

Build X: Android

Lecture Four:
Recap and ListViews

Notes: <http://android.kcl.tech/>



Recap

Recap: KCL Tech Todo

- We're going to build a basic todo list app, **KCL Tech Todo**.
- If you want a preview, it is **available on Google Play**.
 - Go to <http://tiny.cc/kcl-tech-todo>
 - Scan the QR code



Recap: Layouts, Views and View Groups

- **Layout:** a specific type of application resource
 - These define the structure and appearance of parts of your app
- **View:** an individual component of a layout
 - A button, an image, a text input, etc.
- **View Group:** a special type of view that can contain others
 - You can't see the view group, but you can use it to organise the views inside it
- **Other Resources:** used to supplement a layout, amongst other things
 - Strings, styles, dimension, etc.

Recap: Events, Intents and the Activity Lifecycle

- **Events:** your app can “listen” to all types of events on all types of views
 - Once you have a reference to your view in Java, it’s easy to set an action listener with a few lines of code.
- **Intents:** these tell Android that your app *intends* to do something
 - Usually these start a new activity, but they can do all sorts of other things.
- **Activity Lifecycle:** your activity will move through many different states
 - A **callback** method is called each your activity moves to a new state, such as `onPause ()`.

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ListViews

ListViews

- A **ListView** displays a list of items.
- They are the **most common type** of complex view.



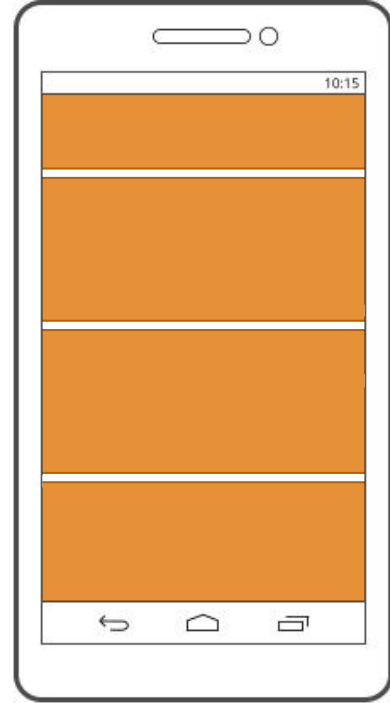
ListViews: What's the Point?

- When it comes to memory, **views are expensive**, and making them is even more expensive!
- A ListView will **recycle** views when they aren't needed, which is much more efficient.

ListViews: Recycling Views

The **Wrong** Way:

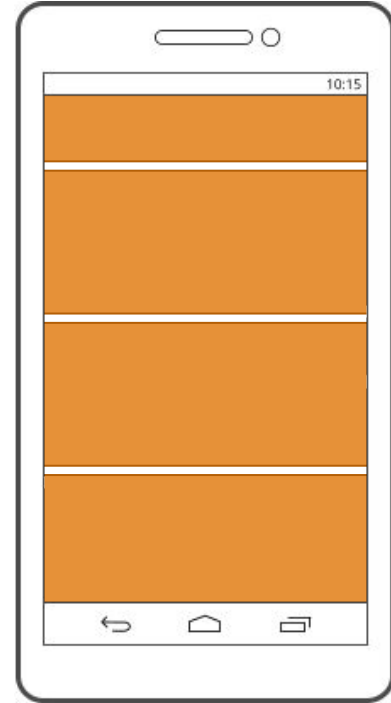
Don't recycle them at all. Create a new view for each item, taking up **a ton of memory** and slowing things down.



ListViews: Recycling Views

The **Right** Way:

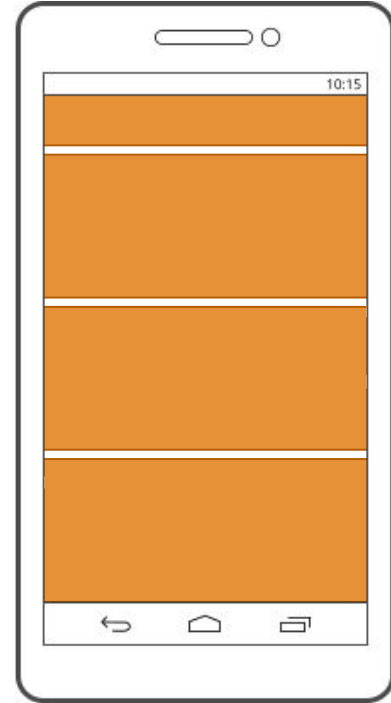
When the user scrolls down, a view “disappears” off the top.



ListViews: Recycling Views

The **Right** Way:

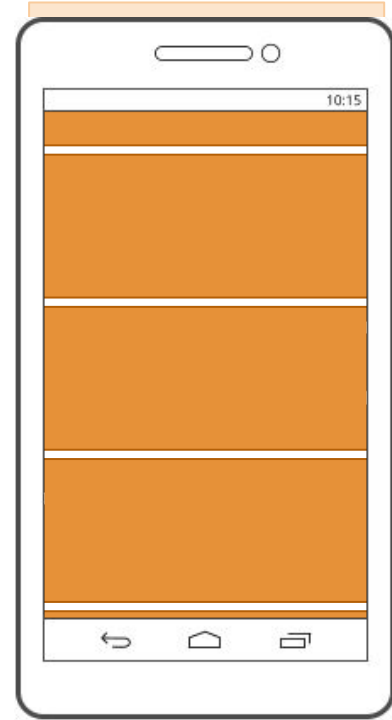
When the user scrolls down, a view “disappears” off the top.



ListViews: Recycling Views

The **Right** Way:

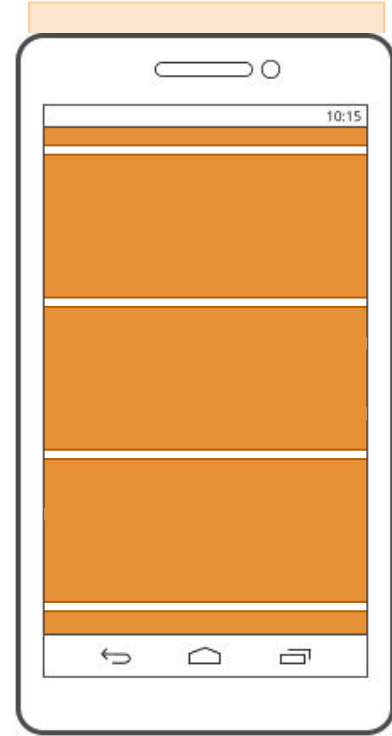
When the user scrolls down, a view “disappears” off the top.



ListViews: Recycling Views

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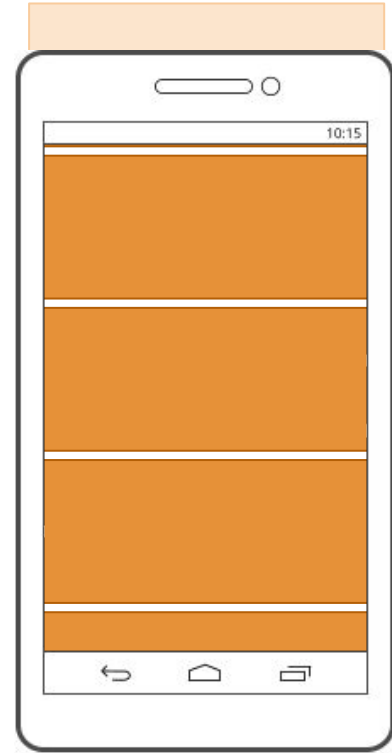
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ListViews: Recycling Views

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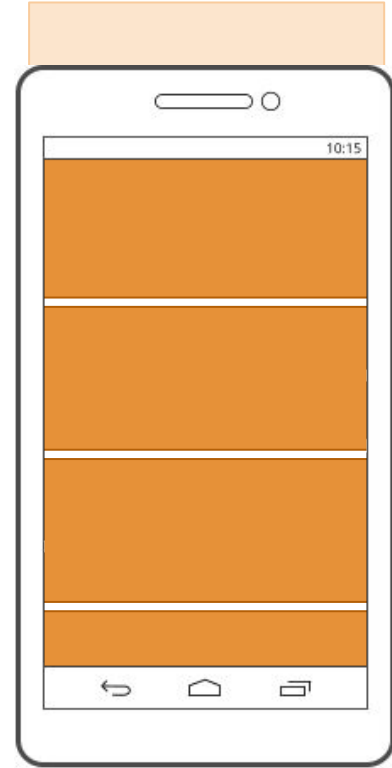
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ListViews: Recycling Views

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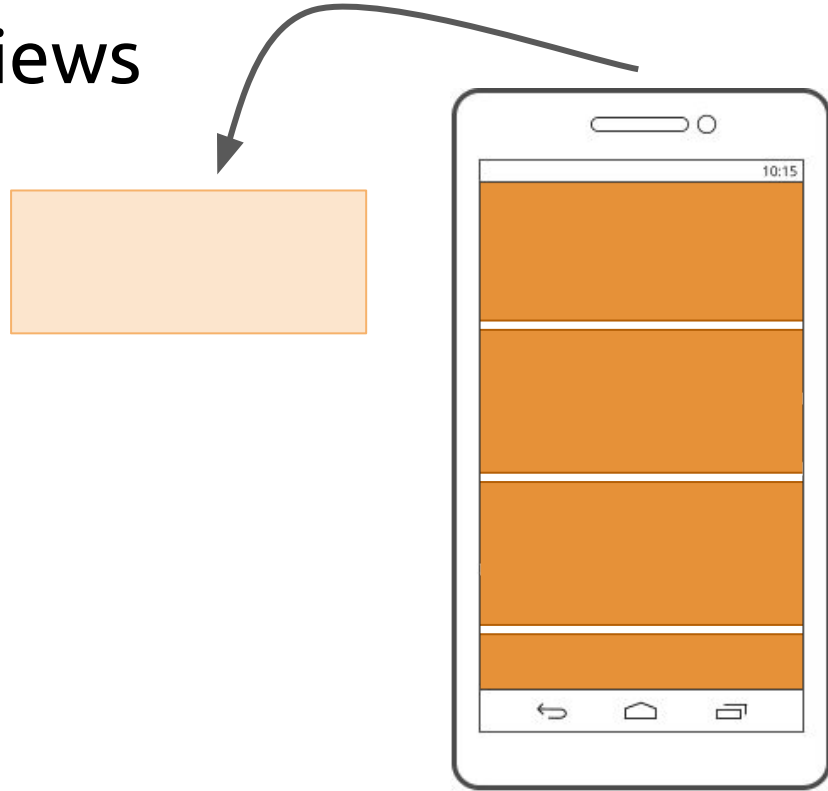
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ListViews: Recycling Views

The **Right** Way:

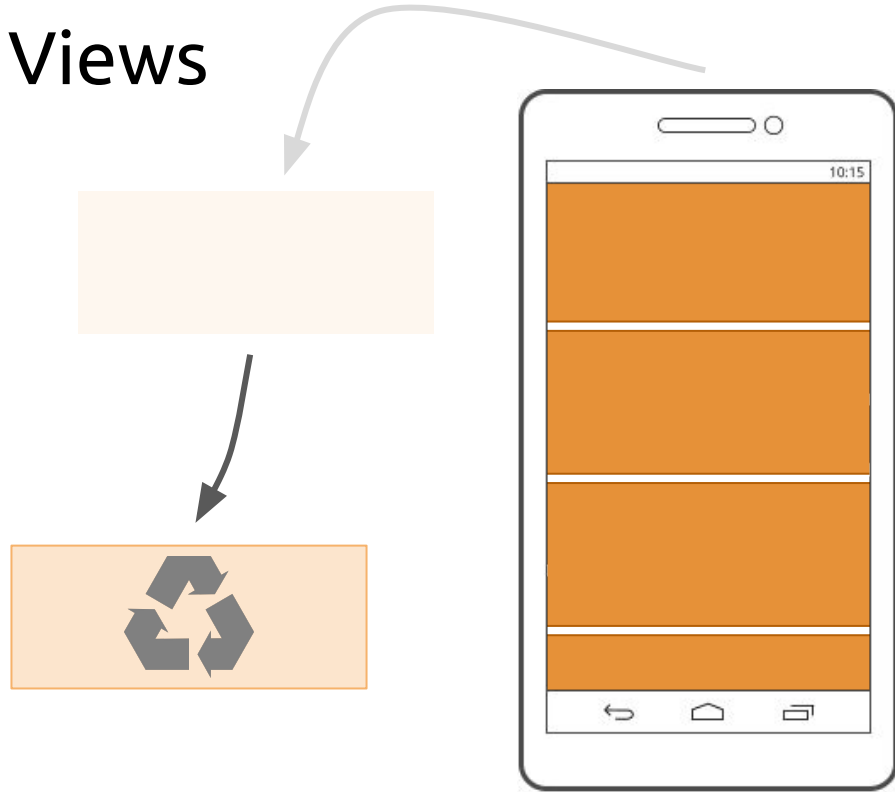
This view is then taken away...



ListViews: Recycling Views

The **Right** Way:

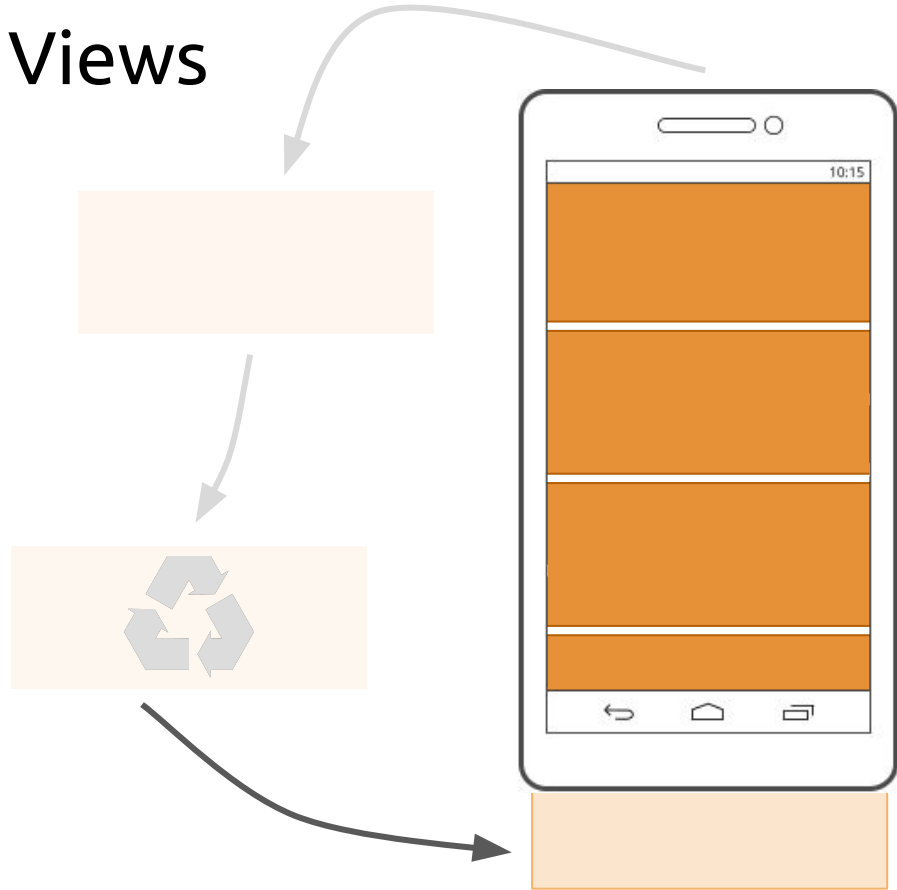
This view is then taken away...
...recycled...



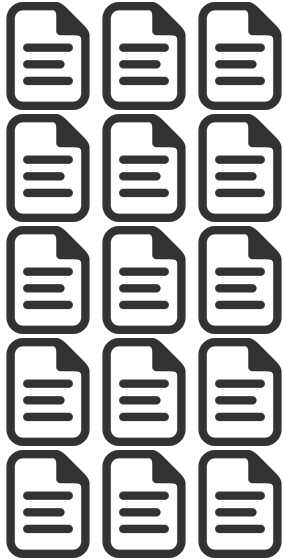
ListViews: Recycling Views

The **Right** Way:

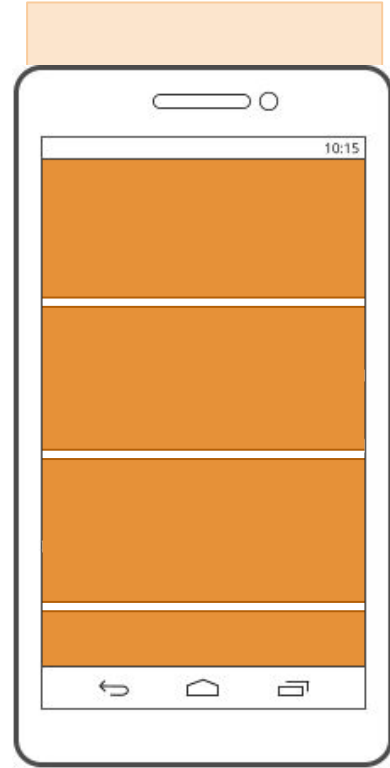
This view is then taken away...
...recycled...
...and replaced back at the
bottom, ready to appear.



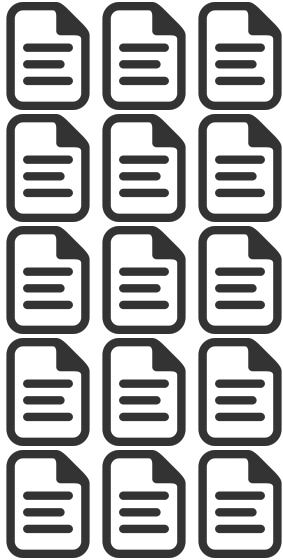
ListViews: Joining the Dots



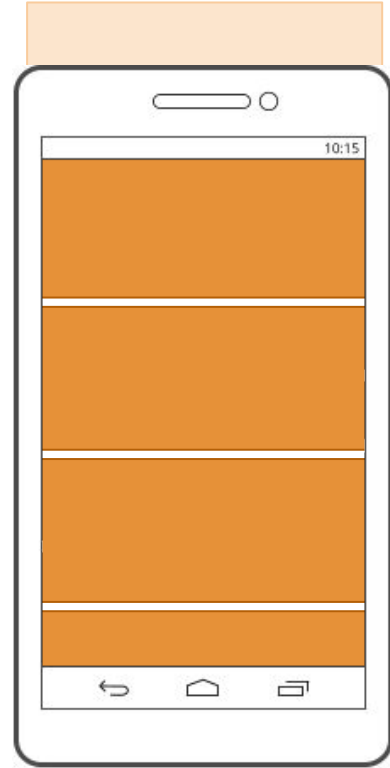
Magic?



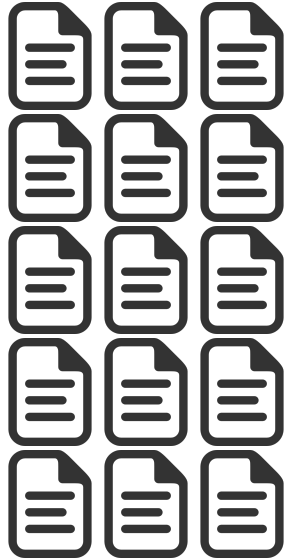
ListViews: Joining the Dots



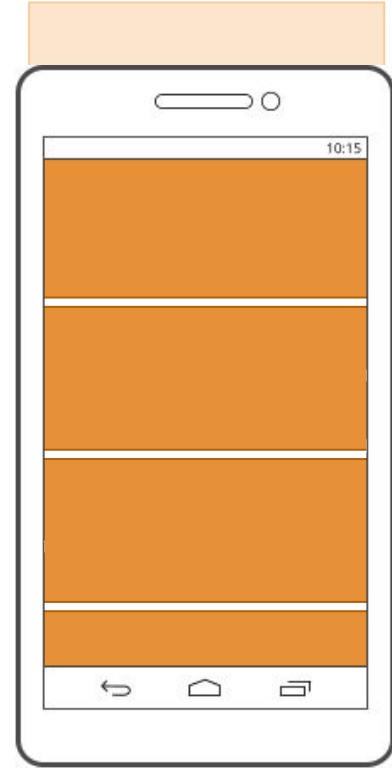
Nope.



ListViews: Joining the Dots



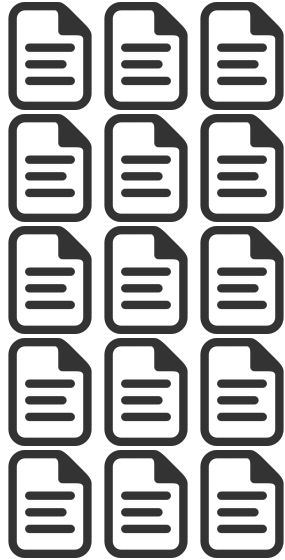
**An
Adapter**



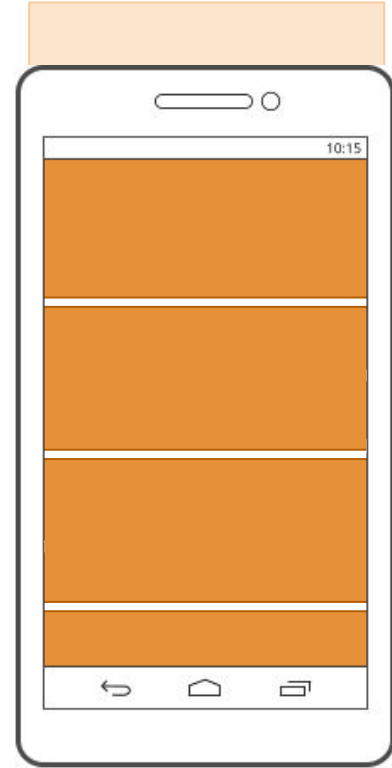
ListView Adapters

- An **adapter** maps your data into a ListView.
- They help with **separation of concerns**: your data *doesn't care* that it's going into a ListView, and your ListView *doesn't care* what your data looks like.
- You can build a **custom adapter for any kind of data**, and it will map it to a standard interface that a ListView can understand.

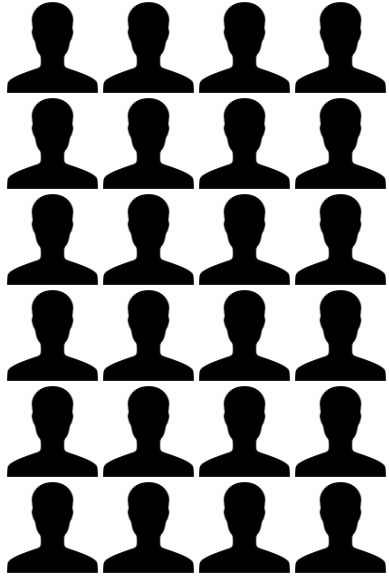
ListView Adapters



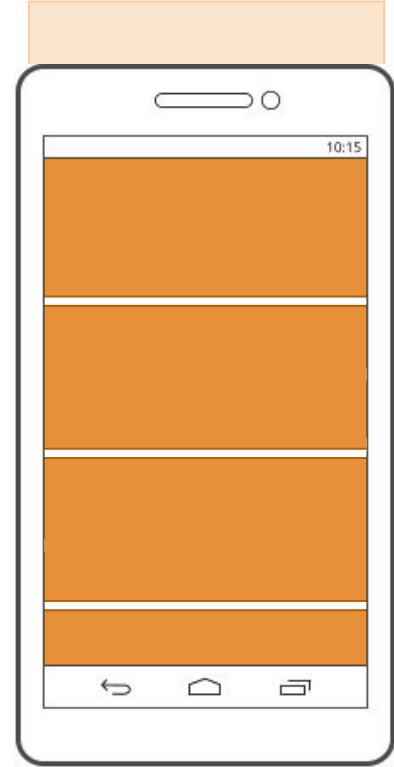
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ListView Adapters



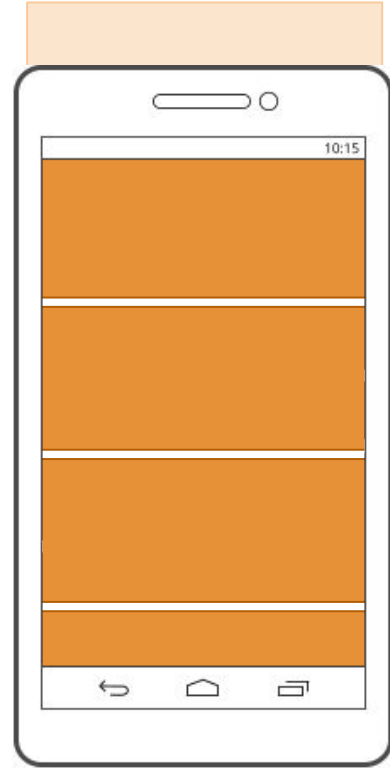
**An
Adapter**



ListView Adapters



**An
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Break! (10 mins)

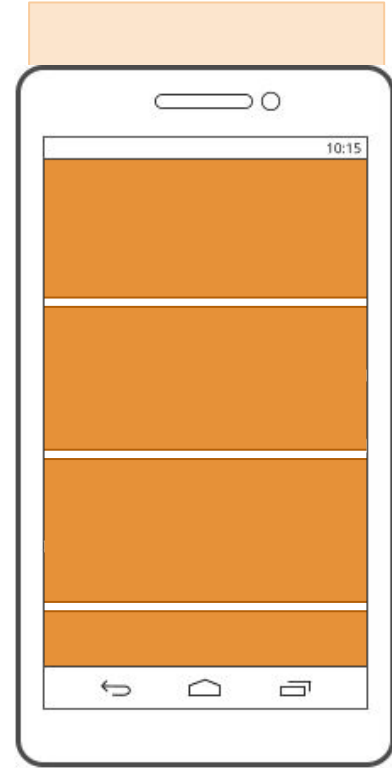
ListViews

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ListView Adapters



**An
Adapter**





Coding time...





Homework

(Sorry.)

Next Week: Databases

- Next week we're going to be studying the use of **databases** in Android apps.
- We're not doing anything exotic with them, but if you haven't used databases in a while, **do a little reading** to brush up on them.
- If you know roughly what these words and terms mean, you're all good:

database	table	column	
record	row	query	SQL



Done!

See you next week!