University of Arkansas – CSCE Department

Capstone I – Final Report – Fall 2019

Bulletin Board Application/Campus Events

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0.0 Abstract

The problem at hand that we are trying to solve is that too many campus events are not advertised well enough to the student population. Campus events coming from a variety of different sources are not even on the radar of the typical University of Arkansas student. Either the event is advertised in an email that very few read, or the event is barely advertised at all so that the students that actually go to these events had to search out the opportunity themselves. We truly believe that more students would love the opportunity to attend some of these awesome events if they were known of beforehand. This is where our solution comes into play.

Our solution to the above problem will be an application that streamlines all campus event info into one common place. With events being solely advertised in one location, students can automatically get notifications from their favorite campus departments or RSOs without having to search around or luckily stumble upon a cool event they'd like to attend. Furthermore, students will now have a clear cut location to search for events now whenever they feel curious about what kinds of things are going on any given week. Event planners will now also have a one stop location to advertise their events to the general student population that they know will get looked at. Our application will also be convenient in that it will be able to link to students' Google Calendars for easy scheduling of events that interest them.

1.0 Problem

The main problem to solve is the unorganized nature of campus events and activities. Students often get many different emails informing them of guest speakers, companies visiting campus, and club events that crowd their inbox. The result is many students might not even open the messages. Because students don't look at these emails, don't pay attention to flyers around campus, or are just overwhelmed by the number of events happening, it's important to try and consolidate all this information into one central application.

The impact of having this application would be increased awareness and turn out to the many events on campus, as well as integration with student smartphones. By syncing with the user's calendar, notifications and reminders can be utilized so the user does not forget about an event they may be interested in attending. With calendar sync, they can plan around classes or other commitments. This would result in a more engaged student body, leading more companies and guest speakers to be interested in hosting events at the University of Arkansas, knowing the school has large turnouts.

2.0 Objective

The objective is to create an application that consolidates all campus events into one central location, which allows users to sync their selected events to their Google Calendar, or export events to their calendar of choice.

3.0 Background

Students receive many emails of school events, company mixers, and guest speakers on campus, but can quickly forget when and where the event is, or lose it in a sea of emails. The idea is to have a central location to view all these various activities on campus and sync them with a personal Google Calendar, or another calendar of choice, and allow for students to plan around these events.

3.1 Key Concepts

For this application a few key concepts are needed. One concept is a dynamic user login database. This would allow for people to create accounts for the application using an email and password. Along with that, the data would be saved to allow for repeated use of the app as long as the database stands.

Another key concept is syncing the event with the user's Google Calendar by using the Google Calendar API. Google allows applications to use this feature which would be implemented by pressing a sync button on the client side of the application, which would need to be implemented in the design process, and then the event would appear on the user's Google Calendar. A similar feature would be created to export calendar information to the user's calendar of choice.

3.2 Related Work

The most similar and accomplished application within our project area would be a calendar app like Google Calendar or Microsoft Outlook. Both applications handle a much broader range of issues as they are designed to organize a person's entire day-to-day schedule for every facet of one's life. The goal of this application is much more specific. The application

targets on-campus events. This allows a student to manage and this part of their life. From this micro-perspective, there are some shortcomings when compared to big applications like Google Calendar or Microsoft Outlook, and this application looks to improve upon these examples. One common drawback of a calendar application such as Google Calendar is that its design inhibits efficiency [1]. Google Calendar can often become too cluttered with multiple calendars and general information being displayed all at once. For some situations, this is understandable and beneficial in terms of managing and displaying specific information clearly. This application will make sure a student's events are displayed with no clutter at all, ensuring the user can check their events and its details quickly and efficiently. Another negative some scheduling apps have is the need to search through the entire calendar to see upcoming events. This application will improve upon this by providing an "upcoming" page that shows all events in the near future.

4.1 Requirements and/or Use Cases and/or Design Goals

Requirements
1. SQL database
    a. Login table to store user login information
        i. Username, password, date created, type (student, faculty, employer, event organizer)
    b. User information table to hold additional information on user
        i. Link to login table, store user's uark email, etc
    c. Events table to store information around events
        i. Store type of event (company, guest speaker, club meetings, other)
2. Easy to navigate User interface
    a. A simple and clean interface for maximum efficiency
        i. User logs into home page displaying there upcoming events
            1. If no upcoming events followed by user, display the events closest to current date
    b. Several tabs, Home, upcoming, search, create
        i. Home page displays user followed events
        ii. Upcoming displays events near current date
        iii. Search allows users to search for a certain event, event organizer, or guest speaker by name, date, or type
        iv. Create tab allows the user to create an event
3. Integration and sync with Google Calendar
    a. When a user follows/accepts an event, the user has the option to link their Google Calendar for the event to be automatically added.
        i. The event is added at the exact time and date to the user's calendar, with specified reminders so the user does not forget the event
4. Ability for users to add events

a. Club owners, companies, and other organizers have the ability to create their own event within the application
   i. On the create tab, if the user is certain type, they can manually create upcoming events to be included in the application
   ii. The user inputs the time, date, location, description, title, etc for the event and notifies moderators/admins to check on listing
5. Notifications
   a. Ability for event organizers to send out notification to a group of people about the event
   b. This could be done using Firebase notifications

4.2 [High Level / Detailed] Architecture

Login Page for our application. It takes the users email and password, and then contains the login button.
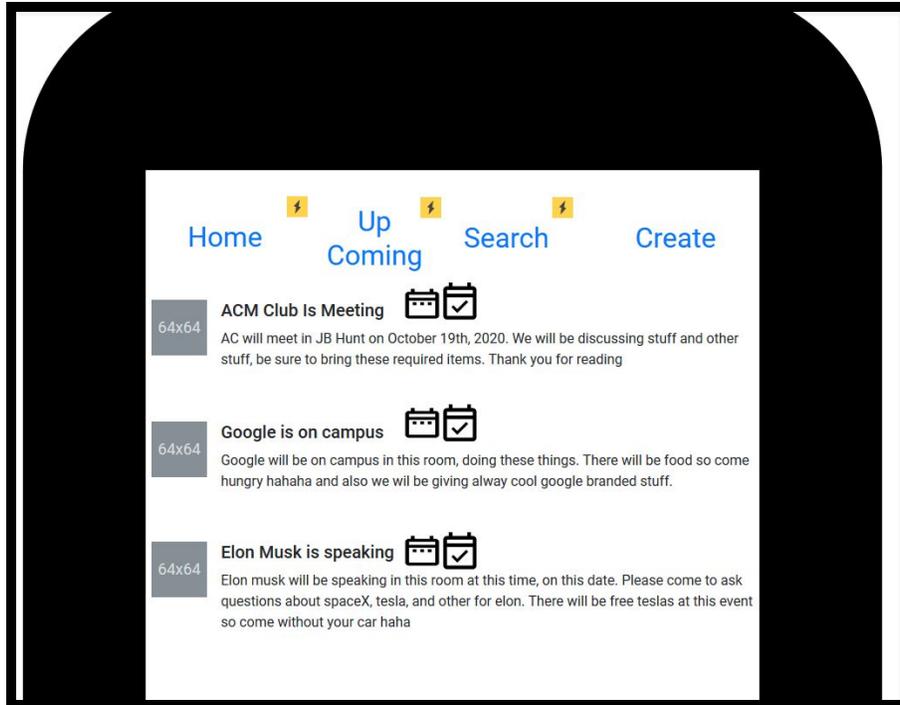
Home page for our application, containing top level navigation and displaying upcoming events.
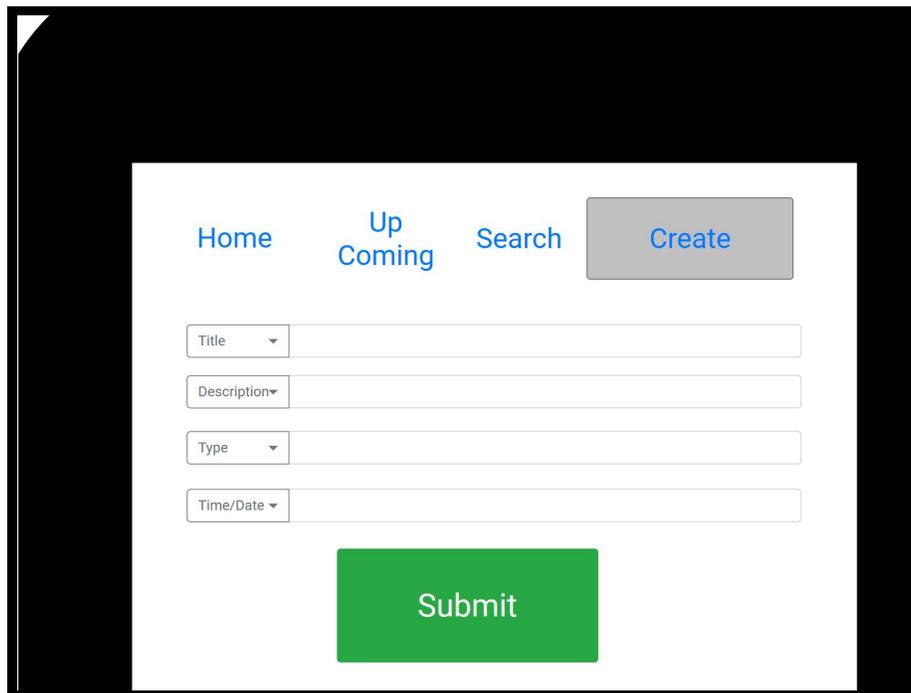
Create page for our application, taking in information on each event.

Design:

The application will follow a simple design at first as most of the team does not have experience with mobile development. Textboxes and buttons will be utilized for user input and action, and the app will feature a top bar navigation system for use within the app. On the home page the user can see all their personal upcoming events. The events page will allow the user to scroll through a long list of upcoming events. The search page will allow users to search for a specific event or speaker. Lastly, the create page permits the user to create their own event, which other users will be able to attend.

If time permits, the app will be customized to follow the color theme of the school, as well as add other graphical design elements to improve the look of the app.

4.3 Risks

Risk	Risk Reduction
Multiple users create the same event, leading to conflicts in the database	Only allow one event creator per event.
Users could overload the database. Resulting in our application on the backend crashing.	Need to make the database be able to handle a lot of users so application does not crash
Risk of privacy, users could hack into our database and get usernames and passwords	Need to hash our passwords and encrypt our database so hackers cannot read the password information.

4.4 Tasks

1. Decide on technologies to be used, and overall architecture of the project

2. Design of backend:

   - Create Database:
     - Develop schemas for all functionality
       - Event creation
       - Event followers/group members
       - Relevant user information

- Create Service to make calls to Google Calendar API

3. Design of Front end to connect to database:

- Develop authentication portion of the app first
  - Login screen, with two factor authentication
- Develop main app stack
  - Home page
    - Settings will be available through this page
  - Upcoming events page
  - Search page
  - Create event page

4. Write unit tests

4.5 Schedule

Tasks	Dates

1. Preliminary work
   1. Set up database accounts
   2. Set up API Keys
   3. Set up dev environments
	1/13-1/17

2. Design database schema
   1. Implement database tables
   2. Start designing service to connect database to calendar
	1/20-1/31

3. Start implementing front end
   1. Design UI/UX for app
   2. Start designing functionality for front end
	2/3-2/14

4. Connect front end to database
    1. Connect user authentication to DB
    2. Connect event creation to DB
	2/17-2/28

5. Implement calendar functions
    1. Use API keys to connect DB to user calendar
    2. Implement notification features
	3/2-3/13

6. Finish front end
    1. Complete UI/UX
    2. Finalize app functionality and start debugging
	3/16-4/3

7. Documentation
    1. Start report
    2. Document any remaining code
    3. Finish debugging and prepare final product
	4/6-4/17

8. Complete any loose ends	4/20-5-1

4.6 Deliverables

- Documentation: All relevant reports and documents outlining the project, its progress, and its completion.
- Database schema and initial data: MySQL will be used for usernames and passwords.
- Web-Site Code: code stacks at various points throughout the process of implementing the web app.

5.0 Key Personnel

William Bissett IV - Bissett is a senior Computer Science major in the Computer Science and Computer Engineering Department at the University of Arkansas. He has completed all the relevant courses. He interned at Dialexa as a Software Engineering Intern and a User Interface developer at Systemware. He will be responsible for the user interface and experience through the whole application.

Keaton Dalquist - Dalquist is a senior Computer Science major in the Computer Science and Computer Engineering Department at the University of Arkansas. He has completed all the relevant courses. He interns as a Software Engineering Intern at Onestone Ecommerce. He will be responsible for the user interface and experience through the whole application. He will also work in calendar integration and anywhere else needed.

Kassell Harris - Harris is a senior Computer Science major in the Computer Science and Computer Engineering Department at the University of Arkansas with a minor in Mathematics. During his time at the University of Arkansas he has taken coursework which includes Mobile Programming, Databases, Software Engineering, and Programming Paradigms. He will be interning as an Applications Developer at J. B.Hunt starting in January 2020. Harris will be responsible for the development of the functionality of the front end and its relation to the user experience.

Manuel Delarosa - Delarosa is a senior Computer Science major in the Computer Science and Computer Engineering Department at the University of Arkansas. He has completed all pre-requisites for Capstone, which can be found in the CSCE degree plan. He will be responsible for client side of the program and whatever the team needs him to complete.

Colby Crowne - Crowne is a senior Computer science major at the University of Arkansas. He has completed all pre-requisites for Capstone. He is currently an intern at JB Hunt. He will be responsible for architecting the database as well as navigation through the app.

Alex Frey - Frey is a senior Computer Science major at the University of Arkansas. He has completed all relevant courses in order to accomplish the project from beginning to end. He has interned with the Data Analytics team at Andrews Distributing in Dallas, Texas. Alex will mainly be working on back-end development and helping the team anywhere else needed.

5.1 Facilities and Equipment

Laptops and computers will be needed for software development. Additionally, meeting locations will need to be discussed so that work can be accomplished in a proper and efficient environment.

7.0 References

[1] GetApp.com Google Calendar Reviews,
https://www.getapp.com/collaboration-software/a/google-calendar/reviews/