1. Creating “Hello World” Application.

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>

MainActivity.Java :

package com.example.myapplication;  
  
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*);  
  
 }  
}

1. Creating an Application that displays message based on the screen orientation.

activity\_main.xml :

<?xml version="1.0" encoding="utf-8"?>  
<androidx.constraintlayout.widget.ConstraintLayout  
 xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
 <Button  
 android:id="@+id/button1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginBottom="8dp"  
 android:layout\_marginTop="112dp"  
 android:onClick="onClick"  
 android:text="Launch next activity"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.612"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/editText1"  
 app:layout\_constraintVertical\_bias="0.613" />  
 <TextView  
 android:id="@+id/editText1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginEnd="8dp"  
 android:layout\_marginStart="8dp"  
 android:layout\_marginTop="124dp"  
 android:ems="10"  
 android:textSize="22dp"  
 android:text="This activity is portrait orientation"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.502"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
</androidx.constraintlayout.widget.ConstraintLayout>

MainActivity.Java :

package com.example.myapplication;  
  
import android.os.Bundle;  
import android.content.Intent;  
import android.view.View;  
  
  
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*);  
  
 }  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this,NextActivity.class);  
 startActivity(intent);  
 }  
}

AndroidManifest.xml :

<?xml version="1.0" encoding="utf-8"?>  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools">  
 <application  
 android:allowBackup="true"  
 android:dataExtractionRules="@xml/data\_extraction\_rules"  
 android:fullBackupContent="@xml/backup\_rules"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.MyApplication"  
 tools:targetApi="31">  
 <activity  
 android:name=".NextActivity"  
 android:exported="false" android:screenOrientation="landscape"  
 />  
 <activity  
 android:name=".MainActivity"  
 android:exported="true"  
 android:screenOrientation="portrait">  
 <intent-filter>  
 <action android:name="android.intent.action.MAIN" />  
 <category android:name="android.intent.category.LAUNCHER"  
 />  
 </intent-filter>  
 </activity>  
 </application>  
</manifest>

activity\_next.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=".NextActivity">  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginEnd="8dp"  
 android:layout\_marginStart="8dp"  
 android:layout\_marginTop="180dp"  
 android:text="this is landscape orientation"  
 android:textSize="22dp"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.502"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent" />  
</androidx.constraintlayout.widget.ConstraintLayout>

NextActivity.java :

package com.example.myapplication;  
import androidx.appcompat.app.AppCompatActivity;  
import android.os.Bundle;  
public class NextActivity extends AppCompatActivity {  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_next*);  
 }  
}

1. Create an application to develop Login window using UI controls.

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:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity"  
 android:orientation="vertical"  
 android:padding="16dp">  
 <TextView android:id="@+id/tvTitle"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:textSize="24sp"  
 android:text="Login Form"  
 android:layout\_gravity="center"/>  
 <TextView android:id="@+id/tvUserName"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:textSize="20sp"  
 android:text="User Name" />  
 <EditText  
 android:id="@+id/etUsername"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Username"  
 android:inputType="text"  
 android:padding="8dp"  
 android:layout\_marginTop="16dp"  
 android:layout\_marginBottom="30dp"/>  
 <TextView android:id="@+id/tvPassword"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:textSize="20sp"  
 android:text="Password" />  
 <EditText  
 android:id="@+id/etPassword"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Password"  
 android:inputType="textPassword"  
 android:padding="8dp"  
 android:layout\_marginTop="16dp"  
 android:layout\_marginBottom="30dp"/>  
 <Button  
 android:id="@+id/btnLogin"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Login"  
 android:textSize="18sp"  
 android:layout\_marginTop="16dp"/>  
</LinearLayout>

MainActivity.Java :

package com.example.myapplication;  
  
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*);  
  
 }  
}

AndroidManifest.xml :

<?xml version="1.0" encoding="utf-8"?>  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools">  
  
 <application  
 android:allowBackup="true"  
 android:dataExtractionRules="@xml/data\_extraction\_rules"  
 android:fullBackupContent="@xml/backup\_rules"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.MyApplication"  
 tools:targetApi="31">  
 <activity  
 android:name=".MainActivity"  
 android:exported="true">  
 <intent-filter>  
 <action android:name="android.intent.action.MAIN" />  
  
 <category android:name="android.intent.category.LAUNCHER" />  
 </intent-filter>  
 </activity>  
 </application>  
  
</manifest>

1. Create an application to implement new activity using explicit intent and implicit intent.

activity\_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"  
 android:padding="16dp"  
 tools:context=".MainActivity">  
  
 <Button  
 android:id="@+id/explicit\_intent\_btn"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Open Second Activity"  
 android:layout\_centerInParent="true"/>  
  
 <Button  
 android:id="@+id/implicit\_intent\_btn"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Open Website"  
 android:layout\_below="@id/explicit\_intent\_btn"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginTop="16dp"/>  
  
</RelativeLayout>

MainActivity.Java :

package com.example.myapplication;  
import android.content.Intent;  
import android.net.Uri;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class MainActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 Button explicitIntentBtn = findViewById(R.id.*explicit\_intent\_btn*);  
 explicitIntentBtn.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 // Explicit Intent  
 Intent intent = new Intent(MainActivity.this, SecondActivity.class);  
 startActivity(intent);  
 }  
 });  
  
 Button implicitIntentBtn = findViewById(R.id.*implicit\_intent\_btn*);  
 implicitIntentBtn.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 // Implicit Intent  
 Intent intent = new Intent(Intent.*ACTION\_VIEW*, Uri.*parse*("https://www.example.com"));  
 startActivity(intent);  
 }  
 });  
 }  
}

activity\_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"  
 android:padding="16dp"  
 tools:context=".SecondActivity">  
  
 <TextView  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Second Activity"  
 android:textSize="24sp"  
 android:layout\_centerInParent="true"/>  
  
</RelativeLayout>

SecondActivity.Java :

package com.example.myapplication;  
import android.os.Bundle;  
import androidx.appcompat.app.AppCompatActivity;  
  
public class SecondActivity extends AppCompatActivity {  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_second*);  
 }  
}

1. Create an Application that displays custom designed Opening Screen.

activity\_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:id="@+id/idRLContainer"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 tools:context=".MainActivity">  
 <TextView  
 android:id="@+id/idTVHeading"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_centerInParent="true"  
 android:layout\_margin="20dp"  
 android:gravity="center"  
 android:padding="10dp"  
 android:text="Background Drawable in Android"  
 android:textAlignment="center"  
 android:textColor="@color/white"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
</RelativeLayout>

back\_drawable.xml :

<?xml version="1.0" encoding="utf-8"?>  
<shape xmlns:android="http://schemas.android.com/apk/res/android"  
 android:shape="rectangle">  
 <!--on below line we are adding gradient and  
 specifying start and end color with angle-->  
 <gradient  
 android:angle="270"  
 android:endColor="@color/white"  
 android:startColor="#0F9D58" />  
</shape>

MainActivity.Java :

package com.example.myapplication;  
  
import android.os.Bundle;  
import android.widget.RelativeLayout;  
import androidx.appcompat.app.AppCompatActivity;  
public class MainActivity extends AppCompatActivity {  
 // on the below line we are creating a variable.  
 private RelativeLayout containerRL;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 // on below line we are initializing variables with ids.  
 containerRL = findViewById(R.id.*idRLContainer*);  
 // on below line we are setting background for  
 // our relative layout on below line.  
 containerRL.setBackground(getResources().getDrawable(R.drawable.*back\_drawable*));  
 }  
}

1. Create an UI with all views.

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:padding="16dp">  
  
 <!-- TextView -->  
 <TextView  
 android:id="@+id/text\_view"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="TextView"  
 android:textSize="24sp"  
 android:layout\_marginTop="16dp"/>  
  
 <!-- ImageView -->  
 <ImageView  
 android:id="@+id/image\_view"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:src="@drawable/ic\_launcher"  
 android:layout\_below="@id/text\_view"  
 android:layout\_marginTop="16dp"/>  
  
 <!-- Button -->  
 <Button  
 android:id="@+id/button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Button"  
 android:layout\_below="@id/image\_view"  
 android:layout\_marginTop="16dp"/>  
  
 <!-- EditText -->  
 <EditText  
 android:id="@+id/edit\_text"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="EditText"  
 android:layout\_below="@id/button"  
 android:layout\_marginTop="16dp"/>  
  
 <!-- RadioButton -->  
 <RadioButton  
 android:id="@+id/radio\_button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="RadioButton"  
 android:layout\_below="@id/edit\_text"  
 android:layout\_marginTop="16dp"/>  
  
 <!-- CheckBox -->  
 <CheckBox  
 android:id="@+id/check\_box"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="CheckBox"  
 android:layout\_below="@id/radio\_button"  
 android:layout\_marginTop="16dp"/>  
  
 <!-- Spinner -->  
 <Spinner  
 android:id="@+id/spinner"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/check\_box"  
 android:layout\_marginTop="16dp"/>  
  
</RelativeLayout>

MainActivity.Java :

package com.example.myapplication;  
  
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*);  
  
 }  
}

1. Create menu in Application

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>

MainActivity.Java :

package com.example.myapplication;  
  
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.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*);  
  
 }  
 @Override  
 public boolean onCreateOptionsMenu( Menu menu)  
 {  
 MenuInflater inflater = getMenuInflater();  
 inflater.inflate(R.menu.*menu*, menu);  
 return true;  
 }  
 @Override  
 public boolean onOptionsItemSelected(MenuItem item)  
 {  
 int itemid=item.getItemId();  
 if(itemid==R.id.*hello*) {  
 Toast.*makeText*(MainActivity.this, "hello", Toast.*LENGTH\_SHORT*).show();  
 return true;  
 }  
 else if (itemid==R.id.*logout*) {  
 logout();  
 return true;  
 }  
 else   
 return super.onOptionsItemSelected(item);  
  
 }  
   
 public void logout()  
 {  
 Toast.*makeText*(this, "bye",Toast.*LENGTH\_SHORT*).show();  
  
}  
}

<?xml version="1.0" encoding="utf-8"?>  
<menu xmlns:android="http://schemas.android.com/apk/res/android">  
 <item  
 android:id="@+id/hello"  
 android:title="Say Hello" />  
 <item  
 android:id="@+id/logout"  
 android:title="logout" />  
  
  
</menu>

8. Read/write the Local Data.

activity\_main.xml :

<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"  
 tools:context=".MainActivity">  
  
 <EditText  
 android:id="@+id/editText1"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Enter Username"/>  
  
 <EditText  
 android:id="@+id/editText2"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Enter Password"/>  
  
 <Button  
 android:id="@+id/buttonDisplay"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Display USERNAME and PASSWORD"/>  
  
 <TextView  
 android:id="@+id/textViewDisplay1"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="16dp"  
 android:textSize="18sp"  
 android:textStyle="bold"  
 android:textColor="@android:color/black"/>  
 <TextView  
 android:id="@+id/textViewDisplay2"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="16dp"  
 android:textSize="18sp"  
 android:textStyle="bold"  
 android:textColor="@android:color/black"/>  
</LinearLayout>

MainActivity.Java :

package com.example.testdisplay;  
  
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 {  
  
 EditText editText1, editText2;  
 Button buttonDisplay;  
 TextView textViewDisplay1, textViewDisplay2;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 editText1 = findViewById(R.id.*editText1*);  
 editText2 = findViewById(R.id.*editText2*);  
 buttonDisplay = findViewById(R.id.*buttonDisplay*);  
 textViewDisplay1 = findViewById(R.id.*textViewDisplay1*);  
 textViewDisplay2 = findViewById(R.id.*textViewDisplay2*);  
  
 buttonDisplay.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 // Get text from EditText  
 String inputText1 = editText1.getText().toString();  
 String inputText2 = editText2.getText().toString();  
  
 // Display text in TextView  
 textViewDisplay1.setText(inputText1);  
 textViewDisplay2.setText(inputText2);  
 }  
 });  
 }  
}

10. Create an Application to send SMS and Receive SMS.

AndroidManifest.xml :

<?xml version="1.0" encoding="utf-8"?>  
<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools">  
 <uses-feature  
 android:name="android.hardware.telephony"  
 android:required="false" />  
 <uses-permission android:name="android.permission.SEND\_SMS"/>  
 <uses-permission android:name="android.permission.RECEIVE\_SMS"/>  
 <uses-permission android:name="android.permission.READ\_SMS"/>  
 <application  
 android:allowBackup="true"  
 android:dataExtractionRules="@xml/data\_extraction\_rules"  
 android:fullBackupContent="@xml/backup\_rules"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:supportsRtl="true"  
 android:theme="@style/Theme.MyApplication"  
 tools:targetApi="31">  
 <activity  
 android:name=".MainActivity"  
 android:exported="true">  
 <intent-filter>  
 <action android:name="android.intent.action.MAIN" />  
 <category android:name="android.intent.category.LAUNCHER"  
 />  
 </intent-filter>  
 </activity>  
 </application>  
</manifest>

activity\_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"  
 android:background="@color/white"  
 tools:context=".MainActivity">  
 <EditText  
 android:id="@+id/editTextPhoneNumber"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Enter phone number"  
 android:layout\_margin="16dp"/>  
 <EditText  
 android:id="@+id/editTextMessage"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="Enter message"  
 android:layout\_below="@id/editTextPhoneNumber"  
 android:layout\_margin="16dp"/>  
 <Button  
 android:id="@+id/buttonSend"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Send"  
 android:layout\_below="@id/editTextMessage"  
 android:layout\_alignParentEnd="true"  
 android:layout\_marginEnd="16dp"  
 android:onClick="sendMessage"  
 tools:ignore="UsingOnClickInXml" />  
 <TextView  
 android:id="@+id/textViewReceivedMessages"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/buttonSend"  
 android:layout\_marginStart="16dp"  
 android:layout\_marginTop="16dp"  
 android:layout\_marginEnd="16dp"  
 android:layout\_marginBottom="16dp"  
 android:textColor="@color/black" />  
</RelativeLayout>

MainActivity.Java :

package com.example.myapplication;  
  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.app.ActivityCompat;  
import androidx.core.content.ContextCompat;  
import android.content.BroadcastReceiver;  
import android.content.Context;  
import android.content.Intent;  
import android.content.IntentFilter;  
import android.content.pm.PackageManager;  
import android.os.Bundle;  
import android.telephony.SmsManager;  
import android.telephony.SmsMessage;  
import android.view.View;  
import android.widget.EditText;  
import android.widget.TextView;  
import android.widget.Toast;  
import android.Manifest;  
public class MainActivity extends AppCompatActivity {  
 private static final int *SMS\_PERMISSION\_CODE* = 101;  
 private EditText editTextPhoneNumber;  
 private EditText editTextMessage;  
 private TextView textViewReceivedMessages;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 editTextPhoneNumber = findViewById(R.id.*editTextPhoneNumber*);  
 editTextMessage = findViewById(R.id.*editTextMessage*);  
 textViewReceivedMessages =  
 findViewById(R.id.*textViewReceivedMessages*);  
 // Request SMS permissions if not granted  
 if (!checkSMSPermission()) {  
 requestSMSPermission();  
 }  
 // Register SMS receiver  
 IntentFilter intentFilter = new IntentFilter();  
 intentFilter.addAction("android.provider.Telephony.SMS\_RECEIVED");  
 registerReceiver(smsReceiver, intentFilter);  
 }  
 @Override  
 protected void onDestroy() {  
 super.onDestroy();  
 unregisterReceiver(smsReceiver);  
 }  
 // Button click listener for sending SMS  
 public void sendMessage(View view) {  
 String phoneNumber =  
 editTextPhoneNumber.getText().toString().trim();  
 String message = editTextMessage.getText().toString();  
 if (phoneNumber.isEmpty()) {  
 Toast.*makeText*(this, "Please enter a valid phone number",  
 Toast.*LENGTH\_SHORT*).show();  
 return;  
 }  
 try {  
 SmsManager smsManager = SmsManager.*getDefault*();  
 smsManager.sendTextMessage(phoneNumber, null, message, null, null);  
 Toast.*makeText*(this, "Message sent", Toast.*LENGTH\_SHORT*).show();  
 } catch (IllegalArgumentException e) {  
 Toast.*makeText*(this, "Invalid phone number format",  
 Toast.*LENGTH\_SHORT*).show();  
 } catch (Exception e) {  
 Toast.*makeText*(this, "Failed to send message",  
 Toast.*LENGTH\_SHORT*).show();  
 e.printStackTrace();  
 }  
 }  
// Check if SMS permission is granted  
private boolean checkSMSPermission() {  
 return ContextCompat.*checkSelfPermission*(this,  
 Manifest.permission.*SEND\_SMS*) == PackageManager.*PERMISSION\_GRANTED*;  
}  
 // Request SMS permission  
 private void requestSMSPermission() {  
 ActivityCompat.*requestPermissions*(this, new  
 String[]{Manifest.permission.*SEND\_SMS*}, *SMS\_PERMISSION\_CODE*);  
 }  
 // SMS receiver  
 private final BroadcastReceiver smsReceiver = new BroadcastReceiver() {  
 @Override  
 public void onReceive(Context context, Intent intent) {  
 Bundle bundle = intent.getExtras();  
 if (bundle != null) {  
 Object[] pdus = (Object[]) bundle.get("pdus");  
 if (pdus != null) {  
 for (Object pdu : pdus) {  
 SmsMessage smsMessage = SmsMessage.*createFromPdu*((byte[]) pdu);  
 String senderPhoneNumber = smsMessage.getDisplayOriginatingAddress();  
 String messageBody = smsMessage.getMessageBody();  
 textViewReceivedMessages.append("From: " +  
 senderPhoneNumber + "\n");  
 textViewReceivedMessages.append("Message: " +  
 messageBody + "\n\n");  
 }  
 }  
 }  
 }  
 };  
}

11. Create an Application to send an e-mail :

activity\_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/editTextTo"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:hint="To"/>  
 <EditText  
 android:id="@+id/editTextSubject"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/editTextTo"  
 android:hint="Subject"/>  
 <EditText  
 android:id="@+id/editTextMessage"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/editTextSubject"  
 android:hint="Message"/>  
 <Button  
 android:id="@+id/buttonSend"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/editTextMessage"  
 android:text="Send"/>  
</RelativeLayout>

MainActivity.Java :

package com.example.myapplication;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import android.annotation.SuppressLint;  
import android.content.Intent;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
  
public class MainActivity extends AppCompatActivity {  
 EditText editTextTo, editTextSubject, editTextMessage;  
 Button buttonSend;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 EdgeToEdge.*enable*(this);  
 setContentView(R.layout.*activity\_main*);  
 editTextTo = findViewById(R.id.*editTextTo*);  
 editTextSubject = findViewById(R.id.*editTextSubject*);  
 editTextMessage = findViewById(R.id.*editTextMessage*);  
 buttonSend = findViewById(R.id.*buttonSend*);  
 buttonSend.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 sendEmail();  
 }  
 });  
 }  
 @SuppressLint("QueryPermissionsNeeded")  
 private void sendEmail() {  
 String to = editTextTo.getText().toString().trim();  
 String subject = editTextSubject.getText().toString().trim();  
 String message = editTextMessage.getText().toString().trim();  
 Intent intent = new Intent(Intent.*ACTION\_SEND*);  
 intent.setType("text/plain");  
 intent.putExtra(Intent.*EXTRA\_EMAIL*, new String[]{to});  
 intent.putExtra(Intent.*EXTRA\_SUBJECT*, subject);  
 intent.putExtra(Intent.*EXTRA\_TEXT*, message);  
 if (intent.resolveActivity(getPackageManager()) != null) {  
 startActivity(Intent.*createChooser*(intent, "Choose an email client"));  
 }  
 }  
}

13. Create a sample Application with login module(check username and password) On successful login change Textview “Login Successful”. On login fail alert using Toast “Login fail”.

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"  
 >  
 <TextView  
 android:id="@+id/tvName"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginStart="21dp"  
 android:layout\_marginTop="49dp"  
 android:text="User Name"  
 android:textSize="18sp" />  
 <EditText  
 android:id="@+id/etUsername"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignBaseline="@+id/tvName"  
 android:layout\_alignBottom="@+id/tvName"  
 android:layout\_alignParentEnd="true"  
 android:layout\_marginEnd="23dp"  
 android:ems="10"  
 android:inputType="textPersonName" />  
 <TextView  
 android:id="@+id/tvPass"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignEnd="@+id/tvName"  
 android:layout\_below="@+id/etUsername"  
 android:layout\_marginTop="32dp"  
 android:text="Password"  
 android:textSize="18sp" />  
 <EditText  
 android:id="@+id/etPassword"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignBaseline="@+id/tvPass"  
 android:layout\_alignBottom="@+id/tvPass"  
 android:layout\_alignStart="@+id/etUsername"  
 android:ems="10"  
 android:inputType="textPassword" />  
 <Button  
 android:id="@+id/button"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@+id/etPassword"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginTop="38dp"  
 android:text="LOGIN"  
 />  
 <TextView  
 android:id="@+id/tvLoginStatus"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/button"  
 android:layout\_centerHorizontal="true"  
 android:layout\_marginTop="100sp"  
 />  
</RelativeLayout>

MainActivity.Java :

import androidx.appcompat.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.TextView;  
import android.widget.Toast;  
public class MainActivity extends AppCompatActivity {  
 EditText etUsername, etPassword;  
 Button btnStatus;  
 TextView tvLoginStatus;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 etUsername = (EditText) findViewById(R.id.*etUsername*);  
 etPassword = (EditText) findViewById(R.id.*etPassword*);  
 btnStatus = (Button) findViewById(R.id.*button*);  
 tvLoginStatus = (TextView) findViewById(R.id.*tvLoginStatus*);  
 btnStatus.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 check();  
 }  
 });  
 }  
 public void check(){  
 if(etUsername.getText().toString().equals("tonystark") &&  
 etPassword.getText().toString().equals("loveyou3000")){  
 tvLoginStatus.setText("Login successful");  
 }else{  
 Toast.*makeText*(this, "Login fail", Toast.*LENGTH\_LONG*).show();  
 }  
 }  
}