

Ex. No. 4 Android Application Development using Database

Aim: Develop a Product information application in Android that enables to perform CRUD operations on data stored in SQLite Database.

Layout Used: Linear Layout, Table Layout

Intents: Insert, Retrieve, Retrieve All, Update, Delete and Main

Code:

MainActivity.java:

```
package com.example.ex4;

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 {

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

        final Database[] db = new Database[1];

        Button create = findViewById(R.id.create);
        create.setOnClickListener(new View.OnClickListener() {
```

```
@Override
public void onClick(View v) {
    db[0] = new Database(MainActivity.this);
}
});
```

```
Button insert = findViewById(R.id.insert);
insert.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent intent = new Intent(MainActivity.this,
            Insert.class); startActivity(intent);
    }
});
```

```
Button delete = findViewById(R.id.delete);
delete.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent intent = new
            Intent(MainActivity.this, Delete.class);
        startActivity(intent);
    }
});
```

```
Button retrieve = findViewById(R.id.read);
retrieve.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent intent = new Intent(MainActivity.this, Retrieve.class);
        startActivity(intent);
    }
});
Button retrieveAll = findViewById(R.id.read_all);
retrieveAll.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
```

```

        Intent intent = new
        Intent(MainActivity.this,RetrieveAll.class);
        startActivity(intent);
    }
});

Button update = findViewById(R.id.update);
update.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent intent = new
        Intent(MainActivity.this,Update.class);
        startActivity(intent);
    }
});

}
}

```

Database.java:

```

package com.example.ex4;

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

public class Database extends SQLiteOpenHelper {

    private static final String DB_NAME = "product";
    private static final int DB_VERSION = 3;

    private static final String TABLE_NAME =

```

```

"prod"; private static final String ID_COL = "id";

private static final String NAME_COL = "name";

private static final String BRAND_COL = "brand";

private static final String DESC_COL = "desc";

private static final String PRICE_COL = "price";

public Database(Context context) {
    super(context, DB_NAME, null, DB_VERSION);
}

@Override
public void onCreate(SQLiteDatabase db) {

    String query = "CREATE TABLE " + TABLE_NAME + " ("
        + ID_COL + " INTEGER PRIMARY KEY, "
        + NAME_COL + " TEXT,"
        + BRAND_COL + " TEXT,"
        + DESC_COL + " TEXT,"
        + PRICE_COL + " TEXT)";

    // at last we are calling a exec sql
    // method to execute above sql query
    db.execSQL(query);
}

// this method is use to add new course to our sqlite database.
public void addProduct(String id,String name,String brand, String desc,
String price) {

    // on below line we are creating a variable for
    // our sqlite database and calling writable method
    // as we are writing data in our database.
    SQLiteDatabase db = this.getWritableDatabase();

```

```

// on below line we are creating a
// variable for content values.
ContentValues values = new ContentValues();

// on below line we are passing all values
// along with its key and value pair.
values.put(ID_COL,id);
values.put(NAME_COL, name);
values.put(BRAND_COL,brand);
values.put(DESC_COL, desc);
values.put(PRICE_COL, price);

// after adding all values we are passing
// content values to our table.
db.insert(TABLE_NAME, null, values);

// at last we are closing our
// database after adding database.
db.close();
}

public void deleteProduct(String id){
    SQLiteDatabase db = this.getWritableDatabase();
    db.delete(TABLE_NAME,ID_COL+"= ?",new String[]{id});
}

public void updateProduct(String id,String price){
    SQLiteDatabase db = this.getWritableDatabase();
    ContentValues values = new ContentValues();
    values.put(PRICE_COL, price);
    db.update(TABLE_NAME, values, ID_COL + "=?", new
String[]{String.valueOf(id)});
}

public Cursor retrieveAll(){
    SQLiteDatabase db = this.getReadableDatabase(); return
db.query(TABLE_NAME, null, null, null, null, null, null); }

```

```

public Cursor retrieve(String id){
    SQLiteDatabase db = this.getReadableDatabase();
    String[] projection = {
        NAME_COL,
        BRAND_COL,
        DESC_COL,
        PRICE_COL
    };

    // Define the condition for retrieval (e.g., where id = ?)
    String selection = ID_COL + " = ?";
    String[] selectionArgs = { id };

    // Execute the query
    Cursor cursor = db.query(
        TABLE_NAME, // Table name
        projection, // Columns to return
        selection, // Selection (WHERE clause)
        selectionArgs, // Selection arguments
        null, // Group by
        null, // Having
        null // Order by
    );
    // The cursor now contains the retrieved row(s)
    return cursor;
}

@Override
public void onUpgrade(SQLiteDatabase db, int oldVersion, int
newVersion) {
    // this method is called to check if the table exists already.
    db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
    onCreate(db);
}
}

```

Insert.java:

```

package com.example.ex4;

import android.content.Intent;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class Insert extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState){
        super.onCreate(savedInstanceState);
        setContentView(R.layout.insert);
        Button backi = findViewById(R.id.backi);
        backi.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new
                Intent(Insert.this,MainActivity.class);
                startActivity(intent);
            }
        });

        Button submiti = findViewById(R.id.submiti);
        submiti.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Database db = new Database(Insert.this);

                TextView textView = findViewById(R.id.idi);
                String id = textView.getText().toString();
                textView = findViewById(R.id.namei);

```

```

        String name = textView.getText().toString();

        RadioGroup radioGroup = findViewById(R.id.radioGroup);
        int selectedRadioButtonId =
radioGroup.getCheckedRadioButtonId();
        RadioButton selectedRadioButton =
findViewById(selectedRadioButtonId);
        String brand = selectedRadioButton.getText().toString();

        Log.d("Debug",brand);

        textView = findViewById(R.id.desci);
        String desc = textView.getText().toString();
        Log.d("Debug",desc);

        textView = findViewById(R.id.pricei);
        String price = textView.getText().toString();
        db.addProduct(id,name,brand,desc,price);
    }
    });
}
}

```

Retrieve:

```

package com.example.ex4;

import android.content.Intent;
import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class Retrieve extends AppCompatActivity {
    @Override

```



```

protected void onCreate(Bundle savedInstanceState){
    super.onCreate(savedInstanceState);
    setContentView(R.layout.retrieve);

    Button backr = findViewById(R.id.backr);
    backr.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Intent intent = new Intent(Retrieve.this,MainActivity.class);
            startActivity(intent);
        }
    });
    Button retrieve = findViewById(R.id.retrieve);
    retrieve.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            TextView textView = findViewById(R.id.idr);
            String id = textView.getText().toString();

            Database db = new Database(Retrieve.this);
            Cursor cursor = db.retrieve(id);

            String name="",brand="",desc="",price="";

            if (cursor.moveToFirst()) {
                do {
                    // Retrieve values from 'column1' and 'column2' as strings
                    int columnIndex = cursor.getColumnIndex("name"); if
                    (columnIndex != -1) {
                        name = cursor.getString(columnIndex);
                    }

                    columnIndex = cursor.getColumnIndex("brand");
                    if(columnIndex!=-1){
                        brand=cursor.getString(columnIndex);
                    }

                    columnIndex = cursor.getColumnIndex("desc");

```

```

        if(columnIndex!=-1){
            desc=cursor.getString(columnIndex);
        }

        columnIndex = cursor.getColumnIndex("price");
        if(columnIndex!=-1){
            price=cursor.getString(columnIndex);
        }
    } while (cursor.moveToNext());
}

textView = findViewById(R.id.namer);
textView.setText(name);

textView = findViewById(R.id.brandr);
textView.setText(brand);

textView = findViewById(R.id.descr);
textView.setText(desc);

textView = findViewById(R.id.pricer);
textView.setText(price);

    }
    });
}
}

```

Retrieve All:

```

package com.example.ex4;

import android.content.Context;
import android.content.Intent;
import android.database.Cursor;
import android.graphics.Color;
import android.os.Bundle;
import android.util.Log;

```

```

import android.view.View;
import android.view.ViewGroup;
import android.widget.Button;
import android.widget.TableLayout;
import android.widget.TableRow;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import androidx.constraintlayout.widget.ConstraintSet;

import org.w3c.dom.Text;

public class RetrieveAll extends AppCompatActivity {

    private TextView newTextView(String text){
        TextView tv = new TextView(RetrieveAll.this);

        tv.setText(text);
        tv.setPadding(4,4,4,4);
        tv.setTextSize(24);
        TableRow.LayoutParams layoutParams = new
        TableRow.LayoutParams(
            TableRow.LayoutParams.WRAP_CONTENT, // Adjust width as
needed
            TableRow.LayoutParams.WRAP_CONTENT // Adjust height as
needed
        );
        layoutParams.rightMargin = 20;
        tv.setLayoutParams(layoutParams);

        return tv;
    }

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

```

```
Database db = new Database(RetrieveAll.this);
Cursor cursor = db.retrieveAll();
```

```
ConstraintLayout parent = findViewById(R.id.parent);
```

```
// Create layout params for the TableLayout
// ConstraintLayout.LayoutParams tableLayoutParams = new
// ConstraintLayout.LayoutParams(
//     ConstraintLayout.LayoutParams.MATCH_PARENT,    //
//     ConstraintLayout.LayoutParams.MATCH_PARENT // );
// tableLayoutParams.startToStart =
// ConstraintLayout.LayoutParams.PARENT_ID;
// tableLayoutParams.endToEnd =
// ConstraintLayout.LayoutParams.PARENT_ID;
// tableLayoutParams.topToTop =
// ConstraintLayout.LayoutParams.PARENT_ID;
// tableLayoutParams.bottomToBottom =
// ConstraintLayout.LayoutParams.PARENT_ID;
```

```
TableLayout tl = new TableLayout(RetrieveAll.this);
```

```
TableRow trh = new TableRow(RetrieveAll.this);
TextView tv0 = new TextView("Id");
trh.addView(tv0);
```

```
tv0 = new TextView("Name");
trh.addView(tv0);
```

```
tv0 = new TextView("Brand");
trh.addView(tv0);
```

```
tv0 = new TextView("Description");
trh.addView(tv0);
```

```
tv0 = new TextView("Price");
trh.addView(tv0);
```

```
tl.addView(trh);
```

```
String id="",name="",brand="",desc="",price="";
```

```
if (cursor.moveToFirst()) {
```

```
    do {
```

```
        // Retrieve values from 'column1' and 'column2' as strings
```

```
        int columnIndex = cursor.getColumnIndex("id");
```

```
        if (columnIndex != -1) {
```

```
            id = cursor.getString(columnIndex);
```

```
        }
```

```
        columnIndex = cursor.getColumnIndex("name");
```

```
        if(columnIndex!=-1){
```

```
            name=cursor.getString(columnIndex);
```

```
        }
```

```
        columnIndex = cursor.getColumnIndex("brand");
```

```
        if(columnIndex!=-1){
```

```
            brand=cursor.getString(columnIndex);
```

```
        }
```

```
        columnIndex = cursor.getColumnIndex("desc");
```

```
        if(columnIndex!=-1){
```

```
            desc=cursor.getString(columnIndex);
```

```
        }
```

```
        columnIndex = cursor.getColumnIndex("price");
```

```
        if(columnIndex!=-1){
```

```
            price=cursor.getString(columnIndex);
```

```
        }
```

```
Log.d("Debug",id+" "+name+" "+brand+" "+desc+" "+price);
```

```
TableRow tr = new TableRow(RetrieveAll.this);
```

```
TextView tv1 = newTextView(id);
```

```
TextView tv2 = newTextView(name);
```

```

        TextView tv3 = new TextView(brand);
        TextView tv4 = new TextView(desc);
        TextView tv5 = new TextView(price);

        tr.addView(tv1);
        tr.addView(tv2);
        tr.addView(tv3);
        tr.addView(tv4);
        tr.addView(tv5);

        tl.addView(tr);

    } while (cursor.moveToNext());
}

parent.addView(tl);

// app:layout_constraintEnd_toEndOf="parent"
// app:layout_constraintStart_toStartOf="parent"
// app:layout_constraintTop_toTopOf="parent"

Button retrieveAll = findViewById(R.id.backra);
retrieveAll.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        Intent intent = new
            Intent(RetrieveAll.this, MainActivity.class);
        startActivity(intent);
    }
});
}
}
}

```

Update:

```

package com.example.ex4;

import android.content.Intent;

```

```

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class Update extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState){
        super.onCreate(savedInstanceState);
        setContentView(R.layout.update);

        Button backu = findViewById(R.id.backu);
        backu.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new
                Intent(Update.this,MainActivity.class);
                startActivity(intent);
            }
        });

        Button update = findViewById(R.id.update);
        update.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Database db = new Database(Update.this);
                TextView textView = findViewById(R.id.idu);
                String id = textView.getText().toString();
                textView = findViewById(R.id.priceu);
                String price = textView.getText().toString();

                db.updateProduct(id,price);
            }
        });
    }
}

```

Delete.java:

```
package com.example.ex4;

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

import androidx.appcompat.app.AppCompatActivity;

public class Delete extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState){
        super.onCreate(savedInstanceState);
        setContentView(R.layout.delete);

        Button backd = findViewById(R.id.backd);
        backd.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new
                Intent(Delete.this,MainActivity.class);
                startActivity(intent);
            }
        });

        Button delete = findViewById(R.id.delete);
        delete.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Database db = new Database(Delete.this);

                TextView textView = findViewById(R.id.idd);
                String id = textView.getText().toString();
```



```

        db.deleteProduct(id);
    }
    });
}
}

```

Activity_main.xml:

```

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

    <RelativeLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <!-- Center the LinearLayout vertically -->
        <LinearLayout
            android:id="@+id/verticalLayout"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_centerInParent="true"
            android:orientation="vertical">

            <!-- Add your UI elements within this LinearLayout -->

            <Button
                android:id="@+id/create"
                android:layout_width="177dp"
                android:layout_height="62dp"
                android:text="Create" />

            <Button

```

```
    android:id="@+id/insert"
    android:layout_width="177dp"
    android:layout_height="62dp"
    android:text="Insert" />
```

```
<Button
    android:id="@+id/read"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Retrieve" />
```

```
<Button
    android:id="@+id/read_all"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Retrieve All" />
```

```
<Button
    android:id="@+id/update"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Update" />
```

```
<Button
    android:id="@+id/delete"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Delete" />
```

```
<!-- Add more views here as needed -->
```

```
</LinearLayout>
```

```
</RelativeLayout>
```

```
</androidx.constraintlayout.widget.ConstraintLayout>
```

Insert.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:layout_width="match_parent"
    android:layout_height="match_parent">
```

```
    <LinearLayout
        android:layout_width="409dp"
        android:layout_height="665dp"
        android:layout_marginTop="50dp"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">
```

```
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="87dp"
            android:orientation="horizontal">
```

```
            <TextView
                android:id="@+id/textView3"
                android:layout_width="120dp"
                android:layout_height="55dp"
                android:layout_weight="1"
                android:text="Product Id"
                android:textSize="24sp" />
```

```
            <EditText
                android:id="@+id/idi"
                android:layout_width="wrap_content"
                android:layout_height="58dp"
                android:layout_weight="1"
                android:ems="10"
```

```
        android:inputType="textPersonName"
        android:textSize="24sp" />
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="84dp"
    android:orientation="horizontal">
```

```
<TextView
    android:id="@+id/textView5"
    android:layout_width="131dp"
    android:layout_height="58dp"
    android:layout_weight="1"
    android:text="Product Name"
    android:textSize="24sp" />
```

```
<EditText
    android:id="@+id/namei"
    android:layout_width="wrap_content"
    android:layout_height="59dp"
    android:layout_weight="1"
    android:ems="10"
    android:inputType="textPersonName"
    android:textSize="24sp" />
```

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="94dp"
    android:orientation="horizontal">
```

```
<TextView
    android:id="@+id/textView6"
    android:layout_width="198dp"
    android:layout_height="71dp"
    android:layout_weight="1"
    android:text="Brand"
```

```
android:textSize="24sp" />
```

```
<RadioGroup
    android:id="@+id/radioGroup"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_weight="1" >

    <RadioButton
        android:id="@+id/radio1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="24sp"
        android:text="A" />

    <RadioButton
        android:id="@+id/radio2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="24sp"
        android:text="B" />
</RadioGroup>
```

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="93dp"
    android:orientation="horizontal">
```

```
<TextView
    android:id="@+id/textView7"
    android:layout_width="146dp"
    android:layout_height="73dp"
    android:layout_weight="1"
    android:text="Description"
    android:textSize="24sp" />
```

```
<EditText
    android:id="@+id/desci"
    android:layout_width="wrap_content"
    android:layout_height="75dp"
    android:layout_weight="1"
    android:ems="10"
    android:inputType="textPersonName"
    android:textSize="24sp" />
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="96dp"
    android:orientation="horizontal">
```

```
<TextView
    android:id="@+id/textView8"
    android:layout_width="114dp"
    android:layout_height="79dp"
    android:layout_weight="1"
    android:text="Price"
    android:textSize="24sp" />
```

```
<EditText
    android:id="@+id/pricei"
    android:layout_width="wrap_content"
    android:layout_height="82dp"
    android:layout_weight="1"
    android:ems="10"
    android:inputType="textPersonName"
    android:textSize="24sp" />
</LinearLayout>
```

```
<Button
    android:id="@+id/submiti"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
```

```
android:text="Submit" />
```

```
<Button  
    android:id="@+id/backi"  
    android:layout_width="match_parent"  
    android:layout_height="wrap_content"  
    android:text="Back" />
```

```
</LinearLayout>
```

```
</androidx.constraintlayout.widget.ConstraintLayout>
```

Retrieve.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:layout_width="match_parent"  
        android:layout_height="match_parent">
```

```
<LinearLayout  
    android:id="@+id/linearLayout"  
    android:layout_width="414dp"  
    android:layout_height="203dp"  
    android:orientation="vertical"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="1.0"  
    app:layout_constraintStart_toStartOf="parent"  
    tools:ignore="MissingConstraints"  
    tools:layout_editor_absoluteY="-2dp">
```

```
<LinearLayout  
    android:layout_width="match_parent"  
    android:layout_height="103dp"  
    android:orientation="horizontal">
```

```
<TextView
```

```
    android:id="@+id/textView"
    android:layout_width="144dp"
    android:layout_height="64dp"
    android:layout_weight="1"
    android:text="Product Id"
    android:textSize="24sp" />
```

```
<EditText
    android:id="@+id/idr"
    android:layout_width="wrap_content"
    android:layout_height="83dp"
    android:layout_weight="1"
    android:ems="10"
    android:inputType="textPersonName"
    android:textSize="24sp" />
</LinearLayout>
```

```
<Button
    android:id="@+id/retrieve"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Retrieve" />
```

```
<Button
    android:id="@+id/backr"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Back" />
</LinearLayout>
```

```
<LinearLayout
    android:layout_marginTop="50dp"
    android:layout_width="411dp"
    android:layout_height="459dp"
    android:orientation="vertical"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/linearLayout">
```



```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="84dp"
    android:orientation="horizontal">
```

```
<TextView
    android:id="@+id/textView5"
    android:layout_width="131dp"
    android:layout_height="58dp"
    android:layout_weight="1"
    android:text="Product Name"
    android:textSize="24sp" />
```

```
<TextView
    android:id="@+id/namer"
    android:layout_width="146dp"
    android:layout_height="73dp"
    android:layout_weight="1"
    android:text=""
    android:textSize="24sp" />
```

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="94dp"
    android:orientation="horizontal">
```

```
<TextView
    android:id="@+id/textView6"
    android:layout_width="198dp"
    android:layout_height="71dp"
    android:layout_weight="1"
    android:text="Brand"
    android:textSize="24sp" />
```

```
<TextView
    android:id="@+id/brandr"
```

```
    android:layout_width="146dp"
    android:layout_height="73dp"
    android:layout_weight="1"
    android:text=""
    android:textSize="24sp" />
```

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="93dp"
    android:orientation="horizontal">
```

```
    <TextView
        android:id="@+id/textView0"
        android:layout_width="146dp"
        android:layout_height="73dp"
        android:layout_weight="1"
        android:text="Description"
        android:textSize="24sp" />
```

```
    <TextView
        android:id="@+id/descr"
        android:layout_width="146dp"
        android:layout_height="73dp"
        android:layout_weight="1"
        android:text=""
        android:textSize="24sp" />
```

```
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="96dp"
    android:orientation="horizontal">
```

```
    <TextView
        android:id="@+id/textView8"
        android:layout_width="114dp"
```

```

        android:layout_height="79dp"
        android:layout_weight="1"
        android:text="Price"
        android:textSize="24sp" />

<TextView
    android:id="@+id/pricer"
    android:layout_width="146dp"
    android:layout_height="73dp"
    android:layout_weight="1"
    android:text=""
    android:textSize="24sp" />
</LinearLayout>

</LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>

```

Retrieve All:

```

<?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:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/parent">
    <Button
        android:id="@+id/backra"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Back"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

```

</androidx.constraintlayout.widget.ConstraintLayout>

Update.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:layout_width="match_parent"
    android:layout_height="match_parent">

    <LinearLayout
        android:layout_width="412dp"
        android:layout_height="352dp"
        android:orientation="vertical"
        app:layout_constraintStart_toStartOf="parent"
        tools:layout_editor_absoluteY="186dp"
        tools:ignore="MissingConstraints">

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="107dp"
            android:orientation="horizontal">

            <TextView
                android:id="@+id/textView2"
                android:layout_width="105dp"
                android:layout_height="80dp"
                android:layout_weight="1"
                android:textSize="24sp"
                android:text="Product Id" />

            <EditText
                android:id="@+id/idu"
                android:layout_width="wrap_content"
```

```
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:ems="10"
        android:inputType="textPersonName"
        android:textSize="24sp" />
</LinearLayout>
```

```
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="97dp"
    android:orientation="horizontal">
```

```
<TextView
    android:id="@+id/textView4"
    android:layout_width="108dp"
    android:layout_height="79dp"
    android:layout_weight="1"
    android:textSize="24sp"
    android:text="Price" />
```

```
<EditText
    android:id="@+id/priceu"
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:layout_weight="1"
    android:ems="10"
    android:textSize="24sp"
    android:inputType="textPersonName" />
</LinearLayout>
```

```
<Button
    android:id="@+id/update"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Update" />
```

```
<Button
    android:id="@+id/backu"
```

```
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Back" />
    </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Delete.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:layout_width="match_parent"
    android:layout_height="match_parent">

    <LinearLayout
        android:layout_width="414dp"
        android:layout_height="475dp"
        android:orientation="vertical"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        tools:layout_editor_absoluteY="101dp"
        tools:ignore="MissingConstraints">

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="152dp"
            android:orientation="horizontal">

            <TextView
                android:id="@+id/textView"
                android:layout_width="144dp"
                android:layout_height="89dp"
                android:layout_weight="1"
                android:textSize="24sp"
                android:text="Product Id" />
```

```
<EditText
    android:id="@+id/idd"
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:layout_weight="1"
    android:ems="10"
    android:inputType="textPersonName"
    android:textSize="24sp" />
</LinearLayout>

<Button
    android:id="@+id/delete"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Delete" />
<Button
    android:id="@+id/backd"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="Back" />
</LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:



3:44

Ex4

Product Id 4

Product Name zxcv

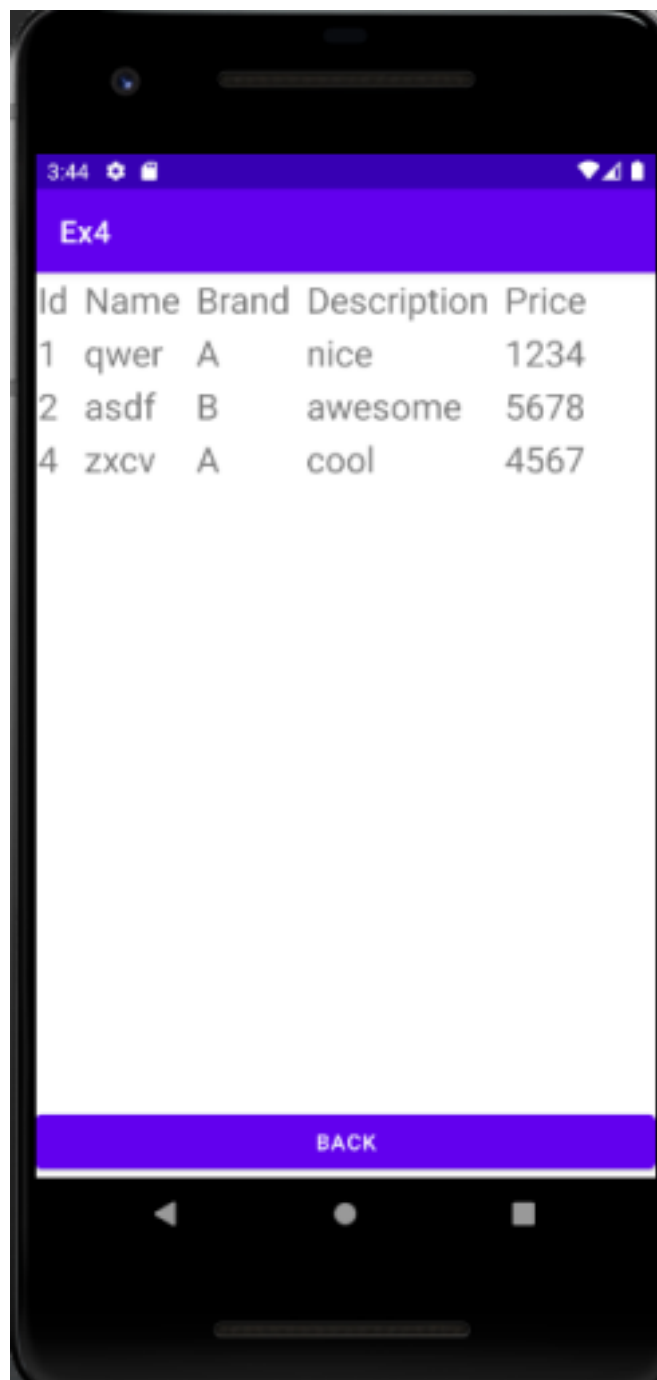
Brand ☒ A ☐ B

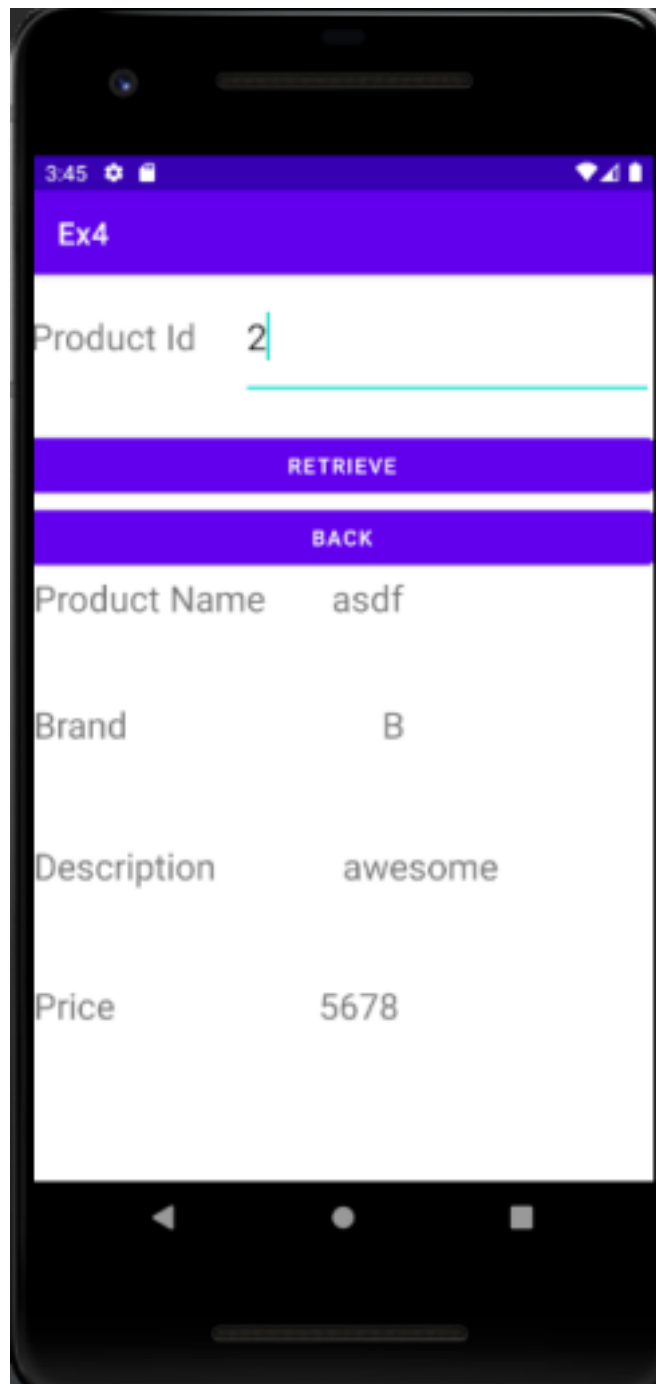
Description cool

Price 4567

SUBMIT

BACK





3:45

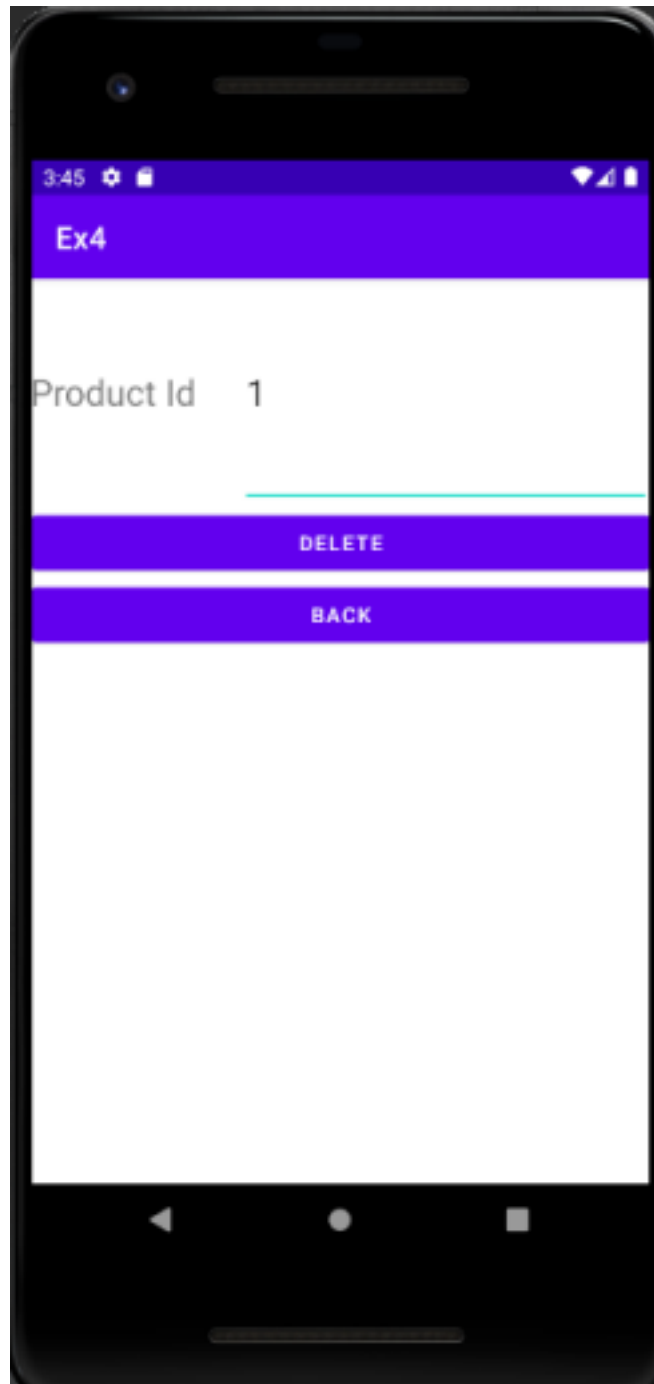
Ex4

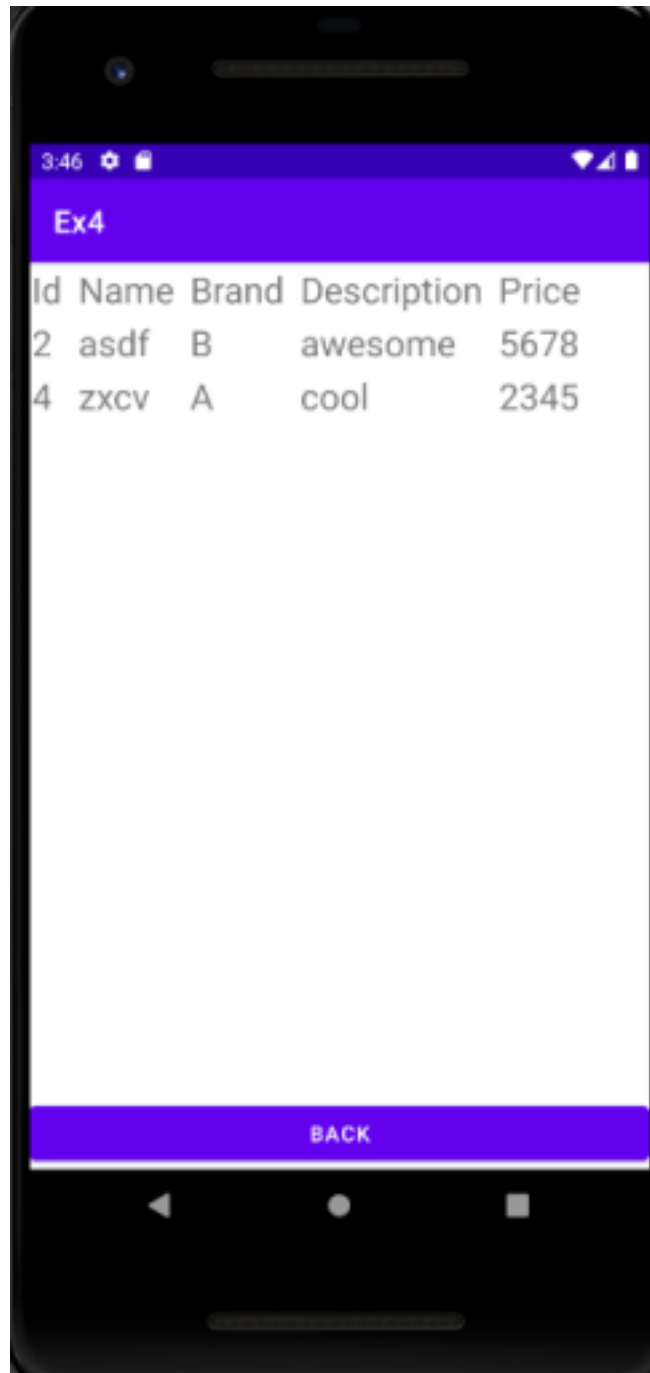
Product Id 4

Price 2345

UPDATE

BACK





Best Practices:

- Used apt names for xml and java files.
- Set padding and margins for dynamically added elements

Learning Outcomes:

- Learnt to integrate sqlite3 in android studio
- Learnt to do CRUD operations