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The ContentProvider Class
Today’s Topics

ContentProvider
ContentResolver
CursorLoader
Implementing ContentProviders
ContentProvider

Represents a repository of structured data
Encapsulates data sets
Enforces data access permissions
ContentProvider

Intended for inter-application data sharing
Clients access ContentProviders through a ContentResolver
ContentResolver

Presents a database-style interface for reading & writing data

query, insert, update, delete, etc.

Provides additional services such as change notification
Get reference to ContentResolver by calling Context.getContentResolver()
ContentProvider & ContentResolver

Together these classes let code running in one process access data managed by another process.
Android ContentProviders

Browser – bookmarks, history
Call log- telephone usage
Contacts – contact data
Media – media database
UserDictionary – database for predictive spelling
Many more
ContentProvider Data Model

Data logically represented as database tables

<table>
<thead>
<tr>
<th>_ID</th>
<th>artist</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Lady Gaga</td>
</tr>
<tr>
<td>44</td>
<td>Frank Sinatra</td>
</tr>
<tr>
<td>45</td>
<td>Elvis Presley</td>
</tr>
<tr>
<td>53</td>
<td>Barbara Streisand</td>
</tr>
</tbody>
</table>
URI

ContentProviders referenced by URIs
The format of the URI identifies specific data sets managed by specific ContentProviders
Format

content://authority/path/id

content – scheme indicating data that is managed by a content provider

authority – id for the content provider

path – 0 or more segments indicating the type of data to be accessed

id – a specific record being requested
Example: Contacts URI

```
ContactsContract.Contacts.CONTENT_URI =
    "content://com.android.contacts/contacts/"
```
Returns a Cursor for iterating over a results set

```java
Cursor query (Uri uri, String[] projection, String selection, String[] selectionArgs, String sortOrder)
```

// ContentProvider Uri
// Columns to retrieve
// SQL selection pattern
// SQL pattern args
// Sort order
ContentProviderExample

Extracts Contact information from the Android Contacts ContentProvider
  Displays each contact’s name
ContentProvider Example

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Service Pros</td>
</tr>
<tr>
<td>Diana Moya Orjuela</td>
</tr>
<tr>
<td>LifeBrain</td>
</tr>
<tr>
<td>Bice Candia</td>
</tr>
<tr>
<td>Jack Flyer</td>
</tr>
<tr>
<td>Steve Ballmer</td>
</tr>
<tr>
<td>Larry Page</td>
</tr>
<tr>
<td>Steve Jobs</td>
</tr>
<tr>
<td>Android Painter</td>
</tr>
<tr>
<td>Martha Barajas</td>
</tr>
<tr>
<td>Bill Gates</td>
</tr>
<tr>
<td>Elon Musk</td>
</tr>
<tr>
<td>Jeff Bezos</td>
</tr>
<tr>
<td>Oprah Winfrey</td>
</tr>
</tbody>
</table>
ContentProviderWithResourceCursorAdapter

Extracts specific contact information from the Android Contacts ContentProvider

Displays each contact’s name and photo, if available
ContentProvider
WithResourceCursorAdapter
More ContentResolver Operations

Delete
Insert
Update
ContentResolver.delete()

Returns the number of rows deleted

```java
int delete(
    Uri url, // content Uri
    String where, // SQL sel. pattern
    String[] selectArgs // SQL pattern args
)
```
ContentResolver.insert()

Returns the Uri of the inserted row

Uri insert (  
    Uri url, // content Uri  
    ContentValues values // values  
)
ContentResolver.update()

Returns the number of rows updated

```java
int update(
    Uri url,    // content Uri
    ContentValues values,    // new field values
    String where,    // SQL sel. pattern
    String[] selectionArgs    // SQL pattern args
)
```
ContentProviderInsertContacts

Application reads contact information from the Android Contacts ContentProvider
Inserts several new contacts into Contacts ContentProvider
Displays old and new contacts
ContentProvider
InsertContacts
Recipe for Creating a ContentProvider

Define a Contract Class to support users of your ContentProvider

Implement a storage system for the data

Implement a ContentProvider subclass

Declare and configure ContentProvider in AndroidManifest.xml
ContentProvider

Application defines a ContentProvider for ID/string pairs
ContentProviderCustomConsumer

Reads ID/String pairs from the ContentProvider
Inserts and deletes ID/String pairs
ContentProvider
CustomProvider
ContentProvider
CustomConsumer
Example Applications

ContentProviderExample
ContentProviderWithResourceCursorAdapter
ContentProviderInsertContacts
ContentProviderCustomProvider
ContentProviderCustomConsumer