MOBILE APPLICATION DEVELOPMENT (3170726)

VVP ENGINEERING COLLEGE

SUBMITTED BY: **DISHEN MAKWANA**

180470107035

G2

V. V. P. Engineering College, Rajkot

Department of Computer Engineering

Vision of the Institute

- To be an exemplary institute, transforming students into competent professionals with human values.

Mission of the Institute

- To provide a conducive academic environment for strengthening technical capabilities of the students.
- To strengthen linkage with industries, alumni and professional bodies.
- To organize various co-curricular and extra-curricular activities for overall development of the students.
- To practice good governance and conduct value- based activities for making students responsible citizens.

Vision of the Department

- Transforming students into globally efficient professionals with moral values.

Mission of the Department

- To provide a strong foundation of computer engineering through effective teaching learning process.
- To enhance industry linkage & alumni network for better placement and real-world exposure.
- To provide various opportunities & platforms for all round development of students &

encourage them for value-based practices.

Program Educational Objectives (PEOs)

Graduates will be able to

- Apply computer engineering theories, principles and skills to meet the challenges of the society.

- Communicate effectively, work collaboratively and manifest professionalism with ethics.

- Exhibit life-long learning attitude and adapt to rapid technological changes in industry.

- Advance their career in industry, pursue higher education or become an entrepreneur.

Program Specific Outcomes (PSO)

Graduates will be able to

- **PSO1**: Apply fundamental knowledge of hardware and software aspects of computer systems.

- **PSO2**: Analyze, model and develop computer applications by adapting emerging technologies and standard practices of software project development to meet the requirements of industry and society.

- **PSO3**: Use different programming languages and open-source platforms.

V.V.P. ENGINEERING COLLEGE
RAJKOT

Certificate

This is to certify that

Mr. DISHEN MAKWANA, Enrollment No: 180470107035, Branch: Computer Engineering, Semester: 7 has satisfactorily completed the course in the subject: **Mobile Application Development (3170726)** within the four walls of V.V.P. Engineering College, Rajkot.

Date of Submission:

Prof. Nivid Limbasiya,
Staff In-Charge

Head of Department,
Department of Computer Engineering,
V.V.P. Engineering College

V. V. P. Engineering College
Department of Computer Engineering
Course Outcomes

Semester: 7th

Subject: Mobile Application Development

Code: 3170726

After learning the course, the students will be able to

Sr. No.	CO statement
CO-1	Understand Android architecture, activities and their life cycle.
CO-2	Apply the knowledge to design user interface using Android UI And Component
CO-3	Manage system database, remote database operations using web services and Firebase
CO-4	Apply knowledge of map, location services, Graphics, android system and background services
CO-5	Publish and distribute Android Application

Index

1. Implement Dialog Message project.

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="center_horizontal"
        android:text="@string/press_the_back_button_of_your_phone"
        android:textSize="30sp"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="0dp"
        tools:layout_editor_absoluteY="328dp" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.example.alertdialog;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.DialogInterface;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    @Override
    public void onBackPressed()
    {
        AlertDialog.Builder builder = new AlertDialog.Builder(MainActivity.this);
        builder.setMessage("Do you want to exit ?");
        builder.setTitle("Alert !");
        builder.setCancelable(false);

        builder.setPositiveButton("Yes", new DialogInterface.OnClickListener() {
                    @Override
                    public void onClick(DialogInterface dialog, int which)
                    {
                        finish();
                    }
```
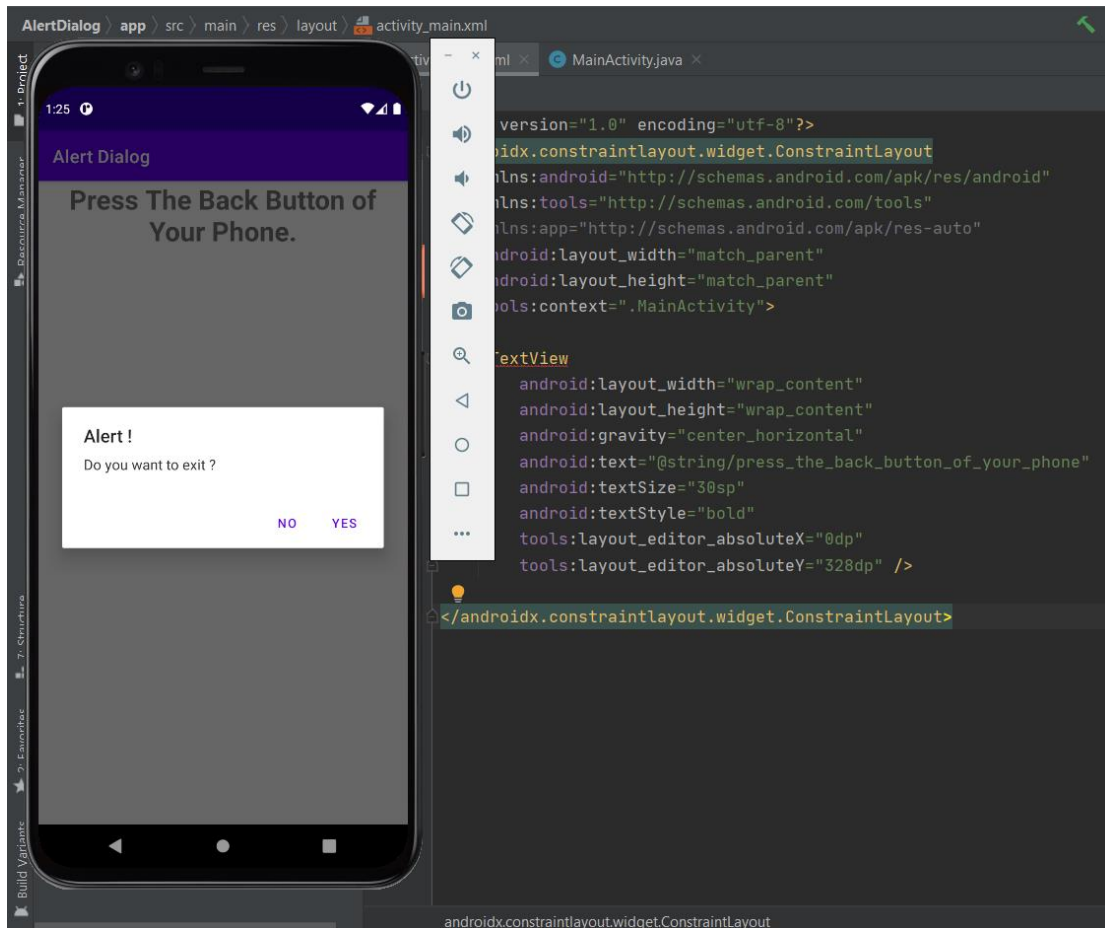
```
            });
    builder.setNegativeButton("No", new DialogInterface.OnClickListener() {
            @Override
            public void onClick(DialogInterface dialog, int which)
            {
                dialog.cancel();
            }
        });
    AlertDialog alertDialog = builder.create();
    alertDialog.show();
    }
}
```

2. Implement Grid view project.

MainActivity.java

```java
package com.example.gridview;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.GridView;
import java.util.ArrayList;
public class MainActivity extends AppCompatActivity {

    GridView coursesGV;

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

        coursesGV = findViewById(R.id.idGVcourses);

        ArrayList<CourseModel> courseModelArrayList = new ArrayList<CourseModel>();
        courseModelArrayList.add(new CourseModel("DSA", R.drawable.ic_gfglogo));
        courseModelArrayList.add(new CourseModel("JAVA", R.drawable.ic_gfglogo));
        courseModelArrayList.add(new CourseModel("C++", R.drawable.ic_gfglogo));
        courseModelArrayList.add(new CourseModel("Python", R.drawable.ic_gfglogo));
        courseModelArrayList.add(new CourseModel("Javascript", R.drawable.ic_gfglogo));
        courseModelArrayList.add(new CourseModel("DSA", R.drawable.ic_gfglogo));

        CourseGVAdapter adapter = new CourseGVAdapter(this, courseModelArrayList);
        coursesGV.setAdapter(adapter);
    }
}
```

CourseModel.java

```java
package com.example.gridview;
public class CourseModel {
    private String course_name;
    private int imgid;

    public CourseModel(String course_name, int imgid) {
        this.course_name = course_name;
        this.imgid = imgid;
    }

    public String getCourse_name() {
        return course_name;
    }

    public void setCourse_name(String course_name) {
        this.course_name = course_name;
    }
```

```java
    public int getImgid() {
        return imgid;
    }

    public void setImgid(int imgid) {
        this.imgid = imgid;
    }
}
```

CourseGVAdapter.java

```java
package com.example.gridview;
import android.content.Context;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ArrayAdapter;
import android.widget.ImageView;
import android.widget.TextView;

import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import java.util.ArrayList;

public class CourseGVAdapter extends ArrayAdapter<CourseModel> {
    public CourseGVAdapter(@NonNull Context context, ArrayList<CourseModel>
courseModelArrayList) {
        super(context, 0, courseModelArrayList);
    }
    @NonNull
    @Override
    public View getView(int position, @Nullable View convertView, @NonNull ViewGroup
parent) {
        View listitemView = convertView;
        if (listitemView == null) {
            // Layout Inflater inflates each item to be displayed in GridView.
            listitemView = LayoutInflater.from(getContext()).inflate(R.layout.card_item, parent,
false);
        }
        CourseModel courseModel = getItem(position);
        TextView courseTV = listitemView.findViewById(R.id.idTVCourse);
        ImageView courseIV = listitemView.findViewById(R.id.idIVcourse);
        courseTV.setText(courseModel.getCourse_name());
        courseIV.setImageResource(courseModel.getImgid());
        return listitemView;
    }
}
```

Card_item.xml

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

```xml
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="120dp"
    android:layout_gravity="center"
    android:layout_margin="5dp"
    app:cardCornerRadius="5dp"
    app:cardElevation="5dp">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">

        <ImageView
            android:id="@+id/idIVcourse"
            android:layout_width="100dp"
            android:layout_height="100dp"
            android:layout_gravity="center"
            android:src="@mipmap/ic_launcher" />
        <TextView
            android:id="@+id/idTVCourse"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="@string/app_name"
            android:textAlignment="center" />
    </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    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">
    <GridView
        android:id="@+id/idGVcourses"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:horizontalSpacing="6dp"
        android:numColumns="2"
        android:verticalSpacing="6dp" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

...xml ×   © MainActivity.java ×   ic_gfglogo.xml ×   card_item.xml ×   © Cou...

Phone emulator screen:

2:35

Grid View

DSA   JAVA

C++   Python

Javascript   DSA

Code editor (card_item.xml):

```xml
 version="1.0" encoding="utf-8"?>
roidx.constraintlayout.widget.ConstraintLayout
tmlns:android="http://schemas.android.com/apk/res/android"
tmlns:app="http://schemas.android.com/apk/res-auto"
ndroid:layout_width="match_parent"
ndroid:layout_height="120dp"
ndroid:layout_gravity="center"
ndroid:layout_margin="5dp"
pp:cardCornerRadius="5dp"
pp:cardElevation="5dp">

:LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">

    <ImageView
        android:id="@+id/idIVcourse"
        android:layout_width="100dp"
        android:layout_height="100dp"
        android:layout_gravity="center"
        android:src="@mipmap/ic_launcher" />

    <TextView
        android:id="@+id/idTVCourse"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="@string/app_name"
        android:textAlignment="center" />

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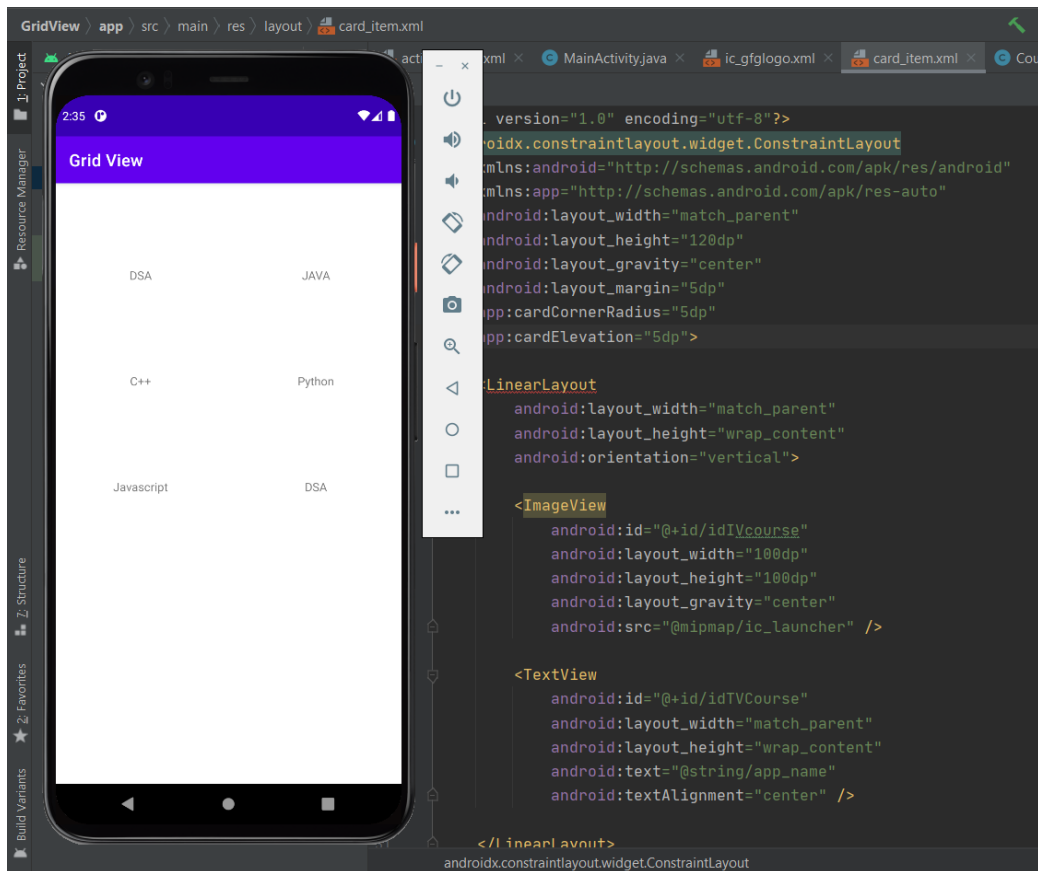
androidx.constraintlayout.widget.ConstraintLayout

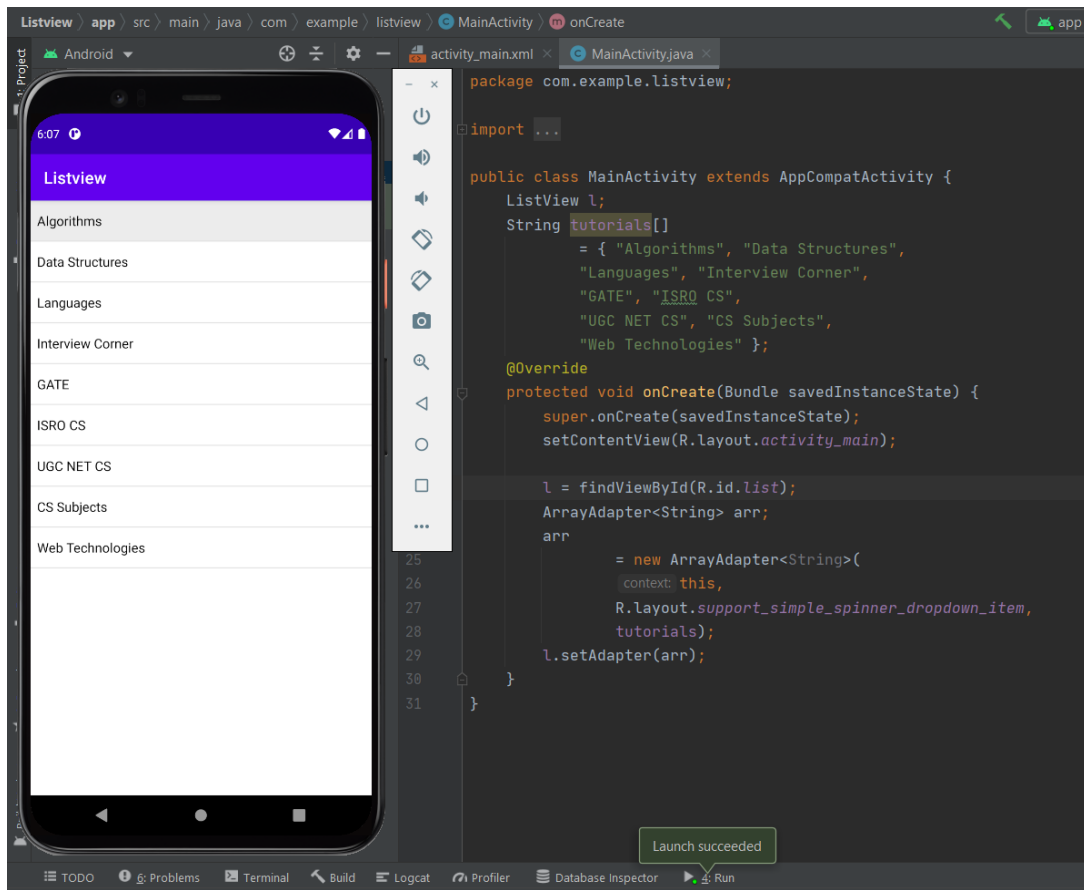## 3. Implement List view project.

MainActivity.java
```java
package com.example.listview;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;

public class MainActivity extends AppCompatActivity {
    ListView l;
    String tutorials[]
        = { "Algorithms", "Data Structures",
        "Languages", "Interview Corner",
        "GATE", "ISRO CS",
        "UGC NET CS", "CS Subjects",
        "Web Technologies" };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        l = findViewById(R.id.list);
        ArrayAdapter<String> arr;
        arr = new ArrayAdapter<String>(this, R.layout.support_simple_spinner_dropdown_item,
tutorials);
        l.setAdapter(arr);
    }
}
```

Activity_main.xml
```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">
    <ListView
        android:id="@+id/list"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>
</LinearLayout>
```

```java
package com.example.listview;

import ...

public class MainActivity extends AppCompatActivity {
    ListView l;
    String tutorials[]
            = { "Algorithms", "Data Structures",
                "Languages", "Interview Corner",
                "GATE", "ISRO CS",
                "UGC NET CS", "CS Subjects",
                "Web Technologies" };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        l = findViewById(R.id.list);
        ArrayAdapter<String> arr;
        arr
                = new ArrayAdapter<String>(
                context: this,
                R.layout.support_simple_spinner_dropdown_item,
                tutorials);
        l.setAdapter(arr);
    }
}
```

Launch succeeded

TODO   🐞 6: Problems   ⬛ Terminal   Build   ≡ Logcat   Profiler   Database Inspector   ▶ Run

4. Implement todo list project.

Activity_main.xml

```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"
    android:background="@android:color/holo_blue_bright"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="5dp"
        android:orientation="horizontal">
        <EditText
            android:id="@+id/editText"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="4"
            android:ems="10"
            android:hint=" Add new item"
            android:inputType="textPersonName" />
        <Button
            android:id="@+id/button"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Add" />
    </LinearLayout>
    <ListView
        android:id="@+id/list"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />
</LinearLayout>
```

MainActivity.java

```java
package com.example.todolist;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ListView;

import java.util.ArrayList;
```

```java
public class MainActivity extends AppCompatActivity {
    EditText item;
    Button add;
    ListView listView;
    ArrayList<String> itemList = new ArrayList<>();
    ArrayAdapter<String> arrayAdapter;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        item = findViewById(R.id.editText);
        add = findViewById(R.id.button);
        listView = findViewById(R.id.list);
        itemList=FileHelper.readData(this);
        arrayAdapter = new ArrayAdapter<>(this, android.R.layout.simple_list_item_1,
                android.R.id.text1,itemList);
        listView.setAdapter(arrayAdapter);
        add.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String itemName = item.getText().toString();
                itemList.add(itemName);
                item.setText("");
                FileHelper.writeData(itemList,getApplicationContext());
                arrayAdapter.notifyDataSetChanged();
            }
        });
    }
}
```

FileHelper.java

```java
package com.example.todolist;
import android.content.Context;
import java.io.FileInputStream;
import java.io.FileNotFoundException;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.ObjectInputStream;
import java.io.ObjectOutputStream;
import java.util.ArrayList;

public class FileHelper {
    public static final String FILENAME = "listinfo.dat";
    public static void writeData(ArrayList<String> item, Context context)
    {
        try {
            FileOutputStream fos =
context.openFileOutput(FILENAME,Context.MODE_PRIVATE);
            ObjectOutputStream oas = new ObjectOutputStream(fos);
```

```java
            oas.writeObject(item);
            oas.close();
        } catch (FileNotFoundException e) {
            e.printStackTrace();
        } catch (IOException e) {
            e.printStackTrace();
        }
    }
    public static ArrayList<String> readData(Context context)
    {
        ArrayList<String> itemList = null;
        try {
            FileInputStream fis = context.openFileInput(FILENAME);
            ObjectInputStream ois = new ObjectInputStream(fis);
            itemList = (ArrayList<String>) ois.readObject();
        } catch (FileNotFoundException e) {
            itemList = new ArrayList<>();
            e.printStackTrace();
        } catch (IOException e) {
            e.printStackTrace();
        } catch (ClassNotFoundException e) {
            e.printStackTrace();
        }
        return itemList;
    }
}
```
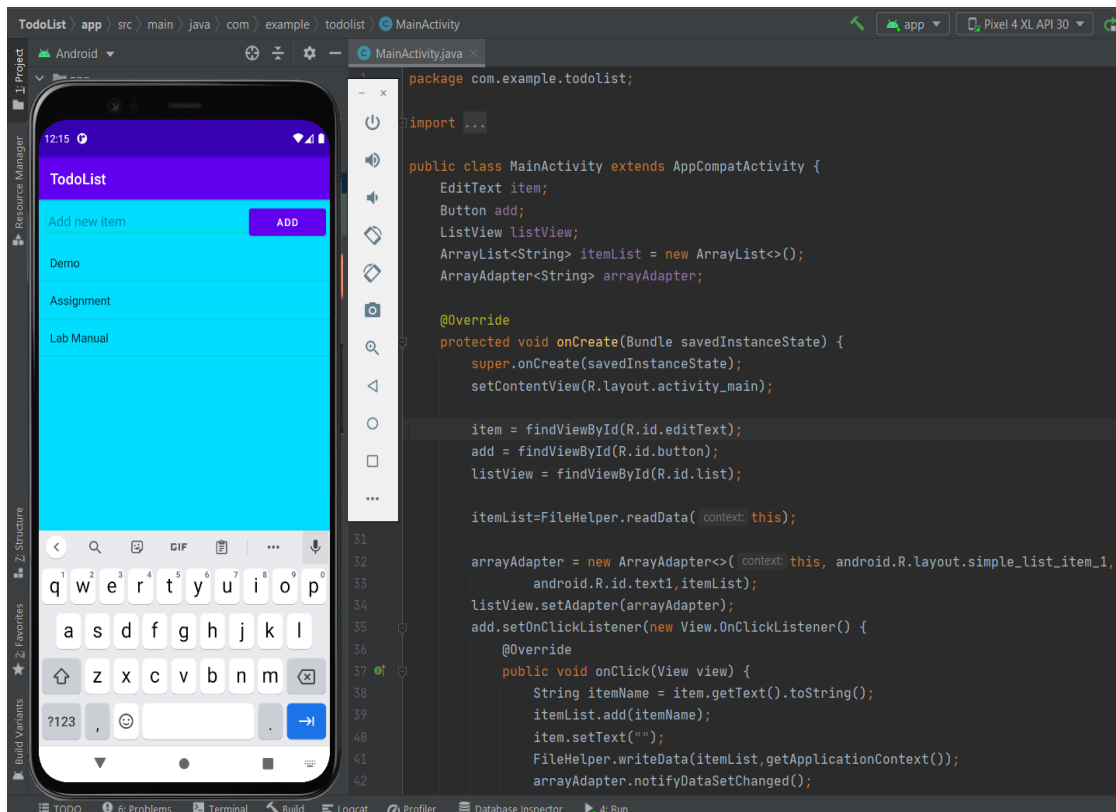
5. Implement Recycler view project.

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.v7.widget.RecyclerView
    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:scrollbars="vertical"
    android:id="@+id/recyclerView"
    tools:context="example.javatpoint.com.recyclerviewlist.MainActivity">
</android.support.v7.widget.RecyclerView>
```

MainActivity.java

```
package com.example.recyclerview;
import androidx.appcompat.app.AppCompatActivity;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        MyListData[] myListData = new MyListData[] {
            new MyListData("Email", android.R.drawable.ic_dialog_email),
            new MyListData("Info", android.R.drawable.ic_dialog_info),
            new MyListData("Delete", android.R.drawable.ic_delete),
            new MyListData("Dialer", android.R.drawable.ic_dialog_dialer),
            new MyListData("Alert", android.R.drawable.ic_dialog_alert),
            new MyListData("Map", android.R.drawable.ic_dialog_map),
            new MyListData("Email", android.R.drawable.ic_dialog_email),
            new MyListData("Info", android.R.drawable.ic_dialog_info),
            new MyListData("Delete", android.R.drawable.ic_delete),
            new MyListData("Dialer", android.R.drawable.ic_dialog_dialer),
            new MyListData("Alert", android.R.drawable.ic_dialog_alert),
            new MyListData("Map", android.R.drawable.ic_dialog_map),
        };

        RecyclerView recyclerView = (RecyclerView) findViewById(R.id.recyclerView);
        MyListAdapter adapter = new MyListAdapter(myListData);
        recyclerView.setHasFixedSize(true);
        recyclerView.setLayoutManager(new LinearLayoutManager(this));
        recyclerView.setAdapter(adapter);
    }
}
```
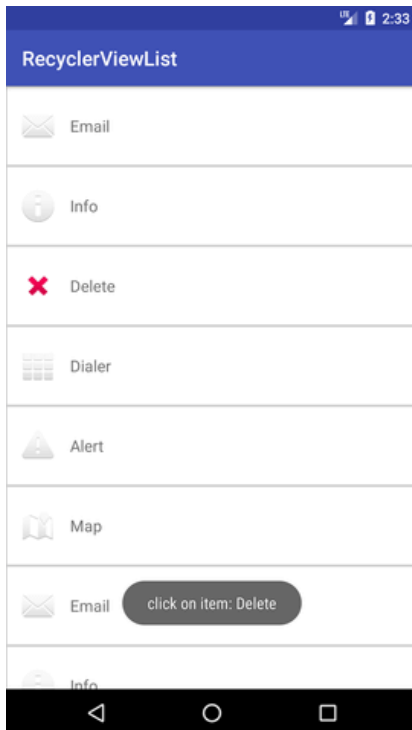
MyListAdapter.java

```java
package com.example.recyclerview;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ImageView;
import android.widget.RelativeLayout;
import android.widget.TextView;
import android.widget.Toast;
import androidx.recyclerview.widget.RecyclerView;
public class MyListAdapter extends RecyclerView.Adapter<MyListAdapter.ViewHolder>
{
    private MyListData[] listdata;
    // RecyclerView recyclerView;
    public MyListAdapter(MyListData[] listdata) {
        this.listdata = listdata;
    }
    @Override
    public ViewHolder onCreateViewHolder(ViewGroup parent, int viewType) {
        LayoutInflater layoutInflater = LayoutInflater.from(parent.getContext());
        View listItem= layoutInflater.inflate(R.layout.list_item, parent, false);
        ViewHolder viewHolder = new ViewHolder(listItem);
        return viewHolder;
    }
    @Override
    public void onBindViewHolder(ViewHolder holder, int position) {
        final MyListData myListData = listdata[position];
        holder.textView.setText(listdata[position].getDescription());
        holder.imageView.setImageResource(listdata[position].getImgId());
        holder.relativeLayout.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Toast.makeText(view.getContext(),"click on item:
"+myListData.getDescription(),Toast.LENGTH_LONG).show();
            }
        });
    }
    @Override
    public int getItemCount() {
        return listdata.length;
    }
    public static class ViewHolder extends RecyclerView.ViewHolder {
        public ImageView imageView;
        public TextView textView;
        public RelativeLayout relativeLayout;
        public ViewHolder(View itemView) {
            super(itemView);
            this.imageView = (ImageView) itemView.findViewById(R.id.imageView);
            this.textView = (TextView) itemView.findViewById(R.id.textView);
            relativeLayout = (RelativeLayout)itemView.findViewById(R.id.relativeLayout);
        }
    }
}
```

}

List_item.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/relativeLayout"
    android:layout_width="match_parent"
    android:layout_height="?android:attr/listPreferredItemHeightLarge"
    android:background="@drawable/border">
    <ImageView
        android:id="@+id/imageView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerVertical="true"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_marginStart="@dimen/activity_horizontal_margin"
        android:layout_marginEnd="@dimen/activity_horizontal_margin"
        android:contentDescription="Icon" />
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_toEndOf="@id/imageView"
        android:layout_toRightOf="@id/imageView"
        android:gravity="center_vertical"
        android:textSize="16sp"/>
</RelativeLayout>
```

6. Implement Scroll view project.

Activity_main.xml

```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:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.test.scrollviews.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:text="Vertical ScrollView example"
        android:id="@+id/textView"
        android:layout_gravity="center_horizontal"
        android:layout_centerHorizontal="true"
        android:layout_alignParentTop="true" />

    <ScrollView android:layout_marginTop="30dp"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:id="@+id/scrollView">

        <LinearLayout
            android:layout_width="fill_parent"
            android:layout_height="fill_parent"
            android:orientation="vertical" >

            <Button
                android:layout_width="fill_parent"
                android:layout_height="wrap_content"
                android:text="Button 1" />
            <Button
                android:layout_width="fill_parent"
                android:layout_height="wrap_content"
                android:text="Button 2" />
            <Button
                android:layout_width="fill_parent"
                android:layout_height="wrap_content"
                android:text="Button 3" />
            <Button
                android:layout_width="fill_parent"
                android:layout_height="wrap_content"
                android:text="Button 4" />
```

```
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 5" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 6" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 7" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 8" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 9" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 10" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 11" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 12" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 13" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 14" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 15" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
  android:text="Button 16" />
<Button
  android:layout_width="fill_parent"
  android:layout_height="wrap_content"
```
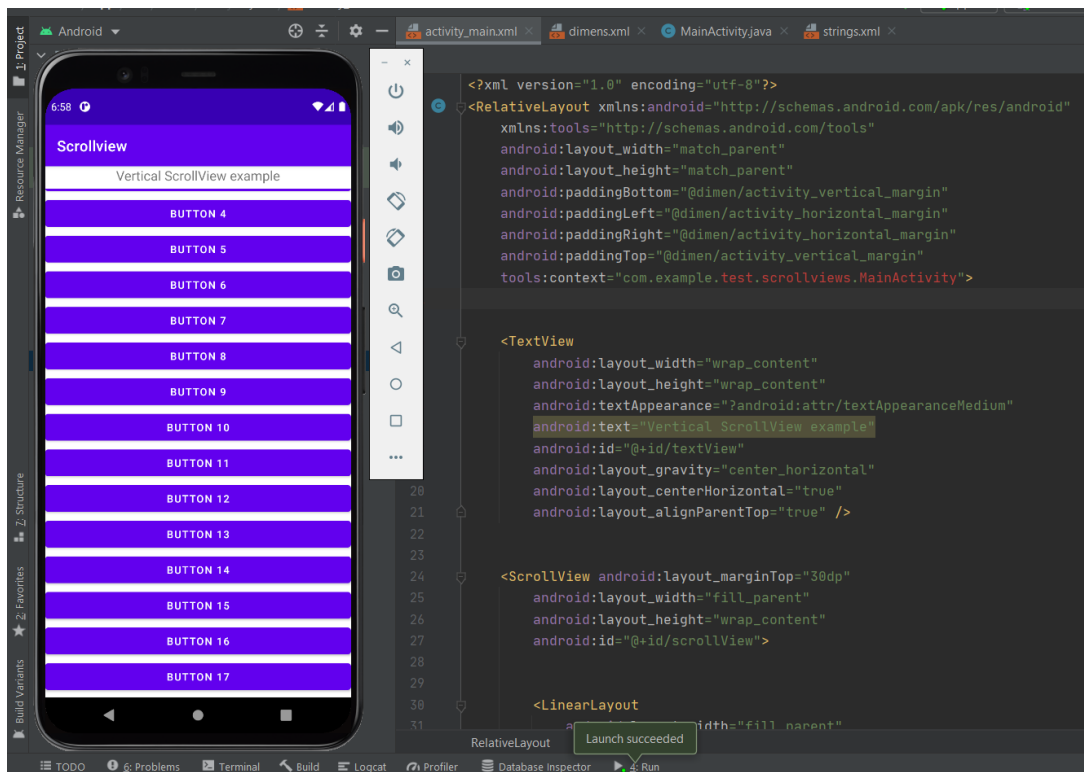
```
            android:text="Button 17" />
        <Button
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:text="Button 18" />

        <Button
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:text="Button 19" />
        <Button
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:text="Button 20" />
    </LinearLayout>
  </ScrollView>
</RelativeLayout>
```

7. Implement Send Email Functionality.

Activity_main.xml

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

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/EmailAddress"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Email Address"
        android:inputType="textEmailAddress"
        app:layout_constraintBottom_toTopOf="@+id/EmailSubject"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/EmailSubject"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:hint="Enter Email Subject"
        android:inputType="textShortMessage|textEmailAddress"
        app:layout_constraintBottom_toTopOf="@+id/EmailMessage"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
```

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


    <EditText
        android:id="@+id/EmailMessage"
        android:layout_width="wrap_content"
        android:layout_height="150dp"
        android:ems="10"
        android:hint="Enter Your Message"
        android:inputType="textMultiLine|textEmailAddress"
        app:layout_constraintBottom_toTopOf="@+id/buttonsendemail"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/EmailSubject" />


    <Button
        android:id="@+id/buttonsendemail"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SEND EMAIL"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/EmailMessage" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.company.sendemail;


import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
```

```java
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    Button send;
    EditText address,message,subject;

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

        address=findViewById(R.id.EmailAddress);
        message=findViewById(R.id.EmailMessage);
        subject=findViewById(R.id.EmailSubject);
        send=findViewById(R.id.buttonsendemail);

        send.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String userAddress=address.getText().toString();//text to string
                String userMessage=message.getText().toString();
                String userSubject=subject.getText().toString();

                sendEmail(userAddress,userSubject,userMessage);//onclick event
            }
        });
    }
    public void sendEmail(String userAddress,String userSubject,String userMessage)//mail sending method
    {
        String[] emailAddress = {userAddress}; //email address   store in array
```

Intent emailIntent = new Intent(Intent.ACTION_SEND);//sending mail, it switch one activity to another activity

emailIntent.setData(Uri.parse("mailto:"));//send data as a email
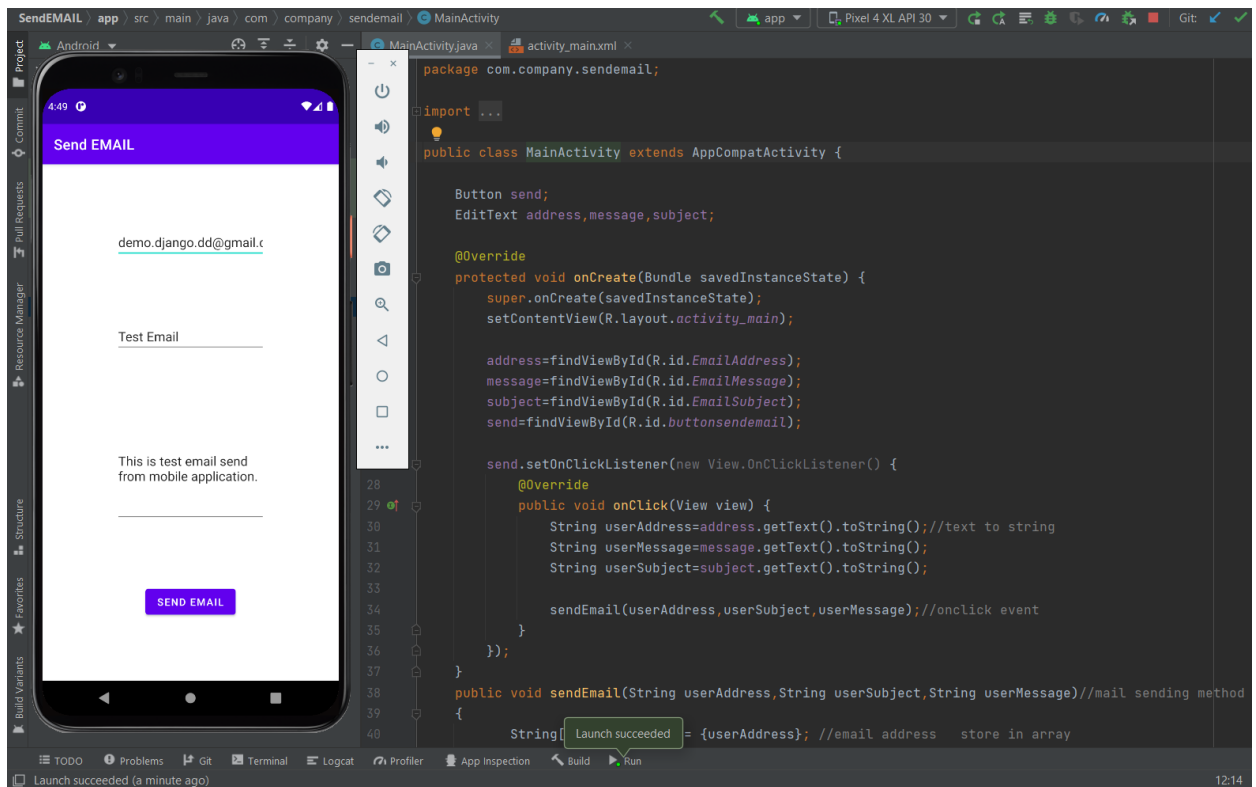
emailIntent.setType("text/plain");

emailIntent.putExtra(Intent.EXTRA_EMAIL,emailAddress);//data will send into mail address section

emailIntent.putExtra(Intent.EXTRA_SUBJECT,userSubject);//data will send into subject section

emailIntent.putExtra(Intent.EXTRA_TEXT,userMessage);//data will send into user message section

startActivity(Intent.createChooser(emailIntent,"email send"));//user choice

}

}

8. Implement Send SMS Functionality.

Activity_main.xml

```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/buttonSend"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="72dp"
        android:layout_marginLeft="72dp"
        android:layout_marginBottom="135dp"
        android:text="Send SMS"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.34"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextNumber" />

    <EditText
        android:id="@+id/editTextMessage"
        android:layout_width="300dp"
        android:layout_height="0dp"
        android:layout_marginTop="79dp"
        android:layout_marginBottom="87dp"
        android:ems="10"
        android:gravity="start|top"
        android:inputType="textMultiLine"
        app:layout_constraintBottom_toTopOf="@+id/editTextNumber"
```

```xml
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/editTextNumber"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="46dp"
        android:layout_marginLeft="46dp"
        android:layout_marginEnd="46dp"
        android:layout_marginRight="46dp"
        android:layout_marginBottom="59dp"
        android:ems="10"
        android:inputType="phone"
        app:layout_constraintBottom_toTopOf="@+id/buttonSend"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/editTextMessage" />

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

MainActivity.java

```java
package com.company.sendsms;
import …

public class MainActivity extends AppCompatActivity {

    Button send;
    EditText message,number;

    String userMessage;
```

```java
String userNumber;

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

    send=findViewById(R.id.buttonSend);
    message=findViewById(R.id.editTextMessage);
    number=findViewById(R.id.editTextNumber);

    send.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            userMessage = message.getText().toString();
            userNumber = number.getText().toString();

            sendSMS(userMessage,userNumber);
        }
    });
}

    public void sendSMS(String userMessage,String userNumber)
    {
        if(ContextCompat.checkSelfPermission(this
            , Manifest.permission.SEND_SMS)!=
PackageManager.PERMISSION_GRANTED)//permission
        {
            ActivityCompat.requestPermissions(this,new
String[]{Manifest.permission.SEND_SMS},1);
        }
        else
        {
            SmsManager smsManager = SmsManager.getDefault();
            smsManager.sendTextMessage(userNumber,null,userMessage,null,null);
```

```java
        }
    }


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

        if(requestCode==1 && grantResults.length > 0 && grantResults[0]==
PackageManager.PERMISSION_GRANTED)
        {
            SmsManager smsManager = SmsManager.getDefault();
            smsManager.sendTextMessage(userNumber,null,userMessage,null,null);


        }
    }
}
```
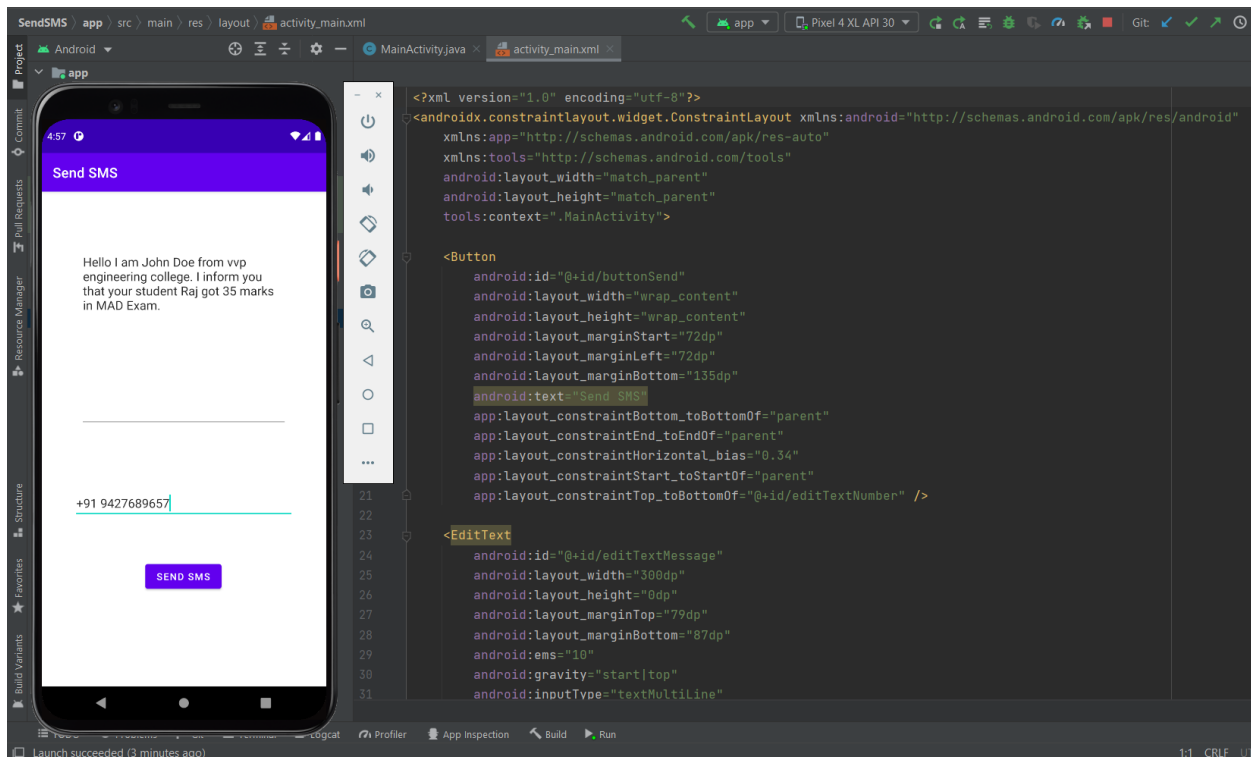
9. Implement Shared preferences project.

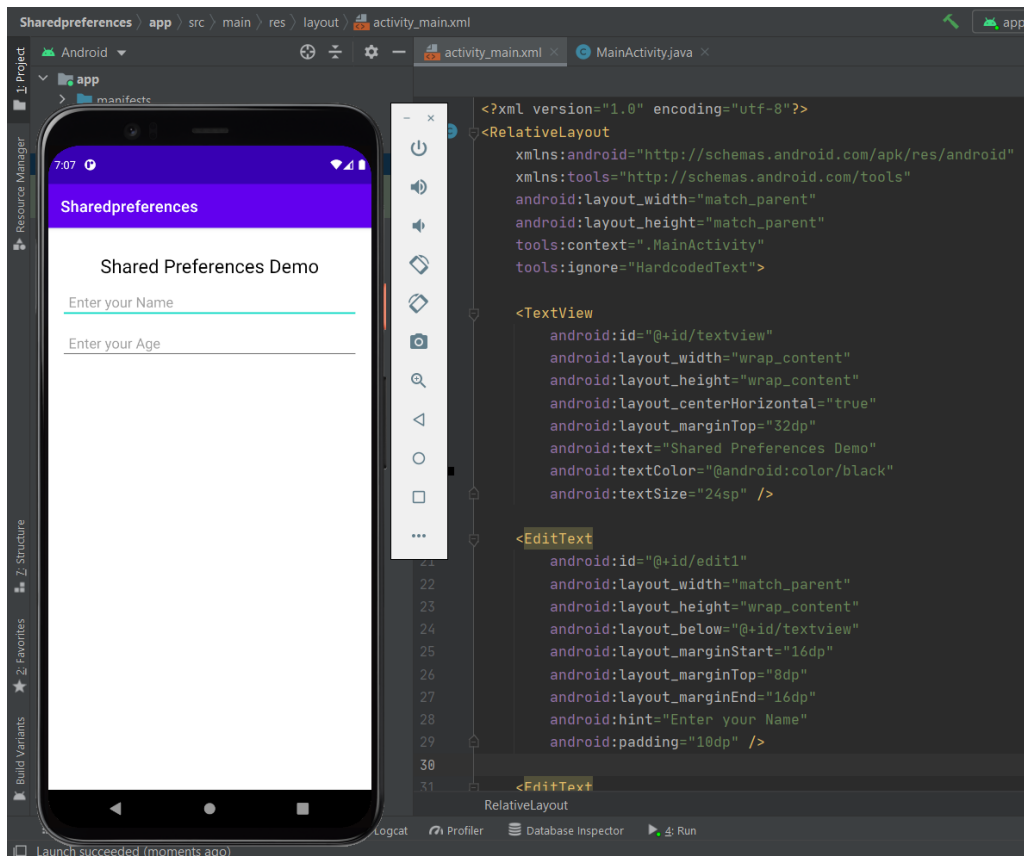### Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    tools:ignore="HardcodedText">

    <TextView
        android:id="@+id/textview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="32dp"
        android:text="Shared Preferences Demo"
        android:textColor="@android:color/black"
        android:textSize="24sp" />

    <EditText
        android:id="@+id/edit1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textview"
        android:layout_marginStart="16dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="16dp"
        android:hint="Enter your Name"
        android:padding="10dp" />

    <EditText
        android:id="@+id/edit2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/edit1"
        android:layout_marginStart="16dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="16dp"
        android:hint="Enter your Age"
        android:padding="10dp" />
</RelativeLayout>
```

Android

app
    manifests

activity_main.xml   MainActivity.java

```
7:07

Sharedpreferences

    Shared Preferences Demo

Enter your Name

Enter your Age
```

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    tools:ignore="HardcodedText">

    <TextView
        android:id="@+id/textview"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="32dp"
        android:text="Shared Preferences Demo"
        android:textColor="@android:color/black"
        android:textSize="24sp" />

    <EditText
        android:id="@+id/edit1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/textview"
        android:layout_marginStart="16dp"
        android:layout_marginTop="8dp"
        android:layout_marginEnd="16dp"
        android:hint="Enter your Name"
        android:padding="10dp" />

    <EditText
```

RelativeLayout

Logcat   Profiler   Database Inspector   4: Run

Launch succeeded (moments ago)

10.Implement Firebase used project.
Activity_main.xml

```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/Signup_buttton"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/signupbutton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="133dp"
        android:layout_marginBottom="156dp"
        android:text="Sign UP"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.173"
        app:layout_constraintStart_toStartOf="parent" />

    <EditText
        android:id="@+id/editTextTextEmaill"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="3dp"
        android:layout_marginBottom="48dp"
        android:ems="10"
        android:hint="Please Enter Your Email Address"
        android:inputType="textEmailAddress"
        app:layout_constraintBottom_toTopOf="@+id/editTextPassword"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent" />

    <EditText
        android:id="@+id/editTextPassword"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="70dp"
        android:layout_marginBottom="44dp"
        android:ems="10"
        android:hint="Please Enter Your Password"
        android:inputType="textPassword"
        app:layout_constraintBottom_toTopOf="@+id/Sign_inButtton"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.229"
```

33

```xml
        app:layout_constraintStart_toStartOf="parent" />

    <Button
        android:id="@+id/Sign_inButtton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="8dp"
        android:layout_marginBottom="116dp"
        android:text="Sign in"
        app:layout_constraintBottom_toTopOf="@+id/signupbutton"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent" />

    <Button
        android:id="@+id/ForgetButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="9dp"
        android:layout_marginTop="44dp"
        android:text="Forget Password"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.542"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/signupbutton" />

    <Button
        android:id="@+id/buttonPhoneSign"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:text="Sign in With Phone no"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/Sign_inButtton" />

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

MainActivity.java

```java
package com.company.firebaseexample;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

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

```java
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;
import com.google.firebase.auth.AuthResult;
import com.google.firebase.auth.FirebaseAuth;
import com.google.firebase.auth.FirebaseUser;
import com.google.firebase.database.DataSnapshot;
import com.google.firebase.database.DatabaseError;
import com.google.firebase.database.DatabaseReference;
import com.google.firebase.database.FirebaseDatabase;
import com.google.firebase.database.ValueEventListener;

public class MainActivity extends AppCompatActivity {

    EditText mail;
    EditText password;
    Button signin;
    Button signup;
    Button forgotpassword;
    Button phoneSign;

    FirebaseAuth auth = FirebaseAuth.getInstance();

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

        mail=findViewById(R.id.editTextTextEmaill);
        password=findViewById(R.id.editTextPassword);
        signin=findViewById(R.id.Sign_inButtton);
        signup=findViewById(R.id.signupbutton);
        forgotpassword=findViewById(R.id.ForgetButton);
        phoneSign=findViewById(R.id.buttonPhoneSign);

        phoneSign.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                Intent i = new Intent(MainActivity.this,phoneSignActivity.class);
                startActivity(i);
                finish();

            }
        });
        signin.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
```

```java
            String userMail = mail.getText().toString();
            String userPassword = password.getText().toString();
            signFirebase(userMail,userPassword);


        }
    });


    signup.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            Intent i = new Intent(MainActivity.this,SignUp.class);
            startActivity(i);



        }
    });

    forgotpassword.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            Intent i = new Intent(MainActivity.this,ForgetActivity.class);
            startActivity(i);


        }
    });


}

public void signFirebase(String userMail,String userPassword)
{
    auth.signInWithEmailAndPassword(userMail, userPassword)
            .addOnCompleteListener(this, new OnCompleteListener<AuthResult>() {
                @Override
                public void onComplete(@NonNull Task<AuthResult> task) {
                    if (task.isSuccessful()) {
                        // Sign in success, update UI with the signed-in user's information
                        Intent i = new Intent(MainActivity.this,Main_Menu.class);
                        startActivity(i);
                        finish();


                    } else {
                        // If sign in fails, display a message to the user.

                        Toast.makeText(MainActivity.this,"Incorrect mail or password
",Toast.LENGTH_SHORT).show();

                    }
```

```
            }
        });


    }

    @Override
    protected void onStart() {
        super.onStart();

        FirebaseUser user = auth.getCurrentUser();
        if(user !=null)
        {
            Intent i = new Intent(MainActivity.this,Main_Menu.class);
            startActivity(i);
            finish();

        }
    }
}
```
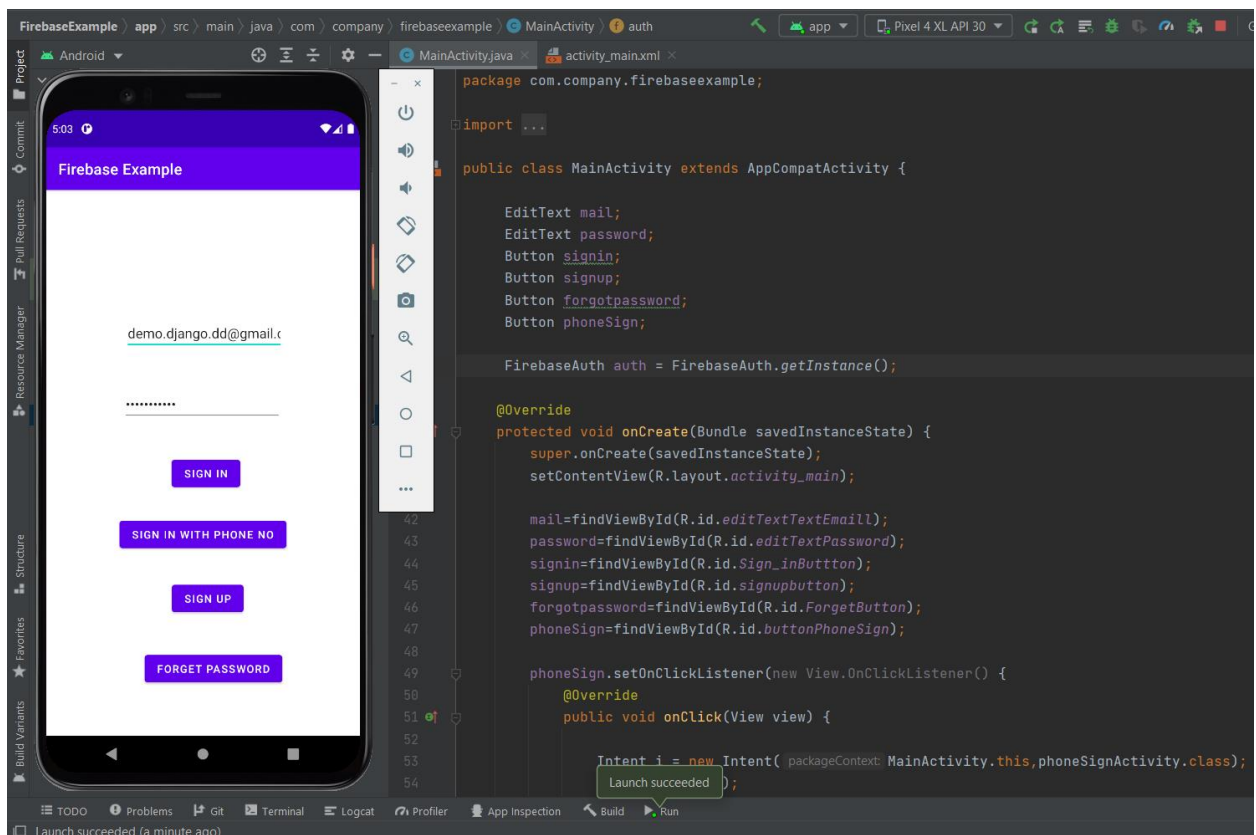
11.Implement Local Notification project.
Activity_main.xml

```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/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Button"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.5"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```java
package com.company.localnotification;
import …

public class MainActivity extends AppCompatActivity {
    Button button;
    public final String CHANNEL_ID= "1";
    int counter = 0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        button = findViewById(R.id.button);

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                counter++;
                button.setText(""+ counter);
                if(counter == 5)
                {
                    startNotification();
                }

            }
```

```java
        });
    }

    @RequiresApi(api = Build.VERSION_CODES.O)
    public void startNotification()
    {
        Intent i = new Intent(this,MainActivity.class);
        PendingIntent pendingIntent = PendingIntent.getActivity(this,0,i,0);

        Intent actionIntent = new Intent(this,recivers.class);
        actionIntent.putExtra("toast","This is Notification Message");

        PendingIntent actionPending = PendingIntent.getBroadcast(this,0,actionIntent,0);
        Notification.Action action = new
Notification.Action.Builder(Icon.createWithResource(this,
            R.drawable.ic_add_alert_24),"Toast Message",actionPending).build();

        Intent dismissIntent = new Intent(this,reciversDismiss.class);
        PendingIntent dismissPending = PendingIntent.getBroadcast(this,0,dismissIntent,0);
        Notification.Action dismissAction = new
Notification.Action.Builder(Icon.createWithResource(this,
            R.drawable.ic_add_alert_24),"Dismiss",dismissPending).build();

        NotificationChannel channel = new NotificationChannel(CHANNEL_ID,"1"
            , NotificationManager.IMPORTANCE_DEFAULT);
        NotificationManager manager =
(NotificationManager)getSystemService(NOTIFICATION_SERVICE);
        manager.createNotificationChannel(channel);

        Bitmap icon = BitmapFactory.decodeResource(getResources(),R.drawable.abc);
    //  String text = getResources().getString(R.string.big_text);

        Notification.Builder builder = new
Notification.Builder(MainActivity.this,CHANNEL_ID);

        builder.setSmallIcon(R.drawable.ic_add_alert_24)
            .setContentTitle("Title")
            .setContentText("Notification Text")
            .setContentIntent(pendingIntent)
            .setAutoCancel(true)
            .addAction(action)
            .addAction(dismissAction)
            .setColor(Color.BLUE)
            .setLargeIcon(icon)
            .setStyle(new Notification.BigPictureStyle().bigPicture(icon));


        NotificationManagerCompat compat =
NotificationManagerCompat.from(MainActivity.this);

        compat.notify(1,builder.build());
```
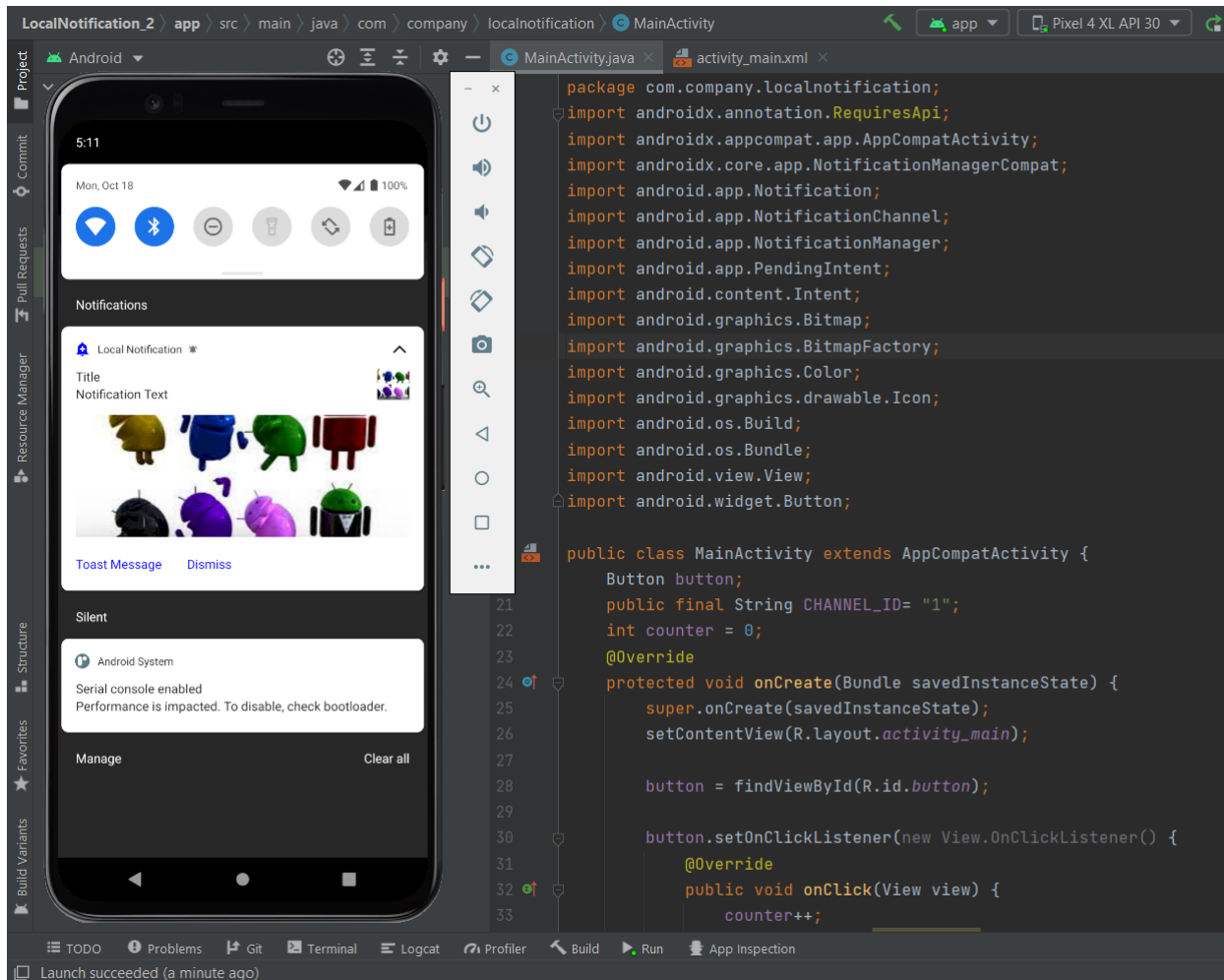
```
            }
        }
```

12. Implement web view project.

MainActivity.java

```java
package com.example.webview;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.webkit.WebView;
import android.webkit.WebViewClient;

public class MainActivity extends AppCompatActivity {
    WebView webView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        webView = findViewById(R.id.web);
        webView.setWebViewClient(new WebViewClient());
        webView.loadUrl("https://www.google.com/");
    }

    @Override
    public void onBackPressed() {
        if(webView.canGoBack())
        {
            webView.goBack();
        }
        else {
            super.onBackPressed();
        }
    }
}
```

Activity_main.xml

```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">
    <WebView
        android:id="@+id/web"
        android:layout_width="match_parent"
        android:layout_height="match_parent" />

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