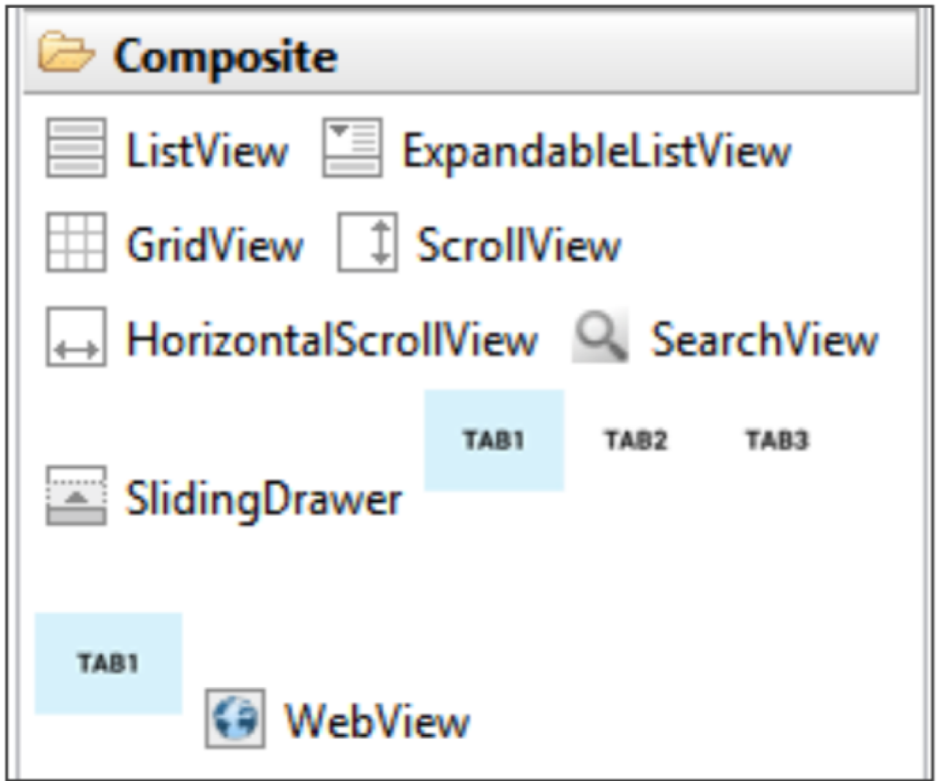
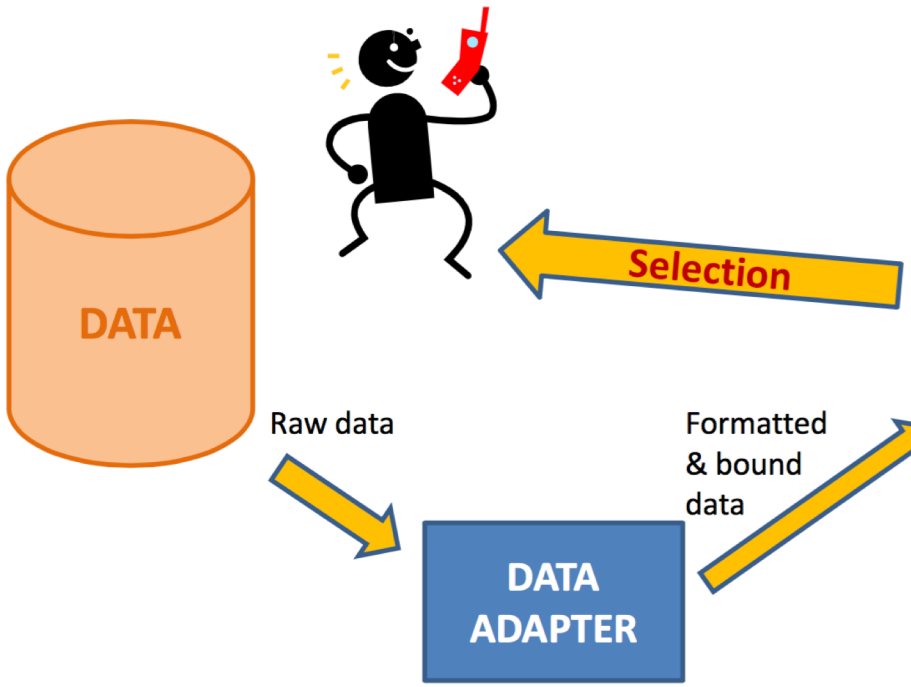
List-Based Widgets

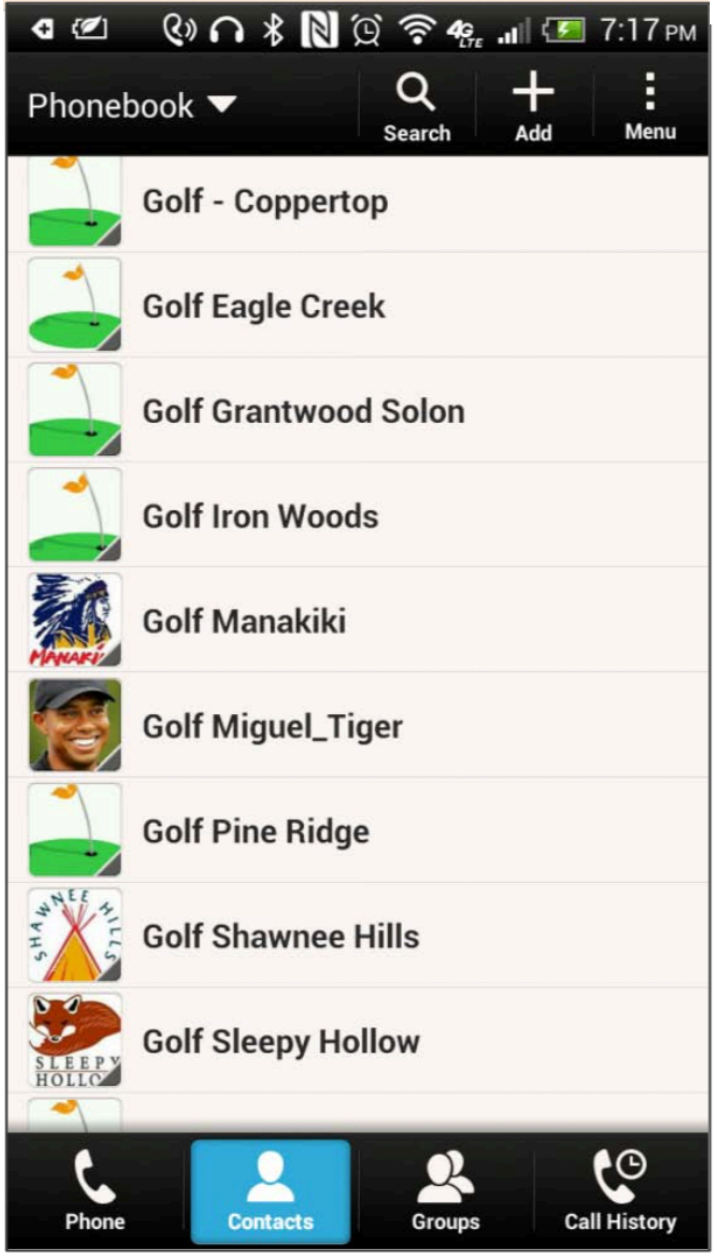
List-Based Widgets

- **RadioButtons** and **CheckButtons** are widgets suitable for selecting options offered by a *small* set of choices.
- When the set of values to choose from is large, other Android **List-Based Widgets** are more appropriate.
- Example of **List-Based Widgets** include:
  - ***ListViews,***
  - ***Spinner,***
  - ***GridView***
  - ***Image Gallery***
  - ***ScrollViews***, etc.



List-Based Widgets





- The Android ***DataAdapter*** class is used to feed a collection of data items to a *List-Based Widget.*
- The *Adapter 's* raw data may come from a variety of sources, such as small arrays as well as large databases.

Destination layout
Holding a **ListView**

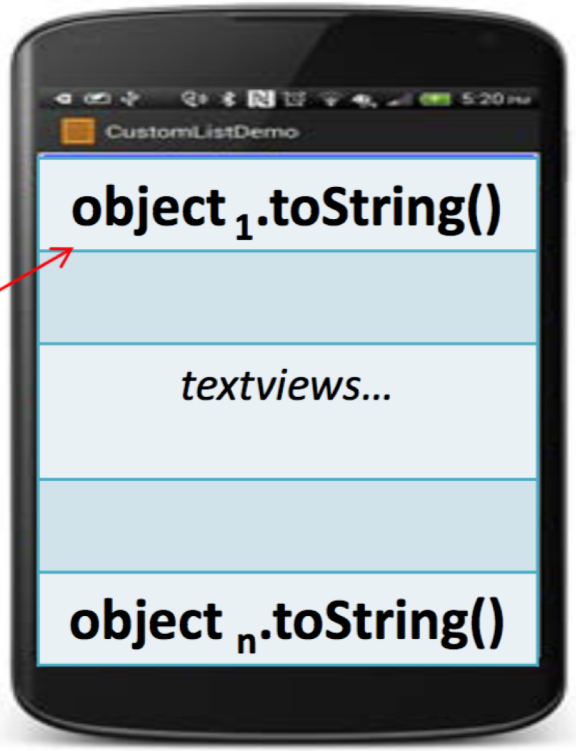
List-Based App = ListView + Data + DataAdapter

- An **ArrayAdapter<T>** accepts for input an **array** (or **ArrayList**) of objects of some arbitrary type T.
- The adapter works on each object by
  - (a) applying its **toString()** method, and
  - (b) moving its formatted output string to a **TextView**.
- The formatting operation is guided by a user supplied XML layout specification which defines the appearance of the receiving TextView.

List-Based App = ListView + Data + DataAdapter

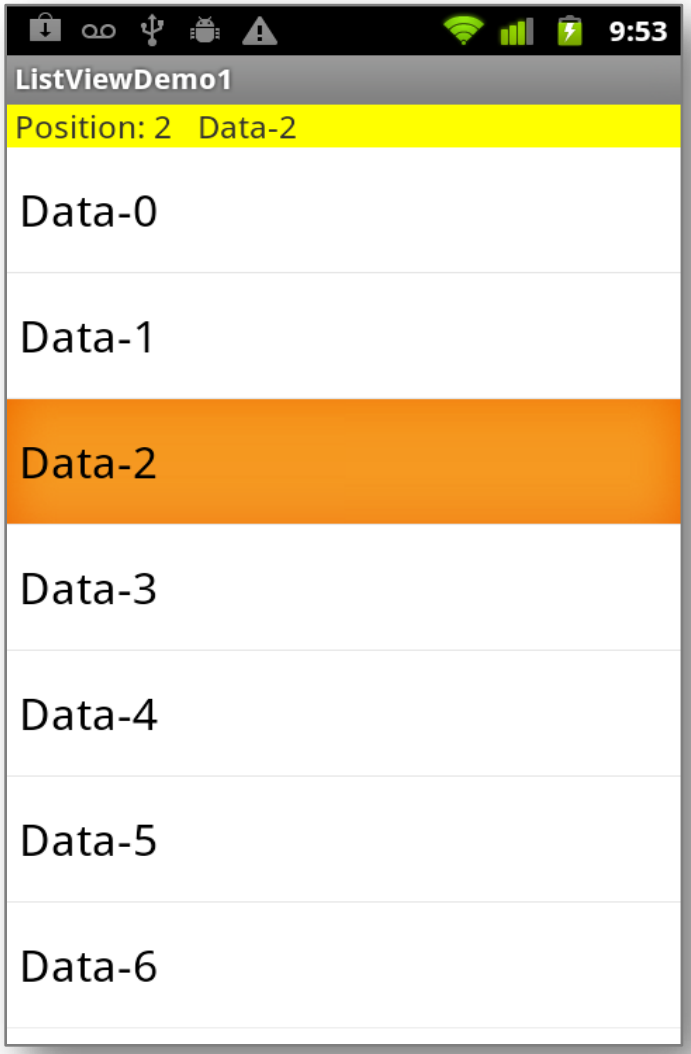
Input Data - array or java.util.List

{ object$_1$, object$_2$, …, object$_n$ }



Input XML Specification

```
<?xml version="1.0" encoding="utf-8"?>
<TextView
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    ...
/>
```

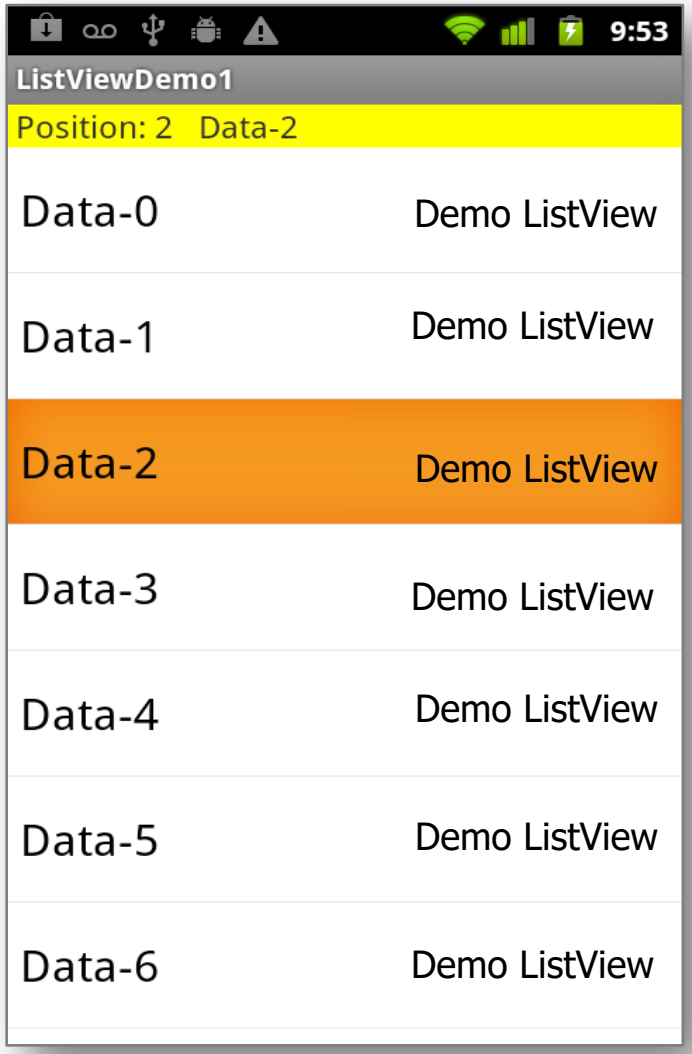


res/layout/main.xml

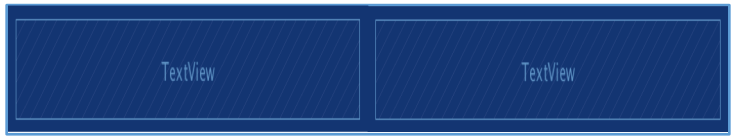
res/layout/row_renderer.xml

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

```
ArrayList<String> data =
        new ArrayList<>(Arrays.asList(
                "Data-0", "Data-1",
                "Data-2", "Data-3",
                "Data-4", "Data-5"));
```



res/layout/main.xml



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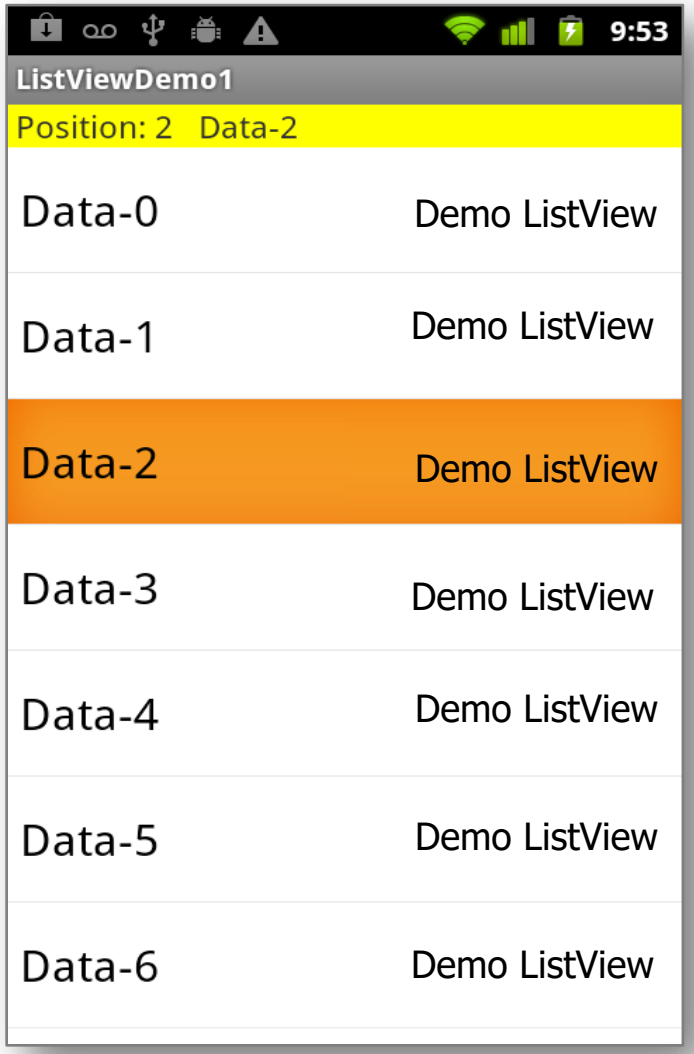
                "Data-2", "Data-3",
                "Data-4", "Data-5"));
```

```
android:id="@id/text1"
```



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res/layout/row_renderer.xml

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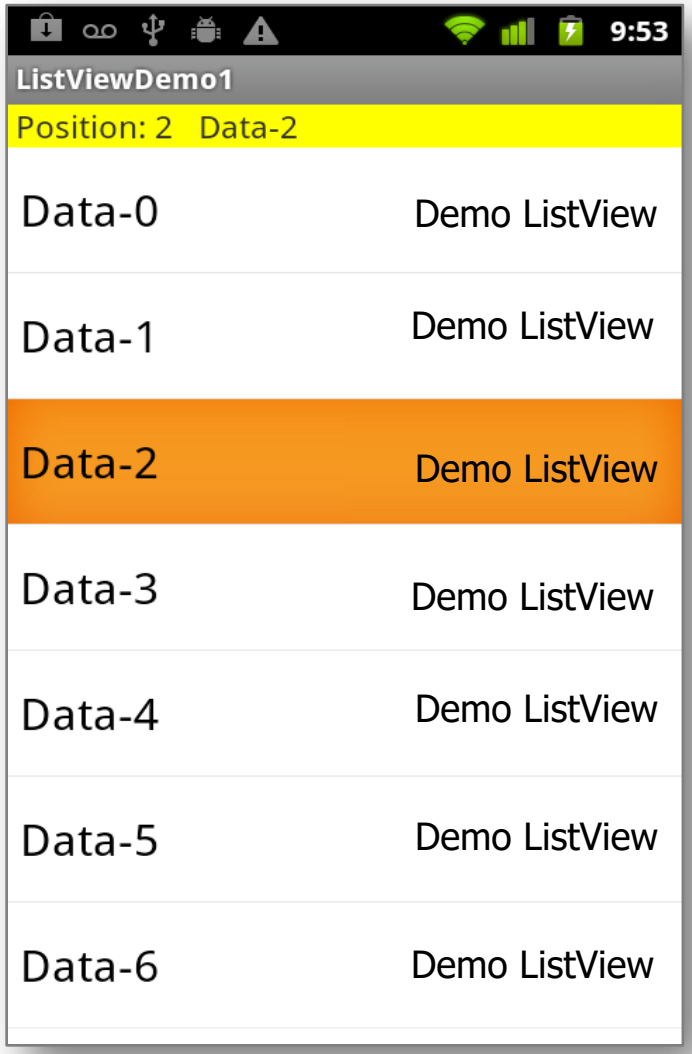
                "Data-0", "Data-1",
                "Data-2", "Data-3",
                "Data-4", "Data-5"));
```

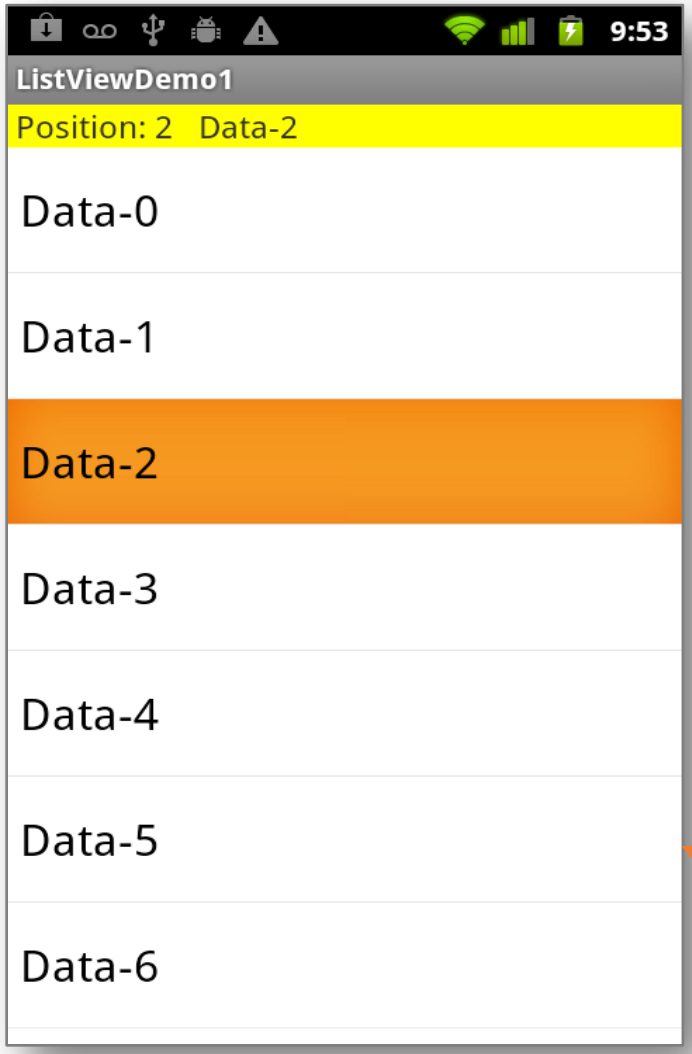
res/layout/row_renderer.xml

```
ArrayAdapter<String> adapter =
        new ArrayAdapter<~>(
                this,
                R.layout.row_renderer,
                R.id.my_textview,
                data);
```

```
ArrayList<String> data =
        new ArrayList<>(Arrays.asList(
                "Data-0", "Data-1",
                "Data-2", "Data-3",
                "Data-4", "Data-5"));
```



res/layout/main.xml



res/layout/main.xml

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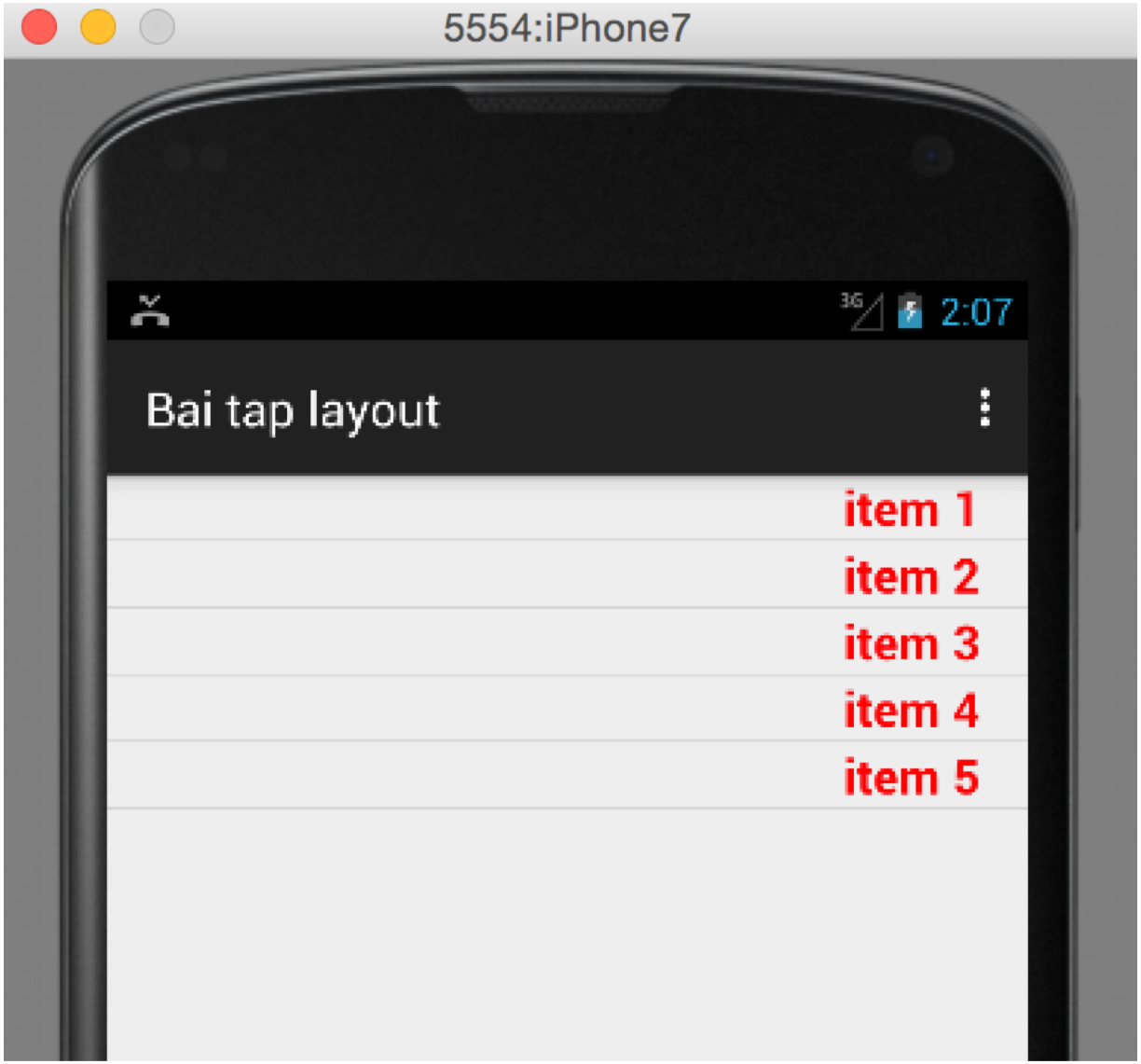
ArrayList<String> data =
        new ArrayList<>(Arrays.asList(
                "Data-0", "Data-1",
                "Data-2", "Data-3",
                "Data-4", "Data-5"));

ArrayAdapter<String> adapter =
        new ArrayAdapter<~>(
                this,
                R.layout.row_renderer,
                R.id.my_textview,
                data);

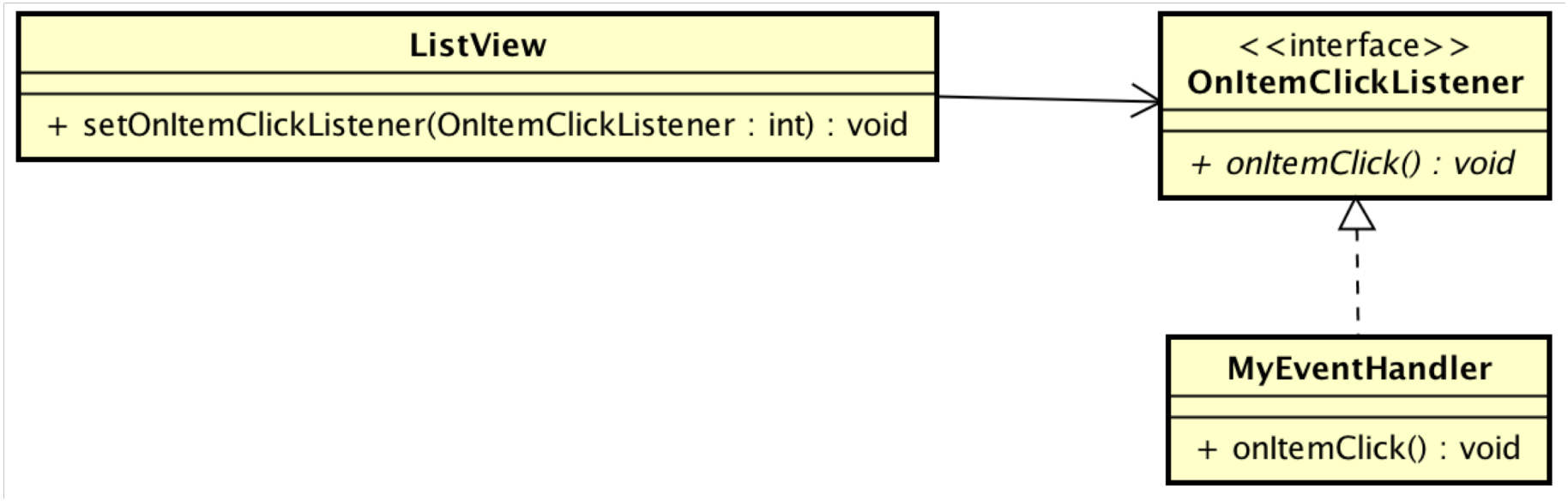
ListView listView =
        (ListView)findViewById(R.id.my_list_view);
listView.setAdapter(adapter);
```

@+id/my_list_view

Exercise 1


5554:iPhone7
2:07
Bai tap layout
item 1
item 2
item 3
item 4
item 5

ListView Event Handling: ItemClickListener




```
MyEventHandler eventHandler1 = new MyEventHandler();
listView.setOnItemClickListener(eventHandler1);
```

ListView Event Handling (Define New Class)

```
public class MyEventHandler
        implements OnItemClickListener {
  @Override
  public void onItemClick(
                AdapterView<?> parent,
                View view,
                int position,
                long id) {
    Toast.makeText(MainActivity.this,
                dataProvider.get(position),
                Toast.LENGTH_LONG)
                .show();
  }
});
```

ListView Event Handling (Anonymous Class)

```
OnItemClickListener eventHandler2 = new
    OnItemClickListener() {
        @Override
        public void onItemClick(
                    AdapterView<?> parent,
                    View view,
                    int position,
                    long id) {
            ...
        }
});
listView.setOnItemClickListener(eventHandler2);
```

ListView Event Handling (Current Class As The Listener)

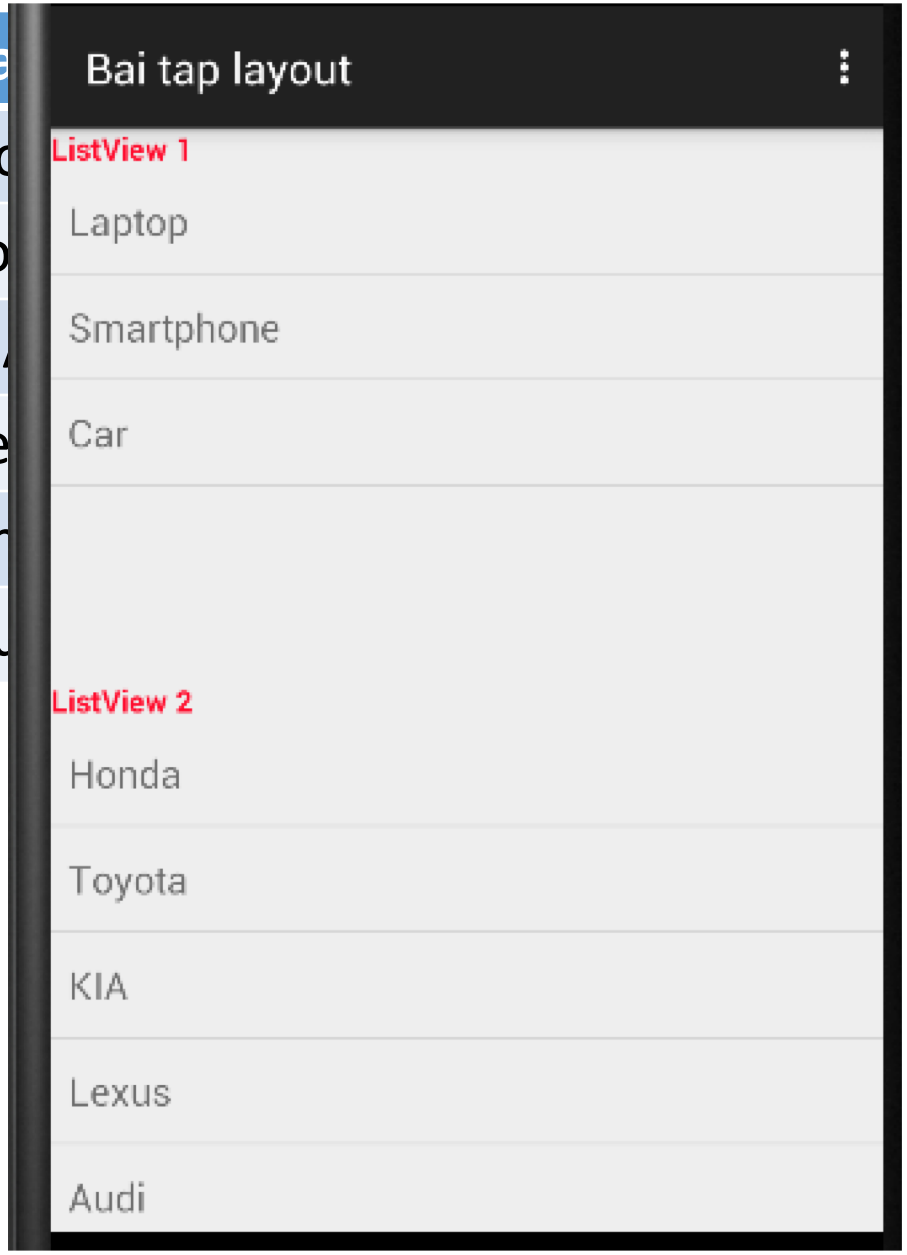
```
public class MainActivity extends Activity
                implements OnItemClickListener {
  @Override
  public void onItemClick(AdapterView<?> parent,
                          View view,
                          int position,
                          long id) {
     ...
  }
  protected void onCreate(...){
     ...
     listView.setOnItemClickListener(this);
  }
});
```

ListView Event Handling (Inner Anonymous Class)

```
listView.setOnItemClickListener(
  new OnItemClickListener() {
  @Override
  public void onItemClick(
                AdapterView<?> parent,
                View view,
                int position,
                long id) {
        ...
  }
});
```

Exercise 2

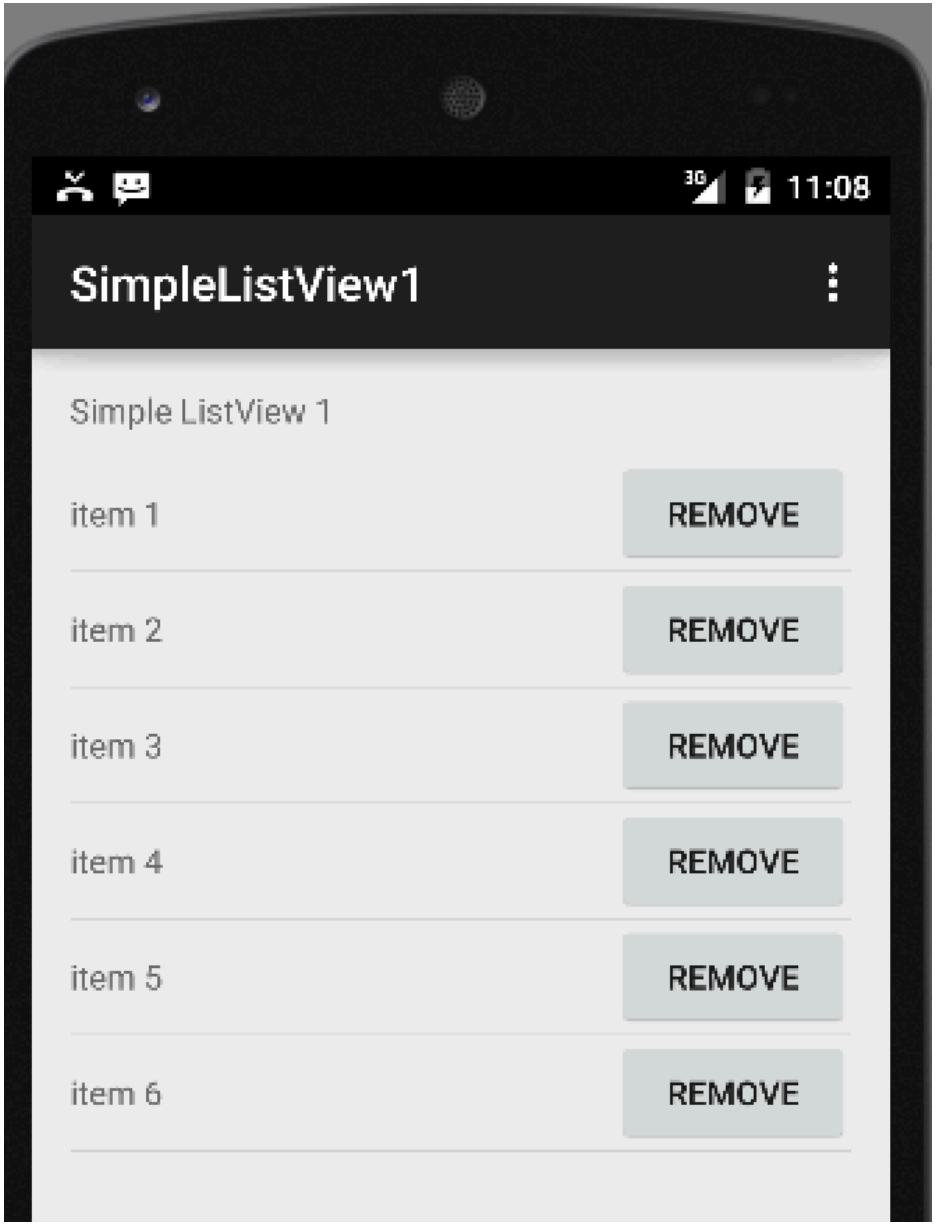
Laptop	Smartphone	Ca
Dell	iPhone	Ho
Apple	Samsung	To
HP	Nokia	KI
Acer	Oppo	Le
Toshiba	LG	Ch
Samsung	BPhone	Au



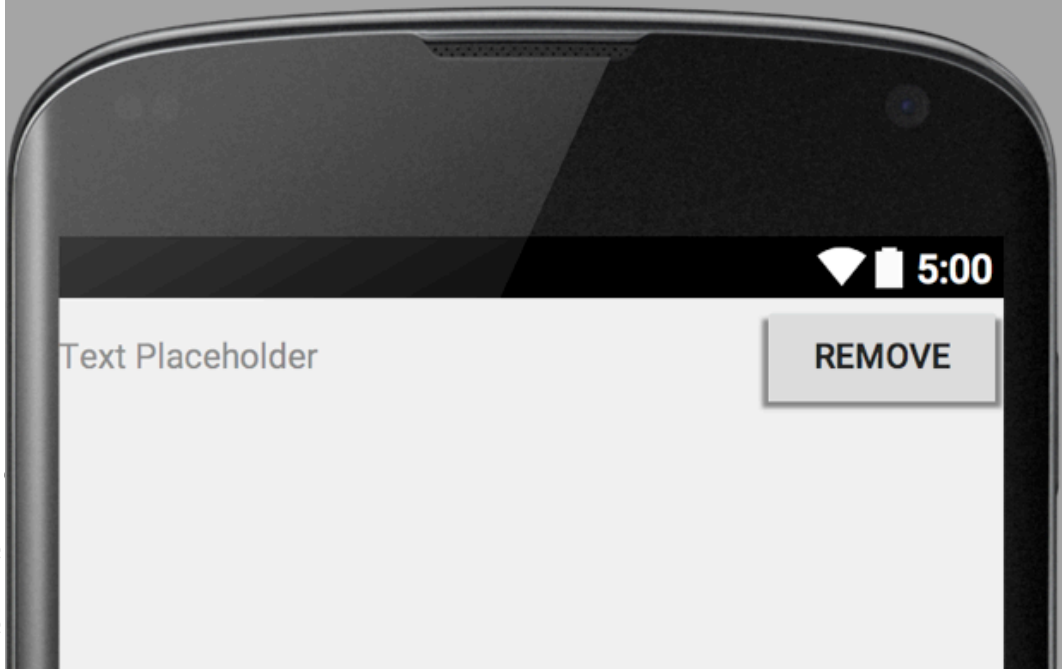
ListView Widgets

- ListView - ListActivity
- ListView - Activity
- ListView – onItemClickListener Event
- **ListView - Customize**

ArrayAdapter Customize



Customize ListView (ArrayAdapter)



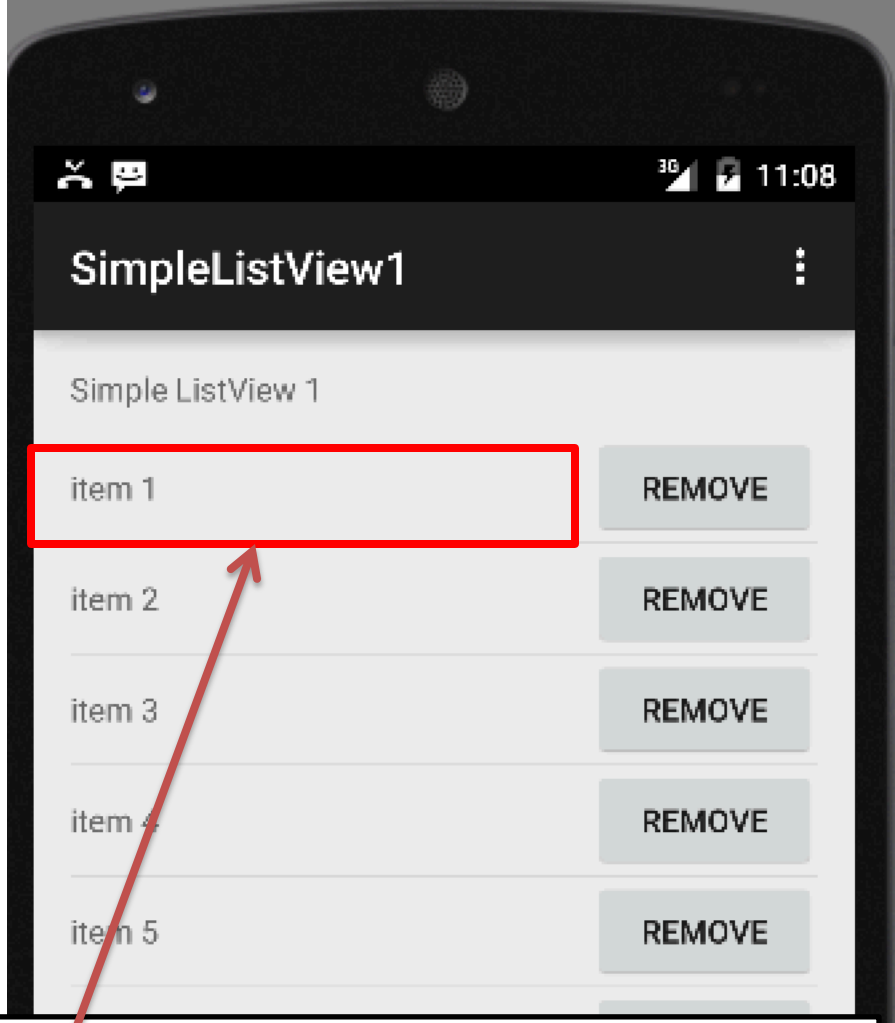

```
<LinearLayout>
    <TextView
        android:layout_wi
        android:layout_we
        android:layout_he
        android:id="@+id/textPlaceHolder"
        android:text="Text Placeholder" />
    <Button
        android:layout_width="100dp"
        android:layout_height="wrap_content"
        android:text="Remove"
        android:id="@+id/button3" />
</LinearLayout>
```

"my_list_item_2.xml" in layout directory

Customize ListView (ArrayAdapter)

```
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_1);

    listView = (ListView) findViewById(R.id.myListView1);
    dataProvider = new ArrayList<>(Arrays.asList(
                    "item 1", "item 2", "item 3",
                    "item 4", "item 5", "item 6"));
    dataAdapter = new ArrayAdapter<String>(
              this,
              R.layout.my_list_item_2,
              R.id.textPlaceHolder
              dataProvider);
    listView.setAdapter(dataAdapter);
}
```




```
dataAdapter = new ArrayAdapter<String>(
                  this,
                  R.layout.my_list_item_2,
                  R.id.textPlaceHolder
                  dataProvider);
```

Comparison

```
dataAdapter = new ArrayAdapter<String>(
 this,
 android.R.layout.simple_list_item_1,
 dataProvider
);
```

```
dataAdapter = new ArrayAdapter<String>(
 this,
 R.layout.my_list_item_1,
 dataProvider
);
```

```
dataAdapter = new ArrayAdapter<String>(
                    this,
                    R.layout.my_list_item_2,
                    R.id.textPlaceHolder
                    dataProvider);
```

Exercise 3