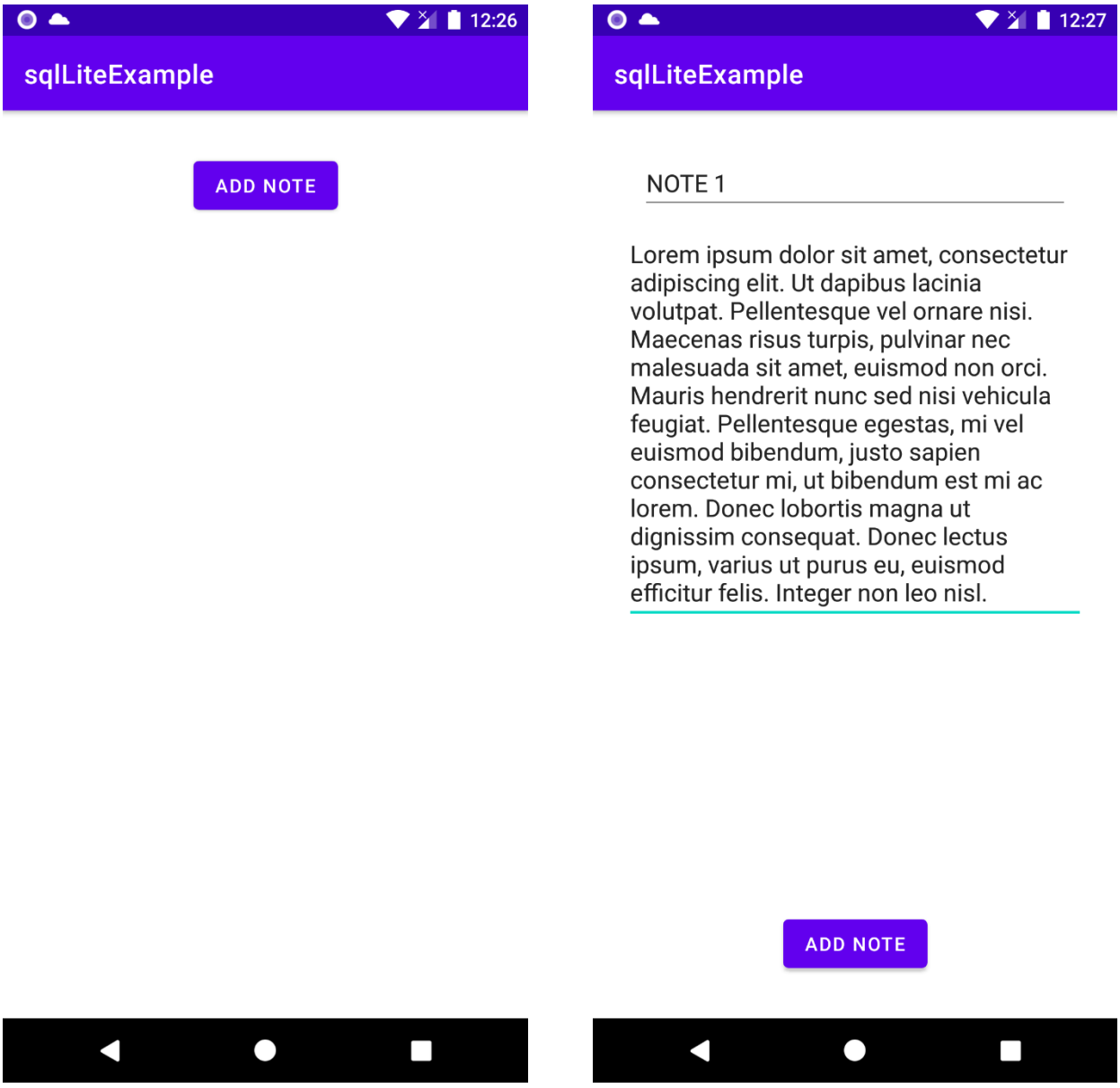
ViewNote.java

```
package com.example.sqlliteexample;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.database.Cursor;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.EditText;

import java.util.ArrayList;
import java.util.List;

public class ViewNote extends AppCompatActivity {

    // EditText of values to be modified
    private EditText toModifyTitleEditText;
    private EditText toModifyNoteEditText;
    private DBManager dbManager;
    private long _ID;

    @Override
```

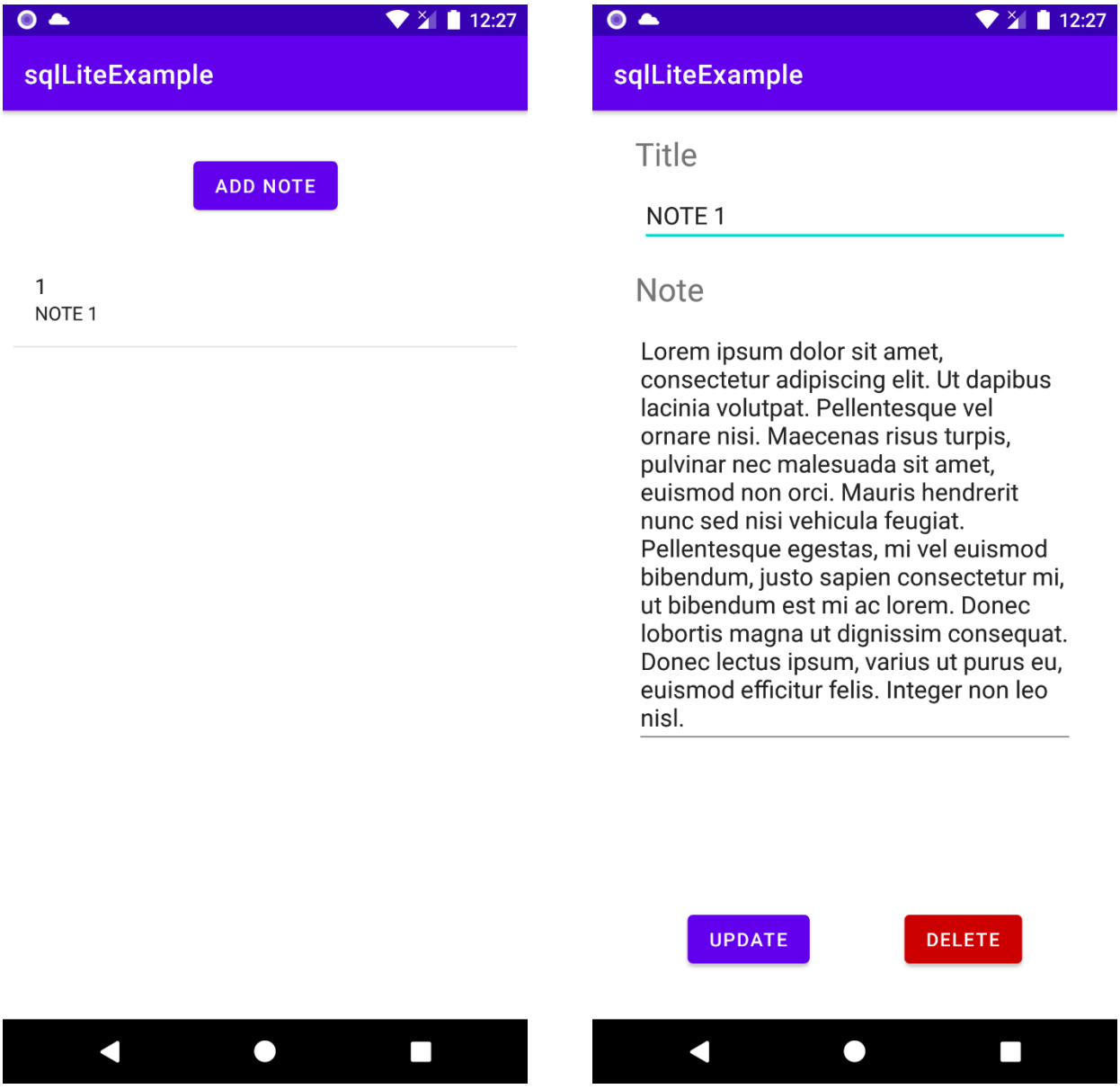
```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_view_note);

        // Getting the EditText Views
        toModifyTitleEditText = (EditText) findViewById(R.id.toModifyNoteTitle);
        toModifyNoteEditText = (EditText) findViewById(R.id.toModifyNote);

        // Getting the Intent Data (ID of the Row)
        Intent intent = getIntent();
         _ID = Long.parseLong(intent.getStringExtra("ID"));
//         Log.d("ID : ",id);

        // Opening the Database
        dbManager = new DBManager(this);
        dbManager.open();

        // Getting the Row/Object/Tuple that is to be modified
        Cursor cursor = dbManager.getNote(_ID);

//         Log.d("CURSOR", String.valueOf(cursor.getCount()));


        while(cursor.moveToNext()) {
            String title =
cursor.getString(cursor.getColumnIndex(DatabaseHelper.TITLE));
            String note =
cursor.getString(cursor.getColumnIndex(DatabaseHelper.NOTE));

            // Setting the EditText Views text to values from Database
            toModifyTitleEditText.setText(title);
            toModifyNoteEditText.setText(note);
        }
        cursor.close();



    }

    public void updateNote(View view) {
        // Getting the New Values
        final String toModifyTitle = toModifyTitleEditText.getText().toString();
        final String toModifyNote = toModifyNoteEditText.getText().toString();

        // Calling the Update Operation
        dbManager.update(_ID,toModifyTitle,toModifyNote);

        // Going Back to Main Activity
        goBackToMainActivity();
    }

    public void deleteNote(View view) {
        //Calling the Delete Operation
        dbManager.delete(_ID);
```

```
        // Going Back to Main Activity
        goBackToMainActivity();
    }

    public void goBackToMainActivity(){
        Intent main = new Intent(ViewNote.this, MainActivity.class);
        main.setFlags(Intent.FLAG_ACTIVITY_CLEAR_TOP);
        startActivity(main);
    }
}
```

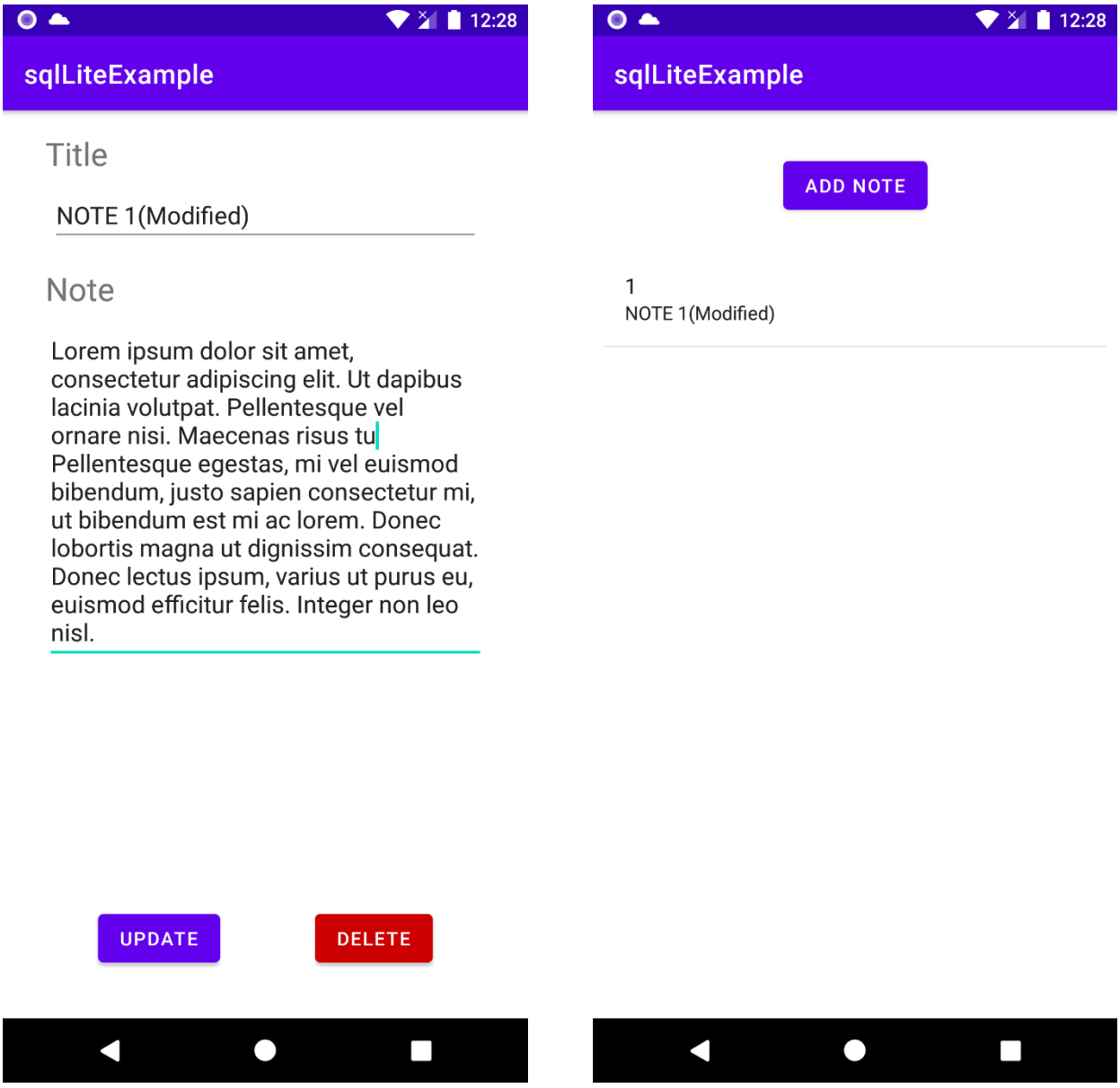
Output



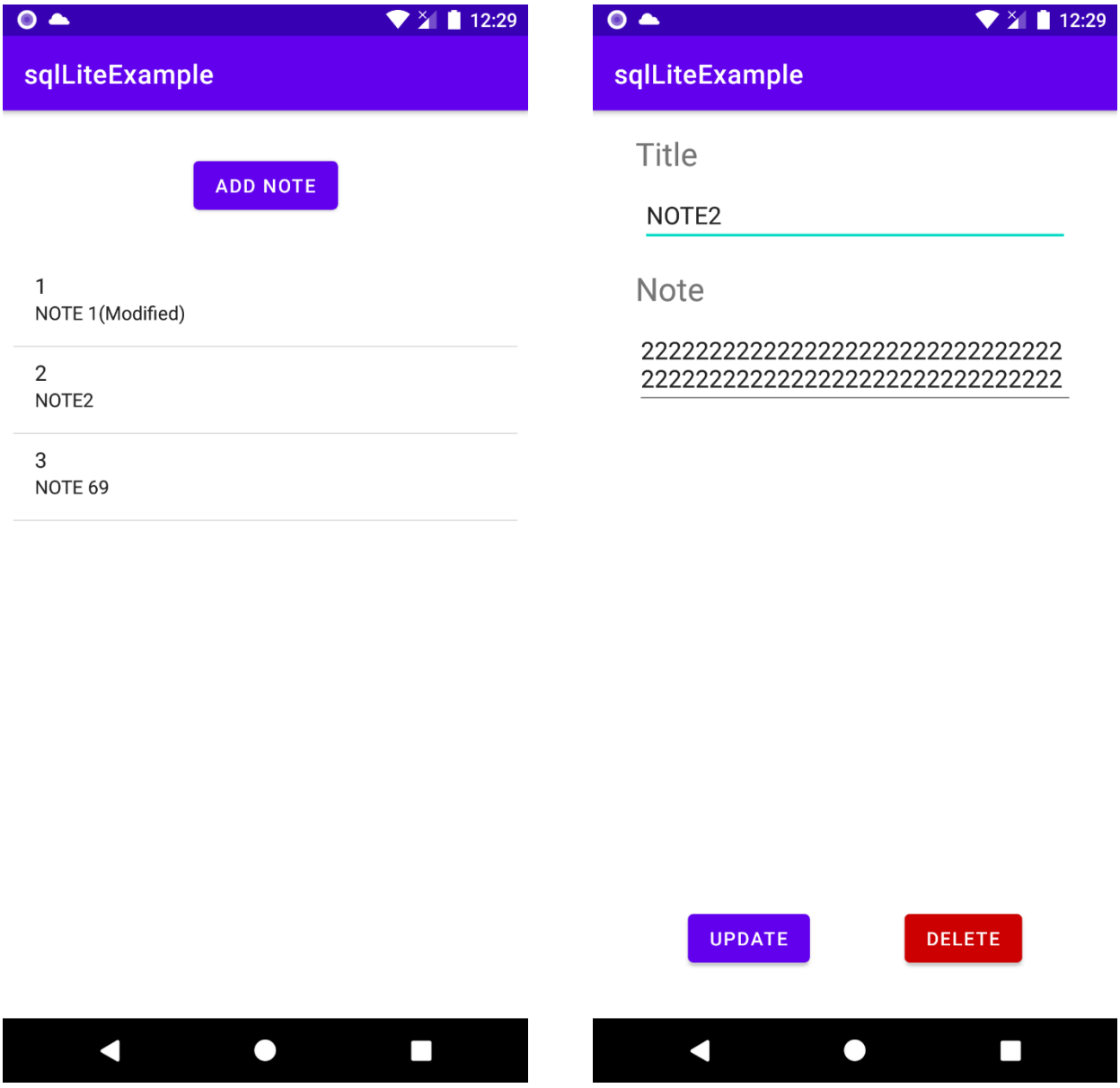
(Left: MainActivity, Right: AddNoteActivity)



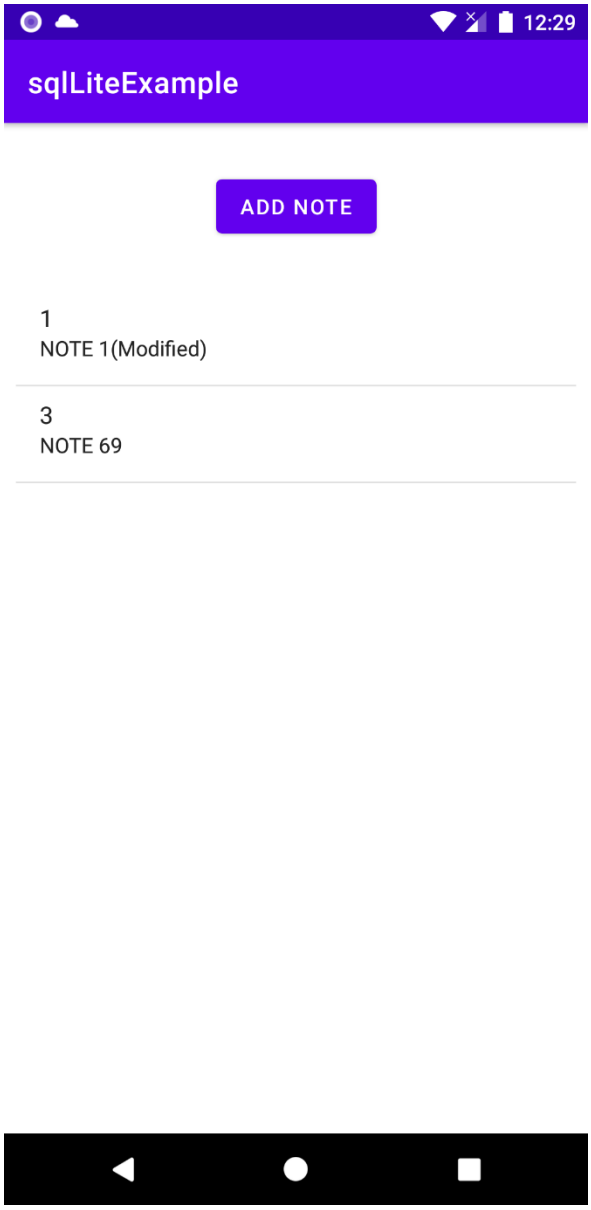
(Left: MainActivity after Adding a Note, Right: ViewNoteActivity for Modifying, Viewing and Deleting a Note)



(Left : Modifying NOTE 1 in ViewNoteActivity, Right: Modified NOTE 1 in MainActivity)



(Left: After adding some Notes, Right: Deleting NOTE2 in ViewNoteActivity)



(MainActivity After Deleting NOTE2)