Conceptual Sketch - Swipe Buddies

Project Motivation & Why it matters

Motivation

As most college students, MIT students are tight on budgets, and buying meals in Cambridge is expensive. Meanwhile, students on meal plans often have swipes leftover which all go to waste at the end of the semester. Currently the Division of Student Life has a program called SwipeShare, but it has its restrictions: only qualified students may apply and there is a maximum limit for donations (6 swipes).

We propose to kill two birds with one stone by implementing a web-app called SwipeBuddies, where students can donate their unused swipes to those seeking free meals, effectively removing all the deadweight loss from the current situation.

How the app will work (key concepts, purpose, structure, & behavior)

SwipeBuddies is an MIT-only service that allows students to donate their swipes. Since we do not have access to student's accounts, swipe givers & receivers must define a specific time/date and specify a dining hall where the giver can physically swipe in the receiver. With that, SwipeBuddies not only promotes food accessibility and reduces food waste, but also promotes users to socialize and meet new people.

When users request meals in a certain time range, or offers to donate meals, these requests and donations are kept hidden from other users after the daily matching job occurs.

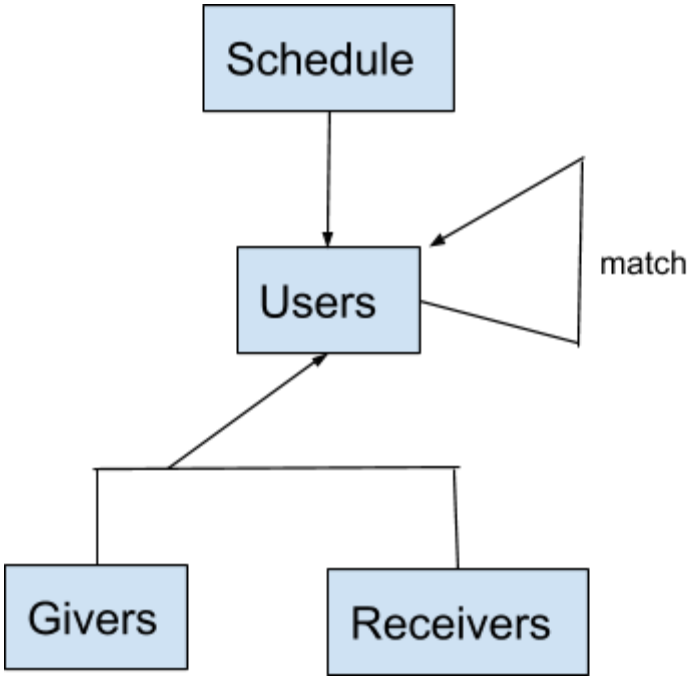
Internally, SwipeBuddies features 1) a scheduling algorithm to maximize the number of swipes shared and distribution of meals, given the list of swipe donors and their availability times, and 2) a subscription system where receivers could have the option of subscribing for free swipes daily, and givers have the option of donating swipes at recurring times.

Key Concept: Matching

Concept: matching

Purpose: to maximize the number of matched swipes while maximizing the number of receivers

Structure:



Behavior:

- donateSwipe(g : Giver, s : Schedule): a giver adds a swipe to the pool & inputs their schedule
- requestSwipe(r : Receiver, s : Schedule): a receiver requests a swipe for next day & inputs their schedule
- updateSchedule (u: User, s : Schedule) : a user updates their schedule
- createMatches (g: Givers, r: Receivers): matches givers & receivers based on their schedules; happens once a day

Why the project will involve interesting and substantive conceptual design work that (in particular that the app is more than just CRUD; that it involves at least one concept that is not already widely used; and that the design problem is non-trivial).

SwipeBuddies requires a design to find out how to maximize the number of given swipes and the number of receivers for a large number of people. Thus, our system must support an efficient matching algorithm to give maximum utility.

Additionally, the design of receiving and giving swipes needs to be carefully designed to benefit the users. There are edge cases where requests may be canceled or where schedules may prevent food from ever being given out.