



# FreeSomething

Application for Exchanging Used Items

FONG King Ting, WONG Hong Yat, LI Sze Hei, SHAM Hyde

Supervised by Professor Dimitris PAPADIAS



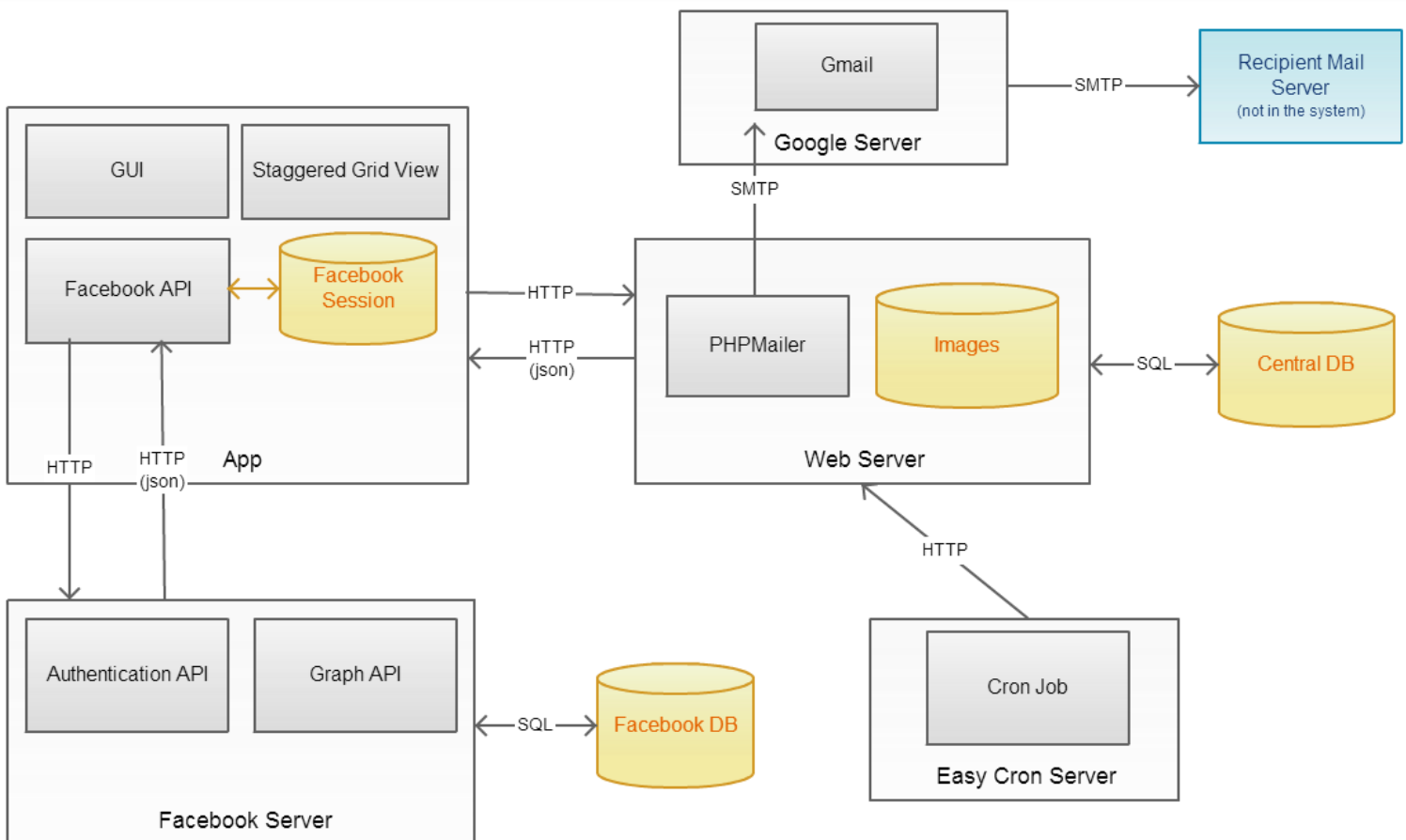
# Motivation



# Objectives

- A customized Android application for exchanging used items in Hong Kong
- A fair manual or random claimer selection mechanism
- An informative freecycling platform
- A user-friendly graphical user interface
- A secure Facebook login mechanism
- A social Facebook sharing function

# System Architecture

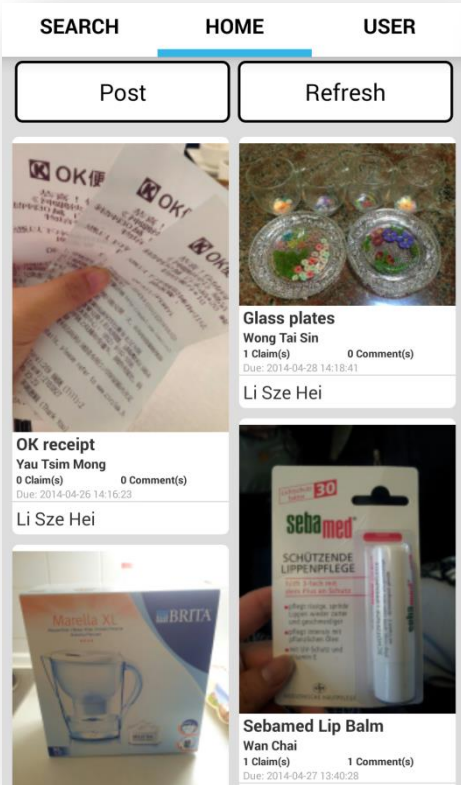


# Implementation

## Overview of User Interface

SEARCH HOME USER

Post Refresh




OK receipt  
Yau Tsim Mong  
0 Claim(s) 0 Comment(s)  
Due: 2014-04-26 14:16:23  
Li Sze Hei

Glass plates  
Wong Tai Sin  
1 Claim(s) 0 Comment(s)  
Due: 2014-04-28 14:18:41  
Li Sze Hei

Sebamed Lip Balm  
Wan Chai  
1 Claim(s) 1 Comment(s)  
Due: 2014-04-27 13:40:28

Home page



Load Image

Edit Title...

Edit Description...

Choose a Category...


Choose a District...

Number of Days for Claiming...

Choose a Selection Method...

Post Item

Post item page



Bicycle  
Sai Kung  
Method: Manual Selection  
0 Claim(s) 1 Comment(s)  
Due: 2014-05-03 22:19:59

Hyde Sham  
Pink color.

Comment

Li Sze Hei  
Is it functioning well?  
2014-04-24 23:16:16

Post a comment... Post

Item detail page

SEARCH HOME USER





Search by Name...

All Categories

All Districts


Search


Sort by: Number of Claims Ascending

-  Bicycle  
Hyde Sham  
0 Claim(s) 1 Comment(s)  
Due: 2014-05-03 22:19:59
-  Mango desserts  
Li Sze Hei  
0 Claim(s) 0 Comment(s)  
Due: 2014-04-26 08:48:09
-  OK receipt  
Li Sze Hei  
0 Claim(s) 0 Comment(s)  
Due: 2014-04-26 14:16:23
-  3D glasses  
Li Sze Hei  
0 Claim(s) 3 Comment(s)  
Due: 2014-04-27 14:20:25

Search page (upper)  
and Search result page (lower) (for Manual selection)

Claimed Users

 Yatyat Wong  
District: Islands  
Rating: -3  
2014-04-16 19:46:40  
Select


 King Ting Fong  
District: North  
Rating: 3  
2014-04-16 22:11:39  
Select


Claim list page


SEARCH HOME USER


Li Sze Hei  
District: Yau Tsim Mong  
Rating: 5  
Email: lizehei726@gmail.com


Your Posts Your Claims Pending

 Toms shoes  
Li Sze Hei  
0 Claim(s) 1 Comment(s)  
Due: 2014-04-28 16:37:03

 Microsoft mouse  
Li Sze Hei  
2 Claim(s) 0 Comment(s)  
Due: 2014-04-28 14:42:32

 3D glasses  
Li Sze Hei  
0 Claim(s) 3 Comment(s)  
Due: 2014-04-27 14:20:25

 Glass plates  
Li Sze Hei  
1 Claim(s) 0 Comment(s)  
Due: 2014-04-28 14:18:41

 OK receipt  
Li Sze Hei  
0 Claim(s) 0 Comment(s)  
Due: 2014-04-26 14:16:23

User page

## Facebook API

We used **Login API** to allow users to login and logout with Facebook accounts to provide user authentication and security. Also, we used **Graph API** to access users' public profile and allow them to share their posts in our app to their own Facebook timeline with "deep linking" for advertising purpose.

## Server

**CRON**, a time-based job scheduler, is used to select user randomly and update the status attribute value when the item is expired. The cron job is set to be run every hour.

### Email System:

Once a claimer is selected by the donor or our system, an email will be sent to notify the involved users. The email is constructed by PHPMailer and sent to Google SMTP server and finally delivered to users' mail server.

## Search and Sort

For searching items, a SQL statement is sent to database to retrieve data. We used two classes in java.util for Sort function inside our app instead of sending queries to Database for sorting. Collections and Comparator are the classes for Sort function inside our app. The sort operation in Collections uses a slightly optimized merge sort algorithm, which provides a faster and more stable sort.

## Ranking Algorithm

FreeSomething displays the items on Home page in a particular order according to their scores we calculated. The score of each item is computed as:

$$\sum_{\text{Attribute } b} \alpha_b \cdot \omega_b$$

where  $\alpha$  is the Attribute Score,  $\omega$  is the weight for this Attribute.

Key attributes of an item are summarized based on users' feedback as "Currentness", "Preferred district", "Donor's rating", "Item's number of claim" and "Item's number of comment".

## Conclusion

In this project, we have developed an Android mobile application for freecycling purpose. The major accomplishments are API integration, ranking algorithm implementation, database and server integration, search, filter and sort features, and GUI design. Comparing to other similar freecycling apps, we had added a ranking algorithm that based on user's preference and behavior, sorting and filtering features to maximize the efficiency of freecycling, and we focused on showing pictures instead of words to attract users to use it.