

Mobile Application Store Product API Design Document

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Introduction

This document defines the design for the Mobile Application Store Product API.

Overview

A Mobile Application Store provides developers and content producers with a way to distribute downloadable applications, wallpapers, and ringtones to consumers. The store makes both free and premium content available for download.

The Product API serves two basic functions. First, it allows authorized developers methods to add mobile applications to the product catalog. Second, it gives all consumers access to information about products currently in the store. Consumers can search and filter the products they see by a variety of metadata, including name, description, language, and price.

Requirements

The design must support a GUID-restricted method for adding Countries.

The design must support a GUID-restricted method for adding Devices.

The design must support a GUID-restricted method for adding Content.

The design must support a non-restricted method of searching for Content.

Content may take the form of Applications, Ringtones, or Wallpaper. The design should accommodate additional types of Content in the future with minimal restructuring.

All data should be stored in memory. The scope of this design does not include long-term storage.

Content updating and removal may be left to future versions of this design.

Use Cases

Administrators add Countries and Devices.

Creators add Content.

Users search for Content.

Implementation

Class Diagram

Please see the attached diagram.jpg

Class Dictionary

Store

The Store class is the heart of the Mobile Application Store and its API. The Store object itself is a singleton, and it keeps references to every country, device, and product alive in memory. All Country, Device, and Content additions go through the Store class.

Methods

Method	Signature	Description
getStore	() : Store	Returns a reference to the Store singleton.
addCountry	(code : String, name : String, open : boolean, GUID : String) : String	Adds a country to the Store's lists. Eventual GUID authentication support is presumed.
addDevice	(deviceid : String, name : String, manufact : String, GUID : String) : String	Adds a device to the Store's lists. Eventual GUID authentication support is presumed.
addItem	(content_type : String, content_id : String, content_name : String, content_description : String, author : String, rating : int, categories : Set, export_countries : Set, supported_devices : Set, price : float, supported_languages : Set, image_url : String, GUID : String) : Content	Adds an item to the Store. Throws ContentAddException upon failure. Eventual GUID authentication support is presumed. Actual item type added is dependent on the type parameter. Rating must be between 0 and 5. export_countries must already exist in countryList. supported_devices must already exist in deviceList. Price cannot be less than 0.
addItem	(content_type : String, content_id : String, content_name : String, content_description : String, author : String, rating : int, categories : Set, export_countries : Set, supported_devices : Set, price : float, supported_languages : Set, image_url : String, application_size : int, GUID : String) : Content	Overloaded method, for item types requiring additional parameters.

Associations

Association Name	Type	Description
countryList	Set<Country>	Private association for maintaining the active set of Countries. Each country should have a unique countrycode, although this is not currently enforced.
deviceList	Set<Device>	Private association for maintaining the active set of Devices. Each device should have a unique deviceid, although this is not currently enforced.
contentList	Set<Content>	Private association for maintaining the active set of products. Each item should have a unique content_id, although this is not currently enforced.

Content

A particular product available in the store. Note that this is an abstract class, and should be subclassed.

Properties

Property Name	Type	Description
name	String	Name of the product.
description	String	Description of the product; a single String.
author	String	Author of the product.
rating	int	Star rating between 0 and 5, inclusive.
categories	Set<String>	0 or more categories. Note that, as currently implemented, categories unstructured and similar to tags in other systems.
price	float	0 is free; cannot be less than 0.
language	Set<String>	1 or more supported language codes
image	String	URL of image; URL formation is not currently enforced.
type	String	Must be an existing type - currently application, wallpaper,

		or ringtone.
contentid	String	Unique ID of content.

Associations

Association Name	Type	Description
country	Set<Country>	One or more counties where content can be downloaded to.
device	Set<Device>	One or more supported devices.

Application

A type of Content and subclass of the Content class.

Properties

Property Name	Type	Description
size	int	The size of the application, in bytes.

Wallpaper

A type of Content and subclass of the Content class.

Ringtone

A type of Content and subclass of the Content class.

Country

Properties

Property Name	Type	Description
countrycode	String	Two letter unique identifier of the country in question.
countryname	String	The name of the country.
exportsopen	boolean	True if the country is open for exports.

Device

Properties

Property Name	Type	Description
deviceid	String	Unique identifier of the device.
devicename	String	The name of the device.
manufacturer	String	The manufacturer of the device.

Query

Query: To Query the Store, users (or their representatives) instantiate a Query object and then add appropriate parameters to it. For convenience, all methods adding parameters to a Query object return a reference to that object, allowing calls to be chained together.

The csvStringQuery() method, which translates a single String into a Query object, is also provided.

Methods

Method	Signature	Description
searchProducts	(store : Store) : ArrayList	Executes a Query on the provided Store.
csvStringQuery	(csv : String) : ArrayList	Converts a String in CSV format into a Query object and the executes the query.

Properties

Property Name	Type	Description
categories	Set<String>	Optional, one or more categories. Uses an OR operator.
textSearch	String	Optional, looks for matching text in a product's name or description.
maxPrice	float	Optional, the maximum price.
minRating	int	Optional, the minimum star rating.
languages	Set<String>	Optional, one or more languages. Uses an OR operator.
country	Set<String>	Optional, one or more countries. Uses an OR operator.
device	Set<String>	Optional, one or more devices. Uses an OR operator.
type	Set<String>	Optional, one or more content types. Uses an OR operator.

Testing

Testing is performed by two classes - the TestDriver class and the Importer class. The TestDriver class handles command-line processing. The Importer class handles I/O, and converts files of CSV data to discrete String, Sets, and Objects. The Importer class offers an example of one way to interact with the Mobile Application Store API, and much of the functionality it offers could likely be imported into the API proper upon request.

Note that the provided queries.csv files has been replaced by a custom one with additional queries.

Risks; Opportunities for Improvement

The current system requires a degree of forethought on the part of its users: the greater the privileges of the user, the greater thought must be put in. Administrators are not restricted from adding duplicate Countries or Devices, and probably ought to be. Developers are not required to make their device IDs unique. Queries are not heavily controlled - users are not forbidden from making illegal searches (for example, a maximum rating of 7) although they will only decrease the utility of their own results.

Image URLs are not currently validated, and really ought to be.

Categories and languages are currently loosely-handled. Maintaining category lists and promoting languages to first-class objects would likely increase utility for creators and users alike.