Part 1 - How It Works

There are two classes involved in a ContentProvider interaction:

ContentProvider – Implements an API that exposes a set of data in a standard way. The main methods are Query, Insert, Update and Delete.

ContentResolver – A static proxy that communicates with a ContentProvider to access its data, either from within the same application or from another application.

A content provider is normally backed by an SQLite database, but the API means that consuming code does not need to know anything about the underlying SQL. Queries are done via a Uri using constants to reference column names (to reduce dependencies on the underlying data structure), and an ICursor is returned for the consuming code to iterate over.

Consuming a ContentProvider

ContentProviders expose their functionality through a Uri that is registered in the AndroidManifest.xml of the application that publishes the data. There is a convention where the Uri and the data columns that are exposed should be available as constants to make it easy to bind to the data. Android's built-in ContentProviders all provide convenience classes with constants that reference the data structure in the Android.Providers namespace.

Built-In Providers

Android offers access to a wide range of system and user data using ContentProviders.

Browser – bookmarks and browser history (requires permission READ_HISTORY_BOOKMARKS and/or WRITE_HISTORY_BOOKMARKS).

CallLog – recent calls made or received with the device.

Contacts – detailed information from the user's contact list, including people, phones, photos & groups.

MediaStore – contents of the user's device: audio (albums, artists, genres, playlists), images (including thumbnails) & video.

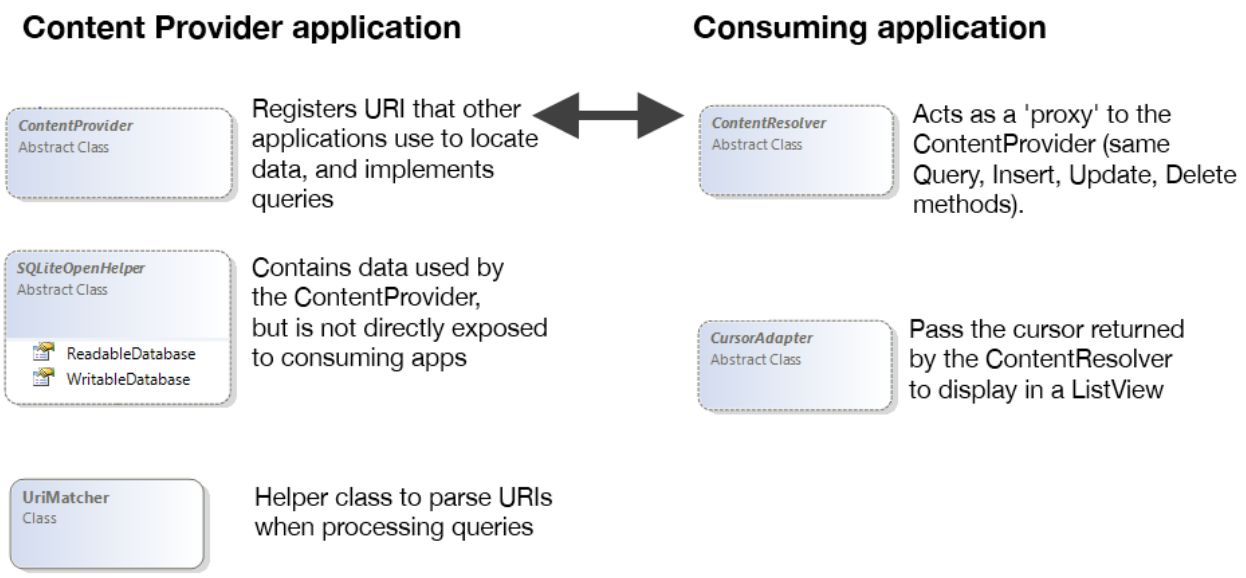
Settings – system-wide device settings and preferences.

UserDictionary – contents of the user-defined dictionary used for predictive text input.

Voicemail – history of voicemail messages.

Classes Overview

The primary classes used when working with a ContentProvider are shown here:



The purpose of each class is described below:

ContentProvider – Implement this abstract class's methods to expose data. The API is made available to other classes and applications via the Uri attribute that is added to the class definition.

SQLiteOpenHelper – Helps implement the SQLite datastore that is exposed by the ContentProvider.

UriMatcher – Use UriMatcher in your ContentProvider implementation to help manage Uris that are used to query the content.

ContentResolver – Consuming code uses a ContentResolver to access a ContentProvider instance. The two classes together take care of the inter-process communication issues, allowing data to be easily shared between applications. Consuming code never creates a ContentProvider class explicity, instead the data is accessed by creating a cursor based on a Uri exposed by the ContentProvider application.

CursorAdapter – Use CursorAdapter or SimpleCursorAdapter to display data accessed via a ContentProvider.

The ContentProvider API allows consumers to perform a variety of operations on the data, such as:

- Querying data to return lists or individual records.
- Modifying individual records.
- Adding new records.
- Deleting records.

This document contains an example that use a system-provided ContentProvider as well as a simple read-only example that implements a custom ContentProvider.

Next: Part 2 - Using the Contacts ContentProvider