SW Engineering CSC648/848 Spring 2023

Application Title: <u>Dooms Day Alert</u>
Section 02
Team 06

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Milestone 1
02/28/2023

History Table

Date Submitted	02/27/2023
Date Revised	03/08/2023

Executive Summary

Dooms Day Alert is a web-based service that aims to revolutionize the way California residents stay informed about potential dangers related to health, physical safety, and extreme weather conditions. Our platform provides real-time input of metrics related to COVID-19/public infections, wildfire evacuation levels, and other security emergencies, which enables residents to access and search this information at a county level.

An easy-to-use interface allows users to register if they would like to receive personalized alerts based on their location and preferences, helping them to shelter-in-place, evacuate for wildfire, or avoid certain areas for security or weather situations. Our platform includes a map-based interface for easy visualization of events, with all data being reviewed and validated by our team members to ensure accuracy and appropriateness.

One of the key advantages of the web application is its commitment to maintaining user privacy, with clear communication of all privacy policies. The platform will also be optimized for laptop browsers and selected functions will render well on mobile devices, ensuring access for a broad range of users. With the integration of Google maps and analytics, Dooms Day Alert provides a seamless and intuitive experience for all users. The platform is designed with well-organized and maintainable code, making it easy to modify for future improvements.

Dooms Day Alert not only aids during emergencies but also has the potential to generate revenue through partnerships and advertising. Emergency supply companies, for example, may collaborate with Dooms Day Alert to promote their products to users who might require them. Moreover, Dooms Day Alert can accept donations and allocate them towards aiding families in need during emergencies. The app could operate on a non-profit basis, charging no management

fee for these donations, to ensure that all funds go towards helping those affected by disasters. This could incentivize users to support the app and contribute to its development and promotion.

Our team consists of a talented group of students, with diverse skills and expertise, who are all committed to developing the Dooms Day Alert website into a valuable resource for California residents. Our front-end developers are skilled in designing user-friendly interfaces and creating seamless user experiences. Our back-end developers are experts in creating scalability and they are responsible for developing the underlying infrastructure of the platform, ensuring its reliability, and working with large amounts of data to provide real-time information to users.

Personas and Main Use Cases

In recent years, Earth has undergone radical changes when it comes to weather, health, and security. Plenty of people were severely affected due to the Covid-19 pandemic. Our website, Dooms Day Alert, will serve a variety of audiences by providing resources and information regarding California counties. Users can closely view the current status of health, security, fire, and weather within California counties. This website will be free and accessible to the general public.

Personas (Users)

This website will be especially useful for community and city leaders such as government officials, police officers, firefighters, and the health department.

1. Government Officials: The contents of this map will indicate the different needs and issues occurring in each county. With these indicators, government officials can analyze and create policies and interventions.

2. Police Officers**:** We will have a security section to show crime activity in the specified area. Officers may keep track of the upsurge in crime and help them understand which areas are in need of more help.

3. Firefighters: Those affected by fires, victims, and firefighters, will also be benefited from our Wildfire section. The website will monitor and display wildfires happening in the area, so the community members are well-prepared and informed.

4. Health Officials: With the rise of Covid-19 cases, doctors and nurses will have to be well aware of the conditions of their counties. This website will also have updates to report the current prevalence and incidence rates of Covid-19 spread.

Main Use Cases

1. User Registration: The general public can register on the Dooms Day Alert website and create a profile for free. During the profile creation process, users can select either "Regular" or "Official" status. "Regular" profiles are intended for general use, while "Official" profiles are for persons of authority. Official profile requests are reviewed and approved by the website administrator. Users can customize their profiles with their name, username, and other information. They will receive real-time alerts based on their preferences.

2. Enter Metrics: The Health Director and Chief Owen Wilson have identified high percentages of Covid-19 cases in Contra Costa County. The Dooms Day Alert website allows officials, like Owen Wilson, to enter current metrics of Covid-19, weather forecasts, wildfire evacuation levels, security concerns, and other emergencies into the system. The website administrator then checks the accuracy of the data.

3. <u>Warnings and Alerts:</u> Governor Arnold is responsible for ensuring that his state is prepared for any potential crisis. The Dooms Day Alert website allows users, including Arnold, to register for warnings and alerts for selected counties. The governor receives notifications of impending danger through the system and can take prompt action.

4. <u>County Status Search:</u> Joseph is a California Police Chief who wants to check up on his county. The Dooms Day Alert website will have a feature where Joseph can search for his county name to check its status. Users, similar to Joseph, will be able to access the website and enter their county name or zip code to find the relevant data. The website will display the data in an easy-to-understand format, such as graphs and maps.

5. <u>Monitoring Metrics:</u> Helen recently underwent an operation and wishes to explore California. However, due to her weakened immune system, she is considered to be at high risk for illness. Helen visits the Dooms Day Alert website, where she can access real-time information about Covid-19 in the county she plans to visit. This information enables her to make informed decisions regarding her health and associated risks.

List of Main Data Items and Entities

California has been hit by a number of natural disasters, including wildfires, extreme weather, and the ongoing Covid-19 pandemic. The Dooms Day Alert provides information about these topics that require various types of data items and entities in order to provide up-to-date information to visitors of the website. We will have a variety of user types that will use <u>Dooms Day Alert</u> . They could be interested in 4 different things or all of them at the same time:

- Wildfires
- Covid-19 Cases

- Weather Conditions

- Security

It is also important to keep in mind that county officials will have a special access to enter data to the site. They would have to sign up and select their profession for us to grant certain user privileges. These privileges will allow them to make additions to the metrics.

Let's break down and explore the data items and entities that are required for each of these sections.

Wildfires

The information regarding Wildfires in California will be provided in our website as:

1. Fire incidents: A fire can be expected at any point around California, which usually increases during summer. Important information that would be associated with the fire incident will be the duration of the fire (start and end date), size of the fire, the name of the fire if applicable and the casualties of the fire.

2. Evacuation orders or warnings: The city officials tend to give out evacuation plans and/or warnings when fire occurs. Dooms Day Alert will store those official orders, including the location of the affected areas, and the date and time of the warnings.

Covid-19

The information regarding Covid-19 in California will be provided in our website as:

1. Case counts: The number of Covid-19 cases in California is currently being tracked by the local and state health departments. Three items in this entity include: number of confirmed cases, death count, and recoveries.

2. Covid testing locations: City offers numerous sites that can provide COVID-19 testing to residents. We can store the name of the location, address, and open hours in this entity.

3. <u>Covid vaccination locations</u>: There are numerous locations to get vaccinated against COVID-19 in California. We can also store the name of the location, address, and open hours in this entity as well.

Weather

The information regarding Weather cases in California will be provided in our website as:

1. <u>Temperature:</u> The temperature can be different for every county in California. We can store the average current temperature of the city.

2. <u>Air quality:</u> Air quality can be dangerous during Wildfires, as we have experienced first hand before. To provide up to date information, this entity can include: air quality index (AQI), the level of pollutants, and any relevant health warnings.

3. <u>Warnings</u>: We tend to get warnings from city officials throughout the year. These warnings can include: Wind warning, Storm warning (thunderstorms, and tornadoes), Freeze warning, and Heat warning.

Security

The information regarding Security cases in California will be provided in our website as:

1. <u>Incident</u>: This entity would contain data items such as incident type, description of the incident, location it occurred, and the date and time.

2. <u>Law enforcement</u>: This entity would contain data items related to law enforcement responses, such as officer name and badge number, incident report number if applicable.

Functional Requirements

1. User Account

- ○ Users have the option to create an account by entering their email and choosing a password.

- ○ Users are able to opt in as a government official to add data to the metrics.

2. County Search

- ○ Users can search a specific county/location for their use.

- ○ Users can search metrics in health/covid-cases within a county.

- ○ Users can search metrics in weather within a county.

- ○ Users can search metrics in wildfires within a county.

- ○ Users can search metrics in security/crimes within a county

3. Toggle Metrics

- ○ Users can choose specific information categories, such as health/covid-cases, weather, wildfires, and security/crimes. Within each category, users can toggle individual metrics on or off, depending on their preferences.

4. Mobile Devices

- ○ The website is able to adjust itself to different devices that users may use to access.

5. Alerts and Notifications

- ○ Users can register for alerts or notifications for their county.

- ○ Users will receive an alert when there is a spike in covid-cases.

- ○ Users will receive an alert when there are severe weather conditions.

- ○ Users will receive an alert when there is a high risk of wildfires.

- ○ Users will receive an alert when there is an increase in crimes.

6. Trends

- Users can view the trend of covid cases in different counties. The counties with the highest number of cases will be listed at the top, followed by the ones with lower numbers.

7. Maps
    - Users can interact with maps to visualize the different counties within California.

8. Additional Resources
    - Users will have access to the government website and links for additional information with all the metrics.
    - Users can access and view temperature, air quality, and warnings for weather.
    - Users can access and view incidents and law enforcement for security/crimes.
    - Users can access and view fire incidents, evacuation orders, or warnings for wildfires.
    - Users can access and view case counts, covid testing locations, and covid vaccination locations.

Non-Functional Requirements

1. Application shall be developed, tested and deployed using tools and servers approved by Class CTO and as agreed in M0 (some may be provided in the class, some may be chosen by the student team but all tools and servers have to be approved by class CTO).

2. Application shall be optimized for standard desktop/laptop browsers e.g., must render correctly on the two latest versions of two major browsers

3. Selected application functions must render well on mobile devices (this is a plus)

4. Data shall be stored in the team's chosen database technology on the team's deployment server.

5. Privacy of users shall be protected, and all privacy policies will be appropriately communicated to the users.

6. The language used shall be English.

7. Application shall be very easy to use and intuitive.

8. Google maps and analytics shall be added

9. No email clients shall be allowed. You shall use webmail.

10. Pay functionality, if any (e.g. paying for goods and services) shall not be implemented nor simulated in UI.

11. Site security: basic best practices shall be applied (as covered in the class)

12. Modern SE processes and practices shall be used as specified in the class, including collaborative and continuous SW development

13. The website shall prominently display the following exact text on all pages "SFSU Software Engineering Project CSC 648-848, Spring 2023. For Demonstration Only" at the top of the WWW page. (Important so not to confuse this with a real application).

Competitive Analysis

Feature	Weather.gov	www.worldometers.info/coronavirus/	spotcrime.com	DoomsDay Alert (Our future product)
Centralized source of a variety of information	-	-	-	+
Modern UI	-	+	+	++
Category Searches	+	+	+	+
Information filter	-	+	-	++
Ease of access	-	+	+	++

+ = Feature exists | ++ = Superior | - Does not exist

We designed our product with an intuitive interface that caters to individual user needs by providing easy access to personalized information. We understand that users have different information requirements, and presenting excess data can be counterproductive. For instance, a wildfire respondent may not be interested in COVID-related information. Therefore, our platform offers relevant information to specific users and filters out irrelevant data to improve readability. However, for the general user who seeks comprehensive information, we also provide an option to access all the data. Our product collates information from multiple sources and presents it in a centralized location, making it easier for users to find what they need. Additionally, we will have an updated user interface to create a modern and visually appealing look.

High-level System Architecture and Technologies Used

The high-level system architecture depicted in the attached picture provides an overview of the system's structure and how its components interact with each other. The diagram visually communicates the system's key functionalities and helps stakeholders understand how it operates at a high level.
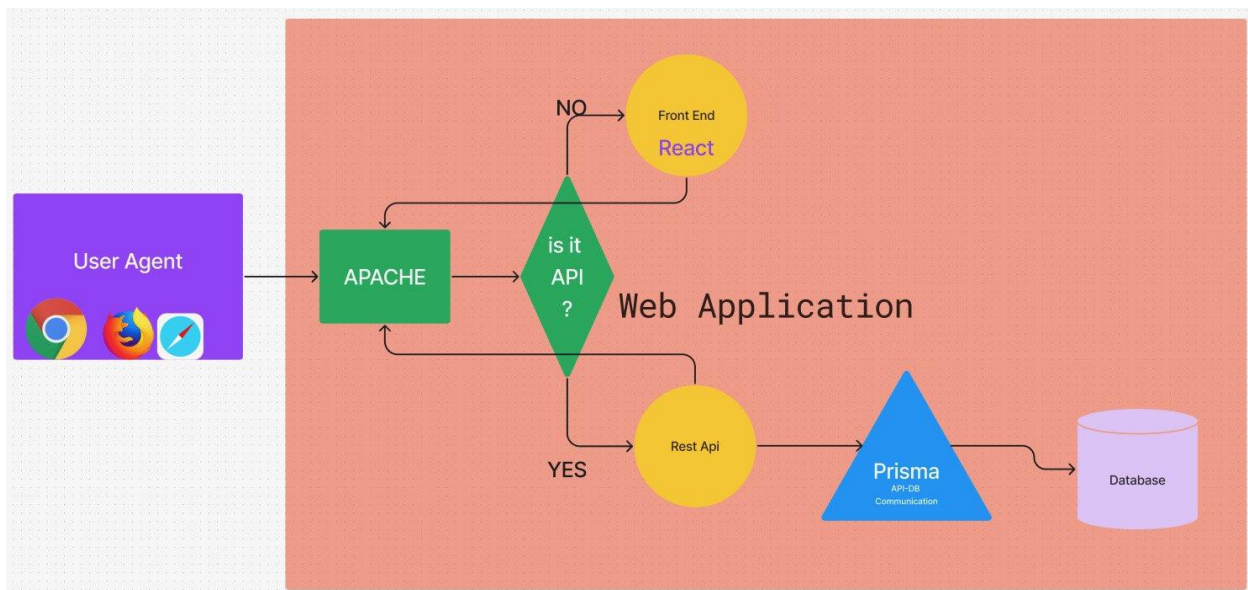
Framework	React
APIs	Google Maps, Earthquake Data API, COVID-19 Statistics API, Active Forest Fire API
Tools	IDE, Github, Terminal, Mysql Workbench
Systems	Git, MySql
Supported Browsers	Chrome, Safari, Firefox, Edge
Deployment Platform	AWS

Team and Roles

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Checklist

Task	Status
Team found a time slot to meet outside of the class	DONE
Github master chosen	DONE
Team decided and agreed together on using the listed SW tools and deployment server	DONE
Team ready and able to use the chosen back and front end frameworks and those who need to learn are working on learning and practicing	DONE
Team lead ensured that all team members read the final M1 and agree/understand it before submission	DONE
Github organized as discussed in class (e.g. master branch, development branch, folder for milestone documents etc.)	DONE