**Группировка, сортировка, выборка данных SQLite в Android**

На этом уроке продолжим работу с базой данных SQLite в Android. Создадим приложение, на примере которого покажем, как делать группировку, сортировку и выборку данных по условию в базе данных SQLite с помощью метода query с параметрами columns, selection, selectionArgs, groupBy, having, orderBy.

**activity\_main**

<?xml version="1.0" encoding="utf-8"?>

<LinearLayout

    xmlns:android="http://schemas.android.com/apk/res/android"

    android:layout\_width="fill\_parent"

    android:layout\_height="fill\_parent"

    android:orientation="vertical">

    <TextView

        android:layout\_width="fill\_parent"

        android:layout\_height="wrap\_content"

        android:text="Справочник стран"

        android:textSize="14sp"

        android:gravity="center\_horizontal"

        android:layout\_marginBottom="5dp"

        android:layout\_marginTop="5dp">

    </TextView>

    <Button

        android:id="@+id/btnAll"

        android:layout\_width="wrap\_content"

        android:layout\_height="wrap\_content"

        android:text="Все записи"

        android:layout\_marginTop="5dp">

    </Button>

    <LinearLayout

        android:id="@+id/linearLayout1"

        android:layout\_width="match\_parent"

        android:layout\_height="wrap\_content"

        android:layout\_marginTop="5dp">

        <Button

            android:id="@+id/btnFunc"

            android:layout\_width="wrap\_content"

            android:layout\_height="wrap\_content"

            android:text="Функция">

        </Button>

        <EditText

            android:id="@+id/etFunc"

            android:layout\_width="wrap\_content"

            android:layout\_height="wrap\_content"

            android:layout\_weight="1">

            <requestFocus>

            </requestFocus>

        </EditText>

    </LinearLayout>

    <LinearLayout

        android:id="@+id/linearLayout2"

        android:layout\_width="match\_parent"

        android:layout\_height="wrap\_content"

        android:layout\_marginTop="5dp">

        <Button

            android:id="@+id/btnPeople"

            android:layout\_width="wrap\_content"

            android:layout\_height="wrap\_content"

            android:text="Население >">

        </Button>

        <EditText

            android:id="@+id/etPeople"

            android:layout\_width="wrap\_content"

            android:layout\_height="wrap\_content"

            android:layout\_weight="1"

            android:inputType="number">

        </EditText>

    </LinearLayout>

    <Button

        android:id="@+id/btnGroup"

        android:layout\_width="wrap\_content"

        android:layout\_height="wrap\_content"

        android:text="Население по региону"

        android:layout\_marginTop="5dp">

    </Button>

    <LinearLayout

        android:id="@+id/linearLayout4"

        android:layout\_width="match\_parent"

        android:layout\_height="wrap\_content"

        android:layout\_marginTop="5dp">

        <Button

            android:id="@+id/btnHaving"

            android:layout\_width="wrap\_content"

            android:layout\_height="wrap\_content"

            android:text="Население по региону >">

        </Button>

        <EditText

            android:id="@+id/etRegionPeople"

            android:layout\_width="wrap\_content"

            android:layout\_height="wrap\_content"

            android:layout\_weight="1"

            android:inputType="number">

        </EditText>

    </LinearLayout>

    <LinearLayout

        android:id="@+id/linearLayout3"

        android:layout\_width="match\_parent"

        android:layout\_height="wrap\_content"

        android:layout\_marginTop="5dp">

        <Button

            android:id="@+id/btnSort"

            android:layout\_width="wrap\_content"

            android:layout\_height="wrap\_content"

            android:text="Сортировка">

        </Button>

        <RadioGroup

            android:id="@+id/rgSort"

            android:layout\_width="wrap\_content"

            android:layout\_height="wrap\_content">

            <RadioButton

                android:id="@+id/rName"

                android:layout\_width="wrap\_content"

                android:layout\_height="wrap\_content"

                android:checked="true"

                android:text="Наименование">

            </RadioButton>

            <RadioButton

                android:id="@+id/rPeople"

                android:layout\_width="wrap\_content"

                android:layout\_height="wrap\_content"

                android:text="Население">

            </RadioButton>

            <RadioButton

                android:id="@+id/rRegion"

                android:layout\_width="wrap\_content"

                android:layout\_height="wrap\_content"

                android:text="Регион">

            </RadioButton>

        </RadioGroup>

    </LinearLayout>

</LinearLayout>

**MainActivity.java**

package ...

import android.content.ContentValues;

import android.content.Context;

import android.database.Cursor;

import android.database.sqlite.SQLiteDatabase;

import android.database.sqlite.SQLiteOpenHelper;

import android.os.Bundle;

import android.support.v7.app.AppCompatActivity;

import android.util.Log;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

import android.widget.RadioGroup;

public class MainActivity extends AppCompatActivity implements View.OnClickListener {

    final String LOG\_TAG = "myLogs";

    String name[] = { "Китай", "США", "Бразилия", "Россия", "Япония",

            "Германия", "Египет", "Италия", "Франция", "Канада" };

    int people[] = { 1400, 311, 195, 142, 128, 82, 80, 60, 66, 35 };

    String region[] = { "Азия", "Америка", "Америка", "Европа", "Азия",

            "Европа", "Африка", "Европа", "Европа", "Америка" };

    Button btnAll, btnFunc, btnPeople, btnSort, btnGroup, btnHaving;

    EditText etFunc, etPeople, etRegionPeople;

    RadioGroup rgSort;

    DBHelper dbHelper;

    SQLiteDatabase db;

    public void onCreate(Bundle savedInstanceState) {

        super.onCreate(savedInstanceState);

        setContentView(R.layout.activity\_main);

        btnAll = (Button) findViewById(R.id.btnAll);

        btnAll.setOnClickListener(this);

        btnFunc = (Button) findViewById(R.id.btnFunc);

        btnFunc.setOnClickListener(this);

        btnPeople = (Button) findViewById(R.id.btnPeople);

        btnPeople.setOnClickListener(this);

        btnSort = (Button) findViewById(R.id.btnSort);

        btnSort.setOnClickListener(this);

        btnGroup = (Button) findViewById(R.id.btnGroup);

        btnGroup.setOnClickListener(this);

        btnHaving = (Button) findViewById(R.id.btnHaving);

        btnHaving.setOnClickListener(this);

        etFunc = (EditText) findViewById(R.id.etFunc);

        etPeople = (EditText) findViewById(R.id.etPeople);

        etRegionPeople = (EditText) findViewById(R.id.etRegionPeople);

        rgSort = (RadioGroup) findViewById(R.id.rgSort);

        dbHelper = new DBHelper(this);

        // подключаемся к базе

        db = dbHelper.getWritableDatabase();

        // проверка существования записей

        Cursor c = db.query("mytable", null, null, null, null, null, null);

        if (c.getCount() == 0) {

            ContentValues cv = new ContentValues();

            // заполним таблицу

            for (int i = 0; i < 10; i++) {

                cv.put("name", name[i]);

                cv.put("people", people[i]);

                cv.put("region", region[i]);

                Log.d(LOG\_TAG, "id = " + db.insert("mytable", null, cv));

            }

        }

        c.close();

        dbHelper.close();

        // эмулируем нажатие кнопки btnAll

        onClick(btnAll);

    }

    public void onClick(View v) {

        // подключаемся к базе

        db = dbHelper.getWritableDatabase();

        // данные с экрана

        String sFunc = etFunc.getText().toString();

        String sPeople = etPeople.getText().toString();

        String sRegionPeople = etRegionPeople.getText().toString();

        // переменные для query

        String[] columns = null;

        String selection = null;

        String[] selectionArgs = null;

        String groupBy = null;

        String having = null;

        String orderBy = null;

        // курсор

        Cursor c = null;

        // определяем нажатую кнопку

        switch (v.getId()) {

            // Все записи

            case R.id.btnAll:

                Log.d(LOG\_TAG, "--- Все записи ---");

                c = db.query("mytable", null, null, null, null, null, null);

                break;

            // Функция

            case R.id.btnFunc:

                Log.d(LOG\_TAG, "--- Функция " + sFunc + " ---");

                columns = new String[] { sFunc };

                c = db.query("mytable", columns, null, null, null, null, null);

                break;

            // Население больше, чем

            case R.id.btnPeople:

                Log.d(LOG\_TAG, "--- Население больше " + sPeople + " ---");

                selection = "people > ?";

                selectionArgs = new String[] { sPeople };

                c = db.query("mytable", null, selection, selectionArgs, null, null,

                        null);

                break;

            // Население по региону

            case R.id.btnGroup:

                Log.d(LOG\_TAG, "--- Население по региону ---");

                columns = new String[] { "region", "sum(people) as people" };

                groupBy = "region";

                c = db.query("mytable", columns, null, null, groupBy, null, null);

                break;

            // Население по региону больше чем

            case R.id.btnHaving:

                Log.d(LOG\_TAG, "--- Регионы с населением больше " + sRegionPeople

                        + " ---");

                columns = new String[] { "region", "sum(people) as people" };

                groupBy = "region";

                having = "sum(people) > " + sRegionPeople;

                c = db.query("mytable", columns, null, null, groupBy, having, null);

                break;

            // Сортировка

            case R.id.btnSort:

                // сортировка по

                switch (rgSort.getCheckedRadioButtonId()) {

                    // наименование

                    case R.id.rName:

                        Log.d(LOG\_TAG, "--- Сортировка по наименованию ---");

                        orderBy = "name";

                        break;

                    // население

                    case R.id.rPeople:

                        Log.d(LOG\_TAG, "--- Сортировка по населению ---");

                        orderBy = "people";

                        break;

                    // регион

                    case R.id.rRegion:

                        Log.d(LOG\_TAG, "--- Сортировка по региону ---");

                        orderBy = "region";

                        break;

                }

                c = db.query("mytable", null, null, null, null, null, orderBy);

                break;

        }

        if (c != null) {

            if (c.moveToFirst()) {

                String str;

                do {

                    str = "";

                    for (String cn : c.getColumnNames()) {

                        str = str.concat(cn + " = "

                                + c.getString(c.getColumnIndex(cn)) + "; ");

                    }

                    Log.d(LOG\_TAG, str);

                } while (c.moveToNext());

            }

            c.close();

        } else

            Log.d(LOG\_TAG, "Cursor is null");

        dbHelper.close();

    }

    class DBHelper extends SQLiteOpenHelper {

        public DBHelper(Context context) {

            // конструктор суперкласса

            super(context, "myDB", null, 1);

        }

        public void onCreate(SQLiteDatabase db) {

            Log.d(LOG\_TAG, "--- onCreate database ---");

            // создаем таблицу с полями

            db.execSQL("create table mytable ("

                    + "id integer primary key autoincrement," + "name text,"

                    + "people integer," + "region text" + ");");

        }

        public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {

        }

    }

}