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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.

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**Rules:**

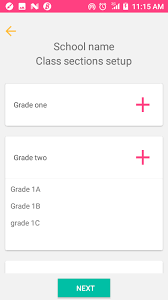
1. Usage of string.xml is mandatory

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



MainActivity.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*);

}

}

});

}

}

activity\_main.xml

<?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.

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical">  
  
 <Button  
 android:id="@+id/buttonToSecondActivity"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Go to Second Activity" />  
  
 <Button  
 android:id="@+id/buttonOpenCamera"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Open Camera" />  
  
 </LinearLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

activity\_second.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"  
 tools:context=".SecondActivity">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical">  
  
 <Button  
 android:id="@+id/buttonToThirdActivity"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Go to Third Activity" />  
  
 </LinearLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

activity\_third.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"  
 tools:context=".ThirdActivity">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical">  
  
 <TextView  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="This is the Third Activity"  
 android:textSize="18sp"  
 android:gravity="center" />  
  
 </LinearLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java

package com.example.opencamera;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.provider.MediaStore;  
import android.view.View;  
import android.widget.Button;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class MainActivity extends AppCompatActivity {  
  
 private Button buttonToSecondActivity;  
 private Button buttonOpenCamera;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_main*);  
  
 buttonToSecondActivity = findViewById(R.id.*buttonToSecondActivity*);  
 buttonOpenCamera = findViewById(R.id.*buttonOpenCamera*);  
  
 buttonToSecondActivity.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this, SecondActivity.class);  
 startActivity(intent);  
 }  
 });  
  
 buttonOpenCamera.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent cameraIntent = new Intent(MediaStore.*ACTION\_IMAGE\_CAPTURE*);  
 if (cameraIntent.resolveActivity(getPackageManager()) != null) {  
 startActivity(cameraIntent);  
 }  
 }  
 });  
  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

SecondActivity.java

package com.example.opencamera;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class SecondActivity extends AppCompatActivity {  
  
 private Button buttonToThirdActivity;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_second*);  
  
 buttonToThirdActivity = findViewById(R.id.*buttonToThirdActivity*);  
  
 buttonToThirdActivity.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(SecondActivity.this, ThirdActivity.class);  
 startActivity(intent);  
 }  
 });  
  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

ThirdActivity.java

package com.example.opencamera;  
  
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;  
  
public class ThirdActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_third*);  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

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

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical">  
  
 <Button  
 android:id="@+id/btnDial"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_margin="30dp"  
 android:text="Dial" />  
  
 <Button  
 android:id="@+id/btnShare"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:text="JavaPoint" />  
  
 <Button  
 android:id="@+id/btnSecondActivity"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_margin="30dp"  
 android:text="Go To Second Activity" />  
  
 </LinearLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

activity\_second.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=".SecondActivity">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:gravity="left"  
 android:orientation="vertical">  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="211dp"  
 android:gravity="center"  
 android:text="This is Second Activity"  
 android:textColor="#E91E63"  
 android:textSize="24sp" />  
 </LinearLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java

package com.example.javapoint;  
  
import android.content.Intent;  
import android.net.Uri;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class MainActivity extends AppCompatActivity {  
  
 Button btnDial,btnShare,btnSecondActivity;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.enable(this);  
 setContentView(R.layout.activity\_main);  
  
 btnDial = findViewById(R.id.*btnDial*);  
 btnShare = findViewById(R.id.*btnShare*);  
 btnSecondActivity = findViewById(R.id.*btnSecondActivity*);  
  
 btnDial.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent iDial = new Intent(Intent.*ACTION\_DIAL*);  
 iDial.setData(Uri.*parse*("tel: +919552993363"));  
 startActivity(iDial);  
 }  
 });  
  
 btnShare.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent iShare = new Intent(Intent.*ACTION\_SEND*);  
 iShare.setType("text/plain");  
 iShare.putExtra(Intent.*EXTRA\_TEXT*,"Download this:, https://www.javatpoint.com/");  
 startActivity(Intent.*createChooser*(iShare,"Share Via"));  
 }  
 });  
  
 btnSecondActivity.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this, SecondActivity.class);  
 startActivity(intent);  
 }  
 });  
  
 ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

SecondActivity.java

package com.example.javapoint;  
  
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;  
  
public class SecondActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_second*);  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

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

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

activity\_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"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 android:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 //Write AppBa  
 <com.google.android.material.appbar.AppBarLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:background="#087773">  
  
 //Write Too  
 <androidx.appcompat.widget.Toolbar  
 android:id="@+id/toolbar"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content">  
 </androidx.appcompat.widget.Toolbar>  
  
 </com.google.android.material.appbar.AppBarLayout>  
  
 </LinearLayout>

MainActivity.java

package com.example.appbar;  
import android.os.Bundle;  
import android.view.Menu;  
import android.view.MenuInflater;  
import android.view.MenuItem;  
import android.widget.Toast;  
  
import androidx.activity.EdgeToEdge;  
import androidx.annotation.NonNull;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.appcompat.widget.Toolbar;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
public class MainActivity extends AppCompatActivity {  
 Toolbar toolbar;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_main*);  
  
 toolbar = findViewById(R.id.*toolbar*);  
  
 //step1  
 setSupportActionBar(toolbar);  
  
 //step2 Customization  
 if(getSupportActionBar()!=null) {  
 getSupportActionBar().setDisplayHomeAsUpEnabled(true);  
 getSupportActionBar().setTitle("My Toolbar");  
 }  
  
 toolbar.setSubtitle("Sub Title");  
  
  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
  
 @Override  
 public boolean onCreateOptionsMenu(Menu menu) {  
 new MenuInflater(this).inflate(R.menu.*opt\_menu*,menu);  
 return super.onCreateOptionsMenu(menu);  
 }  
  
 @Override  
 public boolean onOptionsItemSelected(@NonNull MenuItem item) {  
 int itemId = item.getItemId();  
 if(itemId==R.id.*opt\_new*){  
 Toast.*makeText*(this, "Created New File", Toast.*LENGTH\_SHORT*).show();  
 }  
 else if (itemId==R.id.*opt\_open*) {  
 Toast.*makeText*(this, "File Opened", Toast.*LENGTH\_SHORT*).show();  
 }  
 else if (itemId==android.R.id.*home*) {  
 super.onBackPressed();  
 }  
 else{  
 Toast.*makeText*(this, "File Saved", Toast.*LENGTH\_SHORT*).show();  
 }  
  
 return super.onOptionsItemSelected(item);  
 }  
}

opt\_menu.xml

<?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">  
  
 <item android:id="@+id/opt\_new"  
 android:icon="@drawable/baseline\_create\_new\_folder\_24"  
 android:title="New"  
 app:showAsAction="ifRoom"/>  
  
 <item android:id="@+id/opt\_open"  
 android:icon="@drawable/baseline\_add\_24"  
 android:title="Open"  
 app:showAsAction="ifRoom"/>  
  
 <item android:id="@+id/opt\_save"  
 android:icon="@drawable/baseline\_add\_task\_24"  
 android:title="Save"  
 app:showAsAction="collapseActionView"/>  
  
</menu>

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

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
  
 android:theme="@style/MyButtonBold"  
  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/textView"  
 style="@style/MyButtonBold"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Hello World!"  
 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="0.317" />  
  
 <Button  
 android:id="@+id/button"  
 style="@style/MyButtonBold"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Play"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.496"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.463" />  
  
 <Button  
 style="@style/MyButtonBold2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Play2"  
 app:layout\_constraintBottom\_toTopOf="@+id/button2"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/button"  
 app:layout\_constraintVertical\_bias="0.625" />  
  
 <Button  
 android:id="@+id/button2"  
 style="@style/MyButtonBold3"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Play3"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/button" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java

package com.example.colortheme;  
  
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;  
  
public class MainActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_main*);  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

themes.xml

<resources xmlns:tools="http://schemas.android.com/tools">  
 <!-- Base application theme. -->  
 <style name="Base.Theme.ColorTheme" parent="Theme.Material3.DayNight.NoActionBar">  
 <!-- Customize your light theme here. -->  
 <!-- <item name="colorPrimary">@color/my\_light\_primary</item> -->  
 </style>  
  
 <style name="MyButtonBold">  
 <item name="android:textSize">34sp</item>  
 <item name="android:textStyle">bold</item>  
 <item name="android:textColor">#FF6D00</item>  
 </style>  
  
 <style name="MyButtonBold2">  
 <item name="android:textSize">25sp</item>  
 <item name="android:textStyle">bold</item>  
 <item name="android:textColor">#FF757BDD</item>  
 </style>  
  
 <style name="MyButtonBold3">  
 <item name="android:textSize">42sp</item>  
 <item name="android:textStyle">bold</item>  
 <item name="android:textColor">#FFFFEB3B</item>  
 </style>  
  
 <style name="Theme.ColorTheme" parent="Base.Theme.ColorTheme" />  
</resources>

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

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

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <androidx.constraintlayout.widget.ConstraintLayout  
 android:id="@+id/linearLayout"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:layout\_editor\_absoluteX="0dp"  
 tools:layout\_editor\_absoluteY="0dp">  
  
  
 <!-- Button to start the music playback -->  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_centerHorizontal="true"  
 android:text="Press the button to play music"  
 android:textColor="#056C62"  
 android:textSize="24sp"  
 android:textStyle="bold"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.389" />  
  
 <Button  
 android:id="@+id/buttonPlayMusic"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/textView"  
 android:layout\_centerHorizontal="true"  
 android:backgroundTint="#009688"  
 android:text="Play Music"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
 </androidx.constraintlayout.widget.ConstraintLayout>  
  
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java

package com.example.asyncmusic;  
  
import android.media.MediaPlayer;  
import android.os.AsyncTask;  
import android.os.Bundle;  
import android.widget.Button;  
import android.widget.TextView;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
 private TextView textView;  
 private Button buttonPlayMusic;  
 private MediaPlayer mediaPlayer;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 textView = findViewById(R.id.*textView*);  
 buttonPlayMusic = findViewById(R.id.*buttonPlayMusic*);  
  
 // Set button click listener to start the AsyncTask  
 buttonPlayMusic.setOnClickListener(v -> {  
 MyAsyncTask myAsyncTask = new MyAsyncTask();  
 myAsyncTask.execute();  
 });  
 }  
  
  
 private class MyAsyncTask extends AsyncTask<Void, Void, String> {  
 @Override  
 protected void onPreExecute() {  
 // Prepare the MediaPlayer  
 mediaPlayer = MediaPlayer.*create*(MainActivity.this, R.raw.*your\_music\_file*); // replace 'your\_music\_file' with your actual music file in res/raw directory  
 textView.setText("Playing Music...");  
 }  
  
  
  
  
 @Override  
 protected String doInBackground(Void... voids) {  
 // Play music in background  
 if (mediaPlayer != null) {  
 mediaPlayer.start();  
 while (mediaPlayer.isPlaying()) {  
 // Keep the AsyncTask running until the music stops  
 }  
 }  
 return "Music Playback Completed";  
 }  
  
 @Override  
 protected void onPostExecute(String result) {  
 // Update UI after music playback is completed  
 textView.setText(result);  
 // Release the MediaPlayer  
 if (mediaPlayer != null) {  
 mediaPlayer.release();  
 mediaPlayer = null;  
 }  
 }  
 }  
  
 @Override  
 protected void onDestroy() {  
 super.onDestroy();  
 // Release the MediaPlayer if the activity is destroyed to avoid memory leaks  
 if (mediaPlayer != null) {  
 mediaPlayer.release();  
 mediaPlayer = null;  
 }  
 }  
}

AndroidManifest.xml

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

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

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <androidx.constraintlayout.widget.ConstraintLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent">  
  
 <EditText  
 android:id="@+id/edit"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:ems="10"  
 android:inputType="text"  
 android:text="Name"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 <Button  
 android:id="@+id/button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Sent"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/edit"  
 app:layout\_constraintVertical\_bias="0.159" />  
 </androidx.constraintlayout.widget.ConstraintLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

activity\_main2.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"  
 tools:context=".MainActivity2">  
  
 <androidx.constraintlayout.widget.ConstraintLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent">  
  
 <TextView  
 android:id="@+id/txt"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="TextView"  
 android:textColor="#E91E63"  
 android:textSize="24sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
 </androidx.constraintlayout.widget.ConstraintLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java

package com.example.explicitintent;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class MainActivity extends AppCompatActivity {  
  
 Button button;  
 EditText edit;  
  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_main*);  
  
 button = findViewById(R.id.*button*);  
 edit = findViewById(R.id.*edit*);  
  
 button.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 String name = edit.getText().toString();  
 Intent intent = new Intent(MainActivity.this,MainActivity2.class);  
 intent.putExtra("data",name);  
 startActivity(intent);  
 }  
 });  
  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

MainActivity2.java

package com.example.explicitintent;  
  
import android.content.Intent;  
import android.os.Bundle;  
import android.widget.TextView;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class MainActivity2 extends AppCompatActivity {  
  
 TextView txt;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_main2*);  
  
 txt = findViewById(R.id.*txt*);  
 Intent intent = getIntent();  
 String received = intent.getStringExtra("data");  
  
 txt.setText("Hello " + received);  
  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

8. Write an Android project for creating Notification.

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Hello World!"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

Strings.xml

<resources>  
<string name="app\_name">NotificationDemo</string>  
<string name="channel\_name">My Channel</string>  
<string name="channel\_description">This is my notification channel</string>  
<string name="notification\_title">Notification Title</string>  
<string name="notification\_content">Notification Content</string>  
</resources>

MainActivity.java

package com.example.newnotification;  
  
import android.app.Notification;  
import android.app.NotificationChannel;  
import android.app.NotificationManager;  
import android.content.Context;  
import android.os.Build;  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
  
 private static final String *CHANNEL\_ID* = "My\_Channel";  
 private static final int *NOTIFICATION\_ID* = 123;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 createNotificationChannel();  
 sendNotification();  
 }  
  
 private void createNotificationChannel() {  
 if (Build.VERSION.*SDK\_INT* >= Build.VERSION\_CODES.*O*) {  
 CharSequence name = getString(R.string.*channel\_name*);  
 String description = getString(R.string.*channel\_description*);  
 int importance = NotificationManager.*IMPORTANCE\_DEFAULT*;  
 NotificationChannel channel = new NotificationChannel(*CHANNEL\_ID*, name, importance);  
 channel.setDescription(description);  
  
 NotificationManager notificationManager = getSystemService(NotificationManager.class);  
 notificationManager.createNotificationChannel(channel);  
 }  
 }  
  
 private void sendNotification() {  
 NotificationManager notificationManager = (NotificationManager) getSystemService(Context.*NOTIFICATION\_SERVICE*);  
 Notification.Builder builder = null;  
 if (android.os.Build.VERSION.*SDK\_INT* >= android.os.Build.VERSION\_CODES.*O*) {  
 builder = new Notification.Builder(this, *CHANNEL\_ID*)  
 .setSmallIcon(R.drawable.*notification*)  
 .setContentTitle(getString(R.string.*notification\_title*))  
 .setContentText(getString(R.string.*notification\_content*))  
 .setPriority(Notification.*PRIORITY\_DEFAULT*);  
 }  
  
 notificationManager.notify(*NOTIFICATION\_ID*, builder.build());  
 }  
}

AndroidManifest.xml

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

9. Write an Android project to create shared preferences.

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 tools:layout\_editor\_absoluteX="0dp"  
 tools:layout\_editor\_absoluteY="0dp">  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_margin="20dp"  
 android:gravity="center"  
 android:text="Shared Preferences"  
 android:textColor="#E91E63"  
 android:textSize="25dp" />  
  
 <EditText  
 android:id="@+id/editText\_name"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="20dp"  
 android:ems="10"  
 android:hint="Enter Full Name"  
 android:inputType="text" />  
  
 <EditText  
 android:id="@+id/editText\_email"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="20dp"  
 android:ems="10"  
 android:hint="Enter Email ID"  
 android:inputType="text" />  
  
 <Button  
 android:id="@+id/button\_save"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_margin="20dp"  
 android:background="#FF5722"  
 android:text="Save" />  
  
 </LinearLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

Activity\_home.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"  
 tools:context=".HomeActivity">  
  
 <LinearLayout  
 android:id="@+id/button\_logout"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_margin="20dp"  
 android:orientation="vertical"  
 tools:layout\_editor\_absoluteX="20dp"  
 tools:layout\_editor\_absoluteY="20dp">  
  
 <TextView  
 android:id="@+id/textView6"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_margin="20dp"  
 android:gravity="center"  
 android:text="Welcome"  
 android:textColor="#08534C"  
 android:textSize="25dp"  
 android:textStyle="bold" />  
  
 <TextView  
 android:id="@+id/text\_fullname"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_margin="20dp"  
 android:gravity="center"  
 android:text="Full Name"  
 android:textSize="18dp"  
 android:textStyle="bold" />  
  
 <TextView  
 android:id="@+id/text\_email"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_margin="20dp"  
 android:gravity="center"  
 android:text="Email"  
 android:textSize="18dp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/button\_log"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:gravity="center"  
 android:text="Log Out" />  
  
 </LinearLayout>  
  
  
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java

package com.example.sharedpreferences;  
  
import android.content.Intent;  
import android.content.SharedPreferences;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.Toast;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class MainActivity extends AppCompatActivity {  
  
 EditText editText\_name,editText\_email;  
 Button button\_save;  
 SharedPreferences sharedPreferences;  
  
 //So create sharedPreference name and also key name  
 private static final String *SHARED\_PREF\_NAME* = "mypref";  
 private static final String *KEY\_NAME* = "name";  
 private static final String *KEY\_EMAIL* = "email";  
  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_main*);  
  
 editText\_name = findViewById(R.id.*editText\_name*);  
 editText\_email = findViewById(R.id.*editText\_email*);  
 button\_save = findViewById(R.id.*button\_save*);  
  
 sharedPreferences= getSharedPreferences(*SHARED\_PREF\_NAME*,*MODE\_PRIVATE*);  
 //whwn opwn activity first check data available or not  
 String name = sharedPreferences.getString(*KEY\_NAME*,null);  
 if(name!=null){  
 //if data is available so directly call home activity  
 Intent intent = new Intent(MainActivity.this,HomeActivity.class);  
 startActivity(intent);  
 }  
  
 button\_save.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
  
 //when click on a button put data on shared preferences  
 SharedPreferences.Editor editor = sharedPreferences.edit();  
 editor.putString(*KEY\_NAME*,editText\_name.getText().toString());  
 editor.putString(*KEY\_EMAIL*,editText\_email.getText().toString());  
 editor.apply();  
  
 Intent intent = new Intent(MainActivity.this,HomeActivity.class);  
 startActivity(intent);  
 Toast.*makeText*(MainActivity.this, "Login Successfully", Toast.*LENGTH\_SHORT*).show();  
 }  
 });  
  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

HomeActivity.java

package com.example.sharedpreferences;  
  
import android.content.SharedPreferences;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.TextView;  
import android.widget.Toast;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class HomeActivity extends AppCompatActivity {  
  
 TextView text\_fullname,text\_email;  
 Button button\_log;  
  
 SharedPreferences sharedPreferences;  
  
 //So create sharedPreference name and also key name  
 private static final String SHARED\_PREF\_NAME = "mypref";  
 private static final String KEY\_NAME = "name";  
 private static final String KEY\_EMAIL = "email";  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.enable(this);  
 setContentView(R.layout.activity\_home);  
  
 text\_email = findViewById(R.id.text\_email);  
 text\_fullname = findViewById(R.id.text\_fullname);  
 button\_log = findViewById(R.id.button\_log);  
  
 sharedPreferences = getSharedPreferences(SHARED\_PREF\_NAME,MODE\_PRIVATE);  
 String name = sharedPreferences.getString(KEY\_NAME,null);  
 String email = sharedPreferences.getString(KEY\_EMAIL,null);  
  
 if (name!=null || email!=null){  
 text\_fullname.setText("Full name : " + name);  
 text\_email.setText("Email ID : " +email);  
 }  
  
 button\_log.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 SharedPreferences.Editor editor = sharedPreferences.edit();  
 editor.clear();  
 editor.commit();  
 Toast.makeText(HomeActivity.this, "Logout Successfully", Toast.LENGTH\_SHORT).show();  
 finish();  
 }  
 });  
  
 ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

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

activity\_main.xml

<?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:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 tools:context=".MainActivity">  
  
 <EditText  
 android:id="@+id/editTextName"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Name" />  
  
 <EditText  
 android:id="@+id/editTextPhone"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Phone" />  
  
 <Button  
 android:id="@+id/buttonSave"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Save" />  
  
 <Button  
 android:id="@+id/buttonView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="View All Contacts" />  
  
</LinearLayout>

activity\_display.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"  
 tools:context=".DisplayActivity">  
  
 <TextView  
 android:id="@+id/textViewDisplay"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Contacts will be displayed here"  
 android:textSize="18sp" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.java

package com.example.newsql;  
  
import android.content.Intent;  
import android.database.Cursor;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.Toast;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
  
 DBHelper mydb;  
 EditText editTextName, editTextPhone;  
 Button buttonSave, buttonView;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 mydb = new DBHelper(this);  
  
 editTextName = findViewById(R.id.*editTextName*);  
 editTextPhone = findViewById(R.id.*editTextPhone*);  
 buttonSave = findViewById(R.id.*buttonSave*);  
 buttonView = findViewById(R.id.*buttonView*);  
  
 buttonSave.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 String name = editTextName.getText().toString();  
 String phone = editTextPhone.getText().toString();  
 boolean isInserted = mydb.insertContact(name, phone);  
 if (isInserted) {  
 Toast.*makeText*(MainActivity.this, "Contact Inserted", Toast.*LENGTH\_SHORT*).show();  
 } else {  
 Toast.*makeText*(MainActivity.this, "Insertion Failed", Toast.*LENGTH\_SHORT*).show();  
 }  
 }  
 });  
  
 buttonView.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this, DisplayActivity.class);  
 startActivity(intent);  
 }  
 });  
 }  
}

DisplayActivity.java

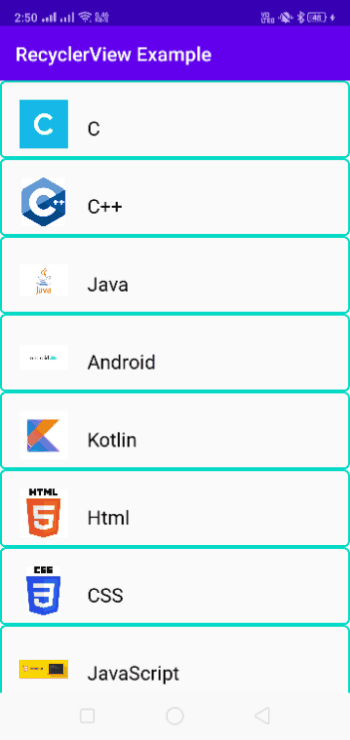
package com.example.newsql;  
  
import android.database.Cursor;  
import android.os.Bundle;  
import android.widget.TextView;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class DisplayActivity extends AppCompatActivity {  
  
 DBHelper mydb;  
 TextView textViewDisplay;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_display*);  
  
 mydb = new DBHelper(this);  
 textViewDisplay = findViewById(R.id.*textViewDisplay*);  
  
 Cursor res = mydb.getAllContacts();  
 if (res.getCount() == 0) {  
 textViewDisplay.setText("No contacts found");  
 return;  
 }  
  
 StringBuilder buffer = new StringBuilder();  
 while (res.moveToNext()) {  
 buffer.append("Id: ").append(res.getString(0)).append("\n");  
 buffer.append("Name: ").append(res.getString(1)).append("\n");  
 buffer.append("Phone: ").append(res.getString(2)).append("\n\n");  
 }  
  
 textViewDisplay.setText(buffer.toString());  
 }  
}

DBHelper.java

package com.example.newsql;  
  
import android.content.ContentValues;  
import android.content.Context;  
import android.database.Cursor;  
import android.database.sqlite.SQLiteDatabase;  
import android.database.sqlite.SQLiteOpenHelper;  
  
public class DBHelper extends SQLiteOpenHelper {  
  
 public static final String *DATABASE\_NAME* = "MyDatabase.db";  
 public static final String *TABLE\_NAME* = "contacts";  
 public static final String *COLUMN\_ID* = "id";  
 public static final String *COLUMN\_NAME* = "name";  
 public static final String *COLUMN\_PHONE* = "phone";  
  
 public DBHelper(Context context) {  
 super(context, *DATABASE\_NAME*, null, 1);  
 }  
  
 @Override  
 public void onCreate(SQLiteDatabase db) {  
 db.execSQL(  
 "CREATE TABLE " + *TABLE\_NAME* +  
 "(id INTEGER PRIMARY KEY, name TEXT, phone TEXT)"  
 );  
 }  
  
 @Override  
 public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {  
 db.execSQL("DROP TABLE IF EXISTS " + *TABLE\_NAME*);  
 onCreate(db);  
 }  
  
 public boolean insertContact(String name, String phone) {  
 SQLiteDatabase db = this.getWritableDatabase();  
 ContentValues contentValues = new ContentValues();  
 contentValues.put(*COLUMN\_NAME*, name);  
 contentValues.put(*COLUMN\_PHONE*, phone);  
 db.insert(*TABLE\_NAME*, null, contentValues);  
 return true;  
 }  
  
 public Cursor getAllContacts() {  
 SQLiteDatabase db = this.getReadableDatabase();  
 return db.rawQuery("SELECT \* FROM " + *TABLE\_NAME*, null);  
 }  
}

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

12. Implement an Android project. Use Recyclerview like below



**build.gradle.kts(:app)**

implementation("androidx.recyclerview:recyclerview:1.3.2")

**activity\_main.xml**

<?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"

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

tools:context=".MainActivity">

<androidx.recyclerview.widget.RecyclerView

android:id="@+id/recycler\_view"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent" />

</RelativeLayout>

**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:layout\_marginEnd="16dp">

<ImageView

android:layout\_width="50dp"

android:layout\_height="50dp"

android:id="@+id/item\_image"

android:layout\_marginEnd="16dp"

android:contentDescription="@string/image\_desc"

/>

<TextView

android:text="TextView"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:id="@+id/item\_text"

android:textSize="18sp"/>

</LinearLayout>

**ActivityMain.java**

package com.examp.my\_recyclwview;

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 RecyclerView.Adapter adapter;

private RecyclerView.LayoutManager layoutManager;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

recyclerView = findViewById(R.id.recycler\_view);

recyclerView.setHasFixedSize(true);

layoutManager = new LinearLayoutManager(this);

recyclerView.setLayoutManager(layoutManager);

List<ProgrammingLanguage> languages = new ArrayList<>();

languages.add(new ProgrammingLanguage("C", R.drawable.ic\_c));

languages.add(new ProgrammingLanguage("C++", R.drawable.ic\_cpp));

languages.add(new ProgrammingLanguage("Java", R.drawable.ic\_java));

languages.add(new ProgrammingLanguage("Android", R.drawable.ic\_android));

languages.add(new ProgrammingLanguage("Kotlin", R.drawable.ic\_kotlin));

languages.add(new ProgrammingLanguage("HTML", R.drawable.ic\_html));

languages.add(new ProgrammingLanguage("CSS", R.drawable.ic\_css));

languages.add(new ProgrammingLanguage("JavaScript", R.drawable.ic\_javascript));

languages.add(new ProgrammingLanguage("C", R.drawable.ic\_c));

languages.add(new ProgrammingLanguage("C++", R.drawable.ic\_cpp));

languages.add(new ProgrammingLanguage("Java", R.drawable.ic\_java));

languages.add(new ProgrammingLanguage("Android", R.drawable.ic\_android));

languages.add(new ProgrammingLanguage("Kotlin", R.drawable.ic\_kotlin));

languages.add(new ProgrammingLanguage("HTML", R.drawable.ic\_html));

languages.add(new ProgrammingLanguage("CSS", R.drawable.ic\_css));

languages.add(new ProgrammingLanguage("JavaScript", R.drawable.ic\_javascript));

languages.add(new ProgrammingLanguage("C", R.drawable.ic\_c));

languages.add(new ProgrammingLanguage("C++", R.drawable.ic\_cpp));

languages.add(new ProgrammingLanguage("Java", R.drawable.ic\_java));

languages.add(new ProgrammingLanguage("Android", R.drawable.ic\_android));

languages.add(new ProgrammingLanguage("Kotlin", R.drawable.ic\_kotlin));

languages.add(new ProgrammingLanguage("HTML", R.drawable.ic\_html));

languages.add(new ProgrammingLanguage("CSS", R.drawable.ic\_css));

languages.add(new ProgrammingLanguage("JavaScript", R.drawable.ic\_javascript));

adapter = new ProgrammingLanguageAdapter(languages);

recyclerView.setAdapter(adapter);

}

}

**ProgrammingLanguage.java**

package com.examp.my\_recyclwview;

public class ProgrammingLanguage {

private String name;

private int imageResId;

public ProgrammingLanguage(String name, int imageResId) {

this.name = name;

this.imageResId = imageResId;

}

public String getName() {

return name;

}

public int getImageResId() {

return imageResId;

}

}

**ProgrammingLanguageAdapter.java**

package com.examp.my\_recyclwview;

import android.view.LayoutInflater;

import android.view.View;

import android.view.ViewGroup;

import android.widget.ImageView;

import android.widget.TextView;

import androidx.recyclerview.widget.RecyclerView;

import java.util.List;

public class ProgrammingLanguageAdapter extends RecyclerView.Adapter<ProgrammingLanguageAdapter.ViewHolder> {

private List<ProgrammingLanguage> languages;

public static class ViewHolder extends RecyclerView.ViewHolder {

public TextView textView;

public ImageView imageView;

public ViewHolder(View view) {

super(view);

textView = view.findViewById(R.id.item\_text);

imageView = view.findViewById(R.id.item\_image);

}

}

public ProgrammingLanguageAdapter(List<ProgrammingLanguage> languages) {

this.languages = languages;

}

@Override

public ViewHolder onCreateViewHolder(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(ViewHolder holder, int position) {

ProgrammingLanguage language = languages.get(position);

holder.textView.setText(language.getName());

holder.imageView.setImageResource(language.getImageResId());

}

@Override

public int getItemCount() {

return languages.size();

}

}

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

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/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <androidx.constraintlayout.widget.ConstraintLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:layout\_editor\_absoluteX="0dp"  
 tools:layout\_editor\_absoluteY="-64dp">  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="REGISTRATION"  
 android:textColor="#027A6F"  
 android:textSize="34sp"  
 android:textStyle="bold"  
 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="0.165" />  
  
 <EditText  
 android:id="@+id/firstName"  
 android:layout\_width="343dp"  
 android:layout\_height="46dp"  
 android:ems="10"  
 android:hint="First Name"  
 android:inputType="text"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/textView"  
 app:layout\_constraintVertical\_bias="0.092" />  
  
 <EditText  
 android:id="@+id/lastName"  
 android:layout\_width="341dp"  
 android:layout\_height="46dp"  
 android:ems="10"  
 android:hint="Last Name"  
 android:inputType="text"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.407" />  
  
 <EditText  
 android:id="@+id/age"  
 android:layout\_width="337dp"  
 android:layout\_height="52dp"  
 android:ems="10"  
 android:hint="Age"  
 android:inputType="text"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.459"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/lastName"  
 app:layout\_constraintVertical\_bias="0.039" />  
  
 <EditText  
 android:id="@+id/userName"  
 android:layout\_width="333dp"  
 android:layout\_height="51dp"  
 android:ems="10"  
 android:hint="Username"  
 android:inputType="text"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.402"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/age"  
 app:layout\_constraintVertical\_bias="0.065" />  
  
 <Button  
 android:id="@+id/registerBtn"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:backgroundTint="#009688"  
 android:text="Login"  
 android:textSize="20sp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/userName"  
 app:layout\_constraintVertical\_bias="0.222" />  
  
 </androidx.constraintlayout.widget.ConstraintLayout>  
</androidx.constraintlayout.widget.ConstraintLayout>

build.gradle.kts(:app)

buildFeatures**{** viewBinding = true  
**}**

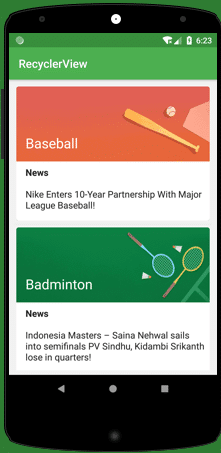
Users.java

package com.example.firebasedatabase;  
  
public class Users {  
 String firstName, lastName, age, userName;  
  
 public String getFirstName() {  
 return firstName;  
 }  
 public Users(String firstName, String lastName, String age, String userName) {  
 this.firstName = firstName;  
 this.lastName = lastName;  
 this.age = age;  
 this.userName = userName;  
 }  
  
 public void setFirstName(String firstName) {  
 this.firstName = firstName;  
 }  
  
 public String getLastName() {  
 return lastName;  
 }  
  
 public void setLastName(String lastName) {  
 this.lastName = lastName;  
 }  
  
 public String getAge() {  
 return age;  
 }  
  
 public void setAge(String age) {  
 this.age = age;  
 }  
  
 public String getUserName() {  
 return userName;  
 }  
  
 public void setUserName(String userName) {  
 this.userName = userName;  
 }  
  
 public Users() {  
  
 }  
  
}

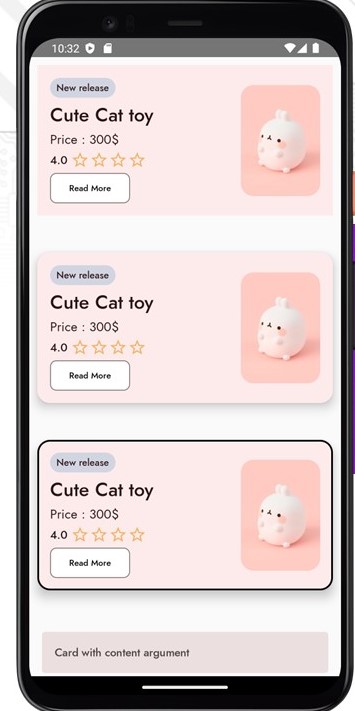
MainActivity.java

package com.example.firebasedatabase;  
  
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.firebasedatabase.databinding.ActivityMainBinding;  
import com.google.android.gms.tasks.OnCompleteListener;  
import com.google.android.gms.tasks.Task;  
import com.google.firebase.Firebase;  
import com.google.firebase.database.DatabaseReference;  
import com.google.firebase.database.FirebaseDatabase;  
  
public class MainActivity extends AppCompatActivity {  
  
 ActivityMainBinding binding;  
 String firstName, lastName, age, userName;  
 FirebaseDatabase db;  
 DatabaseReference reference;  
  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
  
 binding = ActivityMainBinding.*inflate*(getLayoutInflater());  
 //setContentView(R.layout.activity\_main);  
 setContentView(binding.getRoot());  
 binding.registerBtn.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 firstName=binding.firstName.getText().toString();  
 lastName=binding.lastName.getText().toString();  
 age=binding.age.getText().toString();  
 userName=binding.userName.getText().toString();  
  
 if(!firstName.isEmpty() && ! lastName.isEmpty() && !age.isEmpty() && !userName.isEmpty()){  
 Users users = new Users(firstName,lastName,age,userName);  
 db = FirebaseDatabase.*getInstance*();  
 reference = db.getReference("Users");  
 reference.child(userName).setValue(users).addOnCompleteListener(new OnCompleteListener<Void>() {  
 @Override  
 public void onComplete(@NonNull Task<Void> task) {  
 binding.firstName.setText("");  
 binding.lastName.setText("");  
 binding.age.setText("");  
 binding.userName.setText("");  
 Toast.*makeText*(MainActivity.this,"Successfully Updated",Toast.*LENGTH\_SHORT*).show();  
 }  
 });  
 }  
 }  
 });  
  
 ViewCompat.*setOnApplyWindowInsetsListener*(findViewById(R.id.*main*), (v, insets) -> {  
 Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.*systemBars*());  
 v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);  
 return insets;  
 });  
 }  
}

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

