Design Document (ProspectPass)

Team

- Olivia Johnston: oliviaj@princeton.edu
- Samuel Arnesen: sarnesen@princeton.edu
- Stephen Cornwell: sjc4@princeton.edu (**team leader**)
- Yijia Liang: yijial@princeton.edu

Overview

We proposing an electronic pass system to manage entrance into the Princeton eating clubs. This application, which we are calling "ProspectPass," will enable students to easily transfer their passes to their friends while also allowing clubs to gather accurate statistics about club attendance. ProspectPass will therefore not only be more convenient than the existing paper pass system is for students, but also an important tool for clubs seeking to create a safe and enjoyable experience.

Requirements and Target Audience

Problem

Currently, students use paper passes (printed on small business cards) to enter clubs. Students typically contact a friend who is the member of the club to inquire about a pass, and then meet in person to receive the pass. On a typical night out, students will present the physical pass, which should have the student's name as well as the club member's name written, as well as their student identification card. The bouncers check the pass with the student's ID, and then allow entry.

We identify several problems with the current pass method.

First, the use of a physical pass unnecessarily wastes resources - clubs spend thousands of dollars per year printing out color-coded paper passes which end up being discarded around campus if a student decides not to use it.

Second, physical distribution of passes has been criticized by students as tedious and occasionally awkward. This is especially the case if a non-member student is securing a pass from a mutual friend, or a friend of a friend. Even for members, the existing system can also be problematic if they are unable to pick up physical passes during the specific distribution hours.

Third, under the existing paper pass system, clubs have no means of tracking who or how many people enter the club. After the bouncer collects the pass, they do not record any additional information, making it difficult for the club to precisely manage how many people enter the club on a given night.

Fourth, students tend to secure multiple passes for one night out, which can lead to lost passes. Given that most (it not all) students have a smartphone that can access the internet, it makes more sense to have a centralized solution for passes.

Existing Solutions

There are no existing solutions to the problems of the paper pass system. With the paper pass system being in use for at least a decade, institutional inertia rather than any inherent benefit explains why the system is still in place despite its flaws.

Intended Users

We intend for Princeton students to use the application, specifically when they want to go to eating clubs that require passes on nights out.

We expect the platform to be used extensively if adopted by clubs needing passes, especially on nights out with heavy traffic (Thursdays, Saturdays).

Key Benefits

The main benefit of ProspectPass is the electronic centralization of the pass system.

For students:

1. Access all of their passes in one place
2. Transfer and receive passes immediately

For bouncers:

1. View passes and IDs without need for collection

For clubs:

1. Keep track of how many students have activated and entered a club
2. Know exactly who has a pass to enter the club
3. Prevent re-entry since passes will expire at a designated time after activation
4. Reduce costs of printing physical passes and environmental pollution
5. Easier management of pass distribution

Functionality

When students are transferring passes or receiving passes, we anticipate this will likely be done on a desktop app.

In general, when deciding to use electronic passes, users will likely consider several factors:

1. Ease of use - the current paper system is already quite intuitive and easy to use. ProspectPass therefore will need to be at least as easy to use in order to be competitive.
2. Reliability - the paper system, unless you lose the paper pass, is quite reliable. You give the pass to the bouncer and proceed with your night. Clubs and students are unlikely to adopt our system unless these same standards are met.

At a minimum then, ProspectPass's functionality must meet those conditions.

In particular, we anticipate that most usage, on a night out, will come from mobile devices meaning that the mobile experience must be seamless. Accessing and transferring passes must also be fast and intuitive for students and so we intend on designing the system to require as few clicks as possible. From the bouncer's point of view, a successful implementation is one that allows a bouncer to quickly verify the validity of the pass so the pass must be clear to read and easily distinguishable from a screenshot.

We thus aim to develop a webapp that will service the following use cases:

Example Use Cases

Club Member:

- Receives however many allotted passes clubs distribute
- Transfers passes to whomever they would like

Generic Student:

- Receives passes from club member
- Transfers pass to whomever they would like
- Has a centralized location for all their passes on their phone, organized by date and club
- Activates passes with the click of a button before heading to the eating club
- Shows pass to bouncer along with ID

Club Officer:

- Sets pass color and how long a pass remains activated
- Distributes passes to club members
- Tracks number of activated passes as a metric for how many students have entered (or are planning on entering) the club

Design

Backend:

We will be using a Django-powered backend with three main models:

1. Generic user - the user attributes will include their netID, name, and class year, and passes
2. Superuser (club officers) - the club officers will have all the attributes of a generic user as well as an attribute denoting which club they are in
3. Passes - the pass will contain the club name, pass color, and pass date.

We plan on beginning with the SQLite3 database that is native to Django. We will be generating a Django RESTful API to connect with our front end interface.

Server:

We will be hosting the application on Heroku.

Client Design Goals:

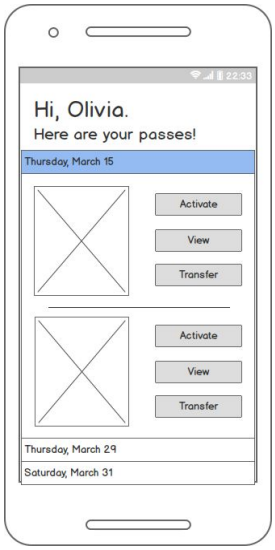
The basic view has a few basic requirements from the perspective of the student. It must be easy to see what passes you have, open those passes quickly, and transfer passes. To address these basic needs, we will have the design feature a page with images of your passes. Passes will be sorted according to date, with the closest dates coming first. Passes that have expired—or that have dates in the past—will not be displayed. Each pass will be accompanied by buttons offering options to transfer, view, or activate. While having the same set of buttons be displayed for each pass takes up space, it also makes the interface extremely intuitive, especially on mobile. The site will be created with HTML, CSS, and Javascript, using Bootstrap to help create a visually appealing site that works on both desktop and mobile devices.

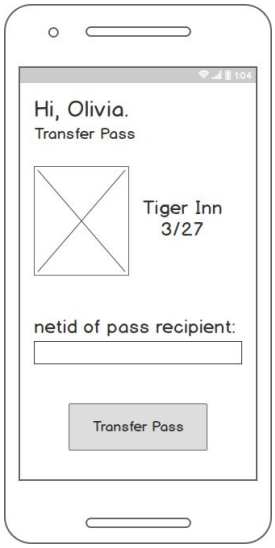
The site will have four main pages: a splash page that will prompt user login on CAS, a homepage that will display all of a user's passes, a screen that allows a user to transfer a pass, and a screen that allows a viewer to use and activate their pass. Mockups of the homepage and transfer page along with a pass design are below.

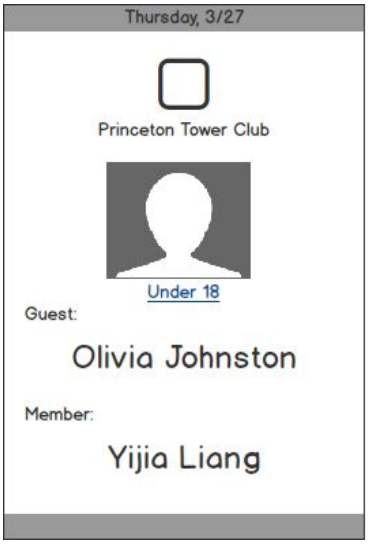
To design the actual pass, we want to include a few main features.

- Name of the club (optional: logo).
- Name of the pass holder.
- Name of the member who the pass came from.
- Date, which should also be signified by some type of colored strip.
- A feature that flashes to ensure the pass is not a screenshot.
- Whether the student is under 18.

Mockups:







Timeline

Design Document: March 17

1. Work on design document week of March 12
2. Turn in March 17

Sunday March 25

1. Github setup - Stephen
2. Back end setup (backend models thought out) - Yijia & Olivia
3. Send CAS request & do research (how to integrate) - Sam

Sunday April 1

1. Back end fully fleshed out in Django
2. REST API done
3. Front end views (code)
4. CAS login

Sunday April 8 (Prototype Project)

1. Prototype
    a. CAS login implemented for users

        i. Complete CAS functionality done by this time
    b. Pass interface done
    c. Sending functionality done
        i. Very basic send infrastructure
    d. Superuser for clubs admin
        i. Distribute passes

Sunday April 15

Sunday April 22 (Alpha Test)

1. Alpha design
    a. Everything from prototype needs to be bug free
    b. Wiring elements together - we want the pass structure to be linked to backend
    c. Seamless pass transfer and receiving
    d. Pass needs to be completed
        i. Blinking functionality
        ii. Other shiny features
    e. Superuser additional functionality
        i. Set pass expiration time
        ii. Set pass color, etc.

Sunday April 29 (Beta Test)

1. Requirements are same as Alpha
2. Make everything refined
3. Resolve all bugs

Demo Days: May 7, 8, and 9

Submission: May 13

Challenges and Outcomes

1. Challenges
    a. Sending/receiving between users - we will need to figure out how we can enable specific users to send data between one another. We have not worked with transfer of information with a SQLite database before and we will have to generate an API to enable a front end interface for manipulating information.

    b. Difficulty in connecting the model with actual view - we are considering using a front end framework (AngularJS perhaps) in order to connect the model together. We will need to create a Django RESTful interface in order to generate the model API to link with the front end framework.
2. Outcomes
    a. If we are having trouble figuring out the sending/receiving component, we will focus our efforts mainly on this portion as it's the main backbone of our product. We will scale back other features to do this (for example, pass activation time, etc.)
    b. We will scale back our work on the front end features to make sure that the back end works well without bugs. After all, the ability to send and receive passes is the crucial component.