LOCATION-BASED SMART DIGITAL WALLETS WITH TRACKING

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CSC2231 - ADVANCED TOPICS IN MOBILE AND CLOUD COMPUTING

FIRST PROGRESS REPORT

OVERVIEW

The digital revolution continues to transform most aspects of our daily life. It is moving more to enhance the quality of our living and to facilitate our daily interaction. So, we plan on using this technology to enhance the user shopping experience. Our goal is to minimize the time wasted during shopping by:

- Contextually identifying, using sensor data, the location of a user, and if the user is determined to be at a place where they have a previously stored membership card in the application, pop-up the corresponding card to avoid searching for a card manually.
- Storing the digitized membership card and tagging them to particular locations.
- Keeping track of time spent at a store, and sending a reminder if they have spent more than the planned duration.

CURRENT PROGRESS

The current progress of our project is as follows:

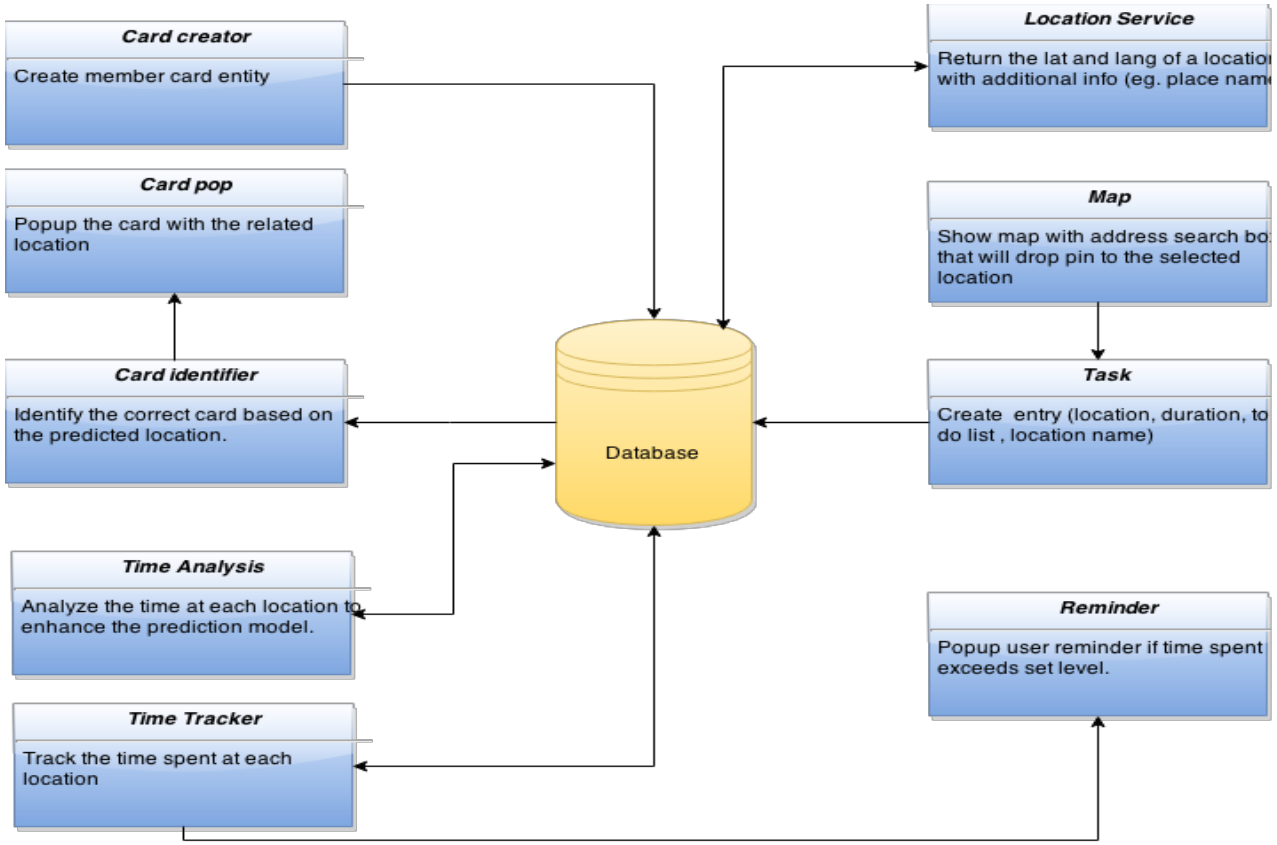
- Created an architecture of the application.
- Divided the tasks among team members.
- Developed map interface for the application with searching functionality implemented.
- Researched into the existing libraries that provide location based information and to read/generate barcodes.

ARCHITECTURE

The application broadly consists of 9 components and 1 database:

- **Database:** Holds all the location information, the user entered information for time-tracking, the membership cards that the user has, and the logs of every time the application detects that the user is at a particular establishment. These logs will be used for better prediction of the membership card to pop-up as the granularity of the location information may not be not fine enough.

- **LocationService:** This component is responsible for identifying the location of the user and also obtaining the relevant information like the latitude/longitude and the name of the establishment where the user is currently in.
- **Map:** Provides the map interface with address search functionality.
- **Task:** Provides an interface on the map to create a reminder that the user sets with information such as location, duration, things to do etc.
- **Reminder:** This determines if the user exceeds the time limit they've set at a particular location and provides the corresponding feedback.
- **TimeTracker:** This keeps the actual time tracking and calls the Reminder module access TimeTracker's information to function.
- **TimeAnalysis:** This is the engine that reads in the previous logs of the user behavior in order to better determine the card and also the TimeTracker as both of them would be triggered based on the location. Calls the TimeTracker and CardIdentifier based on the predicted location.
- **Card Identifier:** This module reads in the information from the TimeAnalysis engine and determines which card to pop-up and display to the user when they are at a particular establishment.
- **Card Pop:** The UI to display the membership card that the user can scan at the store.
- **Card Creator:** This module is responsible for enabling the user to create a digital version of their membership card and storing it into the database.



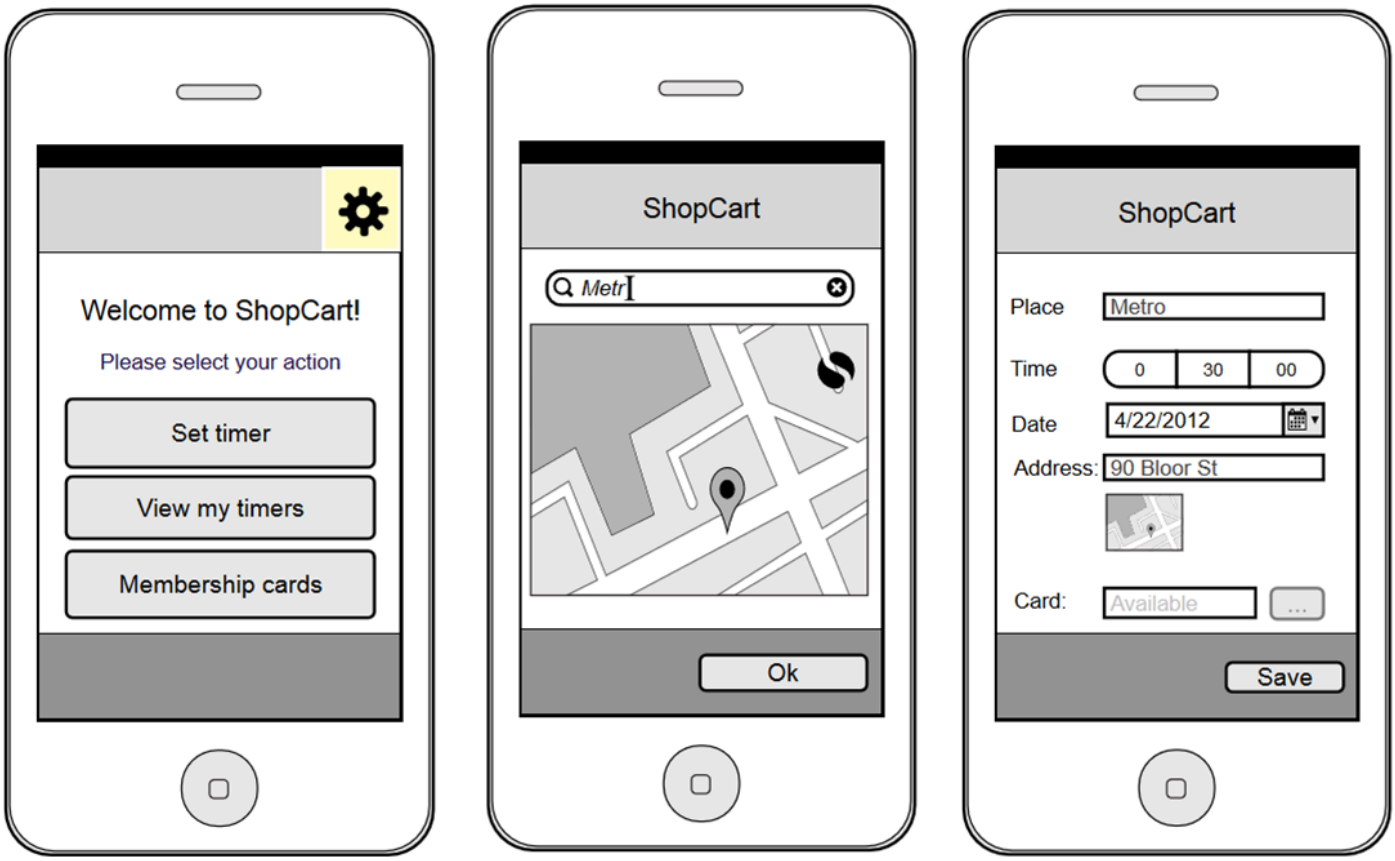
IMPLEMENTATION PROGRESS

We've currently completed the implementation of the following modules:

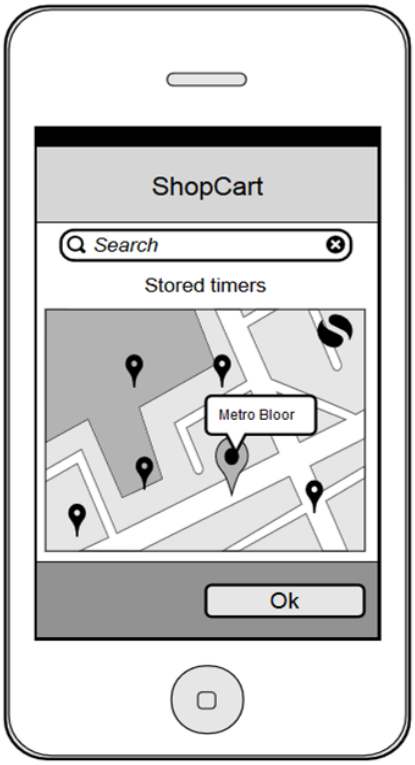
- LocationServices
- Map
- Task

We've also partially completed the database. We've not yet completed this step as we are determining on the best schema to store the data so that the retrieval for the prediction is fast.

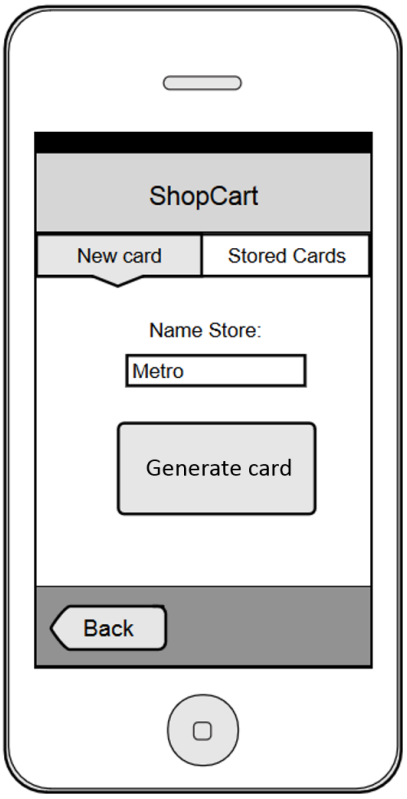
WIREFRAMES




ShopCart
Place
Metro
You have set a timer for Metro
Ok
Click the map to find location
Card:
Available
...
Save


ShopCart
Search
Stored timers
Metro Bloor
Ok


ShopCart
Store Name:
Metr
Update


ShopCart
New card
Stored Cards
Name Store:
Metro
Generate card
Back

NEXT STEPS

- Merge the implemented components.
- Research on the best method to implement the Card Creator.
- Study the existing algorithms for accurate predictions.
- Implement the other components.
- The final step will be a user study of the application.