Smart Shopping App

Research Document

7/4/2015
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1. Introduction

This document contains all of the information/research to build the Smart Shopping App. The research document contains information of software that I have thought of using or researching to archive my project goal. This document act like a list of option that allows you to choose the right option and you are confident with to use before starting to code. This document is here to provide only the software/technology.

1.1.Purpose

- Provide quick research information on different software.
- Allow user to check and choose their confident choice.
- Easy to understand.

2. Clients Platform

A client platform is the technology of the application that it will be building on. There are many great open sources clients platform available out there these days. Our technology have improved so much that each year many new platform has been created and improving. There are many popular platforms that have very high in clients (customers), those including the in following.

[1]

2.1.Android

Android maybe consider one of the most popular Operating System out there today. It is one of the most fast growing mobile devices. Android contains over 1 billons app available on Play Store. Android is very popular due to it open sources, user friendly and services.

[Figure 2.1]

Android Features

- Android newest version is 5.0 and it is called 'Lollipop'.
- Smart Phone
- Messaging
- Play Store
- Web browser
- Multi-touch
- Multitasking
- Screen capture
- Video Calling
- Multi-Platform
- External storage
- Wireless
- Bluetooth

2.2.Window Phone

Window Phone is also one of the most popular devices out there today. It was created by Microsoft Company, one of the most famous and well knows Company in the world. Window Phone 7 was first launch in October 2010. The newest releases were recently in 2014.

Window Phone Features

- Window Phone newest version is 8.1 and it code name is called 'blue'.
- Smart Phone
- Camera
- Wireless
- Play Store
- Touch Screen
- Multi-Platform
- Multi-Tasking
- Multi Media
- Bluetooth

[2]

2.3.BlackBerry

The BlackBerry Operating System is a software platform developed by its manufacturer RIM. Its OS provides multi-tasking that maximizes use of the devices specialized platform including: n trackball, trackpad and touchscreen. Updated versions of the BlackBerry OS are released regularly to support new BlackBerry Smartphones n latest OS version is OS 5.0. The current version of the OS allows

complete wireless activation and synchronization with Exchange's email, calendar and other features.

BlackBerry Features

- Gestures
- Multitasking
- BlackBerry Hub
- Time Shift Camera
- Android Layout
- Keyboard
- BBM Video
- Voice Control

[3]

2.4.Ubuntu Phone

Ubuntu Phone is a currently new phone that has been release recently. You can use a phone that revolves around you and the content and services you use the most. You can switch between multiple apps and instead, let Ubuntu's unique scopes bring everything you need to one screen. The code is shared openly throughout the development cycle.

[4]

3. Development Tool

3.1.Mobile App Development Tool

3.1.1. PhoneGap

Building applications for each device—iPhone, Android, Windows Mobile and more—requires different frameworks and languages. PhoneGap solves this by using standards-based web technologies to bridge web applications and mobile devices. Since PhoneGap apps are standards compliant, they're future-proofed to work with browsers as they evolve. Read an in-depth post explaining PhoneGap visually. PhoneGap has been downloaded over 1 million times and is being used by over 400,000 developers. Thousands of apps built using PhoneGap are available in mobile app stores and directories. Check out some of them here.   [5]

	Android	Blackberry OS 6.0+	Blackberry 10	Windows Phone 8	Ubuntu	Firefox OS
Accelerometer	✓	✓	✓	✓	✓	✓
Camera	✓	✓	✓	✓	✓	✓

Compass	✓	X	✓	✓	✓	✓
Contacts	✓	✓	✓	✓	✓	✓
File	✓	✓	✓	✓	✓	X
Geolocation	✓	✓	✓	✓	✓	✓
Media	✓	X	✓	✓	✓	X
Network	✓	✓	✓	✓	✓	✓
Notification (Alert)	✓	✓	✓	✓	✓	✓
Notification (Sound)	✓	✓	✓	✓	✓	✓
Notification (Vibration)	✓	✓	✓	✓	✓	✓
Storage	✓	✓	✓	✓	✓	✓

[Figure 3.1.1]

3.1.2. Android Development Tool (ADT)

ADT stand for Android Developer Tools, it is a plugin for Eclipse that provides a suite of tools that are integrated with the Eclipse IDE. It allows you access to many features that help you develop Android applications. ADT provides GUI access to many of the command line SDK tools as well as a UI design tool for rapid prototyping, designing, and building of your application's user interface.

[6]

SDK Tools

- Virtual Device Tools
- Development Tools
- Debugging Tools
- Build Tools
- Image Tools

3.1.3. Kivy

Kivy is a recently released Framework that allows us to develop applications. Kivy runs on Linux, Windows, OS X, Android and iOS. You can run the same code on all supported platforms. Kivy is the main framework developed by the Kivy organization, alongside Python for Android, Kivy iOS,and several other libraries meant to be used on all platforms. It can use natively most inputs, protocols and devices including WM_Touch, WM_Pen, Mac OS X Trackpad and Magic Mouse, Mtdev, Linux Kernel HID, TUIO. A multi-touch mouse simulator is included.

[Figure 3.1.3]

- **Kv Language**

The *KV* language (sometimes called kvlang, or kivy language), allows you to create your widget tree in a declarative way and to bind widget properties to each other or to callbacks in a natural manner. It allows for very fast prototyping and agile changes to your UI. It also facilitates a good separation between the logic of your application and it's User Interface.

- **Python-for-android**
  Allow you to create package for android application such as apk file
  - **Require**
    - A linux computer or a virtual machine
    - Java
    - Python 2.7 (not 2.6.)
    - Jinja2 (python module)
    - Apache ant
    - Android SDK

- **Buildozer**

Buildozer is a tool that automates the entire build process. It downloads and sets up all the perquisites for python-for-android, including the android SDK and NDK, then builds an apk that can be automatically pushed to the device. Buildozer currently works only in Linux, and is an alpha release, but it already works well and can significantly simplify the apk build.

[7]

3.2.Database

3.2.1. SQLite3
SQLite3 is a very easy to use database engine. It is self-contained, serverless, zero-configuration and transactional. It is very fast and lightweight, and the entire database is stored in a single disk file. It is used in a lot of applications as internal data storage. The Python Standard Library includes a module called "sqlite3" intended for working with this database. This module is a SQL interface compliant with the DB-API 2.0 specification.

[8]

3.2.2. Django
Web development is a broad term for any work that involves creating a web site for the Internet or an intranet. The end product of a web development project varies from simple sites composed of static web pages to complex applications that interact with databases and users. The list of tasks involved in web development includes web design, web content development, client-server scripting, web server and network configuration and e-commerce development. Usually, web development means the non-design aspect of building web sites: coding.   [9]

3.3.Cloud-Server

3.3.1. Google App Engine
Google App Engine is a Platform as a Service (PaaS) offering that lets you build and run applications on Google's infrastructure. App Engine applications are easy to build, easy to maintain, and easy to scale as your traffic and data storage needs change. With App Engine, there are no servers for you to maintain. A well know Cloud-server that allow user to write applications in some of the most popular programming languages: Python, Java, PHP and Go. Use existing frameworks such as Django, Flask, Spring and webapp2. Develop locally with language-specific SDKs. Pair your applications with Compute Engine to integrate other familiar technologies such as Node.js, C++, Scala, Hadoop, MongoDB, Redis and more.

[10]

3.3.2. Dropbox
What is Dropbox? It's is an easy way to store and share photos, documents, spreadsheets, and other types of computer files, using a PC, tablet, or mobile device. Much like the introduction of email, digital photography, and low-rise athletic socks, once you get the hang of Dropbox, you'll wonder how you ever got along without it. Dropbox works by keeping identical copies of selected files on your computer(s) and Dropbox's cloud-based storage system, and automatically synchronizing them over an encrypted Internet connection.

[11]

[Figure 3.3.2]

3.3.3. Google Drive

Google Drive lets you store and share all of your files and folders, including documents, videos, images and other content that is important to you. You can sync, store and access your files anywhere – on the web, on your hard drive, or on the go. Google Drive can be used on any computer, tablet or mobile device. Store and view all types of files—images, HD videos, PDFs, text files, Microsoft Office® documents, drawings, and music, for free, with no software other than a web browser. You can convert Office documents to Google Docs format or edit them natively in Drive. Google Drive can be very useful to store all your project as a backup plan or sharing with your partner over the network.

[12]

3.3.4. Window Azure

Microsoft Azure is Microsoft's application platform for the public cloud. The goal of this article is to give you a foundation for understanding the fundamentals of Azure, even if you don't know anything about cloud computing. Azure is growing all the time so it's easy to get overloaded. The basic services are listed earlier in the paper. Start with just those, and then go through the additional services. That doesn't mean you can't use just the additional services by themselves, but the basic services make up the core of an application running in Azure.

[13]

3.4. Cloud-Database

3.4.1. Google App Engine Datastore

App Engine Datastore is a schema less NoSQL datastore providing robust, scalable storage for web application, with the following features:

- Highly reliable and covered by the App Engine SLA.
- ACID transactions.
- Advanced querying features.
- High availability of reads and writes.
- Strong consistency for reads and ancestor queries.

- Eventual consistency for all other queries

NDB Database

The NDB API provides persistent storage in a schema less object datastore. It supports automatic caching, sophisticated queries, and atomic transactions. NDB is well-suited to storing structured data records. An application creates entities, objects with data values stored as *properties* of an entity. When the application reads an entity, that entity is automatically cached; this gives fast (and inexpensive) reads for frequently-read entities. The application can perform queries over entities.

DB

The Python Datastore interface includes a rich data modeling API and a SQL-like query language called GQL. The primary data repository is the High Replication Datastore (HRD), in which data is replicated across multiple datacenters using a system based on the Paxos algorithm. This provides a high level of availability for reads and writes. Most queries are eventually consistent.

[14]

3.5.Other Tools

3.5.1. Gimp 2

Gimp 2 is a very powerful tool for image editing that is available for many OS such as UNIX, Windows and Macintosh computers. Gimp 2 work almost the same way as Photoshop, but not as popular. It is designed to be augmented with plug-ins and extensions to do just about anything. The advanced scripting interface allows everything from the simplest task to the most complex image manipulation procedures to be easily scripted.

Gimp 2 Features

- Painting
- System
- Advanced Manipulation
- Extensible
- Animation
- File Handling
- Etc…

[15]

3.5.2. Genymotion

Genymotion is an Android emulator which comprises a complete set of sensors and features in order to communicate with a virtual Android environment. Genymotion allow you to test your

Android application on a wide range of virtual devices for development, test and demonstration purpose. Genymotion run very fast unlike ADT emulator in eclipse which can take up to 5-10min to run, as for Genymotion that will only take like 1-2 min to boot. Genymotion currently work on Windows, Mac OS X and Linux operating system.

[15]

3.5.3. UMLet

UMLet is a very simple diagram editor that will help you make readable and easily editable UML and inheritance diagrams. The UMLet are not complex, later programs will have numerous classes and associations, all of which can lead to illegible design diagrams when done by hand. UML diagrams done by hand are also difficult to edit. UMLet can eliminate this hassle if used properly.
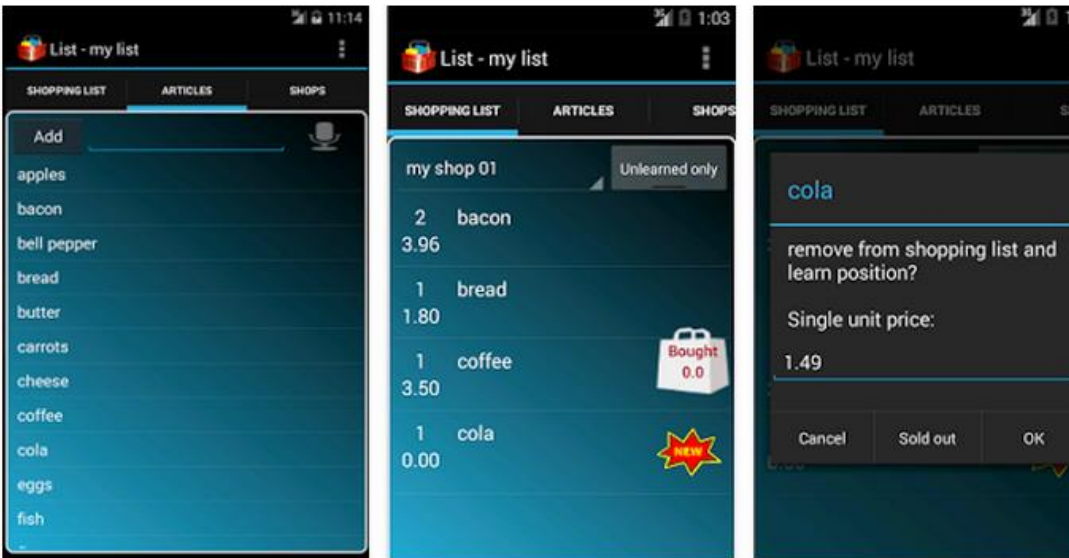
3.5.4. Fluid UI

Fluid UI comes with over 2000 ready-made iOS, Android, Windows 8 and wireframe UI widgets for phone & tablet prototyping - all regularly updated with the latest advances in mobile OS. Simply build the prototype on your desktop and scan the preview using the custom player apps for Android and iPhone/iPad. Fluid UI is a very easy to use tool which allow you to design your application before start coding.
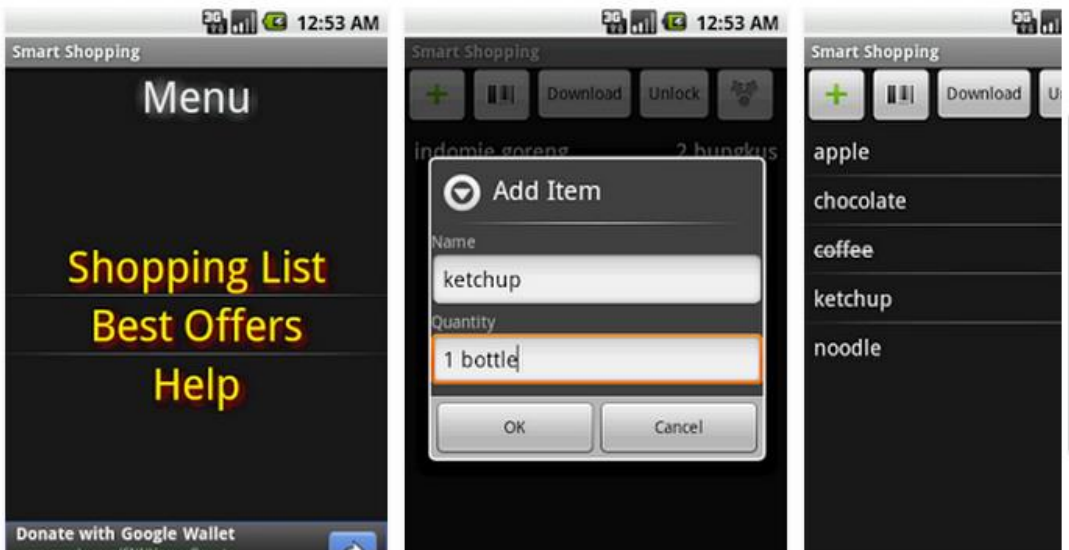
4. Similar Application

There are many other application that have the same idea as my app, but from what I see not everything are the same because I had tested out those application and they don't have Shop layout where a user can select a shop Layout and all information of the grocery item will be provide such as Aisle. The other information is very similar such as a user can create a shopping list and in the list, it's containing many grocery items. The user can add as many groceries as he/she want. The user may CRUD the shopping list and adds information into the grocery item. The following images are the similar application.

4.1.Smart Shopping List

[Figure 4.1]

4.2.Smart Shopping

[Figure 4.2]

5. Reference

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[Figure 4.1] [Smart Shopping List]
https://play.google.com/store/apps/details?id=de.tn_software.CleverList_free&hl=en

[Figure 4.2] [Smart Shopping] https://play.google.com/store/apps/details?id=com.plugie.shop&hl=en