Virtual Second Hand Markets in HK

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Introduction

The idea of trade has been around since the Stone Age. According to Wikipedia, "There is evidence of exchange of obsidian and flint during the Stone Age." This form of trade is called *Barter*.

Objectives

The goal of this project is to develop an Android app that creates a local second hand markets in residential areas in Hong Kong.

1. Recognize buildings that is surrounding the user in HKUST (as a prototype)
2. Respond quickly when the real time information changes
3. Allow buyers and sellers to access the market information immediately
4. Create a reliable system that users are willing to use
5. Provide a user-friendly graphical user interface to display market information
6. Encourage interpersonal barter and material sharing

Design

1. The hybrid positioning system
   - Combining Wi-Fi positioning, GPS and inertial sensors.
2. Database - OLTP database
3. AR user interface - AR view, a Google Map view and a list view

Implementation

1. Develop the hybrid positioning system

We used Habersien formula to find out the distance and direction
Then, By combining with the acelerometer data, we can overlay the marker on user screen.

2. Build the database

We created a simple RESTful database by using PHP as a communicator between android device and the database.

3. Develop the client side program

We developed a simple MVC structure program that displaies, recieve and modies data with user.
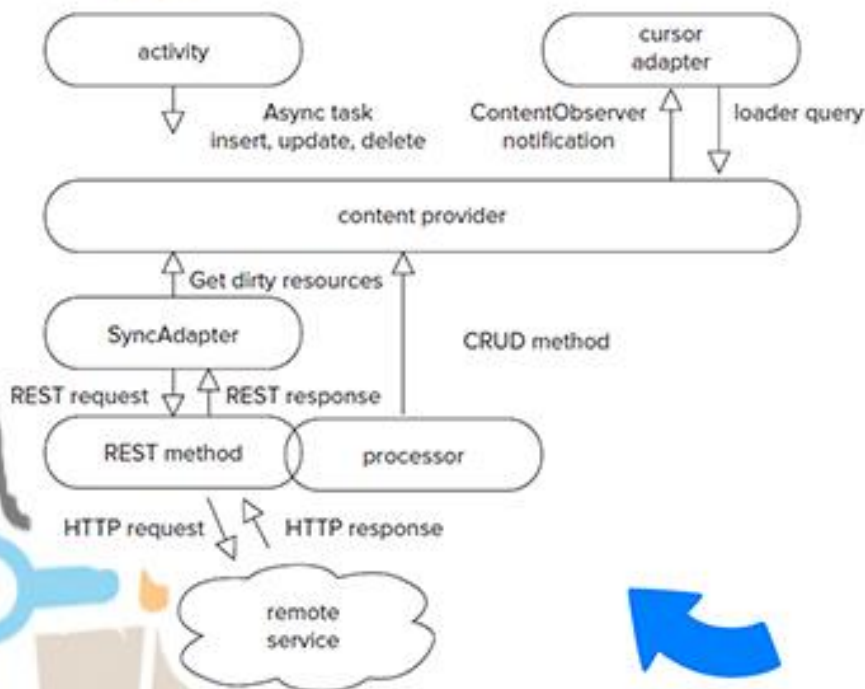
Result

The hybrid positioning system

There are 20 degree of diviation in the system which was casued by GPS accurcy problem.

Database performance

The performacne was a little bit slow for a image dependent system. It should be repleced by synchronizing local database approach

Conclusion

The system can only serve as a prototype for now, there is still much room for further development.