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MAD Lab Manual

Computer science (Indian Institute of Technology Goa)

Ex. No: 01	Develop an application that uses GUI components, Font and Colors
Date:	

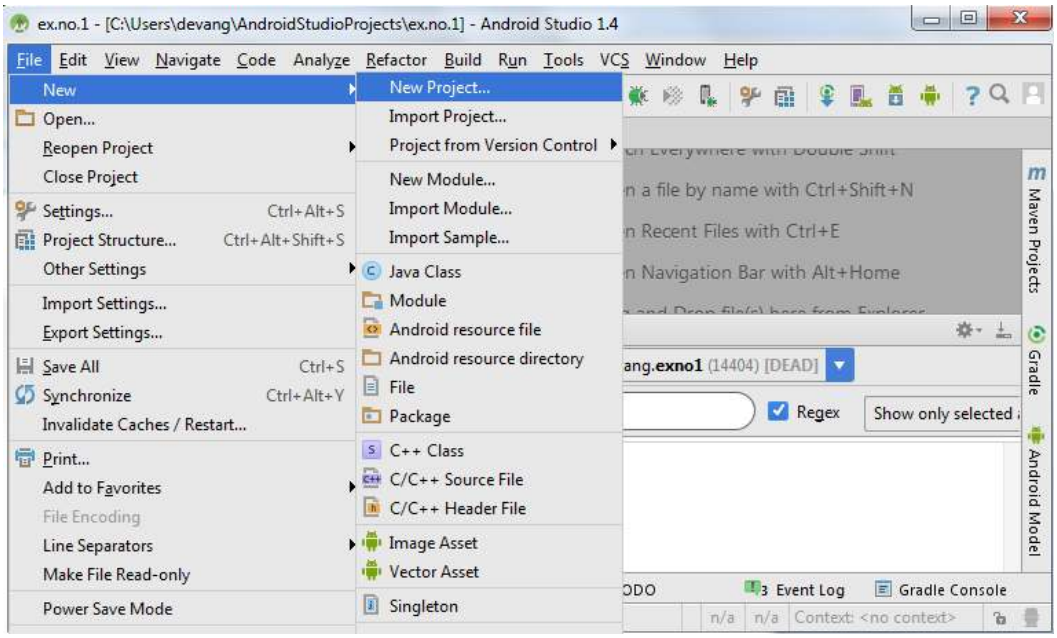
Aim:

To develop a Simple Android Application that uses GUI components, Font and Colors.

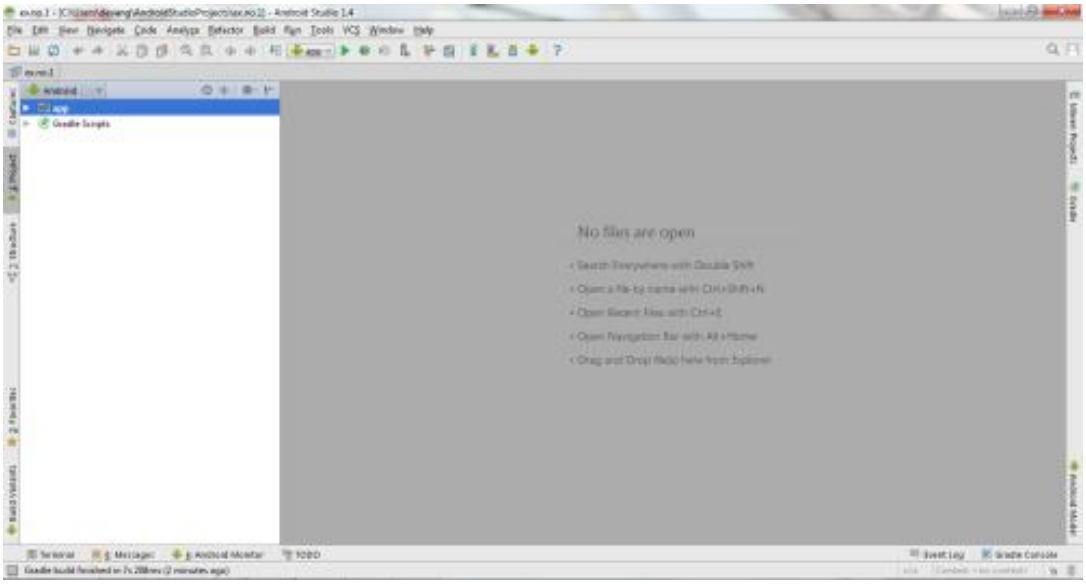
Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.



- Then type the Application name as **"exno1"**and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then select the **Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.



Designing layout for the Android Application:

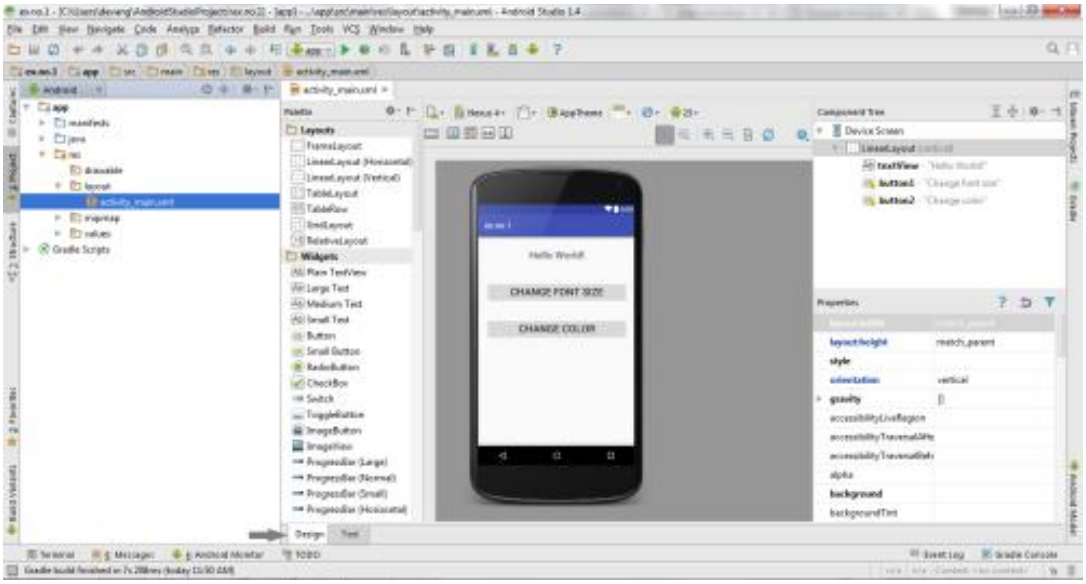
- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:orientation="vertical"
  android:layout_width="match_parent"
  android:layout_height="match_parent">
<TextView
    android:id="@+id/textView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="30dp"
    android:gravity="center"
    android:text="Hello World!"
    android:textSize="25sp"
    android:textStyle="bold" />
<Button
    android:id="@+id/button1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:gravity="center"
    android:text="Change font size"
    android:textSize="25sp" />
```

```
<Button
    android:id="@+id/button2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:gravity="center"
    android:text="Change color"
    android:textSize="25sp" />
</LinearLayout>
```

- Now click on Design and your application will look as given below.



- So now the designing part is completed.

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno1 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

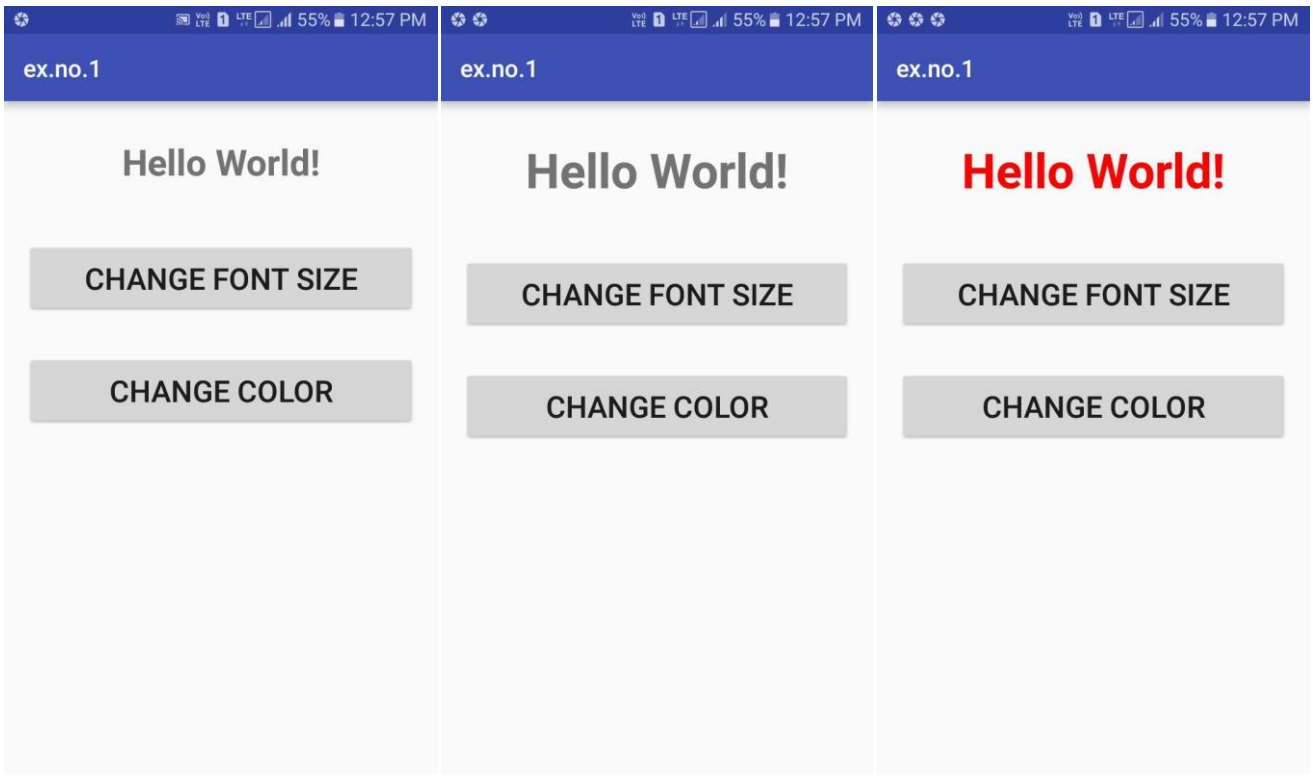
```
package com.example.exno1;
import android.graphics.Color;
//import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity
{
   int ch=1;
   float font=30;
```

```
@Override
protected void onCreate(Bundle savedInstanceState)
{
  super.onCreate(savedInstanceState);
  setContentView(R.layout.activity_main);
  final TextView t= (TextView) findViewById(R.id.textView);
  Button b1= (Button) findViewById(R.id.button1);
  b1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
      t.setTextSize(font);
      font = font + 5;
      if (font == 50)
        font = 30;
    }
  });
  Button b2= (Button) findViewById(R.id.button2);
  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;
        }
    });
  }
}
```

- So now the Coding part is also completed.
- Now run the application to see the output.

Output:



Result:

Thus a Simple Android Application that uses GUI components, Font and Colors is developed and executed successfully.

Ex. No. 02 **Develop an application that uses Layout Managers and Event Listeners**
Date:

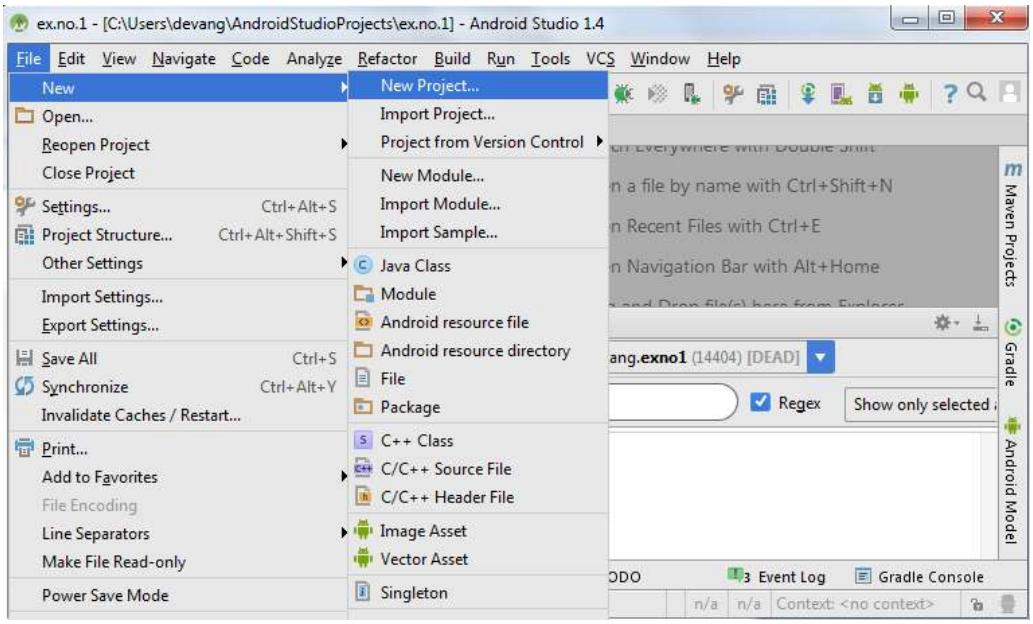
Aim:

To develop a Simple Android Application that uses Layout Managers and Event Listeners.

Procedure:

Creating a New project:

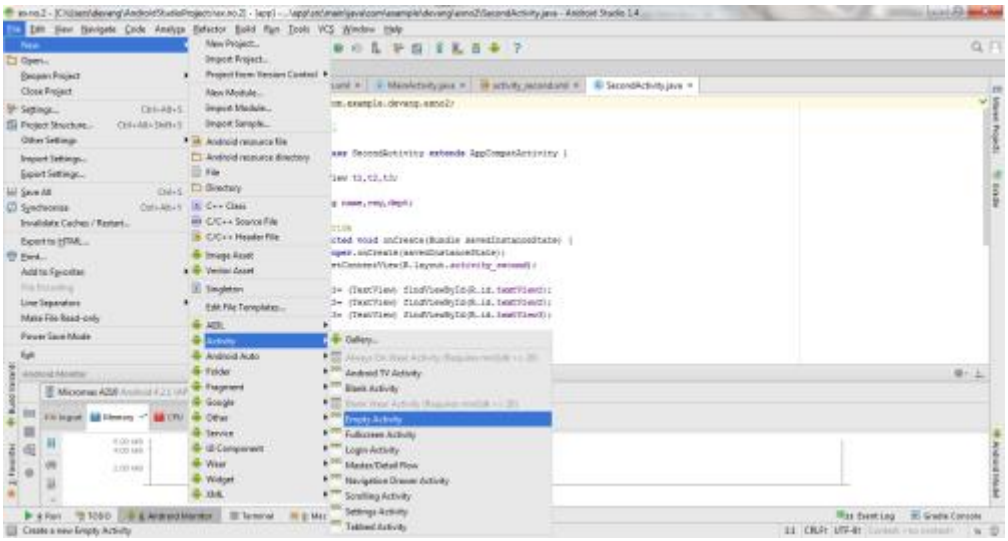
- Open Android Studio and then click on **File -> New -> New project**.



- Then type the Application name as **"exno2"** and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Creating Second Activity for the Android Application:

- Click on **File -> New -> Activity -> Empty Activity**.



- Type the Activity Name as **SecondActivity** and click Finish button.
- Thus Second Activity For the application is created.

Designing Layout for Main Activity:

- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

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

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="100dp">
<TextView
      android:id="@+id/textView"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_margin="30dp"
      android:text="Details Form"
      android:textSize="25sp"
      android:gravity="center"/>
</LinearLayout>
```

```
<GridLayout
    android:id="@+id/gridLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginTop="100dp"
    android:layout_marginBottom="200dp"
    android:columnCount="2"
    android:rowCount="3">
<TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="0"
        android:layout_column="0"
        android:text="Name"
        android:textSize="20sp"
        android:gravity="center"/>

<EditText
        android:id="@+id/editText"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="0"
        android:layout_column="1"
        android:ems="10"/>

<TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="1"
        android:layout_column="0"
        android:text="Reg.No"
        android:textSize="20sp"
        android:gravity="center"/>
```

```
<EditText
        android:id="@+id/editText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="1"
        android:layout_column="1"
        android:inputType="number"
        android:ems="10"/>

<TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="2"
        android:layout_column="0"
        android:text="Dept"
        android:textSize="20sp"
        android:gravity="center"/>
<Spinner
        android:id="@+id/spinner"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:layout_row="2"
        android:layout_column="1"
        android:spinnerMode="dropdown"/>
</GridLayout>
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignParentBottom="true"
    android:layout_centerInParent="true"
    android:layout_marginBottom="150dp"
    android:text="Submit"/>

</RelativeLayout>
```

Designing Layout for Second Activity:

- Click on **app -> res -> layout -> activity_second.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_second.xml:

```
<?xmlversion="1.0"encoding="utf-8"?>
<LinearLayoutxmlns: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="com.example.devang.exno2.SecondActivity"
  android:orientation="vertical"
  android:gravity="center">

  <TextView
    android:id="@+id/textView1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:text="New Text"
    android:textSize="30sp"/>

  <TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:text="New Text"
    android:textSize="30sp"/>

  <TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    android:text="New Text"
    android:textSize="30sp"/>
</LinearLayout>
```

- Now click on Design and your activity will look as given below.
- So now the designing part of Second Activity is also completed.

Java Coding for the Android Application:

- Java Coidng for Main Activity:
- Click on **app -> java -> com.example.exno2 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

```
package com.example.exno2;

import android.content.Intent;
//import android.support.v7.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.Spinner;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

  //Defining the Views
  EditText e1,e2;
  Button bt;
  Spinner s;

  //Data for populating in Spinner
  String [] dept_array={"CSE","ECE","IT","Mech","Civil"};

  String name,reg,dept;

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

    //Referring the Views
    e1= (EditText) findViewById(R.id.editText);
```

```
    e2= (EditText) findViewById(R.id.editText2);

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

    s= (Spinner) findViewById(R.id.spinner);

    //Creating Adapter for Spinner for adapting the data from array to Spinner
    ArrayAdapter adapter= new
    ArrayAdapter(MainActivity.this,android.R.layout.simple_spinner_item,dept_array);
    s.setAdapter(adapter);

    //Creating Listener for Button
    bt.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {

        //Getting the Values from Views(Edittext & Spinner)
        name=e1.getText().toString();
        reg=e2.getText().toString();
        dept=s.getSelectedItem().toString();

        //Intent For Navigating to Second Activity
        Intent i = new Intent(MainActivity.this,SecondActivity.class);

        //For Passing the Values to Second Activity
        i.putExtra("name_key", name);
        i.putExtra("reg_key",reg);
        i.putExtra("dept_key", dept);

        startActivity(i);
      }
    });
  }
}
```

Java Coding for Second Activity:

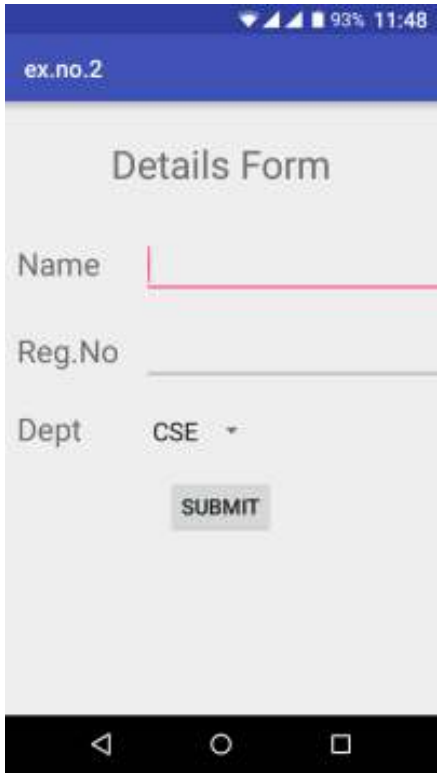
- Click on **app -> java -> com.example.exno2 -> SecondActivity**.
- Then delete the code which is there and type the code as given below.

Code for SecondActivity.java:

```
package com.example.exno2;

import android.content.Intent;
//import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class SecondActivity extends AppCompatActivity {
  TextView t1,t2,t3;
  String name,reg,dept;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_second);
    t1= (TextView) findViewById(R.id.textView1);
    t2= (TextView) findViewById(R.id.textView2);
    t3= (TextView) findViewById(R.id.textView3);
    //Getting the Intent
    Intent i = getIntent();
    //Getting the Values from First Activity using the Intent received
    name=i.getStringExtra("name_key");
    reg=i.getStringExtra("reg_key");
    dept=i.getStringExtra("dept_key");
    //Setting the Values to Intent
    t1.setText(name);
    t2.setText(reg);
    t3.setText(dept);
  }
}
```

- So now the Coding part of Second Activity is also completed.
- Now run the application to see the output.

Output:



Result:

Thus a Simple Android Application that uses Layout Managers and Event Listeners is developed and executed successfully.

Ex No. 03 **Write an application that draws Basic Graphical Primitives on the screen**
Date:

Aim:

To develop a Simple Android Application that draws basic Graphical Primitives on the screen.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno3"** and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Act**ivity and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

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

<ImageView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/imageView" />
</RelativeLayout>
```

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno3 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

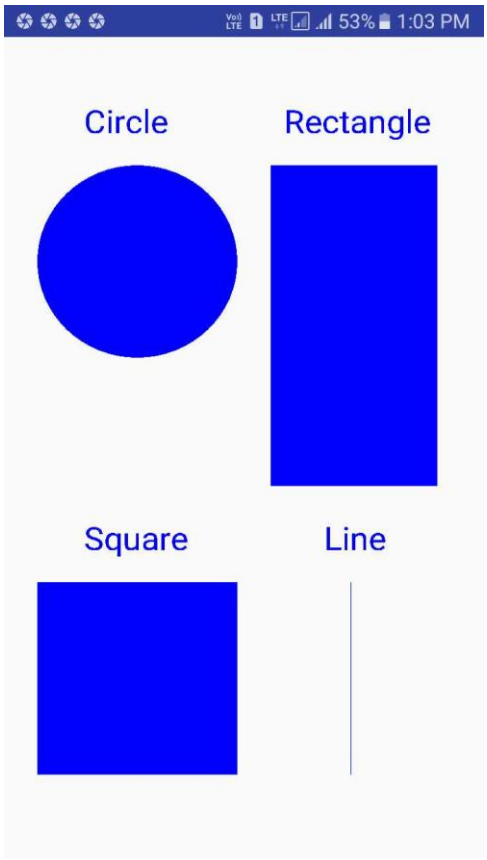
Code for MainActivity.java:

```
package com.example.exno3;

import android.app.Activity;
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 Activity
{
  @Override
  public void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    //Creating a Bitmap
    Bitmap bg = Bitmap.createBitmap(720, 1280, Bitmap.Config.ARGB_8888);

    //Setting the Bitmap as background for the ImageView
    ImageView i = (ImageView) findViewById(R.id.imageView);
    i.setBackgroundDrawable(new BitmapDrawable(bg));

    //Creating the Canvas Object
    Canvas canvas = new Canvas(bg);

    //Creating the Paint Object and set its color & TextSize
    Paint paint = new Paint();
    paint.setColor(Color.BLUE);
    paint.setTextSize(50);

    //To draw a Rectangle
    canvas.drawText("Rectangle", 420, 150, paint);
    canvas.drawRect(400, 200, 650, 700, paint);

    //To draw a Circle
    canvas.drawText("Circle", 120, 150, paint);
    canvas.drawCircle(200, 350, 150, paint);
```

```
        //To draw a Square
        canvas.drawText("Square", 120, 800, paint);
        canvas.drawRect(50, 850, 350, 1150, paint);

        //To draw a Line
        canvas.drawText("Line", 480, 800, paint);
        canvas.drawLine(520, 850, 520, 1150, paint);
    }
}
```

- So now the Coding part is also completed.
- Now run the application to see the output.

Output:



Result:

Thus a Simple Android Application that draws basic Graphical Primitives on the screen is developed and executed successfully.

Ex. No. 04 **Develop an application that makes use of database**
Date:

Aim:

To develop a Simple Android Application that makes use of Database.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno4"** and click Next.
- Then **select the Minimum S**DK as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent">
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_x="50dp"
    android:layout_y="20dp"
    android:text="Student Details"
    android:textSize="30sp" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_x="20dp"
    android:layout_y="110dp"
    android:text="Enter Rollno:"
    android:textSize="20sp" />
```

```
<EditText
    android:id="@+id/Rollno"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="175dp"
    android:layout_y="100dp"
    android:inputType="number"
    android:textSize="20sp" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_x="20dp"
    android:layout_y="160dp"
    android:text="Enter Name:"
    android:textSize="20sp" />

<EditText
    android:id="@+id/Name"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="175dp"
    android:layout_y="150dp"
    android:inputType="text"
    android:textSize="20sp" />

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_x="20dp"
    android:layout_y="210dp"
    android:text="Enter Marks:"
    android:textSize="20sp" />

<EditText
    android:id="@+id/Marks"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
```

```
    android:layout_x="175dp"
    android:layout_y="200dp"
    android:inputType="number"
    android:textSize="20sp" />

<Button
    android:id="@+id/Insert"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="25dp"
    android:layout_y="300dp"
    android:text="Insert"
    android:textSize="30dp" />

<Button
    android:id="@+id/Delete"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="200dp"
    android:layout_y="300dp"
    android:text="Delete"
    android:textSize="30dp" />

<Button
    android:id="@+id/Update"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="25dp"
    android:layout_y="400dp"
    android:text="Update"
    android:textSize="30dp" />

<Button
    android:id="@+id/View"
    android:layout_width="150dp"
    android:layout_height="wrap_content"
    android:layout_x="200dp"
    android:layout_y="400dp"
    android:text="View"
```

```
    android:textSize="30dp" />

<Button
    android:id="@+id/ViewAll"
    android:layout_width="200dp"
    android:layout_height="wrap_content"
    android:layout_x="100dp"
    android:layout_y="500dp"
    android:text="View All"
    android:textSize="30dp" />

</AbsoluteLayout>
```

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno4 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

```
packagecom.example.exno4;
 import android.app.Activity;
import android.app.AlertDialog.Builder;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends Activity implements OnClickListener
{
  EditText Rollno,Name,Marks;
  Button Insert,Delete,Update,View,ViewAll;
  SQLiteDatabase db;
  /** Called when the activity is first created. */
  @Override
  public void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
```

```
    setContentView(R.layout.activity_main);

    Rollno=(EditText)findViewById(R.id.Rollno);
    Name=(EditText)findViewById(R.id.Name);
    Marks=(EditText)findViewById(R.id.Marks);
    Insert=(Button)findViewById(R.id.Insert);
    Delete=(Button)findViewById(R.id.Delete);
    Update=(Button)findViewById(R.id.Update);
    View=(Button)findViewById(R.id.View);
    ViewAll=(Button)findViewById(R.id.ViewAll);

    Insert.setOnClickListener(this);
    Delete.setOnClickListener(this);
    Update.setOnClickListener(this);
    View.setOnClickListener(this);
    ViewAll.setOnClickListener(this);

    // Creating database and table
    db=openOrCreateDatabase("StudentDB", Context.MODE_PRIVATE, null);
    db.execSQL("CREATE TABLE IF NOT EXISTS student(rollno VARCHAR,name VARCHAR,marks
VARCHAR);");
  }
  public void onClick(View view)
  {
    // Inserting a record to the Student table
    if(view==Insert)
    {
      // Checking for empty fields
      if(Rollno.getText().toString().trim().length()==0||
           Name.getText().toString().trim().length()==0||
           Marks.getText().toString().trim().length()==0)
      {
        showMessage("Error", "Please enter all values");
        return;
      }
      db.execSQL("INSERT INTO student VALUES('"+Rollno.getText()+"','"+Name.getText()+
           "','"+Marks.getText()+"');");
      showMessage("Success", "Record added");
      clearText();
    }
    // Deleting a record from the Student table
    if(view==Delete)
```

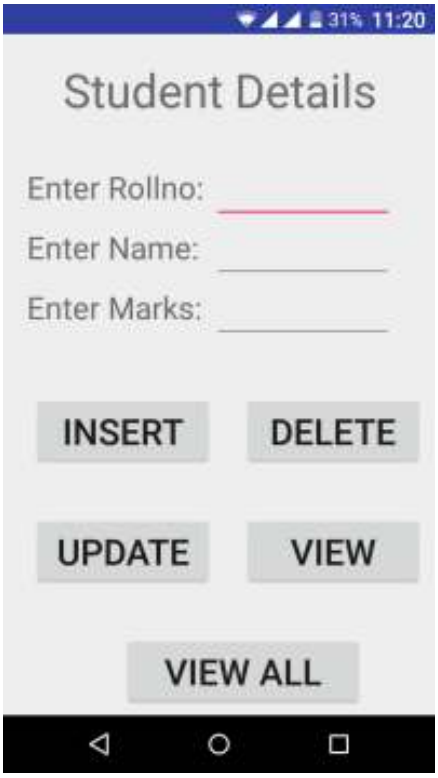
```
{
  // Checking for empty roll number
  if(Rollno.getText().toString().trim().length()==0)
  {
    showMessage("Error", "Please enter Rollno");
    return;
  }
  Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
  if(c.moveToFirst())
  {
    db.execSQL("DELETE FROM student WHERE rollno='"+Rollno.getText()+"'");
    showMessage("Success", "Record Deleted");
  }
  else
  {
    showMessage("Error", "Invalid Rollno");
  }
  clearText();
}
// Updating a record in the Student table
if(view==Update)
{
  // Checking for empty roll number
  if(Rollno.getText().toString().trim().length()==0)
  {
    showMessage("Error", "Please enter Rollno");
    return;
  }
  Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
  if(c.moveToFirst()) {
    db.execSQL("UPDATE student SET name='" + Name.getText() + "',marks='" + Marks.getText() +
        "' WHERE rollno='"+Rollno.getText()+"'");
    showMessage("Success", "Record Modified");
  }
  else {
    showMessage("Error", "Invalid Rollno");
  }
  clearText();
}
// Display a record from the Student table
if(view==View)
{
```

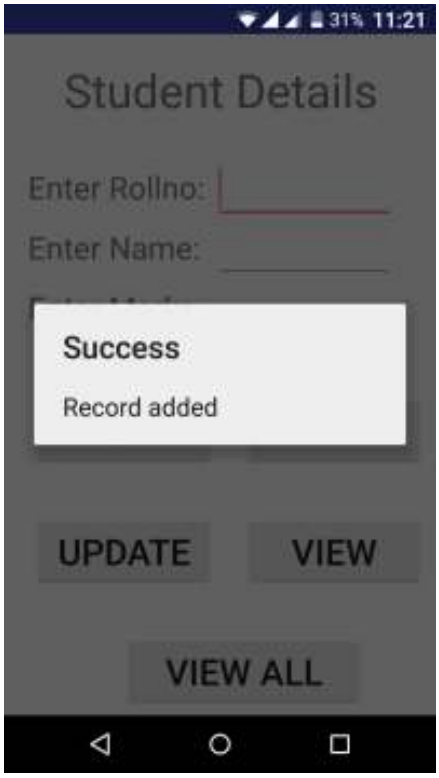
```
        // Checking for empty roll number
        if(Rollno.getText().toString().trim().length()==0)
        {
            showMessage("Error", "Please enter Rollno");
            return;
        }
        Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
        if(c.moveToFirst())
        {
            Name.setText(c.getString(1));
            Marks.setText(c.getString(2));
        }
        else
        {
            showMessage("Error", "Invalid Rollno");
            clearText();
        }
    }
    // Displaying all the records
    if(view==ViewAll)
    {
        Cursor c=db.rawQuery("SELECT * FROM student", null);
        if(c.getCount()==0)
        {
            showMessage("Error", "No records found");
            return;
        }
        StringBuffer buffer=new StringBuffer();
        while(c.moveToNext())
        {
            buffer.append("Rollno: "+c.getString(0)+"\n");
            buffer.append("Name: "+c.getString(1)+"\n");
            buffer.append("Marks: "+c.getString(2)+"\n\n");
        }
        showMessage("Student Details", buffer.toString());
    }
}
public void showMessage(String title,String message)
{
    Builder builder=new Builder(this);
    builder.setCancelable(true);
    builder.setTitle(title);
```

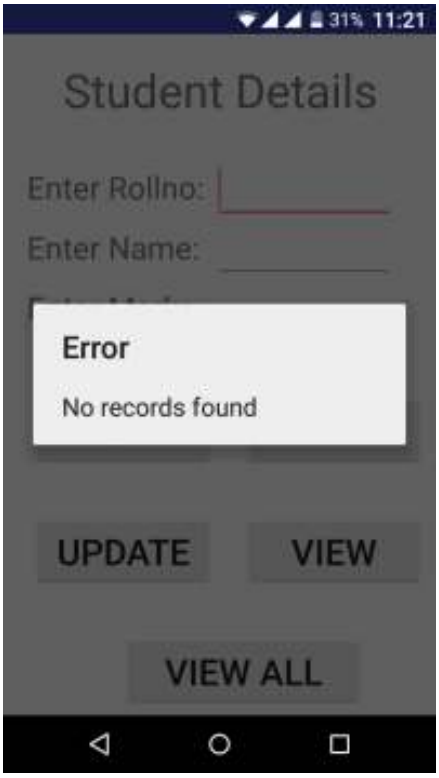
```
    builder.setMessage(message);
    builder.show();
  }
  public void clearText()
  {
    Rollno.setText("");
    Name.setText("");
    Marks.setText("");
    Rollno.requestFocus();
  }
}
```

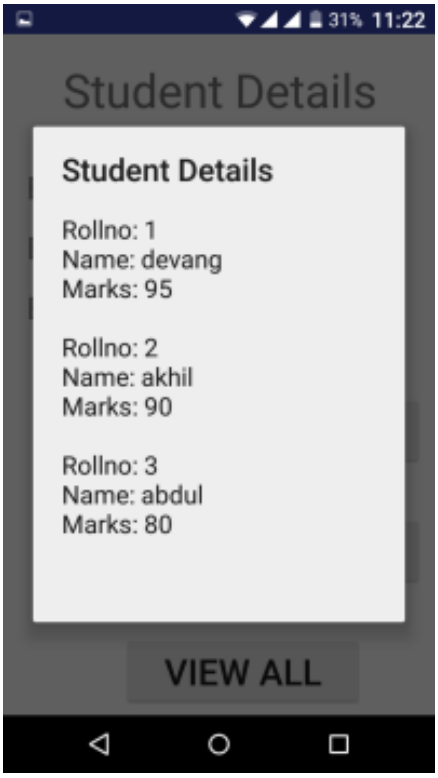
- So now the Coding part is also completed.
- Now run the application to see the output.

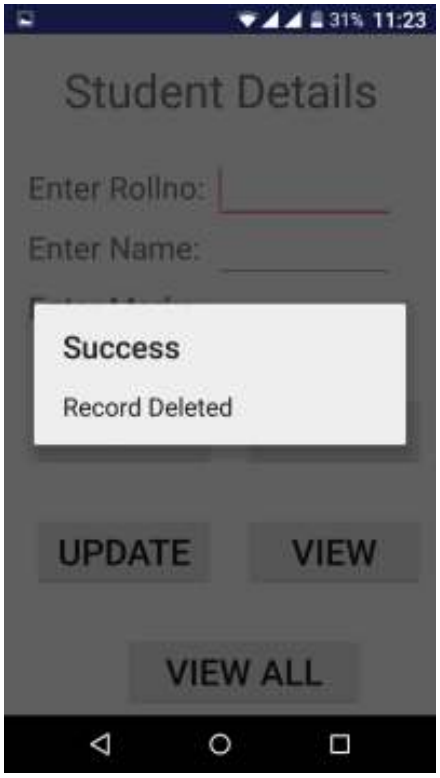
Output:

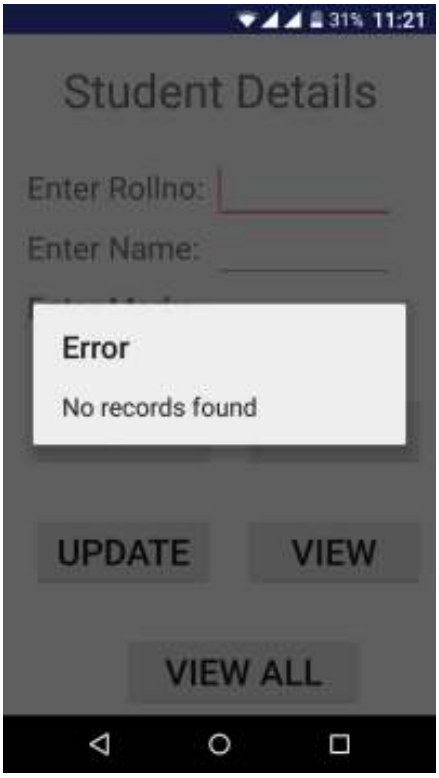


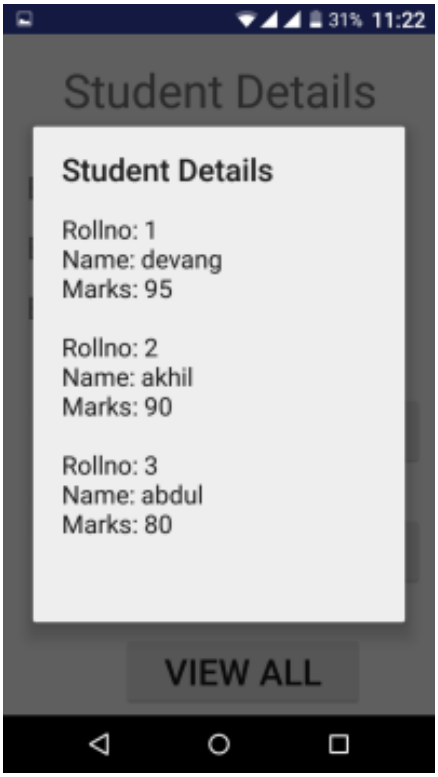


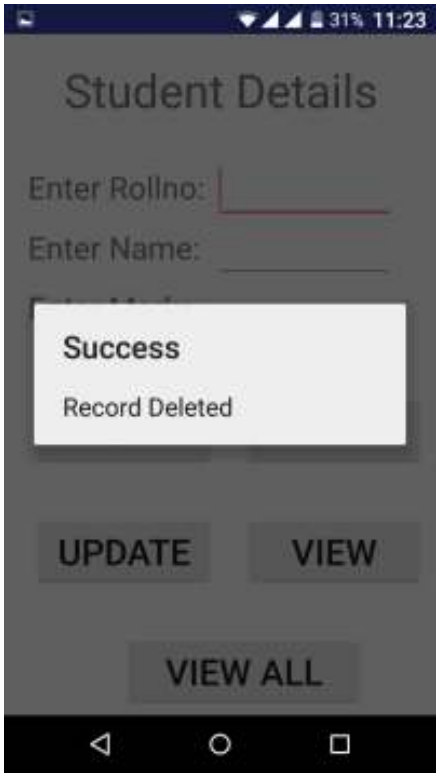


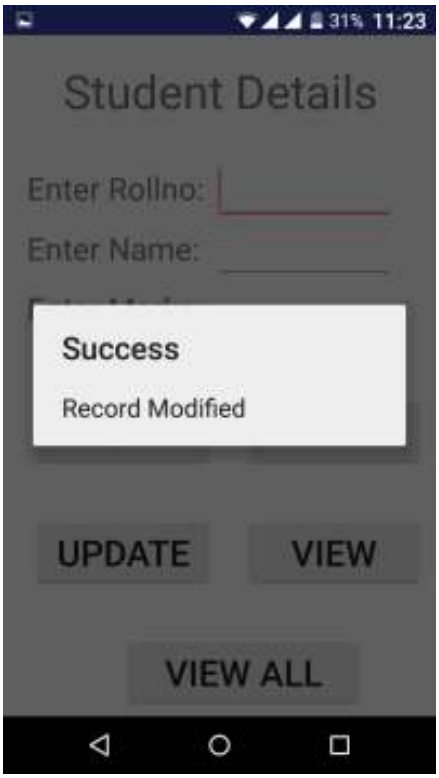


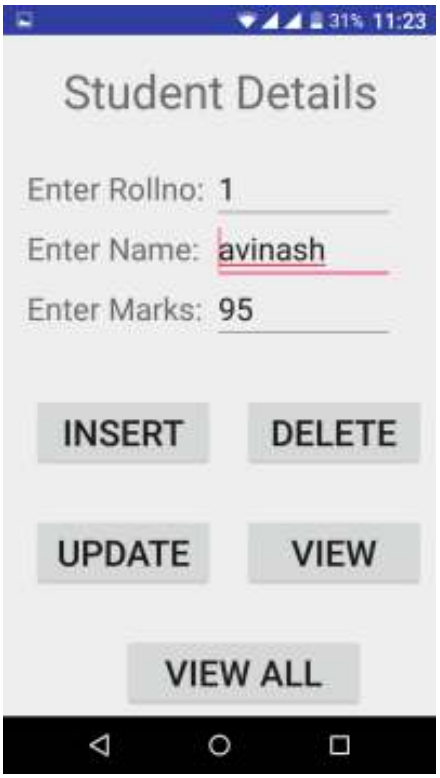












Result:

Thus a Simple Android Application that makes use of Database is developed and executed successfully.

Ex. No. 05 **Develop an application that makes use of Notification Manager**
Date:

Aim:

To develop an Android Application that makes use of Notification Manager.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno5"**and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml.**
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:app="http://schemas.android.com/apk/res-auto"
  xmlns:tools="http://schemas.android.com/tools"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical"
  android:gravity="center"
  tools:context=".MainActivity">

  <Button
    android:id="@+id/btnSimpleNotification"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Simple Notification" />

  <Button
    android:id="@+id/btnNotificationIcon"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
```

```
    android:text="Notification With Icon" />

  <Button
    android:id="@+id/btnNotificationImage"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Notification With Image" />

  <Button
    android:id="@+id/btnNotificationWithGroupConvo"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Notification With Group Conversation" />

  <Button
    android:id="@+id/btnNotificationSemantic"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Notification Semantic Action" />

</LinearLayout>
```

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno5 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

```
packagecom.example.exno5;

import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.Context;
import android.content.Intent;
import android.net.Uri;
import androidx.core.app.NotificationCompat;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.Person;
import androidx.core.graphics.drawable.IconCompat;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
```

```
import android.widget.Toast;
import java.util.Date;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {

  NotificationManager notificationManager;
  NotificationCompat.Builder builder;
  NotificationChannel channel;

  CharSequence charSequence = "";

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

    Button btnSimpleNotification = findViewById(R.id.btnSimpleNotification);
    Button btnNotificationIcon = findViewById(R.id.btnNotificationIcon);
    Button btnNotificationImage = findViewById(R.id.btnNotificationImage);
    Button btnNotificationWithGroupConvo = findViewById(R.id.btnNotificationWithGroupConvo);
    Button btnNotificationSemantic = findViewById(R.id.btnNotificationSemantic);

    charSequence = btnNotificationIcon.getText();

    btnSimpleNotification.setOnClickListener(this);
    btnNotificationIcon.setOnClickListener(this);
    btnNotificationImage.setOnClickListener(this);
    btnNotificationWithGroupConvo.setOnClickListener(this);
    btnNotificationSemantic.setOnClickListener(this);

    notificationManager = (NotificationManager) getSystemService(Context.NOTIFICATION_SERVICE);
    CharSequence name = "My Notification";
    String description = "yadda yadda";
    int importance = NotificationManager.IMPORTANCE_DEFAULT;

    channel = new NotificationChannel("1", name, importance);
    channel.setDescription(description);

    builder = new NotificationCompat.Builder(MainActivity.this, channel.getId())
            .setSmallIcon(R.mipmap.ic_launcher);

    notificationManager.createNotificationChannel(channel);
```

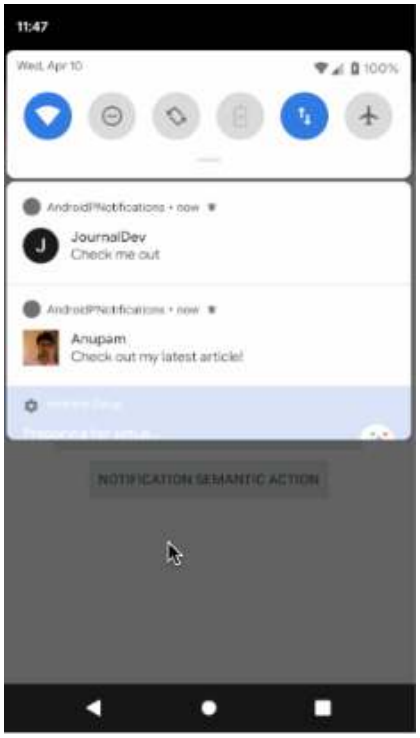
```
}

@Override
public void onClick(View v) {

  switch (v.getId()) {
    case R.id.btnSimpleNotification:
      simpleNotification();
      break;
    case R.id.btnNotificationIcon:
      notificationWithIcon();
      break;
    case R.id.btnNotificationImage:
      notificationWithImage();
      break;

    case R.id.btnNotificationWithGroupConvo:
      notificationWithGroupConvo();
      break;

    case R.id.btnNotificationSemantic:
      notificationSemantic();
      break;
  }
}
private void simpleNotification() {
  Person jd = new Person.Builder().setName("JournalDev ") .setImportant(true) .build();

  new NotificationCompat.MessagingStyle(jd)
      .addMessage("Check me out", new Date().getTime(), jd) .setBuilder(builder);

  notificationManager.notify(1, builder.build());
}
private void notificationWithIcon() {
  Person anupam = new Person.Builder()
      .setName("Anupam")
      .setIcon(IconCompat.createWithResource(this, R.drawable.index))
      .setImportant(true) .build();
  new NotificationCompat.MessagingStyle(anupam)
      .addMessage("Check out my latest article!", new Date().getTime(), anupam)
      .setBuilder(builder);
```

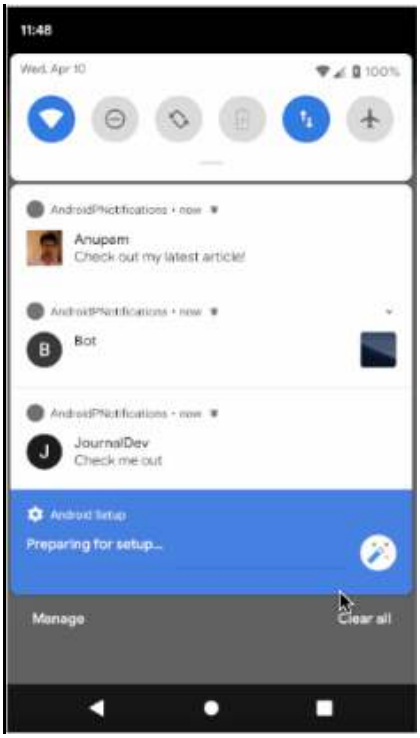
```
    notificationManager.notify(2, builder.build());
}
private void notificationWithImage() {
    Person bot = new Person.Builder()
            .setName("Bot") .setImportant(true)
            .setBot(true) .build();

    Uri uri = Uri.parse("android.resource://com.journaldev.androidpnotifications/drawable/"+R.drawable.bg);

    NotificationCompat.MessagingStyle.Message message = new
    NotificationCompat.MessagingStyle.Message("Check out my latest article!", new Date().getTime(), bot);
    message.setData("image/*",uri);

    new NotificationCompat.MessagingStyle(bot)
            .addMessage(message) .setGroupConversation(true).setBuilder(builder);

    notificationManager.notify(3, builder.build());
}
private void notificationWithGroupConvo()
{
    Person jd = new Person.Builder()
            .setName("JournalDev") .build();

    Person anupam = new Person.Builder()
            .setName("Anupam")
            .setIcon(IconCompat.createWithResource(this, R.drawable.samindexple_photo))
            .setImportant(true).build();

    Person bot = new Person.Builder()
            .setName("Bot").setBot(true) .build();

    Uri uri = Uri.parse("android.resource://com.journaldev.androidpnotifications/drawable/"+R.drawable.bg);

    NotificationCompat.MessagingStyle.Message message = new
    NotificationCompat.MessagingStyle.Message("", new Date().getTime(), bot);
    message.setData("image/*",uri);
    new NotificationCompat.MessagingStyle(bot)
            .addMessage("Hi. How are you?", new Date().getTime(), anupam)
            .addMessage(message)
            .addMessage("Does this image look good?", new Date().getTime(), bot)
            .addMessage("Looks good!", new Date().getTime(), jd)
            .setGroupConversation(true)
```

```
        .setConversationTitle("Sample Conversation")
        .setBuilder(builder);

    notificationManager.notify(4, builder.build());

}
private void notificationSemantic()
{
    Person jd = new Person.Builder()
        .setName("JournalDev")
        .build();

    Person anupam = new Person.Builder()
        .setName("Anupam")
        .setIcon(IconCompat.createWithResource(this, R.drawable.index))
        .setImportant(true)
        .build();

    Person bot = new Person.Builder()
        .setName("Bot")
        .setBot(true)
        .build();

    Uri uri = Uri.parse("android.resource://com.journaldev.androidpnotifications/drawable/"+R.drawable.bg);

    Intent intent = new Intent(this, MainActivity.class);
    intent.putExtra("hi","Notifications were read");
    PendingIntent pendingIntent = PendingIntent.getActivity(this, 0, intent, 0);

    NotificationCompat.MessagingStyle.Message message = new
    NotificationCompat.MessagingStyle.Message("", new Date().getTime(), bot);
    message.setData("image/*",uri);

    NotificationCompat.Action replyAction =
        new NotificationCompat.Action.Builder(
            R.drawable.bg, "MARK READ", pendingIntent)
            .setSemanticAction(NotificationCompat.Action.SEMANTIC_ACTION_MARK_AS_READ)
            .build();
    NotificationCompat.Builder separateBuilder = builder;
    separateBuilder.addAction(replyAction);

    new NotificationCompat.MessagingStyle(bot)
```

```
        .addMessage("Hi. How are you?", new Date().getTime(), anupam)
        .addMessage(message)
        .addMessage("Does this image look good?", new Date().getTime(), bot)
        .addMessage("Looks good!", new Date().getTime(), jd)
        .setGroupConversation(true)
        .setConversationTitle("Sample Conversation")
        .setBuilder(separateBuilder);

    notificationManager.notify(5, separateBuilder.build());
  }
  @Override
  protected void onResume() {
    super.onResume();

    if(getIntent()!=null && getIntent().getExtras()!=null)
    {
      String value = getIntent().getStringExtra("hi");
      Toast.makeText(getApplicationContext(),value,Toast.LENGTH_LONG).show();
    }
  }
}
```

Output:





Result:

Thus Android Application that makes use of notification manager is developed and executed successfully.

Ex. No. 06 **Implement an application that uses Multi-threading**
Date:

Aim:

To develop an Android Application that implements Multi threading.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno6"**and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml.**
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical" >

<ImageView
    android:id="@+id/imageView"
    android:layout_width="250dp"
    android:layout_height="250dp"
    android:layout_margin="50dp"
    android:layout_gravity="center" />

<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="10dp"
    android:layout_gravity="center"
    android:text="Load Image 1" />
```

```
<Button
    android:id="@+id/button2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="10dp"
    android:layout_gravity="center"
    android:text="Load image 2" />

</LinearLayout>
```

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno6 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

```
packagecom.example.exno6;

import android.os.Bundle;
//import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity
{
  ImageView img;
  Button bt1,bt2;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    bt1 = (Button)findViewById(R.id.button);
    bt2= (Button) findViewById(R.id.button2);
    img = (ImageView)findViewById(R.id.imageView);
```

```
bt1.setOnClickListener(new View.OnClickListener()
{
  @Override
  public void onClick(View v)
  {
    new Thread(new Runnable()
    {
      @Override
      public void run()
      {
        img.post(new Runnable()
        {
          @Override
          public void run()
          {
            img.setImageResource(R.drawable.india1);
          }
        });
      }
    }).start();
  }
});

bt2.setOnClickListener(new View.OnClickListener()
{
  @Override
  public void onClick(View v)
  {
    new Thread(new Runnable()
    {
      @Override
      public void run()
      {
        img.post(new Runnable()
        {
          @Override
          public void run()
          {
            img.setImageResource(R.drawable.india2);
          }
        });
      }
```

```
        }).start();
      }
    });
  }
}
```

- So now the Coding part is also completed.
- Now run the application to see the output.

Note:

- Before running the application, copy the images given below and paste it in **"app -> res -> drawable"** by pressing **"right click mouse button on drawable"** and selecting the **"Paste"** option.

Output:

Result:

Thus Android Application that implements Multi threading is developed and executed successfully.

Ex. No. 07 **Develop a native application that uses GPS location information**
Date:

Aim:

To develop an Android Application that uses GPS location information.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exn07"**and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version = "1.0" encoding = "utf-8"?>
<LinearLayout xmlns:android = "http://schemas.android.com/apk/res/android"
  android:layout_width = "fill_parent"
  android:layout_height = "fill_parent"
  android:orientation = "vertical" >

<Button
    android:id = "@+id/button"
    android:layout_width = "fill_parent"
    android:layout_height = "wrap_content"
    android:text = "getlocation"/>

</LinearLayout>
```

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Following will be the content of res/values/strings.xml to define two new constants –

```
<?xml version = "1.0" encoding = "utf-8"?>
<resources>
<string name = "app_name">Tutorialspoint</string>
</resources>
```

Adding permissions in Manifest for the Android Application:

- Click on **app -> manifests -> AndroidManifest.xml.**

Code for AndroidManifest.xml:

```
<?xml version = "1.0" encoding = "utf-8"?>
<manifest xmlns:android = "http://schemas.android.com/apk/res/android"
  package = "com.example.tutorialspoint7.myapplication">
<uses-permission android:name="android.permission.ACCESS_COARSE_LOCATION" />
<uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
<uses-permission android:name = "android.permission.INTERNET" />
<application
    android:allowBackup = "true"
    android:icon = "@mipmap/ic_launcher"
    android:label = "@string/app_name"
    android:supportsRtl = "true"
    android:theme = "@style/AppTheme">

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

</manifest>
```

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno7 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

```
packagecom.example.exno7;

import android.Manifest;
import android.app.Activity;
import android.os.Bundle;
import android.support.v4.app.ActivityCompat;
import android.test.mock.MockPackageManager;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

public class MainActivity extends Activity {

  Button btnShowLocation;
  private static final int REQUEST_CODE_PERMISSION = 2;
  String mPermission = Manifest.permission.ACCESS_FINE_LOCATION;

  // GPSTracker class
  GPSTracker gps;

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

    try {
      if (ActivityCompat.checkSelfPermission(this, mPermission)
        != MockPackageManager.PERMISSION_GRANTED) {

        ActivityCompat.requestPermissions(this, new String[]{mPermission},
          REQUEST_CODE_PERMISSION);

        // If any permission above not allowed by user, this condition will
          execute every time, else your else part will work
      }
    } catch (Exception e) {
      e.printStackTrace();
    }

    btnShowLocation = (Button) findViewById(R.id.button);
```

```
    // show location button click event
    btnShowLocation.setOnClickListener(new View.OnClickListener() {

      @Override
      public void onClick(View argo) {
        // create class object
        gps = new GPSTracker(MainActivity.this);

        // check if GPS enabled
        if(gps.canGetLocation()){

          double latitude = gps.getLatitude();
          double longitude = gps.getLongitude();

          // \n is for new line
          Toast.makeText(getApplicationContext(), "Your Location is - \nLat: "
            + latitude + "\nLong: " + longitude, Toast.LENGTH_LONG).show();
        }else{
          // can't get location
          // GPS or Network is not enabled
          // Ask user to enable GPS/network in settings
          gps.showSettingsAlert();
        }

      }
    });
  }
}
```

- Following is the content of the modified main activity file **GPSTracker.java**.

Code for GPDTracker.Java

```
packagecom.example.exno7;
import android.app.AlertDialog;
import android.app.Service;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.os.IBinder;
import android.provider.Settings;
```

```
import android.util.Log;
public class GPSTracker extends Service implements LocationListener {

  private final Context mContext;

  // flag for GPS status
  boolean isGPSEnabled = false;

  // flag for network status
  boolean isNetworkEnabled = false;

  // flag for GPS status
  boolean canGetLocation = false;

  Location location; // location
  double latitude; // latitude
  double longitude; // longitude

  // The minimum distance to change Updates in meters
  private static final long MIN_DISTANCE_CHANGE_FOR_UPDATES = 10; // 10 meters

  // The minimum time between updates in milliseconds
  private static final long MIN_TIME_BW_UPDATES = 1000 * 60 * 1; // 1 minute

  // Declaring a Location Manager
  protected LocationManager locationManager;

  public GPSTracker(Context context) {
    this.mContext = context;
    getLocation();
  }

  public Location getLocation() {
    try {
      locationManager = (LocationManager) mContext.getSystemService(LOCATION_SERVICE);

      // getting GPS status
      isGPSEnabled = locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER);

      // getting network status
      isNetworkEnabled = locationManager
        .isProviderEnabled(LocationManager.NETWORK_PROVIDER);
```

```
if (!isGPSEnabled && !isNetworkEnabled) {
  // no network provider is enabled
} else {
  this.canGetLocation = true;
  // First get location from Network Provider
  if (isNetworkEnabled) {
    locationManager.requestLocationUpdates(
      LocationManager.NETWORK_PROVIDER,
      MIN_TIME_BW_UPDATES,
      MIN_DISTANCE_CHANGE_FOR_UPDATES, this);

    Log.d("Network", "Network");
    if (locationManager != null) {
      location = locationManager
        .getLastKnownLocation(LocationManager.NETWORK_PROVIDER);

      if (location != null) {
        latitude = location.getLatitude();
        longitude = location.getLongitude();
      }
    }
  }

  // if GPS Enabled get lat/long using GPS Services
  if (isGPSEnabled) {
    if (location == null) {
      locationManager.requestLocationUpdates(
        LocationManager.GPS_PROVIDER,
        MIN_TIME_BW_UPDATES,
        MIN_DISTANCE_CHANGE_FOR_UPDATES, this);

      Log.d("GPS Enabled", "GPS Enabled");
      if (locationManager != null) {
        location = locationManager
          .getLastKnownLocation(LocationManager.GPS_PROVIDER);

        if (location != null) {
          latitude = location.getLatitude();
          longitude = location.getLongitude();
        }
      }
```

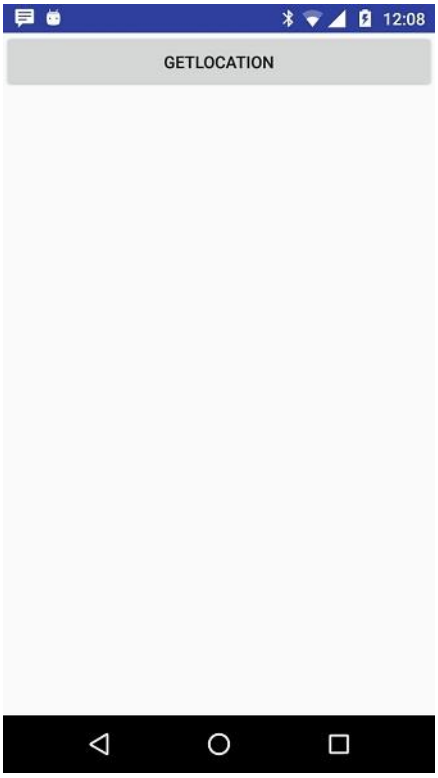
```
        }
      }
    }

  } catch (Exception e) {
    e.printStackTrace();
  }

  return location;
}

/**
  * Stop using GPS listener
  * Calling this function will stop using GPS in your app
* */

public void stopUsingGPS(){
  if(locationManager != null){
    locationManager.removeUpdates(GPSTracker.this);
  }
}

/**
  * Function to get latitude
* */

public double getLatitude(){
  if(location != null){
    latitude = location.getLatitude();
  }

  // return latitude
  return latitude;
}

/**
  * Function to get longitude
* */

public double getLongitude(){
  if(location != null){
    longitude = location.getLongitude();
```

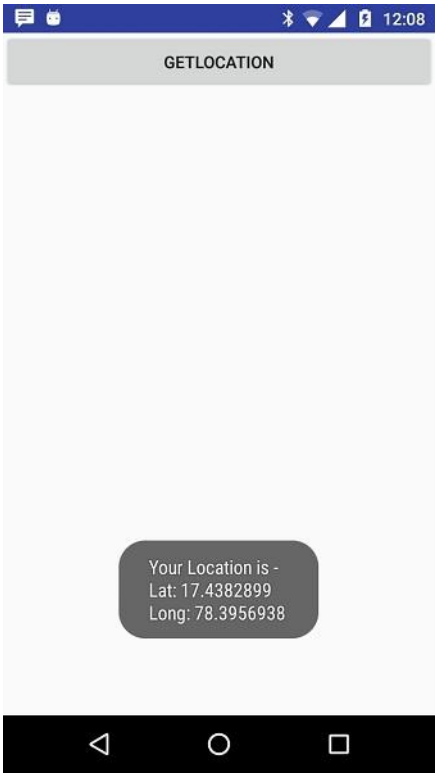
```
    }

    // return longitude
    return longitude;
}

/**
    * Function to check GPS/wifi enabled
    * @return boolean
* */

public boolean canGetLocation() {
    return this.canGetLocation;
}

/**
    * Function to show settings alert dialog
    * On pressing Settings button will lauch Settings Options
* */

public void showSettingsAlert(){
    AlertDialog.Builder alertDialog = new AlertDialog.Builder(mContext);

    // Setting Dialog Title
    alertDialog.setTitle("GPS is settings");

    // Setting Dialog Message
    alertDialog.setMessage("GPS is not enabled. Do you want to go to settings menu?");

    // On pressing Settings button
    alertDialog.setPositiveButton("Settings", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog,int which) {
            Intent intent = new Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
            mContext.startActivity(intent);
        }
    });

    // on pressing cancel button
    alertDialog.setNegativeButton("Cancel", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog, int which) {
            dialog.cancel();
        }
```

```
    });

    // Showing Alert Message
    alertDialog.show();
  }

  @Override
  public void onLocationChanged(Location location) {
  }

  @Override
  public void onProviderDisabled(String provider) {
  }

  @Override
  public void onProviderEnabled(String provider) {
  }

  @Override
  public void onStatusChanged(String provider, int status, Bundle extras) {
  }

  @Override
  public IBinder onBind(Intent argo) {
    return null;
  }
}
```

- So now the Coding part is also completed.
- Now run the application to see the output.

Output:





Result:

Thus Android Application that implements GPS Location Information is developed and executed successfully.

Ex. No. 08 **Implement an application that writes data to the SD Card**
Date:

Aim:

To develop an Android Application that writes data to the SD Card.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno8**" and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

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

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Adding permissions in Manifest for the Android Application:

- Click on **app -> manifests -> AndroidManifest.xml.**
- Now include the WRITE_EXTERNAL_STORAGE permissions in the AndroidManifest.xml file as shown below.

Code for AndroidManifest.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
  package="com.example.exno8" >

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

<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
```

```
    android:supportsRtl="true"
    android:theme="@style/AppTheme" >
<activity android:name=".MainActivity" >
<intent-filter>
<action android:name="android.intent.action.MAIN" />

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

- So now the Permissions are added in the Manifest.

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno8 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

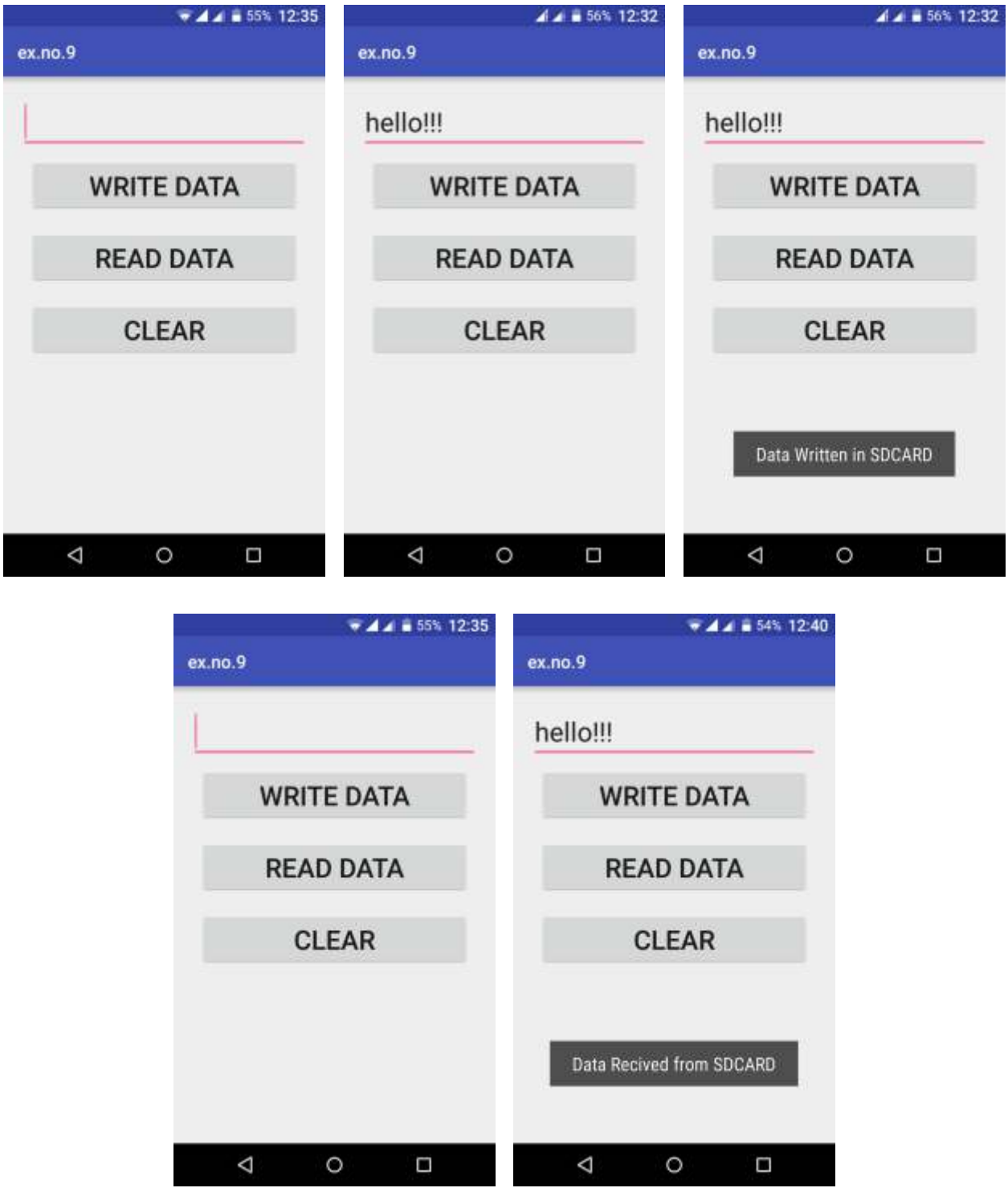
```
packagecom.example.exno8;

import android.os.Bundle;
//import android.support.v7.app.AppCompatActivity;
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;
import java.io.FileOutputStream;
import java.io.InputStreamReader;
import androidx.appcompat.app.AppCompatActivity;

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("/sdcard/myfile.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)
    {
      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("/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 Recived from SDCARD",Toast.LENGTH_LONG).show();
          }
          catch (Exception e)
          {
            Toast.makeText(getBaseContext(), e.getMessage(), Toast.LENGTH_LONG).show();
          }
        }
      });

      clear.setOnClickListener(new View.OnClickListener()
      {
        @Override
        public void onClick(View v)
        {
          e1.setText("");
        }
      });
    }
}
```

- So now the Coding part is also completed.
- Now run the application to see the output.

Output:



Result:

Thus Android Application that writes data to the SD Card is developed and executed successfully.

Ex. No. 09 **Implement an application that creates an alert upon receiving a message**
Date:

Aim:

To develop an Android Application that creates an alert upon receiving a message.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"ex.no9"**and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish.**
- It will take some time to build and load the project.
- After completion it will look as given below.

Creating Second Activity for the Android Application:

- Click on **File -> New -> Activity -> Empty Activity**.
- Type the Activity Name as SecondActivity and click Finish button.
- Thus Second Activity For the application is created.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:layout_margin="10dp"
  android:orientation="vertical">

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Message"
    android:textSize="30sp" />
```

```
<EditText
    android:id="@+id/editText"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:singleLine="true"
    android:textSize="30sp" />

<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_margin="30dp"
    android:layout_gravity="center"
    android:text="Notify"
    android:textSize="30sp"/>

</LinearLayout>
```

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno9 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

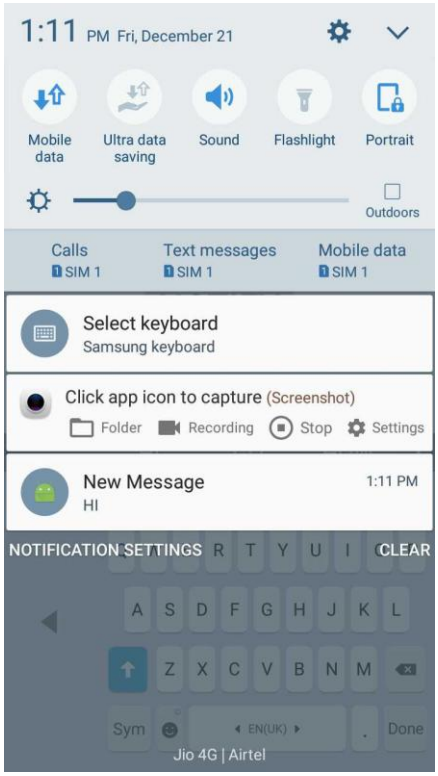
Code for MainActivity.java:

```
packagecom.example.exno9;

import android.app.Notification;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
//import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity
{
```

```
  Button notify;
  EditText e;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);

    notify= (Button) findViewById(R.id.button);
    e= (EditText) findViewById(R.id.editText);

    notify.setOnClickListener(new View.OnClickListener()
    {
      @Override
      public void onClick(View v)
      {
        Intent intent = new Intent(MainActivity.this, SecondActivity.class);
        PendingIntent pending = PendingIntent.getActivity(MainActivity.this, 0, intent, 0);
        Notification noti = new Notification.Builder(MainActivity.this).setContentTitle("New
Message").setContentText(e.getText().toString()).setSmallIcon(R.mipmap.ic_launcher).setContentIntent(pe
nding).build();
        NotificationManager manager = (NotificationManager)
getSystemService(NOTIFICATION_SERVICE);
        noti.flags |= Notification.FLAG_AUTO_CANCEL;
        manager.notify(0, noti);
      }
    });
  }
}
```

- So now the coding part is also completed.
- Now run the application to see the output.

Output:



Result:

Thus Android Application that creates an alert upon receiving a message is developed and executed successfully.

Ex. No. 10 **Write a mobile application that makes use of RSS Feed**
Date:

Aim:

To develop an Android Application that makes use of RSS Feed.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno10"**and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then select the **Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml.**
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="fill_parent"
  android:layout_height="fill_parent"
  android:orientation="vertical" >

<ListView
    android:id="@+id/listView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content" />

</LinearLayout>
```

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Adding permissions in Manifest for the Android Application:

- Click on **app -> manifests -> AndroidManifest.xml.**
- Now include the INTERNET permissions in the AndroidManifest.xml file as shown below.

Code for AndroidManifest.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
  package="com.example.exno10" >
<uses-permission android:name="android.permission.INTERNET"/>

<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/AppTheme" >
<activity android:name=".MainActivity" >
<intent-filter>
<action android:name="android.intent.action.MAIN" />

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

</manifest>
```

- So now the Permissions are added in the Manifest.

Java Coding for the Android Application:

- Click on app -> java -> com.example.exno10 -> MainActivity.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

```
package com.example.exno10;

import android.app.ListActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.AsyncTask;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
```

```
import android.widget.ListView;
import org.xmlpull.v1.XmlPullParser;
import org.xmlpull.v1.XmlPullParserException;
import org.xmlpull.v1.XmlPullParserFactory;
import java.io.IOException;
import java.io.InputStream;
import java.net.MalformedURLException;
import java.net.URL;
import java.util.ArrayList;
import java.util.List;

public class MainActivity extends ListActivity
{
  List headlines;
  List links;
  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    new MyAsyncTask().execute();
  }
  class MyAsyncTask extends AsyncTask<Object,Void,ArrayAdapter>
  {
    @Override
    protected ArrayAdapter doInBackground(Object[] params)
    {
      headlines = new ArrayList();
      links = new ArrayList();
      try
      {
        URL url = new URL("https://codingconnect.net/feed");
        XmlPullParserFactory factory = XmlPullParserFactory.newInstance();
        factory.setNamespaceAware(false);
        XmlPullParser xpp = factory.newPullParser();

        // We will get the XML from an input stream
        xpp.setInput(getInputStream(url), "UTF_8");
        boolean insideItem = false;
```

```
  // Returns the type of current event: START_TAG, END_TAG, etc..
  int eventType = xpp.getEventType();
  while (eventType != XmlPullParser.END_DOCUMENT)
  {
    if (eventType == XmlPullParser.START_TAG)
    {
      if (xpp.getName().equalsIgnoreCase("item"))
      {
        insideItem = true;
      }
      else if (xpp.getName().equalsIgnoreCase("title"))
      {
        if (insideItem)
          headlines.add(xpp.nextText()); //extract the headline
      }
      else if (xpp.getName().equalsIgnoreCase("link"))
      {
        if (insideItem)
          links.add(xpp.nextText()); //extract the link of article
      }
    }
    else if(eventType==XmlPullParser.END_TAG && xpp.getName().equalsIgnoreCase("item"))
    {
      insideItem=false;
    }
    eventType = xpp.next(); //move to next element
  }

}
catch (MalformedURLException e)
{
  e.printStackTrace();
}
catch (XmlPullParserException e)
{
  e.printStackTrace();
}
catch (IOException e)
{
```

```
            e.printStackTrace();
          }
          return null;
        }
        protected void onPostExecute(ArrayAdapter adapter)
        {
          adapter = new ArrayAdapter(MainActivity.this, android.R.layout.simple_list_item_1, headlines);
          setListAdapter(adapter);
        }
      }
      @Override
      protected void onListItemClick(ListView l, View v, int position, long id)
      {
        Uri uri = Uri.parse((links.get(position)).toString());
        Intent intent = new Intent(Intent.ACTION_VIEW, uri);
        startActivity(intent);
      }
      public InputStream getInputStream(URL url)
      {
        try
        {
          return url.openConnection().getInputStream();
        }
        catch (IOException e)
        {
          return null;
        }
      }
}
```

- So now the Coding part is also completed.
- Now run the application to see the output.

Output:

Result:

Thus Android Application that makes use of RSS Feed is developed and executed successfully.

Ex. No. 11 **Develop a mobile application to send an email.**
Date:

Aim:

To develop an Android Application to send an Email.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno11"** and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml.**
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:paddingLeft="20dp"
  android:paddingRight="20dp"
  android:orientation="vertical" >
  <EditText
    android:id="@+id/txtTo"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="To"/>
  <EditText
    android:id="@+id/txtSub"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="Subject"/>
  <EditText
```

```
    android:id="@+id/txtMsg"
    android:layout_width="match_parent"
    android:layout_height="0dp"
    android:layout_weight="1"
    android:gravity="top"
    android:hint="Message"/>
  <Button
    android:layout_width="100dp"
    android:layout_height="wrap_content"
    android:layout_gravity="right"
    android:text="Send"
    android:id="@+id/btnSend"/>
</LinearLayout>
```

Adding permissions in Manifest for the Android Application:

- Click on **app -> manifests -> AndroidManifest.xml.**
- Now include the INTERNET permissions in the AndroidManifest.xml file as shown below.

Code for AndroidManifest.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
  xmlns:tools="http://schemas.android.com/tools"
  package="com.example.exno11" >
  <uses-permission android:name="android.permission.INTERNET" />
  <application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:theme="@style/AppTheme"
    tools:ignore="GoogleAppIndexingWarning">

    <activity
      android:name="com.example.exno11.MainActivity"
      android:label="@string/app_name">

      <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>
```

- So now the Permissions are added in the Manifest.

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno10 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

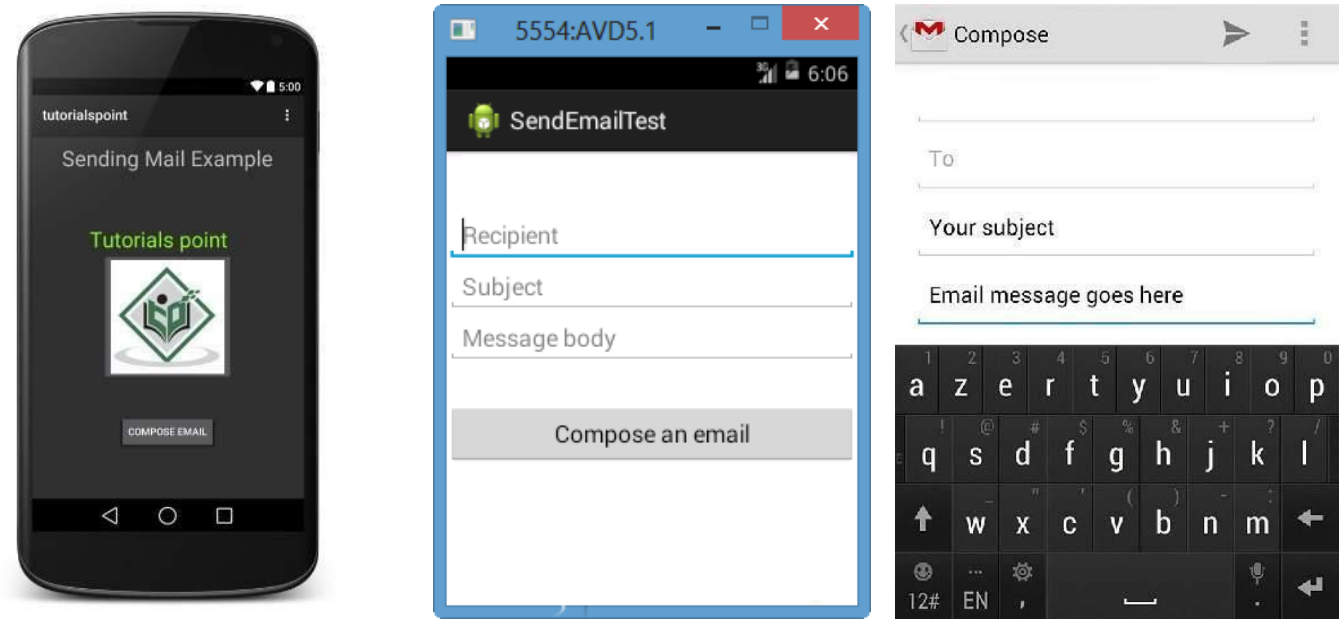
Code for MainActivity.java:

```
package com.example.exno11;

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;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {

  private EditText eTo;
  private EditText eSubject;
  private EditText eMsg;
  private Button btn;
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    eTo = (EditText)findViewById(R.id.txtTo);
    eSubject = (EditText)findViewById(R.id.txtSub);
    eMsg = (EditText)findViewById(R.id.txtMsg);
    btn = (Button)findViewById(R.id.btnSend);
    btn.setOnClickListener(new View.OnClickListener() {
      @Override
```

```
        public void onClick(View v) {
            Intent it = new Intent(Intent.ACTION_SEND);
            it.putExtra(Intent.EXTRA_EMAIL, new String[]{eTo.getText().toString()});
            it.putExtra(Intent.EXTRA_SUBJECT,eSubject.getText().toString());
            it.putExtra(Intent.EXTRA_TEXT,eMsg.getText());
            it.setType("message/rfc822");
            startActivity(Intent.createChooser(it,"Choose Mail App"));
        }
    });
  }
}
```

- So now the Coding part is also completed.
- Now run the application to see the output.

Output:



Result:

Thus Android Application for sending an email is developed and executed successfully.

Ex. No. 12 **Develop a Mobile application for simple needs (Mini Project)**
Date:

Aim:

To develop a Simple Android Application for Native Calculator.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno12"**and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select the Empty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
  xmlns:android="http://schemas.android.com/apk/res/android"
  android:orientation="vertical"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:layout_margin="20dp">

<LinearLayout
    android:id="@+id/linearLayout1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp">

<EditText
      android:id="@+id/editText1"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
```

```
        android:layout_weight="1"
        android:inputType="numberDecimal"
        android:textSize="20sp" />

<EditText
        android:id="@+id/editText2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:inputType="numberDecimal"
        android:textSize="20sp" />

</LinearLayout>

<LinearLayout
    android:id="@+id/linearLayout2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp">

<Button
        android:id="@+id/Add"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="+"
        android:textSize="30sp"/>

<Button
        android:id="@+id/Sub"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="-"
        android:textSize="30sp"/>

<Button
        android:id="@+id/Mul"
        android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="*"
        android:textSize="30sp"/>

<Button
        android:id="@+id/Div"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="/"
        android:textSize="30sp"/>

</LinearLayout>

<TextView
    android:id="@+id/textView"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="50dp"
    android:text="Answer is"
    android:textSize="30sp"
    android:gravity="center"/>

</LinearLayout>
```

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Java Coding for the Android Application:

- Click on **app -> java -> com.example.exno12 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

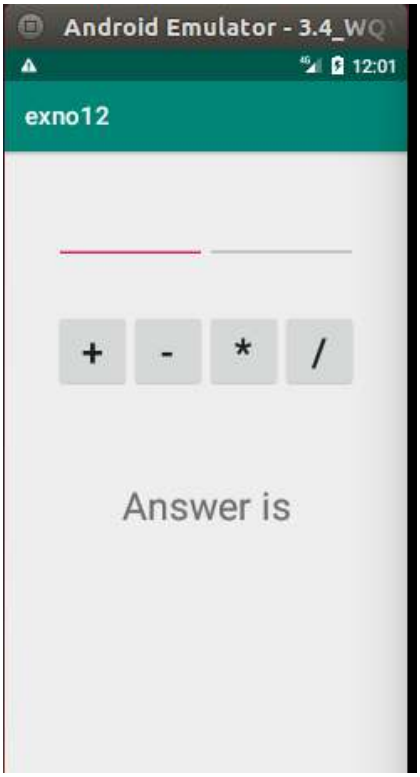
```
packagecom.example.exno12;
import android.os.Bundle;
//import android.support.v7.app.AppCompatActivity;
import android.text.TextUtils;
import android.view.View;
import android.view.View.OnClickListener;
```

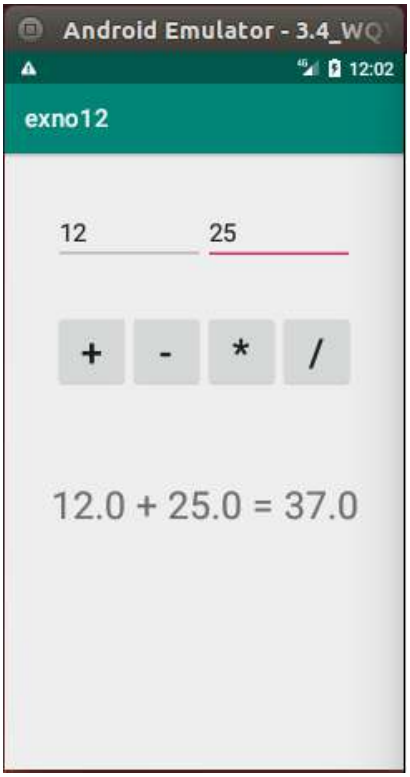
```
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity implements OnClickListener
{
  //Defining the Views
  EditText Num1;
  EditText Num2;
  Button Add;
  Button Sub;
  Button Mul;
  Button Div;
  TextView Result;

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

    //Referring the Views
    Num1 = (EditText) findViewById(R.id.editText1);
    Num2 = (EditText) findViewById(R.id.editText2);
    Add = (Button) findViewById(R.id.Add);
    Sub = (Button) findViewById(R.id.Sub);
    Mul = (Button) findViewById(R.id.Mul);
    Div = (Button) findViewById(R.id.Div);
    Result = (TextView) findViewById(R.id.textView);

    // set a listener
    Add.setOnClickListener(this);
    Sub.setOnClickListener(this);
    Mul.setOnClickListener(this);
    Div.setOnClickListener(this);
  }
  @Override
  public void onClick (View v)
  {
```

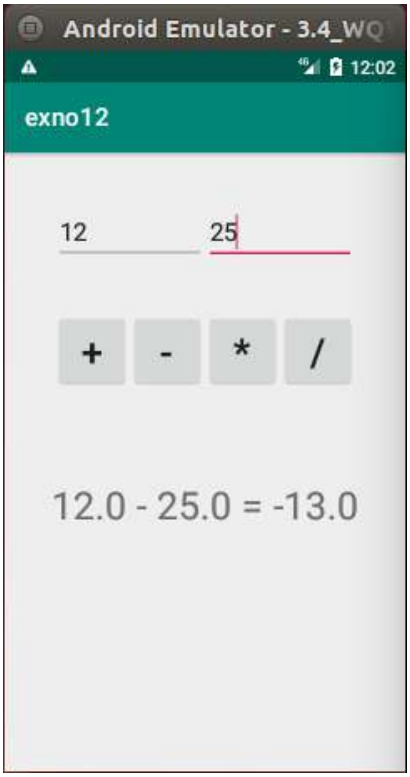
```
    float num1 = 0;
    float num2 = 0;
    float result = 0;
    String oper = "";
    // check if the fields are empty
    if (TextUtils.isEmpty(Num1.getText().toString()) || TextUtils.isEmpty(Num2.getText().toString()))
        return;

    // read EditText and fill variables with numbers
    num1 = Float.parseFloat(Num1.getText().toString());
    num2 = Float.parseFloat(Num2.getText().toString());

    // defines the button that has been clicked and performs the corresponding operation
    // write operation into oper, we will use it later for output
    switch (v.getId())
    {
      case R.id.Add:
        oper = "+";
        result = num1 + num2;
        break;
      case R.id.Sub:
        oper = "-";
        result = num1 - num2;
        break;
      case R.id.Mul:
        oper = "*";
        result = num1 * num2;
        break;
      case R.id.Div:
        oper = "/";
        result = num1 / num2;
        break;
      default:
        break;
    }
    // form the output line
    Result.setText(num1 + " " + oper + " " + num2 + " = " + result);
  }
}
```

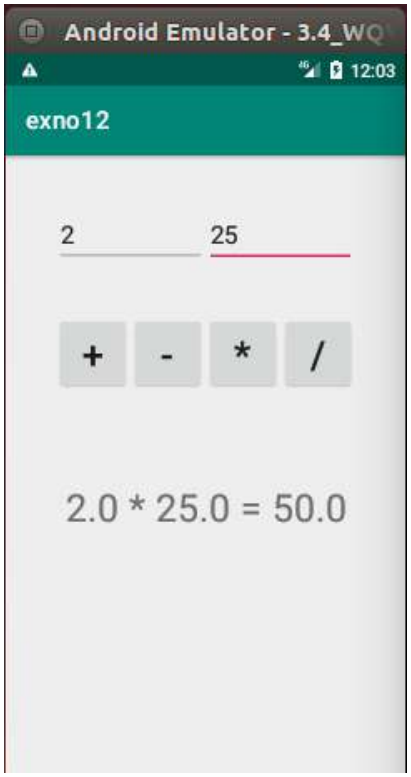
- So now the Coding part is also completed.
- Now run the application to see the output.

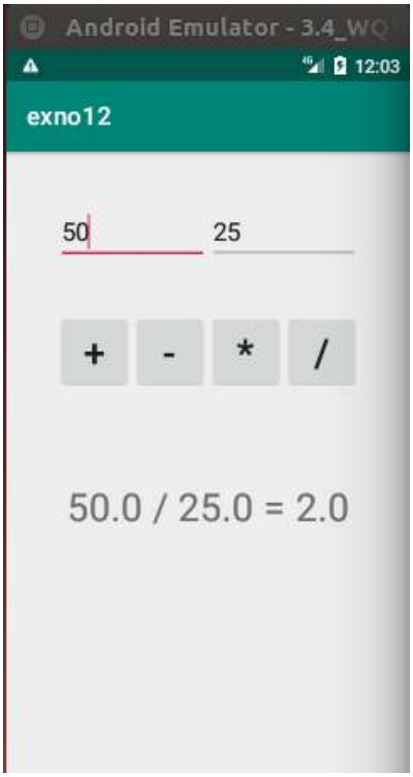
Output:











Result:

Thus a Simple Android Application for Native Calculator is developed and executed successfully.

Additional Exercises

Ex. No. 01	Android Application that creates Alarm Clock
Date:	

Aim:

To develop a Android Application that creates Alarm Clock.

Procedure:

Creating a New project:

- Open Android Studio and then click on **File -> New -> New project**.
- Then type the Application name as **"exno13"** and click Next.
- Then **select the Minimum SDK** as shown below and click Next.
- Then **select theEmpty Activity** and click Next.
- Finally click **Finish**.
- It will take some time to build and load the project.
- After completion it will look as given below.

Creating Second Activity for the Android Application:

- Click on **File -> New -> Activity -> Empty Activity**.
- Type the **Activity Name as AlarmReceiver** and click **Finish** button.
- Thus **Second Activity**for the application is created.

Designing layout for the Android Application:

- Click on **app -> res -> layout -> activity_main.xml**.
- Now click on Text as shown below.
- Then delete the code which is there and type the code as given below.

Code for Activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:layout_width="match_parent"
  android:layout_height="match_parent"
  android:orientation="vertical">

<TimePicker
    android:id="@+id/timePicker"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center" />

<ToggleButton
    android:id="@+id/toggleButton"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_margin="20dp"
    android:checked="false"
    android:onClick="OnToggleClicked" />

</LinearLayout>
```

- Now click on Design and your application will look as given below.
- So now the designing part is completed.

Changes in Manifest for the Android Application:

- Click on **app -> manifests -> AndroidManifest.xml.**
- Now change the activity tag to receiver tag in the AndroidManifest.xml file as shown below.

Code for AndroidManifest.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
  package="com.example.exno13" >

<application
    android:allowBackup="true"
    android:icon="@mipmap/ic_launcher"
    android:label="@string/app_name"
    android:supportsRtl="true"
    android:theme="@style/AppTheme" >
<activity android:name=".MainActivity" >
<intent-filter>
<action android:name="android.intent.action.MAIN" />

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

</manifest>
```

- So now the changes are done in the Manifest.

Java Coding for the Android Application:

Java Coding for Main Activity:

- Click on **app -> java -> com.example.exno13 -> MainActivity**.
- Then delete the code which is there and type the code as given below.

Code for MainActivity.java:

```
packagecom.example.exno13;
import android.app.AlarmManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
//import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.TimePicker;
import android.widget.Toast;
import android.widget.ToggleButton;

import java.util.Calendar;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity
{
  TimePicker alarmTimePicker;
  PendingIntent pendingIntent;
  AlarmManager alarmManager;

  @Override
  protected void onCreate(Bundle savedInstanceState)
  {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    alarmTimePicker = (TimePicker) findViewById(R.id.timePicker);
    alarmManager = (AlarmManager) getSystemService(ALARM_SERVICE);
  }
  public void OnToggleClicked(View view)
  {
    long time;
    if (((ToggleButton) view).isChecked())
    {
      Toast.makeText(MainActivity.this, "ALARM ON", Toast.LENGTH_SHORT).show();
      Calendar calendar = Calendar.getInstance();
      calendar.set(Calendar.HOUR_OF_DAY, alarmTimePicker.getCurrentHour());
```

```
        calendar.set(Calendar.MINUTE, alarmTimePicker.getCurrentMinute());
        Intent intent = new Intent(this, AlarmReceiver.class);
        pendingIntent = PendingIntent.getBroadcast(this, 0, intent, 0);

        time=(calendar.getTimeInMillis()-(calendar.getTimeInMillis()%60000));
        if(System.currentTimeMillis()>time)
        {
          if (calendar.AM_PM == 0)
            time = time + (1000*60*60*12);
          else
            time = time + (1000*60*60*24);
        }
        alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, time, 10000, pendingIntent);
      }
      else
      {
        alarmManager.cancel(pendingIntent);
        Toast.makeText(MainActivity.this, "ALARM OFF", Toast.LENGTH_SHORT).show();
      }
    }
```

Java Coding for Alarm Receiver:

- Click on **app -> java -> com.example.exno13 -> AlarmReceiver**.
- Then delete the code which is there and type the code as given below.

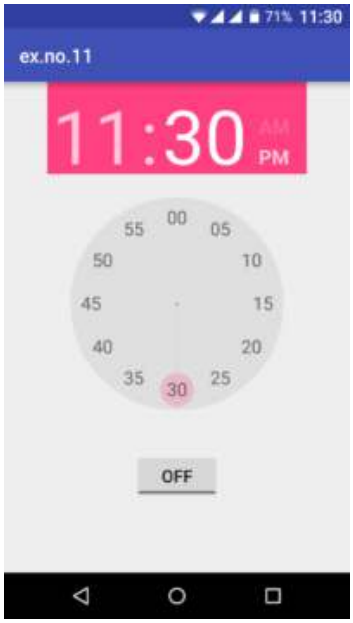
Code for AlarmReceiver.java:

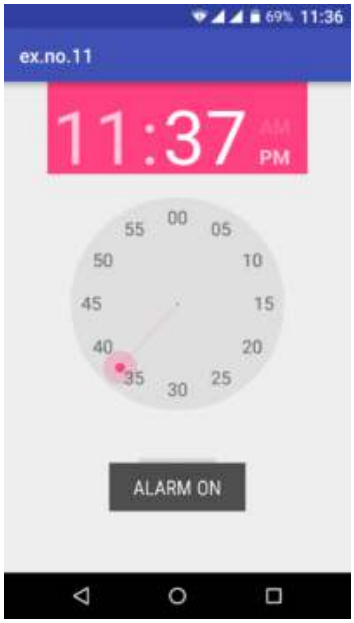
```
packagecom.example.exno13;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.media.Ringtone;
import android.media.RingtoneManager;
import android.net.Uri;
import android.widget.Toast;

public class AlarmReceiver extends BroadcastReceiver
{
  @Override
  public void onReceive(Context context, Intent intent)
  {
    Toast.makeText(context, "Alarm! Wake up! Wake up!", Toast.LENGTH_LONG).show();
    Uri alarmUri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
```

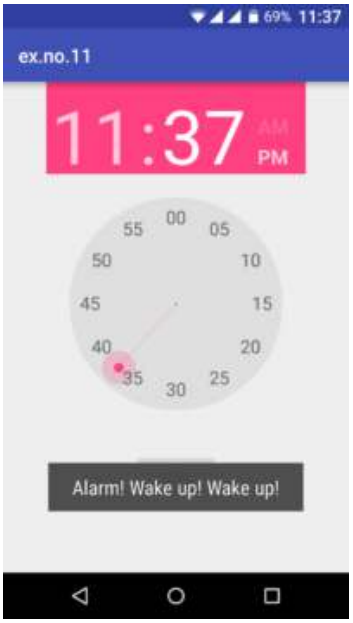
```
    if (alarmUri == null)
    {
       alarmUri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
    }
    Ringtone ringtone = RingtoneManager.getRingtone(context, alarmUri);
    ringtone.play();
  }
}
```

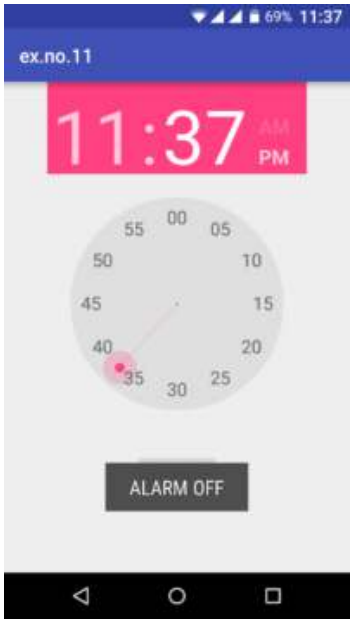
- So now the Coding part of Alarm Receiver is also completed.
- Now run the application to see the output.

Output:









Result:

Thus Android Application that creates Alarm Clock is developed and executed successfully.