**Rules:**

1. Usage of string.xml is mandatory

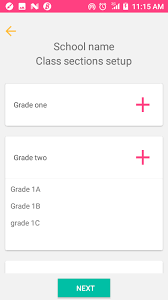
2. Use of @+id is mandatory

3. Use of drawable folder in mandatory.

4. Use of Launcher Icon is mandatory.

1

1. Implement an Android project having activity similar to given below



Java🡺

package com.example.madl1;  
  
import android.os.Bundle;  
import android.view.View;  
import android.widget.ImageButton;  
import android.widget.LinearLayout;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
  
 private LinearLayout gradeOneSections;  
 private LinearLayout gradeTwoSections;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 gradeOneSections = findViewById(R.id.*grade\_one\_sections*);  
 gradeTwoSections = findViewById(R.id.*grade\_two\_sections*);  
  
 ImageButton gradeOneButton = findViewById(R.id.*grade\_one\_button*);  
 ImageButton gradeTwoButton = findViewById(R.id.*grade\_two\_button*);  
  
 gradeOneButton.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 if (gradeOneSections.getVisibility() == View.*GONE*) {  
 gradeOneSections.setVisibility(View.*VISIBLE*);  
 } else {  
 gradeOneSections.setVisibility(View.*GONE*);  
 }  
 }  
 });  
  
 gradeTwoButton.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 if (gradeTwoSections.getVisibility() == View.*GONE*) {  
 gradeTwoSections.setVisibility(View.*VISIBLE*);  
 } else {  
 gradeTwoSections.setVisibility(View.*GONE*);  
 }  
 }  
 });  
 }  
}

<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="#F5F5F5"  
 android:padding="16dp">  
  
 <TextView  
 android:id="@+id/school\_name"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="School name"  
 android:textSize="24sp"  
 android:textColor="#000"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginTop="16dp"/>  
  
 <TextView  
 android:id="@+id/class\_sections\_setup"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Class sections setup"  
 android:textSize="18sp"  
 android:textColor="#666"  
 android:layout\_below="@id/school\_name"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginTop="8dp"/>  
  
 <LinearLayout  
 android:id="@+id/grade\_one\_layout"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"  
 android:background="#FFF"  
 android:elevation="2dp"  
 android:padding="16dp"  
 android:layout\_below="@id/class\_sections\_setup"  
 android:layout\_marginTop="24dp">  
  
 <RelativeLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content">  
  
 <TextView  
 android:id="@+id/grade\_one"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Grade one"  
 android:textSize="18sp"  
 android:textColor="#000"/>  
  
 <ImageButton  
 android:id="@+id/grade\_one\_button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:src="@android:drawable/ic\_input\_add"  
 android:background="?attr/selectableItemBackgroundBorderless"  
 android:layout\_alignParentEnd="true"  
 android:layout\_centerVertical="true"/>  
 </RelativeLayout>  
  
 <LinearLayout  
 android:id="@+id/grade\_one\_sections"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"  
 android:visibility="gone"  
 android:layout\_marginTop="8dp">  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Grade 1A"  
 android:textSize="16sp"  
 android:textColor="#000"  
 android:layout\_marginTop="4dp"/>  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Grade 1B"  
 android:textSize="16sp"  
 android:textColor="#000"  
 android:layout\_marginTop="4dp"/>  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Grade 1C"  
 android:textSize="16sp"  
 android:textColor="#000"  
 android:layout\_marginTop="4dp"/>  
 </LinearLayout>  
 </LinearLayout>  
  
 <LinearLayout  
 android:id="@+id/grade\_two\_layout"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"  
 android:background="#FFF"  
 android:elevation="2dp"  
 android:padding="16dp"  
 android:layout\_below="@id/grade\_one\_layout"  
 android:layout\_marginTop="16dp">  
  
 <RelativeLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content">  
  
 <TextView  
 android:id="@+id/grade\_two"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Grade two"  
 android:textSize="18sp"  
 android:textColor="#000"/>  
  
 <ImageButton  
 android:id="@+id/grade\_two\_button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:src="@android:drawable/ic\_input\_add"  
 android:background="?attr/selectableItemBackgroundBorderless"  
 android:layout\_alignParentEnd="true"  
 android:layout\_centerVertical="true"/>  
 </RelativeLayout>  
  
 <LinearLayout  
 android:id="@+id/grade\_two\_sections"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="vertical"  
 android:visibility="gone"  
 android:layout\_marginTop="8dp">  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Grade 2A"  
 android:textSize="16sp"  
 android:textColor="#000"  
 android:layout\_marginTop="4dp"/>  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Grade 2B"  
 android:textSize="16sp"  
 android:textColor="#000"  
 android:layout\_marginTop="4dp"/>  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Grade 2C"  
 android:textSize="16sp"  
 android:textColor="#000"  
 android:layout\_marginTop="4dp"/>  
 </LinearLayout>  
 </LinearLayout>  
  
 <Button  
 android:id="@+id/next\_button"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="NEXT"  
 android:textColor="#FFF"  
 android:background="#00C853"  
 android:layout\_alignParentBottom="true"  
 android:layout\_marginTop="16dp"/>  
</RelativeLayout>

2. Write an Android project to create 3 activities with explicit Intents and implicit intent to open camera.

<?xml version="1.0" encoding="utf-8"?>  
 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 android:padding="16dp">  
  
   
 <Button  
 android:id="@+id/button\_open\_camera"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Open Camera" />  
  
 <ImageView  
 android:id="@+id/imageView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:contentDescription="Captured Image"  
 android:layout\_marginTop="16dp"  
 android:adjustViewBounds="true"  
 android:scaleType="centerInside" />  
 </LinearLayout>

package com.example.madl2;  
  
import android.content.Intent;  
import android.graphics.Bitmap;  
import android.os.Bundle;  
import android.provider.MediaStore;  
import android.widget.ImageView;  
import android.widget.Toast;  
import androidx.annotation.Nullable;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class CaptureImage extends AppCompatActivity {  
  
 private static final int *REQUEST\_IMAGE\_CAPTURE* = 1;  
 private ImageView imageView;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_capture\_image*);  
  
 imageView = findViewById(R.id.*imageView*);  
  
  
 findViewById(R.id.*button\_open\_camera*).setOnClickListener(v -> {  
 Intent intent = new Intent(MediaStore.*ACTION\_IMAGE\_CAPTURE*);  
 if (intent.resolveActivity(getPackageManager()) != null) {  
 startActivityForResult(intent, *REQUEST\_IMAGE\_CAPTURE*);  
 } else {  
 Toast.*makeText*(CaptureImage.this, "No camera app found", Toast.*LENGTH\_SHORT*).show();  
 }  
 });  
 }  
  
 @Override  
 protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent data) {  
 super.onActivityResult(requestCode, resultCode, data);  
 if (requestCode == *REQUEST\_IMAGE\_CAPTURE* && resultCode == *RESULT\_OK* && data != null) {  
 Bundle extras = data.getExtras();  
 Bitmap imageBitmap = (Bitmap) extras.get("data");  
 imageView.setImageBitmap(imageBitmap);  
 }  
 }  
}

3. Write an Android project to create 2 activities and Implicit Intents to open a web page of javapoint.com

<?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:layout\_marginEnd="8dp"  
 android:layout\_marginStart="8dp"  
 android:layout\_marginTop="60dp"  
 android:ems="10"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.575"  
 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\_marginRight="8dp"  
 android:layout\_marginLeft="156dp"  
 android:layout\_marginTop="172dp"  
 android:text="Visit"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.0"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/editText" />  
</androidx.constraintlayout.widget.ConstraintLayout>

Java🡪

package com.example.madl;  
  
  
  
  
import androidx.constraintlayout.widget.ConstraintLayout;  
import android.content.Intent;  
import android.net.Uri;  
import androidx.appcompat.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
  
public class MainActivity extends AppCompatActivity {  
  
 Button button;  
 EditText editText;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 button = findViewById(R.id.*button*);  
 editText = findViewById(R.id.*editText*);  
  
 button.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 String url=editText.getText().toString();  
 Intent intent=new Intent(Intent.*ACTION\_VIEW*, Uri.*parse*(url));  
 startActivity(intent);  
 }  
 });  
}  
}

4. Write an Android project to create app bar and create option menus and context menu.

<?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/main"  
 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="Long press me for context menu"  
 android:textSize="20sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 <androidx.appcompat.widget.Toolbar  
 android:id="@+id/toolbar"  
 android:layout\_width="409dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginEnd="1dp"  
 android:layout\_marginBottom="288dp"  
 android:background="?attr/colorPrimary"  
 android:minHeight="?attr/actionBarSize"  
 android:theme="?attr/actionBarTheme"  
 app:layout\_constraintBottom\_toTopOf="@+id/textView"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
  
</androidx.constraintlayout.widget.ConstraintLayout>

package com.example.madl4;  
  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.appcompat.widget.Toolbar;  
  
import android.app.ActionBar;  
import android.graphics.Color;  
import android.graphics.drawable.ColorDrawable;  
import android.os.Bundle;  
import android.view.ContextMenu;  
import android.view.Menu;  
import android.view.MenuInflater;  
import android.view.MenuItem;  
import android.view.View;  
import android.widget.TextView;  
import android.widget.Toast;  
  
import static android.widget.Toast.*LENGTH\_LONG*;  
  
public class MainActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 Toolbar toolbar = findViewById(R.id.*toolbar*);  
 setSupportActionBar(toolbar);  
 ActionBar actionBar = getActionBar();  
 if (actionBar != null) {  
 actionBar.setBackgroundDrawable(new ColorDrawable(Color.*BLUE*));  
 actionBar.setTitle("Menu");  
 actionBar.show();  
 }  
  
  
// for context menu  
 TextView textView=findViewById(R.id.*textView*);  
 registerForContextMenu(textView);  
 }  
//option menu  
 @Override  
 public boolean onCreateOptionsMenu(Menu menu) {  
 getMenuInflater().inflate(R.menu.*main\_menu*, menu);  
 return true;  
 }  
  
 @Override  
 public boolean onOptionsItemSelected(MenuItem item) {  
 int itemId = item.getItemId();  
 if (itemId == R.id.*home*) {  
 Toast.*makeText*(getApplicationContext(), "home icon", Toast.*LENGTH\_SHORT*).show();  
 return true;  
 } else if (itemId == R.id.*share*) {  
 Toast.*makeText*(getApplicationContext(), "Share icon", Toast.*LENGTH\_SHORT*).show();  
 return (true);  
 } else if (itemId == R.id.*star*) {  
 Toast.*makeText*(getApplicationContext(), "star icon", Toast.*LENGTH\_SHORT*).show();  
 return (true);  
 } else if (itemId == R.id.*setting*) {  
 Toast.*makeText*(getApplicationContext(), "setting menu", Toast.*LENGTH\_SHORT*).show();  
 return (true);  
 }  
 else if (itemId == R.id.*refresh*) {  
 Toast.*makeText*(getApplicationContext(), "Refresh menu", Toast.*LENGTH\_SHORT*).show();  
 return (true);  
 }else if (itemId == R.id.*exit*) {  
 finish();  
 return (true);  
 }  
 return super.onOptionsItemSelected(item);  
  
 }  
  
// context menu  
@Override  
public void onCreateContextMenu(ContextMenu menu, View view, ContextMenu.ContextMenuInfo menuInfo){  
 super.onCreateContextMenu(menu,view,menuInfo);  
 MenuInflater inflater=getMenuInflater();  
 inflater.inflate(R.menu.*context\_menu*,menu);  
  
}  
  
@Override  
public boolean onContextItemSelected(MenuItem item){  
 int itemId = item.getItemId();  
 if (itemId == R.id.*copy*) {  
 Toast.*makeText*(getApplicationContext(), " copied", Toast.*LENGTH\_SHORT*).show();  
 return true;  
 } else if (itemId == R.id.*cut*) {  
 Toast.*makeText*(getApplicationContext(), "cut", Toast.*LENGTH\_SHORT*).show();  
 return (true);  
 } else if (itemId == R.id.*paste*) {  
 Toast.*makeText*(getApplicationContext(), "paste", Toast.*LENGTH\_SHORT*).show();  
 return (true);  
 } else if (itemId == R.id.*share*) {  
 Toast.*makeText*(getApplicationContext(), "share", Toast.*LENGTH\_SHORT*).show();  
 return (true);  
 }  
 else if (itemId == R.id.*delete*) {  
 Toast.*makeText*(getApplicationContext(), "deleted", Toast.*LENGTH\_SHORT*).show();  
 return (true);  
 }  
 return super.onOptionsItemSelected(item);  
  
}  
  
}

main\_menu🡪(res/Menu/main\_menu)

<?xml version="1.0" encoding="utf-8"?>  
<menu 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"  
 tools:context="example.javatpoint.com.optionmenu.MainActivity">  
  
 <item android:id="@+id/home"  
 android:title="home"  
 app:showAsAction="always"  
 android:icon="@drawable/home"/>  
 <item android:id="@+id/share"  
 android:title="Share"  
 app:showAsAction="always"  
 android:icon="@drawable/share"/>  
 <item android:id="@+id/star"  
 android:title="@string/star"  
 app:showAsAction="ifRoom"  
 android:icon="@drawable/star"/>  
 <item android:id="@+id/setting"  
 android:title="@string/setting"  
 app:showAsAction="never"  
 android:icon="@drawable/setting"/>  
 <item android:id="@+id/exit"  
 android:title="exit"  
 app:showAsAction="always"  
 android:icon="@drawable/close"/>  
 <item android:id="@+id/refresh"  
 android:title="refresh"  
 app:showAsAction="always"  
 android:icon="@drawable/refresh"/>  
</menu>

context\_menu🡪(res/Menu/context\_menu)

<?xml version="1.0" encoding="utf-8"?>  
<menu xmlns:android="http://schemas.android.com/apk/res/android">  
 <item  
 android:id="@+id/copy"  
 android:title="copy" />  
 <item  
 android:id="@+id/cut"  
 android:title="cut" />  
 <item  
 android:id="@+id/paste"  
 android:title="Paste" />  
 <item  
 android:id="@+id/share"  
 android:title="Share" />  
 <item  
 android:id="@+id/delete"  
 android:title="Delete" />  
</menu>

5. Write an Android project to change the Color theme of the App and create a custom theme for views.

Colors.xml

<?xml version="1.0" encoding="utf-8"?>  
<resources>  
 <color name="black">#FF000000</color>  
 <color name="white">#FFFFFFFF</color>  
 <color name="purple\_500">#6200EE</color>  
 <color name="purple\_700">#3700B3</color>  
 <color name="teal\_200">#03DAC5</color>  
 <color name="teal\_700">#018786</color>  
</resources>

Themes.xml

<resources xmlns:tools="http://schemas.android.com/tools">  
 <!-- Base application theme. -->  
 <style name="Base.Theme.ChangeTheme" parent="Theme.Material3.DayNight.NoActionBar">  
 <!-- Customize your light theme here. -->  
 <!-- <item name="colorPrimary">@color/my\_light\_primary</item> -->  
 </style>  
  
  
 <!-- Base application theme. -->  
 <style name="Theme.ThemeChangeApp" parent="Theme.MaterialComponents.DayNight.DarkActionBar">  
 <!-- Primary brand color. -->  
 <item name="colorPrimary">@color/purple\_500</item>  
 <item name="colorPrimaryVariant">@color/purple\_700</item>  
 <item name="colorOnPrimary">@color/white</item>  
 <!-- Secondary brand color. -->  
 <item name="colorSecondary">@color/teal\_200</item>  
 <item name="colorSecondaryVariant">@color/teal\_700</item>  
 <item name="colorOnSecondary">@color/black</item>  
 <!-- Default background color. -->  
 <item name="android:colorBackground">@color/white</item>  
 <item name="android:textColor">@color/black</item>  
 </style>  
  
 <!-- Custom theme for a specific view -->  
 <style name="CustomButtonTheme" parent="Widget.MaterialComponents.Button">  
 <item name="android:backgroundTint">@color/teal\_200</item>  
 <item name="android:textColor">@color/white</item>  
 </style>  
  
 <!-- Dark theme -->  
 <style name="Theme.ThemeChangeApp.Dark" parent="Theme.MaterialComponents.DayNight.DarkActionBar">  
 <item name="colorPrimary">@color/black</item>  
 <item name="colorPrimaryVariant">@color/black</item>  
 <item name="colorOnPrimary">@color/white</item>  
 <item name="colorSecondary">@color/teal\_200</item>  
 <item name="colorSecondaryVariant">@color/teal\_700</item>  
 <item name="colorOnSecondary">@color/black</item>  
 <item name="android:colorBackground">@color/black</item>  
 <item name="android:textColor">@color/white</item>  
 </style>  
  
  
</resources>

Manifest

android:theme="@style/Theme.ThemeChangeApp"

main.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 android:padding="16dp"  
 >  
  
 <Button  
 android:id="@+id/toggle"  
 style="@style/CustomButtonTheme"  
 android:layout\_width="371dp"  
 android:layout\_height="48dp"  
 android:text="Toggle Theme"  
 android:textSize="20dp" />  
  
</LinearLayout>

Main.java

package com.example.changetheme;  
  
import android.content.Intent;  
import android.content.SharedPreferences;  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.appcompat.app.AppCompatDelegate;  
import android.view.View;  
import android.widget.Button;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
 private static final String *PREFS\_NAME* = "prefs";  
 private static final String *PREF\_DARK\_THEME* = "dark\_theme";  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
  
 // Check if dark theme is enabled  
 SharedPreferences preferences = getSharedPreferences(*PREFS\_NAME*, *MODE\_PRIVATE*);  
 boolean useDarkTheme = preferences.getBoolean(*PREF\_DARK\_THEME*, false);  
  
 if (useDarkTheme) {  
 setTheme(R.style.*Theme\_ThemeChangeApp\_Dark*);  
 } else {  
 setTheme(R.style.*Theme\_ThemeChangeApp*);  
 }  
  
 setContentView(R.layout.*activity\_main*);  
  
 Button toggleButton = findViewById(R.id.*toggle*);  
 toggleButton.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 toggleTheme();  
 }  
 });  
 }  
  
 private void toggleTheme() {  
 SharedPreferences.Editor editor = getSharedPreferences(*PREFS\_NAME*, *MODE\_PRIVATE*).edit();  
 boolean useDarkTheme = getSharedPreferences(*PREFS\_NAME*, *MODE\_PRIVATE*)  
 .getBoolean(*PREF\_DARK\_THEME*, false);  
  
 if (useDarkTheme) {  
 editor.putBoolean(*PREF\_DARK\_THEME*, false);  
 } else {  
 editor.putBoolean(*PREF\_DARK\_THEME*, true);  
 }  
  
 editor.apply();  
  
 // Restart activity to apply theme change  
 Intent intent = getIntent();  
 finish();  
 startActivity(intent);  
 }  
}

6. Write an Android project to create Background Task using AsyncTask to download a file/play music.

<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <Button  
 android:id="@+id/downloadButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Download and Play Music"  
 android:layout\_centerInParent="true"/>  
  
 <TextView  
 android:id="@+id/statusTextView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Status"  
 android:layout\_below="@id/downloadButton"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginTop="20dp"/>  
  
</RelativeLayout>

Java->

package com.example.madl6;  
  
import android.Manifest;  
import android.app.Activity;  
import android.content.pm.PackageManager;  
import android.media.MediaPlayer;  
import android.os.AsyncTask;  
import android.os.Bundle;  
import android.os.Environment;  
import android.view.View;  
import android.widget.Button;  
import android.widget.TextView;  
import androidx.core.app.ActivityCompat;  
import androidx.core.content.ContextCompat;  
  
import java.io.BufferedInputStream;  
import java.io.File;  
import java.io.FileOutputStream;  
import java.io.InputStream;  
import java.net.URL;  
import java.net.URLConnection;  
  
public class MainActivity extends Activity {  
  
 private Button downloadButton;  
 private TextView statusTextView;  
 private MediaPlayer mediaPlayer;  
 private static final int *PERMISSION\_REQUEST\_CODE* = 1;  
 private static final String *FILE\_URL* = "https://www.pagalworld.com.sb/files/download/id/71258";  
 private static final String *FILE\_NAME* = "downloaded\_music.mp3";  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 downloadButton = findViewById(R.id.*downloadButton*);  
 statusTextView = findViewById(R.id.*statusTextView*);  
  
 downloadButton.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 // Check permissions before starting the download  
 if (checkPermission()) {  
 new DownloadTask().execute(*FILE\_URL*);  
 } else {  
 requestPermission();  
 }  
 }  
 });  
 }  
  
 private boolean checkPermission() {  
 // Check if WRITE\_EXTERNAL\_STORAGE permission is granted  
 int result = ContextCompat.*checkSelfPermission*(getApplicationContext(), Manifest.permission.*WRITE\_EXTERNAL\_STORAGE*);  
 return result == PackageManager.*PERMISSION\_GRANTED*;  
 }  
  
 private void requestPermission() {  
 // Request WRITE\_EXTERNAL\_STORAGE permission  
 ActivityCompat.*requestPermissions*(this, new String[]{Manifest.permission.*WRITE\_EXTERNAL\_STORAGE*}, *PERMISSION\_REQUEST\_CODE*);  
 }  
  
 @Override  
 public void onRequestPermissionsResult(int requestCode, String[] permissions, int[] grantResults) {  
 super.onRequestPermissionsResult(requestCode, permissions, grantResults);  
 if (requestCode == *PERMISSION\_REQUEST\_CODE*) {  
 if (grantResults.length > 0 && grantResults[0] == PackageManager.*PERMISSION\_GRANTED*) {  
 // Permission granted, start the download  
 new DownloadTask().execute(*FILE\_URL*);  
 } else {  
 // Permission denied, show message  
 statusTextView.setText("Permission Denied");  
 }  
 }  
 }  
  
 private class DownloadTask extends AsyncTask<String, Integer, String> {  
  
 @Override  
 protected void onPreExecute() {  
 super.onPreExecute();  
 statusTextView.setText("Downloading...");  
 }  
  
 @Override  
 protected String doInBackground(String... urls) {  
 int count;  
 try {  
 URL url = new URL(urls[0]);  
 URLConnection connection = url.openConnection();  
 connection.connect();  
 int lengthOfFile = connection.getContentLength();  
 InputStream input = new BufferedInputStream(url.openStream(), 8192);  
  
 // Use getExternalFilesDir for the path  
 File outputFile = new File(getExternalFilesDir(null), *FILE\_NAME*);  
 FileOutputStream output = new FileOutputStream(outputFile);  
  
 byte data[] = new byte[1024];  
 long total = 0;  
 while ((count = input.read(data)) != -1) {  
 total += count;  
 publishProgress((int) ((total \* 100) / lengthOfFile));  
 output.write(data, 0, count);  
 }  
 output.flush();  
 output.close();  
 input.close();  
 } catch (Exception e) {  
 return e.getMessage();  
 }  
 return "Downloaded";  
 }  
  
 @Override  
 protected void onProgressUpdate(Integer... progress) {  
 super.onProgressUpdate(progress);  
 statusTextView.setText("Downloaded " + progress[0] + "%");  
 }  
  
 @Override  
 protected void onPostExecute(String result) {  
 super.onPostExecute(result);  
 statusTextView.setText(result);  
 playMusic();  
 }  
 }  
  
 private void playMusic() {  
 File filePath = new File(getExternalFilesDir(null), *FILE\_NAME*);  
 mediaPlayer = new MediaPlayer();  
 try {  
 mediaPlayer.setDataSource(filePath.getAbsolutePath());  
 mediaPlayer.prepare();  
 mediaPlayer.start();  
 } catch (Exception e) {  
 statusTextView.setText("Error playing music: " + e.getMessage());  
 }  
 }  
}

7. Write an Android project for Intent to pass data from one activity to another using extra and data

Main.xml

<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <EditText  
 android:id="@+id/send\_text\_id"  
 android:layout\_width="300dp"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginLeft="40dp"  
 android:layout\_marginTop="20dp"  
 android:hint="Input"  
 android:textSize="25dp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/send\_button\_id"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="40dp"  
 android:layout\_marginLeft="150dp"  
 android:layout\_marginTop="150dp"  
 android:text="send"  
 android:textStyle="bold" />  
</RelativeLayout>

Main.java

package com.example.madl7;  
  
  
import androidx.activity.EdgeToEdge;  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
import android.content.Intent;  
import android.widget.Button;  
import android.widget.EditText;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
  
 // define the variable  
 Button send\_button;  
 EditText send\_text;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 send\_button = findViewById(R.id.*send\_button\_id*);  
 send\_text = findViewById(R.id.*send\_text\_id*);  
  
 // add the OnClickListener in sender button after clicked this button following Instruction will run  
 send\_button.setOnClickListener(v -> {  
 // get the value which input by user in EditText and convert it to string  
 String str = send\_text.getText().toString();  
 // Create the Intent object of this class Context() to Second\_activity class  
 Intent intent = new Intent(getApplicationContext(), SecondActivity.class);  
 // now by putExtra method put the value in key, value pair key is  
 // message\_key by this key we will receive the value, and put the string  
 intent.putExtra("message\_key", str);  
 // start the Intent  
 startActivity(intent);  
 });  
 }  
}

Second.xml

<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".SecondActivity">  
  
 <TextView  
 android:id="@+id/received\_value\_id"  
 android:layout\_width="300dp"  
 android:layout\_height="50dp"  
 android:layout\_marginLeft="40dp"  
 android:layout\_marginTop="20dp"  
 android:textSize="40sp"  
 android:textStyle="bold"  
 android:layout\_marginStart="40dp" />  
</RelativeLayout>

Second.java

package com.example.madl7;  
  
import android.os.Bundle;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.widget.TextView;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class SecondActivity extends AppCompatActivity {  
  
 TextView receiver\_msg;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_second*);  
  
 receiver\_msg = findViewById(R.id.*received\_value\_id*);  
 // create the get Intent object  
 Intent intent = getIntent();  
 // receive the value by getStringExtra() method and  
 // key must be same which is send by first activity  
 String str = intent.getStringExtra("message\_key");  
 // display the string into textView  
 receiver\_msg.setText(str);  
 }  
}

8. Write an Android project for creating Notification.

Activity\_main.xml

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"

xmlns:tools="http://schemas.android.com/tools"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:paddingBottom="@dimen/activity\_vertical\_margin"

android:paddingLeft="@dimen/activity\_horizontal\_margin"

android:paddingRight="@dimen/activity\_horizontal\_margin"

android:paddingTop="@dimen/activity\_vertical\_margin"

tools:context=".MainActivity">

<TextView

android:id="@+id/textView1"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Notification Example"

android:textSize="30dp"

android:layout\_alignParentTop="true"

android:layout\_centerHorizontal="true" />

<TextView

android:id="@+id/textView2"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Tutorials point"

android:textColor="#ff87ff09"

android:textSize="30dp"

android:layout\_below="@+id/textView1"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="48dp" />

<ImageButton

android:id="@+id/imageButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:src="@drawable/cat"

android:layout\_below="@+id/textView2"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="48dp" />

<Button

android:id="@+id/button"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Notification"

android:layout\_below="@+id/imageButton"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="-164dp"/>

</RelativeLayout>

Activity\_notification\_view.xml

*<?*xml version="1.0" encoding="utf-8"*?>*

<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"

android:orientation="vertical"

android:layout\_width="fill\_parent"

android:layout\_height="fill\_parent" >

<TextView

android:layout\_width="fill\_parent"

android:layout\_height="400dp"

android:text="Hi, Your Detailed notification view goes here...." />

</LinearLayout>

MainActivity.java

package com.example.notificationdemo;

import android.Manifest;

import android.app.Activity;

import android.app.NotificationChannel;

import android.app.NotificationManager;

import android.app.PendingIntent;

import android.content.Context;

import android.content.Intent;

import android.content.pm.PackageManager;

import android.os.Build;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import androidx.annotation.NonNull;

import androidx.core.app.ActivityCompat;

import androidx.core.app.NotificationCompat;

import androidx.core.app.NotificationManagerCompat;

public class MainActivity extends Activity {

Button b1;

private final String CHANNEL\_ID = "example\_channel\_id";

private final int NOTIFICATION\_ID = 0;

private final int REQUEST\_CODE = 1;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.*activity\_main*);

b1 = (Button) findViewById(R.id.*button*);

b1.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

createNotificationChannel();

if (ActivityCompat.*checkSelfPermission*(MainActivity.this, Manifest.permission.*POST\_NOTIFICATIONS*) != PackageManager.*PERMISSION\_GRANTED*) {

*// Request the missing permission*

ActivityCompat.*requestPermissions*(MainActivity.this, new String[]{Manifest.permission.*POST\_NOTIFICATIONS*}, REQUEST\_CODE);

} else {

*// Permission is already granted, proceed with notification*

addNotification();

}

}

});

}

private void createNotificationChannel() {

*// Create the NotificationChannel, but only on API 26+ because*

*// the NotificationChannel class is new and not in the support library*

if (Build.VERSION.*SDK\_INT* >= Build.VERSION\_CODES.*O*) {

CharSequence name = "Example Channel";

String description = "This is an example notification channel";

int importance = NotificationManager.*IMPORTANCE\_DEFAULT*;

NotificationChannel channel = new NotificationChannel(CHANNEL\_ID, name, importance);

channel.setDescription(description);

*// Register the channel with the system*

NotificationManager notificationManager = getSystemService(NotificationManager.class);

notificationManager.createNotificationChannel(channel);

}

}

private void addNotification() {

NotificationCompat.Builder builder = new NotificationCompat.Builder(this, CHANNEL\_ID)

.setSmallIcon(R.drawable.*cat*) *// replace with your actual icon*

.setContentTitle("Notifications Example")

.setContentText("This is a test notification")

.setPriority(NotificationCompat.*PRIORITY\_DEFAULT*);

Intent notificationIntent = new Intent(this, MainActivity.class);

PendingIntent contentIntent = PendingIntent.*getActivity*(this, 0, notificationIntent, PendingIntent.*FLAG\_UPDATE\_CURRENT* | PendingIntent.*FLAG\_IMMUTABLE*);

builder.setContentIntent(contentIntent);

*// Show the notification*

NotificationManagerCompat notificationManager = NotificationManagerCompat.*from*(this);

if (ActivityCompat.*checkSelfPermission*(this, Manifest.permission.*POST\_NOTIFICATIONS*) != PackageManager.*PERMISSION\_GRANTED*) {

*// TODO: Consider calling*

*// ActivityCompat#requestPermissions*

*// here to request the missing permissions, and then overriding*

*// public void onRequestPermissionsResult(int requestCode, String[] permissions,*

*// int[] grantResults)*

*// to handle the case where the user grants the permission. See the documentation*

*// for ActivityCompat#requestPermissions for more details.*

return;

}

notificationManager.notify(NOTIFICATION\_ID, builder.build());

}

@Override

public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions, @NonNull int[] grantResults) {

super.onRequestPermissionsResult(requestCode, permissions, grantResults);

if (requestCode == REQUEST\_CODE) {

*// Check if the permission is granted*

if (grantResults.length > 0 && grantResults[0] == PackageManager.*PERMISSION\_GRANTED*) {

*// Permission is granted, proceed with notification*

addNotification();

} else {

*// Permission is denied, handle accordingly (e.g., show a message)*

}

}

}

}

NotificationView.java

package com.example.notificationdemo;

import android.os.Bundle;

import android.app.Activity;

public class NotificationView extends Activity{

@Override

public void onCreate(Bundle savedInstanceState){

super.onCreate(savedInstanceState);

setContentView(R.layout.*activity\_notification\_view*);

}

}

manifest

*<?*xml version="1.0" encoding="utf-8"*?>*

<manifest xmlns:android="http://schemas.android.com/apk/res/android"

package="com.example.notificationdemo" >

<uses-permission android:name="android.permission.POST\_NOTIFICATIONS"/>

<application

android:allowBackup="true"

android:icon="@mipmap/ic\_launcher"

android:label="@string/app\_name"

android:theme="@style/Theme.Notificationdemo" >

<activity

android:name="com.example.notificationdemo.MainActivity"

android:label="@string/app\_name" android:exported="true">

<intent-filter>

<action android:name="android.intent.action.MAIN" />

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

</intent-filter>

</activity>

<activity android:name=".NotificationView"

android:label="Details of notification"

android:parentActivityName=".MainActivity">

<meta-data

android:name="android.support.PARENT\_ACTIVITY"

android:value=".MainActivity"/>

</activity>

</application>

</manifest>

9. Write an Android project to create shared preferences.

Main.xml

<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity"  
 tools:ignore="HardcodedText">  
  
 <TextView  
 android:id="@+id/textview"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginTop="32dp"  
 android:text="Shared Preferences Demo"  
 android:textColor="@android:color/black"  
 android:textSize="24sp" />  
  
 <!--EditText to take the data from the user and save the data in SharedPreferences-->  
 <EditText  
 android:id="@+id/edit1"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@+id/textview"  
 android:layout\_marginStart="16dp"  
 android:layout\_marginTop="8dp"  
 android:layout\_marginEnd="16dp"  
 android:hint="Enter your Name"  
 android:padding="10dp" />  
  
 <!--EditText to take the data from the user and save the data in SharedPreferences-->  
 <EditText  
 android:id="@+id/edit2"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@+id/edit1"  
 android:layout\_marginStart="16dp"  
 android:layout\_marginTop="8dp"  
 android:layout\_marginEnd="16dp"  
 android:hint="Enter your Age"  
 android:inputType="number"  
 android:padding="10dp" />  
</RelativeLayout>

Main.java

package com.example.sharedpreferences;  
  
import androidx.appcompat.app.AppCompatActivity;  
import android.content.SharedPreferences;  
import android.os.Bundle;  
import android.widget.EditText;  
  
public class MainActivity extends AppCompatActivity {  
 private EditText name, age;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 name = findViewById(R.id.*edit1*);  
 age = findViewById(R.id.*edit2*);  
 }  
  
 // Fetch the stored data in onResume() Because this is what will be called when the app opens again  
 @Override  
 protected void onResume() {  
 super.onResume();  
 // Fetching the stored data from the SharedPreference  
 SharedPreferences sh = getSharedPreferences("MySharedPref", *MODE\_PRIVATE*);  
 String s1 = sh.getString("name", "");  
 int a = sh.getInt("age", 0);  
  
 // Setting the fetched data in the EditTexts  
 name.setText(s1);  
 age.setText(String.*valueOf*(a));  
 }  
  
 // Store the data in the SharedPreference in the onPause() method  
 // When the user closes the application onPause() will be called and data will be stored  
 @Override  
 protected void onPause() {  
 super.onPause();  
 // Creating a shared pref object with a file name "MySharedPref" in private mode  
 SharedPreferences sharedPreferences = getSharedPreferences("MySharedPref", *MODE\_PRIVATE*);  
 SharedPreferences.Editor myEdit = sharedPreferences.edit();  
  
 // write all the data entered by the user in SharedPreference and apply  
 myEdit.putString("name", name.getText().toString());  
 myEdit.putInt("age", Integer.*parseInt*(age.getText().toString()));  
 myEdit.apply();  
 }  
}

10. Write an Android project to store data in SQLite database.

**Main.xml**

<!-- res/layout/activity\_main.xml -->  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 android:padding="16dp">  
  
 <EditText  
 android:id="@+id/nameEditText"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Name" />  
  
 <EditText  
 android:id="@+id/emailEditText"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Email" />  
  
 <Button  
 android:id="@+id/insertButton"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Insert" />  
  
 <Button  
 android:id="@+id/fetchButton"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Fetch" />  
  
 <TextView  
 android:id="@+id/resultTextView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="" />  
  
</LinearLayout>

**Main.java**

package com.example.sqlitedemo;  
  
import android.database.Cursor;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.TextView;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
  
 private DatabaseManager dbManager;  
 private EditText nameEditText;  
 private EditText emailEditText;  
 private TextView resultTextView;  
 private Button insertButton;  
 private Button fetchButton;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 dbManager = new DatabaseManager(this);  
 dbManager.open();  
  
 nameEditText = findViewById(R.id.*nameEditText*);  
 emailEditText = findViewById(R.id.*emailEditText*);  
 resultTextView = findViewById(R.id.*resultTextView*);  
 insertButton = findViewById(R.id.*insertButton*);  
 fetchButton = findViewById(R.id.*fetchButton*);  
  
 insertButton.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 String name = nameEditText.getText().toString();  
 String email = emailEditText.getText().toString();  
 dbManager.insert(name, email);  
 }  
 });  
  
 fetchButton.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Cursor cursor = dbManager.fetch();  
 if (cursor.moveToFirst()) {  
 StringBuilder result = new StringBuilder();  
 do {  
 result.append("ID: ").append(cursor.getInt(0)).append(", ")  
 .append("Name: ").append(cursor.getString(1)).append(", ")  
 .append("Email: ").append(cursor.getString(2)).append("\n");  
 } while (cursor.moveToNext());  
 resultTextView.setText(result.toString());  
 }  
 }  
 });  
 }  
  
 @Override  
 protected void onDestroy() {  
 super.onDestroy();  
 dbManager.close();  
 }  
}

**DatabaseHelper.java**

package com.example.sqlitedemo;  
  
import android.content.Context;  
import android.database.sqlite.SQLiteDatabase;  
import android.database.sqlite.SQLiteOpenHelper;  
  
public class DatabaseHelper extends SQLiteOpenHelper {  
  
 private static final String *DATABASE\_NAME* = "example.db";  
 private static final int *DATABASE\_VERSION* = 1;  
  
 public static final String *TABLE\_NAME* = "users";  
 public static final String *COLUMN\_ID* = "\_id";  
 public static final String *COLUMN\_NAME* = "name";  
 public static final String *COLUMN\_EMAIL* = "email";  
  
 private static final String *TABLE\_CREATE* =  
 "CREATE TABLE " + *TABLE\_NAME* + " (" +  
 *COLUMN\_ID* + " INTEGER PRIMARY KEY AUTOINCREMENT, " +  
 *COLUMN\_NAME* + " TEXT, " +  
 *COLUMN\_EMAIL* + " TEXT);";  
  
 public DatabaseHelper(Context context) {  
 super(context, *DATABASE\_NAME*, null, *DATABASE\_VERSION*);  
 }  
  
 @Override  
 public void onCreate(SQLiteDatabase db) {  
 db.execSQL(*TABLE\_CREATE*);  
 }  
  
 @Override  
 public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {  
 db.execSQL("DROP TABLE IF EXISTS " + *TABLE\_NAME*);  
 onCreate(db);  
 }  
}

**DatabaseManager.java**

package com.example.sqlitedemo;  
  
import android.content.ContentValues;  
import android.content.Context;  
import android.database.Cursor;  
import android.database.SQLException;  
import android.database.sqlite.SQLiteDatabase;  
  
public class DatabaseManager {  
 private DatabaseHelper dbHelper;  
 private Context context;  
 private SQLiteDatabase database;  
  
 public DatabaseManager(Context context) {  
 this.context = context;  
 }  
  
 public DatabaseManager open() throws SQLException {  
 dbHelper = new DatabaseHelper(context);  
 database = dbHelper.getWritableDatabase();  
 return this;  
 }  
  
 public void close() {  
 dbHelper.close();  
 }  
  
 public void insert(String name, String email) {  
 ContentValues contentValue = new ContentValues();  
 contentValue.put(DatabaseHelper.*COLUMN\_NAME*, name);  
 contentValue.put(DatabaseHelper.*COLUMN\_EMAIL*, email);  
 database.insert(DatabaseHelper.*TABLE\_NAME*, null, contentValue);  
 }  
  
 public Cursor fetch() {  
 String[] columns = new String[] {  
 DatabaseHelper.*COLUMN\_ID*,  
 DatabaseHelper.*COLUMN\_NAME*,  
 DatabaseHelper.*COLUMN\_EMAIL* };  
 Cursor cursor = database.query(DatabaseHelper.*TABLE\_NAME*, columns, null, null, null, null, null);  
 if (cursor != null) {  
 cursor.moveToFirst();  
 }  
 return cursor;  
 }  
  
 public int update(long \_id, String name, String email) {  
 ContentValues contentValues = new ContentValues();  
 contentValues.put(DatabaseHelper.*COLUMN\_NAME*, name);  
 contentValues.put(DatabaseHelper.*COLUMN\_EMAIL*, email);  
 return database.update(DatabaseHelper.*TABLE\_NAME*, contentValues, DatabaseHelper.*COLUMN\_ID* + " = " + \_id, null);  
 }  
  
 public void delete(long \_id) {  
 database.delete(DatabaseHelper.*TABLE\_NAME*, DatabaseHelper.*COLUMN\_ID* + "=" + \_id, null);  
 }  
}

11. Write an Android project to create 3 activities (registration, login, profile)using explicit Intent and back navigation using back arrows.

Color.xml

<?xml version="1.0" encoding="utf-8"?>  
<resources>  
 <color name="black">#FF000000</color>  
 <color name="white">#FFFFFFFF</color>  
  
 <color name="colorPrimary">#6200EE</color>  
 <color name="colorPrimaryDark">#3700B3</color>  
 <color name="colorAccent">#03DAC5</color>  
  
  
</resources>

Style.xml

<?xml version="1.0" encoding="utf-8"?>  
<resources>  
 <style name="AppTheme" parent="Theme.AppCompat.Light.DarkActionBar">  
 <!-- Customize your theme here. -->  
 <item name="colorPrimary">@color/colorPrimary</item>  
 <item name="colorPrimaryDark">@color/colorPrimaryDark</item>  
 <item name="colorAccent">@color/colorAccent</item>  
  
  
 </style>  
  
</resources>

Main.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:orientation="vertical" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:gravity="center">  
  
 <Button  
 android:id="@+id/buttonRegister"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Go to Registration" />  
  
 <Button  
 android:id="@+id/buttonLogin"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Go to Login" />  
</LinearLayout>

Registration.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:orientation="vertical" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:padding="16dp">  
  
 <EditText  
 android:id="@+id/editTextUsername"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Username" />  
  
 <EditText  
 android:id="@+id/editTextPassword"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Password"  
 android:inputType="textPassword" />  
  
 <Button  
 android:id="@+id/buttonRegister"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Register" />  
</LinearLayout>

Login.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:orientation="vertical" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:padding="16dp">  
  
 <EditText  
 android:id="@+id/editTextUsername"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Username" />  
  
 <EditText  
 android:id="@+id/editTextPassword"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Password"  
 android:inputType="textPassword" />  
  
 <Button  
 android:id="@+id/buttonLogin"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Login" />  
</LinearLayout>

Profile.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:orientation="vertical" android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:padding="16dp"  
 android:gravity="center">  
  
 <TextView  
 android:id="@+id/textViewProfile"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Welcome to your Profile"  
 android:textSize="18sp" />  
</LinearLayout>

Main.java

package com.example.madl11;  
  
import android.content.Intent;  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
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 buttonRegister = findViewById(R.id.*buttonRegister*);  
 Button buttonLogin = findViewById(R.id.*buttonLogin*);  
  
 buttonRegister.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this, RegistrationActivity.class);  
 startActivity(intent);  
 }  
 });  
  
 buttonLogin.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this, LoginActivity.class);  
 startActivity(intent);  
 }  
 });  
 }  
}

registration.java

package com.example.madl11;  
  
import android.content.Intent;  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
import android.view.MenuItem;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
  
import java.util.Objects;  
  
public class RegistrationActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_registration*);  
 Objects.*requireNonNull*(getSupportActionBar()).setDisplayHomeAsUpEnabled(true);  
  
 Button buttonRegister = findViewById(R.id.*buttonRegister*);  
 buttonRegister.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 // Handle registration logic  
 Intent intent = new Intent(RegistrationActivity.this, ProfileActivity.class);  
 startActivity(intent);  
 }  
 });  
 }  
  
 @Override  
 public boolean onOptionsItemSelected(MenuItem item) {  
 if (item.getItemId() == android.R.id.*home*) {  
 onBackPressed();  
 return true;  
 }  
 return super.onOptionsItemSelected(item);  
 }  
}

login.java

package com.example.madl11;  
  
  
import android.content.Intent;  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
import android.view.MenuItem;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
  
import java.util.Objects;  
  
public class LoginActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_login*);  
 Objects.*requireNonNull*(getSupportActionBar()).setDisplayHomeAsUpEnabled(true);  
  
 Button buttonLogin = findViewById(R.id.*buttonLogin*);  
 buttonLogin.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 // Handle login logic  
 Intent intent = new Intent(LoginActivity.this, ProfileActivity.class);  
 startActivity(intent);  
 }  
 });  
 }  
  
 @Override  
 public boolean onOptionsItemSelected(MenuItem item) {  
 if (item.getItemId() == android.R.id.*home*) {  
 onBackPressed();  
 return true;  
 }  
 return super.onOptionsItemSelected(item);  
 }  
}

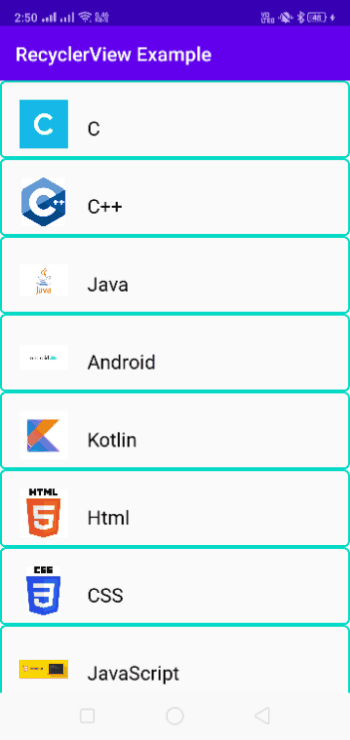
profile.java

package com.example.madl11;  
  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
import android.view.MenuItem;  
  
import java.util.Objects;  
  
public class ProfileActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_profile*);  
 Objects.*requireNonNull*(getSupportActionBar()).setDisplayHomeAsUpEnabled(true);  
 }  
  
 @Override  
 public boolean onOptionsItemSelected(MenuItem item) {  
 if (item.getItemId() == android.R.id.*home*) {  
 onBackPressed();  
 return true;  
 }  
 return super.onOptionsItemSelected(item);  
 }  
}

manifest

android:theme="@style/AppTheme"

12. Implement an Android project. Use Recyclerview like below



<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <androidx.recyclerview.widget.RecyclerView  
 android:id="@+id/recyclerView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:padding="16dp" />  
  
</RelativeLayout>

Main.java

package com.example.madl12;  
  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.recyclerview.widget.LinearLayoutManager;  
import androidx.recyclerview.widget.RecyclerView;  
import java.util.ArrayList;  
import java.util.List;  
  
public class MainActivity extends AppCompatActivity {  
  
 private RecyclerView recyclerView;  
 private MyAdapter adapter;  
 private List<Item> itemList;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 recyclerView = findViewById(R.id.*recyclerView*);  
 recyclerView.setLayoutManager(new LinearLayoutManager(this));  
  
 itemList = new ArrayList<>();  
 itemList.add(new Item("C", R.drawable.*cut*));  
 itemList.add(new Item("C++", R.drawable.*copy*));  
 itemList.add(new Item("Java", R.drawable.*delete*));  
 itemList.add(new Item("Android", R.drawable.*close*));  
 itemList.add(new Item("Kotlin", R.drawable.*edit*));  
 itemList.add(new Item("Html", R.drawable.*home*));  
 itemList.add(new Item("CSS", R.drawable.*refresh*));  
 itemList.add(new Item("JavaScript", R.drawable.*send*));  
 itemList.add(new Item("Kotlin", R.drawable.*edit*));  
 itemList.add(new Item("Html", R.drawable.*home*));  
 itemList.add(new Item("CSS", R.drawable.*refresh*));  
 itemList.add(new Item("JavaScript", R.drawable.*send*));  
 itemList.add(new Item("JavaScript", R.drawable.*send*));  
 itemList.add(new Item("Kotlin", R.drawable.*edit*));  
 itemList.add(new Item("Html", R.drawable.*home*));  
 itemList.add(new Item("CSS", R.drawable.*refresh*));  
 itemList.add(new Item("JavaScript", R.drawable.*send*));  
  
 adapter = new MyAdapter(itemList);  
 recyclerView.setAdapter(adapter);  
 }  
}

MyAdapter.java(java/MyAdapter.java)

package com.example.madl12;  
  
import android.view.LayoutInflater;  
import android.view.View;  
import android.view.ViewGroup;  
import android.widget.ImageView;  
import android.widget.TextView;  
import androidx.annotation.NonNull;  
import androidx.recyclerview.widget.RecyclerView;  
import java.util.List;  
  
public class MyAdapter extends RecyclerView.Adapter<MyAdapter.ViewHolder> {  
  
 private List<Item> itemList;  
  
 public MyAdapter(List<Item> itemList) {  
 this.itemList = itemList;  
 }  
  
 @NonNull  
 @Override  
 public ViewHolder onCreateViewHolder(@NonNull ViewGroup parent, int viewType) {  
 View view = LayoutInflater.*from*(parent.getContext()).inflate(R.layout.*item\_layout*, parent, false);  
 return new ViewHolder(view);  
 }  
  
 @Override  
 public void onBindViewHolder(@NonNull ViewHolder holder, int position) {  
 Item item = itemList.get(position);  
 holder.textView.setText(item.getText());  
 holder.imageView.setImageResource(item.getImageResId());  
 }  
  
 @Override  
 public int getItemCount() {  
 return itemList.size();  
 }  
  
 public static class ViewHolder extends RecyclerView.ViewHolder {  
 public TextView textView;  
 public ImageView imageView;  
  
 public ViewHolder(View itemView) {  
 super(itemView);  
 textView = itemView.findViewById(R.id.*textView*);  
 imageView = itemView.findViewById(R.id.*imageView*);  
 }  
 }  
}

Item.java

package com.example.madl12;  
  
public class Item {  
 private String text;  
 private int imageResId;  
  
 public Item(String text, int imageResId) {  
 this.text = text;  
 this.imageResId = imageResId;  
 }  
  
 public String getText() {  
 return text;  
 }  
  
 public int getImageResId() {  
 return imageResId;  
 }  
}

item\_layout.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal"  
 android:padding="8dp"  
 android:background="@drawable/item\_background">  
  
 <ImageView  
 android:id="@+id/imageView"  
 android:layout\_width="50dp"  
 android:layout\_height="50dp"  
 android:layout\_marginEnd="16dp"  
 android:contentDescription="@string/app\_name" />  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:textSize="18sp" />  
  
</LinearLayout>

13. Implement an Android project to play audio and video using AsyncTask

Main.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 tools:context=".MainActivity">  
  
 <Button  
 android:id="@+id/playAudioButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Play Audio" />  
  
 <Button  
 android:id="@+id/playVideoButton"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Play Video" />  
  
 <VideoView  
 android:id="@+id/videoView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:visibility="gone"/>  
</LinearLayout>

Main.java

package com.example.ascyncaudiovedio;  
  
import android.media.MediaPlayer;  
import android.os.AsyncTask;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.VideoView;  
import android.widget.MediaController;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
  
 private static final String *AUDIO\_URL* = "https://samplelib.com/lib/preview/mp3/sample-12s.mp3";  
 private static final String *VIDEO\_URL* = "https://sample-videos.com/video321/mp4/480/big\_buck\_bunny\_480p\_5mb.mp4";  
  
 private Button playAudioButton;  
 private Button playVideoButton;  
 private VideoView videoView;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 playAudioButton = findViewById(R.id.*playAudioButton*);  
 playVideoButton = findViewById(R.id.*playVideoButton*);  
 videoView = findViewById(R.id.*videoView*);  
  
 playAudioButton.setOnClickListener(v -> new PlayAudioTask().execute(*AUDIO\_URL*));  
  
 playVideoButton.setOnClickListener(v -> {  
 videoView.setVisibility(View.*VISIBLE*);  
 new PlayVideoTask(videoView).execute(*VIDEO\_URL*);  
 });  
 }  
  
 private static class PlayAudioTask extends AsyncTask<String, Void, Void> {  
 private MediaPlayer mediaPlayer;  
  
 @Override  
 protected Void doInBackground(String... params) {  
 String audioUrl = params[0];  
 mediaPlayer = new MediaPlayer();  
 try {  
 mediaPlayer.setDataSource(audioUrl);  
 mediaPlayer.prepare();  
 mediaPlayer.start();  
 } catch (Exception e) {  
 e.printStackTrace();  
 }  
 return null;  
 }  
  
 @Override  
 protected void onPostExecute(Void aVoid) {  
 super.onPostExecute(aVoid);  
 if (mediaPlayer != null) {  
 mediaPlayer.setOnCompletionListener(mp -> mp.release());  
 }  
 }  
 }  
  
 private static class PlayVideoTask extends AsyncTask<String, Void, Void> {  
 private VideoView videoView;  
  
 public PlayVideoTask(VideoView videoView) {  
 this.videoView = videoView;  
 }  
  
 @Override  
 protected Void doInBackground(String... params) {  
 String videoUrl = params[0];  
 videoView.setVideoPath(videoUrl);  
 return null;  
 }  
  
 @Override  
 protected void onPostExecute(Void aVoid) {  
 super.onPostExecute(aVoid);  
 MediaController mediaController = new MediaController(videoView.getContext());  
 mediaController.setAnchorView(videoView);  
 videoView.setMediaController(mediaController);  
 videoView.start();  
 }  
 }  
}

<uses-permission android:name="android.permission.INTERNET"/>  
<uses-permission android:name="android.permission.READ\_EXTERNAL\_STORAGE"/>  
<uses-permission android:name="android.permission.WRITE\_EXTERNAL\_STORAGE"/>

14. Implement an Android project to connect with firebase database to store the data.

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_gravity="center"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/registration"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="108dp"  
 android:layout\_marginEnd="144dp"  
 android:text="Registration"  
 android:textSize="32sp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 <EditText  
 android:id="@+id/fname"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="64dp"  
 android:layout\_marginEnd="92dp"  
 android:ems="10"  
 android:hint="first name"  
 android:inputType="text"  
 android:textSize="24sp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/registration" />  
  
 <EditText  
 android:id="@+id/lname"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="60dp"  
 android:layout\_marginEnd="92dp"  
 android:ems="10"  
 android:hint="Last name"  
 android:inputType="text"  
 android:textSize="24sp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/fname" />  
 <EditText  
 android:id="@+id/age"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="60dp"  
 android:layout\_marginEnd="92dp"  
 android:ems="10"  
 android:hint="Age"  
 android:inputType="text"  
 android:textSize="24sp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/lname" />  
  
 <EditText  
 android:id="@+id/Username"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="60dp"  
 android:layout\_marginEnd="92dp"  
 android:ems="10"  
 android:hint="Username"  
 android:inputType="text"  
 android:textSize="24sp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/age" />  
  
 <Button  
 android:id="@+id/save"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="60dp"  
 android:layout\_marginEnd="92dp"  
 android:ems="10"  
 android:hint="Save"  
 android:textSize="24sp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/Username" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

Main.java

package com.example.madl14;  
  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Toast;  
  
import androidx.activity.EdgeToEdge;  
import androidx.annotation.NonNull;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
import com.example.madl14.databinding.ActivityMainBinding;  
import com.google.android.gms.tasks.OnCompleteListener;  
import com.google.android.gms.tasks.Task;  
import com.google.firebase.database.DatabaseReference;  
import com.google.firebase.database.FirebaseDatabase;  
  
public class MainActivity extends AppCompatActivity {  
  
 ActivityMainBinding binding;  
 String fname,lname,username;  
 String age;  
 FirebaseDatabase db;  
 DatabaseReference reference;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
// EdgeToEdge.enable(this);  
// setContentView(R.layout.activity\_main);  
  
 binding = ActivityMainBinding.*inflate*(getLayoutInflater());  
 setContentView(binding.getRoot());  
  
 binding.save.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 fname=binding.fname.getText().toString();  
 lname=binding.lname.getText().toString();  
 age = binding.age.getText().toString();  
 username=binding.Username.getText().toString();  
  
 if(!fname.isEmpty() && !lname.isEmpty() && !age.isEmpty() && !username.isEmpty()){  
 Users user =new Users(fname,lname,age,username);  
 db =FirebaseDatabase.*getInstance*();  
 reference=db.getReference("User");  
 reference.child(username).setValue(user).addOnCompleteListener(new OnCompleteListener<Void>() {  
 @Override  
 public void onComplete(@NonNull Task<Void> task) {  
 binding.fname.setText("");  
 binding.lname.setText("");  
 binding.age.setText("");  
 binding.Username.setText("");  
 Toast.*makeText*(MainActivity.this, "Successfully Saved", Toast.*LENGTH\_SHORT*).show();  
 }  
 });  
  
 }  
 }  
 });  
  
 }  
}

users.java

package com.example.madl14;  
  
public class Users {  
 String fname,lname,usernane;  
 String age;  
  
 public Users() {  
 }  
  
 public Users(String fname, String lname, String usernane, String age) {  
 this.fname = fname;  
 this.lname = lname;  
 this.usernane = usernane;  
 this.age = age;  
 }  
  
 public String getFname() {  
 return fname;  
 }  
  
 public void setFname(String fname) {  
 this.fname = fname;  
 }  
  
 public String getLname() {  
 return lname;  
 }  
  
 public void setLname(String lname) {  
 this.lname = lname;  
 }  
  
 public String getUsernane() {  
 return usernane;  
 }  
  
 public void setUsernane(String usernane) {  
 this.usernane = usernane;  
 }  
  
 public String getAge() {  
 return age;  
 }  
  
 public void setAge(String age) {  
 this.age = age;  
 }  
}

15. Write an Android project to create app bar and create option menus and popup menu.

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:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:id="@+id/button"  
 android:text="Click"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintLeft\_toLeftOf="parent"  
 app:layout\_constraintRight\_toRightOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

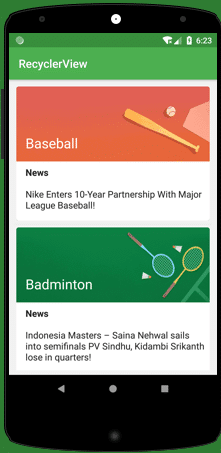
Main.java

package com.example.mad15;  
import androidx.appcompat.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.MenuItem;  
import android.view.View;  
import android.widget.Button;  
import android.widget.PopupMenu;  
import android.widget.Toast;  
  
public class MainActivity extends AppCompatActivity {  
 Button button;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 button = (Button) findViewById(R.id.*button*);  
 button.setOnClickListener(new View.OnClickListener() {  
  
 @Override  
 public void onClick(View v) {  
 //Creating the instance of PopupMenu  
 PopupMenu popup = new PopupMenu(MainActivity.this, button);  
 //Inflating the Popup using xml file  
 popup.getMenuInflater().inflate(R.menu.*popup\_menu*, popup.getMenu());  
  
 //registering popup with OnMenuItemClickListener  
 popup.setOnMenuItemClickListener(new PopupMenu.OnMenuItemClickListener() {  
 public boolean onMenuItemClick(MenuItem item) {  
 Toast.*makeText*(MainActivity.this,"You Clicked : " + item.getTitle(), Toast.*LENGTH\_SHORT*).show();  
 return true;  
 }  
 });  
  
 popup.show();//showing popup menu  
 }  
 });//closing the setOnClickListener method  
}  
}

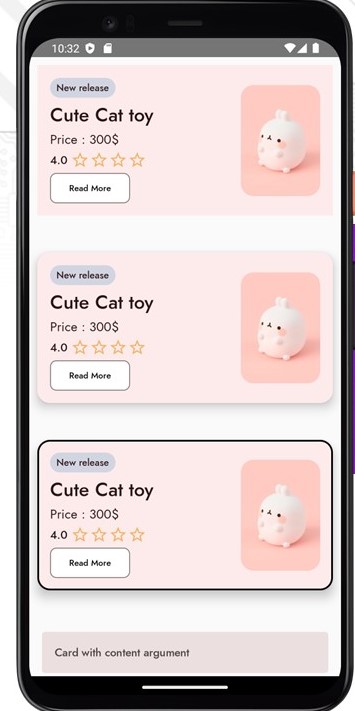
popup\_menu.xml(res/Menu/popup\_menu)

<?xml version="1.0" encoding="utf-8"?>  
<menu xmlns:android="http://schemas.android.com/apk/res/android">  
 <item  
 android:id="@+id/one"  
 android:title="One" />  
 <item  
 android:id="@+id/two"  
 android:title="Two"/>  
 <item  
 android:id="@+id/three"  
 android:title="Three"/>  
</menu>

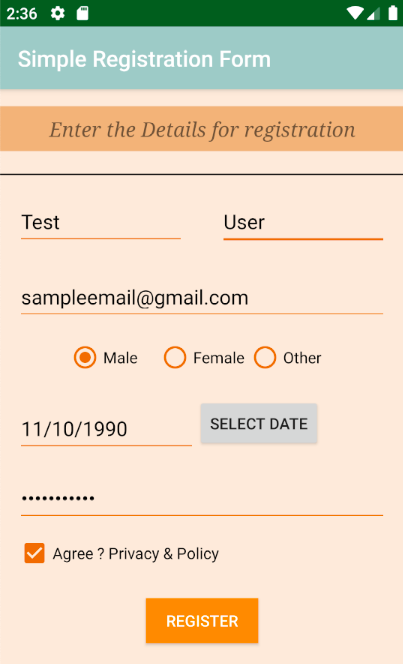
16. Implement an Android project. Use Recyclerview like below.



17. Implement an Android project. Use Recyclerview like below.



18. Implement an android project for registration form use even handling for display data of registration form



<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout 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:orientation="vertical"  
 android:padding="16dp"  
 tools:context=".MainActivity">  
  
 <EditText  
 android:id="@+id/et\_name"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Name" />  
  
 <EditText  
 android:id="@+id/et\_username"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Username" />  
  
 <EditText  
 android:id="@+id/et\_email"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Email" />  
  
 <RadioGroup  
 android:id="@+id/rg\_gender"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:orientation="horizontal">  
  
 <RadioButton  
 android:id="@+id/rb\_male"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Male" />  
  
 <RadioButton  
 android:id="@+id/rb\_female"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Female" />  
  
 <RadioButton  
 android:id="@+id/rb\_other"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Other" />  
  
 </RadioGroup>  
  
 <EditText  
 android:id="@+id/et\_dob"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Date of Birth (DD/MM/YYYY)"  
 android:inputType="date" />  
  
 <Button  
 android:id="@+id/btn\_register"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center\_horizontal"  
 android:text="Register" />  
  
 <TextView  
 android:id="@+id/tv\_register\_result"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center\_horizontal"  
 android:layout\_marginTop="16dp"  
 android:text="" />  
  
</LinearLayout>

package com.example.mdl18;  
  
import androidx.appcompat.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.RadioButton;  
import android.widget.RadioGroup;  
import android.widget.TextView;  
  
public class MainActivity extends AppCompatActivity {  
 private EditText etName;  
 private EditText etUsername;  
 private EditText etEmail;  
 private RadioGroup rgGender;  
 private EditText etDob;  
 private Button btnRegister;  
 private TextView tvRegisterResult;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 etName = findViewById(R.id.*et\_name*);  
 etUsername = findViewById(R.id.*et\_username*);  
 etEmail = findViewById(R.id.*et\_email*);  
 rgGender = findViewById(R.id.*rg\_gender*);  
 etDob = findViewById(R.id.*et\_dob*);  
 btnRegister = findViewById(R.id.*btn\_register*);  
 tvRegisterResult = findViewById(R.id.*tv\_register\_result*);  
  
 btnRegister.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 String name = etName.getText().toString();  
 String username = etUsername.getText().toString();  
 String email = etEmail.getText().toString();  
  
 String gender = "";  
 int checkedRadioButtonId = rgGender.getCheckedRadioButtonId();  
 if (checkedRadioButtonId == R.id.*rb\_male*) {  
 gender = "Male";  
 } else if (checkedRadioButtonId == R.id.*rb\_female*) {  
 gender = "Female";  
 } else if (checkedRadioButtonId == R.id.*rb\_other*) {  
 gender = "Other";  
 }  
  
 String dob = etDob.getText().toString();  
  
 // Perform registration logic here  
 // For example, you can use the following code to display the input data:  
 tvRegisterResult.setText("Name: " + name + "\nUsername: " + username + "\nEmail: " + email + "\nGender: " + gender + "\nDate of Birth: " + dob);  
 }  
 });  
 }  
}