

Practical No.18

Q.Write a program to create button"Start Dialer".When you click on this button it should open the phone dialer

Activity_main.xml

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

    <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Start Dialer!"
    />
</LinearLayout>
```

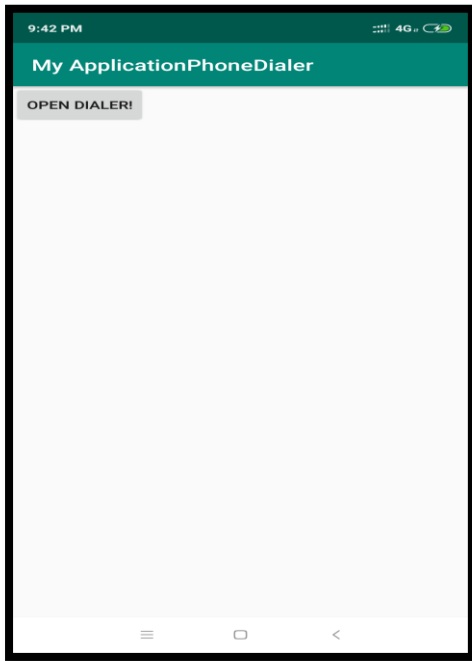
MainActivity.java

```
package com.example.myapplicationphonedialer;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
    Button b1;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1=findViewById(R.id.b1);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i=new Intent("android.intent.action.DIAL");
                startActivity(i);
            }
        });
    }
}
```

Output



Practical No:19

Q. write a program to create your own content provider to insert and access data in android application

```
<?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"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Content provider"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:textSize="30dp" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText"/>

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText2"
        android:hint="Name"
        android:textColorHint="@android:color/holo_blue_light" />

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText3"
        android:hint="Grade"
        android:textColorHint="@android:color/holo_blue_bright" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/button2"
        android:text="Add Name"
        android:onClick="onClickAddName"/>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
        android:text="Retrive student"
        android:id="@+id/button"
        android:onClick="onClickRetrieveStudents"/>
</LinearLayout>
```

Manifest.xml

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="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>

        <provider android:name="StudentsProvider"
            android:authorities="com.example.MyApplication.StudentsProvider"/>
    </application>

</manifest>
```

StudentsProvider.java

```
package com.example.myapplicationcontentprovider;

import android.content.ContentProvider;
import android.content.ContentUris;
import android.content.ContentValues;
import android.content.Context;
import android.content.UriMatcher;
import android.database.Cursor;
import android.database.SQLException;
```

```

import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.database.sqlite.SQLiteQueryBuilder;
import android.net.Uri;
import android.text.TextUtils;

import java.util.HashMap;

public class StudentsProvider extends ContentProvider {
    static final String PROVIDER_NAME = "com.example.MyApplication.StudentsProvider";
    static final String URL = "content://" + PROVIDER_NAME + "/students";
    static final Uri CONTENT_URI = Uri.parse(URL);

    static final String _ID = "_id";
    static final String NAME = "name";
    static final String GRADE = "grade";

    private static HashMap<String, String> STUDENTS_PROJECTION_MAP;

    static final int STUDENTS = 1;
    static final int STUDENT_ID = 2;

    static final UriMatcher uriMatcher;
    static{
        uriMatcher = new UriMatcher(UriMatcher.NO_MATCH);
        uriMatcher.addURI(PROVIDER_NAME, "students", STUDENTS);
        uriMatcher.addURI(PROVIDER_NAME, "students/#", STUDENT_ID);
    }

    /**
     * Database specific constant declarations
     */

    private SQLiteDatabase db;
    static final String DATABASE_NAME = "College";
    static final String STUDENTS_TABLE_NAME = "students";
    static final int DATABASE_VERSION = 1;
    static final String CREATE_DB_TABLE =
        " CREATE TABLE " + STUDENTS_TABLE_NAME +
        " (_id INTEGER PRIMARY KEY AUTOINCREMENT, " +
        " name TEXT NOT NULL, " +
        " grade TEXT NOT NULL);";

    /**
     * Helper class that actually creates and manages
     * the provider's underlying data repository.
     */

    private static class DatabaseHelper extends SQLiteOpenHelper {
        DatabaseHelper(Context context){

```

```

        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL(CREATE_DB_TABLE);
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " + STUDENTS_TABLE_NAME);
        onCreate(db);
    }
}

@Override
public boolean onCreate() {
    Context context = getContext();
    DatabaseHelper dbHelper = new DatabaseHelper(context);

    /**
     * Create a write able database which will trigger its
     * creation if it doesn't already exist.
     */

    db = dbHelper.getWritableDatabase();
    return (db == null)? false:true;
}

@Override
public Uri insert(Uri uri, ContentValues values) {
    /**
     * Add a new student record
     */
    long rowID = db.insert( STUDENTS_TABLE_NAME, "", values);

    /**
     * If record is added successfully
     */
    if (rowID > 0) {
        Uri _uri = ContentUris.withAppendedId(CONTENT_URI, rowID);
        getContext().getContentResolver().notifyChange(_uri, null);
        return _uri;
    }

    throw new SQLException("Failed to add a record into " + uri);
}

@Override
public Cursor query(Uri uri, String[] projection,

```

```

        String selection, String[] selectionArgs, String sortOrder) {
    SQLiteQueryBuilder qb = new SQLiteQueryBuilder();
    qb.setTables(STUDENTS_TABLE_NAME);

    switch (uriMatcher.match(uri)) {
        case STUDENTS:
            qb.setProjectionMap(STUDENTS_PROJECTION_MAP);
            break;

        case STUDENT_ID:
            qb.appendWhere( _ID + "=" + uri.getPathSegments().get(1));
            break;

        default:
    }

    if (sortOrder == null || sortOrder == ""){
        /**
         * By default sort on student names
         */
        sortOrder = NAME;
    }

    Cursor c = qb.query(db, projection, selection,
        selectionArgs,null, null, sortOrder);
    /**
     * register to watch a content URI for changes
     */
    c.setNotificationUri(getContext().getContentResolver(), uri);
    return c;
}

@Override
public int delete(Uri uri, String selection, String[] selectionArgs) {
    int count = 0;
    switch (uriMatcher.match(uri)){
        case STUDENTS:
            count = db.delete(STUDENTS_TABLE_NAME, selection, selectionArgs);
            break;

        case STUDENT_ID:
            String id = uri.getPathSegments().get(1);
            count = db.delete( STUDENTS_TABLE_NAME, _ID + " = " + id +
                (!TextUtils.isEmpty(selection) ? " AND (" + selection + ')' : ""), selectionArgs);
            break;
        default:
            throw new IllegalArgumentException("Unknown URI " + uri);
    }

    getContext().getContentResolver().notifyChange(uri, null);
}

```

```

        return count;
    }

    @Override
    public int update(Uri uri, ContentValues values,
        String selection, String[] selectionArgs) {
        int count = 0;
        switch (uriMatcher.match(uri)) {
            case STUDENTS:
                count = db.update(STUDENTS_TABLE_NAME, values, selection, selectionArgs);
                break;

            case STUDENT_ID:
                count = db.update(STUDENTS_TABLE_NAME, values,
                    _ID + " = " + uri.getPathSegments().get(1) +
                    (!TextUtils.isEmpty(selection) ? " AND (" + selection + ')' : ""), selectionArgs);
                break;
            default:
                throw new IllegalArgumentException("Unknown URI " + uri);
        }

        getContext().getContentResolver().notifyChange(uri, null);
        return count;
    }

```

```

    @Override
    public String getType(Uri uri) {
        switch (uriMatcher.match(uri)) {
            /**
             * Get all student records
             */
            case STUDENTS:
                return "vnd.android.cursor.dir/vnd.example.students";
            /**
             * Get a particular student
             */
            case STUDENT_ID:
                return "vnd.android.cursor.item/vnd.example.students";
            default:
                throw new IllegalArgumentException("Unsupported URI: " + uri);
        }
    }
}

```

MainActivity.java

```
package com.example.myapplicationcontentprovider;
```

```
import androidx.appcompat.app.AppCompatActivity;
```



```
import android.content.ContentValues;
import android.database.Cursor;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;
```

```
public class MainActivity extends AppCompatActivity {
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
```

```
    public void onClickAddName(View view) {
        // Add a new student record
        ContentValues values = new ContentValues();
        values.put(StudentsProvider.NAME,
            ((EditText)findViewById(R.id.editText2)).getText().toString());

        values.put(StudentsProvider.GRADE,
            ((EditText)findViewById(R.id.editText3)).getText().toString());
```

```
        Uri uri = getContentResolver().insert(StudentsProvider.CONTENT_URI, values);
```

```
        Toast.makeText(getBaseContext(),
            uri.toString(), Toast.LENGTH_LONG).show();
    }
```

```
    public void onClickRetrieveStudents(View view) {
        // Retrieve student records
        String URL = "content://com.example.MyApplication.StudentsProvider";
```

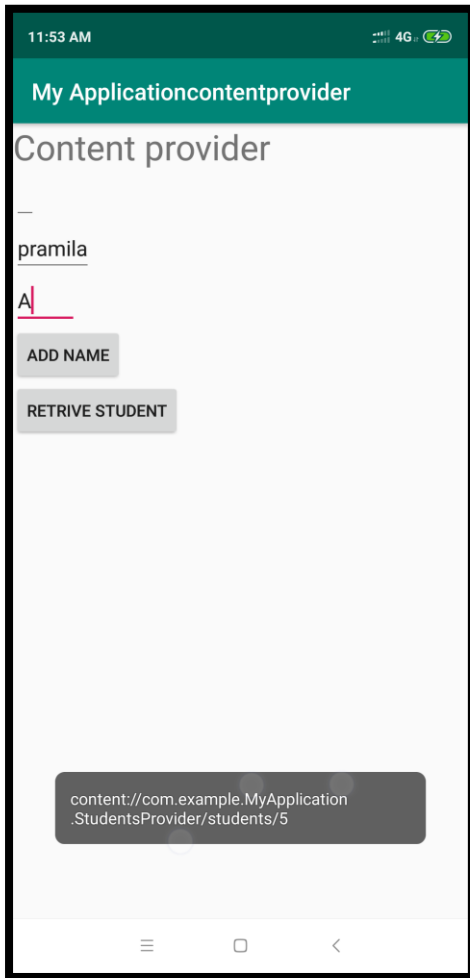
```
        Uri students = Uri.parse(URL);
        Cursor c = managedQuery(students, null, null, null, "name");
```

```
        if (c.moveToFirst()) {
            do{
                Toast.makeText(this,
                    c.getString(c.getColumnIndex(StudentsProvider._ID)) +
                    ", " + c.getString(c.getColumnIndex( StudentsProvider.NAME)) +
                    ", " + c.getString(c.getColumnIndex( StudentsProvider.GRADE)),
                    Toast.LENGTH_SHORT).show();
            } while (c.moveToNext());
        }
    }
```

```

}
```

Output:



Practical No:20

Q.Write a program to start wifi using service

Main activity.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Wifi Turn On!"
    />
    <Button
        android:id="@+id/b2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Wifi Turn Off!" />
</LinearLayout>
```

Manifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.myapplicationwifi">
    <uses-permission android:name="android.permission.ACCESS_WIFI_STATE"/>
    <uses-permission android:name="android.permission.INTERNET"/>
    <uses-permission android:name="android.permission.CHANGE_WIFI_STATE"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="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>

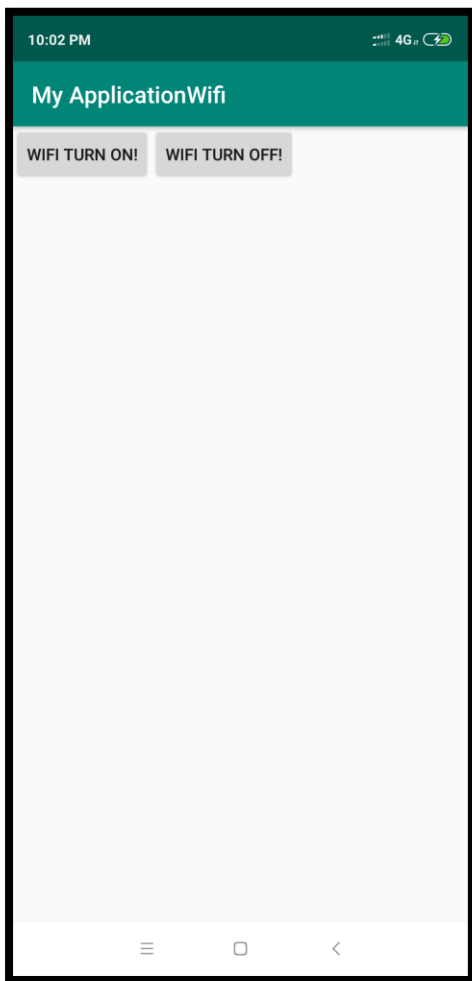
Main activity.java

```
package com.example.myapplicationwifi;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.content.Intent;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

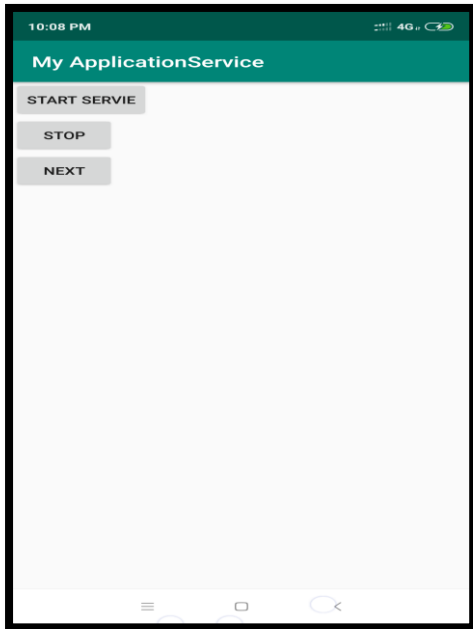
public class MainActivity extends AppCompatActivity {
    Button b1,b2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1=findViewById(R.id.b1);
        b2=findViewById(R.id.b2);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                WifiManager wmgr =
                (WifiManager)getApplicationContext().getSystemService(Context.WIFI_SERVICE);
                wmgr.setWifiEnabled(true);
            }
        });

        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                WifiManager wmgr =
                (WifiManager)getApplicationContext().getSystemService(Context.WIFI_SERVICE);
                wmgr.setWifiEnabled(false);
            }
        });
    }
}
```

Output



Q. Write a program to display the following output



Main activity.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"
    tools:context=".MainActivity">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/b1"
        android:text="Start Service"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/b2"
        android:text="Stop Service"/>
    <Button
        android:id="@+id/b3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Next Page" />
</LinearLayout>
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.videoplayer">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="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>
        <service
            android:name=".MyService"
            android:enabled="true" />
    </application>
</manifest>
```

MyService.java

```
package com.example.myapplication;
import android.app.Service;
import android.content.Intent;
import android.media.MediaPlayer;
import android.os.IBinder;
import android.widget.Toast;
import androidx.annotation.Nullable;
public class MyService extends Service {
    MediaPlayer m1;
    @Nullable
    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }
}
```

//intent (StartService Intent,flags Additional data about this start Requested,Unique integer representing request to start

```
public int onStartCommand(Intent intent, int flags, int startId) {
    m1 = MediaPlayer.create(this,R.raw.dil);
    // This will play the ringtone continuously until we stop the service.
    m1.setLooping(true);
    // It will start the player
}
```

```

    m1.start();
    Toast.makeText(this, "Service Started", Toast.LENGTH_LONG).show();
    return START_STICKY;
//    tells the system to create fresh copy of the service when sufficient memory is available after it
//    recovers from low memory
}
public void onDestroy()
{
    Toast.makeText(this, "Service Stopped", Toast.LENGTH_SHORT).show();
    m1.stop();
}
}

```

MainActivity.java

```

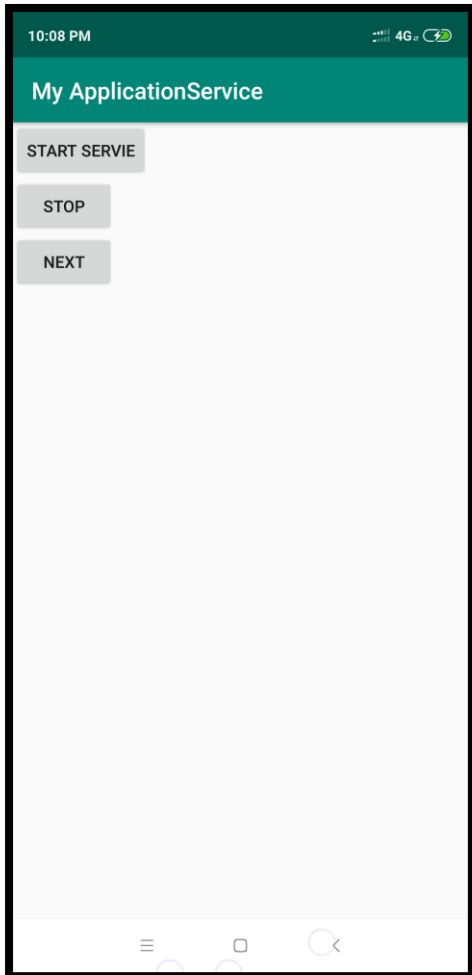
package com.example.myapplication;
import androidx.appcompat.app.AppCompatActivity;
import android.Manifest;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
    Button b1,b2,b3;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1=findViewById(R.id.b1);
        b2=findViewById(R.id.b2);
        b3=findViewById(R.id.b3);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent i=new Intent(MainActivity.this,MyService.class);
                startService(i);
            }
        });
        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent i=new Intent(MainActivity.this,MyService.class);
                stopService(i);
            }
        });
        b3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent i=new Intent(MainActivity.this,second.class);
                startActivity(i);
            }
        });
    }
}

```



```
});  
}  
}
```

Output



Practical No:23

Q. Write a program to capture an image using camera and display it.

main_activity.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:text="Take a Photo" >
    </Button>
    <ImageView
        android:id="@+id/imageView1"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:layout_above="@+id/button1"
        android:layout_alignParentTop="true">
    </ImageView>
</RelativeLayout>
```

MainActivity.java

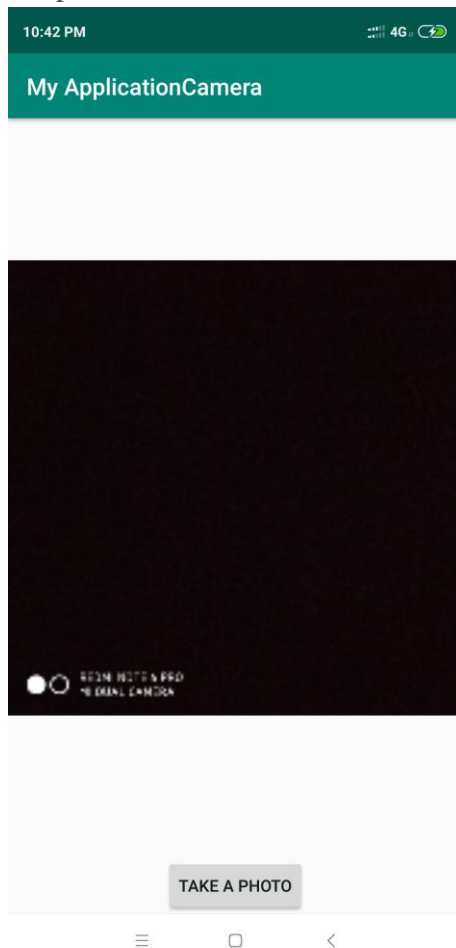
```
package com.example.myapplicationcamera;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.graphics.Bitmap;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    private static final int CAMERA_REQUEST=1888;
    ImageView imageView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        imageView=(ImageView) this.findViewById(R.id.imageView1);
        Button photoButton=(Button) this.findViewById(R.id.button1);
        photoButton.setOnClickListener(new View.OnClickListener() {
```

```

@Override
public void onClick(View v) {
    Intent
cameraIntent=new Intent(android.provider.MediaStore.ACTION_IMAGE_CAPTURE);
    startActivityForResult(cameraIntent, CAMERA_REQUEST);
}
});
}
protected void onActivityResult(int requestCode, int resultCode, Intent data) {
    if (requestCode == CAMERA_REQUEST) {
        Bitmap photo=(Bitmap) data.getExtras().get("data");
        imageView.setImageBitmap(photo);
    }
}
}

```

Output



Q. Write a program to record video using various camera methods

main_activity.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_centerHorizontal="true"
        android:text="Take a Video" >
    </Button>
    <ImageView
        android:id="@+id/imageView1"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:layout_above="@+id/button1"
        android:layout_alignParentTop="true">
    </ImageView>
</RelativeLayout>
```

MainActivity.java

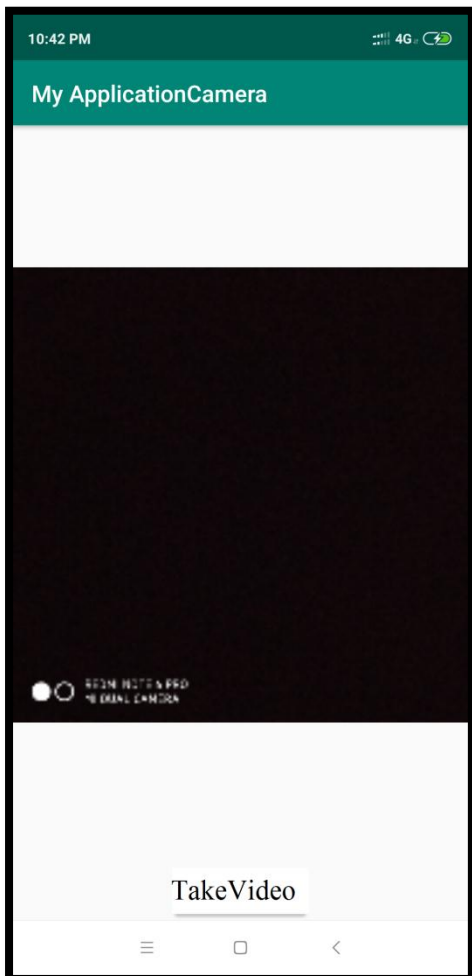
```
package com.example.myapplicationcamera;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.graphics.Bitmap;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    private static final int CAMERA_REQUEST=1888;
    ImageView imageView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        imageView=(ImageView) this.findViewById(R.id.imageView1);
        Button photoButton=(Button) this.findViewById(R.id.button1);
        photoButton.setOnClickListener(new View.OnClickListener() {
            @Override
```

```

public void onClick(View v) {
    Intent
    cameraIntent=newIntent(android.provider.MediaStore.ACTION_VIDEO_CAPTURE);
    startActivityForResult(cameraIntent, CAMERA_REQUEST);
}
});
}
}

```

Output:



Practical No:24

Q.Write a program to turn on,get visible,list devices and turn off Bluetooth with the help of following GUI

Main activity.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"
    tools:context=".MainActivity">
    <TextView android:text="Bluetooth Example"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/textview"
        android:textSize="35dp"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Turn On"
        android:id="@+id/button"
        android:layout_below="@+id/imageView"
        android:layout_toStartOf="@+id/imageView"
        android:layout_toLeftOf="@+id/imageView"
        android:clickable="true"
        android:onClick="on" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Get visible"
        android:onClick="visible"
        android:id="@+id/button2"
        android:layout_alignBottom="@+id/button"
        android:layout_centerHorizontal="true" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="List devices"
        android:onClick="list"
        android:id="@+id/button3"
        android:layout_below="@+id/imageView"
        android:layout_toRightOf="@+id/imageView"
        android:layout_toEndOf="@+id/imageView" />
```

```

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="turn off"
    android:onClick="off"
    android:id="@+id/button4"
    android:layout_below="@+id/button"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true" />
<ListView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/listView"
    android:layout_alignParentBottom="true"
    android:layout_alignLeft="@+id/button"
    android:layout_alignStart="@+id/button"
    android:layout_below="@+id/textView2" />
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Paired devices:"
    android:id="@+id/textView2"
    android:textColor="#ff34ff06"
    android:textSize="25dp"
    android:layout_below="@+id/button4"
    android:layout_alignLeft="@+id/listView"
    android:layout_alignStart="@+id/listView" />
</LinearLayout>

```

myapplicationbluetooth .java

```

package com.example.myapplicationbluetooth;
import androidx.appcompat.app.AppCompatActivity;
import android.bluetooth.BluetoothAdapter;
import android.bluetooth.BluetoothDevice;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.Button;
import android.widget.ListView;
import android.widget.Toast;
import java.util.ArrayList;
import java.util.Set;
public class MainActivity extends AppCompatActivity {
    Button b1, b2, b3, b4;
    private BluetoothAdapter BA;
    private Set<BluetoothDevice> pairedDevices;

    ListView lv;

```

```

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    b1 = (Button) findViewById(R.id.button);
    b2 = (Button) findViewById(R.id.button2);
    b3 = (Button) findViewById(R.id.button3);
    b4 = (Button) findViewById(R.id.button4);
    BA = BluetoothAdapter.getDefaultAdapter();
    lv = (ListView) findViewById(R.id.listView);
}

public void on(View v) {
    if (!BA.isEnabled()) {
        Intent turnOn = new Intent(BluetoothAdapter.ACTION_REQUEST_ENABLE);
        startActivityForResult(turnOn, 0);
        Toast.makeText(getApplicationContext(), "Turned on", Toast.LENGTH_LONG).show();
    }
    else {
        Toast.makeText(getApplicationContext(), "Already on", Toast.LENGTH_LONG).show();
    }
}

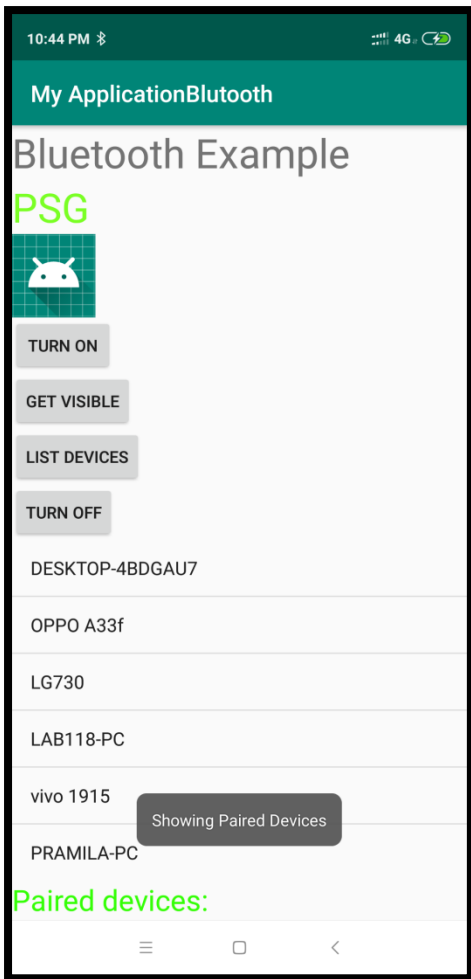
public void off(View v) {
    BA.disable();
    Toast.makeText(getApplicationContext(), "Turned off", Toast.LENGTH_LONG).show();
}

public void visible(View v)
{
    Intent getVisible = new Intent(BluetoothAdapter.ACTION_REQUEST_DISCOVERABLE);
    startActivityForResult(getVisible, 0);
}

public void list(View v) {
    pairedDevices = BA.getBondedDevices();
    ArrayList list = new ArrayList();
    for (BluetoothDevice bt : pairedDevices) list.add(bt.getName());
    Toast.makeText(getApplicationContext(), "Showing Paired Devices",
    Toast.LENGTH_SHORT).show();
    final ArrayAdapter adapter = new ArrayAdapter(this, android.R.layout.simple_list_item_1, list);
    lv.setAdapter(adapter);
}
}

```

Output:



Practical No:25

Develop a program to rotate image clockwise,Zoom In ,Zoom Out,fade In,fade Out

Activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Animation in Android"
        android:id="@+id/textView"
        android:textSize="35dp"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true" />
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/imageView"
        android:src="@mipmap/ic_launcher_round"
        android:layout_below="@+id/textView2"
        android:layout_alignRight="@+id/textView2"
        android:layout_alignEnd="@+id/textView2"
        android:layout_alignLeft="@+id/textView"
        android:layout_alignStart="@+id/textView"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="zoom"
        android:id="@+id/button"
        android:layout_below="@+id/imageView"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:layout_marginTop="40dp"
        android:onClick="clockwise"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="clockwise"
        android:id="@+id/button2"
        android:layout_alignTop="@+id/button"
        android:layout_centerHorizontal="true"
        android:onClick="zoom"/>

    <Button
```

```

        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="fade"
        android:id="@+id/button3"
        android:layout_alignTop="@+id/button2"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true"
        android:onClick="fade"/>
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="blink"
    android:onClick="blink"
    android:id="@+id/button4"
    android:layout_below="@+id/button"
    android:layout_alignParentLeft="true"
    android:layout_alignParentStart="true" />
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="move"
    android:onClick="move"
    android:id="@+id/button5"
    android:layout_below="@+id/button2"
    android:layout_alignRight="@+id/button2"
    android:layout_alignEnd="@+id/button2"
    android:layout_alignLeft="@+id/button2"
    android:layout_alignStart="@+id/button2" />
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="slide"
    android:onClick="slide"
    android:id="@+id/button6"
    android:layout_below="@+id/button3"
    android:layout_toRightOf="@+id/textView"
    android:layout_toEndOf="@+id/textView" />
</RelativeLayout>

```

MainActivity.java

```

package com.example.myapplicationanimation;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.ImageView;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {

```

```

    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
}
public void clockwise(View view){
    ImageView image = (ImageView)findViewById(R.id.imageView);
    Animation animation = AnimationUtils.loadAnimation(getApplicationContext(),
        R.anim.myanimation);
    image.startAnimation(animation);
}
public void zoom(View view){
    ImageView image = (ImageView)findViewById(R.id.imageView);
    Animation animation1 = AnimationUtils.loadAnimation(getApplicationContext(),
        R.anim.clockwise);
    image.startAnimation(animation1);
}

public void fade(View view){
    ImageView image = (ImageView)findViewById(R.id.imageView);
    Animation animation1 =
        AnimationUtils.loadAnimation(getApplicationContext(),
            R.anim.fade);
    image.startAnimation(animation1);
}

public void blink(View view){
    ImageView image = (ImageView)findViewById(R.id.imageView);
    Animation animation1 =
        AnimationUtils.loadAnimation(getApplicationContext(),
            R.anim.blink);
    image.startAnimation(animation1);
}

public void move(View view){
    ImageView image = (ImageView)findViewById(R.id.imageView);
    Animation animation1 =
        AnimationUtils.loadAnimation(getApplicationContext(), R.anim.move);
    image.startAnimation(animation1);
}

public void slide(View view){
    ImageView image = (ImageView)findViewById(R.id.imageView);
    Animation animation1 =
        AnimationUtils.loadAnimation(getApplicationContext(), R.anim.slide);
    image.startAnimation(animation1);
}
}

```

Animation.xml Files

Create anim folder and create xml files as below

1. Animation.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
  <scale xmlns:android="http://schemas.android.com/apk/res/android"
    android:fromXScale="0.5"
    android:toXScale="3.0"
    android:fromYScale="0.5"
    android:toYScale="3.0"
    android:duration="5000"
    android:pivotX="50%"
    android:pivotY="50%" >
  </scale>

  <scale xmlns:android="http://schemas.android.com/apk/res/android"
    android:startOffset="5000"
    android:fromXScale="3.0"
    android:toXScale="0.5"
    android:fromYScale="3.0"
    android:toYScale="0.5"
    android:duration="5000"
    android:pivotX="50%"
    android:pivotY="50%" >
  </scale>

</set>
```

2.clockwise.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
  <rotate xmlns:android="http://schemas.android.com/apk/res/android"
    android:fromDegrees="0"
    android:toDegrees="360"
    android:pivotX="50%"
    android:pivotY="50%"
    android:duration="5000" >
  </rotate>
  <rotate xmlns:android="http://schemas.android.com/apk/res/android"
    android:startOffset="5000"
    android:fromDegrees="360"
    android:toDegrees="0"
    android:pivotX="50%"
    android:pivotY="50%"
    android:duration="5000" >
  </rotate>
</set>
```

3.fade.xml

```

<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android"
    android:interpolator="@android:anim/accelerate_interpolator" >
    <alpha
        android:fromAlpha="0"
        android:toAlpha="1"
        android:duration="2000" >
    </alpha>
    <alpha
        android:startOffset="2000"
        android:fromAlpha="1"
        android:toAlpha="0"
        android:duration="2000" >
    </alpha>
</set>

```

4.blink.xml

```

<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android">
    <alpha android:fromAlpha="0.0"
        android:toAlpha="1.0"
        android:interpolator="@android:anim/accelerate_interpolator"
        android:duration="600"
        android:repeatMode="reverse"
        android:repeatCount="infinite"/>
</set>

```

5.move.xml

```

<?xml version="1.0" encoding="utf-8"?>
<set
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:interpolator="@android:anim/linear_interpolator"
    android:fillAfter="true">

    <translate
        android:fromXDelta="0%p"
        android:toXDelta="75%p"
        android:duration="800" />
</set>

```

6.slide.xml

```

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

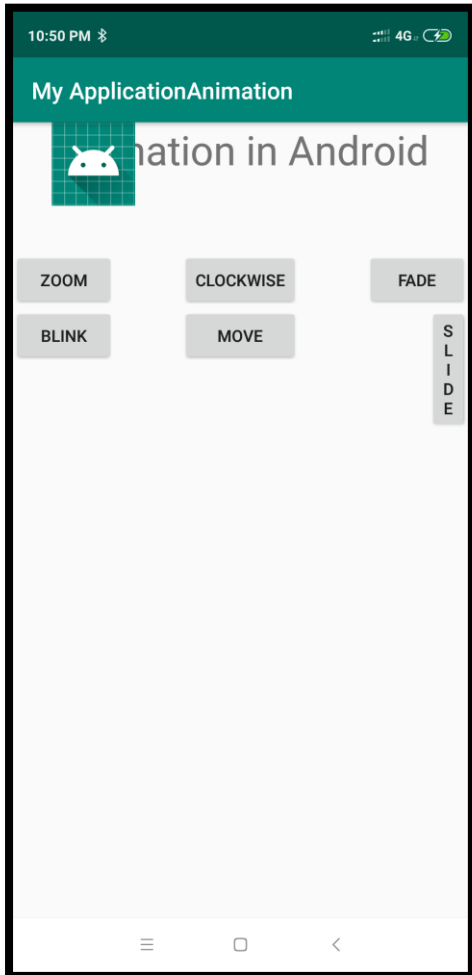
    <scale
        android:duration="500"
        android:fromXScale="1.0"
        android:fromYScale="1.0"

```

```
android:interpolator="@android:anim/linear_interpolator"  
android:toXScale="1.0"  
android:toYScale="0.0" />
```

</set>

Output:



Practical No:27

Q. Write a program to create the login form and display login successful or unsuccessful toast message

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

```
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText"
        android:hint="Enter Name"
        android:focusable="true"
        android:textColorHighlight="#ff7eff15"
        android:textColorHint="#ffff25e6"
        android:layout_marginTop="46dp"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentEnd="true" />
```

```
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:inputType="textPassword"
        android:ems="10"
        android:id="@+id/editText2"
        android:layout_below="@+id/editText"
        android:layout_alignParentLeft="true"
        android:layout_alignParentStart="true"
        android:layout_alignRight="@+id/editText"
        android:layout_alignEnd="@+id/editText"
        android:textColorHint="#ffff299f"
        android:hint="Password" />
```

```
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_marginBottom="388dp"
        android:text="login" />
```

```
    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentBottom="true"
        android:layout_marginBottom="381dp"
```



```

        android:layout_toRightOf="@+id/button"
        android:text="Cancel" />
</RelativeLayout>

```

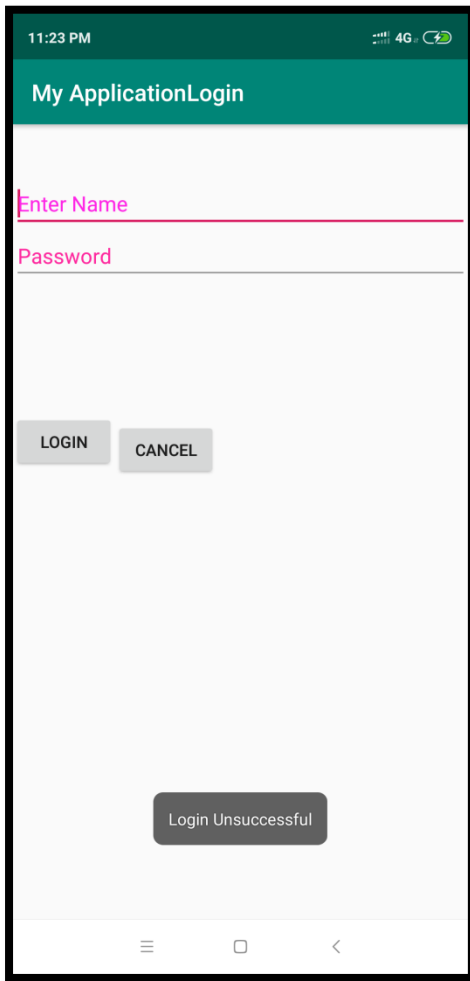
```

package com.example.myapplicationlogin;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity{
    Button b1,b2;
    EditText ed1,ed2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1 = (Button)findViewById(R.id.button);
        ed1 = (EditText)findViewById(R.id.editText);
        ed2 = (EditText)findViewById(R.id.editText2);
        b2 = (Button)findViewById(R.id.button2);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if((ed1.getText().toString().equals("admin"))&&(ed2.getText().toString().equals("admin")))
                {
                    Toast.makeText(MainActivity.this, "Login Successful", Toast.LENGTH_SHORT).show();
                }
                else
                {
                    Toast.makeText(MainActivity.this, "Login Unsuccessful", Toast.LENGTH_SHORT).show();
                }
            }
        });

        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                finish();
            }
        });
    }
}

```

Output



Practical No:28

Q. Write a program to create a login form with necessary validations like length of username and password ,empty text fields,count of unsuccessful login attempts
Display Login Successful and unsuccessful toast messages

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"
    tools:context=".MainActivity">
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText"
        android:hint="Enter User Name"
        android:focusable="true"
        android:layout_gravity="center"
    />
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/editText1"
        android:hint="Enter Valid Mail ID"
        android:focusable="true"
        android:layout_gravity="center"
    />
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:inputType="textPassword"
        android:id="@+id/editText2"
        android:hint="Enter Valid Password"
        android:layout_gravity="center"/>
    <Button
        android:id="@+id/button"
        android:layout_gravity="center"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="388dp"
        android:onClick="confirmInput"
        android:text="login" />
```

</LinearLayout>

Main_Activity.java

```
package com.example.myapplicationlogin;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Patterns;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import java.util.regex.Pattern;
public class MainActivity extends AppCompatActivity {
    Button b1;
    EditText ed1, ed2, ed3;
    private static final Pattern PASSWORD_PATTERN = Pattern.compile("^" +
        "(?=.*[0-9])" +      //at least 1 digit
        "(?=.*[a-z])" +      //at least 1 lower case letter
        "(?=.*[A-Z])" +      //at least 1 upper case letter
        "(?=.*[a-zA-Z])" +   //any letter
        "(?=.*[@#$%^&+=])" + //at least 1 special character
        "(?=\s+$)" +         //no white spaces
        ".{6,}" +            //at least 4 characters
        "$");

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1 = (Button) findViewById(R.id.button);
        ed1 = (EditText) findViewById(R.id.editText1);
        ed2 = (EditText) findViewById(R.id.editText);
        ed3 = (EditText) findViewById(R.id.editText2);
    }
    private boolean validateEmail() {
        String email = ed1.getText().toString().trim();
        if (email.isEmpty()) {
            ed1.setError("Fields cant be empty");
            return false;
        } else if (!Patterns.EMAIL_ADDRESS.matcher(email).matches()) {
            ed1.setError("Please Enter the valid address");
            return false;
        } else {
            ed1.setError(null);
            return true;
        }
    }
}
```

```

private boolean validateUsername() {
    String usernameInput = ed2.getText().toString().trim();

    if (usernameInput.isEmpty()) {
        ed2.setError("Field can't be empty");
        return false;
    } else if (usernameInput.length() > 15) {
        ed2.setError("Username too long");
        return false;
    } else {
        ed2.setError(null);
        return true;
    }
}

private boolean validatePassword() {
    String password = ed3.getText().toString().trim();
    if (password.isEmpty()) {
        ed3.setError("Field can't be empty");
        return false;
    } else if (!PASSWORD_PATTERN.matcher(password).matches()) {
        ed3.setError("Password weak");
        return false;
    } else {
        ed3.setError(null);
        return true;
    }
}

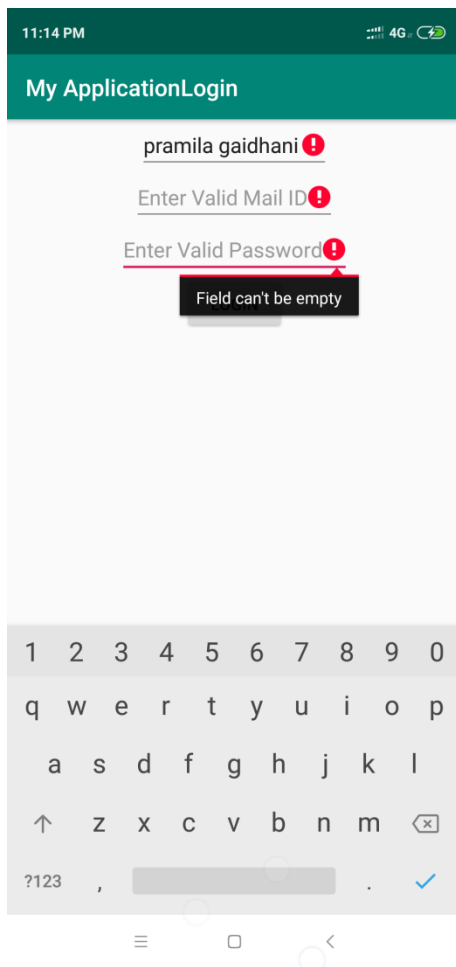
// return true;
}

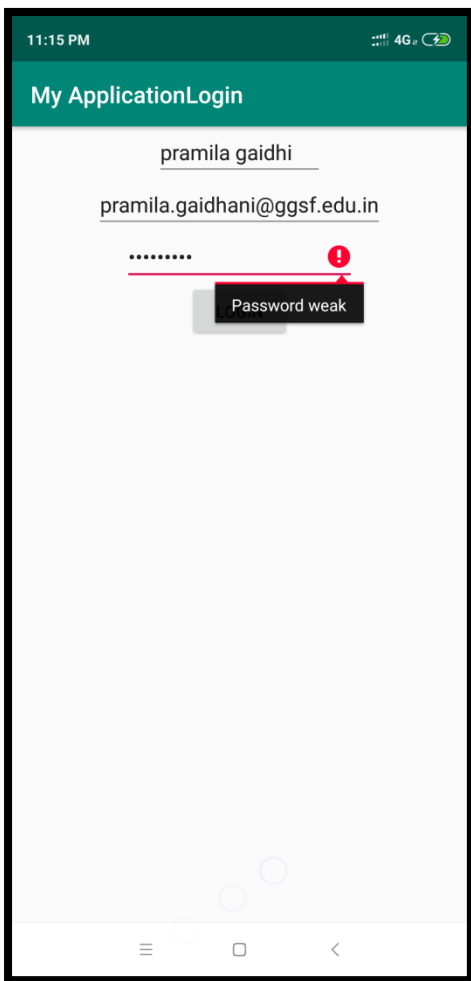
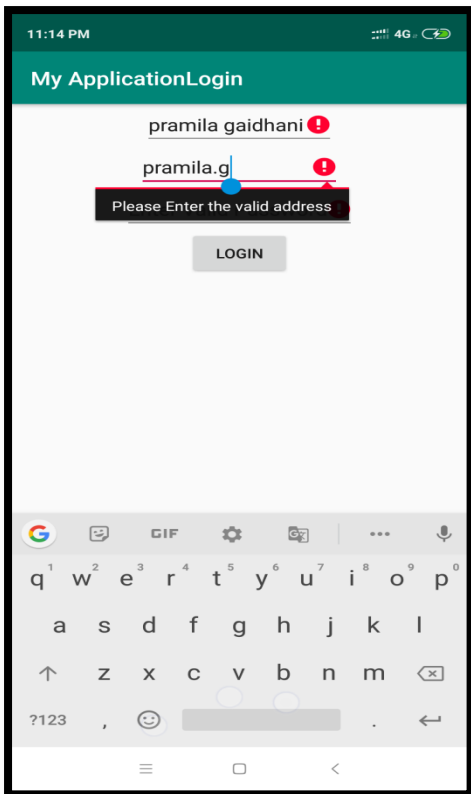
public void confirmInput(View v) {
    if (!validateEmail() | !validatePassword() | !validateUsername()) {
        return;
    }

    String input="Email"+ ed1.getText().toString();
    input+="\n";
    input="password"+ ed1.getText().toString();
    input+="\n";
    Toast.makeText(this, input, Toast.LENGTH_SHORT).show();
}
}

```

Output





Practical No:29

Write a program to send and receive SMS

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/fstTxt"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="100dp"
        android:layout_marginTop="150dp"
        android:text="Mobile No" />
    <EditText
        android:id="@+id/mbtTxt"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="100dp"
        android:ems="10"/>
    <TextView
        android:id="@+id/secTxt"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Message"
        android:layout_marginLeft="100dp" />
    <EditText
        android:id="@+id/msgTxt"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="100dp"
        android:ems="10" />
    <Button
        android:id="@+id/btnSend"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="100dp"
        android:text="Send SMS" />
</LinearLayout>
```

MainActivity.java

```
package com.example.myapplicationsms;
import android.content.Intent;
import android.net.Uri;
import android.provider.Telephony;
import android.support.v7.app.AppCompatActivity;
```



```

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

public class MainActivity extends AppCompatActivity {

    private EditText txtMobile;
    private EditText txtMessage;
    private Button btnSms;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        txtMobile = (EditText)findViewById(R.id.mblTxt);
        txtMessage = (EditText)findViewById(R.id.msgTxt);
        btnSms = (Button)findViewById(R.id.btnSend);
        btnSms.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                try{
                    SmsManager smgr = SmsManager.getDefault();
                    smgr.sendTextMessage(txtMobile.getText().toString(),null,txtMessage.getText().toString(
),null,null);
                    Toast.makeText(MainActivity.this, "SMS Sent Successfully",
Toast.LENGTH_SHORT).show();
                }
                catch (Exception e){
                    Toast.makeText(MainActivity.this, "SMS Failed to Send, Please try again",
Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}

```

Manifest.xml

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.myapplicationSMS">
    <uses-permission android:name="android.permission.SEND_SMS"/>
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"

```

```
    android:roundIcon="@mipmap/ic_launcher_round"
    android:supportRtl="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>
```

Output



Practical No:30

Q. Write a program to send email

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"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/tv1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginLeft="90dp"
        android:layout_marginTop="60dp"
        android:text="Send Email Activity"
        android:textColor="@color/colorPrimaryDark"
        android:textSize="50dp" />
    <EditText
        android:id="@+id/textTo"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Mail To" />
    <EditText
        android:id="@+id/textSubject"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Subject:" />
    <EditText
        android:id="@+id/textMessage"
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1"
        android:gravity="top"
        android:hint="Content:" />
    <Button
        android:id="@+id/buttonSend"
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:layout_gravity="right"
        android:text="Send" />
</LinearLayout>
```

```

<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.myapplication"
    >
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportRtl="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"/>
                <action android:name="android.intent.action.SEND" />
                <category android:name="android.intent.category.DEFAULT"/>
                <data android:mimeType="message/rfc822"/>
            </intent-filter>
        </activity>
    </application>

</manifest>

```

```

package com.example.myapplication;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

```

```

public class MainActivity extends AppCompatActivity {
    private EditText mailTo;
    private EditText mailSubject;
    private EditText mailContent;
    private Button subbtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mailTo = (EditText) findViewById(R.id.textTo);
        mailSubject = (EditText) findViewById(R.id.textMessage);
        mailContent = (EditText) findViewById(R.id.textMessage);
        subbtn = (Button) findViewById(R.id.buttonSend);
        subbtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

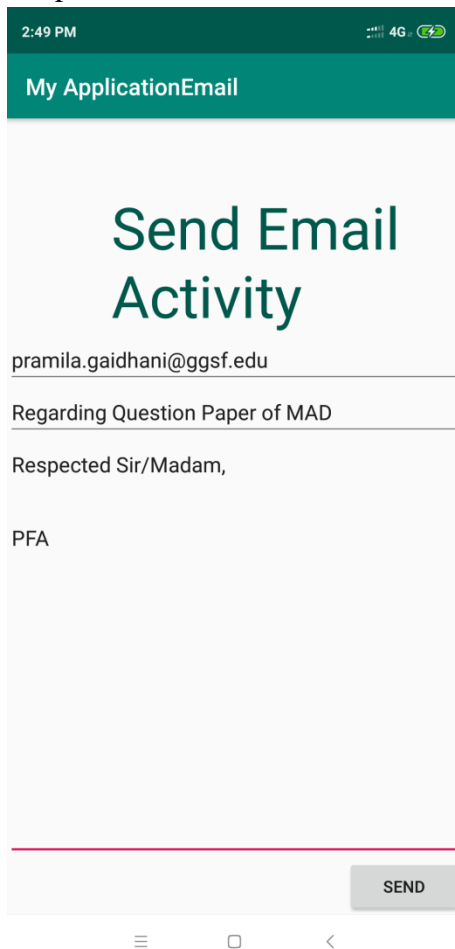
```

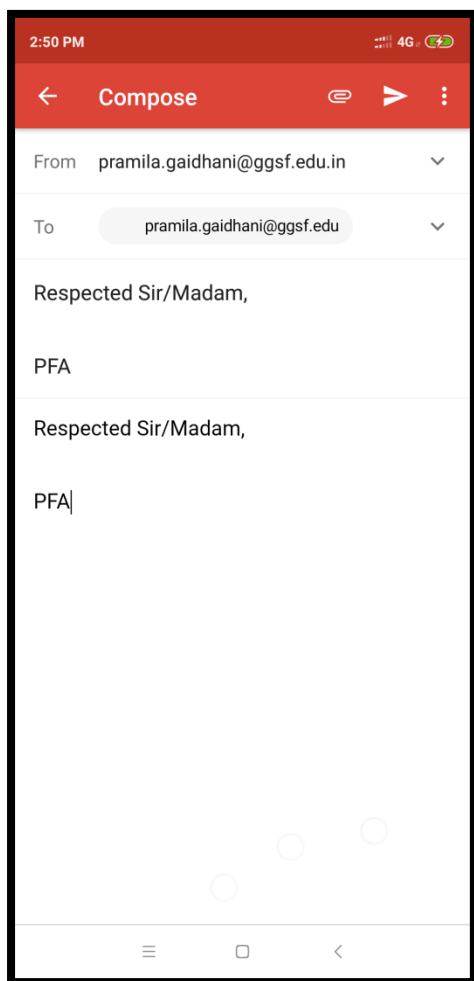
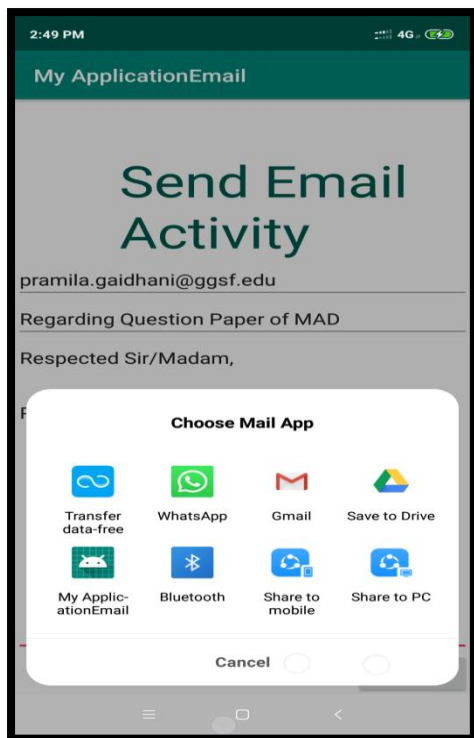
```

Intent it = new Intent(Intent.ACTION_SEND);
it.putExtra(Intent.EXTRA_EMAIL, new String[]{mailTo.getText().toString()});
it.putExtra(Intent.EXTRA_SUBJECT, mailSubject.getText().toString());
it.putExtra(Intent.EXTRA_TEXT, mailContent.getText());
it.setType("message/rfc822");
startActivity(Intent.createChooser(it, "Choose Mail App"));
    }
});
}
}

```

Output:





Practical No:31

Q. Write a program to locate users current location

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.currentlocation.MainActivity">

    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Get Current Location"
        android:id="@+id/getLocationBtn"/>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/locationText"
        android:layout_below="@id/getLocationBtn"/>
</RelativeLayout>
```

AndroidManifest.xml

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

    <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:supportRtl="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>

MainActivity.java

```
package com.currentlocation;
import android.content.Context;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity implements LocationListener {
    Button getLocationBtn;
    TextView locationText;
    LocationManager locationManager;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        getLocationBtn = (Button)findViewById(R.id.getLocationBtn);
        locationText = (TextView)findViewById(R.id.locationText);
        getLocationBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                getLocation();
            }
        });
    }

    void getLocation() {
        try {
            locationManager = (LocationManager) getSystemService(Context.LOCATION_SERVICE);
            locationManager.requestLocationUpdates(LocationManager.GPS_PROVIDER, 5000, 5, this);
        }
        catch(SecurityException e) {
            e.printStackTrace();
        }
    }

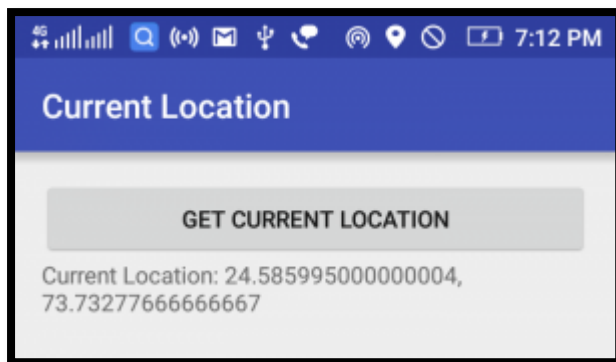
    @Override
    public void onLocationChanged(Location location) {
        locationText.setText("Current Location: " + location.getLatitude() + ", " + location.getLongitude());
    }

    @Override
```



```
public void onProviderDisabled(String provider) {  
    Toast.makeText(MainActivity.this, "Please Enable GPS and Internet",  
        Toast.LENGTH_SHORT).show();  
}  
  
@Override  
public void onStatusChanged(String provider, int status, Bundle extras) {  
}  
  
@Override  
public void onProviderEnabled(String provider) {  
}  
}
```

Screenshot



Practical No:32

Q. Write a program to route between two locations

MapsActivity.java

```
import android.graphics.Color;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.util.Log;

import com.google.android.gms.maps.CameraUpdate;
import com.google.android.gms.maps.CameraUpdateFactory;
import com.google.android.gms.maps.GoogleMap;
import com.google.android.gms.maps.OnMapReadyCallback;
import com.google.android.gms.maps.SupportMapFragment;
import com.google.android.gms.maps.model.BitmapDescriptorFactory;
import com.google.android.gms.maps.model.LatLng;
import com.google.android.gms.maps.model.MarkerOptions;
import com.google.android.gms.maps.model.PolylineOptions;

import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;

public class MapsActivity extends AppCompatActivity implements OnMapReadyCallback, Listener {

    private GoogleMap mMap;
    CameraUpdate cup;
    ArrayList<LatLng> markerPoints;
    public static final String TAG = "MAP DEMO";
    public static final float DEFAULT_ZOOM_LEVEL = 9.0f;

    ArrayList<LatLng> points = null;
    PolylineOptions lineOptions = null;

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

        markerPoints = new ArrayList<LatLng>();

        // Obtain the SupportMapFragment and get notified when the map is ready to be used.
        SupportMapFragment mapFragment = (SupportMapFragment) getSupportFragmentManager()
            .findFragmentById(R.id.map);
        mapFragment.getMapAsync(this);
    }

    @Override
    public void onMapReady(GoogleMap googleMap) {

        mMap = googleMap;

        //Moving to a sample location
        mMap.animateCamera(CameraUpdateFactory.newLatLngZoom(new LatLng(37.5, -122.0),
            DEFAULT_ZOOM_LEVEL));

        // Setting onclick event listener for the map
        mMap.setOnMapClickListener(new GoogleMap.OnMapClickListener() {
```

```

@Override
public void onMapClick(LatLng point) {

    // Already two locations
    if (markerPoints.size() > 1) {
        markerPoints.clear();
        mMap.clear();
    }

    // Adding new point to the ArrayList
    markerPoints.add(point);

    // Creating MarkerOptions
    MarkerOptions options = new MarkerOptions();

    // Setting the position of the marker
    options.position(point);

    /**
     * For the start location, Marker color is GREEN,
     * for the end location, Marker color is MAGENTA.
     */
    if (markerPoints.size() == 1) {
        options.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_GREEN));
    } else if (markerPoints.size() == 2) {
        options.icon(BitmapDescriptorFactory.defaultMarker(BitmapDescriptorFactory.HUE_MAGENTA));
    }

    // Checks, whether start and end locations are captured
    if (markerPoints.size() >= 2) {
        LatLng origin = markerPoints.get(0);
        LatLng dest = markerPoints.get(1);

        // Getting URL to the Google Directions API
        String url = GetDataFromUrl.getDirectionsUrl(origin, dest);
        GetDirections getDirections = new GetDirections(MapsActivity.this);
        getDirections.startGettingDirections(url);
    }

    // Add new marker to the Google Map Android API V2
    mMap.addMarker(options);
}
});
}

```

//The task for getting directions ends up here...

```

@Override
public void onSuccessfullRouteFetch(final List<List<HashMap<String, String>>> result) {

```

//if it takes a long time, we will do it in a seperate thread...

```

new Thread(new Runnable() {

```

```

    @Override

```

```

    public void run() {

```

```

        MarkerOptions markerOptions = new MarkerOptions();

```

```

        // Traversing through all the routes

```

```

        for (List<HashMap<String, String>> path : result) {

```

```

points = new ArrayList<LatLng>();
lineOptions = new PolylineOptions();

int size = path.size();
// Get all the points for this route
for (HashMap<String, String> point : path) {
    double lat = Double.parseDouble(point.get("lat"));
    double lng = Double.parseDouble(point.get("lng"));
    LatLng position = new LatLng(lat, lng);
    points.add(position);
}

// Adding all the points in the route to LineOptions
lineOptions.addAll(points);
lineOptions.width(12);
lineOptions.color(Color.RED);
}

//Do all UI operations on the UI thread only...
runOnUiThread(new Runnable() {
    @Override
    public void run() {
        // Drawing polyline in the Google Map for the this route
        mMap.addPolyline(lineOptions);
    }
});

}
}).start();

}

@Override
public void onFail() {
    Log.i(TAG, "Failed to get directions from Google...");
}
}

```

GetDataFromUrl.java

[This file gets the JSON Data as a String from the Google Webservice]

```
import android.util.Log;
```

```
import com.google.android.gms.maps.model.LatLng;
```

```
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStream;
import java.io.InputStreamReader;
import java.net.HttpURLConnection;
import java.net.URL;
```

```
public class GetDataFromUrl {
```

```
    public static String getDirectionsUrl(LatLng origin,LatLng dest){
```

```
        // Origin of route
```

```
        String str_origin = "origin="+origin.latitude+" "+origin.longitude;
```

```
        // Destination of route
```

```

String str_dest = "destination="+dest.latitude+","+dest.longitude;

// Sensor enabled
String sensor = "sensor=false";

// Building the parameters to the web service
String parameters = str_origin+"&" + str_dest+"&" + sensor;

// Output format
String output = "json";

// Building the url to the web service
String url = "https://maps.googleapis.com/maps/api/directions/" + output + "?" + parameters;

return url;
}

/** A method to download json data from url */
public static String getDataFromUrl(String strUrl) throws IOException {

    String data = "";
    InputStream iStream = null;
    HttpURLConnection urlConnection = null;

    try{
        URL url = new URL(strUrl);

        // Creating an http connection to communicate with url
        urlConnection = (HttpURLConnection) url.openConnection();

        // Connecting to url
        urlConnection.connect();

        // Reading data from url
        iStream = urlConnection.getInputStream();

        BufferedReader br = new BufferedReader(new InputStreamReader(iStream));

        StringBuffer sb = new StringBuffer();

        String line = "";
        while( ( line = br.readLine()) != null){
            sb.append(line);
        }

        data = sb.toString();

        br.close();

    }catch(Exception e){
        Log.d("Maps", "Exception while downloading url" + e.toString());
    }finally{
        iStream.close();
        urlConnection.disconnect();
    }
    return data;
}
}

```

GetDirections.java

Gets the data from the Google Webservice and parses to Get the routes..

```

import android.os.AsyncTask;
import android.util.Log;

import org.json.JSONObject;

import java.util.HashMap;
import java.util.List;

public class GetDirections {

    Listener listener;

    public GetDirections(Listener listener) {
        this.listener = listener;
    }

    public void startGettingDirections(String downloadUrl) {
        new DirectionsTask().execute(downloadUrl);
    }

    class DirectionsTask extends AsyncTask<String, Void, String> {

        @Override
        protected String doInBackground(String... url) {

            String data = null;
            try {
                // Fetching the data from Google Service
                data = GetDataFromUrl.getDataFromUrl(url[0]);
            } catch (Exception e) {
                Log.d("Background Task", e.toString());
            }
            return data;
        }

        @Override
        protected void onPostExecute(String result) {
            super.onPostExecute(result);

            ParserTask parserTask = new ParserTask();
            // Parse JSON data received from Google
            parserTask.execute(result);
        }
    }

    /**
     * A class to parse the Google Places in JSON format
     */
    private class ParserTask extends AsyncTask<String, Integer, List<List<HashMap<String, String>>>> {

        // Parsing the data in non-ui thread
        @Override
        protected List<List<HashMap<String, String>>>> doInBackground(String... jsonData) {

            JSONObject jObject;
            List<List<HashMap<String, String>>>> routes = null;

            try {
                jObject = new JSONObject(jsonData[0]);
                RoutesJsonParser parser = new RoutesJsonParser();

```

```

        // Starts parsing data
        routes = parser.parse(jsonObject);
    } catch (Exception e) {
        listener.onFail();
        e.printStackTrace();
    }
    return routes;
}

// Executes in UI thread, after the parsing process
@Override
protected void onPostExecute(List<List<HashMap<String, String>>> result) {
    super.onPostExecute(result);
    if (result != null && result.size() > 0)
        listener.onSuccessfulRouteFetch(result);
    else
        listener.onFail();
}
}

import com.google.android.gms.maps.model.LatLng;

import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;

import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;

public class RoutesJsonParser {

    /**
     * Receives a JSONObject and returns a list of lists containing latitude and longitude
     */
    public List<List<HashMap<String, String>>> parse(JSONObject jsonObject) {

        List<List<HashMap<String, String>>> routes = new ArrayList<List<HashMap<String, String>>>();
        JSONArray jRoutes = null;
        JSONArray jLegs = null;
        JSONArray jSteps = null;

        try {

            jRoutes = jsonObject.getJSONArray("routes");

            /** Traversing all routes */
            for (int i = 0; i < jRoutes.length(); i++) {
                jLegs = ((JSONObject) jRoutes.get(i)).getJSONArray("legs");
                List path = new ArrayList<HashMap<String, String>>();

                /** Traversing all legs */
                for (int j = 0; j < jLegs.length(); j++) {
                    jSteps = ((JSONObject) jLegs.get(j)).getJSONArray("steps");

                    /** Traversing all steps */
                    for (int k = 0; k < jSteps.length(); k++) {
                        String polyline = "";
                        polyline = (String) ((JSONObject) ((JSONObject) jSteps.get(k)).get("polyline")).get("points");
                        List<LatLng> list = decodePoly(polyline);
                    }
                }
            }
        } catch (JSONException e) {
            e.printStackTrace();
        }

        return routes;
    }
}

```

```

        /** Traversing all points */
        for (int l = 0; l < list.size(); l++) {
            HashMap<String, String> hm = new HashMap<String, String>();
            hm.put("lat", Double.toString(((LatLng) list.get(l)).latitude));
            hm.put("lng", Double.toString(((LatLng) list.get(l)).longitude));
            path.add(hm);
        }
        routes.add(path);
    }
}

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

return routes;
}

/**
 * Method to decode polyline points
 * Courtesy : http://jeffreysambells.com/2010/05/27/decoding-polylines-from-google-maps-direction-api-with-java
 */
private List<LatLng> decodePoly(String encoded) {

    List<LatLng> poly = new ArrayList<LatLng>();
    int index = 0, len = encoded.length();
    int lat = 0, lng = 0;

    while (index < len) {
        int b, shift = 0, result = 0;
        do {
            b = encoded.charAt(index++) - 63;
            result |= (b & 0x1f) << shift;
            shift += 5;
        } while (b >= 0x20);
        int dlat = ((result & 1) != 0 ? ~(result >> 1) : (result >> 1));
        lat += dlat;

        shift = 0;
        result = 0;
        do {
            b = encoded.charAt(index++) - 63;
            result |= (b & 0x1f) << shift;
            shift += 5;
        } while (b >= 0x20);
        int dlng = ((result & 1) != 0 ? ~(result >> 1) : (result >> 1));
        lng += dlng;

        LatLng p = new LatLng((((double) lat / 1E5)),
                               (((double) lng / 1E5)));
        poly.add(p);
    }

    return poly;
}
}

```