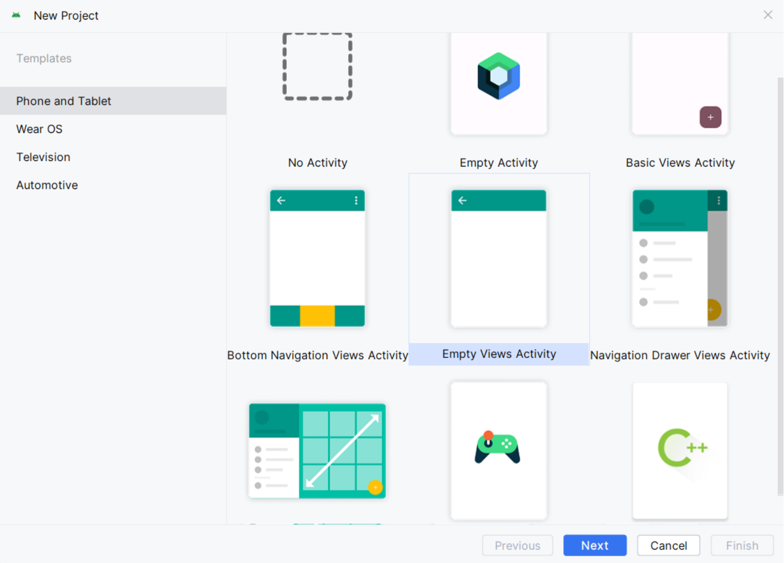
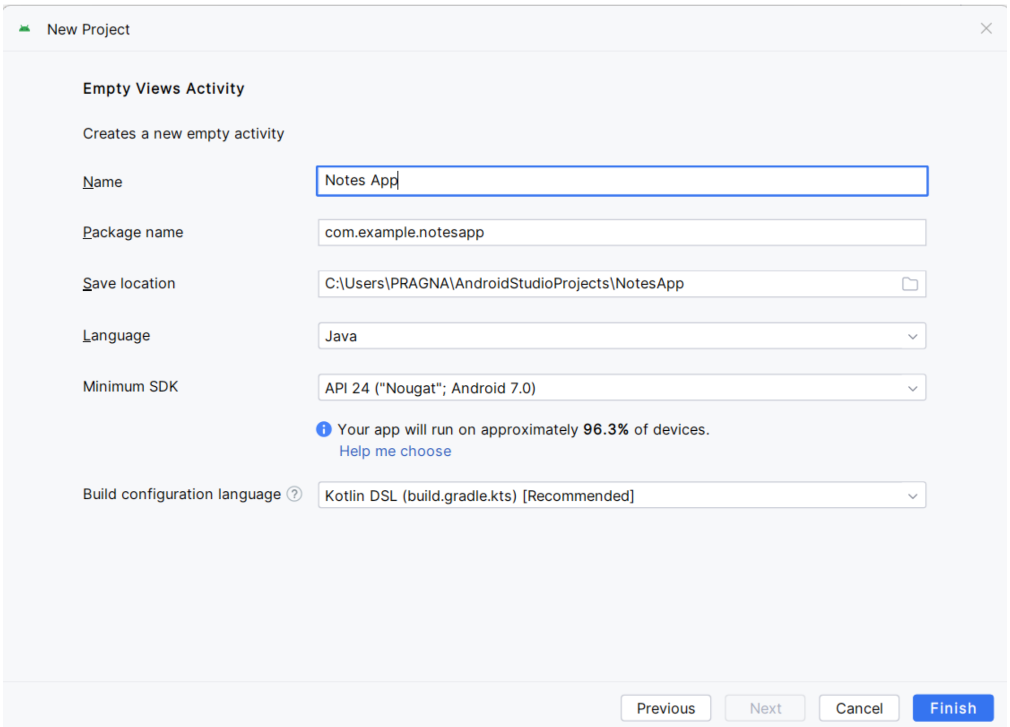
PROJECT REPORT

MOBILE NOTES APPLICATION using SQLITE Database in JAVA and implementing CRUD Operations in ANDROID STUDIO

Procedure :

- Open Android Studio and Create a New Project with Empty Activity




New Project

Empty Views Activity

Creates a new empty activity

Name: Notes App

Package name: com.example.notesapp

Save location: C:\Users\PRAGNA\AndroidStudioProjects\NotesApp

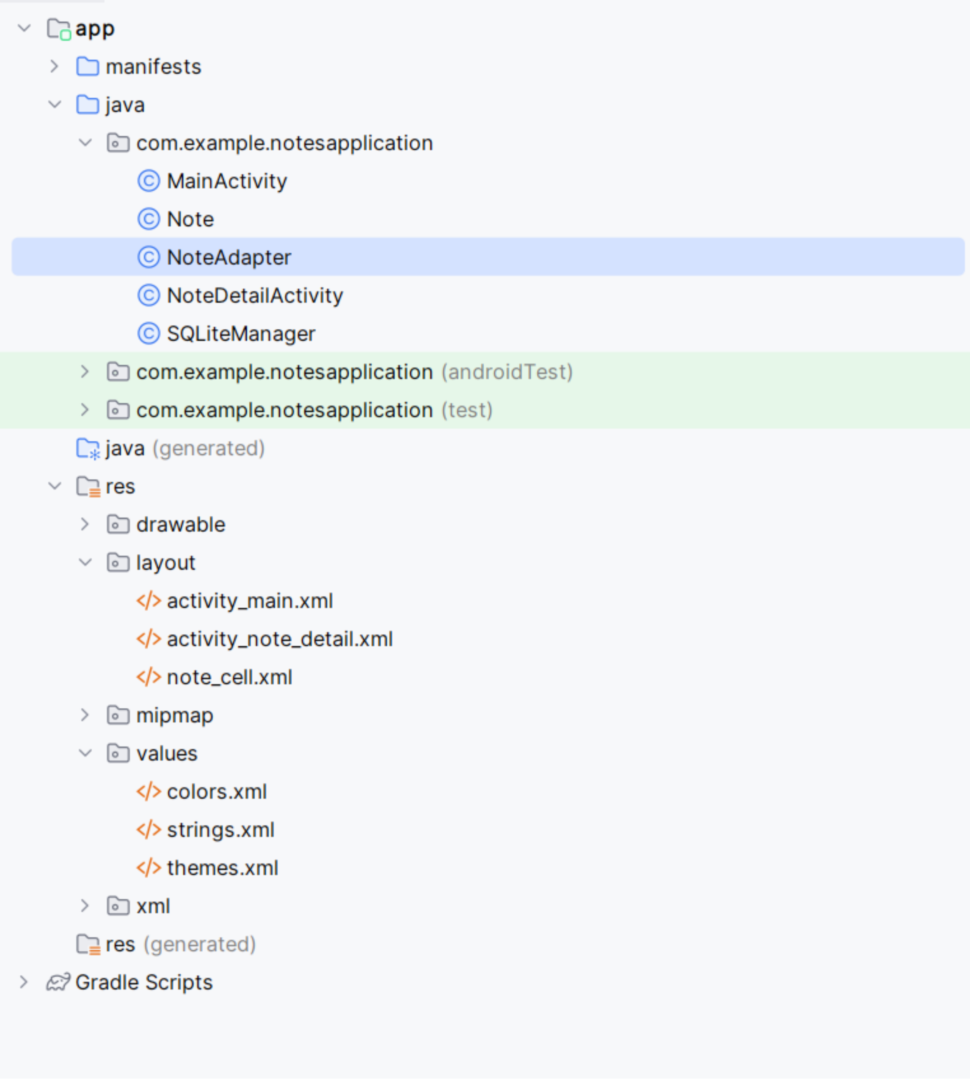
Language: Java

Minimum SDK: API 24 ("Nougat"; Android 7.0)

Your app will run on approximately **96.3%** of devices.
Help me choose

Build configuration language: Kotlin DSL (build.gradle.kts) [Recommended]

- **Project Structure**



```
app
  manifests
  java
    com.example.notesapplication
      MainActivity
      Note
      NoteAdapter
      NoteDetailActivity
      SQLiteManager
    com.example.notesapplication (androidTest)
    com.example.notesapplication (test)
  java (generated)
  res
    drawable
    layout
      activity_main.xml
      activity_note_detail.xml
      note_cell.xml
    mipmap
    values
      colors.xml
      strings.xml
      themes.xml
    xml
  res (generated)
Gradle Scripts
```

Colors.xml :

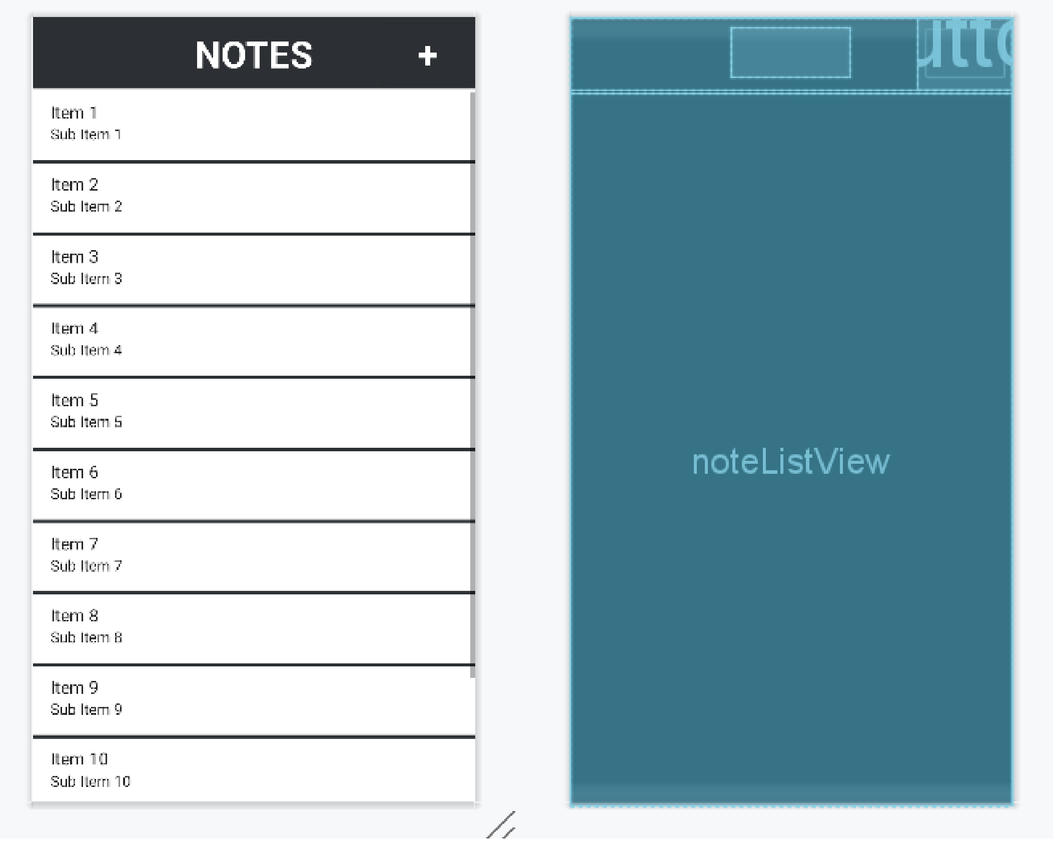
```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
    <color name="darkGray">#2C2F33</color>
    <color name="red">#F00</color>
</resources>
```

Themes.xml :

```
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Theme.NotesApplication"
parent="Theme.MaterialComponents.Light.NoActionBar">
        <!-- Primary brand color. -->
        <item name="colorPrimary">@color/darkGray</item>
        <item name="colorPrimaryVariant">@color/black</item>
        <item name="colorOnPrimary">@color/darkGray</item>
        <!-- Status bar color. -->
        <item name="android:statusBarColor"
tools:targetApi="l">?attr/colorPrimaryVariant</item>
        <!-- Customize your theme here. -->
    </style>
</resources>
```

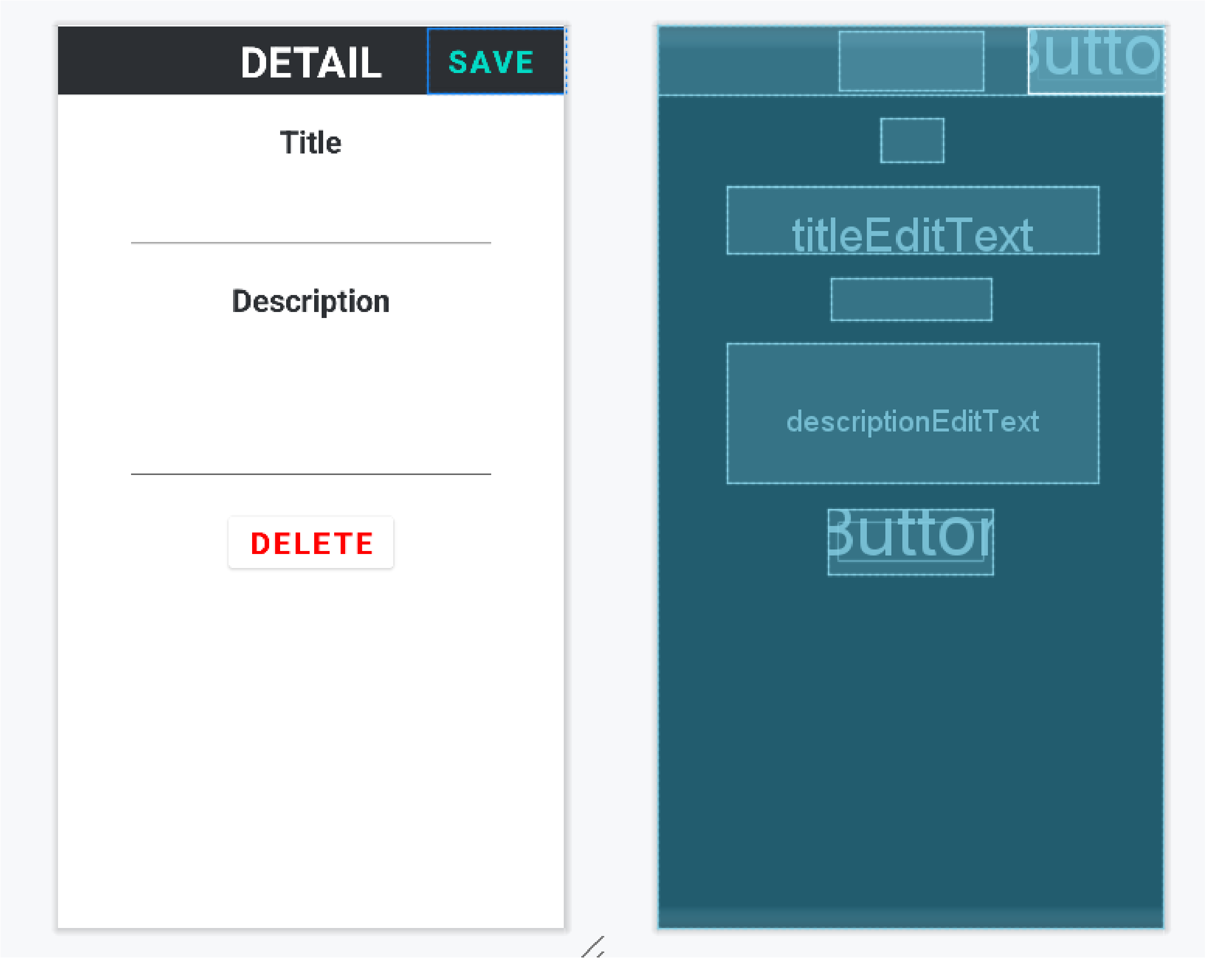
Activity_main.xml :

```
<?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:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <androidx.appcompat.widget.Toolbar
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:minHeight="?actionBarSize"
        android:theme="?actionBarTheme"
        android:background="@color/darkGray">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="NOTES"
            android:textSize="35sp"
            android:textColor="@color/white"
            android:textStyle="bold"
            android:layout_gravity="center"/>

        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text=" + "
            android:textSize="35sp"
            android:textColor="@color/white"
            android:textStyle="bold"
            android:layout_gravity="end"
            android:onClick="newNote"/>

    </androidx.appcompat.widget.Toolbar>

    <ListView
        android:id="@+id/noteListView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="3dp"
        android:dividerHeight="3dp"
        android:divider="@color/darkGray"/>

</LinearLayout>
```



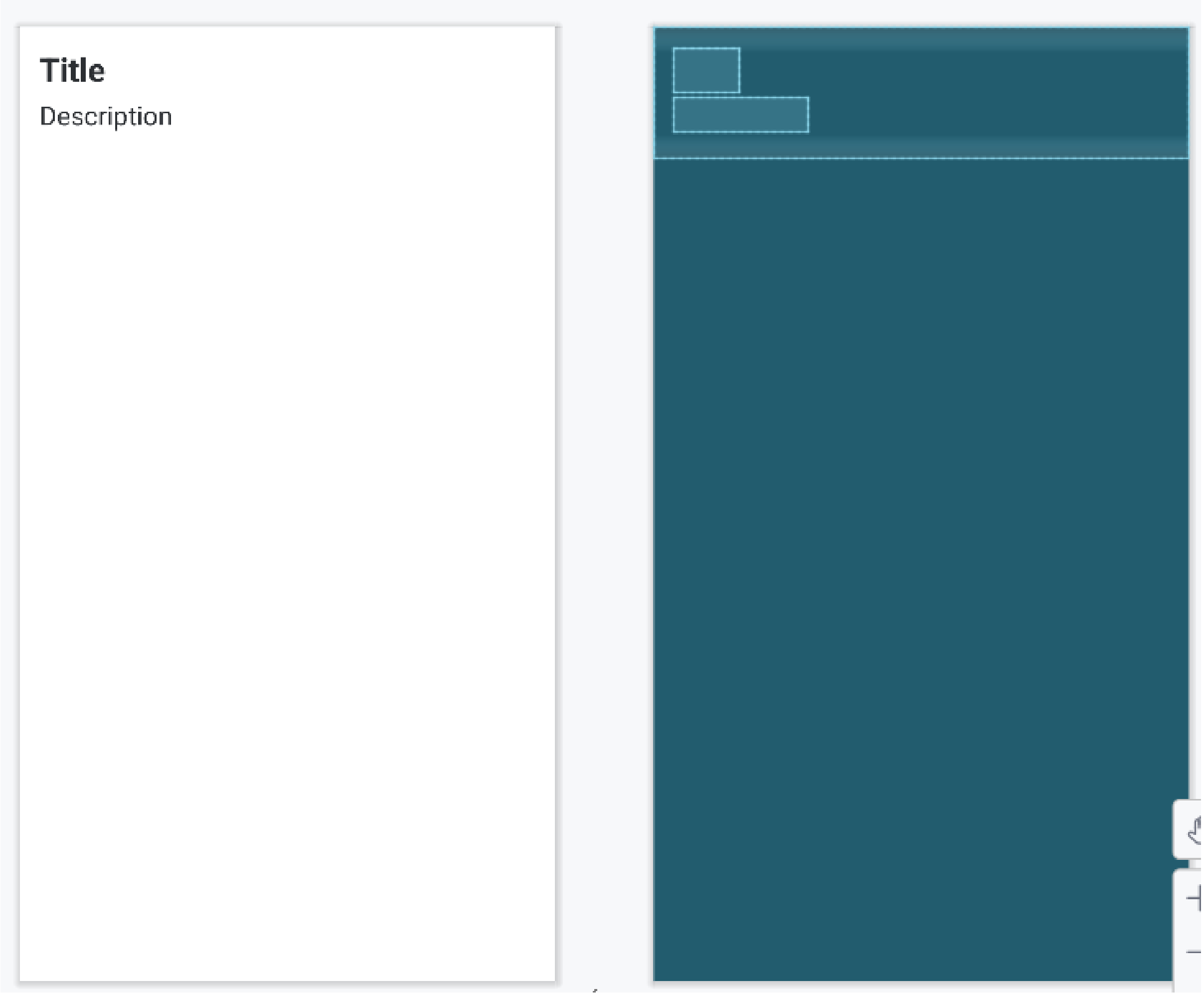
Activity_note_detail.xml :

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

    <androidx.appcompat.widget.Toolbar
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:minHeight="?actionBarSize"
        android:theme="?actionBarTheme"
        android:background="@color/darkGray">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="DETAIL"
            android:textSize="35sp"
            android:textColor="@color/white"
            android:textStyle="bold"
            android:layout_gravity="center"/>
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="SAVE "
            android:textSize="25sp"
            android:backgroundTint="@color/darkGray"
            android:textColor="@color/teal_200"
            android:textStyle="bold"
            android:layout_gravity="end"
            android:onClick="saveNote"/>

    </androidx.appcompat.widget.Toolbar>

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Title"
        android:textSize="25sp"
        android:layout_marginTop="20dp"
        android:textColor="@color/darkGray"
        android:textStyle="bold"
        android:layout_gravity="center"/>

    <EditText
        android:id="@+id/titleEditText"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:textSize="25sp"
        android:layout_marginTop="20dp"
        android:maxLines="1"
        android:textColor="@color/darkGray"
        android:layout_gravity="center"/>


    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Description"
        android:textSize="25sp"
        android:layout_marginTop="20dp"
        android:textColor="@color/darkGray"
        android:textStyle="bold"
        android:layout_gravity="center"/>

    <EditText
        android:id="@+id/descriptionEditText"
        android:layout_width="300dp"
        android:layout_height="wrap_content"
        android:textSize="25sp"
        android:layout_marginTop="20dp"
        android:minLines="3"
        android:textColor="@color/darkGray"
        android:layout_gravity="center"/>


    <Button
        android:id="@+id/deleteNoteButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="DELETE"
        android:textSize="25sp"
        android:backgroundTint="@color/white"
        android:textColor="@color/red"
        android:textStyle="bold"
        android:layout_gravity="center"
        android:layout_marginTop="20dp"
        android:onClick="deleteNote"/>

</LinearLayout>
```



Note_cell.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:padding="15dp"
    android:layout_height="100dp">

    <TextView
        android:id="@+id/cellTitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Title"
        android:textStyle="bold"
        android:maxLines="1"
        android:textColor="@color/darkGray"
        android:textSize="25sp"/>
    <TextView
        android:id="@+id/cellDesc"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Description"
        android:maxLines="1"
        android:layout_marginTop="5dp"
        android:textColor="@color/darkGray"
        android:textSize="20sp"/>

</LinearLayout>
```



MainActivity.java :

```
package com.example.notesapplication;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ListView;

public class MainActivity extends AppCompatActivity
```

```
{
    private ListView noteListView;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        initWidgets();
        loadFromDBToMemory();
        setNoteAdapter();
        setOnClickListener();
    }


    private void initWidgets()
    {
        noteListView = findViewById(R.id.noteListView);
    }

    private void loadFromDBToMemory()
    {
        SQLiteManager sqLiteManager =
SQLiteManager.instanceOfDatabase(this);
        sqLiteManager.populateNoteListArray();
    }

    private void setNoteAdapter()
    {
        NoteAdapter noteAdapter = new NoteAdapter(getApplicationContext(),
Note.nonDeletedNotes());
        noteListView.setAdapter(noteAdapter);
    }


    private void setOnClickListener()
    {
        noteListView.setOnItemClickListener(new
AdapterView.OnItemClickListener()
        {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view,
int position, long l)
            {
                Note selectedNote = (Note)
noteListView.getItemAtPosition(position);
                Intent editNoteIntent = new Intent(getApplicationContext(),
NoteDetailActivity.class);
                editNoteIntent.putExtra(Note.NOTE_EDIT_EXTRA,
selectedNote.getId());
                startActivity(editNoteIntent);
            }
        });
    }


    public void newNote(View view)
    {
        Intent newNoteIntent = new Intent(this, NoteDetailActivity.class);
        startActivity(newNoteIntent);
    }
    @Override
    protected void onResume()
    {
        super.onResume();
        setNoteAdapter();
    }
}
```

Note.java :

```
package com.example.notesapplication;

import java.util.ArrayList;
import java.util.Date;

public class Note
{
    public static ArrayList<Note> noteArrayList = new ArrayList<>();
    public static String NOTE_EDIT_EXTRA =  "noteEdit";

    private int id;
    private String title;
    private String description;
    private Date deleted;

    public Note(int id, String title, String description, Date deleted)
    {
        this.id = id;
        this.title = title;
        this.description = description;
        this.deleted = deleted;
    }

    public Note(int id, String title, String description)
    {
        this.id = id;
        this.title = title;
        this.description = description;
        deleted = null;
    }

    public static Note getNoteForID(int passedNoteID)
    {
        for (Note note : noteArrayList)
        {
            if(note.getId() == passedNoteID)
                return note;
        }

        return null;
    }

    public static ArrayList<Note> nonDeletedNotes()
    {
        ArrayList<Note> nonDeleted = new ArrayList<>();
        for(Note note : noteArrayList)
        {
            if(note.getDeleted() == null)
                nonDeleted.add(note);
        }

        return nonDeleted;
    }

    public int getId()
    {
        return id;
    }

    public void setId(int id)
    {
        this.id = id;
    }

    public String getTitle()
    {
        return title;
    }

    public void setTitle(String title)
    {
        this.title = title;
    }

    public String getDescription()
    {
        return description;
    }

    public void setDescription(String description)
    {
        this.description = description;
    }

    public Date getDeleted()
    {
        return deleted;
    }

    public void setDeleted(Date deleted)
    {
        this.deleted = deleted;
    }
}
```

NoteAdapter.java :

```
package com.example.notesapplication;
import android.content.Context;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ArrayAdapter;
import android.widget.TextView;

import androidx.annotation.NonNull;
import androidx.annotation.Nullable;

import java.util.List;
```

```
public class NoteAdapter extends ArrayAdapter<Note>
{
    public NoteAdapter(Context context, List<Note> notes)
    {
        super(context, 0, notes);
    }

    @NonNull
    @Override
    public View getView(int position, @Nullable View convertView, @NonNull
ViewGroup parent)
    {
        Note note = getItem(position);
        if(convertView == null)
            convertView =
LayoutInflater.from(getContext()).inflate(R.layout.note_cell, parent,
false);

        TextView title = convertView.findViewById(R.id.cellTitle);
        TextView desc = convertView.findViewById(R.id.cellDesc);

        title.setText(note.getTitle());
        desc.setText(note.getDescription());

        return convertView;
    }
}
```

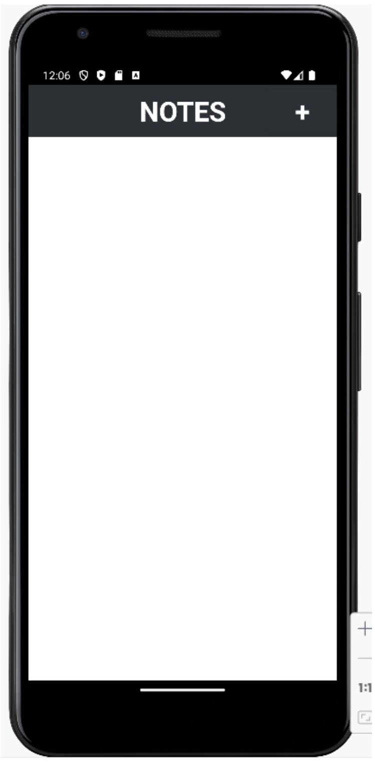
NoteDetailActivity.java :

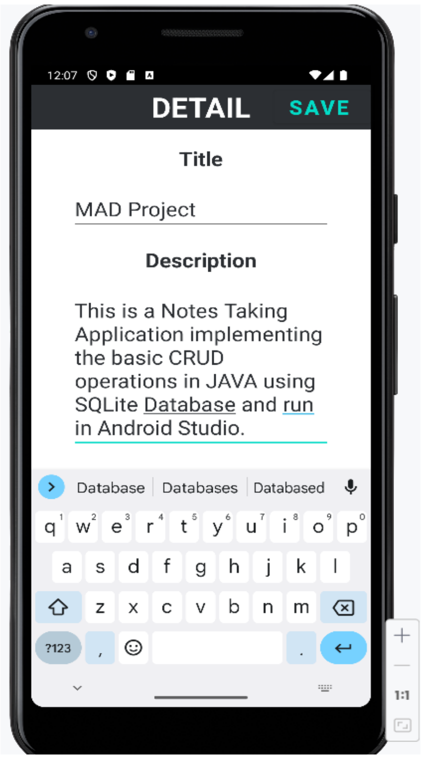
```
package com.example.notesapplication;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

import java.util.Date;

public class NoteDetailActivity extends AppCompatActivity
{
    private EditText titleEditText, descEditText;
    private Button deleteButton;
    private Note selectedNote;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_note_detail);
        initWidgets();
        checkForEditNote();
    }

    private void initWidgets()
    {
        titleEditText = findViewById(R.id.titleEditText);
        descEditText = findViewById(R.id.descriptionEditText);
        deleteButton = findViewById(R.id.deleteNoteButton);
    }

    private void checkForEditNote()
    {
        Intent previousIntent = getIntent();

        int passedNoteID = previousIntent.getIntExtra(Note.NOTE_EDIT_EXTRA,
-1);
        selectedNote = Note.getNoteForID(passedNoteID);

        if (selectedNote != null)
        {
            titleEditText.setText(selectedNote.getTitle());
            descEditText.setText(selectedNote.getDescription());
        }
        else
        {
            deleteButton.setVisibility(View.INVISIBLE);
        }
    }

    public void saveNote(View view)
    {
        SQLiteManager sqLiteManager =
SQLiteManager.instanceOfDatabase(this);
        String title = String.valueOf(titleEditText.getText());
        String desc = String.valueOf(descEditText.getText());

        if(selectedNote == null)
        {
            int id = Note.noteArrayList.size();
            Note newNote = new Note(id, title, desc);
            Note.noteArrayList.add(newNote);
            sqLiteManager.addNoteToDatabase(newNote);
        }
        else
        {
            selectedNote.setTitle(title);
            selectedNote.setDescription(desc);
            sqLiteManager.updateNoteInDB(selectedNote);
        }

        finish();
    }

    public void deleteNote(View view)
    {
        selectedNote.setDeleted(new Date());
        SQLiteManager sqLiteManager =
SQLiteManager.instanceOfDatabase(this);
        sqLiteManager.updateNoteInDB(selectedNote);
        finish();
    }
}
```

SQLiteManager.java :

```java
package com.example.notesapplication;

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

import java.text.DateFormat;
import java.text.ParseException;
import java.text.SimpleDateFormat;
import java.util.Date;


public class SQLiteManager extends SQLiteOpenHelper
{
    private static SQLiteManager sqLiteManager;

    private static final String DATABASE_NAME = "NoteDB";
    private static final int DATABASE_VERSION = 1;
    private static final String TABLE_NAME = "Note";
    private static final String COUNTER = "Counter";

    private static final String ID_FIELD = "id";
    private static final String TITLE_FIELD = "title";
    private static final String DESC_FIELD = "desc";
    private static final String DELETED_FIELD = "deleted";

    @SuppressLint("SimpleDateFormat")
    private static final DateFormat dateFormat = new SimpleDateFormat("MM-
dd-yyyy HH:mm:ss");

    public SQLiteManager(Context context)
    {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }

    public static SQLiteManager instanceOfDatabase(Context context)
    {
        if(sqLiteManager == null)
            sqLiteManager = new SQLiteManager(context);

        return sqLiteManager;
    }

    @Override
    public void onCreate(SQLiteDatabase sqLiteDatabase)
    {
        StringBuilder sql;
        sql = new StringBuilder()
                .append("CREATE TABLE ")
                .append(TABLE_NAME)
                .append("(")
                .append(COUNTER)
                .append(" INTEGER PRIMARY KEY AUTOINCREMENT, ")
                .append(ID_FIELD)
                .append(" INT, ")
                .append(TITLE_FIELD)
                .append(" TEXT, ")
                .append(DESC_FIELD)
                .append(" TEXT, ")
                .append(DELETED_FIELD)
                .append(" TEXT)");

        sqLiteDatabase.execSQL(sql.toString());
    }

    @Override
    public void onUpgrade(SQLiteDatabase sqLiteDatabase, int oldVersion,
int newVersion)
    {
//        switch (oldVersion)
//        {
//            case 1:
//                sqLiteDatabase.execSQL("ALTER TABLE " + TABLE_NAME + "
ADD COLUMN " + NEW_COLUMN + " TEXT");
//            case 2:
//                sqLiteDatabase.execSQL("ALTER TABLE " + TABLE_NAME + "
ADD COLUMN " + NEW_COLUMN + " TEXT");
//        }
    }

    public void addNoteToDatabase(Note note)
    {
        SQLiteDatabase sqLiteDatabase = this.getWritableDatabase();

        ContentValues contentValues = new ContentValues();
        contentValues.put(ID_FIELD, note.getId());
        contentValues.put(TITLE_FIELD, note.getTitle());
        contentValues.put(DESC_FIELD, note.getDescription());
        contentValues.put(DELETED_FIELD,
getStringFromDate(note.getDeleted()));

        sqLiteDatabase.insert(TABLE_NAME, null, contentValues);
    }

    public void populateNoteListArray()
    {
        SQLiteDatabase sqLiteDatabase = this.getReadableDatabase();

        try (Cursor result = sqLiteDatabase.rawQuery("SELECT * FROM " +
TABLE_NAME, null))
        {
            if(result.getCount() != 0)
            {
                while (result.moveToNext())
                {
                    int id = result.getInt(1);
                    String title = result.getString(2);
                    String desc = result.getString(3);
                    String stringDeleted = result.getString(4);
                    Date deleted = getDateFromString(stringDeleted);
                    Note note = new Note(id,title,desc,deleted);
                    Note.noteArrayList.add(note);
                }
            }
        }
    }
    public void updateNoteInDB(Note note)
    {
        SQLiteDatabase sqLiteDatabase = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put(ID_FIELD, note.getId());
        contentValues.put(TITLE_FIELD, note.getTitle());
        contentValues.put(DESC_FIELD, note.getDescription());
        contentValues.put(DELETED_FIELD,
getStringFromDate(note.getDeleted()));

        sqLiteDatabase.update(TABLE_NAME, contentValues, ID_FIELD + " =? ",
new String[]{String.valueOf(note.getId())});
    }

    private String getStringFromDate(Date date)
    {
        if(date == null)
            return null;
        return dateFormat.format(date);
    }

    private Date getDateFromString(String string)
    {
        try
        {
            return dateFormat.parse(string);
        }
        catch (ParseException | NullPointerException e)
        {
            return null;
        }
    }
}
```

Output :



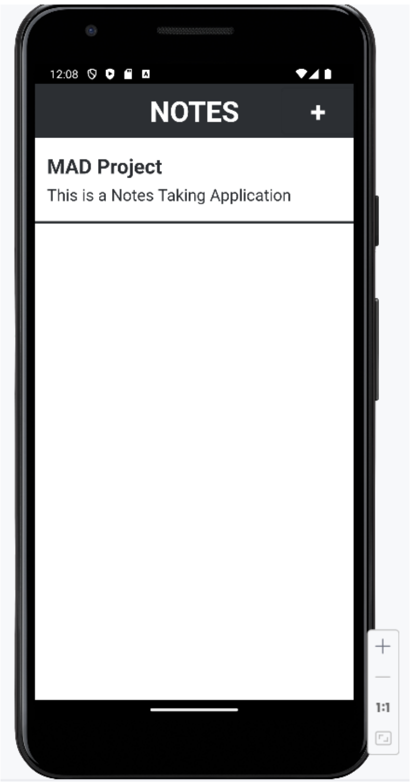


Title

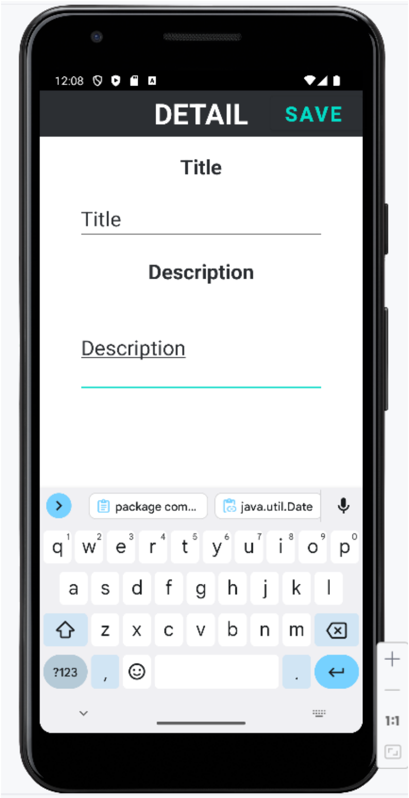
MAD Project

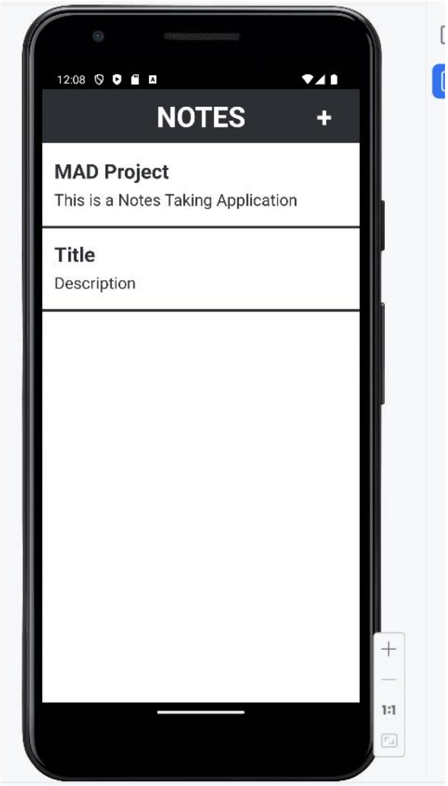
Description

This is a Notes Taking Application implementing the basic CRUD operations in JAVA using SQLite Database and run in Android Studio.



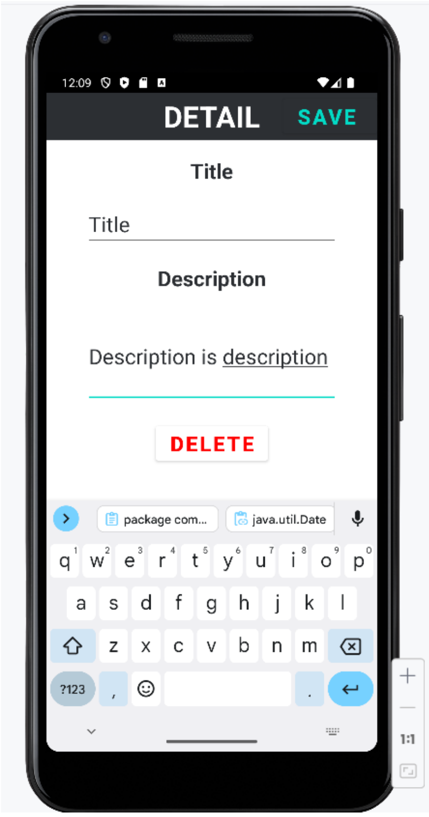
MAD Project
This is a Notes Taking Application



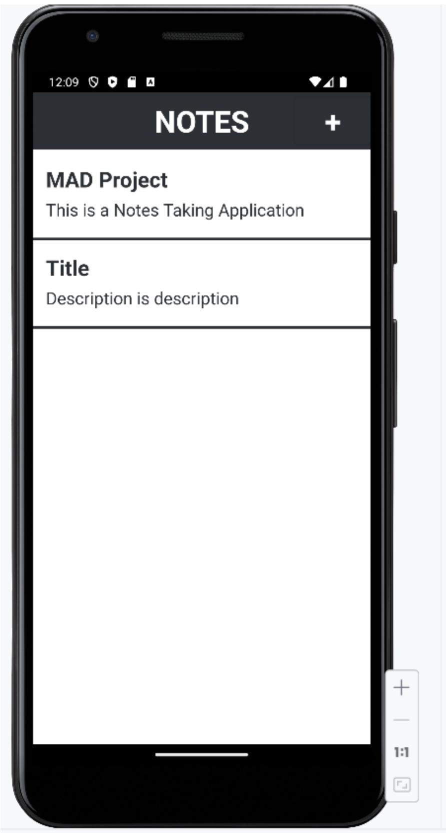


MAD Project
This is a Notes Taking Application

Title
Description

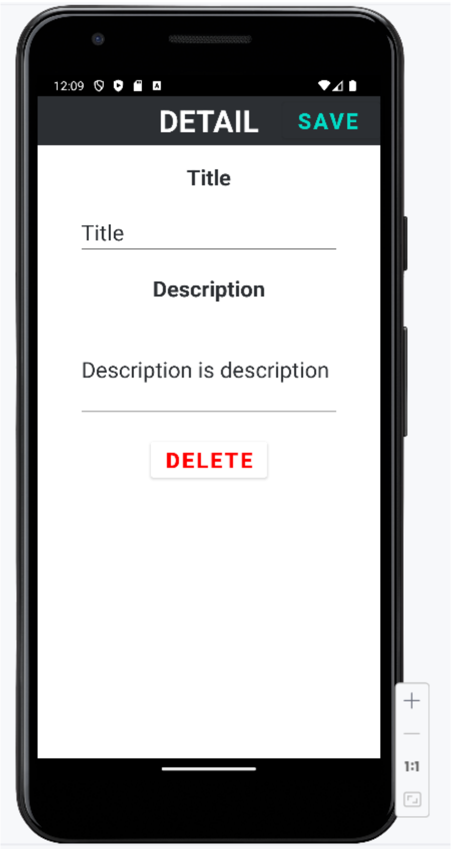


Description is description



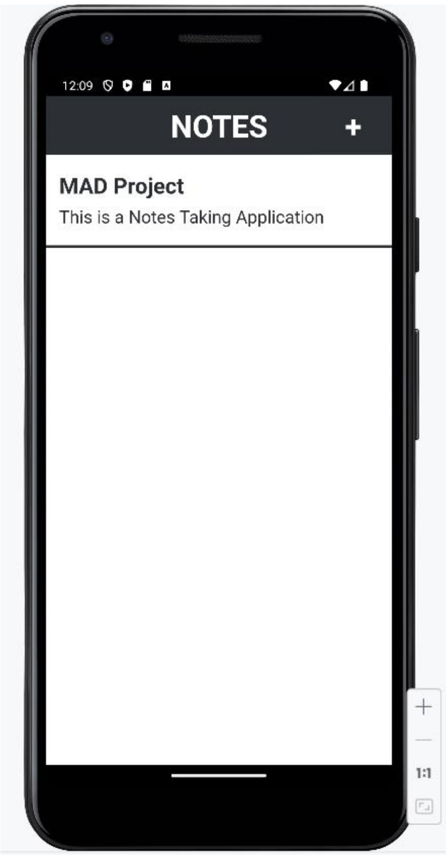
MAD Project
This is a Notes Taking Application

Title
Description is description



Title

Description is description



MAD Project
This is a Notes Taking Application