CEN 4010 Principles of Software Engineering
Summer 2021

Milestone 3: More Detailed Requirements, Architecture, and a Vertical Software Prototype

Team Name: CEN 4010 Team 2

Project Name: Covid Hut

Team Number: 2

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Documentation Date: 7/8/21

History Table: Revision Dates

1.Executive Summary

Covid-Hut is a social networking site that makes it easier to connect while maintaining social distancing. This platform promotes communication with others by allowing you to share images and status updates from the tip of your fingers. From staying in touch with family and friends, to getting updates about Covid-19, Covid-Hut is a friendly and safe platform to use while dealing with isolation and loneliness during this world-wide pandemic. Unlike other social platforms, Covid-Hut provides a secure platform to share your life.

During the Covid-19 outbreak, the developers of Covid-Hut wanted to create a safe and friendly environment for people to connect. The pandemic changed our lives for the worst and quarantine disconnected us from the world. We wanted to create an environment in which people can stay quarantined and maintain social distancing, while still being social. The way to do this was with our own social networking platform: Covid-Hut. With Covid-Hut, we are able to stay in touch with friends and family all around the world, while remaining in our homes. It's not only safe for your health, but unlike other social media platforms, Covid-Hut keeps all of your information safe as well! We respect your privacy and will continue to ensure that all your personal information stays personal!

Covid-Hut allows users to share content from their lives, while simultaneously viewing important information on the Covid-19 pandemic. With our unique live Covid-19 Cases Count on display, users will be able to stay informed on the spread rate of the virus. Likewise, if they feel like the time is ready to get vaccinated, our live Covid-19 Vaccination Sites Map will allow them to get to the nearest location available. With Covid-Hut, we make the world a safer place, one post at a time!

2. Competitive Analysis:

Our program	**Twitter**	**Instagram**
Posting photos/text	Microblogging(posts up to 140 characters with picture)	Photo/text posts
Live covid statistics	Follow other users to see their posts	Short video posts
Hashtags/trending	Hashtags for trend following	Hashtags for trend following
Profile/profile picture	Timeline of posts	Profiles/private profiles(follow other users to see their private profiles/posts)

Comparisons to Competitors:

1. **Photo/text posting:**
   This feature is shared between our site and our competitors. Instagram has the feature of posting short videos, which is not a planned feature for this site.

2. **Profiles:**
   This feature is shared between our site and our competitors. Features appear to be identical, but it should be noted that Instagram has the private profile feature which restricts other users from seeing your posts if they do not follow you, a feature that is not currently planned for our site.

3. **Trending topics:**
   Each platform possesses a feature to track current trends with the use of hashtags. Our site will implement a feature that keeps up with these trends as well.

4. **COVID 19 info:**
   Competitors of our site do possess means to access helpful knowledge/resources about the Covid-19 pandemic, but this will be a mean feature of this platform. Our platform intends to outperform all competitors in this area, providing live statistics about infection/death rates, nearby vaccination facilities, and other helpful resources available quickly on demand.

3. Data Definition:

Users:

- *Username*
  - Differentiates users
- *Password*
  - Allows account access

Content:

- *Posts*
  - User posted content containing image, text, or both
- *Hashtags*
  - Common text placed on a post to group similar content
- *Comments*
  - Replies on a post
- *Likes*
  - Count and detail of each like from other users

Virus Info:

- *Num. of Covid-19 Cases*
    - Live data containing current number of Covid-19 cases
- *Vaccination Rate*
    - Live data containing current number of distributed vaccines
- *Vaccine Locations*
    - Locations of areas providing the vaccine

4. Overview, Scenarios, and Use Cases:

Covid-Hut is a social media platform that will provide a community for users hoping to interact during the COVID-19 pandemic. Covid-Hut's main goal is to allow users to access accurate live information regarding the pandemic while maintaining contact with their close friends and relatives. Users can also join popular discussions/trends by using our "trending" feature. In addition, users can access our Covid resources to find vaccination centers near them as well as various health/safety tips provided by the CDC(center for disease control). Covid-Hut's focus is to be a user friendly platform, so minimal technical skill will be required to log in and begin interacting.

To begin, the user will first log in with their Google account. If they do not have one, they will be given the option to create one. Once they have logged in, they will be directed to their personal profile page. If their account is new, they will be asked to add some information and/or a picture to complete their profile. Once their profile is complete, the user can begin browsing through trending topics on the platform. If they wish to contribute, they can make a post with some text/pictures, and upload it using a hashtag to join the conversation. The user is always given the option to access our various Covid-19 resources, including live and accurate information concerning infection/death rates, vaccination sites near them, and helpful health tips from the CDC. Once the user is done browsing, they can log out and exit the platform.

5. List of high-level functional requirements:

- **Posting:**
    - We will create a posting system for authorized users to share their photos while social distancing/self-isolating.
    - Users will be able to like and comment on posts.
- **Viewing:**
    - This web application will allow authorized users to view posts in their feed as well as view a list of their favorited/liked posts

- **Feeding Data:**
    - This web application will feed data to display vaccine locations, the number of individuals vaccinated, and the current number of Covid-19 cases.
- **Authentication:**
    - This web application will allow authorized users to login, allow new users to create an account, and allow users to connect to all of the functionality of the app

6. List of Non-Functional Requirements:

1. **Performance and scalability**
    - After submitting a post through the web interface, it should be available to appear in other users' lists of posts within 30 seconds for 90% of posts.
    - An update to a users list of posts (either the initial view of a list, or an extension to the list when scrolling to the bottom) should appear in 3 seconds for 90% of users.
    - 50% of users should be able to post a status update within 1 minute of starting to try and post without having used the application before or receiving help.
    - The site should load in 3 seconds when the number of simultaneous users are > 10000
2. **Portability and compatibility**
    - The webpage will be able to run on Chrome, FireFox, Internet Explorer and Safari for Mac Users and mobile users
3. **Security requirements**
    - Google Firebase will hold all the profile information
4. **User requirements**
    - Users will have to create a Google account to be able access site
5. **Storage**
    - The SQL database should handle a high volume of user information

7. High-level System Architecture and Database Organization:

- **Languages to be used:**
  - Frontend: HTML, CSS, JavaScript, PHP(For connecting backend to frontend)
  - Backend: PHP, SQL

- **APIs to be used:**
  - Google maps API to display vaccine locations

- **Database Organization:**
  - The main database tables we will use are the table of authorized users, the table of posts, and the table of likes.
  - The main schema that will be used are username, password, posts, hashtags, comments, likes, Num. of Covid 19 cases, Vaccination Rate, and Vaccine Locations

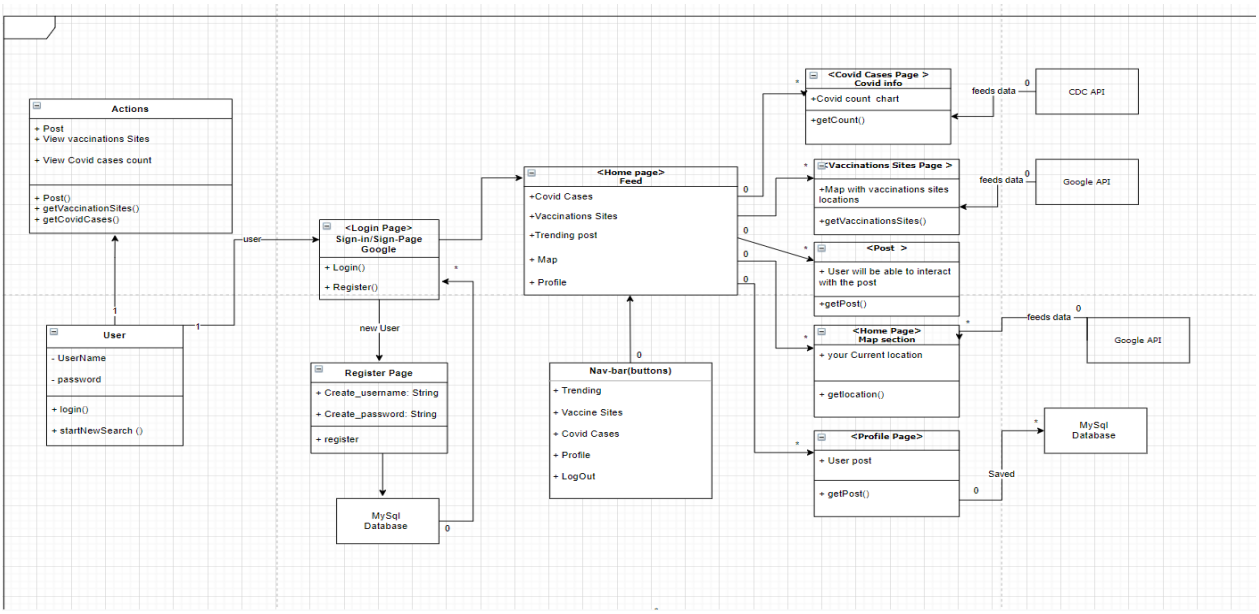
- **Media Storage:**
  - The media files will be stored in the database
  - There are no specific requirements for media formats

- **Search/ Filter Architecture:**
  - The database items that will be filtered and sorted are the posts and likes. They will be sorted by authorized users and display the authorized user's posts and likes.
  - The main algorithm we will use for searching and filtering will take the text the user entered in the search bar and find the best match by scanning through the database and finding posts/usernames that match the entered text the best and display them to the authorized user.
  - This will be coded using PHP and SQL. SQL will be used to create the tables that store authorized user information, likes, and posts. PHP will be used for the backend to connect the database to the site.

- **Non-Trivial Algorithms:**
  - One of the non-trivial processes we will be using is liking. In this process we will be using an algorithm to note which posts were liked and display them in a list for the user.

- **Your Own API's:**
    - Photo Scanning API:
        - This API will scan the posted photos and determine where in the world the posted photo was taken. For instance, if the photo is of Boynton Beach, FL it will show Boynton Beach, FL as the photo's location and give the user the option to view the location on the map.

8. High-Level UML Diagrams:



https://drive.google.com/file/d/1ZzS396u1m6FlsM5xoDASQiigZbvfmHh5/view?usp=sharing

9. Identify Actual Key Risks for Your Project At This Time:

1. **Skills risks:** Our team has adjusted the distribution of tasks to account for any differences in skills. For example, some team members are not experienced with PHP, but are competent with HTML/CSS. Because of this distribution, each team member has the skills necessary to complete each task assigned to them, thus minimizing any skill related risk.
2. **Schedule risks:** There is some concern over the schedule for this assignment among our group members. We are currently adjusting the schedule to create a realistic deadline for tasks so we can finish the project on time.

3. **Technical risks:** Our team is currently working on some technical issues with integrating APIs for our own functionality. However, we are making steady progress and should resolve the issue soon.
4. **Teamwork risks:** Our team has experienced very few issues regarding teamwork. Because of this, we do not expect to be significantly slowed down by any teamwork related issues over the course of this project.
5. **Legal/content risks:** Originally, our team had planned to use some content that would have required obtaining permissions from copyright holders. In order to avoid any legal issues, we have decided to create our own content to save time.

10. Vertical Demo: https://youtu.be/QT1_9cfnDRI