Layout Manager & Event Listener:

XML:

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

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"

  xmlns:app="http://schemas.android.com/apk/res-auto"

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

  android:layout_width="match_parent"

  android:layout_height="match_parent"

  tools:context=".MainActivity">

  <RelativeLayout

    android:id="@+id/textView2"

    android:layout_width="368dp"

    android:layout_height="495dp"

    android:layout_marginStart="8dp"

    android:layout_marginTop="8dp"

    app:layout_constraintStart_toStartOf="parent"

    app:layout_constraintTop_toTopOf="parent">

    <LinearLayout

      android:id="@+id/linearLayout"

      android:layout_width="match_parent"

      android:layout_height="40dp"

      android:layout_alignParentTop="true"

      android:layout_centerHorizontal="true"

      android:layout_marginTop="28dp"

      android:orientation="vertical"

      android:visibility="visible">

      <TextView

        android:id="@+id/textView"

        android:layout_width="match_parent"

```xml
        android:layout_height="40dp"

        android:text="Layout Manager Event
Listener"

        android:textAlignment="center"

        android:textColor="@color/black"

        android:textSize="24sp" />

    </LinearLayout>


    <LinearLayout

        android:id="@+id/linearLayout2"

        android:layout_width="match_parent"

        android:layout_height="50dp"

        android:layout_below="@+id/linearLayout"

        android:layout_alignParentStart="true"

        android:layout_marginStart="11dp"

        android:layout_marginTop="23dp"

        android:orientation="horizontal">


        <Button

            android:id="@+id/b1"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:layout_weight="1"

            android:text="RED" />


        <Button

            android:id="@+id/b2"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"

            android:layout_weight="1"

            android:text="GREEN" />


        <Button
```

```xml
        android:id="@+id/b3"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_weight="1"

        android:text="BLUE" />

    </LinearLayout>


    <ListView

        android:id="@+id/l"

        android:layout_width="match_parent"

        android:layout_height="200dp"

        android:layout_alignParentEnd="true"

        android:layout_centerVertical="true" />


    <LinearLayout

        android:layout_width="match_parent"

        android:layout_height="50dp"

        android:layout_alignStart="@+id/linearLayout2"

        android:layout_alignParentBottom="true"

        android:layout_marginStart="110dp"

        android:layout_marginBottom="52dp"

        android:orientation="vertical">


        <Spinner

            android:id="@+id/s"

            android:layout_width="match_parent"


            android:layout_height="50dp"

            android:visibility="visible" />

    </LinearLayout>

  </RelativeLayout>


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

Java:

```java
package com.example.ex2;

import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.ListView;
import android.widget.Spinner;
import android.widget.Toast;
import android.view.View;



public class MainActivity extends AppCompatActivity {
    Button b1,b2,b3;
    ListView l;
    Spinner s;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1=(Button)findViewById( R.id.b1);
        b2=(Button)findViewById( R.id.b2 );
        b3=(Button)findViewById( R.id.b3 );
        l=(ListView)findViewById( R.id.l );
        s=(Spinner)findViewById( R.id.s );
        b1.setOnClickListener( new View.OnClickListener()
        { @Override
        public void onClick(View v) {
            b1.setTextColor( Color.RED );
```

```java
    }
} );
b2.setOnClickListener( new View.OnClickListener()
{ @Override
public void onClick(View v) {
    b2.setTextColor( Color.GREEN );
}
} );
b3.setOnClickListener( new View.OnClickListener()
{ @Override
public void onClick(View v) {
    b3.setTextColor( Color.BLUE );
}
} );
String a[]=new String[] {"Red", "Green","Blue"};
final ArrayAdapter<String> aa=new
    ArrayAdapter<String>(this,android.R.layout.simple_dropdown_item_1line,a );
l.setAdapter( aa );
s.setAdapter( aa );
l.setOnItemClickListener( new AdapterView.OnItemClickListener()
{ @Override
public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
    String s=(String)l.getItemAtPosition( position );
    Toast.makeText(getApplicationContext(),"List View "+s,
        Toast.LENGTH_SHORT).show();
}
} );
s.setOnItemSelectedListener( new AdapterView.OnItemSelectedListener()
{ @Override
public void onItemSelected(AdapterView<?> parent, View view, int position, long id)
{
    String s1=(String)parent.getItemAtPosition( position );
    Toast.makeText(getApplicationContext(),"Spinner "+s1,
```

```java
                    Toast.LENGTH_SHORT).show();

        }
            @Override

            public void onNothingSelected(AdapterView<?> parent) {

            }

        } );

    }
}
```

Graphical Primitives:

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">


    <RelativeLayout

        android:id="@+id/relativeLayout"

        android:layout_width="368dp"

        android:layout_height="495dp"

        android:layout_marginStart="4dp"

        android:layout_marginTop="16dp"

        app:layout_constraintStart_toStartOf="parent"

        app:layout_constraintTop_toTopOf="parent">


        <ImageView

            android:id="@+id/i"
```

```xml
        android:layout_width="288dp"

        android:layout_hehgt="335dp"

        app:srcCompat="@android:drawable/btn_star" />

    </RelativeLayout>


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

JAVA:

```java
package com.example.ex3;


import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.graphics.Bitmap;

import android.graphics.Canvas;

import android.graphics.Color;

import android.graphics.Paint;

import android.graphics.drawable.BitmapDrawable;

import android.os.Bundle;

import android.widget.ImageView;


public class MainActivity extends AppCompatActivity {
    ImageView i;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Bitmap b= Bitmap.createBitmap( 720,1280,Bitmap.Config.ARGB_8888 );
        i=(ImageView)findViewById( R.id.i ); i.setBackgroundDrawable( new
            BitmapDrawable( b ) );
        Canvas canvas=new Canvas( b );
        Paint paint =new Paint( );
        paint.setColor( Color.BLUE );
        paint.setTextSize( 50 );
```

```
        canvas.drawText( "Rectangle", 420, 150, paint );

        canvas.drawRect( 400, 200, 650, 700, paint );

        canvas.drawText( "Circle",120, 150, paint );

        canvas.drawCircle( 200,350, 150, paint );

        canvas.drawText( "Square", 120, 800, paint );

        canvas.drawRect( 50, 850, 350, 1150, paint );

        canvas.drawText( "Line", 480, 800, paint );

        canvas.drawLine( 520,850, 520, 1150, paint );

    }

}
```

Animation using Multithread:

XML:

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

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:app="http://schemas.android.com/apk/res-auto"

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    tools:context=".MainActivity">


    <RelativeLayout

        android:layout_width="368dp"

        android:layout_height="495dp"

        tools:layout_editor_absoluteX="50dp"

        tools:layout_editor_absoluteY="30dp">


        <ImageView

            android:id="@+id/i"

            android:layout_width="267dp"

            android:layout_height="233dp"

            android:layout_alignParentTop="true"

            android:layout_marginTop="94dp" />
```

```xml
    <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignBaseline="@+id/b2"
        android:layout_alignStart="@+id/i"
        android:layout_alignBottom="@+id/b2"
        android:layout_marginStart="0dp"
        android:layout_marginBottom="-12dp"
        android:text="LOAD IMAGE 1" />

    <Button
        android:id="@+id/b2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="33dp"
        android:layout_marginBottom="54dp"
        android:text="LOAD IMAGE 2"
        tools:layout_editor_absoluteX="235dp"
        tools:layout_editor_absoluteY="385dp" />
    </RelativeLayout>

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

JAVA:

```java
package com.example.ex4;


import androidx.appcompat.app.AppCompatActivity;


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

```java
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
    ImageView i;
    Button b1,b2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        i=(ImageView)findViewById( R.id.i );
        b1=(Button)findViewById( R.id.b1 );
        b2=(Button)findViewById( R.id.b2 );
        b1.setOnClickListener( new View.OnClickListener()
        { @Override
        public void onClick(View v) {
            new Thread( new Runnable() {
                @Override
                public void run() {
                    i.post( new Runnable() {
                        @Override
                        public void run() {
                            i.setImageResource( R.drawable.n1 );
                        }
                    } );
                }
            } ).start();
        }
        } );
        b2.setOnClickListener( new View.OnClickListener()
        { @Override
        public void onClick(View v) {
            new Thread( new Runnable(){
```

```java
            @Override
            public void run() {
                i.post( new Runnable() {
                    @Override
                    public void run() {
                        i.setImageResource( R.drawable.n2 );
                    }
                } );
            }
        } ).start();
    }
    } );
}
}
```

Persistent Database:

XML1:

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

<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"

    xmlns:app="http://schemas.android.com/apk/res-auto"

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

    android:layout_width="match_parent"

    android:layout_height="match_parent"

    tools:context=".MainActivity">

    <RelativeLayout

        android:layout_width="368dp"

        android:layout_height="495dp"

        tools:layout_editor_absoluteX="8dp"

        tools:layout_editor_absoluteY="8dp">

    <TextView

        android:id="@+id/f1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"
```

```xml
        android:layout_alignParentTop="true"

        android:layout_alignStart="@+id/b1"

        android:layout_marginTop="65dp"

        android:text="FirstName" />

    <TextView

        android:id="@+id/l1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignStart="@+id/f1"

        android:layout_below="@+id/e1"

        android:layout_marginTop="16dp"

        android:text="LastName" />

    <TextView

        android:id="@+id/m1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignStart="@+id/b1"

        android:layout_below="@+id/e2"

        android:layout_marginTop="19dp"

        android:text="MailId" />

    <EditText

        android:id="@+id/e1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignParentEnd="true"

        android:layout_alignTop="@+id/f1"

    android:layout_marginEnd="24dp"

    android:ems="10"

    android:inputType="textPersonName" />

    <EditText

        android:id="@+id/e2"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"
```

```
    android:layout_alignStart="@+id/e1"

    android:layout_alignTop="@+id/l1"

    android:ems="10"

    android:inputType="textPersonName" />

<EditText

    android:id="@+id/e3"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_alignStart="@+id/e2"

    android:layout_alignTop="@+id/m1"

    android:ems="10"

    android:inputType="textPersonName" />

<Button

    android:id="@+id/b1"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_below="@+id/m1"

    android:layout_marginTop="52dp"

    android:layout_toStartOf="@+id/e3"

    android:text="Add" />

<Button

    android:id="@+id/b2"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_alignTop="@+id/b1"

    android:layout_centerHorizontal="true"

    android:text="Close" />

<Button

    android:id="@+id/b3"

    android:layout_width="wrap_content"

    android:layout_height="wrap_content"

    android:layout_alignBaseline="@+id/b2"

    android:layout_alignBottom="@+id/b2"
```

```xml
        android:layout_marginStart="12dp"

        android:layout_toEndOf="@+id/b2"

        android:text="Show" />

    </RelativeLayout>


    <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>
```

XML2:

```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=".MainActivity2">

    <RelativeLayout

        android:layout_width="368dp"

        android:layout_height="495dp"

        tools:layout_editor_absoluteX="8dp"

        tools:layout_editor_absoluteY="8dp">

        <TextView

            android:id="@+id/f2"

            android:layout_width="wrap_content"

            android:layout_height="wrap_content"
```

```xml
        android:layout_alignParentTop="true"

        android:layout_marginEnd="32dp"

        android:layout_marginTop="68dp"

        android:layout_toStartOf="@+id/e4"

        android:text="FirstName" />
    <EditText

        android:id="@+id/e4"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignStart="@+id/b5"

        android:layout_alignTop="@+id/f2"

        android:ems="10"

        android:inputType="textPersonName" />
    <TextView

        android:id="@+id/l2"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignStart="@+id/f2"

        android:layout_below="@+id/e4"

        android:layout_marginTop="20dp"

        android:text="LastName" />
    <EditText

        android:id="@+id/e5"

        android:layout_width="wrap_content"


    android:layout_height="wrap_content"

    android:layout_alignStart="@+id/e4"

    android:layout_alignTop="@+id/l2"

    android:ems="10"

    android:inputType="textPersonName" />
    <TextView

        android:id="@+id/m2"

        android:layout_width="wrap_content"
```

```xml
    android:layout_height="wrap_content"
    android:layout_alignStart="@+id/l2"
    android:layout_below="@+id/e5"
    android:layout_marginTop="21dp"
    android:text="MailId" />
<EditText
    android:id="@+id/e6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignStart="@+id/e5"
    android:layout_alignTop="@+id/m2"
    android:ems="10"
    android:inputType="textPersonName" />
<Button
    android:id="@+id/b4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignStart="@+id/m2"
    android:layout_below="@+id/e6"
    android:layout_marginTop="35dp"
    android:text="previous" />
<Button
    android:id="@+id/b5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBottom="@+id/b4"
    android:layout_centerHorizontal="true"
    android:text="Next" />
<Button
    android:id="@+id/b6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/b5"
```

```
        android:layout_alignBottom="@+id/b5"

        android:layout_marginStart="13dp"

        android:layout_toEndOf="@+id/b5"

        android:text="Back" />


    </RelativeLayout>


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

JAVA1:

```java
package com.example.exp5;


import androidx.appcompat.app.AppCompatActivity;


import android.content.Intent;
import android.database.sqlite.SQLiteDatabase;


import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;


public class MainActivity extends AppCompatActivity {
    SQLiteDatabase db;
    String f1,l1,m1;
    EditText e1,e2,e3;
    Button add,close,show;


    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        db=openOrCreateDatabase("Mydb",MODE_PRIVATE,null);
```

```java
db.execSQL("CREATE TABLE IF NOT EXISTS student(fname VARCHAR, lname VARCHAR,
email VARCHAR);");

add=(Button)findViewById(R.id.b1);

close=(Button)findViewById(R.id.b2);

show=(Button)findViewById(R.id.b3);

add.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View view) {

        e1=(EditText)findViewById(R.id.e1);

        e2=(EditText)findViewById(R.id.e2);

        e3=(EditText)findViewById(R.id.e3);

        f1=e1.getText().toString();

        l1=e2.getText().toString();

        m1=e3.getText().toString();

        db.execSQL("INSERT INTO student VALUES ('"+f1+"','"+l1+"','"+m1+"');");

        Toast.makeText(getApplicationContext(),

            "Row Inserted",Toast.LENGTH_LONG).show();

    }

});

close.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View view) {

        System.exit(0);


    }

});

show.setOnClickListener(new View.OnClickListener()

{ @Override

public void onClick(View view) {

    Intent i=new Intent(getApplicationContext(),MainActivity2.class);

    startActivity(i);

}

});
```

```
        }
}
```

JAVA2:

```java
package com.example.exp5;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.content.Intent;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity2 extends AppCompatActivity {
    EditText fn,ln,em;
    Button prev,next,back;
    SQLiteDatabase db;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);
        fn=(EditText)findViewById(R.id.e4);
        ln=(EditText)findViewById(R.id.e5);
        em=(EditText)findViewById(R.id.e6);
        prev=(Button)findViewById(R.id.b4);
        next=(Button)findViewById(R.id.b5);
        back=(Button)findViewById(R.id.b6);
        db=openOrCreateDatabase("Mydb",MODE_PRIVATE,null);
        final Cursor c=db.rawQuery("select * from student",null);
        c.moveToFirst();
```

```java
back.setOnClickListener(new View.OnClickListener()

{ @Override

public void onClick(View view) {

    Intent i1=new Intent(getApplicationContext(),MainActivity.class);

    startActivity(i1);

}

});

prev.setOnClickListener(new View.OnClickListener()

{ @Override

public void onClick(View view) {

    try {

        c.moveToPrevious();

        fn.setText(c.getString(c.getColumnIndexOrThrow("fname")));

        ln.setText(c.getString(c.getColumnIndexOrThrow("lname")));

        em.setText(c.getString(c.getColumnIndexOrThrow("email")));

    }

    catch (Exception e){

        Toast.makeText(getApplicationContext(),

            "First Record",Toast.LENGTH_SHORT).show();

        e.printStackTrace();

    }

}

});

next.setOnClickListener(new View.OnClickListener() {

    @Override

    public void onClick(View view) {

        try{

            c.moveToNext();

            fn.setText(c.getString(c.getColumnIndexOrThrow("fname")));

            ln.setText(c.getString(c.getColumnIndexOrThrow("lname")));

            em.setText(c.getString(c.getColumnIndexOrThrow("email")));

        }

        catch (Exception e){
```

```
                Toast.makeText(getApplicationContext(),

                    "Last Record",Toast.LENGTH_SHORT).show();

            }

        }

    });

    }

}
```

SD CARD MANAGER:

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">

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

        android:layout_width="match_parent"

        android:layout_height="match_parent"

        android:layout_margin="20dp"

        android:orientation="vertical">

        <EditText

            android:id="@+id/editText"

            android:layout_width="match_parent"

            android:layout_height="wrap_content"

            android:singleLine="true"

            android:textSize="30dp" />

        <Button

            android:id="@+id/button"

            android:layout_width="match_parent"

            android:layout_height="wrap_content"

            android:layout_margin="10dp"
```

```xml
        android:text="Write Data"

        android:textSize="30dp" />

    <Button

        android:id="@+id/button2"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_margin="10dp"

        android:text="Read data"

        android:textSize="30dp" />

    <Button

        android:id="@+id/button3"

        android:layout_width="match_parent"

        android:layout_height="wrap_content"

        android:layout_margin="10dp"

        android:text="Clear"

        android:textSize="30dp" />

    </LinearLayout>


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

JAVA:

```java
package com.example.ex6;


import androidx.appcompat.app.AppCompatActivity;


import android.os.Bundle;

import android.os.Environment;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.Toast;

import java.io.BufferedReader;

import java.io.File;

import java.io.FileInputStream;
```

```java
import java.io.FileOutputStream;

import java.io.InputStreamReader;


public class MainActivity extends AppCompatActivity {

    EditText e1;

    Button write,read,clear;


    @Override
    protected void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity_main);

        e1= (EditText) findViewById(R.id.editText);

        write= (Button) findViewById(R.id.button);

        read= (Button) findViewById(R.id.button2);

        clear= (Button) findViewById(R.id.button3);

        write.setOnClickListener(new View.OnClickListener()

        {

            @Override

            public void onClick(View v)

            {

                String message=e1.getText().toString();

                try

                {

                    File f=new
File(Environment.getExternalStoragePublicDirectory(Environment.DIRECTORY_DOCUMENTS),"myf
ile.txt");

                    f.createNewFile();

                    FileOutputStream fout=new

                        FileOutputStream(f);

                    fout.write(message.getBytes()); fout.close();

                    Toast.makeText(getBaseContext(),"Data Written in
SDCARD",Toast.LENGTH_LONG).show();

                }

                catch (Exception e)
```

```java
            {
                Toast.makeText(getBaseContext(),e.getMessage(),Toast.LENGTH_LONG).show();

            }
        }
    });
    read.setOnClickListener(new View.OnClickListener()
    {
        @Override
        public void onClick(View v)
        {
            String message;
            String buf = "";
            try
            {
                File f = new File(getExternalFilesDir(null),"/sdcard/myfile.txt");
                FileInputStream fin = new FileInputStream(f);
                BufferedReader br = new BufferedReader(new InputStreamReader(fin));
                while ((message = br.readLine()) != null) {
                    buf += message;
                }
                e1.setText(buf);
                br.close();
                fin.close();
                Toast.makeText(getBaseContext(),"Data Received from
SDCARD",Toast.LENGTH_LONG).show();
            }
            catch (Exception e)
            {
                Toast.makeText(getBaseContext(),
                        e.getMessage(), Toast.LENGTH_LONG).show();
            }
        }
    });
```

```java
        clear.setOnClickListener(new View.OnClickListener()

    {

        @Override

        public void onClick(View v)

        {

            e1.setText("");

        }

    });


    }

}
```

Manifest:

```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-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"></uses-permission>

    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"></uses-permission>


    <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.Ex6"

    tools:targetApi="31">

        <activity

            android:name=".MainActivity"

            android:exported="true">

            <intent-filter>
```

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

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

</manifest>
```

EMAIL

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">


  <RelativeLayout

    android:layout_width="368dp"

    android:layout_height="495dp"

    tools:layout_editor_absoluteX="8dp"

    tools:layout_editor_absoluteY="8dp">

    <TextView

      android:id="@+id/textView"

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:layout_alignParentStart="true"

      android:layout_alignParentTop="true"

      android:layout_marginStart="23dp"

      android:layout_marginTop="51dp"

      android:text="Recipient"
```

```xml
        android:textSize="18sp"

        android:textStyle="bold" />

    <EditText

        android:id="@+id/e1"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignParentTop="true"

        android:layout_marginStart="35dp"

        android:layout_marginTop="37dp"

        android:layout_toEndOf="@+id/textView"

        android:ems="10"

        android:inputType="textPersonName" />

    <TextView

        android:id="@+id/textView2"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_below="@+id/e1"

        android:layout_marginTop="39dp"

        android:layout_toStartOf="@+id/e1"

    android:text="Subject"

    android:textSize="18sp"

    android:textStyle="bold" />

    <TextView

        android:id="@+id/textView3"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignStart="@+id/textView2"

        android:layout_below="@+id/textView2"

        android:layout_marginTop="43dp"

        android:text="Message"

        android:textSize="18sp"

        android:textStyle="bold" />

    <EditText
```

```xml
        android:id="@+id/e2"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignStart="@+id/e1"

        android:layout_below="@+id/e1"

        android:layout_marginTop="26dp"

        android:ems="10"

        android:inputType="textPersonName" />
    <EditText

        android:id="@+id/e3"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_alignBottom="@+id/textView3"

        android:layout_alignStart="@+id/e2"

        android:ems="10"

        android:inputType="textPersonName" />
    <Button

        android:id="@+id/b"

        android:layout_width="wrap_content"

        android:layout_height="wrap_content"

        android:layout_below="@+id/textView3"

        android:layout_marginTop="48dp"

        android:layout_toEndOf="@+id/textView3"

        android:text="SEND" />
    </RelativeLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

JAVA:

```java
package com.example.ex9;


import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle;

import android.view.View;
```

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

public class MainActivity extends AppCompatActivity {
    Button b;
    EditText e1,e2,e3;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b = (Button) findViewById( R.id.b );
        e1 = (EditText) findViewById( R.id.e1 );
        e2 = (EditText) findViewById( R.id.e2 );
        e3 = (EditText) findViewById( R.id.e3 );
        b.setOnClickListener( new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String to = e1.getText().toString();
                String subject = e2.getText().toString();
                String message = e3.getText().toString();
                Intent i = new Intent( Intent.ACTION_SEND );
                i.putExtra( Intent.EXTRA_EMAIL, new String[]{to}
                ); i.putExtra( Intent.EXTRA_SUBJECT, subject );
                i.putExtra( Intent.EXTRA_TEXT, message );
                i.setType( "message/rfc822" );
                startActivity( Intent.createChooser( i, "Choose EMail App" ) );
            }
        } );
    }
}
```

Manifest.XML:

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

```xml
    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.Ex9"
        tools:targetApi="34">
        <activity
            android:name=".MainActivity2"
            android:exported="false" />
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
                <!--<action android:name="android.intent.action.SEND" />
                <category android:name="android.intent.category.DEFAULT" />
                <data android:mimeType="message/rfc822" />-->
            </intent-filter>
        </activity>
    </application>

</manifest>
```

XML2& JAVA2 are Blank.

NOTIFICATION MANAGER:

XML :

<?xml version="1.0" encoding="utf-8"?> <android.support.constraint.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="e.student.alertonreceivingmsg.MainActivity">

<RelativeLayout android:layout_width="368dp" android:layout_height="495dp" tools:layout_editor_absoluteX="8dp" tools:layout_editor_absoluteY="8dp">

<TextView android:id="@+id/textView" android:layout_width="wrap_content" android:layout_height="wrap_content" android:layout_alignParentTop="true" android:layout_centerHorizontal="true" android:layout_marginTop="22dp" android:text="Message" android:textColor="@color/colorPrimary" android:textSize="24sp" android:textStyle="bold" />

<EditText android:id="@+id/e" android:layout_width="wrap_content" android:layout_height="wrap_content" android:layout_below="@+id/textView" android:layout_centerHorizontal="true" android:layout_marginTop="40dp" android:ems="10"

android:inputType="textPersonName" />

<Button android:id="@+id/b" android:layout_width="wrap_content" android:layout_height="wrap_content" android:layout_alignStart="@+id/textView" android:layout_below="@+id/e" android:layout_marginTop="72dp" android:text="notify" />

</RelativeLayout>

</android.support.constraint.ConstraintLayout>

XML2:

<?xml version="1.0" encoding="utf-8"?> <android.support.constraint.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="e.student.notificationmanager.Main2Activity">

</android.support.constraint.ConstraintLayout>

JAVA1:

package e.student.alertonreceivingmsg; import android.app.Notification; import android.app.NotificationManager; import android.app.PendingIntent; import android.content.Intent;

import android.support.v7.app.AppCompatActivity; import android.os.Bundle; import android.view.View; import android.widget.Button; import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

Button b;

EditText e; @Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(

```java
R.layout.activity_main ); b=(Button)findViewById(
R.id.b ); e=(EditText)findViewById( R.id.e );
b.setOnClickListener( new View.OnClickListener() {  @Override
public void onClick(View v) {
Intent intent=new Intent( MainActivity.this,Main2Activity.class );
PendingIntent pendingIntent = PendingIntent.getActivity( MainActivity.this, 0,  intent, 0 );
Notification notification = new Notification.Builder( MainActivity.this )
.setContentTitle( "New Message")
.setContentText( e.getText().toString())
.setSmallIcon( R.mipmap.ic_launcher)
.setContentIntent( pendingIntent ).build();
NotificationManager manager = (NotificationManager) getSystemService(  NOTIFICATION_SERVICE
);
notification.flags |= Notification.FLAG_AUTO_CANCEL;  manager.notify( 0, notification );
}
} );
}
}
```

 JAVA2:

```java
package e.student.notificationmanager;
 import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
public class Main2Activity extends AppCompatActivity {
@Override
protected void onCreate(Bundle savedInstanceState)
{ super.onCreate( savedInstanceState );
 setContentView( R.layout.activity_main2 );
} }
```

EX NO: 8—GPS LOCATION TRACKING.

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">

    <RelativeLayout
        android:id="@+id/relativeLayout"
        android:layout_width="0dp"
        android:layout_height="495dp"
        android:layout_marginStart="16dp"
        android:layout_marginTop="28dp"
        android:layout_marginEnd="16dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <TextView
            android:id="@+id/tv"
            android:layout_width="wrap_content"
            android:layout_height="10mm"
            android:layout_alignParentTop="true"
            android:layout_centerHorizontal="true"
            android:layout_marginTop="117dp"
            android:text="GPS" />

        <TextView
            android:id="@+id/l1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_below="@+id/tv"
            android:layout_alignParentStart="true"
            android:layout_marginStart="41dp"
            android:layout_marginTop="45dp"
            android:text="latitude" />

        <TextView
            android:id="@+id/l2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_below="@+id/l1"
            android:layout_alignEnd="@+id/l1"
            android:layout_marginTop="66dp"
```

```xml
            android:layout_marginEnd="-3dp"
            android:text="longitude" />

        <EditText
            android:id="@+id/e1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_above="@+id/l2"
            android:layout_marginStart="20dp"
            android:layout_toEndOf="@+id/l1"
            android:ems="10"
            android:inputType="textPersonName" />

        <EditText
            android:id="@+id/e2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_below="@+id/e1"
            android:layout_alignEnd="@+id/e1"
            android:layout_marginTop="48dp"
            android:layout_marginEnd="-5dp"
            android:ems="10"
            android:inputType="textPersonName" />

        <Button
            android:id="@+id/b1"
            android:layout_width="130dp"
            android:layout_height="wrap_content"
            android:layout_below="@+id/e2"
            android:layout_alignStart="@+id/e2"
            android:layout_marginStart="10dp"
            android:layout_marginTop="97dp"
            android:text="locate" />
    </RelativeLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Activity_main2.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=".MainActivity2">

    <RelativeLayout
        android:layout_width="436dp"
```

```
        android:layout_height="702dp"
        tools:layout_editor_absoluteX="-2dp"
        tools:layout_editor_absoluteY="28dp">

        <WebView
            android:id="@+id/w1"
            android:layout_width="410dp"
            android:layout_height="457dp"
            android:layout_alignParentEnd="true"
            android:layout_centerHorizontal="true"
            android:layout_marginEnd="25dp" />
    </RelativeLayout>

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

MainActivity.java:

```java
package com.example.ex8;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;

import android.os.Bundle; import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
    Button b1;
    EditText e1,e2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1=(Button)findViewById( R.id.b1 );
        e1=(EditText)findViewById( R.id.e1 );
        e2=(EditText)findViewById( R.id.e2 );
        b1.setOnClickListener( new View.OnClickListener()
        { @Override
        public void onClick(View v) {
            Intent i=new Intent( getApplicationContext(),MainActivity2.class );
            i.putExtra( "e1",e1.getText().toString() ); i.putExtra(
                "e2",e2.getText().toString() );
            startActivity( i );
        }
        } );
    }
}
```

MainActivity2.java:

```java
package com.example.ex8;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.webkit.WebView;
import android.webkit.WebViewClient;

public class MainActivity2 extends AppCompatActivity {
    String lat,long1;
    WebView w1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);
        Bundle
            b=getIntent().getExtras();
        lat=b.getString( "e1" );
        long1=b.getString( "e2" );
        w1=(WebView)findViewById( R.id.w1 );
        w1.setWebViewClient( new WebViewClient() );
        w1.getSettings().setJavaScriptEnabled( true );
        String url="https://www.google.com/maps/search/?api=1&query="+lat+","+long1;
        w1.loadUrl(url);
    }
}
```

EX NO: 1--GUI COMPONENTS , FONT AND COLOURS.

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_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/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"
```

```xml
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.255" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="52dp"
        android:text="Change Size"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.515"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />

    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="4dp"
        android:layout_marginTop="40dp"
        android:text="Change Colour"
        app:layout_constraintStart_toStartOf="@+id/button"
        app:layout_constraintTop_toBottomOf="@+id/button" />

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

MainActivity.java:

```java
package com.example.exp1;

import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.TextView;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
    TextView t;
    Button b1,b2;
    int ch=1;
    float font=25;
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        t=(TextView)findViewById(R.id.textView);
        b1=(Button)findViewById(R.id.button);
        b2=(Button)findViewById(R.id.button2);
        b1.setOnClickListener(new View.OnClickListener() {
            public void onClick(View v) {
                t.setTextSize( font );
```

```java
         font = font +5;
         if (font == 60)
            font = 25;
      }
   });
   b2.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {
         switch(ch) {
            case 1:
               t.setTextColor( Color.RED );
               break;
            case 2:
               t.setTextColor( Color.GREEN );
               break;
            case 3:
               t.setTextColor( Color.BLUE );
               break;
            case 4:
               t.setTextColor( Color.CYAN );
               break;
            case 5:
               t.setTextColor( Color.YELLOW );
               break;
            case 6:
               t.setTextColor( Color.MAGENTA );
               break;
         }
         ch++;
         if(ch == 7)
            ch = 1;
      }
   });
   }
}
```