



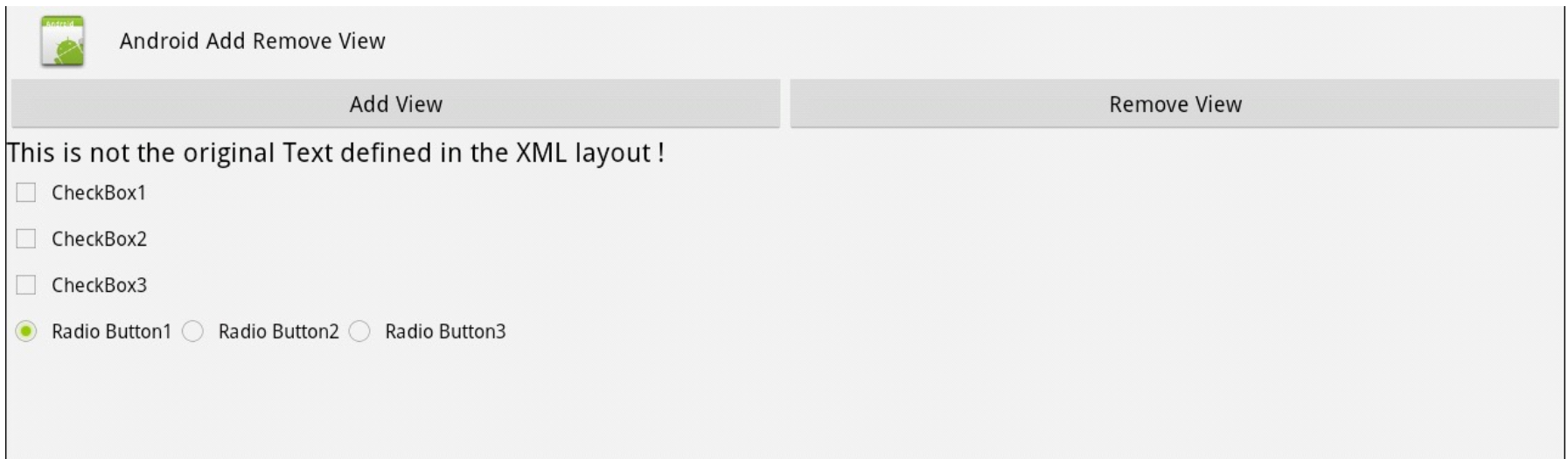
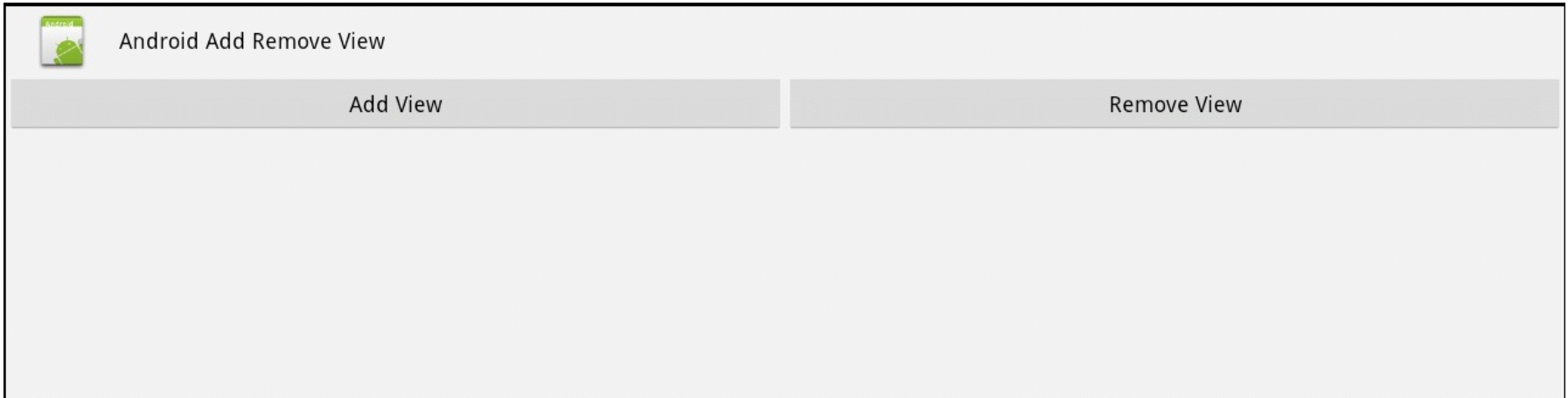
# List-Based Widgets (Continued)

# ListView Widget

- **LayoutInflater**
- Advance custom-made ListView
  - ArrayAdapter
  - BaseAdapter
- Spinner
- ExpandableListView

# LayoutInflater

- The LayoutInflater class converts an XML layout specification into an actual tree of View objects.



# LayoutInflater

```
<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout  
    ....  
    android:id="@+id/root_view">  
</LinearLayout>
```

# LayoutInflater

```
ViewGroup root =  
    (ViewGroup) findViewById(R.id.root_view) ;  
LayoutInflater inflater = getLayoutInflater() ;  
inflater.inflate(R.layout.child_view, root) ;
```

# LayoutInflater

```
ViewGroup root =  
    (ViewGroup) findViewById(R.id.root_view) ;  
  
LayoutInflater inflater = getLayoutInflater() ;  
View childView =  
    inflater.inflate(R.layout.child_view, null) ;  
  
root.addView(childView) ;
```

# LayoutInflater

**Profile**

☒ Vertical ☐ Horizontal

This is child view

This is child view

ADD VIEW

**Profile**

☐ Vertical ☒ Horizontal

This is child viewThis is child view

ADD VIEW

# ListView Widget

- LayoutInflater
- **Advance custom-made ListView**
  - **ArrayAdapter**
  - **BaseAdapter**
- Spinner
- ExpandableListView



# Custom-made List-Based Widgets


## (Create your own Data Adapter class )

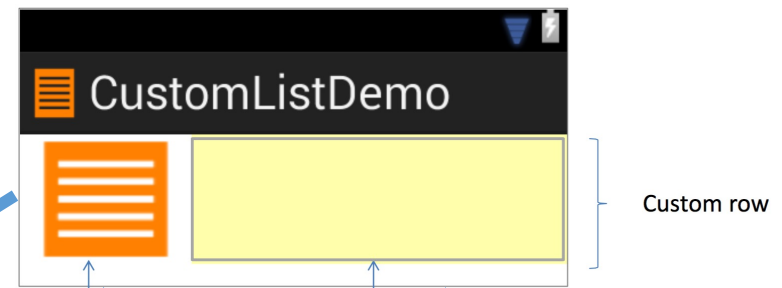
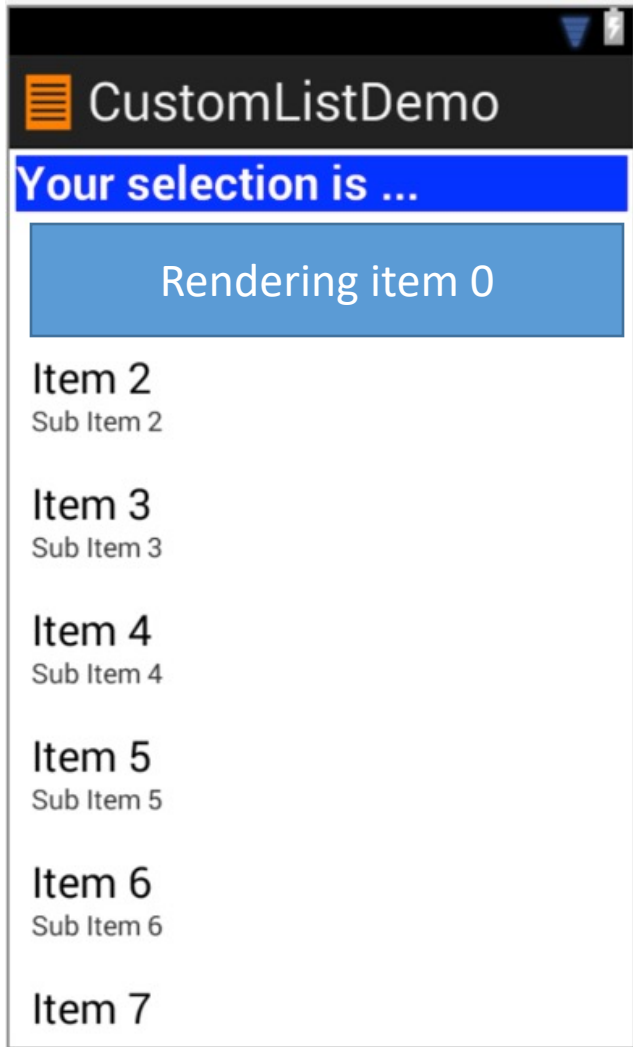
In order to customize a Data Adapter, you need to:

1. Create a class extending the concrete **ArrayAdapter** class
2. Override its **getView()**, and
3. Construct (inflate) your rows yourself.

```
public class MyCustomAdapter extends ArrayAdapter{  
    // class variables go here ...  
  
    public MyCustomAdapter(...) { }  
  
    public View getView(...) { }  
  
} //MyCustomAdapter
```

For each data element supplied by the adapter, the `getView()` method returns its corresponding 'visible' View.





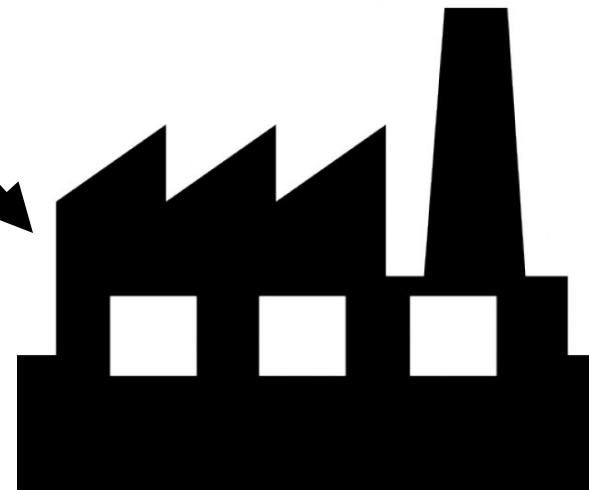
Icon

Text

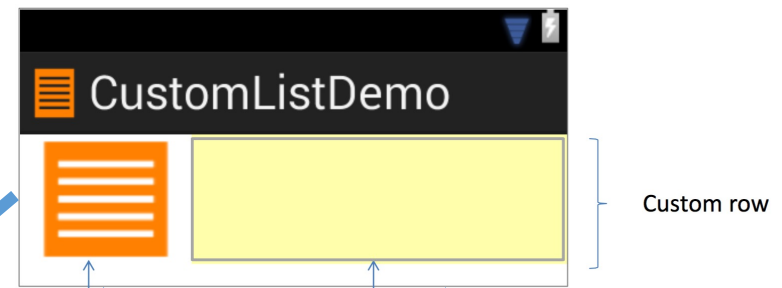
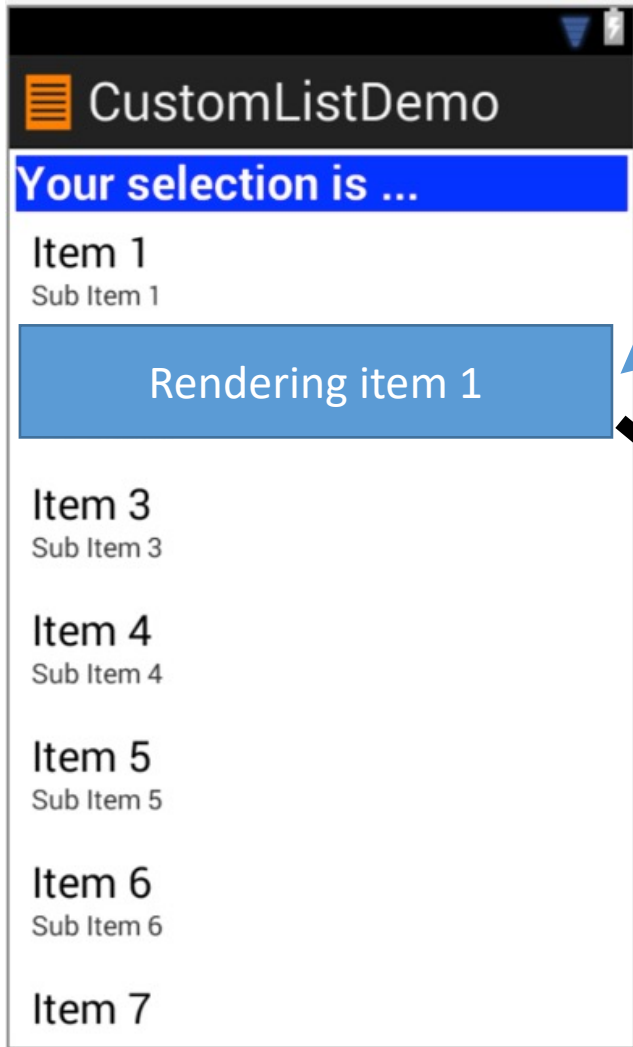
Replace actual icon

Replace actual text

Call **getView(...)**  
Position = 0



CustomAdapter



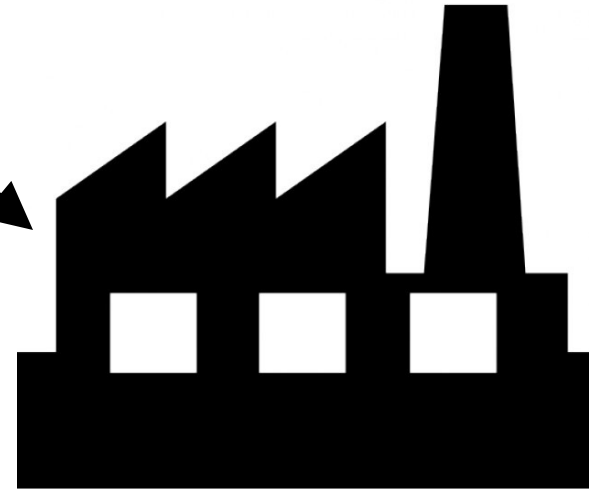
Icon

Text

Replace actual icon

Replace actual text

Call **getView(...)**  
Position = 1



CustomAdapter

## Custom-made List-Based Widgets (Create your own Data Adapter class )

```
private class MyCustomAdapter extends  
                ArrayAdapter<String> {  
    public MyCustomAdapter(...) { ... }  
  
    @override  
    public View getView(...) { ... }  
}
```

```
adapter = new MyCustomAdapter(  
            this,  
            R.layout.my_list_item,  
            data);
```

```
listView.setAdapter(adapter);
```

# Custom-made List-Based Widgets

## (Inline override getView method)

```
adapter = new ArrayAdapter<String>(
    this,
    R.layout.my_list_item,
    data) {

    @override
    public View getView(...) { ... };

};

listView.setAdapter(adapter);
```

# ListView Widget

- LayoutInflater
- **Advance custom-made ListView**
  - ArrayAdapter
  - **BaseAdapter**
- Spinner
- ExpandableListView

## Custom-made List-Based Widgets (BaseAdapter class)

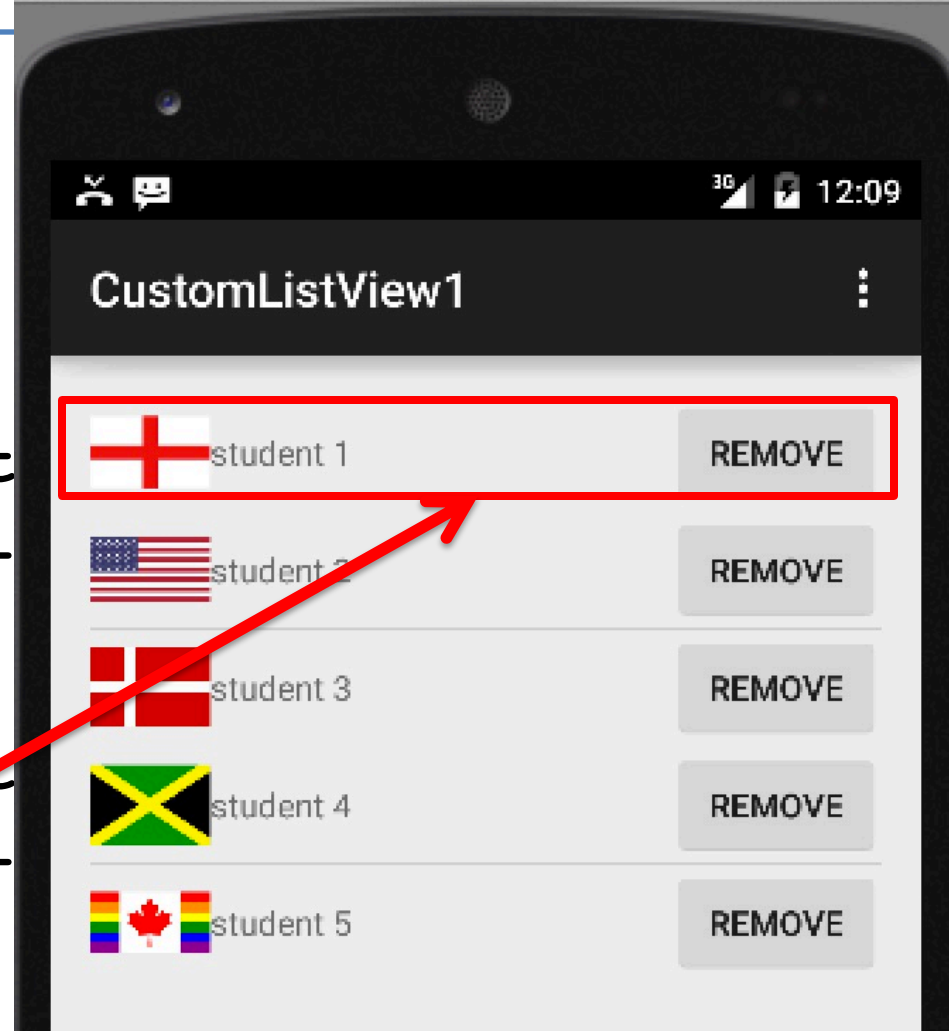
```
public class MyAdapter extends BaseAdapter {  
    public int getCount() {    }  
    public Object getItem(...) {    }  
    public long getItemId(...) {    }  
    public View getView(...) {    }  
}
```

```
@Override
public int getCount() {
    return data.size();
}

@Override
public Object getItem(int
    return data.get(positi
}

@Override
public long getItemId(int
    return data.get(positi
}

@Override
public View getView(...) {
    ...
}
```





# BaseAdapter: getView(...)

```
@Override
public View getView(int position,
                    View convertView,
                    ViewGroup parent) {
    TextView textView;

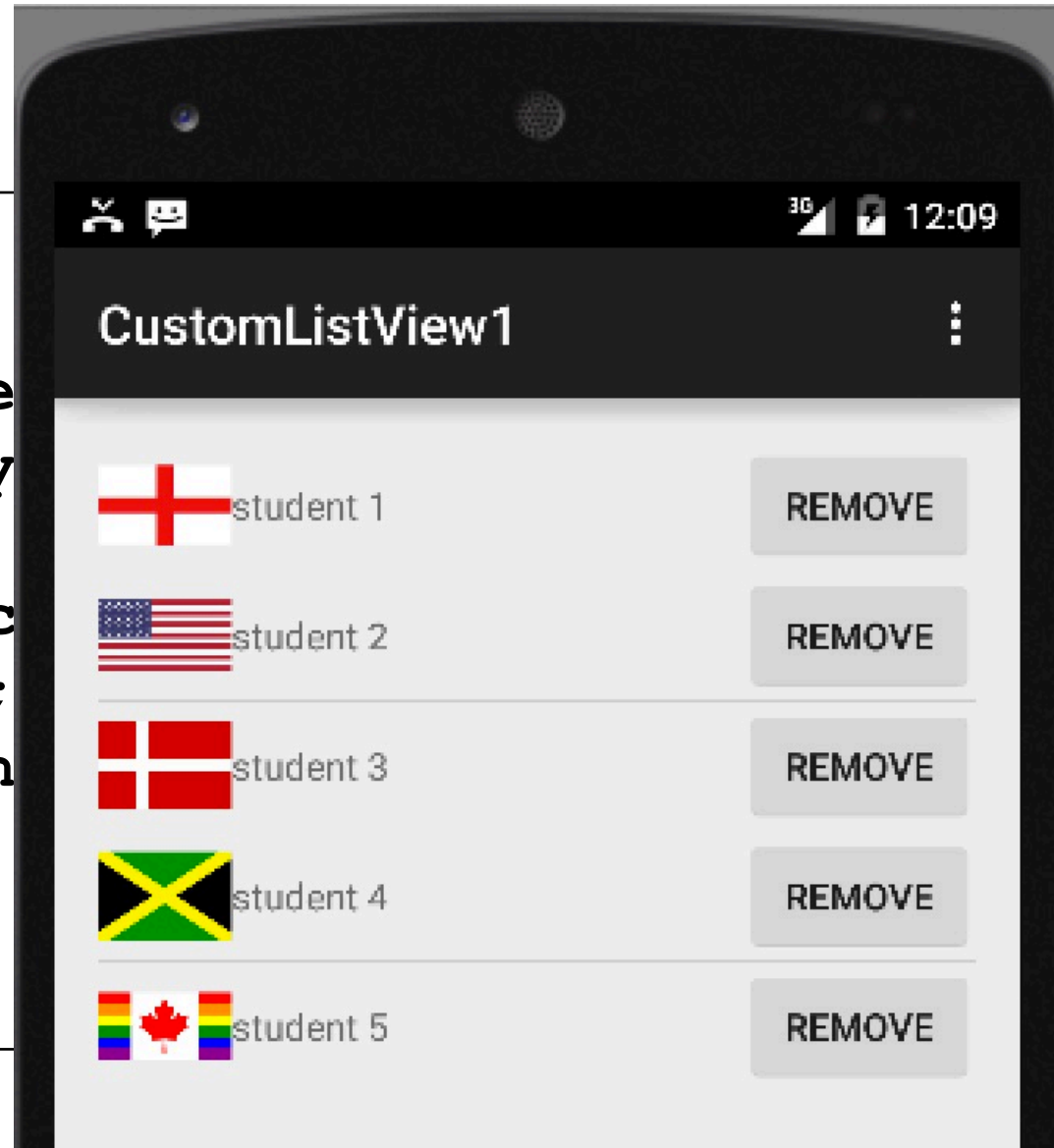
    LayoutInflater inflater =
        LayoutInflater.from(context);
    View itemView = inflater.inflate(
        R.layout.my_list_item, null);

    //do something with itemView

    return itemView;
}
```

## Example 01

```
public class Student
{
    private int id;
    private String name;
    private int country;
    public Student(int id, String name, int country)
    {
        this.id = id;
        this.name = name;
        this.country = country;
    }
}
```



## Example 02



# ListView Widget

- LayoutInflater
- Advance custom-made ListView
  - ArrayAdapter
  - BaseAdapter
- **Spinner**
  - **Simple Spinner**
  - Custom Spinner 1
  - Custom Spinner 2
- ExpandableListView

# Spinner

## (Simple Spinner)

```
public class SimpleSpinner extends Activity {  
    private Spinner spinner;  
    private ArrayList<String> dataProvider;  
    private ArrayAdapter adapter;  
    ...  
}
```

# Spinner

## (Simple Spinner)

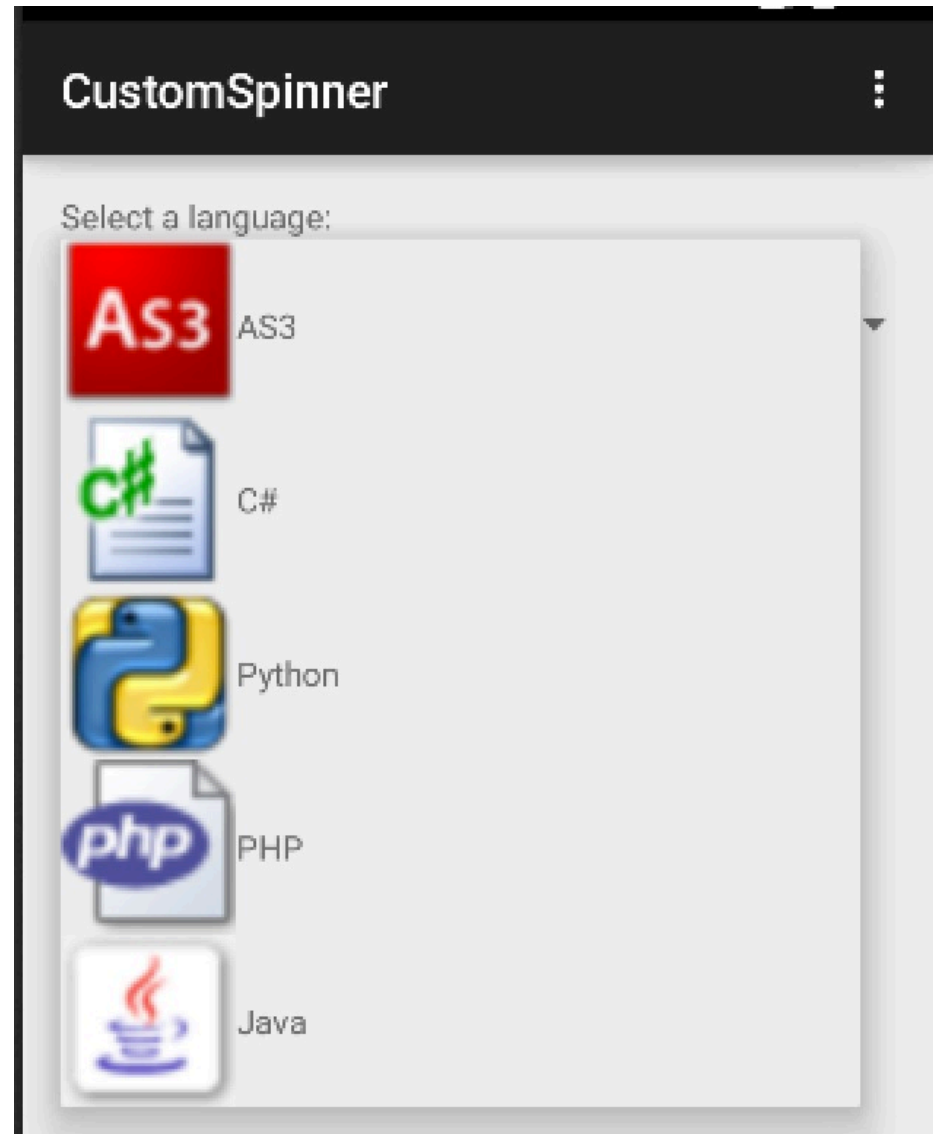
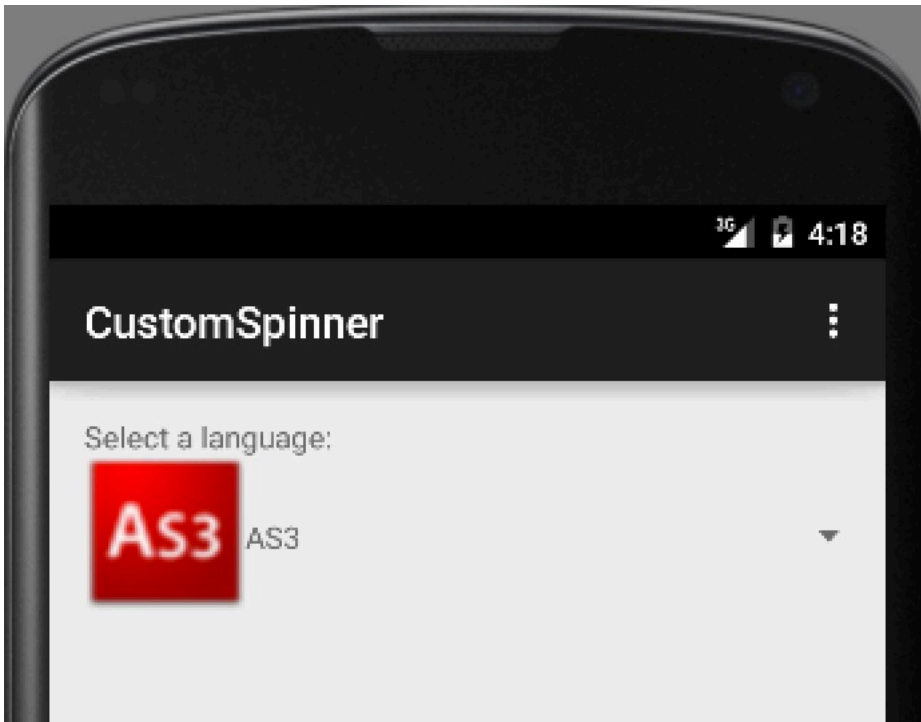
```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_simple_spinner);

    dataProvider = new ArrayList<>(Arrays.asList(
        "Ha Noi", "Ho Chi Minh", "Binh Duong",
        "Da Nang", "Quang Ngai", "Hai Phong",
        "Binh Phuoc"));
    spinner = (Spinner) findViewById(R.id.spinner);
    adapter = new ArrayAdapter(this,
        android.R.layout.simple_spinner_item,
        dataProvider);
    spinner.setAdapter(adapter);
}
```

# ListView Widget












- LayoutInflater
- Advance custom-made ListView
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  - Custom Spinner 2
- ExpandableListView

# Custom Spinner 1





# Custom Spinner 1

- ▼  res
  - ▼  drawable
    - ▶  ic\_launcher.png (4)
      -  icon\_as3.png
      -  icon\_csharp.png
      -  icon\_java.png
      -  icon\_php.png
      -  icon\_python.png
  - ▶  layout
  - ▶  menu
  - ▶  values

# Custom Spinner 1

```
public class LanguageInfo {  
    private String name;  
    private int icon;  
    public LanguageInfo(String name, int icon) {  
        this.name = name;  
        this.icon = icon;  
    }  
    ... Getter/Setter here ...  
    @Override  
    public String toString() {  
        return name;  
    }  
}
```

# Custom Spinner 1

## (CustomSpinner.java)

```
public class CustomSpinner
    extends ActionBarActivity {
    private Spinner spinner;
    private ArrayList<LanguageInfo> dataProvider;
    private CustomAdapter adapter;
    ...
}
```

# Custom Spinner 1

## (onCreate – CustomSpinner.java)

```
dataProvider = new ArrayList<>(Arrays.asList(  
    new LanguageInfo("AS3",  
        R.drawable.icon_as3) ,  
    new LanguageInfo("C#",  
        R.drawable.icon_csharp) ,  
    new LanguageInfo("Python",  
        R.drawable.icon_python) ,  
    new LanguageInfo("PHP",  
        R.drawable.icon_php) ,  
    new LanguageInfo("Java",  
        R.drawable.icon_java)  
));  
spinner = (Spinner) findViewById(R.id.spinner);  
adapter = new CustomAdapter(dataProvider, this);  
spinner.setAdapter(adapter);
```

# Custom Spinner 1

## (CustomAdapter.java)

```
@Override
public View getView(int position,
                    View convertView, ViewGroup parent) {
    LayoutInflater inflater =
        LayoutInflater.from(context);
    View row = inflater.inflate(
        R.layout.custom_spinner_item_1, null);
    LanguageInfo info = dataProvider.get(position);
    ImageView imageView = (ImageView)
        row.findViewById(R.id.imagePlaceholder);
    TextView textView = (TextView)
        row.findViewById(R.id.textPlaceholder);
    imageView.setImageResource(info.getIcon());
    textView.setText(info.getName());
    return row;
}
```

# Custom Spinner 1

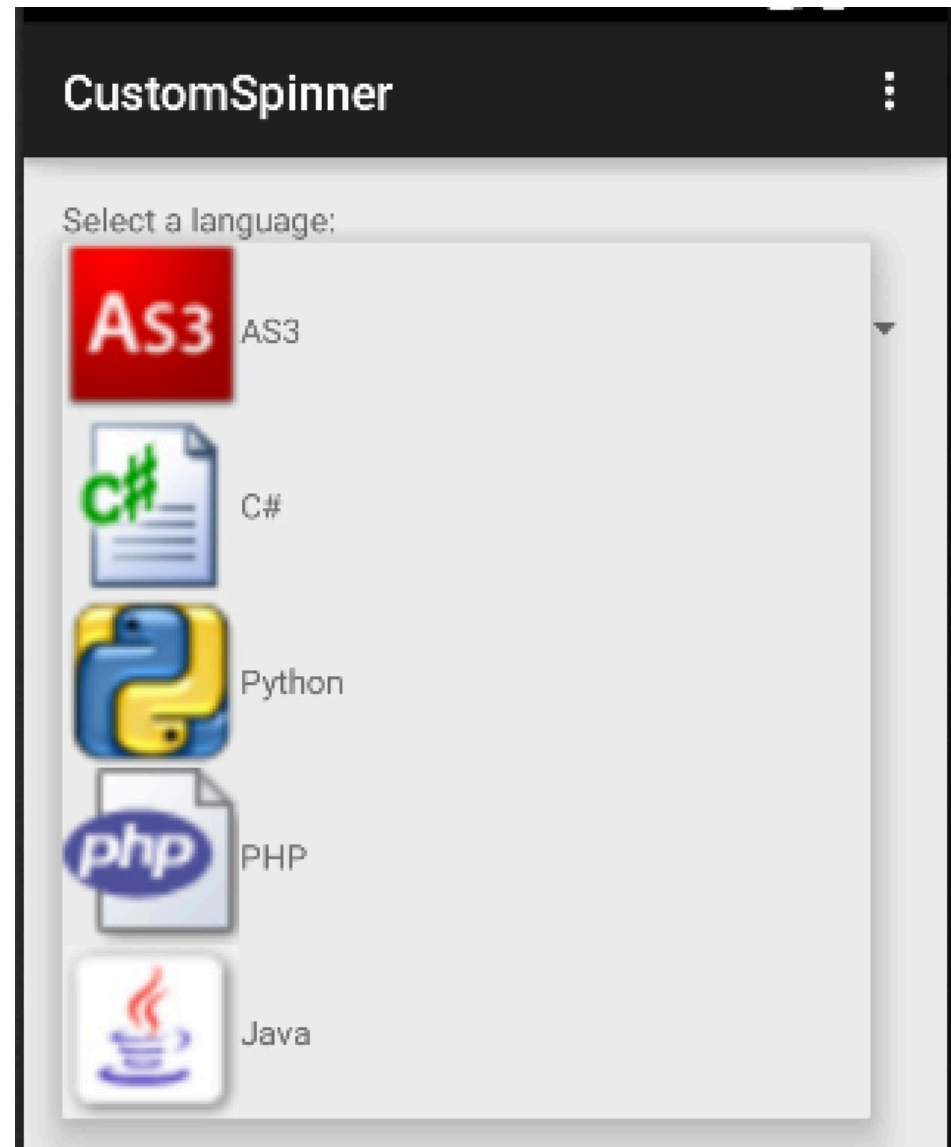
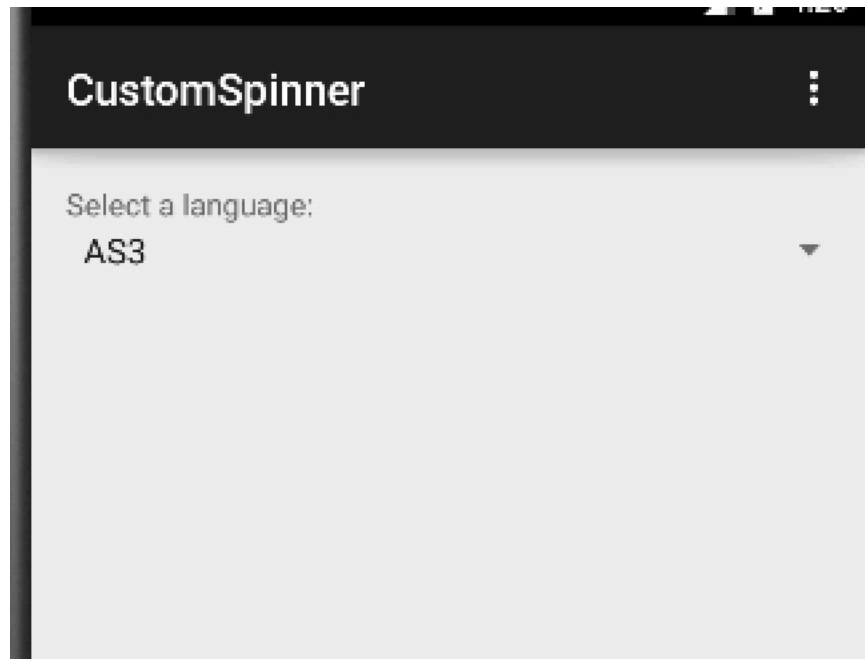
## (layout\_main.xml)

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout>
    <ImageView
        android:layout_width="74dp"
        android:layout_height="73dp"
        android:id="@+id/imagePlaceholder"
        android:layout_gravity="center_vertical"/>
    <TextView
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Text will be replaced here"
        android:id="@+id/textPlaceholder"
        android:layout_gravity="center_vertical" />
</LinearLayout>
```

# ListView Widget

- LayoutInflater
- Advance custom-made ListView
  - ArrayAdapter
  - BaseAdapter
- **Spinner**
  - Simple Spinner
  - Custom Spinner 1
  - **Custom Spinner 2**
- ExpandableListView

# Custom Spinner 2

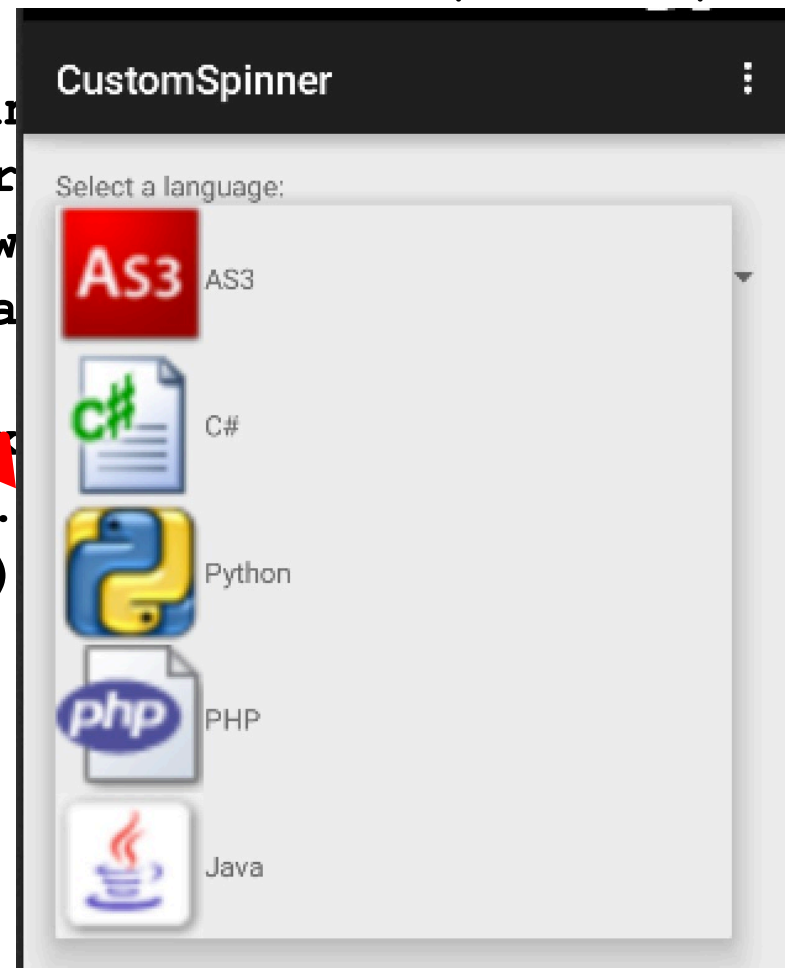




## Custom Spinner 2 (CustomAdapter.java)

@Override

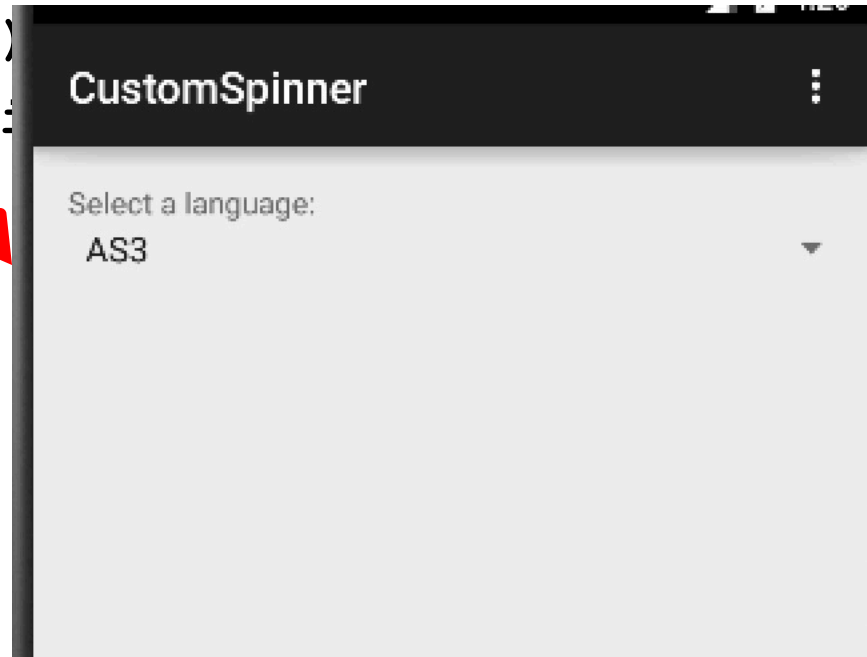
```
public View getDropDownView(int position,  
                             View convertView, ViewGroup parent) {  
    LayoutInflater inflater = LayoutInflater.from(context);  
    View row = inflater.inflate(  
        R.layout.custom_spinner_row, parent, false);  
    LanguageInfo info = dataProvider.getItem(position);  
    ImageView imageView = (ImageView)  
        row.findViewById(R.id.image);  
    TextView textView = (TextView)  
        row.findViewById(R.id.text);  
    imageView.setImageResource(info.getImageResId());  
    textView.setText(info.getName());  
    return row;  
}
```



## Custom Spinner 2 (CustomAdapter.java)

@Override

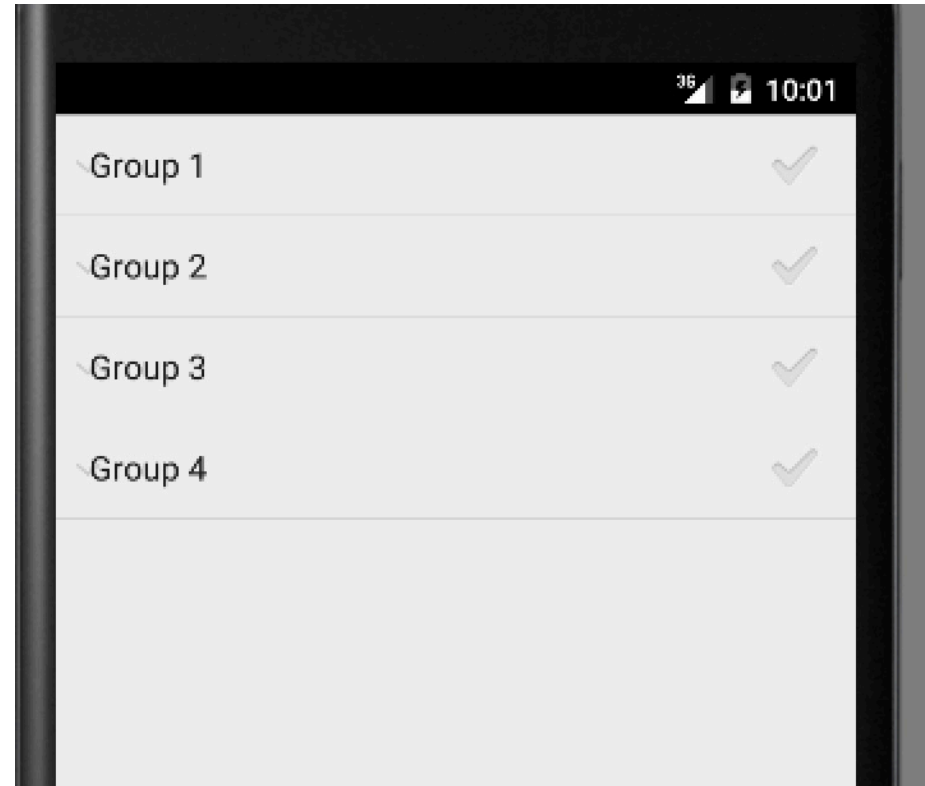
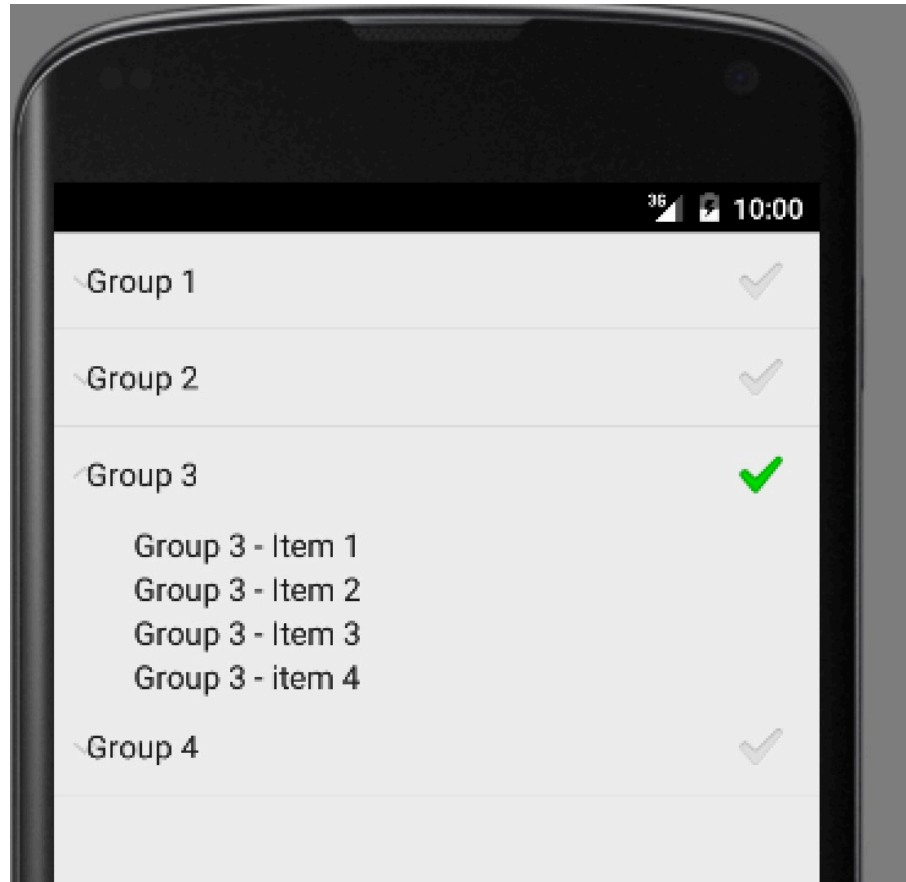
```
public View getView(int position,  
    View convertView, ViewGroup parent) {  
    LayoutInflater inflater = LayoutInflater.from(context);  
    View row = inflater.inflate(  
        android.R.layout.simple_spinner_item, null);  
    LanguageInfo info = dataProvider.get(position);  
    TextView textView = (TextView)  
        row.findViewById(android.R.id.text1);  
    textView.setText(info.getName());  
    return row;  
}
```



# ListView Widget

- LayoutInflater
- Advance custom-made ListView
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  - BaseAdapter
- Spinner
  - Simple Spinner
  - Custom Spinner 1
  - Custom Spinner 2
- **ExpandableListView**

# ExpandableListView



# ExpandableListView

## (ExpandableList.java)

```
public class ExpandableList extends ExpandableListActivity {  
  
    private static ArrayList<String> groups;  
    private static ArrayList<ArrayList<String>> groupItems;  
    private MyExpandableListAdapter adapter;
```

```
<?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:layout_height="match_parent">  
  
    <ExpandableListView  
        android:layout_width="match_parent"  
        android:layout_height="match_parent"  
        android:id="@android:id/list" />  
</LinearLayout>
```

# ExpandableListView

## (ExpandableList.java – static block)

```
static {  
    groups = new ArrayList<>(Arrays.asList("Group 1", "Group 2",  
        "Group 3", "Group 4"));  
    groupItems = new ArrayList<>();  
    groupItems.add(new ArrayList<String>(Arrays.asList(  
        "Group 1 - Item 1", "Group 1 - Item 2",  
        "Group 1 - Item 3", "Group 1 - item 4")));  
    groupItems.add(new ArrayList<String>(Arrays.asList(  
        "Group 2 - Item 1", "Group 2 - Item 2",  
        "Group 2 - Item 3", "Group 2 - item 4")));  
    groupItems.add(new ArrayList<String>(Arrays.asList(  
        "Group 3 - Item 1", "Group 3 - Item 2",  
        "Group 3 - Item 3", "Group 3 - item 4")));  
    groupItems.add(new ArrayList<String>(Arrays.asList(  
        "Group 4 - Item 1", "Group 4 - Item 2",  
        "Group 4 - Item 3", "Group 4 - item 4")));  
}
```



# ExpandableListView

## (ExpandableList.java – onCreate)

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

    adapter = new MyExpandableListAdapter(this, groups, groupItems);
    this.setAdapter(adapter);
}
```

```
public class MyExpandableListAdapter extends BaseExpandableListAdapter{
    private Context context;
    private ArrayList<String> groups;
    private ArrayList<ArrayList<String>> groupItems;

    public MyExpandableListAdapter(Context context,
                                   ArrayList<String> groups,
                                   ArrayList<ArrayList<String>> groupItems) {

        this.context = context;
        this.groups = groups;
        this.groupItems = groupItems;
    }
}
```

# ExpandableListView (Adapter)

```
@Override
public View getView(int groupPosition,
                    boolean isExpanded,
                    View convertView,
                    ViewGroup parent) {
    LayoutInflater inflater = LayoutInflater.from(context);
    CheckedTextView row = (CheckedTextView)
        inflater.inflate(android.R.layout.simple_list_item_checked, null);
    row.setChecked(isExpanded);
    row.setText(groups.get(groupPosition));
    return row;
}
```

```
@Override
public View getChildView(int groupPosition,
                        int childPosition,
                        boolean isLastChild,
                        View convertView,
                        ViewGroup parent) {
    LayoutInflater inflater = LayoutInflater.from(context);
    TextView row = (TextView)
        inflater.inflate(android.R.layout.simple_expandable_list_item_1, null);
    row.setText(groupItems.get(groupPosition).get(childPosition));
    return row;
}
```