



**ATMA RAM SANATAN DHARMA  
COLLEGE  
University of Delhi**



**ANDROID PROGRAMMING  
PRACTICAL FILE**

**SUBMITTED BY:**

**EKTA ARORA**

**ROLL NO: - 21/18075**

**BSc. (HONS) COMPUTER SCIENCE**

**SUBMITTED TO:**

**Mr. Lokesh Shrivastav**

**Department of Computer Science**

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### SNO. OBJECTIVE

1. Create a “Hello World “ application that will display “Hello World” in the middle of the screen in the emulator . Also display “Hello World “ in the middle of the screen in the android phone.
2. Create an application to display various android activity lifecycle phases.
3. Create an application with first activity with an editText and send button. On click of send button , make use of explicit intent to send text to second activity and display there in textview.
4. Create an application with first activity with an editText and send button . On click of send button , make use of implicit intent that uses a SEND ACTION and let user select app from app chooser and navigate to that application.
5. Create spinner with strings taken from resource folder (res>> value folder) and on changing the spinner value , image will change.
6. Create a menu with 5 options and selected option should appear in text box in upper case.
7. Create a radio button group with radio button of all courses in your college and on selecting a particular course , teacher-in-charge of that course should appear at the bottom of the screen.
8. Create a list of all Courses in your college and on selecting a particular course parent department and the teacher-in-charge of that department should appear at the bottom of the screen.

- 9. -Create an application with three buttons (with different color names) vertically aligned , on selecting a button color of the screen will change.**  
**-Create an application with three buttons horizontally aligned , on selecting a button color of the screen will change.**
- 10. Create a Login application (check username and password ) . On successful login , pop up the message .(“Welcome Username “)**
- 11. Create a login application as above , on successful login redirect to another activity with logout button . On click of logout button a dialog appears with OK and CANCELbutton . On OK button click go to login activity and on CANCEL stay at same activity.**
- 12. Create an application to Create , Insert , Update and Delete operation on the database .**

## OBJECTIVE :

Create a “Hello World “ application that will display “Hello World” in the middle of the screen in the emulator . Also display “Hello World “ in the middle of the screen in the android phone.

## Code :

### Activity\_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">

    <TextView
        android:id="@+id/textview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#9C27B0"
        android:fontFamily="sans-serif-medium"
        android:text="Hello World!"
        android:textSize="24sp"
        android:textStyle="bold"
        app:autoSizeTextType="uniform"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.453" />

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

### Main\_Activity

```
package com.example.practical1;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

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

8:14

VoLTE+ VoLTE+  
LTE1 LTE2 87%

Practical1

Hello World!



## OBJECTIVE:

Create an application to display various android activity lifecycle phases.

Code :

### Activity\_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">

    <TextView
        android:id="@+id/textview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Android Activity LifeCycle"
        android:textAppearance="@style/TextAppearance.AppCompat.Display1"
        android:textColor="#673AB7"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.458"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.172" />

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

### MainActivity

```
package com.example.practical2;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Toast toast = Toast.makeText(getApplicationContext(),"Activity
Created",Toast.LENGTH_SHORT);
        toast.show();
    }

    @Override
    protected void onResume() {
```

```
        super.onResume();
        Toast toast = Toast.makeText(getApplicationContext(),"Activity
Resumed",Toast.LENGTH_SHORT);
        toast.show();
    }

    @Override
    protected void onPause() {
        super.onPause();
        Toast toast = Toast.makeText(getApplicationContext(),"Activity
Paused",Toast.LENGTH_SHORT);
        toast.show();
    }

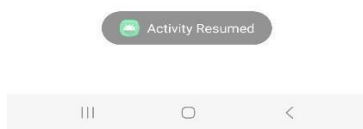
    @Override
    protected void onStart() {
        super.onStart();
        Toast toast = Toast.makeText(getApplicationContext(),"Activity
Started",Toast.LENGTH_SHORT);
        toast.show();
    }

    @Override
    protected void onStop() {
        super.onStop();
        Toast toast = Toast.makeText(getApplicationContext(),"Activity
Stopped",Toast.LENGTH_SHORT);
        toast.show();
    }

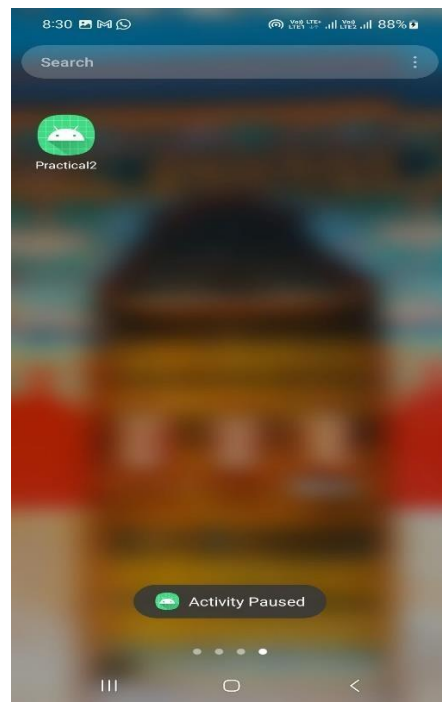
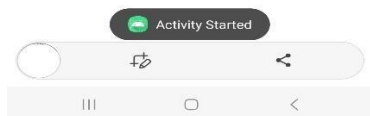
    @Override
    protected void onDestroy() {
        super.onDestroy();
        Toast toast = Toast.makeText(getApplicationContext(),"Activity
Destroyed",Toast.LENGTH_SHORT);
        toast.show();
    }
}
```



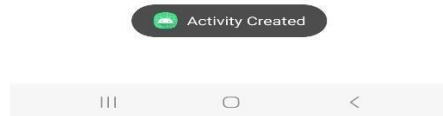
## Android Activity LifeCycle



## Android Activity LifeCycle



## Android Activity LifeCycle





## OBJECTIVE :

**Create an application with first activity with an editText and send button. On click of send button , make use of explicit intent to send text to second activity and display there in textview.**

**Code:**

### 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/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.314" />

    <Button
        android:id="@+id/sendButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SUBMIT"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editText"
        app:layout_constraintVertical_bias="0.189" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

### Second\_activity.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=".Second_Activity">
```

```

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:fontFamily="sans-serif-black"
    android:textAlignment="center"
    android:textAppearance="@style/TextAppearance.AppCompat.Display3"
    android:textColor="#4CAF50"
    android:textSize="60sp"
    android:textStyle="bold"
    android:typeface="serif"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.258" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

## MainActivity.java

```

package com.example.practical3;

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 MainActivity extends AppCompatActivity {
    private Button btn ;
    private EditText editText;
    private String str;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn=findViewById(R.id.sendButton);
        editText = findViewById(R.id.editText);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(MainActivity.this ,
SecondActivity.class);
                str = editText.getText().toString();
                intent.putExtra("value",str);
                startActivity(intent);
                finish();
            }
        });
    }
}

```

## SecondActivity.java

```

package com.example.practical3;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.TextView;

public class SecondActivity extends AppCompatActivity {
    private TextView textView;
    private String str;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_second);
        textView = findViewById(R.id.textview);
        str= getIntent().getExtras().getString("value");
        textView.setText(str);
    }
}

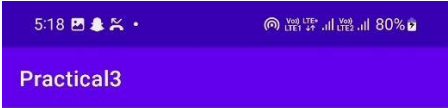
```



Hello There

SUBMIT





Hello There



## OBJECTIVE:

Create an application with first activity with an editText and send button . On click of send button , make use of implicit intent that uses a SEND ACTION and let user select app from app chooser and navigate to that application.

## Code:

### 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/share"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Share Text"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.531"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.442" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

### MainActivity.java

```
package com.example.practical4;

import static com.example.practical4.R.id.share;

import androidx.appcompat.app.AppCompatActivity;

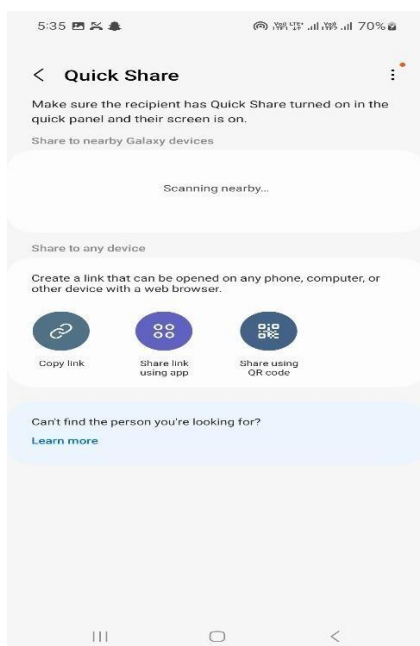
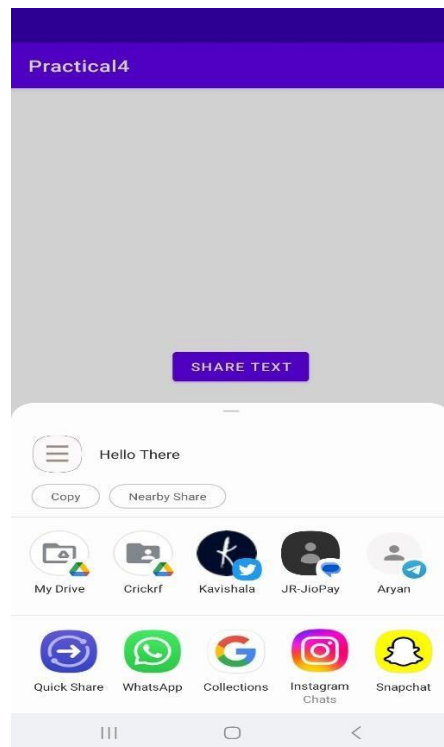
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button btn= findViewById(R.id.share);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
```

```

        Intent intent = new Intent(Intent.ACTION_SEND);
        intent.setType("text/plain");
        intent.putExtra(Intent.EXTRA_TEXT, "Hello There");
        startActivity(intent.createChooser(intent, "Share"));
    }
}
}

```



## OBJECTIVE:

Create spinner with strings taken from resource folder (res>> value folder) and on changing the spinner value , image will change.

## Code:

### 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">

    <Spinner
        android:id="@+id/spin"
        android:layout_width="409dp"
        android:layout_height="wrap_content"
        android:contentDescription="@string/value0"
        android:minHeight="48dp"
        android:spinnerMode="dropdown"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.045" />

    <ImageView
        android:id="@+id/imageview"
        android:layout_width="410dp"
        android:layout_height="397dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.461"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/spin"
        app:layout_constraintVertical_bias="0.283"
        tools:srcCompat="@color/white" />

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

### MainActivity.java

```
package com.example.practical5;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
```

```

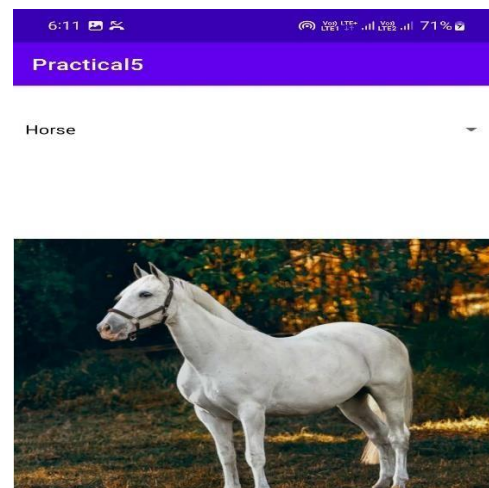
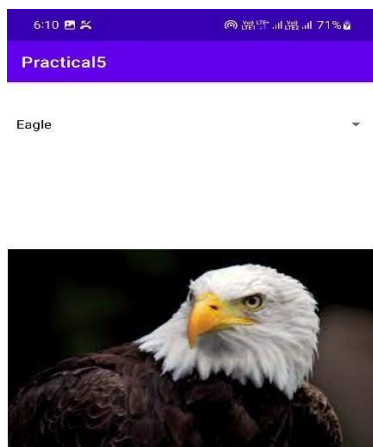
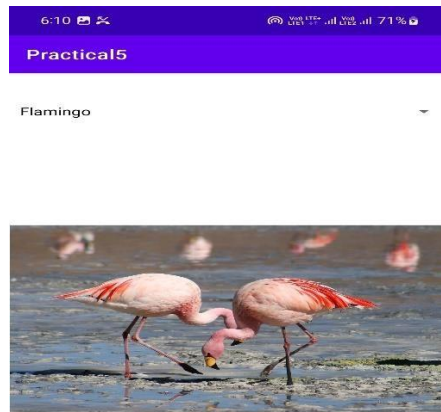
import android.widget.ArrayAdapter;
import android.widget.ImageView;
import android.widget.Spinner;

public class MainActivity extends AppCompatActivity {
    private Spinner spinner;
    private ImageView imageView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        spinner = findViewById(R.id.spin);
        imageView = findViewById(R.id.imageview);
        String [] birds = {"Select One" , "Flamingo" , "Eagle","Horse"
,"Tiger"};
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
android.R.layout.simple_spinner_dropdown_item,birds);
        spinner.setAdapter(adapter);
        spinner.setOnItemSelectedListener(new
AdapterView.OnItemSelectedListener() {
            @Override
            public void onItemSelected(AdapterView<?> parent, View view,
int position, long id) {
                switch (position){
                    case 1:
                        imageView.setImageResource(R.drawable.flamingo);
                        break;
                    case 2:
                        imageView.setImageResource(R.drawable.eagle);
                        break;
                    case 3:
                        imageView.setImageResource(R.drawable.horse);
                        break;
                    case 4:
                        imageView.setImageResource(R.drawable.tiger);
                        break;
                }
            }

            @Override
            public void onNothingSelected(AdapterView<?> parent) {
            }
        });
    }
}

```





Tiger



## OBJECTIVE:

Create a menu with 5 options and selected option should appear in text box in upper case.

## Code:

### 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">

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        tools:layout_editor_absoluteX="61dp"
        tools:layout_editor_absoluteY="145dp">

        <EditText
            android:id="@+id/menuitem"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_alignParentTop="true"
            android:layout_alignParentBottom="true"
            android:layout_marginTop="299dp"
            android:layout_marginBottom="387dp"
            android:ems="10"
            android:gravity="center_horizontal"
            android:hint="Select an Option from the Item"
            android:inputType="textPersonName"
            android:textAlignment="center" />

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

### Main\_menu.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:android="http://schemas.android.com/apk/res/android">

    <item
        android:id="@+id/settings"
        android:title="@string/settings" />

    <item
        android:id="@+id/backup"
        android:title="@string/backup" />

    <item
        android:id="@+id/reset"
        android:title="@string/reset" />

    <item
        android:id="@+id/about"
```

```
        android:title="@string/about" />
    <item
        android:id="@+id/help"
        android:title="@string/help" />
</menu>
```

## Strings.xml

```
<resources>
    <string name="app_name">Practical6</string>
    <string name="backup">Backup</string>
    <string name="settings">Settings</string>
    <string name="reset">Reset</string>
    <string name="about">About</string>
    <string name="help">Help</string>
</resources>
```

## MainActivity.java

```
package com.example.practical6;

import androidx.appcompat.app.AppCompatActivity;

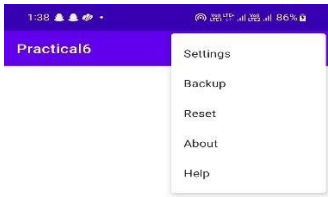
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
    private EditText editText;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        editText = (EditText) findViewById(R.id.menuitem);

    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.main_menu, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        editText.setText(item.getTitle().toString().toUpperCase());
        return super.onOptionsItemSelected(item);
    }
}
```



Select an Option from the Item



SETTINGS



BACKUP



RESET



ABOUT



HELP



## OBJECTIVE:

**Create a radio button group with radio button of all courses in your college and on selecting a particular course , teacher-in-charge of that course should appear at the bottom of the screen.**

## Code:

### 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">

    <RelativeLayout
        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"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        >

        <RadioGroup
            android:id="@+id/courses"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_centerInParent="true"
            />

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

### MainActivity.java

```
package com.example.practical7;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.RadioButton;
import android.widget.RadioGroup;

import com.google.android.material.snackbar.Snackbar;

import java.util.HashMap;

public class MainActivity extends AppCompatActivity {
    private RadioGroup radioGroup;
    private HashMap<String,String> coursesMap;
```

```

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

private void initCourses() {
    radioGroup = (RadioGroup) findViewById(R.id.courses);
    if (coursesMap == null) {
        coursesMap = new HashMap<>();
        coursesMap.put("BSC(Hons) Computer Science", "Dr.V.S. Dixit");
        coursesMap.put("BCOM (Hons)", "Dr. Manika Jain");
        coursesMap.put("BA (Hons)", "Dr.Arpa Sinha");
        for (String course: coursesMap.keySet()) {
            RadioButton radioButton = new
RadioButton(MainActivity.this);
            radioButton.setText(course);
            radioGroup.addView(radioButton);
        }

        radioGroup.setOnCheckedChangeListener(new
RadioGroup.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(RadioGroup group, int
checkedId) {
                int checkedRadioButtonId =
radioGroup.getCheckedRadioButtonId();
                RadioButton rbutton = (RadioButton)
findViewById(checkedRadioButtonId);

                Snackbar.make(radioGroup, coursesMap.get(rbutton.getText()), Snackbar.LENGTH_
SHORT).show();
            }
        });
    }
}
}

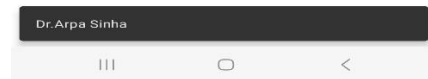
```



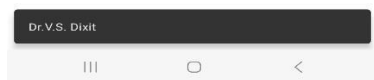
- ☐ BA (Hons)
- ☐ BSC(Hons) Computer Science
- ☐ BCOM (Hons)



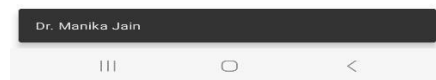
- ☒ BA (Hons)
- ☐ BSC(Hons) Computer Science
- ☐ BCOM (Hons)



- ☐ BA (Hons)
- ☒ BSC(Hons) Computer Science
- ☐ BCOM (Hons)



- ☐ BA (Hons)
- ☐ BSC(Hons) Computer Science
- ☒ BCOM (Hons)





## OBJECTIVE:

Create a list of all Courses in your college and on selecting a particular course parent department and the teacher-in-charge of that department should appear at the bottom of the screen.

## Code:

### 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">

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_margin="75dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        >

        <RadioGroup
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:id="@+id/courses"
            android:layout_centerInParent="true">

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

### MainActivity.java

```
package com.example.practical8;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.widget.RadioButton;
import android.widget.RadioGroup;

import com.google.android.material.snackbar.Snackbar;

import java.util.HashMap;

public class MainActivity extends AppCompatActivity {
    private RadioGroup rgcourses;
    private HashMap<String,String> coursesMap;
```

```

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

private void initCourses() {
    rgcourses = (RadioGroup) findViewById(R.id.courses);
    if (coursesMap == null) {
        coursesMap = new HashMap<>();
        coursesMap.put("BSC(Hons) Computer Science", "Dept. of Computer
Science - Dr. V.S. Dixit");
        coursesMap.put("BCOM(Hons)", "Dept. of Commerce - Dr. Manika
Jain");
        coursesMap.put("BA(Hons)", "Dept. of Economics - Dr. Apra
Sinha");
        for (String course : coursesMap.keySet()) {
            RadioButton radioButton = new
RadioButton(MainActivity.this);
            radioButton.setText(course);
            rgcourses.addView(radioButton);
        }

        rgcourses.setOnCheckedChangeListener(new
RadioGroup.OnCheckedChangeListener() {
            @Override
            public void onCheckedChanged(RadioGroup group, int
checkedId) {
                int checkedRadioButtonId =
rgcourses.getCheckedRadioButtonId();
                RadioButton rbutton = (RadioButton)
findViewById(checkedRadioButtonId);

                Snackbar.make(rgcourses, coursesMap.get(rbutton.getText()), Snackbar.LENGTH_S
HORT).show();
            }
        });
    }
}
}

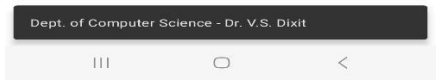
```



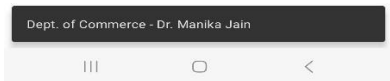
- ☐ BSC(Hons) Computer Science
- ☐ BCOM(Hons)
- ☐ BA(Hons)



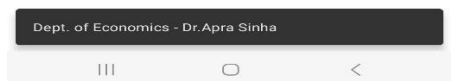
- ☒ BSC(Hons) Computer Science
- ☐ BCOM(Hons)
- ☐ BA(Hons)



- ☐ BSC(Hons) Computer Science
- ☒ BCOM(Hons)
- ☐ BA(Hons)



- ☐ BSC(Hons) Computer Science
- ☐ BCOM(Hons)
- ☒ BA(Hons)



## OBJECTIVE:

a) Create an application with three buttons (with different color names) vertically aligned , on selecting a button color of the screen will change.

b) Create an application with three buttons horizontally aligned , on selecting a button color of the screen will change.

## Code:

### a) Activity\_main.xml

```
b) <?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:id="@+id/layoutSuperParent"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        >
        <Button
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:id="@+id/btnRed"
            android:layout_gravity="center"
            android:backgroundTint="@android:color/holo_red_dark"
            android:text="RED"/>

        <Button
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:id="@+id/btnBlue"
            android:layout_gravity="center"
            android:backgroundTint="@android:color/holo_blue_light"
            android:text="BLUE"/>

        <Button
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:id="@+id/btnGreen"
            android:layout_gravity="center"
            android:backgroundTint="@android:color/holo_green_dark"
            android:text="GREEN"/>

        <Button
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:id="@+id/btnReset"
```

```
        android:text="Reset"
        android:gravity="center"/>

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

## MainActivity.java

```
package com.example.practical9;

import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;

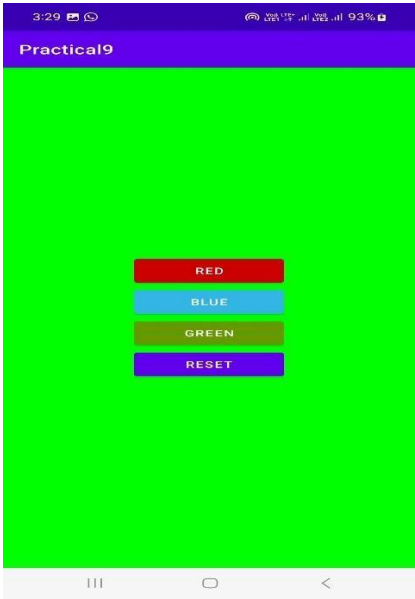
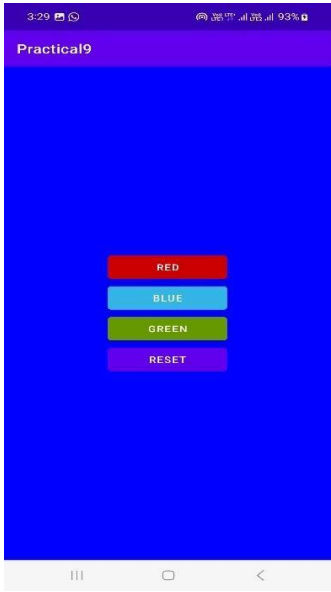
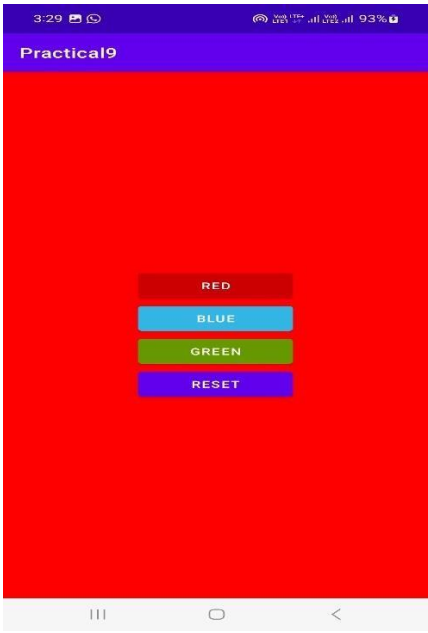
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity implements
View.OnClickListener{
    private Button btnRed;
    private Button btnBlue;
    private Button btnGreen;
    private Button btnReset;
    private ConstraintLayout layoutSuperParent;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        layoutSuperParent=(ConstraintLayout) findViewById(R.id.layoutSuperParent);
        btnRed=(Button) findViewById(R.id.btnRed);
        btnBlue=(Button) findViewById(R.id.btnBlue);
        btnGreen=(Button) findViewById(R.id.btnGreen);
        btnReset=(Button) findViewById(R.id.btnReset);
        btnRed.setOnClickListener(this);
        btnBlue.setOnClickListener(this);
        btnGreen.setOnClickListener(this);
        btnReset.setOnClickListener(this);
    }

    @Override
    public void onClick(View v){
        switch (v.getId()){
            case R.id.btnRed:
                layoutSuperParent.setBackgroundColor(Color.RED);
                break;
            case R.id.btnBlue:
                layoutSuperParent.setBackgroundColor(Color.BLUE);
                break;
            case R.id.btnGreen:
                layoutSuperParent.setBackgroundColor(Color.GREEN);
                break;
            case R.id.btnReset:
                layoutSuperParent.setBackgroundColor(Color.TRANSPARENT);
                break;
            default:
                break;
        }
    }
}
```

```
}  
}
```



b)

## 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"
    android:id="@+id/layoutSuperParent"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="horizontal"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        >
        <Button
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:id="@+id/btnRed"
            android:layout_gravity="center"
            android:backgroundTint="@android:color/holo_red_dark"
            android:text="RED"/>

        <Button
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:id="@+id/btnBlue"
            android:layout_gravity="center"
            android:backgroundTint="@android:color/holo_blue_light"
            android:text="BLUE"/>

        <Button
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:id="@+id/btnGreen"
            android:layout_gravity="center"
            android:backgroundTint="@android:color/holo_green_dark"
            android:text="GREEN"/>

        <Button
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:id="@+id/btnReset"
            android:text="Reset"
            android:gravity="center"/>

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

## MainActivity.java

```
package com.example.practical9;
```

```

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;

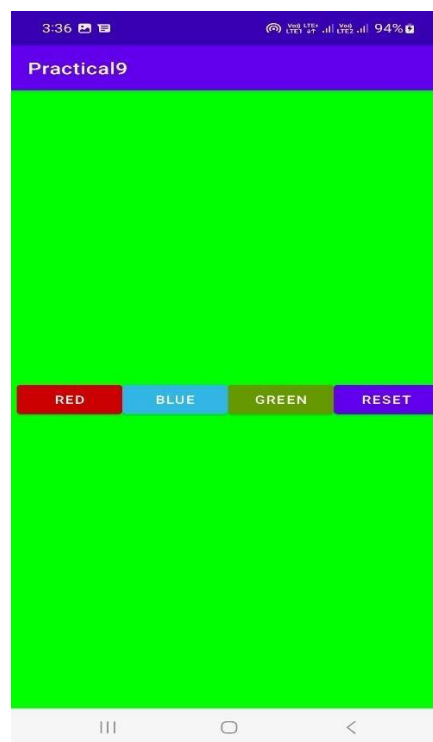
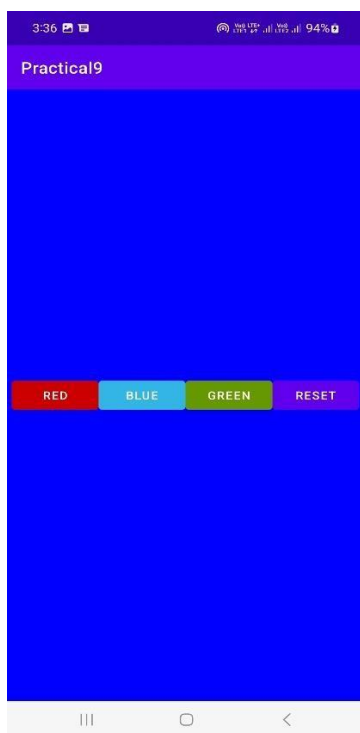
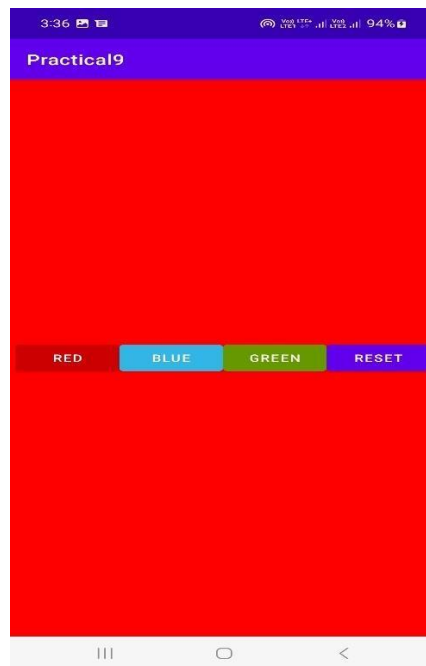
public class MainActivity extends AppCompatActivity implements
View.OnClickListener{
    private Button btnRed;
    private Button btnBlue;
    private Button btnGreen;
    private Button btnReset;
    private ConstraintLayout layoutSuperParent;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        layoutSuperParent=(ConstraintLayout) findViewById(R.id.layoutSuperParent);
        btnRed=(Button) findViewById(R.id.btnRed);
        btnBlue=(Button) findViewById(R.id.btnBlue);
        btnGreen=(Button) findViewById(R.id.btnGreen);
        btnReset=(Button) findViewById(R.id.btnReset);
        btnRed.setOnClickListener(this);
        btnBlue.setOnClickListener(this);
        btnGreen.setOnClickListener(this);
        btnReset.setOnClickListener(this);
    }

    @Override
    public void onClick(View v){
        switch (v.getId()){
            case R.id.btnRed:
                layoutSuperParent.setBackgroundColor(Color.RED);
                break;
            case R.id.btnBlue:
                layoutSuperParent.setBackgroundColor(Color.BLUE);
                break;
            case R.id.btnGreen:
                layoutSuperParent.setBackgroundColor(Color.GREEN);
                break;
            case R.id.btnReset:
                layoutSuperParent.setBackgroundColor(Color.TRANSPARENT);
                break;
            default:
                break;
        }
    }
}

```





## OBJECTIVE:

**Create a Login application (check username and password ) . On successful login , pop up the message .(“Welcome Username “)**

## Code:

### 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/etEmail"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="240dp"
        android:autofillHints="false"
        android:ems="10"
        android:hint="@string/e_mail_id"
        android:inputType="textEmailAddress"
        app:layout_constraintBottom_toTopOf="@id/etPassword"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <EditText
        android:id="@+id/etPassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"
        android:autofillHints="false"
        android:ems="10"
        android:hint="@string/password"
        android:inputType="textPassword"
        app:layout_constraintBottom_toTopOf="@id/btnLogin"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/etEmail" />
    <Button
        android:id="@+id/btnLogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="@string/login"
        app:layout_constraintBottom_toTopOf="@id/btnRegister"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/etPassword" />
    <Button
        android:id="@+id/btnRegister"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="250dp"
        android:text="@string/register"
```

```
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/btnLogin" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

## Strings.xml

```
<resources>
    <string name="app_name">Practical10</string>
    <string name="welcome">Welcome</string>
    <string name="log_out">Log Out</string>
    <string name="password">Password</string>
    <string name="e_mail_id">E-mail ID</string>
    <string name="login">Login</string>
    <string name="register">Register</string>
    <string name="cancel">Cancel</string>
    <string name="ok">Ok</string>
</resources>
```

## User.java

```
package com.example.practical10;
import androidx.annotation.NonNull;
import androidx.room.ColumnInfo;
import androidx.room.Entity;
import androidx.room.PrimaryKey;

@Entity
public class User {
    @PrimaryKey
    @NonNull
    @ColumnInfo(name = "email")
    public String email;
    @NonNull
    @ColumnInfo(name = "password")
    public String password;
    public User(@NonNull String email, @NonNull String password) {
        this.email = email;
        this.password = password;
    }
}
```

## UserDao.java

```
package com.example.practical10;

import androidx.room.Dao;
import androidx.room.Delete;
import androidx.room.Insert;
import androidx.room.Query;
import java.util.List;
import com.example.practical10.User;
```

```

@Dao
public interface UserDao {
    @Query("SELECT * FROM user")
    List<User> getAll();
    @Query("SELECT * FROM user WHERE email LIKE :email LIMIT 1")
    User findByEmail(String email);
    @Insert
    void insert(User user);
    @Delete
    void delete(User user);
}

```

## UserService.java

```

package com.example.practical10;

import android.content.Context;

import androidx.room.Room;

public class UserService {
    private User user = null;
    private static UserService instance = null;
    private static UserDatabase database = null;
    public void login(User user) throws IllegalStateException {
        User u = database.userDao().findByEmail(user.email);
        if (!u.password.equals(user.password))
            throw new IllegalStateException("Password Mismatch");
        this.user = user;
    }
    public void register(User user) {
        database.userDao().insert(user);
        this.user = user;
    }
    public void logout() {
        this.user = null;
    }
    public User getUser() {
        return user;
    }
    public static UserService getInstance() {
        if (instance == null) {
            instance = new UserService();
        }
        return instance;
    }
    public static void initDatabase(Context ctx) {
        if (database == null) {
            database = Room
                .databaseBuilder(ctx, UserDatabase.class,
                    "login_module")
                .allowMainThreadQueries()
                .build();
        }
    }
}

```

## UserDatabase.java

```

package com.example.practical10;

import androidx.room.Database;
import androidx.room.RoomDatabase;

@Database(entities = {User.class}, version = 1)
public abstract class UserDatabase extends RoomDatabase {
    public abstract UserDao userDao();
}

```

## MainActivity.java

```

package com.example.practical10;

import androidx.appcompat.app.AppCompatActivity;

import android.database.sqlite.SQLiteConstraintException;
import android.os.Bundle;
import android.util.Log;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    private EditText etEmail;
    private EditText etPassword;
    private Button btnLogin;
    private Button btnRegister;
    private UserService userService;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        userService = UserService.getInstance();
        UserService.initDatabase(this);
        etEmail = (EditText) findViewById(R.id.etEmail);
        etPassword = (EditText) findViewById(R.id.etPassword);
        btnLogin = (Button) findViewById(R.id.btnLogin);
        btnRegister = (Button) findViewById(R.id.btnRegister);
        btnLogin.setOnClickListener(v -> {
            User user = validateCredentials();
            if (user != null) {
                try {
                    userService.login(user);
                    Toast.makeText(this, "Welcome " +
userService.getUser().email, Toast.LENGTH_SHORT).show();
                } catch (IllegalStateException illegalStateException) {
                    Toast.makeText(this, "Invalid Email/ Password",
Toast.LENGTH_SHORT).show();
                } catch (Exception e) {
                    Log.d("TAG", e.getMessage());
                    Toast.makeText(this, "Error",
Toast.LENGTH_SHORT).show();
                }
            }
        });
        btnRegister.setOnClickListener(v -> { User user
            = validateCredentials(); if (user != null) {
                try {

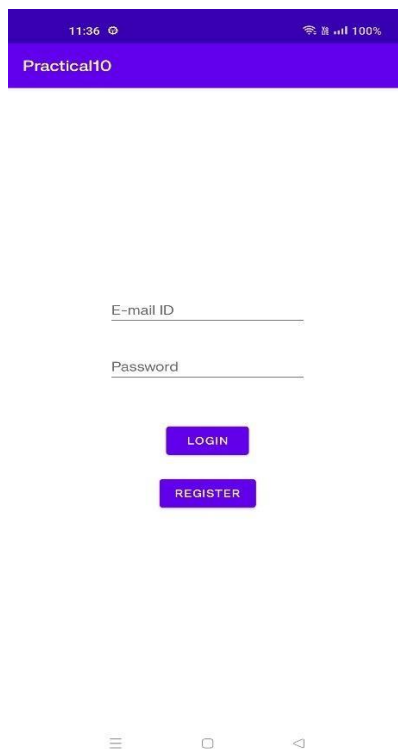
```

```

        userService.register(user);
        Toast.makeText(this, "Registered",
Toast.LENGTH_SHORT).show();
    } catch (SQLiteConstraintException sqLiteConstraintException)
    {
        Toast.makeText(this, "Email Already Used",
Toast.LENGTH_SHORT).show();
    } catch (Exception e) {
        Toast.makeText(this, "Error", Toast.LENGTH_SHORT).show();
    }
}
});
}
private User validateCredentials() {
    String email = etEmail.getText().toString().trim();
    String password = etPassword.getText().toString().trim();
    if (email.length() == 0) {
        etEmail.setError("Enter your e-mail address");
        return null;
    }
    if (password.length() == 0) {
        etPassword.setError("Enter your password");
        return null;
    }
    return new User(email, password);
}
}

```

## Output:



piyush@gmail.com

\*\*\*\*\*

LOGIN

REGISTER

Registered

piyush@gmail.com

\*\*\*\*\*

LOGIN

REGISTER

Welcome piyush@gmail.com

**OBJECTIVE:** Create a login application as above , on successful login redirect to another activity with logout button . On click of logout button a dialog appears with OK and CANCEL button . On OK button click go to login activity and on CANCEL stay at same activity.

## CODE:

### Android\_Manifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.practical11">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.MaterialComponents"
    >
        <activity
            android:name=".MemberModule"
            android:exported="true" />
        <activity android:name=".MainActivity" android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER"
            />
            </intent-filter>
        </activity>

    </application>
</manifest>
```

### Strings.xml

```
<resources>
    <string name="app_name">Practical11</string>
    <string name="welcome">Welcome</string>
    <string name="log_out">Log Out</string>
    <string name="password">Password</string>
    <string name="e_mail_id">E-mail ID</string>
    <string name="login">Login</string>
    <string name="register">Register</string>
    <string name="cancel">Cancel</string>
    <string name="ok">Ok</string>
</resources>
```



## 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/etEmail"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="240dp"
        android:autofillHints="false"
        android:ems="10"
        android:hint="@string/e_mail_id"
        android:inputType="textEmailAddress"
        app:layout_constraintBottom_toTopOf="@id/etPassword"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/etPassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="10dp"
        android:autofillHints="false"
        android:ems="10"
        android:hint="@string/password"
        android:inputType="textPassword"
        app:layout_constraintBottom_toTopOf="@id/btnLogin"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/etEmail" />

    <Button
        android:id="@+id/btnLogin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="30dp"
        android:text="@string/login"
        app:layout_constraintBottom_toTopOf="@id/btnRegister"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/etPassword" />

    <Button
        android:id="@+id/btnRegister"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="250dp"
        android:text="@string/register"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/btnLogin" />

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

## MemberModule\_activity.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=".MemberModule">
    <TextView
        android:id="@+id/tvWelcome"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/welcome"
        android:textAppearance="@style/TextAppearance.AppCompat.Display1"
        app:layout_constraintBottom_toTopOf="@id/tvEmail"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
    <TextView
        android:id="@+id/tvEmail"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text=""
        app:layout_constraintBottom_toTopOf="@id/btnLogout"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@id/tvWelcome" />
    <Button
        android:id="@+id/btnLogout"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/log_out"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/tvEmail" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

## MainActivity.java

```
package com.example.practical11;
import android.content.Intent;
import android.database.sqlite.SQLiteConstraintException;
import android.os.Bundle;
import android.util.Log;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    private EditText etEmail;
```

```

private EditText etPassword;
private Button btnLogin;
private Button btnRegister;
private UserService userService;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    userService = UserService.getInstance();
    UserService.initDatabase(this);
    etEmail = (EditText) findViewById(R.id.etEmail);
    etPassword = (EditText) findViewById(R.id.etPassword);
    btnLogin = (Button) findViewById(R.id.btnLogin);
    btnRegister = (Button) findViewById(R.id.btnRegister);
    btnLogin.setOnClickListener(v -> {
        User user = validateCredentials();
        if (user != null) {
            try {
                userService.login(user);
                Toast.makeText(this, "Logged In",
Toast.LENGTH_SHORT).show();
                startActivity(new Intent(this, MemberModule.class));
            } catch (IllegalStateException illegalStateException) {
                Toast.makeText(this,
                    "Invalid E- mail/Password",
Toast.LENGTH_SHORT).show();
            } catch (Exception e) {
                Log.d("TAG", e.getMessage());
                Toast.makeText(this, "Error",
Toast.LENGTH_SHORT).show();
            }
        }); btnRegister.setOnClickListener(v -> { User
            user = validateCredentials(); if (user !=
            null) {
                try {
                    userService.register(user);
                    Toast.makeText(this, "Registered",
Toast.LENGTH_SHORT).show();
                    startActivity(new Intent(this, MemberModule.class));
                } catch (SQLiteConstraintException sqLiteConstraintException)
                {
                    Toast.makeText(this, "E-mail Already Used",
                        Toast.LENGTH_SHORT).show();
                } catch (Exception e) {
                    Toast.makeText(this, "Error", Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
    private User validateCredentials() {
        String email = etEmail.getText().toString().trim();
        String password = etPassword.getText().toString().trim();
        if (email.length() == 0) {
            etEmail.setError("Enter your e-mail address");
            return null;
        }
        if (password.length() == 0) {
            etPassword.setError("Enter your password");
            return null;
        }
        return new User(email, password);
    }
}

```

```
}  
}
```

## MemberModule.java

```
package com.example.practical11;  
  
import android.app.AlertDialog;  
import android.os.Bundle;  
import android.widget.TextView;  
import android.widget.Toast;  
import androidx.appcompat.app.AppCompatActivity;  
import com.example.practical11.R;  
import com.example.practical11.UserService;  
  
public class MemberModule extends AppCompatActivity {  
    private User user;  
    private UserService userService;  
    private TextView tvEmail;  
    private TextView btnLogout;  
    @Override  
    protected void onCreate(Bundle savedInstanceState) {  
        super.onCreate(savedInstanceState);  
        setContentView(R.layout.activity_member_module);  
        userService = UserService.getInstance();  
        user = userService.getUser();  
        tvEmail = (TextView) findViewById(R.id.tvEmail);  
        btnLogout = (TextView) findViewById(R.id.btnLogout);  
        if (user == null) {  
            super.finish();  
        } else {  
            tvEmail.setText(user.email);  
        }  
        btnLogout.setOnClickListener(v -> {  
            new AlertDialog.Builder(this)  
                .setTitle("Logout")  
                .setMessage("Are you sure you want to log out?")  
                .setPositiveButton(android.R.string.ok, (dialog, which)  
-> logoutUser()).setNegativeButton(android.R.string.cancel, null)  
                .setIcon(android.R.drawable.ic_dialog_alert)  
                .show();  
        });  
    }  
    private void logoutUser() {  
        userService.logout();  
        Toast.makeText(this, "Logged Out", Toast.LENGTH_SHORT).show();  
        super.finish();  
    }  
}
```

## User.java

```
package com.example.practical11;  
  
import androidx.annotation.NonNull;  
import androidx.room.ColumnInfo;  
import androidx.room.Entity;
```

```
import androidx.room.PrimaryKey;
@Entity
public class User {
    @PrimaryKey
    @NonNull
    @ColumnInfo(name = "email")
    public String email;
    @NonNull
    @ColumnInfo(name = "password")
    public String password;
    public User(@NonNull String email, @NonNull String password) {
        this.email = email;
        this.password = password;
    }
}
```

## UserDao.java

```
package com.example.practical11;

import androidx.room.Dao;
import androidx.room.Delete;
import androidx.room.Insert;
import androidx.room.Query;
import java.util.List;

@Dao
public interface UserDao {
    @Query("SELECT * FROM user")
    List<User> getAll();
    @Query("SELECT * FROM user WHERE email LIKE :email LIMIT 1")
    User findByEmail(String email);
    @Insert
    void insert(User user);
    @Delete
    void delete(User user);
}
```

## UserDatabase.java

```
package com.example.practical11;

import androidx.room.RoomDatabase;
import androidx.room.Database;

@Database(entities = {User.class}, version = 1)
public abstract class UserDatabase extends RoomDatabase {
    public abstract UserDao userDao();
}
```

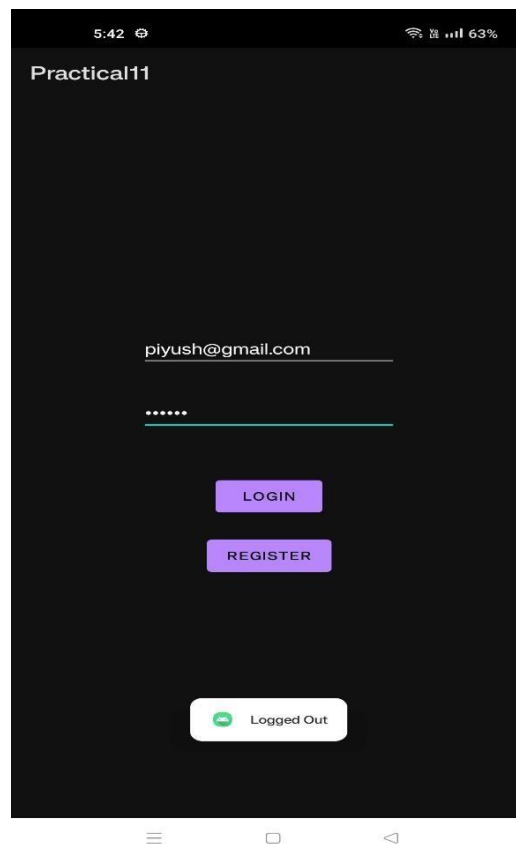
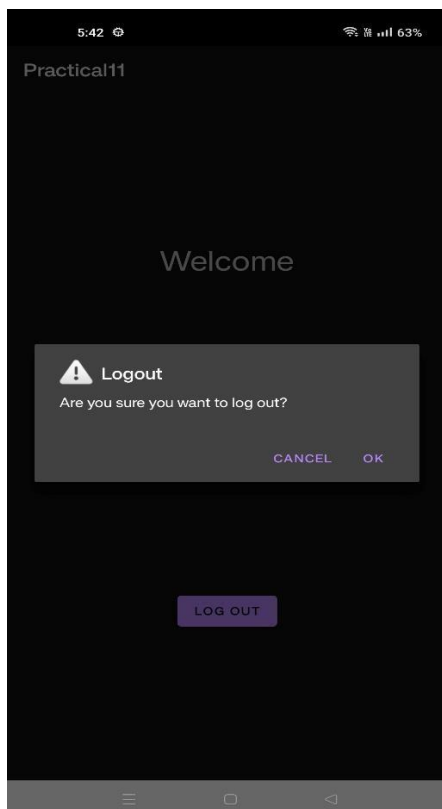
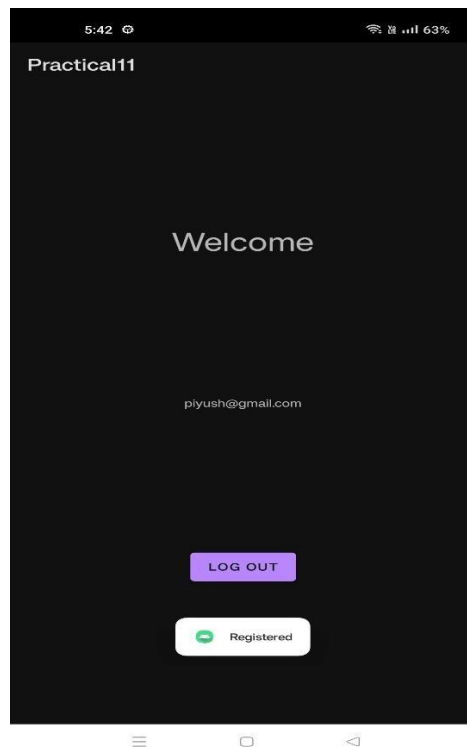
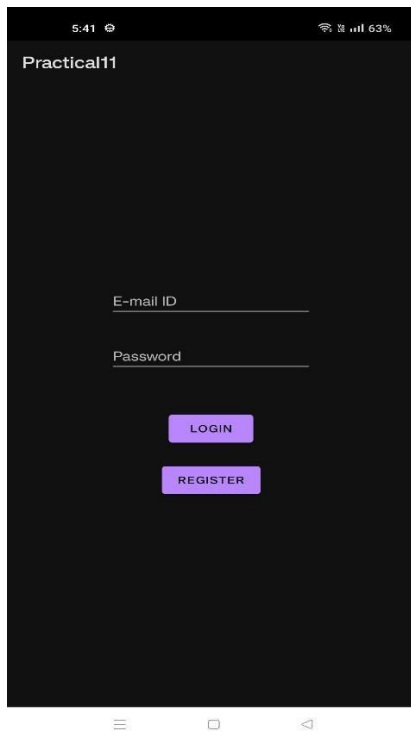
## UserService.java

```
package com.example.practical11;

import android.content.Context;
import androidx.room.Room;

public class UserService {
    private User user = null;
    private static UserService instance = null;
    private static UserDatabase database = null;
    public void login(User user) throws IllegalStateException {
        User u = database.userDao().findByEmail(user.email);
        if (!u.password.equals(user.password))
            throw new IllegalStateException("Password Mismatch");
        this.user = user;
    }
    public void register(User user) {
        database.userDao().insert(user);
        this.user = user;
    }
    public void logout() {
        this.user = null;
    }
    public User getUser() {
        return user;
    }
    public static UserService getInstance() {
        if (instance == null) {
            instance = new UserService();
        }
        return instance;
    }
    public static void initDatabase(Context ctx) {
        if (database == null) {
            database = Room
                .databaseBuilder(ctx, UserDatabase.class,
"login_module")
                .allowMainThreadQueries()
                .build();
        }
    }
}
```

## OUTPUT:



**OBJECTIVE: Create an application to Create , Insert , Update and Delete operation on the database .**

**OUTPUT:**

### **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/clRoot"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
    <androidx.swiperefreshlayout.widget.SwipeRefreshLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:id="@+id/swipeLayout"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent">
        <androidx.recyclerview.widget.RecyclerView
            android:id="@+id/rvTodos"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content" />
    </androidx.swiperefreshlayout.widget.SwipeRefreshLayout>
    <com.google.android.material.floatingactionbutton.FloatingActionButton
        android:id="@+id/fabAdd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="end|bottom"
        android:layout_margin="16dp"
        android:src="@drawable/ic_launcher_foreground"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

### **Dialog\_layout.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:paddingHorizontal="20dp"
    android:layout_width="match_parent"
    android:layout_height="match_parent">
    <EditText
        android:id="@+id/etNewContent"
        android:inputType="text"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Content" />
</LinearLayout>
```



## Todo\_item.xml

```
<?xml version="1.0" encoding="utf-8"?>
<com.google.android.material.card.MaterialCardView
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
android:id="@+id/cvParent"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginHorizontal="@dimen/card_margin"
android:layout_marginTop="@dimen/card_margin"
app:cardCornerRadius="@dimen/cardview_default_radius"
app:cardElevation="@dimen/cardview_default_elevation">
  <RelativeLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="@dimen/default_card_content_margin">
    <TextView
      android:id="@+id/tvTodoId"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:visibility="invisible" />
    <TextView
      android:id="@+id/tvTodoContent"
      style="@style/TextAppearance.MaterialComponents.Headline6"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="@string/default_todo_content" />
    <TextView
      android:id="@+id/tvTodoAddedAt"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_below="@id/tvTodoContent"
      android:layout_marginVertical="5dp"
      android:text="@string/default_todo_added_at" />
    <LinearLayout
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_below="@id/tvTodoAddedAt"
      android:orientation="horizontal">
      <Button
        android:id="@+id/btnTodoAction"
        style="@style/Widget.MaterialComponents.Button.OutlinedButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/default_todo_action" />
      <Button
        android:id="@+id/btnTodoDelete"
        style="@style/Widget.MaterialComponents.Button.OutlinedButton"
        android:textColor="@android:color/holo_red_dark"
        android:layout_marginStart="10dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/default_todo_delete" />
    </LinearLayout>
  </RelativeLayout>
</com.google.android.material.card.MaterialCardView>
```

## Dimens.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <dimen name="default_card_image_height">150dp</dimen>
    <dimen name="default_card_content_margin">10dp</dimen>
    <dimen name="card_margin">25dp</dimen>
    <dimen name="logo_dim">200dp</dimen>
</resources>
```

## Strings.xml

```
<resources>
    <string name="app_name">Practical12</string>
    <string name="default_todo_added_at">YYYY-MM-DD HH:MM:SS</string>
    <string name="default_todo_content">Todo</string>
    <string name="default_todo_action">Mark as Done</string>
    <string name="default_todo_delete">Delete</string>
</resources>
```

## MainActivity.java

```
package com.example.practical12;

import android.app.AlertDialog;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
import androidx.swiperefreshlayout.widget.SwipeRefreshLayout;

import com.google.android.material.floatingactionbutton.FloatingActionButton;

public class MainActivity extends AppCompatActivity implements
SwipeRefreshLayout.OnRefreshListener {
    private TodoRepository todoRepository;
    private RecyclerView rvTodos;
    private RVAdapter todosAdapter;
    private SwipeRefreshLayout swipeLayout;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        todoRepository = new TodoRepository(this);
        todosAdapter = new RVAdapter(this, todoRepository);
        swipeLayout = (SwipeRefreshLayout) findViewById(R.id.swipeLayout);
        swipeLayout.setOnRefreshListener(this);
        rvTodos = (RecyclerView) findViewById(R.id.rvTodos);
        rvTodos.setAdapter(todosAdapter);
        rvTodos.setLayoutManager(new LinearLayoutManager(this));
        FloatingActionButton fabAdd = (FloatingActionButton)
findViewById(R.id
```

```

        .fabAdd);
        fabAdd.setOnClickListener(v -> {View layout =
getLayoutInflater().inflate(R.layout.dialog_layout,
        null);
        EditText etNewContent = (EditText)
layout.findViewById(R.id.etNewContent);
        AlertDialog dialog = new AlertDialog.Builder(this)
        .setView(layout)
        .setTitle("Add New Todo")
        .setPositiveButton("Save", (_dialog, which) -> {
String content = etNewContent.getText().toString().trim();
        if (content.length() == 0) {
Toast.makeText(this, "No Text Entered", Toast.LENGTH_SHORT).show();
        } else {
        todoRepository.create(content);
        loadTodos();
        }
        })
        .setNegativeButton("Cancel", (_dialog, which) -> _dialog.dismiss())
        .create();
        dialog.show();
        });
        loadTodos();
    }

@Override
public void onRefresh() {
    loadTodos();
}

private void loadTodos() {
    swipeLayout.setRefreshing(true);
    todosAdapter.setTodos(todoRepository.getAll());
    swipeLayout.setRefreshing(false);
}
}

```

## RVAdapter.java

```

package com.example.practical12;

import android.content.Context;
import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;
import androidx.annotation.NonNull;
import androidx.recyclerview.widget.RecyclerView;
import com.google.android.material.card.MaterialCardView;
import java.util.ArrayList;

public class RVAdapter extends RecyclerView.Adapter<RVAdapter.ViewHolder> {
    private final Context ctx;
    private final TodoRepository repository;
    private ArrayList<Todo> todos = new ArrayList<>();
    public RVAdapter(Context context, TodoRepository repository) {
        this.ctx = context;
        this.repository = repository;
    }
}

```

```

    }
    @NonNull
    @Override
    public ViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int
viewType) {
        View view = LayoutInflater
            .from(parent.getContext())
            .inflate(R.layout.todo_item, parent, false);
        return new ViewHolder(view);
    }
    @Override
    public void onBindViewHolder(@NonNull ViewHolder holder, int position)
{
        holder.cvParent.setOnClickListener(v ->
            Log.d("DEBUG", todos.get(position).getId() + " Clicked")
        );
        holder.tvTodoContent.setText(todos.get(position).getContent());
holder.tvTodoAddedAt.setText(todos.get(position).getAddedAt().toString
());
        if (todos.get(position).isDone()) {
            holder.btnTodoAction.setText("Mark as Not Done");
        } else {
            holder.btnTodoAction.setText("Mark as Done");
        }
        holder.btnTodoAction.setOnClickListener(v -> {
            repository.update(todos.get(position).getId());
            Toast.makeText(ctx, "Todo State Toggled",
Toast.LENGTH_SHORT).show
                ();
        });
        holder.btnTodoDelete.setOnClickListener(v -> {
            repository.delete(todos.get(position).getId());
            Toast.makeText(ctx, "Todo Deleted", Toast.LENGTH_SHORT).show();
        });
    }
    @Override
    public int getItemCount() {
        return todos.size();
    }
    public void setTodos(ArrayList<Todo> todos) {
        this.todos = todos;
        notifyDataSetChanged();
    }
    public static class ViewHolder extends RecyclerView.ViewHolder {
        private final TextView tvTodoId;
        private final TextView tvTodoContent;
        private final TextView tvTodoAddedAt;
        private final Button btnTodoAction;
        private final Button btnTodoDelete;
        private final MaterialCardView cvParent;
        public ViewHolder(@NonNull View itemView) {
            super(itemView);
            tvTodoId = itemView.findViewById(R.id.tvTodoId);
            tvTodoContent = itemView.findViewById(R.id.tvTodoContent);
            tvTodoAddedAt = itemView.findViewById(R.id.tvTodoAddedAt);
            btnTodoAction = itemView.findViewById(R.id.btnTodoAction);
            btnTodoDelete = itemView.findViewById(R.id.btnTodoDelete);
            cvParent = itemView.findViewById(R.id.cvParent);
        }
    }

```

```
}  
}
```

## Todo.java

```
package com.example.practical12;  
  
import java.time.LocalDateTime;  
import java.util.Date;  
  
public class Todo {  
    private String id;  
    private String content;  
    private LocalDateTime addedAt;  
    private boolean isDone;  
    public Todo(String id, String content, LocalDateTime addedAt, boolean  
isDone) {  
        this.id = id;  
        this.content = content;  
        this.addedAt = addedAt;  
        this.isDone = isDone;  
    }  
    public String getId() {  
        return id;  
    }  
    public void setId(String id) {  
        this.id = id;  
    }  
    public String getContent() {  
        return content;  
    }  
    public void setContent(String content) {  
        this.content = content;  
    }  
    public LocalDateTime getAddedAt() {  
        return addedAt;  
    }  
    public void setAddedAt(LocalDateTime addedAt) {  
        this.addedAt = addedAt;  
    }  
    public boolean isDone() {  
        return isDone;  
    }  
    public void setDone(boolean done) {  
        isDone = done;  
    }  
  
    @Override  
    public String toString(){return "Todo{" +  
        "id='" + id + '\'' +  
        ", content='" + content + '\'' +  
        ", addedAt='" + addedAt +  
        ", isDone='" + isDone +  
        '\'';  
    }  
}
```

## TodoRepository.java

```
package com.example.practical12;

import android.annotation.SuppressLint;
import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.util.Log;
import java.time.LocalDateTime;
import java.util.ArrayList;
import java.util.UUID;

public class TodoRepository {
    private SQLiteDatabase db;
    private DBService dbService;
    public TodoRepository(Context context) {
        this.dbService = DBService.getInstance(context, "todos", 1);
        this.db = this.dbService.getWritableDatabase();
    }
    @SuppressLint("NewApi")
    public boolean create(String content) {
        try {
            ContentValues contentValues = new ContentValues();
            contentValues.put("Id", UUID.randomUUID().toString());
            contentValues.put("Content", content);
            contentValues.put("AddedAt", LocalDateTime.now().toString());
            contentValues.put("IsDone", false);
            db.insert("todos", null, contentValues);
            return true;
        } catch (Exception e) {
            return false;
        }
    }
    @SuppressLint({"Range", "NewApi"})
    public ArrayList<Todo> getAll() {
        ArrayList<Todo> todos = new ArrayList<>();
        Cursor res = db.rawQuery("SELECT * FROM TODOS", null);
        res.moveToFirst();
        while (!res.isAfterLast()) {
            todos.add(
                new Todo(
                    res.getString(res.getColumnIndex("Id")),
                    res.getString(res.getColumnIndex("Content")),
                    LocalDateTime.parse(res.getString(res.getColumnIndex("AddedAt"))),
                    res.getInt(res.getColumnIndex("IsDone")) > 0));
            res.moveToNext();
        }
        res.close();
        for (Todo todo: todos) {
            Log.d("TODO", todo.toString());
        }
        return todos;
    }
    public Todo get(String id) {
        Cursor res = db.rawQuery("SELECT * FROM TODOS WHERE Id = " + id,
null);
        @SuppressLint({"Range", "NewApi", "LocalSuppress"}) Todo todo =
        new
```

```

        res.getString(res.getColumnIndex("Id")),
        res.getString(res.getColumnIndex("Content")),

LocalDateTime.parse(res.getString(res.getColumnIndex("AddedAt"))),
res.getInt(res.getColumnIndex("IsDone")) > 0
    );
    res.close();
    return todo;
}
public void update(String id) {
    db.execSQL("UPDATE TODOS SET IsDone = NOT IsDone WHERE Id = '" + id
+
        "'");
}
public void delete(String id) {
    db.execSQL("DELETE FROM TODOS WHERE Id = '" + id + "'");
}
}

```

## DBService.java

```

package com.example.practical12;

import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import androidx.annotation.Nullable;
public class DBService extends SQLiteOpenHelper {
    private static DBService instance = null;
    public DBService(@Nullable Context context, @Nullable String name,
@Nullable SQLiteDatabase.CursorFactory factory, int version) {
        super(context, name, factory, version);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL(
            "CREATE TABLE TODOS ("
            + "Id INT,"
            + "Content VARCHAR(255),"
            + "AddedAt DATETIME,"
            + "IsDone BOOL"
            + ");"
        );
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int
newVersion) {
        db.execSQL("DROP TABLE IF EXISTS TODOS;");
        onCreate(db);
    }
    public static DBService getInstance(Context context, String name, int
version) {
        if (instance == null) {
            instance = new DBService(context, name, null, version);
        }
        return instance;
    }
}

```

## Output:

