PROGRAM 1:

MainActivity.java

```java
package com.example.expr1;
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;
        }
    });
}}
```

activity_main.xml

```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"
```

```xml
        android:layout_margin="20dp"
        android:gravity="center"
        android:text="Change color"
        android:textSize="25sp" />
</LinearLayout>
```

PROGRAM 2:

MainActivity.java

```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
```

```java
        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);
      }
    });
  }
}
```

SecondActivity.java

```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);
    }
}
```

activity_main.xml

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

```xml
        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>
```

activity_second.xml

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

PROGRAM 3:

MainActivity.java

```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);
    }
```

}

activity_main.xml

```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>
```

PROGRAM 4:

MainActivity.java

```java
package com.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)
```

```java
    {
// 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
```

```java
        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)
```

```java
          {
            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();
    }
}
```

activity_main.xml

```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
```

```xml
        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"
```

```xml
            android:textSize="20sp" />
        <Button
            android:id="@+id/Insert"
            android:layout_width="150dp"
            android:layout_height="wrap_content"
            android:layout_x="29dp"
            android:layout_y="304dp"
            android:text="Insert"
            android:textSize="30dp" />
        <Button
            android:id="@+id/Delete"
            android:layout_width="174dp"
            android:layout_height="wrap_content"
            android:layout_x="215dp"
            android:layout_y="308dp"
            android:text="Delete"
            android:textSize="30dp" />
        <Button
            android:id="@+id/Update"
            android:layout_width="170dp"
            android:layout_height="72dp"
            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="225dp"
            android:layout_y="405dp"
            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>
```

PROGRAM 5:

MainActivity.java

```java
package com.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.annotation.RequiresApi;
import androidx.core.app.NotificationCompat;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.Person;
import androidx.core.graphics.drawable.IconCompat;
import android.os.Build;
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 = "";
    @RequiresApi(api = Build.VERSION_CODES.O)
    @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);
```

```java
        btnNotificationWithGroupConvo.setOnClickListener(this);
        btnNotificationSemantic.setOnClickListener(this);
        notificationManager = (NotificationManager)
getSystemService(Context.NOTIFICATION_SERVICE);
        CharSequence name = "My Notification";
        String description = "welcome seenuvasan";
        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))
```

```
            .setIcon(IconCompat.createWithResource(this,
R.drawable.ic_launcher_foreground))
            .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.ic_launcher_background);
        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.ic_launcher_foreground))
            .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.ic_launcher_background);
        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)
```

```java
                .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.ic_launcher_background);
        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.ic_launcher_background, "MARK READ", pendingIntent)
                .setSemanticAction(NotificationCompat.Action.SEMANTIC_ACTION_MAR
K_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();}}}
```

activity_main.xml

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

```xml
        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="Exit" />
</LinearLayout>
```

PROGRAM 6:

MainActivity.java
```java
package com.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();
                    }
                });
        }
}
```

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"
```

```xml
        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>
```

PROGRAM 7:

MainActivity.java

```java
package com.example.exno7;
import android.Manifest;
import android.annotation.SuppressLint;
import android.content.Context;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.location.Location;
import android.location.LocationManager;
import android.os.Bundle;
import android.os.Looper;
import android.provider.Settings;
import android.widget.TextView;
import android.widget.Toast;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import com.google.android.gms.location.FusedLocationProviderClient;
import com.google.android.gms.location.LocationCallback;
import com.google.android.gms.location.LocationRequest;
import com.google.android.gms.location.LocationResult;
import com.google.android.gms.location.LocationServices;
import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;

public class MainActivity extends AppCompatActivity {

    FusedLocationProviderClient mFusedLocationClient;
    TextView latitudeTextView, longitTextView;
    int PERMISSION_ID = 44;

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

        latitudeTextView = findViewById(R.id.latTextView);
        longitTextView = findViewById(R.id.lonTextView);

        mFusedLocationClient = LocationServices.getFusedLocationProviderClient(this);
```

```java
        // method to get the location
        getLastLocation();
    }


    @SuppressLint("MissingPermission")
    private void getLastLocation() {
        // check if permissions are given
        if (checkPermissions()) {


            // check if location is enabled
            if (isLocationEnabled()) {


                // getting last
                // location from
                // FusedLocationClient
                // object
                mFusedLocationClient.getLastLocation().addOnCompleteListener(new
OnCompleteListener<Location>() {
                    @Override
                    public void onComplete(@NonNull Task<Location> task) {
                        Location location = task.getResult();
                        if (location == null) {
                            requestNewLocationData();
                        } else {
                            latitudeTextView.setText(location.getLatitude() + "");
                            longitTextView.setText(location.getLongitude() + "");
                        }
                    }
                });
            } else {
                Toast.makeText(this, "Please turn on" + " your location...",
Toast.LENGTH_LONG).show();
                Intent intent = new
Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
                startActivity(intent);
            }
        } else {
            // if permissions aren't available,
            // request for permissions
            requestPermissions();
        }
    }
```

```java
@SuppressLint("MissingPermission")
private void requestNewLocationData() {

    // Initializing LocationRequest
    // object with appropriate methods
    LocationRequest mLocationRequest = new LocationRequest();
    mLocationRequest.setPriority(LocationRequest.PRIORITY_HIGH_ACCURACY);
    mLocationRequest.setInterval(5);
    mLocationRequest.setFastestInterval(0);
    mLocationRequest.setNumUpdates(1);

    // setting LocationRequest
    // on FusedLocationClient
    mFusedLocationClient = LocationServices.getFusedLocationProviderClient(this);
    mFusedLocationClient.requestLocationUpdates(mLocationRequest,
mLocationCallback, Looper.myLooper());
}

private LocationCallback mLocationCallback = new LocationCallback() {

    @Override
    public void onLocationResult(LocationResult locationResult) {
        Location mLastLocation = locationResult.getLastLocation();
        latitudeTextView.setText("Latitude: " + mLastLocation.getLatitude() + "");
        longitTextView.setText("Longitude: " + mLastLocation.getLongitude() + "");
    }
};

// method to check for permissions
private boolean checkPermissions() {
    return ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_COARSE_LOCATION) ==
PackageManager.PERMISSION_GRANTED && ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_FINE_LOCATION) ==
PackageManager.PERMISSION_GRANTED;

    // If we want background location
    // on Android 10.0 and higher,
    // use:
    // ActivityCompat.checkSelfPermission(this,
Manifest.permission.ACCESS_BACKGROUND_LOCATION) ==
PackageManager.PERMISSION_GRANTED
}
```

```java
    // method to request for permissions
    private void requestPermissions() {
        ActivityCompat.requestPermissions(this, new String[]{
            Manifest.permission.ACCESS_COARSE_LOCATION,
            Manifest.permission.ACCESS_FINE_LOCATION}, PERMISSION_ID);
    }


    // method to check
    // if location is enabled
    private boolean isLocationEnabled() {
        LocationManager locationManager = (LocationManager)
getSystemService(Context.LOCATION_SERVICE);
        return locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER) ||
locationManager.isProviderEnabled(LocationManager.NETWORK_PROVIDER);
    }


    // If everything is alright then
    @Override
    public void
    onRequestPermissionsResult(int requestCode, @NonNull String[] permissions, @NonNull
int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);


        if (requestCode == PERMISSION_ID) {
            if (grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
                getLastLocation();
            }
        }
    }


    @Override
    public void onResume() {
        super.onResume();
        if (checkPermissions()) {
            getLastLocation();
        }
    }
}
```

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

```xml
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="@color/teal_700"
    android:gravity="center"
    android:orientation="vertical">


    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="sans-serif-black"
        android:text="Latitude:" />

    <TextView
        android:id="@+id/latTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Latitude will be here! "
        android:textColor="#f5f5f5" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="sans-serif-black"
        android:text="Longitude:" />

    <TextView
        android:id="@+id/lonTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Longitude will be here! "
        android:textColor="#f5f5f5" />

</LinearLayout>
```

AndroidManifest.xml

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

```xml
    <uses-permission android:name = "android.permission.INTERNET" />
    <uses-permission
android:name="android.permission.ACCESS_COARSE_LOCATION" />
    <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION" />
    <uses-permission
android:name="android.permission.ACCESS_BACKGROUND_LOCATION" />
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Exno7"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true"
            android:label="@string/app_name"
            android:theme="@style/Theme.Exno7.NoActionBar">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
    </application>

</manifest>
```

PROGRAM 8:

MainActivity.java

```java
package com.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 file = getFilesDir();
                    System.out.println("seenuvasan phone file path"+file.toString());
                    File f=new File( file+"/myfile.txt");
                    f.createNewFile();
                    FileOutputStream fout=new FileOutputStream(f);
                    fout.write(message.getBytes());
                    fout.close();
```

```java
                Toast.makeText(getBaseContext(),"Data Written in
storage",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 file = getFilesDir();
                File f = new File(file+"/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
Storage",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("");
            }
        });
    }
}
```

activity_main.xml

```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>
```

PROGRAM 9:

MainActivity.java

```java
package com.example.exno9;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.content.Context;
import androidx.annotation.RequiresApi;
import androidx.core.app.NotificationCompat;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.Person;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import java.util.Date;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    NotificationManager notificationManager;
    NotificationCompat.Builder builder;
    NotificationChannel channel;
    CharSequence charSequence = "";
    EditText e;
    @RequiresApi(api = Build.VERSION_CODES.O)
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button btnSimpleNotification = findViewById(R.id.Button);
        e= (EditText) findViewById(R.id.editText);
        String msg = e.toString();
        btnSimpleNotification.setOnClickListener(this);
        notificationManager = (NotificationManager)
getSystemService(Context.NOTIFICATION_SERVICE);
        CharSequence name = "My Notification";
        String description = "welcome seenuvasan";
        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
```

```java
    public void onClick(View v) {
        switch (v.getId()) {
            case R.id.Button:
                simpleNotification();
                break;


        }
    }
    private void simpleNotification() {

        Person jd = new Person.Builder().setName("allert") .setImportant(true) .build();
        new NotificationCompat.MessagingStyle(jd)
                .addMessage(e.getText(), new Date().getTime(), jd) .setBuilder(builder);
        notificationManager.notify(1, builder.build());
    }
}
```

activity_main.xml

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

PROGRAM 10:

MainActivity.java

```java
package com.example.exno10;
import android.app.ListActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.AsyncTask;
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);
```

```java
        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)
      {
```

```java
                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;
        }
    }}
```

activity_main.xml
```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>
```

AndroidManifest.xml

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

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Exno10"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true"
            android:label="@string/app_name"
            android:theme="@style/Theme.Exno10.NoActionBar">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

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

            <meta-data
                android:name="android.app.lib_name"
                android:value="" />
        </activity>
    </application>
<uses-permission android:name="android.permission.INTERNET"/>
</manifest>
```

PROGRAM 11:

MainActivity.java

```java
package com.example.exno11;
import android.content.Intent;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    // define objects for edit text and button
    Button button;
    EditText sendto, subject, body;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // Getting instance of edittext and button
        sendto = findViewById(R.id.editText1);
        subject = findViewById(R.id.editText2);
        body = findViewById(R.id.editText3);
        button = findViewById(R.id.button);
        // attach setOnClickListener to button with Intent object define in it
        button.setOnClickListener(view -> {
            String emailsend = sendto.getText().toString();
            String emailsubject = subject.getText().toString();
            String emailbody = body.getText().toString();

            // define Intent object with action attribute as ACTION_SEND
            Intent intent = new Intent(Intent.ACTION_SEND);

            // add three fields to intent using putExtra function
            intent.putExtra(Intent.EXTRA_EMAIL, new String[]{emailsend});
            intent.putExtra(Intent.EXTRA_SUBJECT, emailsubject);
            intent.putExtra(Intent.EXTRA_TEXT, emailbody);

            // set type of intent
            intent.setType("message/rfc822");

            // startActivity with intent with chooser as Email client using createChooser function
            startActivity(Intent.createChooser(intent, "Choose an Email client :"));
        });
    }
```

```
        }

activity_main.xml
<?xml version="1.0" encoding="utf-8"?>
<!-- Relative Layout -->
<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">

    <!-- Edit text for email id -->
    <EditText
        android:id="@+id/editText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_alignParentRight="true"
        android:layout_marginTop="18dp"
        android:layout_marginRight="22dp" />

    <!-- Edit text for email subject -->
    <EditText
        android:id="@+id/editText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/editText1"
        android:layout_alignLeft="@+id/editText1"
        android:layout_marginTop="20dp" />

    <!-- Edit text for email body -->
    <EditText
        android:id="@+id/editText3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@+id/editText2"
        android:layout_alignLeft="@+id/editText2"
        android:layout_marginTop="30dp" />

    <!-- text Views for label -->
    <TextView
        android:id="@+id/textView1"
```

```xml
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/editText1"
    android:layout_alignBottom="@+id/editText1"
    android:layout_alignParentLeft="true"
    android:text="Send To:"
    android:textColor="#0F9D58" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/editText2"
    android:layout_alignBottom="@+id/editText2"
    android:layout_alignParentLeft="true"
    android:text="Email Subject:"
    android:textColor="#0F9D58" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_alignBaseline="@+id/editText3"
    android:layout_alignBottom="@+id/editText3"
    android:text="Email Body:"
    android:textColor="#0F9D58" />

<!-- Button to send email -->
<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_below="@+id/editText3"
    android:layout_alignLeft="@+id/editText3"
    android:layout_marginLeft="76dp"
    android:layout_marginTop="20dp"
    android:text="Send email!!" />
</RelativeLayout>
```

PROGRAM 12 :

MainActivity.java

```java
package com.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);
    }
}
```

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

```xml
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    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"
        android:hint="number 1"
        tools:ignore="SpeakableTextPresentCheck" />

    <EditText
        android:id="@+id/editText2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:hint="number 2"
        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"/>
```

```xml
    <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>
```