Android: Content Providers

http://developer.android.com/guide/topics/providers/content-providers.html

https://cloud.google.com/appengine/docs/java/endpoints/

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Outline

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Content providers

- Manage access to a structured set of data
- Encapsulate data and provide mechanisms for defining data security
- Are the standard interface that connects data in one process with code running in another process
- An URI is used to identify data
  - Content URIs include the symbolic name of the entire provider (its authority) and a name that points to a table (a path)

How to use them

- A content provider presents data to external applications as one or more tables that are similar to the tables found in a relational database
- You need to
  - Create a class that extends android.content.ContentProvider
  - Implement query(), insert(), update(), delete()
    - Register the ContentProvider in the manifest

Accessing a provider

An application accesses the data from a content provider with a ContentResolver client object.

- The ContentResolver methods provide the basic "CRUD" (create, retrieve, update, and delete) functions of persistent storage.

Example

To get a list of the words and their locales from the User Dictionary Provider, you call ContentResolver.query(). The query() method calls the ContentProvider.query() method defined by the User Dictionary Provider. The following lines of code show a ContentResolver.query() call:

```
1 // Queries the user dictionary and returns results
2 mCursor = contentResolver().query(
3     UserDictionary.Words.CONTENT_URI,   // The content URI of the words table
4     mProjection,                        // The columns to return for each row
5     mSelectionClause                    // Selection criteria
6     mSelectionArgs,                     // Selection criteria
7     mSortOrder);                        // The sort order for the returned rows
```

The following table shows how the arguments to

query(Uri,projection,selection,selectionArgs,sortOrder)

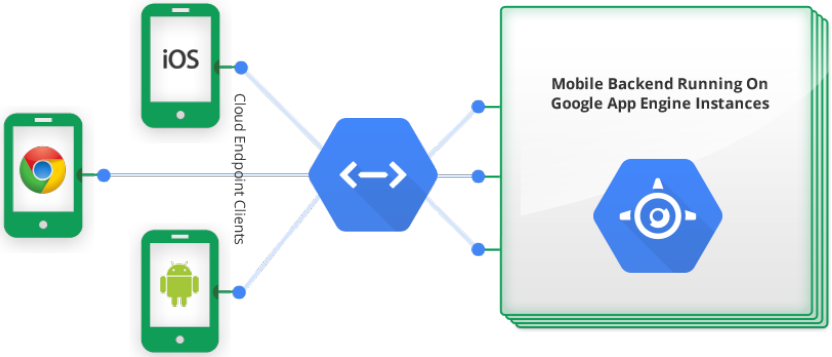
match an SQL SELECT statement:

query() argument	SELECT keyword/parameter	Notes
`Uri`	`FROM table_name`	`Uri` maps to the table in the provider named *table_name*.
`projection`	`col,col,col,...`	`projection` is an array of columns that should be included for each row retrieved.
`selection`	`WHERE col = value`	`selection` specifies the criteria for selecting rows.
`selectionArgs`	(No exact equivalent. Selection arguments replace `?` placeholders in the selection clause.)	
`sortOrder`	`ORDER BY col,col,...`	`sortOrder` specifies the order in which rows appear in the returned `Cursor`.

Outline

Google Cloud Endpoints

Provides a simple way to develop a shared web backend and also provides critical infrastructures, such as OAuth 2.0 authentication



Outline

https://firebase.google.com/

A comprehensive mobile development platform

Build better apps

Cloud Firestore
Store and sync app data at global scale

ML Kit BETA
Machine learning for mobile developers

Cloud Functions
Run mobile backend code without managing servers

Authentication
Authenticate users simply and securely

Hosting
Deliver web app assets with speed and security

Cloud Storage
Store and serve files at Google scale

Realtime Database
Store and sync app data in milliseconds

Improve app quality

Crashlytics
Prioritize and fix issues with powerful, realtime crash reporting

Performance Monitoring
Gain insight into your app's performance

Test Lab
Test your app on devices hosted by Google

Grow your business

In-App Messaging
Engage active app users with contextual messages

Google Analytics
Get free and unlimited app analytics

Predictions
Smart user segmentation based on predicted behavior

A/B Testing BETA
Optimize your app experience through experimentation

Cloud Messaging
Send targeted messages and notifications

Remote Config
Modify your app without deploying a new version

Dynamic Links
Drive growth by using deep links with attribution

App Indexing
Drive search traffic to your mobile app