**5. Develop an application that makes use of database.**

**Objective:**

**XML Code:**

<?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"  
 android:padding="16dp">  
  
 <EditText  
 android:id="@+id/titleEditText"  
 android:layout\_width="match\_parent"  
 android:layout\_height="48dp"  
 android:hint="Title" />  
  
 <EditText  
 android:id="@+id/descriptionEditText"  
 android:layout\_width="match\_parent"  
 android:layout\_height="48dp"  
 android:hint="Description" />  
  
 <Button  
 android:id="@+id/addButton"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="Add Note" />  
  
 <ListView  
 android:id="@+id/notesListView"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content" />  
  
 <TextView  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:fontFamily="sans-serif"  
 android:gravity="bottom|center"  
 android:text="Shubhangi Singh"  
 android:textSize="25sp" />  
</LinearLayout>

**Java Code (DBHelper.java):**

package com.example.android\_db;  
  
import android.content.ContentValues;  
import android.content.Context;  
import android.database.Cursor;  
import android.database.sqlite.SQLiteDatabase;  
import android.database.sqlite.SQLiteOpenHelper;  
  
public class DBHelper extends SQLiteOpenHelper {  
  
 private static final String DATABASE\_NAME = "Notes.db";  
 private static final int DATABASE\_VERSION = 1;  
 private static final String TABLE\_NAME = "notes";  
 private static final String COLUMN\_ID = "id";  
 private static final String COLUMN\_TITLE = "title";  
 private static final String COLUMN\_DESCRIPTION = "description";  
  
 public DBHelper(Context context) {  
 super(context, DATABASE\_NAME, null, DATABASE\_VERSION);  
 }  
  
 @Override  
 public void onCreate(SQLiteDatabase db) {  
 String CREATE\_TABLE = "CREATE TABLE " + TABLE\_NAME + "("  
 + COLUMN\_ID + " INTEGER PRIMARY KEY AUTOINCREMENT,"  
 + COLUMN\_TITLE + " TEXT,"  
 + COLUMN\_DESCRIPTION + " TEXT" + ")";  
 db.execSQL(CREATE\_TABLE);  
 }  
  
 @Override  
 public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {  
 db.execSQL("DROP TABLE IF EXISTS " + TABLE\_NAME);  
 onCreate(db);  
 }  
  
 // Insert a new note  
 public boolean insertNote(String title, String description) {  
 SQLiteDatabase db = this.getWritableDatabase();  
 ContentValues values = new ContentValues();  
 values.put(COLUMN\_TITLE, title);  
 values.put(COLUMN\_DESCRIPTION, description);  
 long result = db.insert(TABLE\_NAME, null, values);  
 return result != -1; // returns false if insert fails  
 }  
  
 // Get all notes  
 public Cursor getAllNotes() {  
 SQLiteDatabase db = this.getReadableDatabase();  
 return db.rawQuery("SELECT \* FROM " + TABLE\_NAME, null);  
 }  
  
 // Delete a note  
 public boolean deleteNoteById(int id) {  
 SQLiteDatabase db = this.getWritableDatabase();  
 return db.delete(TABLE\_NAME, COLUMN\_ID + "=" + id, null) > 0;  
 }  
}

**Java Code(MainActivity.java):**

package com.example.android\_db;  
  
import androidx.appcompat.app.AppCompatActivity;  
import android.database.Cursor;  
import android.os.Bundle;  
import android.widget.ArrayAdapter;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.ListView;  
import android.widget.Toast;  
import java.util.ArrayList;  
  
public class MainActivity extends AppCompatActivity {  
  
 DBHelper dbHelper;  
 EditText titleEditText, descriptionEditText;  
 Button addButton;  
 ListView notesListView;  
 ArrayList<String> notesList;  
 ArrayAdapter<String> notesAdapter;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.activity\_main);  
  
 dbHelper = new DBHelper(this);  
 titleEditText = findViewById(R.id.titleEditText);  
 descriptionEditText = findViewById(R.id.descriptionEditText);  
 addButton = findViewById(R.id.addButton);  
 notesListView = findViewById(R.id.notesListView);  
 notesList = new ArrayList<>();  
  
 loadNotes();  
  
 addButton.setOnClickListener(v -> {  
 String title = titleEditText.getText().toString();  
 String description = descriptionEditText.getText().toString();  
  
 if (title.isEmpty() || description.isEmpty()) {  
 Toast.makeText(MainActivity.this, "Please enter both title and description", Toast.LENGTH\_SHORT).show();  
 return;  
 }  
  
 boolean isInserted = dbHelper.insertNote(title, description);  
 if (isInserted) {  
 Toast.makeText(MainActivity.this, "Note added successfully", Toast.LENGTH\_SHORT).show();  
 loadNotes();  
 } else {  
 Toast.makeText(MainActivity.this, "Failed to add note", Toast.LENGTH\_SHORT).show();  
 }  
 });  
  
 notesListView.setOnItemLongClickListener((parent, view, position, id) -> {  
 String selectedItem = notesList.get(position);  
 int noteId = Integer.parseInt(selectedItem.split(":")[0]);  
 boolean isDeleted = dbHelper.deleteNoteById(noteId);  
 if (isDeleted) {  
 Toast.makeText(MainActivity.this, "Note deleted", Toast.LENGTH\_SHORT).show();  
 loadNotes();  
 } else {  
 Toast.makeText(MainActivity.this, "Failed to delete note", Toast.LENGTH\_SHORT).show();  
 }  
 return true;  
 });  
 }  
  
 private void loadNotes() {  
 Cursor cursor = dbHelper.getAllNotes();  
 notesList.clear();  
 if (cursor.moveToFirst()) {  
 do {  
 int id = cursor.getInt(0);  
 String title = cursor.getString(1);  
 String description = cursor.getString(2);  
 notesList.add(id + ": " + title + "\n" + description);  
 } while (cursor.moveToNext());  
 }  
 notesAdapter = new ArrayAdapter<>(this, android.R.layout.simple\_list\_item\_1, notesList);  
 notesListView.setAdapter(notesAdapter);  
 notesAdapter.notifyDataSetChanged();  
 }  
}

**Output:**

**6. Develop an application that makes use of Notification Manager.**

**Objective:**

The objective of this Android application is to demonstrate the use of the NotificationManager class for generating and managing system notifications.

**XML Code(activity\_main.xml):**

*<?*xml version="1.0" encoding="utf-8"*?>*<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:id="@+id/main"  
 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="Android Notification"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintLeft\_toLeftOf="parent"  
 app:layout\_constraintRight\_toRightOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.091"  
 android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"/>  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:id="@+id/button"  
 android:layout\_marginBottom="112dp"  
 android:layout\_marginEnd="8dp"  
 android:layout\_marginStart="8dp"  
 android:text="Notify"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintStart\_toStartOf="parent" />  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:text="Shubhangi Singh"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.519"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/button"  
 app:layout\_constraintVertical\_bias="0.666" />  
  
</androidx.constraintlayout.widget.ConstraintLayout>

**Java Code (MainActivity.java):**

package com.example.notification3;  
  
import android.app.NotificationChannel;  
import android.app.NotificationManager;  
import android.app.PendingIntent;  
import android.content.Context;  
import android.content.Intent;  
import android.os.Build;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.app.NotificationCompat;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class MainActivity extends AppCompatActivity {  
 Button button;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 button = findViewById(R.id.*button*);  
 button.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 addNotification();  
 }  
 });  
 }  
  
 private void addNotification() {  
 if (Build.VERSION.*SDK\_INT* >= Build.VERSION\_CODES.*O*) {  
 NotificationChannel channel = new NotificationChannel("channel\_id", "Channel Name", NotificationManager.*IMPORTANCE\_DEFAULT*);  
 NotificationManager notificationManager = getSystemService(NotificationManager.class);  
 notificationManager.createNotificationChannel(channel);  
 }  
 NotificationCompat.Builder builder = new NotificationCompat.Builder(this, "channel\_id")  
 .setSmallIcon(R.drawable.*baseline\_circle\_notifications\_24*)  
 .setContentTitle("Notification Example")  
 .setContentText("This is a notification message")  
 .setAutoCancel(true)  
 .setPriority(NotificationCompat.*PRIORITY\_DEFAULT*);  
  
 Intent notificationIntent = new Intent(this, NotificationView.class);  
 notificationIntent.addFlags(Intent.*FLAG\_ACTIVITY\_CLEAR\_TOP*);  
  
 notificationIntent.putExtra("message","This is a notification message");  
  
 PendingIntent pendingIntent = PendingIntent.*getActivity*(this, 0, notificationIntent, PendingIntent.*FLAG\_UPDATE\_CURRENT*);  
 builder.setContentIntent(pendingIntent);  
  
 NotificationManager manager = (NotificationManager)getSystemService(Context.*NOTIFICATION\_SERVICE*);  
 manager.notify(0, builder.build());  
 }  
}

**XML Code(activity\_notification\_view.xml):**

*<?*xml version="1.0" encoding="utf-8"*?>*<androidx.constraintlayout.widget.ConstraintLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:id="@+id/main"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".NotificationView">  
  
 <TextView  
 android:id="@+id/textView2"  
 android:layout\_width="fill\_parent"  
 android:layout\_height="wrap\_content"  
 android:gravity="center"  
 android:text="your detail of notification..."  
 android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.0"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toTopOf="parent"  
 app:layout\_constraintVertical\_bias="0.004" />  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginBottom="8dp"  
 android:layout\_marginEnd="8dp"  
 android:layout\_marginStart="8dp"  
 android:layout\_marginTop="8dp"  
 app:layout\_constraintBottom\_toBottomOf="parent"  
 app:layout\_constraintEnd\_toEndOf="parent"  
 app:layout\_constraintHorizontal\_bias="0.096"  
 app:layout\_constraintStart\_toStartOf="parent"  
 app:layout\_constraintTop\_toBottomOf="@+id/textView2"  
 app:layout\_constraintVertical\_bias="0.206"  
 android:textAppearance="@style/Base.TextAppearance.AppCompat.Medium"/>  
  
</androidx.constraintlayout.widget.ConstraintLayout>

**Java Code(NotificationView.java):**

package com.example.notification3;  
  
import android.os.Bundle;  
import android.widget.TextView;  
  
import androidx.activity.EdgeToEdge;  
import androidx.appcompat.app.AppCompatActivity;  
import androidx.core.graphics.Insets;  
import androidx.core.view.ViewCompat;  
import androidx.core.view.WindowInsetsCompat;  
  
public class NotificationView extends AppCompatActivity {  
 TextView textView;  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
  
 setContentView(R.layout.*activity\_notification\_view*);  
  
 textView = findViewById(R.id.*textView*);  
  
 String message = getIntent().getStringExtra("message");  
 textView.setText(message);  
 }  
}

**Output:**