HOTSPOT
A COMMUNITY EVENTS APP

CIS 3296 SECTION 01
FALL 2024

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Repository:

https://github.com/cis3296f24/01-HotSpot

Project Board:

https://github.com/orgs/cis3296f24/projects/93/views/1

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Project Proposal

Project Abstract

This document proposes a community event app where residents can subscribe to public hotspots such as parks, streets, restaurants, etc… and receive SMS or Email notifications on when events are occurring. Events can range from block parties to casual sports events. Large events auto-populate the app through public APIs (EventBrite, Yelp, Ticketmaster). Users can post their own events. All events can have opportunities to verify checkmarks for safety. Smaller events can still occur without verified checkmarks (e.g. pick-up basketball game). Users could receive high ratings for a successful event to boost their credibility. We will also add additional filters to seek out accommodations for disabilities and other personalized experiences.

Mission

Bring the world closer together by connecting people to live events.

Vision Statement

For event attendees who are looking to discover more relevant and upcoming experiences, HotSpot is an event-matching application that connects attendees with more relevant events for popular spots in the area. Unlike Eventbrite and other event technology platforms, HotSpot allows users to save favorite locations and be notified when events that fit their interest are posted, better-connecting attendees with their ideal event experience.

User Features

- User Profile and Preferences
    - User registration/login (Sign up/in options via ___ (email, Google, FB?)
    - User interests/preferences (can select categories to personalize recommendations)
    - Location-based preferences
    - Notification settings (email, SMS notifications)
    - Personalized home feed
- Event discovery
    - AI model to recommend events based on preferences, location, past interactions, etc
    - Show trending and nearby events
    - Similar event suggestions
    - Maybe suggest events based on friends activities
- Event countdown reminder
- Real-time updates (venue change, time change)
- Event registration

- Allow users to register for the event (within the app or it brings you to the page?)
- Upload event feature
  - Users can upload events with moderation to approve public postings
- Friend connections and invitations
- Event sharing on social media
- Search and filtering system
- Allow event creators to see stats and analytics

Personas

Xavier, a college transfer student

Xavier, age 20, has just moved into his dorm at Penn State University for junior year, far from his home in New York. He is planning to major in Health, but focused on his basketball dreams. He's dedicated to his training and work to the point where he doesn't have much time to put into his social life. He likes hanging out with friends, but since moving, he hasn't been capable of making any connections outside of class. His family is very extensive and all live near his home, so he loves going to the frequent family events such as cookouts and parties.

With Xavier transferring to a different university halfway through his bachelor's degree, he wants to participate in student events, so he believes that Hotspot is the app to use. He loves that the events are all verified, and that he would not have to worry about going to an event that is not occurring anymore. He also thinks that knowing the amount of people attending the events alleviates his worry of being the only one attending.

Hannah, a marketing specialist

Hannah, age 28, is a marketing specialist based in an urban area who often travels for work. She is passionate about socializing, networking, and staying active in the event scene. Hannah relies on HotSpot to keep up with professional events, local meetups, concerts, and pop-ups in every city she visits. With her packed schedule, she doesn't have time to sort through irrelevant events, so having quick, curated recommendations makes a huge difference.

With HotSpot, Hannah can easily discover relevant events wherever she is, from workshops to last-minute concerts. She loves that the app lets her create and manage her own events effortlessly, like networking mixers or skill-building workshops, which helps her engage her professional network. She also values that HotSpot offers easy calendar integration and event reminders so she won't miss a thing.

Henry, a motorcycle enthusiast

Henry is a 25-year-old motorcycle enthusiast living in Cherry Hill, New Jersey. Working as a software engineer, he has a flexible schedule that allows him to explore new trails and attend motorcycle events around the state. Henry is drawn to the motorcycle community's camaraderie, often joining group rides and events. His passion is modifying sports bikes, attending shows to find inspiration, and networking with others who share his interest in bike mods. He's always on the lookout for nearby events or weekend meetups to ride with his friends, especially those organized by popular brands or groups in the upper Cherry Hill location.

With a degree in Computer Science, Henry is tech-savvy and quick to pick up new apps and gadgets. He values a well-designed interface and expects intuitive user experiences. He's looking for a way to get real-time, personalized notifications about local events and track days, so he can plan his weekends around them. Henry appreciates the ability to set preferences in an app so it can notify him of the types of events he loves, like bike shows or adventure rides, making HotSpot app a perfect fit.

Julia, the Philadelphia Socialite

Julia is a 35-year-old musician living in Philadelphia, where she loves the vibrant culture and wide array of events in Center City. Her social calendar is often full, as she and her close group of friends enjoy frequenting Rittenhouse Square, local parks, and other spots around town. She often can be found attending art exhibitions, seasonal festivals, outdoor yoga classes, or just catching live jazz at her favorite café.

Julia has a deep appreciation for curated experiences, often choosing events that align with her interests in art, wellness, and community engagement. She also values ease in planning her outings and often coordinates with friends to decide on places and times. The idea of using Hotspot appeals to her because it simplifies finding events that match her vibe and confirms attendance numbers—she loves to know if an event is lively and well-attended.

With Hotspot, Julia can set her preferences to receive updates on Center City events, especially those that are outdoors, pet-friendly, or in iconic locations like Rittenhouse Square. Since she and her friends tend to decide last-minute, she loves that the app offers real-time updates and reliable event details so she can avoid any confusion or wasted trips.

Conceptual Design

We will be maximizing use of the AWS Cloud Ecosystem. Many AWS Cloud Ecosystem resources can target React Native applications for event data. Using a Flask server is lightweight and accomplishes this project's requirements.
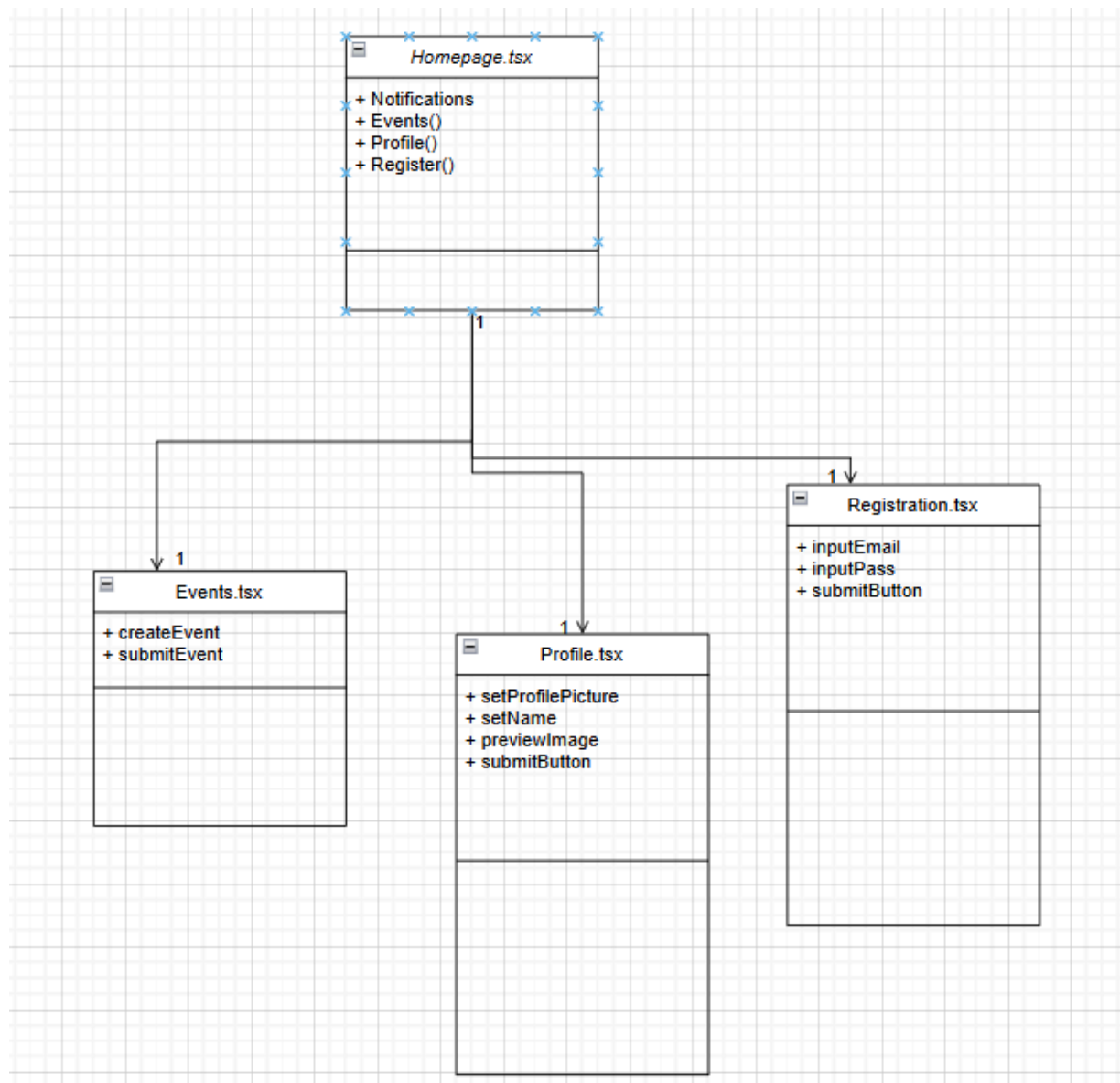

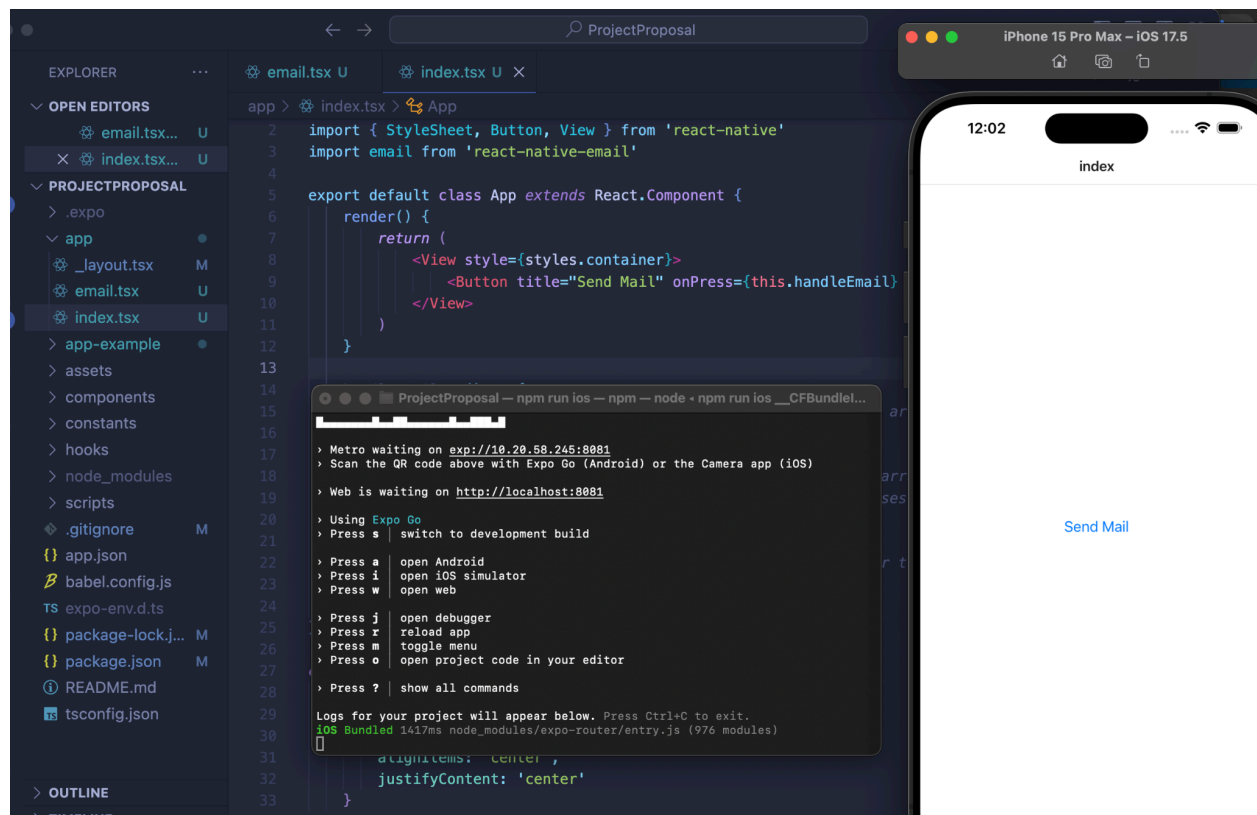Frontend: React Native
Backend: Express.js, Flask
Database: AWS DynamoDB
Notification Feature: AWS SNS Topics
APIs: Google Maps, Eventbrite, Ticketmaster, Yelp

Proof of Concept

Clicking Send Mail currently takes you to the Mail app

React Native with Flask server:
https://github.com/jake9725/Simple-react-native-app-python-flask

Notifications with SNS Topic:
https://www.youtube.com/watch?v=yPbRwmZIG68&pp=ygUNQVdTIHNucyB0b3BpYw%3D%3D

Google Maps API: https://github.com/googlemaps

EventBrite API: https://www.eventbrite.com/platform/api

Background

Planning and meeting up for fun events is important for community engagement. Currently event meetup apps such as Meetup (https://apps.apple.com/us/app/meetup-social-events-groups/id375990038) exist but lack support for casual, local, and spontaneous events. There is also a low-focus on safety and verification. We will also implement stronger accessibility features than what current apps have.

Another one of our most important contributions that build on previous ideas include the verification and rating system for event planners and attendees that want to build credibility and community. Our app focuses on building credibility to forge long-term relationships with individuals rather than quick meetups.

Required Resources

All resources needed are open source. Since the app is built on a React Native-Flask technology stack, we can utilize the vast amount of open source libraries that provide us the tools needed to implement our goals. Again, here are some of the technologies needed:

Frontend: React Native
Backend: Express.js, Flask
Database: AWS DynamoDB
Notification Feature: AWS SNS Topics
APIs: Google Maps, Eventbrite, Ticketmaster, Yelp

Risk Analysis

This risk analysis identifies potential risks associated with the project, evaluates their likelihood and impact, and suggests mitigation strategies.

1. **Technical Risks**
   a. **Backend Integration Failure**
      i. *Likelihood*: Medium
      ii. *Impact*: High
      iii. *Description*: The project uses a Flask server for the backend and Firebase for database for storage. There could be issues with integrating these services or misconfigurations.
      iv. *Mitigation*: Prioritize integration testing early in the development cycle, and have fallback mechanisms for failures in third-party API calls.

b. **Performance Bottlenecks in Real-Time Features**
      i. *Likelihood*: Medium
      ii. *Impact*: High
      iii. *Description*: Features like real-time notifications and updates may face delays or performance issues under heavy user load or poor infrastructure setup.
      iv. *Mitigation*: Optimize the SNS integration and conduct load testing with various scenarios to ensure stability under different conditions.
   c. **Front-End User Experience (UX) Issues**
      i. *Likelihood*: Medium
      ii. *Impact*: Medium
      iii. *Description*: If the React Native app is not optimized for mobile or does not offer a seamless user experience, it may lead to poor user adoption.
      iv. *Mitigation*: Conduct regular UX reviews, use user personas during testing phases, and address user feedback for continuous improvement.

2. **Security Risks**
   a. **Data Breaches and User Privacy**
      i. *Likelihood*: Medium
      ii. *Impact*: High
      iii. *Description*: Handling sensitive user data, such as location information and personal profiles, poses the risk of breaches. Improper security in Firebase or user authentication could lead to data leaks.
      iv. *Mitigation*: Implement strong encryption for data storage and transfers, enforce strict access controls, and regularly audit security measures.
   b. **Authentication and Authorization Flaws**
      i. *Likelihood*: Medium
      ii. *Impact*: High
      iii. *Description*: Vulnerabilities in user login systems could allow unauthorized access or identity theft.
      iv. *Mitigation*: Use secure OAuth implementations, implement multi-factor authentication, and monitor login attempts for suspicious activities.

Risk	Likelihood	Impact	Mitigation
Backend Integration Failure	M	H	Early integration testing
Performance Bottlenecks	M	H	Conduct load testing
UX Issues	M	M	Conduct UX reviews

Data Breaches	M	H	Strong data encryption
Authentication Issues	M	H	Multi-factor authentication

Week 2 Progress

Sprint Goal: The goal for this sprint is to add more features to the interface of the webpage, such as notification pop ups, a home and profile page, and registering events

Backlog Features:
- search bar on homepage
- notifications pop-up
- registration page
- home landing page

Velocity and Task Evaluation:

Tasks in Sprint	Est. Velocity	Fin. Velocity	Task Status at end of Sprint	Assigned To
User Profile	2	3	Done	Hirab
Notification Pop Up	1	1	Done	Noel
Home Landing Page	1	1	Done	Ernest
Search Bar	1	2	Done	Henry
Event Registration	3	5	In Progress	Andrew
Create Event Page	1	2	In Progress	Sophie

[**XS** - 1 (minute to hour), **S** - 1 (entire day), **M** - 2 (multiple days), **L** - 3 (entire sprint), **XL** - 5 (multiple sprints)]

Estimated Velocity: 9
Final Velocity: 14

Week 3 Progress

Sprint Goal: The goal for this sprint is to connect all the frontend features to the backend. Cards for events will be shown, and searching will search the database. Page routing will also be fixed to prevent cases where you would get stuck on a page without a nav bar.

Backlog Features:
- search bar searches database
- fixed page routing
- reorganize file structure
- event cards addition + styling

Velocity and Task Evaluation:

Tasks in Sprint	Est. Velocity	Fin. Velocity	Task Status at end of Sprint	Assigned To
Profile Changes	2	2	Finished	Hirab
Page Routing Fix	2	2	Finished	Noel
Event Cards Formatting	2	2	Finished	Ernest
Search Bar Searches Database	2	2	Finished	Henry
Event Registration	5		In Progress	Andrew
Create New Event Page	1	1	Finished	Sophie

[**XS** - 1 (minute to hour), **S** - 1 (entire day), **M** - 2 (multiple days), **L** - 3 (entire sprint), **XL** - 5 (multiple sprints)]
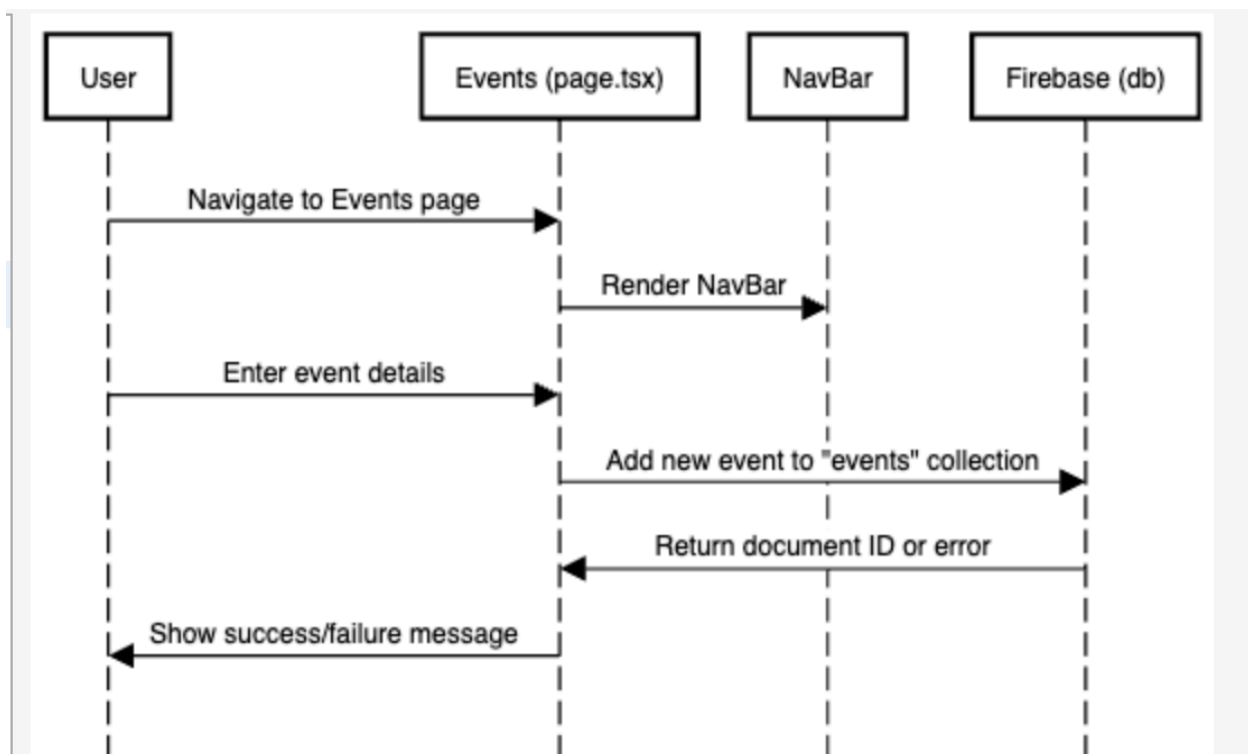
Estimated Velocity: 14
Final Velocity:

Sequence Diagrams:
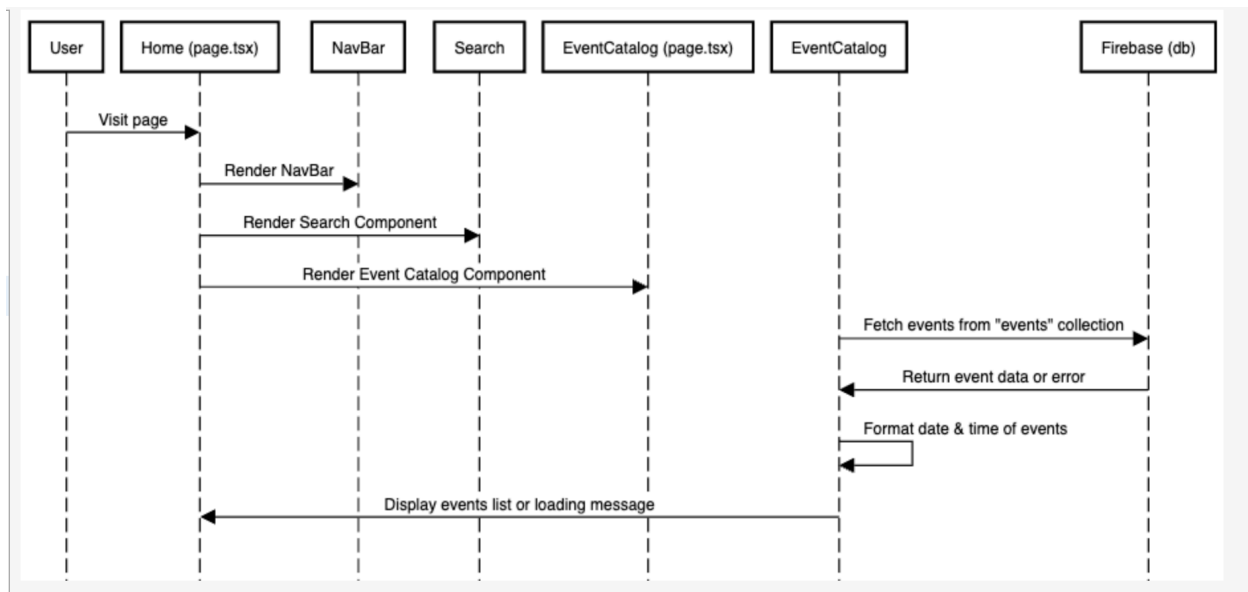
In this sequence diagram, the user is visiting the page, which brings them to the home page where a navbar, search bar, and upcoming events catalog are loaded in. The events catalog fetches data for the events from a database, and it displays the date, time and other data when it is returned.

In this sequence diagram, the user navigates to the events tab. Once there, a navigation tab is loaded in and then they enter event details to create a new event. This data gets sent to the Firebase database, which returns document ID and success message.