ITW202: Mobile Application

Unit IV: Developing for Android

Ms. Sonam Wangmo

Gyalpozhing College of Information Technology
Royal University of Bhutan

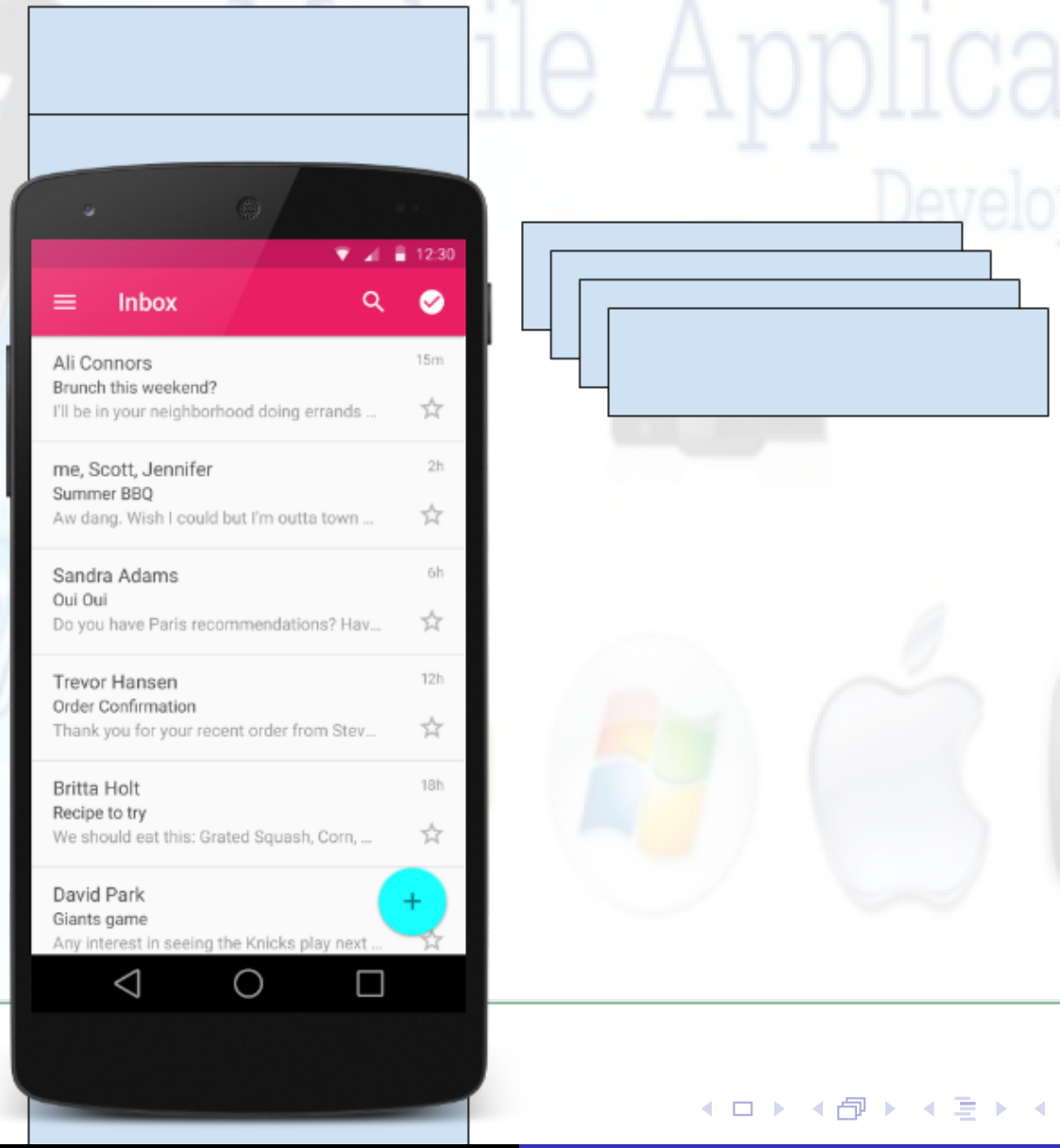
May 9, 2021

RecyclerView

What is a RecyclerView?

- RecyclerView is a container for displaying large, scrollable data sets efficiently by maintaining a limited number of View items.
- Efficient
  - Uses and reuses limited number of View elements
  - Updates changing data fast

What is a RecyclerView?



RecyclerView Components

RecyclerView Components

- Data: It doesn't matter where the data comes from.
- A RecyclerView: The scrolling list that contains the list items.
- Layout for one item of data : All list items look the same, so you can use the same layout for all of them.

RecyclerView Components

- A layout manager: The layout manager handles the organization (layout) of user interface components in a View. Each ViewGroup has a layout manager.
- An adapter : Use an extension of RecyclerView.Adapter to connect your data to the RecyclerView.
- A ViewHolder: Use an extension of RecyclerView.ViewHolder to contain the information for displaying one View item using the item's layout.

Data

Any displayable data can be shown in a RecyclerView.

- Text
- Images
- Icons

Data

Data can come from any source.

- Created by the app. For example, scrambled words for a game.
- From a local database. For example, a list of contacts.
- From cloud storage or the internet. For example news headlines.

RecyclerView

A RecyclerView is a ViewGroup for a scrollable container. It is Ideal for long lists of similar items.
Note: A RecyclerView uses a limited number of View items that are reused when they go off-screen. This saves memory and makes it faster to update list items as the user scrolls through data, because it is not necessary to create a new View for every item that appears.

Item Layout

The layout for a list item is kept in a separate XML layout file so that the adapter can create View items and edit their contents independently from the layout of the Activity.

Layout Manager

- A layout manager positions View items inside a ViewGroup, such as the RecyclerView, and determines when to reuse View items that are no longer visible to the user.
- To reuse (or recycle) a View, a layout manager may ask the adapter to replace the contents of the View with a different element from the dataset.
- Recycling View items in this manner improves performance by avoiding the creation of unnecessary View items or performing expensive findViewById() lookups.

Layout Manager

RecyclerView provides these built-in layout managers:

- LinearLayoutManager shows items in a vertical or horizontal scrolling list.
- GridLayoutManager shows items in a grid.
- StaggeredGridLayoutManager shows items in a staggered grid.

Adapter

An adapter helps two incompatible interfaces to work together.

- In a RecyclerView, the adapter connects data with View items. It acts as an intermediary between the data and the View. The adapter receives or retrieves the data, does any work required to make it displayable in a View, and places the data in a View.

Adapter

- Example: Takes data from database Cursor and prepares strings to put into a View

Adapter

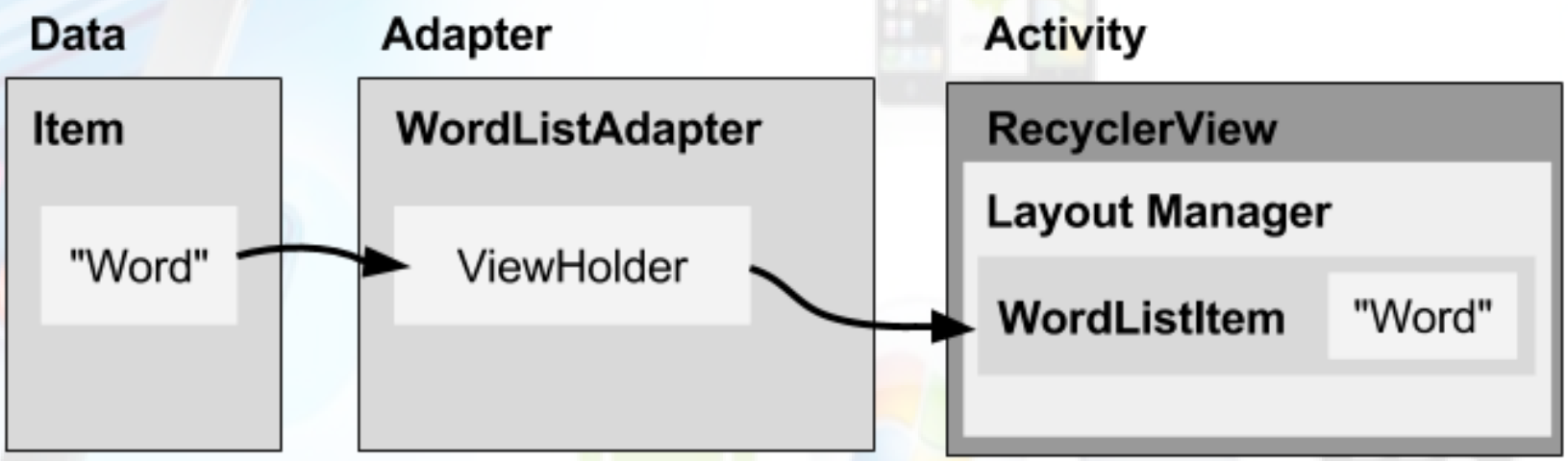
The RecyclerView.Adapter implements a ViewHolder, and must override the following callbacks:

- onCreateViewHolder() inflates a View item and returns a new ViewHolder that contains it.
- onBindViewHolder() sets the contents of a View item at a given position in the RecyclerView.
- getItemCount() returns the total number of items in the data set held by the adapter.

ViewHolder

- Used by the adapter to prepare one View with data for one list item
- Each ViewHolder holds one set of data. The adapter adds data to each ViewHolder for the layout manager to display.
- You define your ViewHolder layout in an XML resource file. It can contain (almost) any type of View, including clickable elements.

Relationship between RecyclerView components.



Mobile Application
Development
THANK YOU