1. **Write an android program using java to store record in Employee table(eid, name, sal). perform insert, update, delete and select operation on table.**

DBHelper.java

```
package com.example.employeeapp;

import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import android.content.ContentValues;
import android.database.Cursor;

public class DBHelper extends SQLiteOpenHelper {
    private static final String DB = "empdb";
    private static final String TB = "emp";

    public DBHelper(Context ctx) {
        super(ctx, DB, null, 1);
    }

    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("CREATE TABLE " + TB + " (eid INTEGER PRIMARY KEY, name
TEXT, sal REAL)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldV, int newV) {
        db.execSQL("DROP TABLE IF EXISTS " + TB);
        onCreate(db);
    }

    // Insert
    public boolean ins(int id, String nm, double s) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues cv = new ContentValues();
        cv.put("eid", id);
        cv.put("name", nm);
        cv.put("sal", s);
        long res = db.insert(TB, null, cv);
```

```
        return res != -1;
    }

    // Update
    public boolean upd(int id, String nm, double s) {
        SQLiteDatabase db = this.getWritableDatabase();
        ContentValues cv = new ContentValues();
        cv.put("name", nm);
        cv.put("sal", s);
        int res = db.update(TB, cv, "eid=?", new String[]{String.valueOf(id)});
        return res > 0;
    }

    // Delete
    public boolean del(int id) {
        SQLiteDatabase db = this.getWritableDatabase();
        int res = db.delete(TB, "eid=?", new String[]{String.valueOf(id)});
        return res > 0;
    }

    // Select
    public Cursor sel() {
        SQLiteDatabase db = this.getReadableDatabase();
        return db.rawQuery("SELECT * FROM " + TB, null);
    }
}
```

MainActivity.java

```
package com.example.employeeapp;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.*;
import android.database.Cursor;

public class MainActivity extends AppCompatActivity {

    EditText t1, t2, t3;
    Button b1, b2, b3, b4;
    TextView tv;
```

```
    DBHelper db;

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

        t1 = findViewById(R.id.tid);
        t2 = findViewById(R.id.tnm);
        t3 = findViewById(R.id.tsal);
        b1 = findViewById(R.id.bin);
        b2 = findViewById(R.id.bup);
        b3 = findViewById(R.id.bdel);
        b4 = findViewById(R.id.bsel);
        tv = findViewById(R.id.txt);
        db = new DBHelper(this);

        // Insert
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                boolean res = db.ins(Integer.parseInt(t1.getText().toString()),
                        t2.getText().toString(),
                        Double.parseDouble(t3.getText().toString()));
                Toast.makeText(getApplicationContext(), res ? "Inserted" : "Failed",
Toast.LENGTH_SHORT).show();
            }
        });

        // Update
        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                boolean res = db.upd(Integer.parseInt(t1.getText().toString()),
                        t2.getText().toString(),
                        Double.parseDouble(t3.getText().toString()));
                Toast.makeText(getApplicationContext(), res ? "Updated" : "Not Found",
Toast.LENGTH_SHORT).show();
            }
        });
```

```
        // Delete
        b3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                boolean res = db.del(Integer.parseInt(t1.getText().toString()));
                Toast.makeText(getApplicationContext(), res ? "Deleted" : "Not Found",
Toast.LENGTH_SHORT).show();
            }
        });

        // Select
        b4.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Cursor c = db.sel();
                StringBuilder sb = new StringBuilder();
                while (c.moveToNext()) {
                    sb.append("ID: ").append(c.getInt(0))
                      .append(" Name: ").append(c.getString(1))
                      .append(" Sal: ").append(c.getDouble(2))
                      .append("\n");
                }
                tv.setText(sb.toString());
            }
        });
    }
}
```

activity_main.xml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:padding="16dp"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <EditText android:id="@+id/tid" android:hint="Emp ID"
        android:layout_width="match_parent" android:layout_height="wrap_content"/>
    <EditText android:id="@+id/tnm" android:hint="Name"
        android:layout_width="match_parent" android:layout_height="wrap_content"/>
    <EditText android:id="@+id/tsal" android:hint="Salary"
        android:layout_width="match_parent" android:layout_height="wrap_content"/>
```

```
    <Button android:id="@+id/bin" android:text="Insert"
      android:layout_width="match_parent" android:layout_height="wrap_content"/>
    <Button android:id="@+id/bup" android:text="Update"
      android:layout_width="match_parent" android:layout_height="wrap_content"/>
    <Button android:id="@+id/bdel" android:text="Delete"
      android:layout_width="match_parent" android:layout_height="wrap_content"/>
    <Button android:id="@+id/bsel" android:text="Select"
      android:layout_width="match_parent" android:layout_height="wrap_content"/>

    <TextView android:id="@+id/txt"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:padding="10dp"/>
</LinearLayout>
```

2. **Create application to send and receive messages using SMS Manager.**

AndroidManifest.xml

```
<uses-permission android:name="android.permission.SEND_SMS"/>
<uses-permission android:name="android.permission.RECEIVE_SMS"/>
<uses-permission android:name="android.permission.READ_SMS"/>
  <receiver android:name=".SmsRcvr" android:exported="true">
      <intent-filter>
        <action android:name="android.provider.Telephony.SMS_RECEIVED"/>
      </intent-filter>
    </receiver>
```

MainActivity.java

```
package com.example.smsapp;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.widget.*;
import android.view.View;
import android.Manifest;
import android.content.pm.PackageManager;
import androidx.core.app.ActivityCompat;

public class MainActivity extends AppCompatActivity {
```

```
    EditText t1, t2;
    Button b1;
    TextView tv;

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

        t1 = findViewById(R.id.tnum); // phone number
        t2 = findViewById(R.id.tmsg); // message
        b1 = findViewById(R.id.bsend);
        tv = findViewById(R.id.txt);

        // Ask SMS permissions at runtime
        if (ActivityCompat.checkSelfPermission(this, Manifest.permission.SEND_SMS) !=
PackageManager.PERMISSION_GRANTED ||
            ActivityCompat.checkSelfPermission(this, Manifest.permission.RECEIVE_SMS)
!= PackageManager.PERMISSION_GRANTED) {
            ActivityCompat.requestPermissions(this, new
String[]{Manifest.permission.SEND_SMS, Manifest.permission.RECEIVE_SMS,
Manifest.permission.READ_SMS}, 1);
        }

        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String num = t1.getText().toString();
                String msg = t2.getText().toString();

                try {
                    SmsManager sm = SmsManager.getDefault();
                    sm.sendTextMessage(num, null, msg, null, null);
                    Toast.makeText(getApplicationContext(), "Sent",
Toast.LENGTH_SHORT).show();
                } catch (Exception e) {
                    Toast.makeText(getApplicationContext(), "Failed: " + e.getMessage(),
Toast.LENGTH_LONG).show();
                }
            }
```

```
        });
    }
}
```

SmsRcvr.java

```
package com.example.smsapp;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.os.Bundle;
import android.telephony.SmsMessage;
import android.widget.Toast;

public class SmsRcvr extends BroadcastReceiver {
    @Override
    public void onReceive(Context ctx, Intent intent) {
        Bundle b = intent.getExtras();
        if (b != null) {
            Object[] pdus = (Object[]) b.get("pdus");
            if (pdus != null) {
                for (Object obj : pdus) {
                    SmsMessage sm = SmsMessage.createFromPdu((byte[]) obj);
                    String msg = sm.getMessageBody();
                    String num = sm.getOriginatingAddress();
                    Toast.makeText(ctx, "From: " + num + "\nMsg: " + msg,
Toast.LENGTH_LONG).show();
                }
            }
        }
    }
}
```

activity_main.xml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:padding="16dp"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <EditText android:id="@+id/tnum" android:hint="Enter Number"
        android:layout_width="match_parent" android:layout_height="wrap_content"
        android:inputType="phone"/>
```

```
    <EditText android:id="@+id/tmsg" android:hint="Enter Message"
        android:layout_width="match_parent" android:layout_height="wrap_content"
        android:inputType="text"/>

    <Button android:id="@+id/bsend" android:text="Send SMS"
        android:layout_width="match_parent" android:layout_height="wrap_content"/>

    <TextView android:id="@+id/txt"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:padding="10dp"/>
</LinearLayout>
```

3. **Create application to send an email.**

MainActivity.java

```
package com.example.emailapp;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.Intent;
import android.widget.*;
import android.view.View;

public class MainActivity extends AppCompatActivity {

    EditText t1, t2, t3;
    Button b1;

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

        t1 = findViewById(R.id.temail);  // recipient email
        t2 = findViewById(R.id.tsub);    // subject
        t3 = findViewById(R.id.tmsg);    // message
        b1 = findViewById(R.id.bsend);   // send button

        b1.setOnClickListener(new View.OnClickListener() {
```

```
        @Override
        public void onClick(View v) {
            String to = t1.getText().toString();
            String sub = t2.getText().toString();
            String msg = t3.getText().toString();

            Intent i = new Intent(Intent.ACTION_SEND);
            i.setType("message/rfc822");
            i.putExtra(Intent.EXTRA_EMAIL, new String[]{to});
            i.putExtra(Intent.EXTRA_SUBJECT, sub);
            i.putExtra(Intent.EXTRA_TEXT, msg);

            try {
                startActivity(Intent.createChooser(i, "Send Email..."));
            } catch (android.content.ActivityNotFoundException ex) {
                Toast.makeText(MainActivity.this, "No email app found",
Toast.LENGTH_SHORT).show();
            }
        }
    });
  }
}
```

activity_main.xml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
  android:orientation="vertical" android:padding="16dp"
  android:layout_width="match_parent"
  android:layout_height="match_parent">

  <EditText
    android:id="@+id/temail"
    android:hint="Enter Recipient Email"
    android:inputType="textEmailAddress"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>

  <EditText
    android:id="@+id/tsub"
    android:hint="Enter Subject"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"/>
```

```
    <EditText
        android:id="@+id/tmsg"
        android:hint="Enter Message"
        android:inputType="textMultiLine"
        android:minLines="4"
        android:gravity="top"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

    <Button
        android:id="@+id/bsend"
        android:text="Send Email"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>
</LinearLayout>
```

4. Create an android application to start and stop service.

MyService.java

```
package com.example.myserviceapp;

import android.app.Service;
import android.content.Intent;
import android.os.IBinder;
import android.widget.Toast;

public class MyService extends Service {

    @Override
    public void onCreate() {
        super.onCreate();
        Toast.makeText(this, "Service Created", Toast.LENGTH_SHORT).show();
    }

    @Override
    public int onStartCommand(Intent i, int flags, int startId) {
        Toast.makeText(this, "Service Started", Toast.LENGTH_SHORT).show();
        return START_STICKY;
    }
```

```
    @Override
    public void onDestroy() {
        super.onDestroy();
        Toast.makeText(this, "Service Stopped", Toast.LENGTH_SHORT).show();
    }

    @Override
    public IBinder onBind(Intent i) {
        return null; // not binding
    }
}
```

MainActivity.java

```
package com.example.myserviceapp;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.content.Intent;

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.bstart);
        b2 = findViewById(R.id.bstop);

        Intent i = new Intent(this, MyService.class);

        // Start Service
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                startService(i);
            }
```

```
        });

        // Stop Service
        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                stopService(i);
            }
        });
    }
}
```

activity_main.xml

```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:padding="20dp"
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <Button
        android:id="@+id/bstart"
        android:text="Start Service"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>

    <Button
        android:id="@+id/bstop"
        android:text="Stop Service"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"/>
</LinearLayout>
```