RecyclerView

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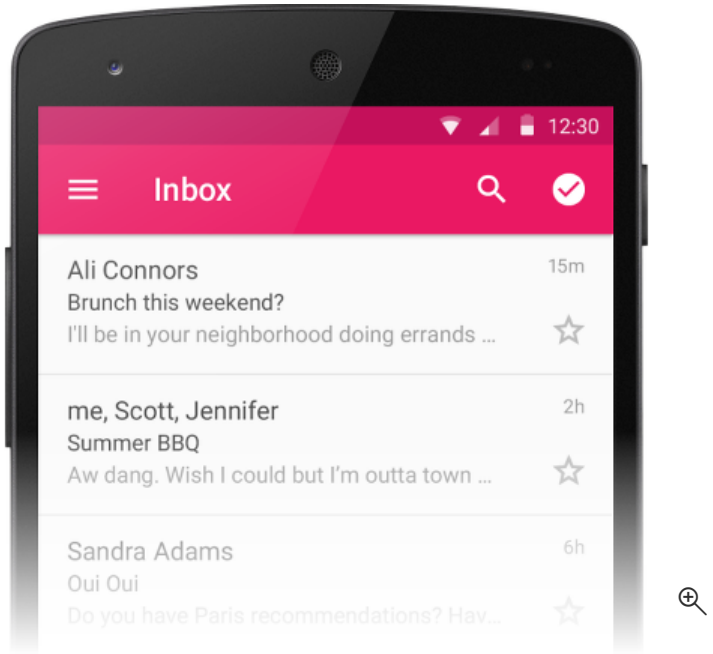
In this article

RecyclerView is a view group for displaying collections; it is designed to be a more flexible replacement for older view groups such as ListView and GridView. This guide explains how to use and customize RecyclerView in Xamarin.Android applications.

RecyclerView

Many apps need to display collections of the same type (such as messages, contacts, images, or songs); often, this collection is too large to fit on the screen, so the collection is presented in a small window that can smoothly scroll through all items in the collection. `RecyclerView` is an Android widget that displays a collection of items in a list or a grid, enabling the user to scroll through the collection. The following is a screenshot of an example app that uses `RecyclerView` to display email inbox contents in a vertical scrolling list:



`RecyclerView` offers two compelling features:

- It has a flexible architecture that lets you modify its behavior by plugging in your preferred components.
- It is efficient with large collections because it reuses item views and requires the use of *view holders* to cache view references.

This guide explains how to use `RecyclerView` in Xamarin.Android applications; it explains how to add the `RecyclerView` package to your Xamarin.Android project, and it describes how `RecyclerView` functions in a typical application. Real code examples are provided to show you how to integrate `RecyclerView` into your application, how to implement item-view click, and how to refresh `RecyclerView` when its underlying data changes. This guide assumes that you are familiar with Xamarin.Android development.

Requirements

Although `RecyclerView` is often associated with Android 5.0 Lollipop, it is offered as a support library – `RecyclerView` works with apps that target API level 7 (Android 2.1) and later. The following is required to use `RecyclerView` in Xamarin-based applications:

- **Xamarin.Android** – Xamarin.Android 4.20 or later must be installed and configured with either Visual Studio or Visual Studio for Mac.

- Your app project must include the **Xamarin.Android.Support.v7.RecyclerView** package. For more information about installing NuGet packages, see Walkthrough: Including a NuGet in your project.

Overview

`RecyclerView` can be thought of as a replacement for the `ListView` and `GridView` widgets in Android. Like its predecessors, `RecyclerView` is designed to display a large data set in a small window, but `RecyclerView` offers more layout options and is better optimized for displaying large collections. If you are familiar with `ListView`, there are several important differences between `ListView` and `RecyclerView`:

- `RecyclerView` is slightly more complex to use: you have to write more code to use `RecyclerView` compared to `ListView`.
- `RecyclerView` does not provide a predefined adapter; you must implement the adapter code that accesses your data source. However, Android includes several predefined adapters that work with `ListView` and `GridView`.
- `RecyclerView` does not offer an item-click event when a user taps an item; instead, item-click events are handled by helper classes. By contrast, `ListView` offers an item-click event.
- `RecyclerView` enhances performance by recycling views and by enforcing the view-holder pattern, which eliminates unnecessary layout resource lookups. Use of the view-holder pattern is optional in `ListView`.
- `RecyclerView` is based on a modular design that makes it easier to customize. For example, you can plug in a different layout policy without significant code changes to your app. By contrast, `ListView` is relatively monolithic in structure.
- `RecyclerView` includes built-in animations for item add and remove. `ListView` animations require some additional effort on the part of the app developer.

Sections

RecyclerView Parts and Functionality

This topic explains how the `Adapter`, `LayoutManager`, and `ViewHolder` work together as helper classes to support `RecyclerView`. It provides a high-level overview of each of these helper classes and explains how you use them in your app.

A Basic RecyclerView Example

This topic builds on the information provided in RecyclerView Parts and Functionality by providing real code examples of how the various `RecyclerView` elements are implemented to build a real-world photo-browsing app.

Extending the RecyclerView Example

This topic adds additional code to the example app presented in A Basic RecyclerView Example to demonstrate how to handle item-click events and update `RecyclerView` when the underlying data source changes.

Summary

This guide introduced the Android `RecyclerView` widget; it explained how to add the `RecyclerView` support library to Xamarin.Android projects, how `RecyclerView` recycles views, how it enforces the view-holder pattern for efficiency, and how the various helper classes that make up `RecyclerView` collaborate to display collections. It provided example code to demonstrate how `RecyclerView` is integrated into an application, it explained how to tailor `RecyclerView`'s layout policy by plugging in different layout managers, and it described how to handle item click events and notify `RecyclerView` of data source changes.

For more information about `RecyclerView`, see the RecyclerView class reference.

Related Links

- RecyclerViewer (sample)
- Introduction to Lollipop
- RecyclerView