Project Name: EventBin
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Project URL: https://calm-tundra-53413.herokuapp.com/

Overview and Elevator Pitch

EventBin is a mobile application that parses and interprets listserv emails to create a single platform for tracking events.

Requirements and Target Audiences

Problem Statement

Everyday the average student receives masses of emails from a multitude of listservs. The information becomes scattered and it's difficult to keep track of local events.

Solution

EventBin creates a simple way for students to browse and follow events on campus. By connecting directly to users' inboxes, EventBin is able to collect all listserv events effortlessly and frictionlessly.

Intended Users and Benefits

We plan to start by launching EventBin on Princeton's campus. From there we will slowly expand to other college campuses. We then plan to offer EventBin to any large organization with listservs (companies, non-profits, etc). Then ultimately, if we get our parsing sophisticated enough, we hope to expand to the general public, acting as an "event" layer on top of their inboxes. In this regard, EventBin can assist anyone who receives emails for events.

By using our application, users effortlessly have their email-based events organized and have the ability to discover other community events. This helps users be more organized and aware of what is happening in their local community (college campus, company, etc). Additionally, since users with EventBin are less likely to lose track of events, event hosts are benefited through the increased likelihood of attendance. Lastly, since users are able to signal their interest level through EventBin, hosts are now able to get visibility into the anticipated attendance of listserv events. And since EventBin works automatically, hosts don't need to worry about managing/using another application when hosting an event.

How We Are Different From Existing Solutions

Unlike previous attempts to collect listserv data, EventBin will parse listserv emails.

- This removes friction from experience for both listserv owners as wells as our end users
  - Listserv owners don't need to worry about posting event, just sending emails

    - End users don’t need to subscribe to events categories of interest

EventBin in Relation to Other Existing Event Applications:

- Google Calendar
    - Although users can often export events in their email to google calendar, this action requires additional effort from the user.
    - Google Calendar only gives the user the option to add or ignore the event, rather than simply consider attending. Further, average users likely have far too many events entering their inbox to add all events they are only considering attending.
    - EventBin creates an effortless method of browsing events a user may or may not want to attend.
- Meetup
    - Meetup is an application that hosts events.
    - While its own events may be organized onto a single calendar, there is no simple way that such events are merged with all other events in a user’s inbox. Even though a user could export his or her events to a Google calendar, as stated above, this method is not ideal.
    - Instead, Meetup events could be considered a “listerv” of the general population. EventBin could treat Meetup emails as such and create a simple way to merge “Meetup Events” with all others in a user’s inbox.
- Eventbase
    - Eventbase is an application that allows a user to browse and follow events.
    - This application, however, requires users to follow events based on categories they are interested in. This step therefore creates the additional friction of onboarding that EventBin eliminates.
    - Eventbase also inevitably causes users to follow far more events than they are actually interested in, leading to an even greater friction of having to sort through events, which could potentially cause the user to stop using the application.
    - Finally, without an application such as EventBin, there is no way to effortlessly merge Eventbase events with all others in users inbox that they are considering attending.

Functionality

Upon downloading EventBin, the user will be asked to sign up using his google email address. Please note for the initial version of our EventBin, you must have an @princeton.edu email address. Once his/her account is created, our system will search the user’s inbox for emails containing “invites” for events happening that day or in the future (see design section for more detail). The app will then extract relevant information from the emails and display the events to the user in an easy to read format. In the Today Tab, the user can see all the events (based on his emails) that are happening that day, and in the Bin Tab, the user can see all the events happening that day and beyond. All users will also have a Discover Tab that allows a user to browse through all events happening on Princeton’s by selecting the desired category of an event (“Free Food”, “Dance”, “Tech Talk”, etc.). Any event displayed in the app will also give the user the option to indicate his or her level of interest in going. If the user indicates either “interested” or “going”, that event will automatically be added to the user’s event list.

Scenario A: “I’m looking to discover events on campus”
It is almost Parent's’ weekend, and Freshman Fred wants to show his parents a good time at Princeton. He knows they are particularly interested in his experience with the Tech side of Princeton, so Fred pulls out his EventBin app to see if he can find anything that spurs their interest. His Bin Tab doesn’t seem to have anything too relevant, so he taps on the Discover Tab. Overwhelmed by the abundance of events going on during Parents’ weekend, he filters it by category, “Tech Talk”. As Fred goes down the list he finds an awesome talk by Dr. Zhifeng Chen from Google Brain discussing TensorFlow, Google’s new deep learning framework. Immediately, he taps “going” in order to be reminded of this amazing opportunity 15 minutes before it occurs. Curious as to which groups are behind this event, he uses the “Force Tap” gesture and discovers that it was part of a PWiCs email. If it had not been for EventBin, he would have never known about this event because Fred was not a member of PWiCs. Now, he will have somewhere interesting to take his parents.

Scenario B: “What events am I forgetting about?”
It’s midterms and everyone’s schedules are irregular. In particular, club sports are hosting practices, pick-up games and team fitnesses to help ease everyone’s stress. However, given that it’s midterms week it will be hard to find a time that suits all members of the team. Women’s Club Soccer, for example, cancels all regular Tuesday and Thursday practices and replaces them with an indoor pickup game at 11pm on Monday night, a team dinner on Wednesday, a pregame with Men’s Club Soccer on Thursday night, and group fitness on Friday. Katy, a Junior on Women’s Club Soccer, has recently come back from being abroad and feels disconnected from the team. She decides to give it another try and, hopefully, get a good workout from it too. Katy, however is swamped by emails and so she pulls out her EventBin app, remembering that she must still be signed up for the PWCS listerv. On Monday morning, she looks in her Today Bin, and finds that indoor pickups is happening that night! Immediately, she taps “going” and, to her surprise, sees 9 other people that indicated they were going as well. Katy is happy to have been the 10th person because now they have just enough players for a full court game! Without her Today Bin, Katy would have missed such a fun opportunity to rekindle with her club team.

Scenario C: “Are people actually going to this event”
Dinners with the same people, in the same place, speaking the same language is getting a little boring for Anne, a second semester Sophomore. She recalls someone having mentioned the existence of “language and discussion tables” held at dining halls. Maybe this would be a good chance for Anne to practice her Portuguese, or even some other language. Anne opens up her EventBin app to check the times and dates of the next Portuguese roundtable. She looks at her Bin Tab but finds none scheduled at Butler (her residential college) until the next week. She doesn’t want to wait that long! Although Anne is only subscribed to the Butler listerv, she is sure

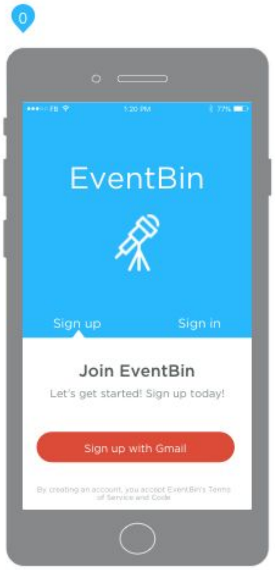
there must be another res college hosting a language table sooner. So, she switched to her Discover Tab, filters by “language tables” and finds an assortment of different languages being offered: Russian, Chinese, Spanish, American Sign Language, Arabic and finally Portuguese! It is on Wednesday, at 5:30pm in Whitman’s community hall cafe (as they call it). Considering it is a pretty early time for dinner, Anne is concerned she may be the only one interested- which would certainly defeat the purpose of a language/discussion table. She checks the list of people that were also “interested” or “going,” and, to her relief, sees 4 people that indicated “going” and 5 that indicated “interested.” ‘Awesome, not too many but not too few’ she thinks. With that, she hits “going” and texts her portuguese friend to come along as well.

Design

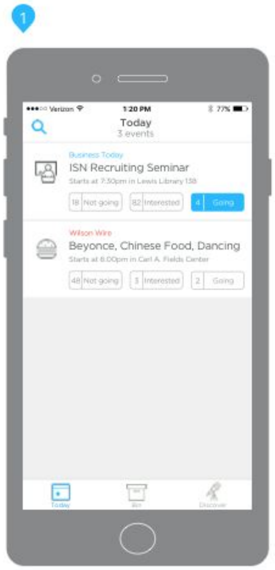
EventBin will be a three tier application containing a presentation tier (iOS frontend), a logic tier (NLP engine) and a data tier (Firebase BaaS).

iOS Frontend (Presentation Tier)

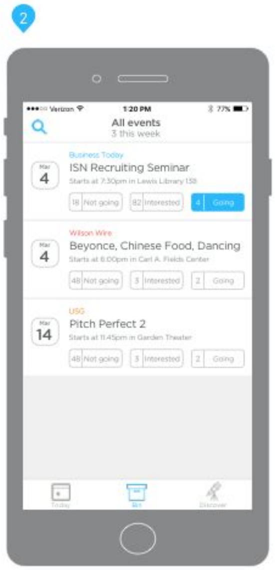
The presentation tier will be written in Swift using XCode. The application interface will have 4 main views: “Sign up/log in”, “Today”, “Bin”, and “Discover”. Please see below for preliminary mockups of the 4 main views:


0
●●●○○ FB
1:20 PM
77%
EventBin
Sign up
Sign in
Join EventBin
Let's get started! Sign up today!
Sign up with Gmail
By creating an account, you accept EventBin's Terms of Service and Code

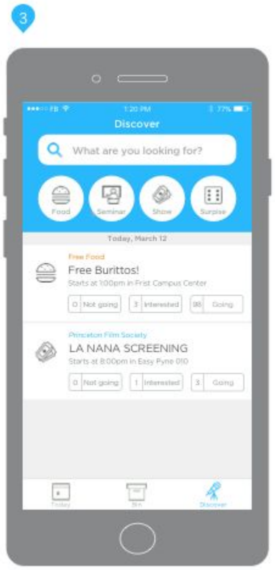
1.0 Login concept



1.1 Today tab concept



1.2 Bin tab concept



1.3 Discover tab concept

Sign up/ Login: This view will prompt users to sign up via Gmail. If a user already has an account, they can tap “Sign in” and will then be prompted to sign in via Gmail. If a user with an existing account tries to “sign up with Gmail,” a modal will appear informing them an account with their email address has already been created. Please note that, for the purpose this project, only users with @princeton.edu email addresses will be able to create accounts.

Today Tab: This view will be the default view when you open the EventBin application. The “Today Tab” displays all events that are currently occurring or will occur in a given calendar day.

The events for this view will be generated by reading and parsing a given user's Gmail inbox (see business logic layer for more information). A user can indicate their interest level in an event by tapping “not going”, “interested” or “going”. If a given user is “interested” or “going” to an event they will receive a push notification 15 minutes before the start time of the event. Users can view the contents of the original email for an event (the source of the event in other words) by using the “force touch” gesture (iPhone 6s).

Bin Tab: The “Today Tab” displays all events that are currently occurring or will occur. These events, identical to the “today tab”, will be generated by reading and parsing a given user's inbox (see business logic layer for more information). A user can indicate their interest level in an event by tapping “not going”, “interested” or “going”. If a given user is “interested” or “going” to an event they will receive a push notification 15 minutes before the start time of the event

Discover Tab: The “Today Tab” gives all @princeton.edu users access to all public events that are occuring on campus. These events will be generated by reading and parsing emails from a list of publically accessible campus listservs. If a user indicates that they are “going” or “interested” in an event, the event will be added to the given user's event list (see data tier section for more information) and displayed in the “today tab” and “bin tab” views. By tapping “Food”, “Seminar”, “Show” or “Surprise” (random category) the user will be displayed all events (collected from the public listservs) that match the selected category.

NLP Engine (Logic/Business Tier)

The presentation tier will be written in Swift using XCode and will be responsible for reading and parsing user’s Gmail Inboxes. If we feel that we are unable to efficiently parse emails in Swift (on the frontend), we might consider parsing emails on the backend with a separate Node.js/MongoDB server (but we are hoping to avoid this outcome).

When reading emails we will first filter out all emails that are from a “whitelist” of listserv email addresses. We will manually compile this whitelist by working with ODUS and reaching out directly to student organizations on campus. Once we have filtered out all non-listserv emails, we will read the remaining emails and search for event identifiers. Event identifiers could be anything from key phrases, such as “free food,” to locations on campus or times/dates**.** Once we have determined that an email contains an event we will extract the following information: Event name (subject of email), date of event, time of event, location of event, and category of event (food, show, misc). For V1, we plan to use Swift’s NSDataDetector Class for the parsing. Time permitting we plan to explore using some of the open source NLP (such as NLTK or Stanford’s Core NLP suite).

Firebase (data tier)

For the data tier, we plan to use a popular BaaS tool called Firebase. Firebase can power all portions of EventBin's backend, including data storage and retrieval and user authentication. We decided to use Firebase for EventBin’s data tier because of it’s real time database functionality (perfect for the event interest level feature) as well as the ease of Google oAuth with tool.

The Firebase database is a JSON NoSQL database, so all data is stored as JSON.
As we learned in lecture JSON is a hierarchical key-value data structure, or in other words a tree of key value pairs. We plan to have two main branches in our tree: one for users and one for events.
***Note: the data below is for illustrative purposes
Users:

- userEmail: “jss3@princeton.edu”
    - listServs: “[btlist@princeton.edu, …]”
    - eventNameList: “[ISN Recruiting Seminar], [Beyonce Chinese Food Dancing] …”
    - lastAction: “March 12 10:00pm”
    - lastParsing: “March 12 11:00pm”

Events:

- eventName: “ISN Recruiting Seminar”
    - eventType: “Seminar”
    - eventList: “btlist@princeton.edu”
    - eventDate: “March 10 @ 6:00pm”
    - eventLocation: “Carl A. Fields Center”
    - eventINotGoing: “[jss@, ams@, …]”
    - eventInterested: [abc@, qrz@, …]”
    - eventGoing: “[wxy@]”

Timeline

March 15

- Design document completed
- Project status website design finalized

March 19

- Swift tutorial completed
- Firebase tutorial completed

March 21

- Project status website online
- Basic version of presentation tier (3 tabs with basic tables)

March 28

- Basic prototype
    - Google oAuth (with @princeton)
    - Display listserv emails in app

April 4

- Firebase setup
    - Build infrastructure of data trees
    - Start storing using account information (integration with Google OAuth)
- Logic tier
    - Identify listserv events using regular expressions (hard coding values)

April 8

- Successfully store listserv and user data in Firebase (have basic version of logic and data tiers)

April 15

- Simplest version of our app (pre-alpha)
  - FIlter listserv emails by hard coded event descriptions such as location, day of the week, etc.
  - Store listserv event information in database
  - Display events (in relevant 2 tabs)
- Start exploring advanced NLP techniques

April 18

- Alpha version of application
  - Add discover functionality to pre-alpha version above
  - Launch trial with small group of friends
- Continue exploring advanced NLP techniques

April 25

- Beta version of application
  - Bug fixes (discovered during Alpha)
  - Implement more advanced NLP techniques
    - Keep testing for false positives

May 2

- Fix any bugs discovered in beta version of app

May 15

- Dean's Date and submission deadline

Risks and Outcomes

Learning Swift: No one in the group has experience building an iOS application, so we will need to quickly learn the language. We plan to complete Swift tutorials by the end of Spring Break.

Email Parsing + Lexical Analysis: The biggest risk of our project is if we are not able to completely efficiently identify events from users' inboxes. While we hope to utilize NLP libraries for this project, in the worst case we can utilize regular expressions and hard code keywords for matching events. While this might not be the "proper" way to identifying events, it should work well enough for the purpose of this project.

GMail OAuth: We are not sure how difficult it will be to utilize the GMail API for our application since none of us have direct experience working with Google's APIs. That being said, Google has great documentations (and tutorials) online about working with their APIs.