ListView
in Android App

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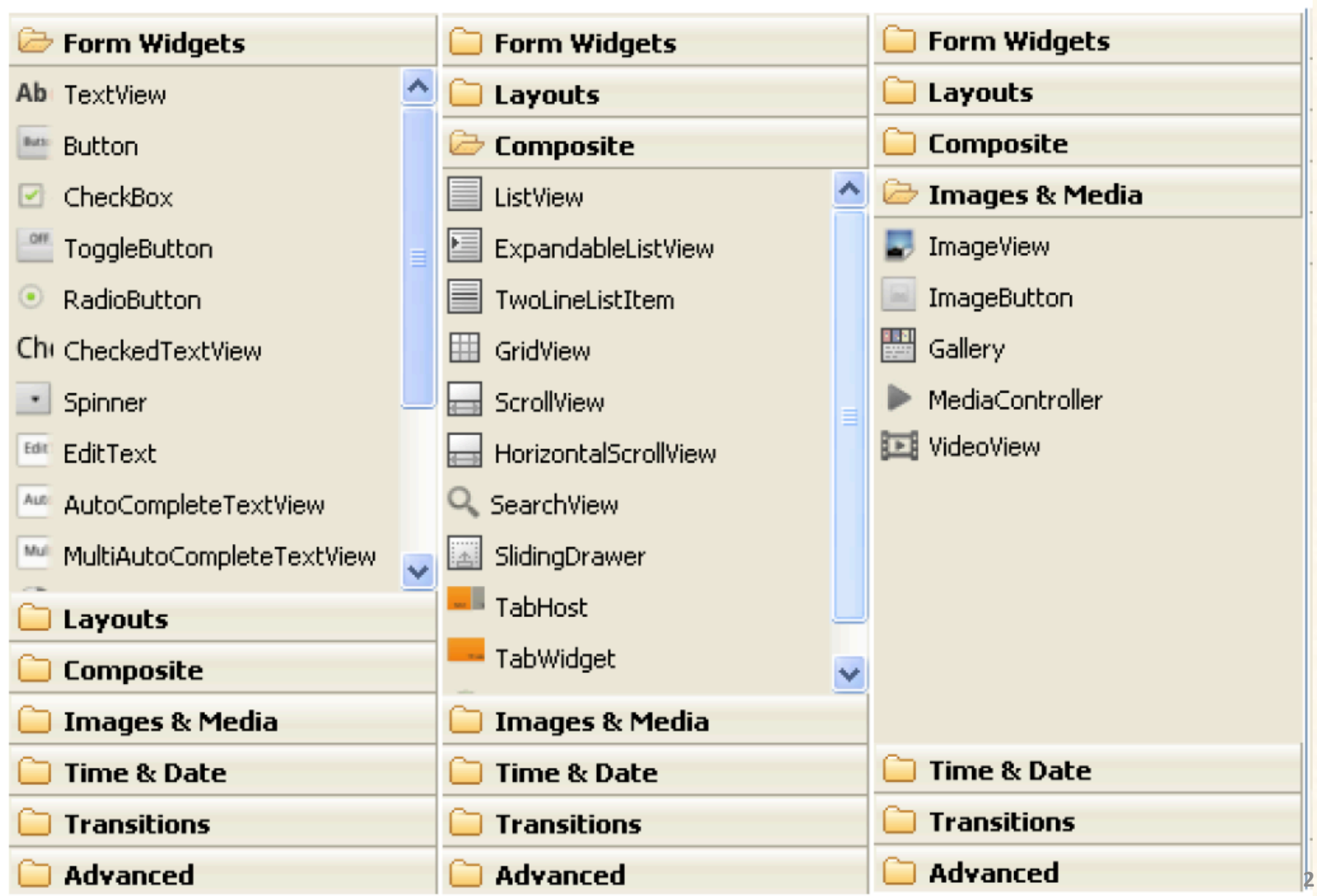
Views Hierarchie



Project: P0421_SimpleList

http://startandroid.ru/ru/uroki/vse-uroki-spiskom/82-urok42-spisok-listview.html

P0421_SimpleList 1

Layout.xml:

```
1  <?xml version="1.0" encoding="utf-8"?>
2  <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3      android:layout_width="fill_parent"
4      android:layout_height="fill_parent"
5      android:orientation="vertical" >
6
7      <TextView
8          android:layout_width="fill_parent"
9          android:layout_height="wrap_content"
10         android:text="@string/hello" >
11     </TextView>
12
13     <ListView
14         android:id="@+id/lvMain"
15         android:layout_width="match_parent"
16         android:layout_height="wrap_content" >
17     </ListView>
18
19 </LinearLayout>
```

P0421_SimpleList 2

```
8  public class MainActivity extends Activity {
9    String[] names = { "Karl-Heinz", "Linnéa", "Hans-Joachim",
10           "Anna-Lena", "Lisa-Marie", "Anna-Maria",
11           "Elias", "Luca", " Alexander", "Eva-Maria", "Kajetan" };
12
13   /** Called when the activity is first created. */
14   public void onCreate(Bundle savedInstanceState) {
15     super.onCreate(savedInstanceState);
16     setContentView(R.layout.main);
17     // Find View
18     ListView lvMain = (ListView) findViewById(R.id.lvMain);
19     // Create an Adapter
20     ArrayAdapter<String> adapter =
21             new ArrayAdapter<String>(this,
22                     android.R.layout.simple_list_item_1, names);
23     //ArrayAdapter<String> adapter =
24     //      new ArrayAdapter<String>(this, R.layout.my_list_item, names);
25     // Connect the ListView with the adapter
26     lvMain.setAdapter(adapter);
27   }
28 }
```

Ein Adapter für die Verbindung mit Daten

Ein Standard-View ist im Einsatz

P0421_SimpleList 3

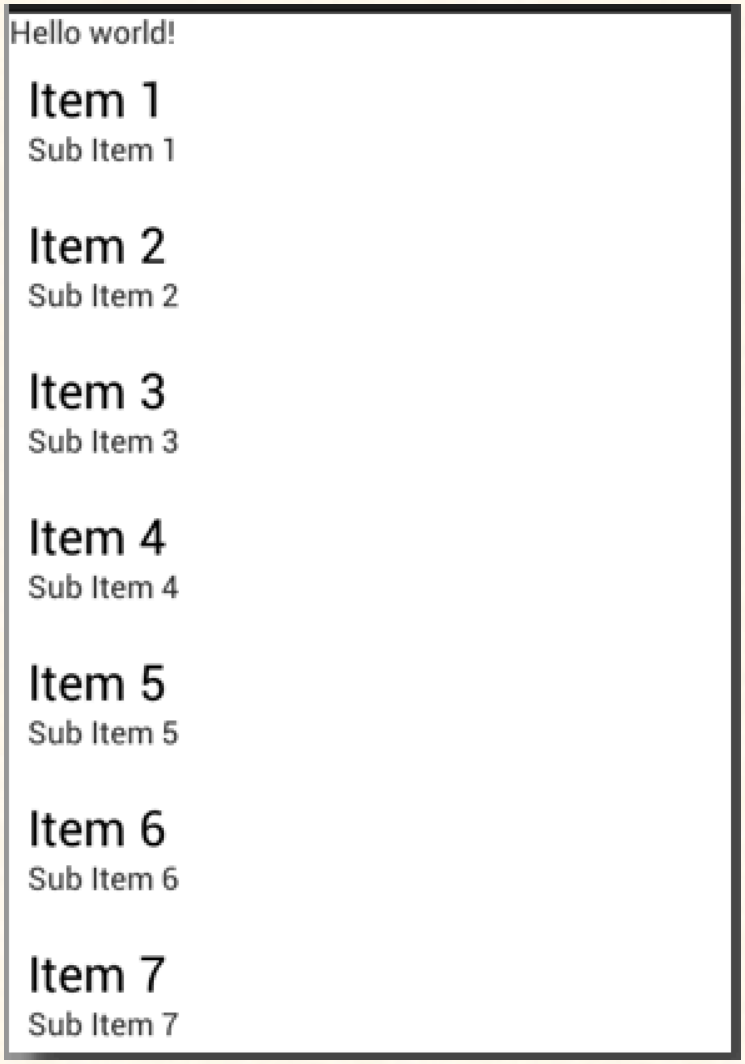
- Adapter:
  - Das Adapterkonzept folgt dem MVC- (Model-View-Controller-) Muster, bei dem die Datenhaltung (im Businessmodel) von der Anzeige (in den Views) bzw. dem Zugriff über den Controller entkoppelt ist.
  - Die listenförmigen Views, zu denen ListViews und Grids gehören, zeigen mehrere Einträge auf einmal und erlauben das Durchrollen durch die Einträge.

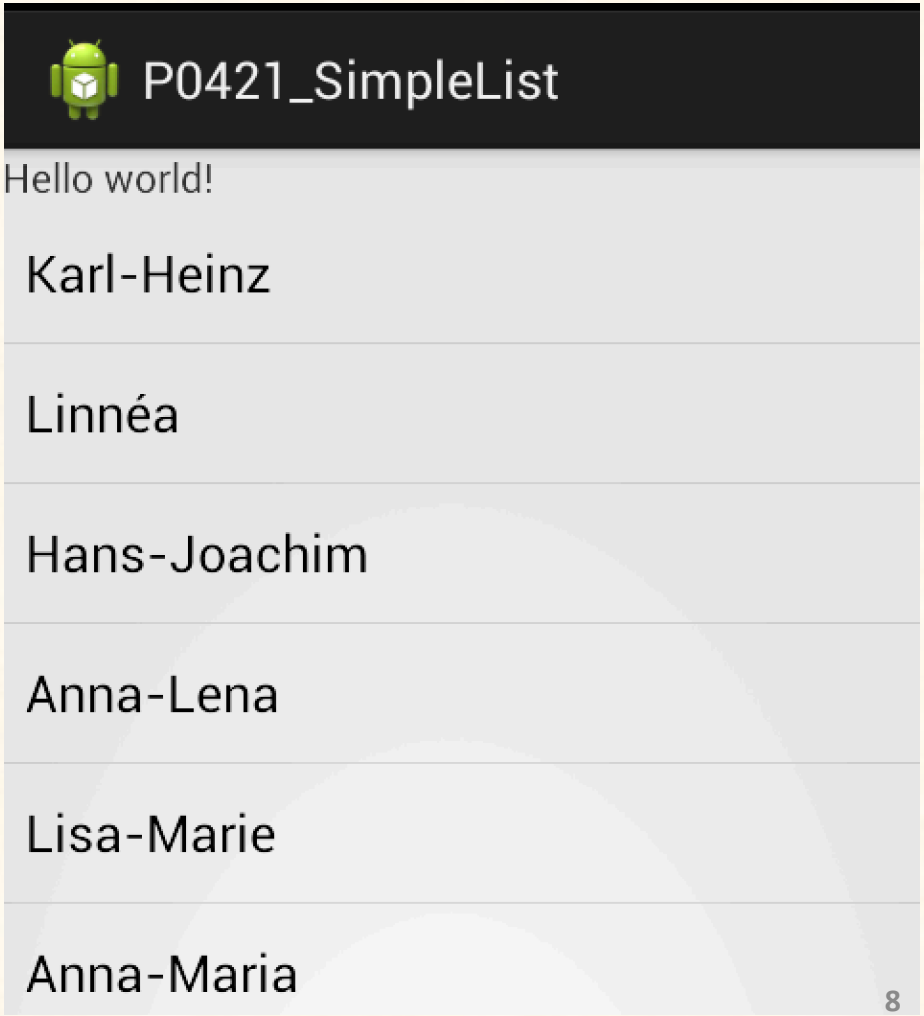
P0421_SimpleList 4

- Einfache Adapter arbeiten mit Arrays von Objekten oder mit Listen, die eine Map – ein assoziatives Array – enthalten können.
- Das Array transportiert in jeder Zeile des Arrays genau ein Objekt. Dieses Objekt wird dann in der Regel als Zeichenkette interpretiert und in der View dargestellt.
- Ein Array kann Objekte eines Typs enthalten oder auch Objekte unterschiedlichen Typs, wobei die Umwandlung in eine Zeichenkette durch das Überschreiben der Methode toString() des Objektes durchgeführt wird.

P0421_SimpleList 6

Vordefinierte ListView Layout

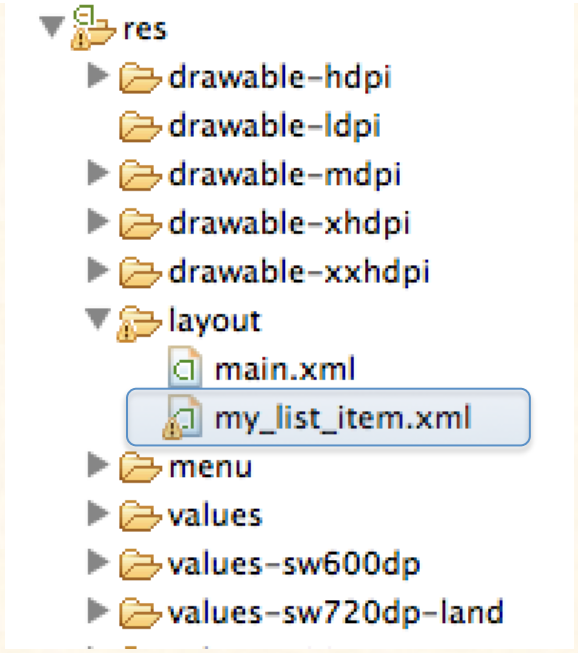




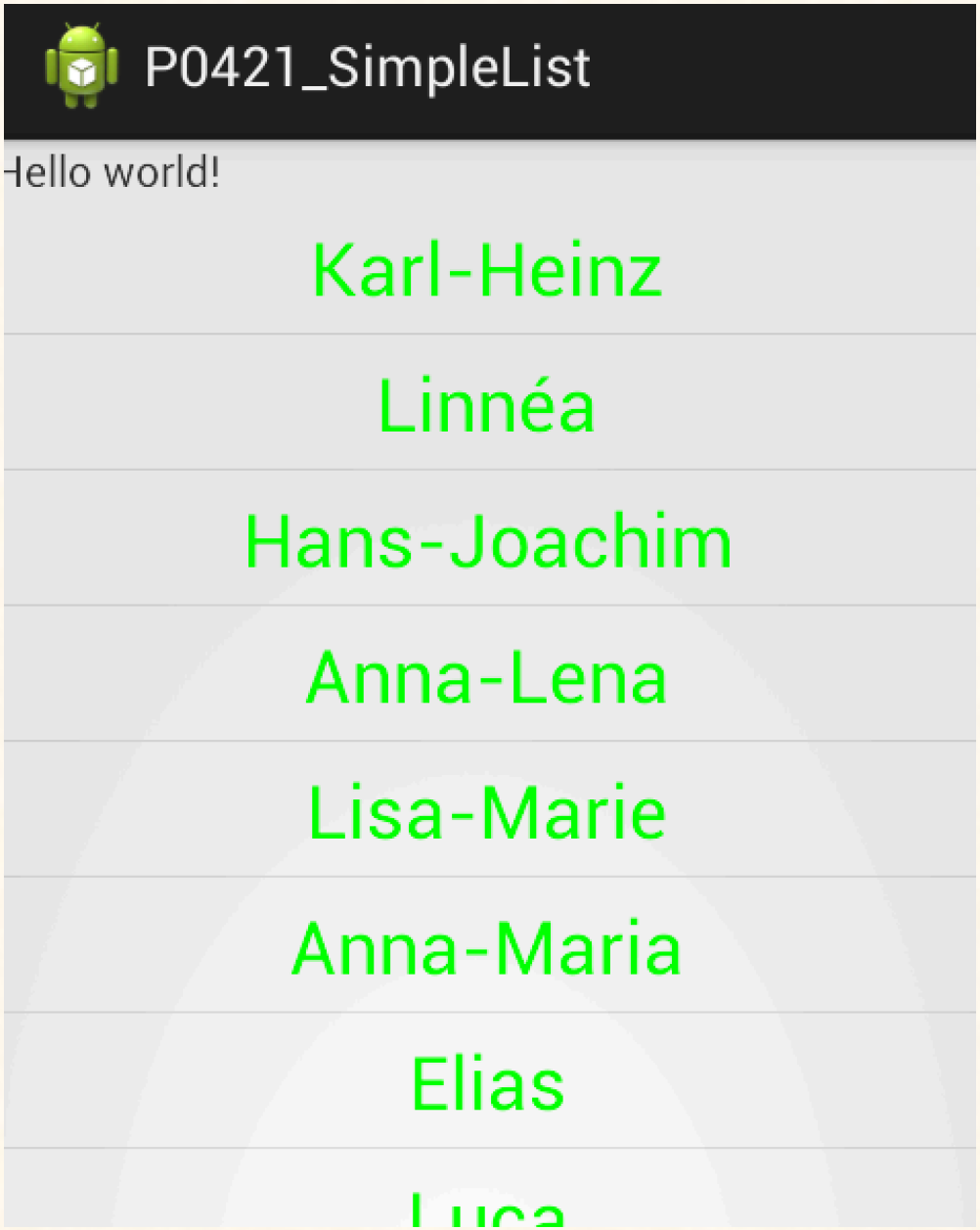
P0421_SimpleList 7

User-definierte ListView Layout

```
1  <?xml version="1.0" encoding="utf-8"?>
2  <TextView xmlns:android="http://schemas.android.com/apk/res/android"
3      android:id="@+id/textView1"
4      android:layout_width="match_parent"
5      android:layout_height="wrap_content"
6      android:gravity="center_horizontal"
7      android:padding="5dp"
8      android:text="TextView"
9      android:textColor="#00FF00"
10     android:textSize="24sp" >
11
12 </TextView>
```



P0421_SimpleList 8



Project: P0431_SimpleListChoice

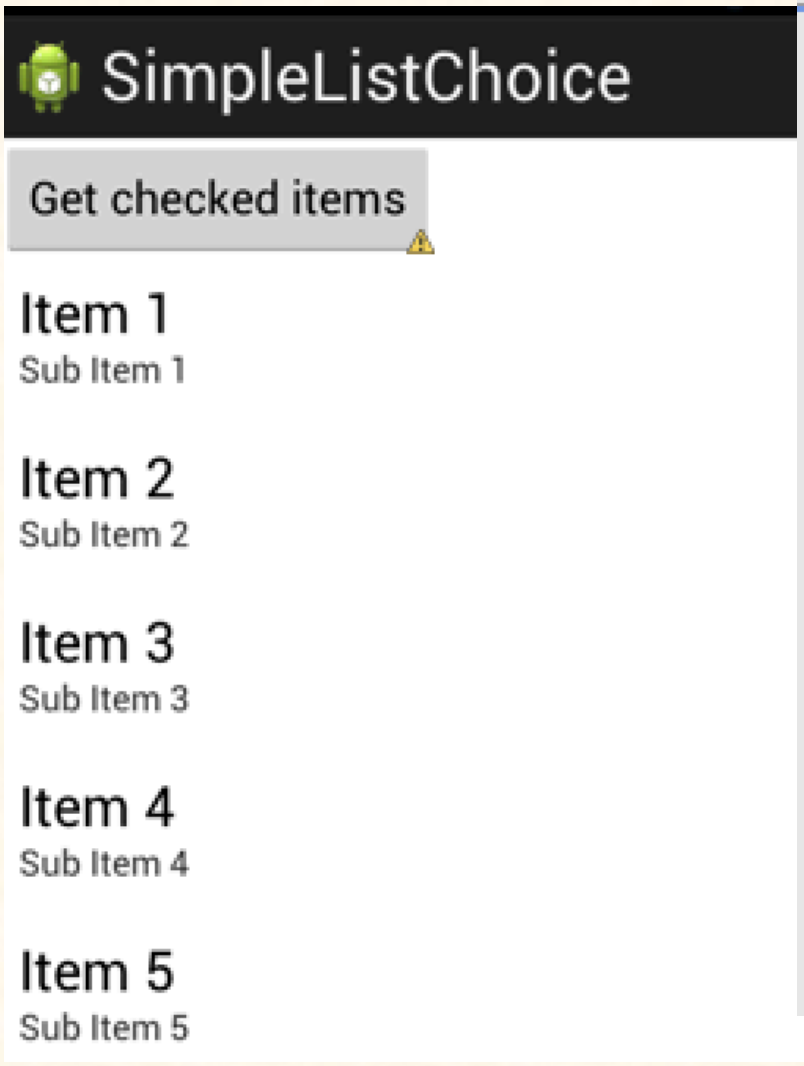
http://startandroid.ru/ru/uroki/vse-uroki-spiskom/83-urok-43-odinochnyj-i-mnozhestvennyj-vybor-v-list.html

P0431_SimpleListChoice 1

```
1  <?xml version="1.0" encoding="utf-8"?>
2  <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
3      android:layout_width="fill_parent"
4      android:layout_height="fill_parent"
5      android:orientation="vertical" >
6
7      <Button
8          android:id="@+id/btnChecked"
9          android:layout_width="wrap_content"
10         android:layout_height="wrap_content"
11         android:text="Get checked items" >
12     </Button>
13
14     <ListView
15         android:id="@+id/lvMain"
16         android:layout_width="match_parent"
17         android:layout_height="wrap_content" >
18     </ListView>
19
20 </LinearLayout>
```

P0431_SimpleListChoice 2

main.xml



strings.xml

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

    <string name="hello">Hello World, MainActivity!</string>
    <string name="app_name">SimpleListChoice</string>
    <string name="action_settings">Settings</string>

    <string-array name="names">
        <item>Karl-Heinz</item>
        <item>Linnéa</item>
        <item>Hans-Joachim</item>
        <item>Anna-Lena</item>
        <item>Lisa-Marie</item>
        <item>Anna-Maria</item>
        <item>Elias</item>
        <item>Luca</item>
        <item>Alexander</item>
        <item>Eva-Maria</item>
        <item>Kajetan</item>
    </string-array>

</resources>
```

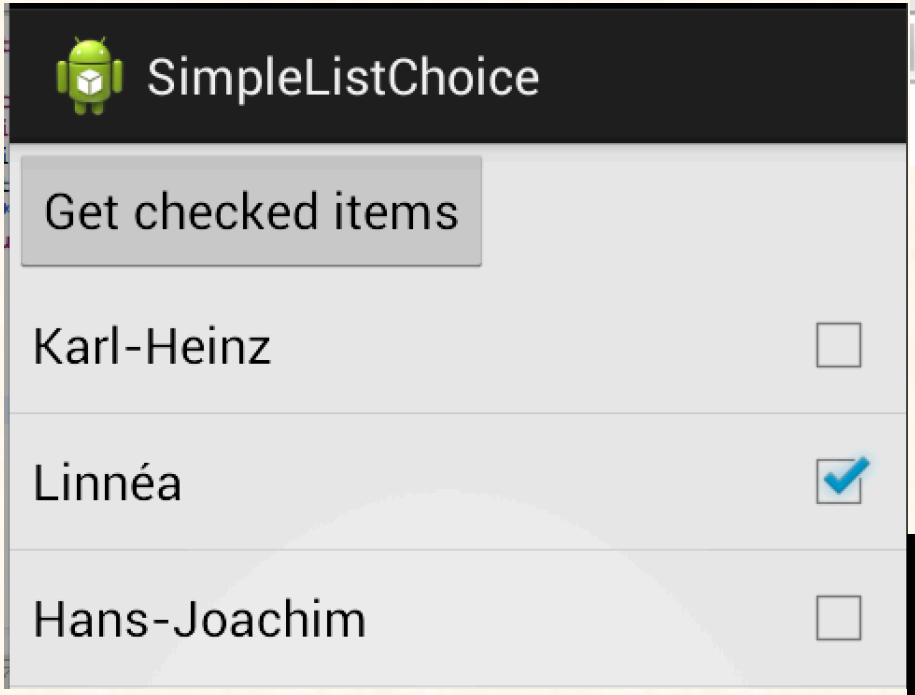
P0431_SimpleListChoice 3

```
13  public class MainActivity extends Activity implements OnClickListener {
14      final String LOG_TAG = "myLogs";
15      ListView lvMain;
16      String[] names;
17      /** Called when the activity is first created. */
18      public void onCreate(Bundle savedInstanceState) {
19          super.onCreate(savedInstanceState);
20          setContentView(R.layout.main);
21          lvMain = (ListView) findViewById(R.id.lvMain);
22          // устанавливаем режим выбора пунктов списка
23          lvMain.setChoiceMode(ListView.CHOICE_MODE_SINGLE);
24          //lvMain.setChoiceMode(ListView.CHOICE_MODE_MULTIPLE);
25          // Создаем адаптер, используя массив из файла ресурсов
26          ArrayAdapter<CharSequence> adapter = ArrayAdapter.createFromResource(
27                  this, R.array.names,
28                  //android.R.layout.simple_list_item_single_choice);
29                  android.R.layout.simple_list_item_multiple_choice);
30          lvMain.setAdapter(adapter);
31          Button btnChecked = (Button) findViewById(R.id.btnChecked);
32          btnChecked.setOnClickListener(this);
33          // получаем массив из файла ресурсов
34          names = getResources().getStringArray(R.array.names);
35      }
36
37      public void onClick(View arg0) {..
48  }
```

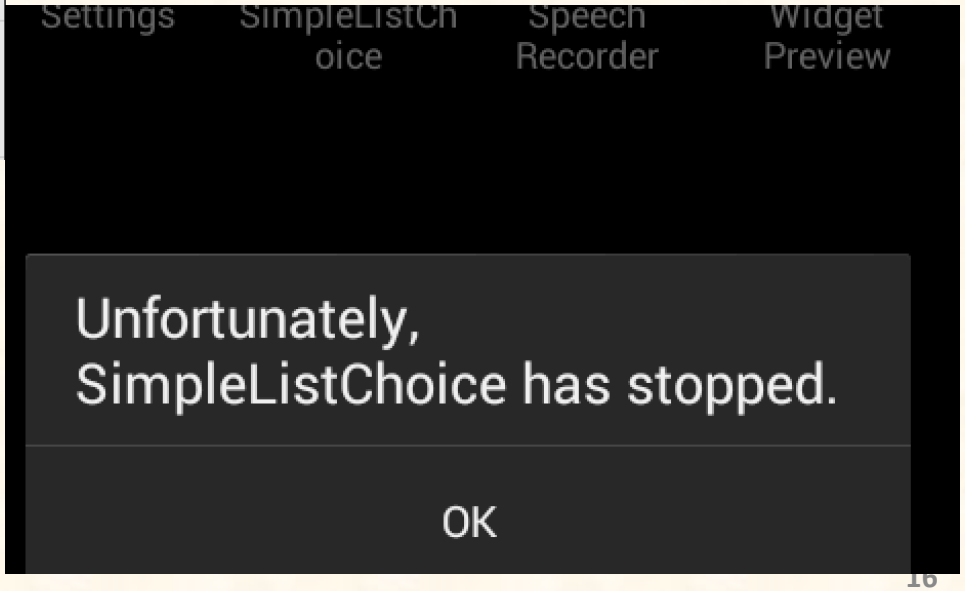
P0431_SimpleListChoice 4

```
13  public class MainActivity extends Activity implements OnClickListener {
14      final String LOG_TAG = "myLogs";
15      ListView lvMain;
16      String[] names;
17      /** Called when the activity is first created. */
18      public void onCreate(Bundle savedInstanceState) {..
36
37      public void onClick(View arg0) {
38          // пишем в лог выделенный элемент
39          Log.d(LOG_TAG, "checked: " + names[lvMain.getCheckedItemPosition()]);
40          //Log.d(LOG_TAG, "checked: ");
41          //SparseBooleanArray sbArray = lvMain.getCheckedItemPositions();
42          //for (int i = 0; i < sbArray.size(); i++) {
43          //  int key = sbArray.keyAt(i);
44          //  if (sbArray.get(key))
45          //    Log.d(LOG_TAG, names[key]);
46          //}
47      }
48  }
```

P0431_SimpleListChoice 5



Tag	Text
myLogs	checked: Linnéa



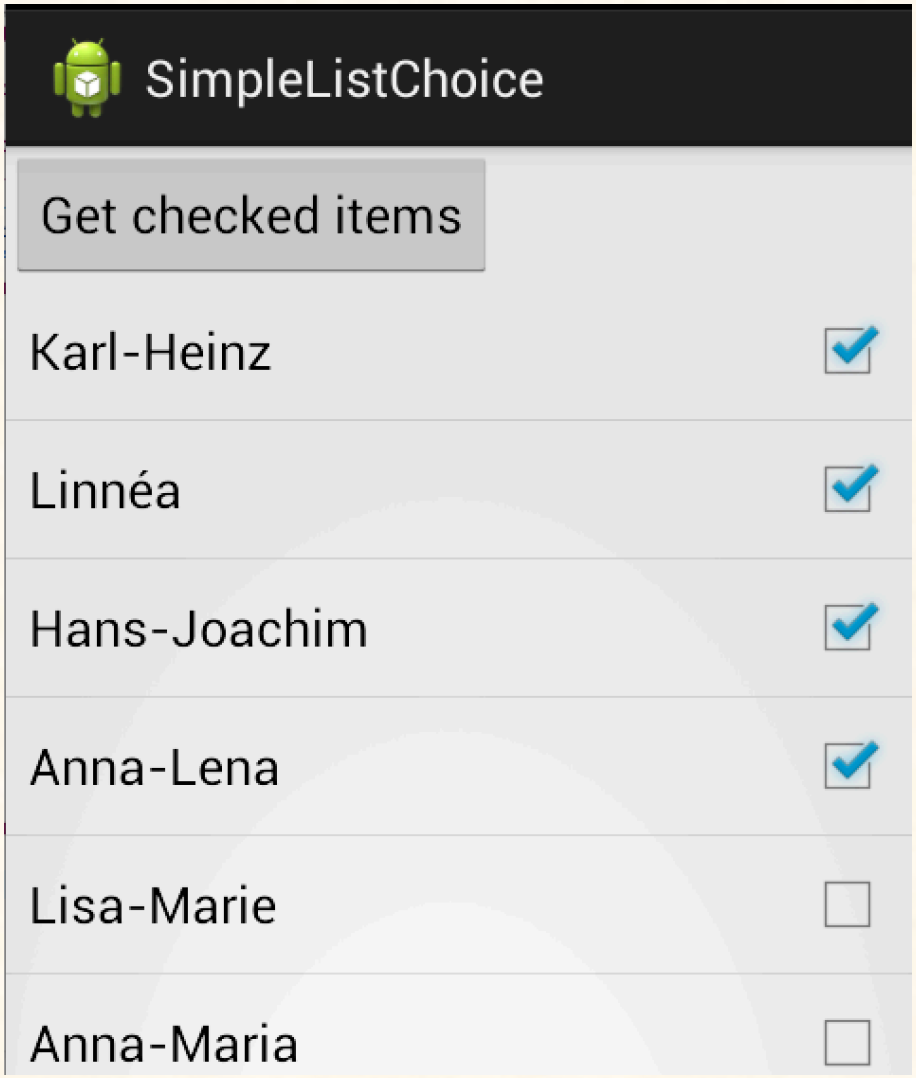
P0431_SimpleListChoice 6

```
13  public class MainActivity extends Activity implements OnClickListener {
14      final String LOG_TAG = "myLogs";
15      ListView lvMain;
16      String[] names;
17      /** Called when the activity is first created. */
18      public void onCreate(Bundle savedInstanceState) {
19          super.onCreate(savedInstanceState);
20          setContentView(R.layout.main);
21          lvMain = (ListView) findViewById(R.id.lvMain);
22          // устанавливаем режим выбора пунктов списка
23          //lvMain.setChoiceMode(ListView.CHOICE_MODE_SINGLE);
24          lvMain.setChoiceMode(ListView.CHOICE_MODE_MULTIPLE);
25          // Создаем адаптер, используя массив из файла ресурсов
26          ArrayAdapter<CharSequence> adapter = ArrayAdapter.createFromResource(
27                  this, R.array.names,
28                  //android.R.layout.simple_list_item_single_choice);
29                  android.R.layout.simple_list_item_multiple_choice);
30          lvMain.setAdapter(adapter);
31          Button btnChecked = (Button) findViewById(R.id.btnChecked);
32          btnChecked.setOnClickListener(this);
33          // получаем массив из файла ресурсов
34          names = getResources().getStringArray(R.array.names);
35      }
36
37      public void onClick(View arg0) {
48  }
```

P0431_SimpleListChoice 7

```
13  public class MainActivity extends Activity implements OnClickListener {
14      final String LOG_TAG = "myLogs";
15      ListView lvMain;
16      String[] names;
17      /** Called when the activity is first created. */
18      public void onCreate(Bundle savedInstanceState) {
36
37      public void onClick(View arg0) {
38          // пишем в лог выделенный элемент
39          //Log.d(LOG_TAG, "checked: " + names[lvMain.getCheckedItemPosition()]);
40          Log.d(LOG_TAG, "checked: ");
41          SparseBooleanArray sbArray = lvMain.getCheckedItemPositions();
42          for (int i = 0; i < sbArray.size(); i++) {
43            int key = sbArray.keyAt(i);
44            if (sbArray.get(key))
45              Log.d(LOG_TAG, names[key]);
46          }
47      }
48  }
49
```

P0431_SimpleListChoice 8



Tag	Text
myLogs	checked:
myLogs	Karl-Heinz
myLogs	Linnéa
myLogs	Hans-Joachim
myLogs	Anna-Lena

Project: P0441_SimpleListEvents

http://startandroid.ru/ru/uroki/vse-uroki-spiskom/85-urok-44-sobytija-v-listview.html

P0441_SimpleListEvents 1

```xml
<?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" >

    <ListView
        android:id="@+id/lvMain"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" >
    </ListView>

</LinearLayout>
```


```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <string name="app_name">P0441_SimpleListEvents</string>
    <string name="action_settings">Settings</string>
    <string name="hello_world">Hello world!</string>
    <string-array name="names">
        <item>Karl-Heinz</item>
        <item>Linnéa</item>
        <item>Hans-Joachim</item>
        <item>Anna-Lena</item>
        <item>Lisa-Marie</item>
        <item>Anna-Maria</item>
        <item>Elias</item>
        <item>Luca</item>
        <item>Alexander</item>
        <item>Eva-Maria</item>
        <item>Kajetan</item>
    </string-array>
</resources>
```

P0441_SimpleListEvents 2

```
15  public class MainActivity extends Activity {
16    final String LOG_TAG = "myLogs";
17    ListView lvMain;
18    /** Called when the activity is first created. */
19    public void onCreate(Bundle savedInstanceState) {
20      super.onCreate(savedInstanceState);
21      setContentView(R.layout.main);
22      lvMain = (ListView) findViewById(R.id.lvMain);
23      ArrayAdapter<CharSequence> adapter = ArrayAdapter.createFromResource(
24          this, R.array.names, android.R.layout.simple_list_item_1);
25      lvMain.setAdapter(adapter);
26      lvMain.setOnItemClickListener(new OnItemClickListener() {
27        public void onItemClick(AdapterView<?> parent, View view,
28            int position, long id) {
29          Log.d(LOG_TAG, "itemClick: position = " + position + ", id = "
30              + id);
31        }
32      });
33      lvMain.setOnItemSelectedListener(new OnItemSelectedListener() {..
42      lvMain.setOnScrollListener(new OnScrollListener() {..
53    }
54  }
```

P0441_SimpleListEvents 3

```
33    lvMain.setOnItemSelectedListener(new OnItemSelectedListener() {
34      public void onItemSelected(AdapterView<?> parent, View view,
35          int position, long id) {
36        Log.d(LOG_TAG, "itemSelect: position = " + position + ", id = " + id);
37      }
38      public void onNothingSelected(AdapterView<?> parent) {
39        Log.d(LOG_TAG, "itemSelect: nothing");
40      }
41    });
42    lvMain.setOnScrollListener(new OnScrollListener() {
43      public void onScrollStateChanged(AbsListView view, int scrollState) {
44        Log.d(LOG_TAG, "scrollState = " + scrollState);
45      }
46      public void onScroll(AbsListView view, int firstVisibleItem,
47          int visibleItemCount, int totalItemCount) {
48        Log.d(LOG_TAG, "scroll: firstVisibleItem = " + firstVisibleItem
49            + ", visibleItemCount" + visibleItemCount
50            + ", totalItemCount" + totalItemCount);
51      }
52    });
```

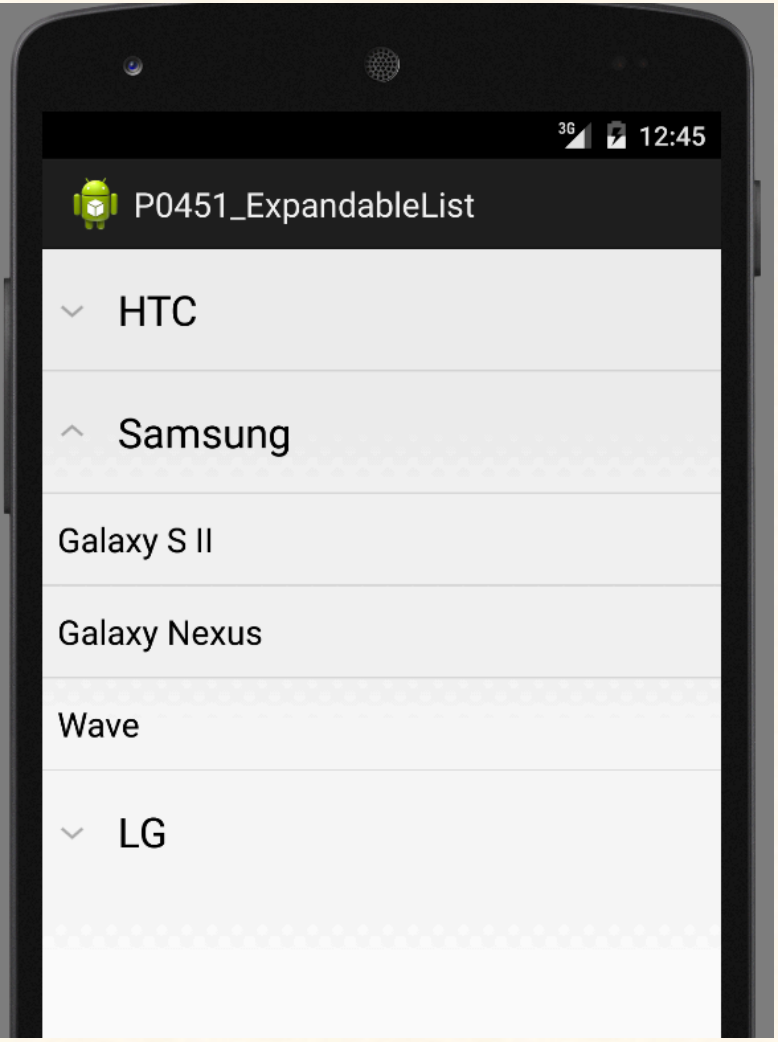
P0441_SimpleListEvents 4

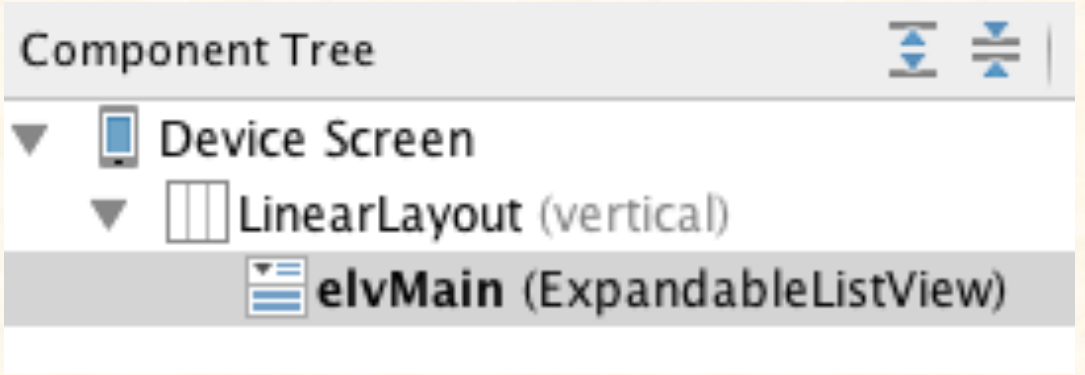
```
myLogs   scroll: firstVisibleItem = 0, visibleItemCount11, totalItemCount11
myLogs   scroll: firstVisibleItem = 0, visibleItemCount11, totalItemCount11
myLogs   scroll: firstVisibleItem = 0, visibleItemCount11, totalItemCount11
myLogs   scroll: firstVisibleItem = 0, visibleItemCount11, totalItemCount11
myLogs   scrollState = 0
```

```
myLogs   itemClick: position = 5, id = 5
```

P0451_ExpandableList

- Project Beispiel: Expandable List View





P0451_ExpandableList

```
12  ublic class MainActivity extends Activity {
13      // Group names (Company)
14      String[] groups = new String[] {"HTC", "Samsung", "LG"};
15      // Element names (Phones)
16      String[] phonesHTC = new String[] {"HTC One M8s", "HTC One mini 2",
17              "HTC Desire 620", "HTC Desire EYE"};
18      String[] phonesSams = new String[] {"Galaxy Note5", "Galaxy On7", "Galaxy S6"};
19      String[] phonesLG = new String[] {"LG Y70 Spirit", "LG Pada", "LG Leon", "LG Joy"};
20      // Group collection
21      ArrayList<Map<String, String>> groupData;
22      // Component collection for a single group
23      ArrayList<Map<String, String>> childDataItem;
24      // common collection for element collections
25      ArrayList<ArrayList<Map<String, String>>> childData;
26      // result must be: childData = ArrayList<childDataItem>
27      // attribute list for a group or an element
28      Map<String, String> m;
29      ExpandableListView elvMain;
```

Map

A Map is a data structure consisting of a set of keys and values in which each key is mapped to a single value. The class of the objects used as keys is declared when the Map is declared, as is the class of the corresponding values.

ArrayList is an implementation of List, backed by an array. All optional operations including adding, removing, and replacing elements are supported.
All elements are permitted, including null.

P0451_ExpandableList

```
30      /** Called when the activity is first created. */
31      public void onCreate(Bundle savedInstanceState) {
32          super.onCreate(savedInstanceState);
33          setContentView(R.layout.main);
34          // fill a group collection from a group name array
35          groupData = new ArrayList<Map<String, String>>();
36          for (String group : groups) {
37            // fill an attribute list for each group
38            m = new HashMap<String, String>();
39              m.put("groupName", group); // company name
40              groupData.add(m);
41          }
42          // group attribute list for read
43          String groupFrom[] = new String[] {"groupName"};
44          // ID view-element list for a group attributes
45          int groupTo[] = new int[] {android.R.id.text1};
46          // a collection of element collections
47          childData = new ArrayList<ArrayList<Map<String, String>>>();
48          // create a first-group element collection
49          childDataItem = new ArrayList<Map<String, String>>();
50          // fill an attribute list for each element
51          for (String phone : phonesHTC) {
52            m = new HashMap<String, String>();
53              m.put("phoneName", phone); // phone name
54              childDataItem.add(m);
55          }
```

P0451_ExpandableList

```
56          // add the collection to the collection of collections
57          childData.add(childDataItem);
58          // create the second group collection of elements
59          childDataItem = new ArrayList<Map<String, String>>();
60          for (String phone : phonesSams) {
61            m = new HashMap<String, String>();
62              m.put("phoneName", phone);
63              childDataItem.add(m);
64          }
65          childData.add(childDataItem);
66          // create the third group collection of elements
67          childDataItem = new ArrayList<Map<String, String>>();
68          for (String phone : phonesLG) {
69            m = new HashMap<String, String>();
70              m.put("phoneName", phone);
71              childDataItem.add(m);
72          }
73          childData.add(childDataItem);
```

P0451_ExpandableList

```
79          SimpleExpandableListAdapter adapter = new SimpleExpandableListAdapter(
80              this,
81              groupData,
82              android.R.layout.simple_expandable_list_item_1,
83              groupFrom,
84              groupTo,
85              childData,
86              android.R.layout.simple_list_item_1,
87              childFrom,
88              childTo);
89          elvMain = (ExpandableListView) findViewById(R.id.elvMain);
90          elvMain.setAdapter(adapter);
91      }
92  }
```

SimpleExpandableListAdapter

extends BaseExpandableListAdapter

An easy adapter to map static data to group and child views defined in an XML file. You can separately specify the data backing the group as a List of Maps. Each entry in the ArrayList corresponds to one group in the expandable list. The Maps contain the data for each row.

P0451_ExpandableList

- Ein Tip: ein Event-Listener mit

```
public boolean onChildClick(android.widget.ExpandableListView parent,
        View v, int groupPosition, int childPosition, long id) {

            String yourText = v.getText().toString();  // Get the text from the view and put it in a string
            // use string as you need to
}
```

ListView

- An advanced Tutorial:
  Using lists in Android (ListView) – Tutorial
  http://www.vogella.com/tutorials/AndroidListView/article.html

Table of Contents

ListView

Fragen?