# SW Engineering CSC648/848 Fall 2020

**Company Name: The Dream Team**

**Application Name: Public Health and Safety in California**

**Section 02**

**Team 6**

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**Milestone 2**

**10/06/2020**

| | |
|---|---|
| **Date Submitted** | **10/06/2020** |
| **Date Reviewed** | |

## 1. Functional Requirements - prioritized

Priority 1:

Admin:

| ID | FR 05 |
|---|---|
| Title | Data Admin's |
| Type | Functional requirement |
| Description | County directors or health and fire departments shall be able to enter metric numbers as COVID-19 number of cases per 100k, death per 100k and number of fires in the county with respective levels of evacuation (L1, L2, L3). |
| Examples | Data Admin can input all data information that they have available into our site of covid-19 and wildfires per county. |
| Priority | 1- must have |

| ID | FR 06 |
|---|---|
| Title | Site Admins |
| Type | Functional requirement |
| Description | The site shall have admins who will be able to trigger the alerts according with state guidelines (either shelter in place or evacuation)<br>They will be able to approve items before they go live on the site<br>They can delete inappropriate items or user's |
| Examples | Country order's a shelter in place, site admin will be able to trigger a alert sent to all users that are registered for alerts<br>Incorrect items are listed on the site, site admin shall be able to take them down<br>User's are sending inappropriate information, site admin shall be able to delete user's |
| Priority | 1- must have |

| ID | FR 09 |
|---|---|
| Title | Covid Alerts |
| Type | Functional requirement |
| Description | The Site admin shall trigger the alerts to the users when there are more than 5k per 100k cases of covid |
| Examples | Sudden increase spike in covid cases, site admin sends out alerts to those who are registered within the same area of the spikes. |
| Priority | 1- must have |

| ID | FR 10 |
|---|---|
| Title | Wildfire alerts |
| Type | Functional requirement |
| Description | The Site admin shall trigger the alerts to the users when the level of evacuation L3 is reported |
| Examples | Wildfires emerge, those who are in similar proximity receive an alert on the severity of the evacuation. |
| Priority | 1- must have |

User:

| ID | FR01 |
|---|---|
| Title | Search by county |
| Type | Functional requirement |
| Description | Search implementation shall be available to the user so that they can look through data |
| Examples | A user shall be able to search for data based on several key inputs. |

| | |
|---|---|
| Priority | 1- must have |

| | |
|---|---|
| ID | FR 03 |
| Title | Registration |
| Type | Functional requirement |
| Description | User's shall register to the application to see the data of wildfires and COVID-19 Metrics |
| Examples | After user's makes an account they can see all the data and access to other features |
| Priority | 1- must have |

| | |
|---|---|
| ID | FR 04 |
| Title | Alerts |
| Type | Functional requirement |
| Description | Users shall get alert messages when it is time to shelter in place or evacuate due to a wildfire. |
| Examples | Ex1: There is a high spike of COVID-19 cases in your county and there is a shelter in place order taken. Our application will be able to send an alert regarding the shelter in place.<br><br>Ex2: Wildfires are happening near your area, the application will be able to send you an alert for evacuation. |
| Priority | 1- must have |

| | |
|---|---|
| ID | FR 08 |
| Title | Covid-Wildfire selection |
| Type | Functional requirement |

| | |
|---|---|
| Description | Application shall have the capability of being able to switch data from covid to wildfire, vice versa and have it accessible to the user. |
| Examples | The user shall select the option between Covid statistics or Wildfire statistics and it will change the interactive map and data. |
| Priority | 1- must have |

| ID | FR 12 |
|---|---|
| Title | County Covid data |
| Type | Functional requirement |
| Description | The page shall show the number of new cases per 100k, the new deaths per 100k, the accumulative cases, the accumulative deaths, number of hospitalization cases, number of ICU cases and the web of the county health department. |
| Examples | Once the user selects a county all the data must be shown |
| Priority | 1- must have |

| ID | FR 13 |
|---|---|
| Title | County Wildfire data |
| Type | Functional requirement |
| Description | User’s shall have current data and historical data that shows all the different levels of evacuations among all counties, |
| Examples | User’s shall be able to access the earliest data available in a certain county |
| Priority | 1- must have |

Priority 2:

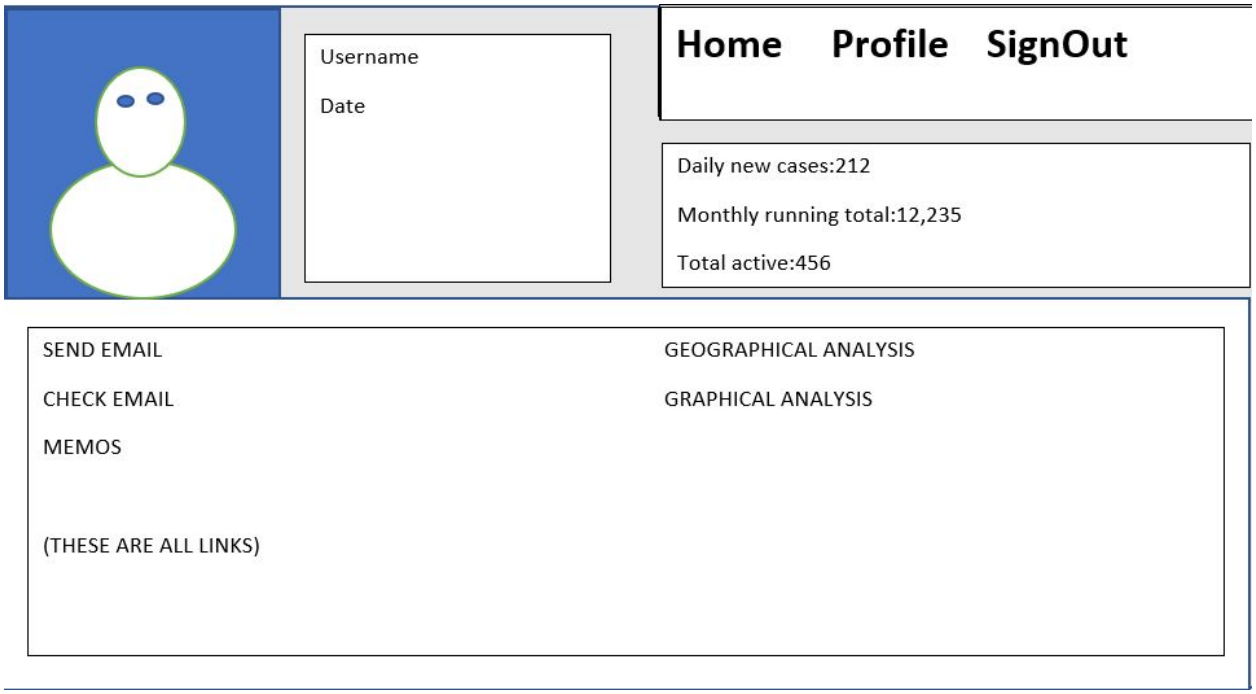
| ID | FR 02 |
|---|---|
| Title | Data filter |
| Type | Functional requirement |
| Description | Users shall choose what data is shown in the map |
| Examples | “User1” wants to search in the map only by air quality so he selects the option of the air quality filter and in the map is only shown that type of data. |
| Priority | 2 – desired |

| ID | FR 07 |
|---|---|
| Title | Map interaction |
| Type | Functional requirements |
| Description | In the user interface we shall include a map that user’s shall be able to interact with to have a better experience looking at data |
| Examples | The user shall select a county in the map and the information about the county will show in the screen |
| Priority | 2 – desired |

Priority 3:

| ID | FR 11 |
|---|---|
| Title | Twitter news |
| Type | Functional requirement |
| Description | The page shall show the latest tweets from different accounts related to the Government of California. |
| Examples | @CAPublicHealth<br>@CAgovernor |
| Priority | 3 – opportunistic |

## 2. UI Mockups and Storyboards (high level only)




**Home** **Profile** **SignOut**

| COUNTY | # OF CASES |
|---|---|
| County with most cases: | |
| County with most new cases: | |
| ALAMEDA: | 56 |
| SAN FRANCISCO: | 22 |

MAP BY COUNTY

**Home** **Profile** **SignOut**

Counties

Map of county with testing centers

# of cases for county:

# new cases:

County announcements (page link)

**Home** **Profile** **SignOut**

# SANTA CLARA COUNTY

- STAY INSIDE
- CURFEW @ 10 PM
- BEACHES CLOSED

**Home** **Profile** **SignOut**

Blue box is map of California broken down into county for forest fires

Interactive map buttons

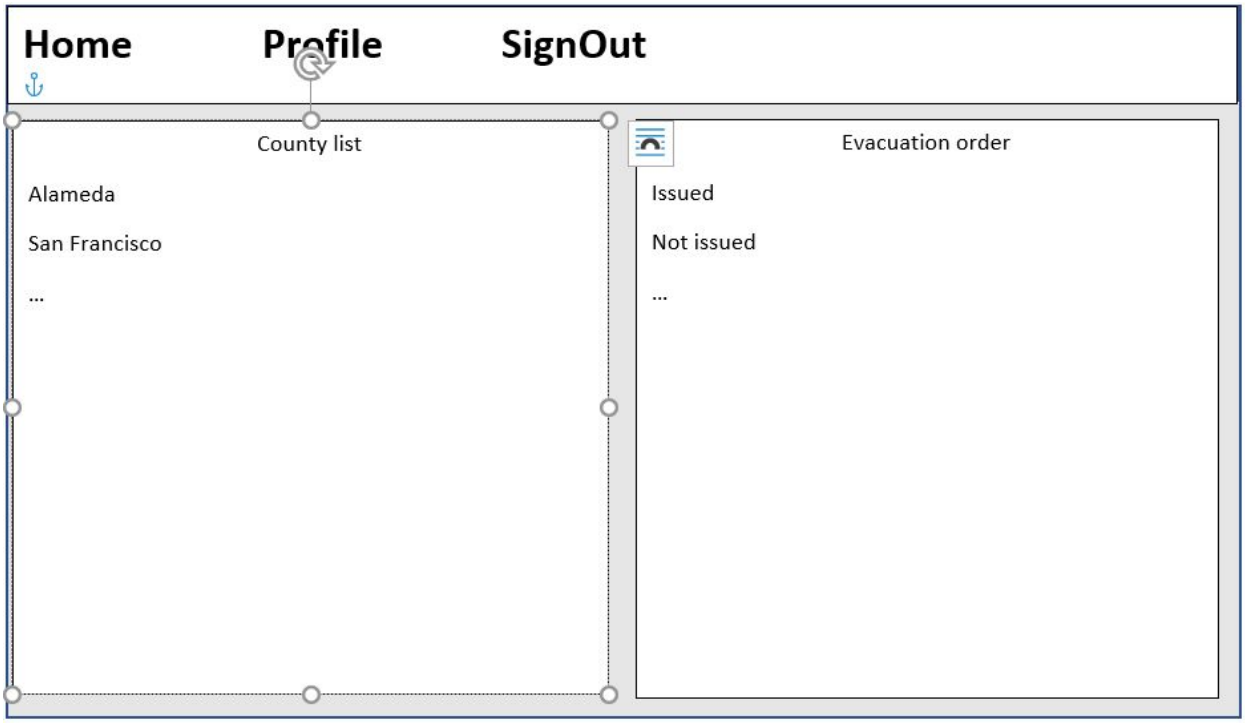
% fire contained

Counties Evacuated

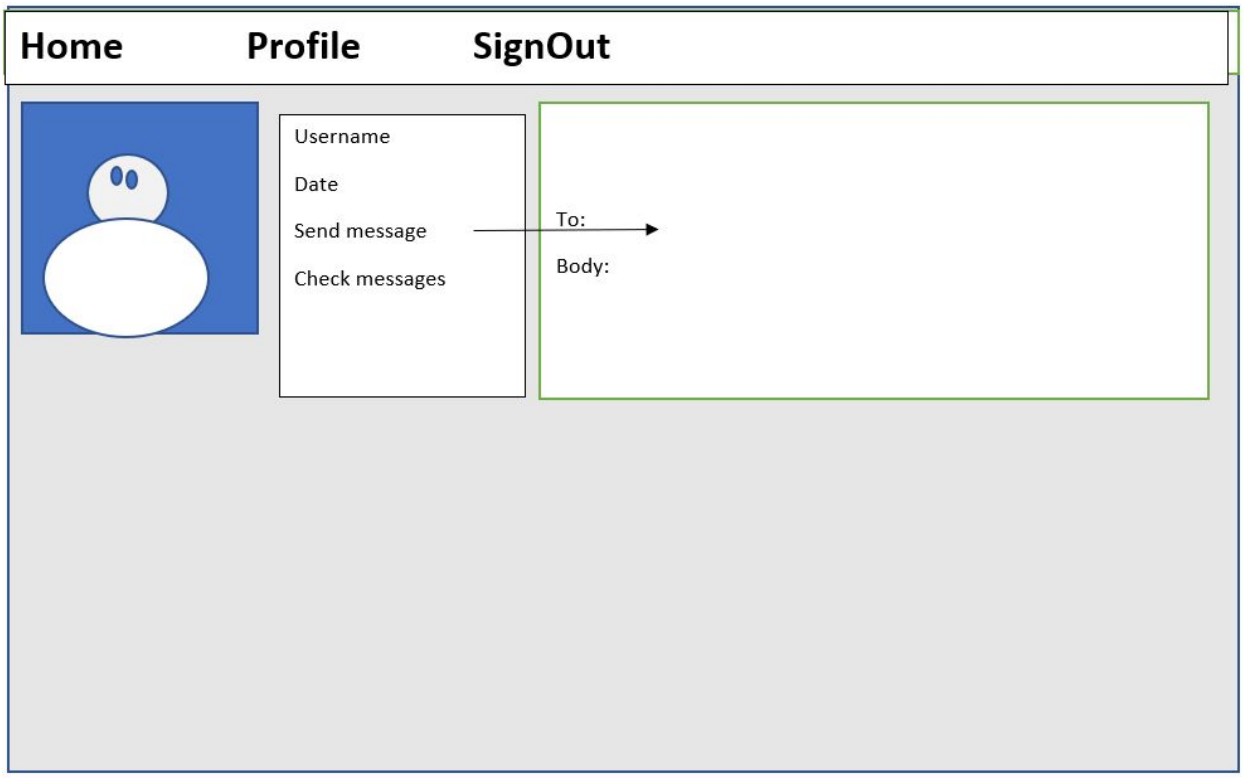
Danger level

Evacuation center address links

Evacuation order by county


Home
Profile
SignOut
County list
Alameda
San Francisco
...
Evacuation order
Issued
Not issued
...


Home
Profile
SignOut
County
fire % contained
San Francisco
12%
Map of surrounding counties for forest fires
Weather projections by county. Temp,wind speeds, fire warnings




### 3. Database Model Description

| USER - Informations about a registered user | | |
|---|---|---|
| id | UUID / CUID | Auto generated by My SQL |
| firstname | String | User’s first name |
| lastname | String | User's last name |
| email | String | Unique user email address used for the login |
| password | String (encrypted) | Encrypted user password used for the login |
| phone | String | User's phone number |

| | | |
|---|---|---|
| address | addressId | User's address needed for relaying relevant and useful information |
| type | String | Identifies whether user has regular access, data-entry access, admin, etc |

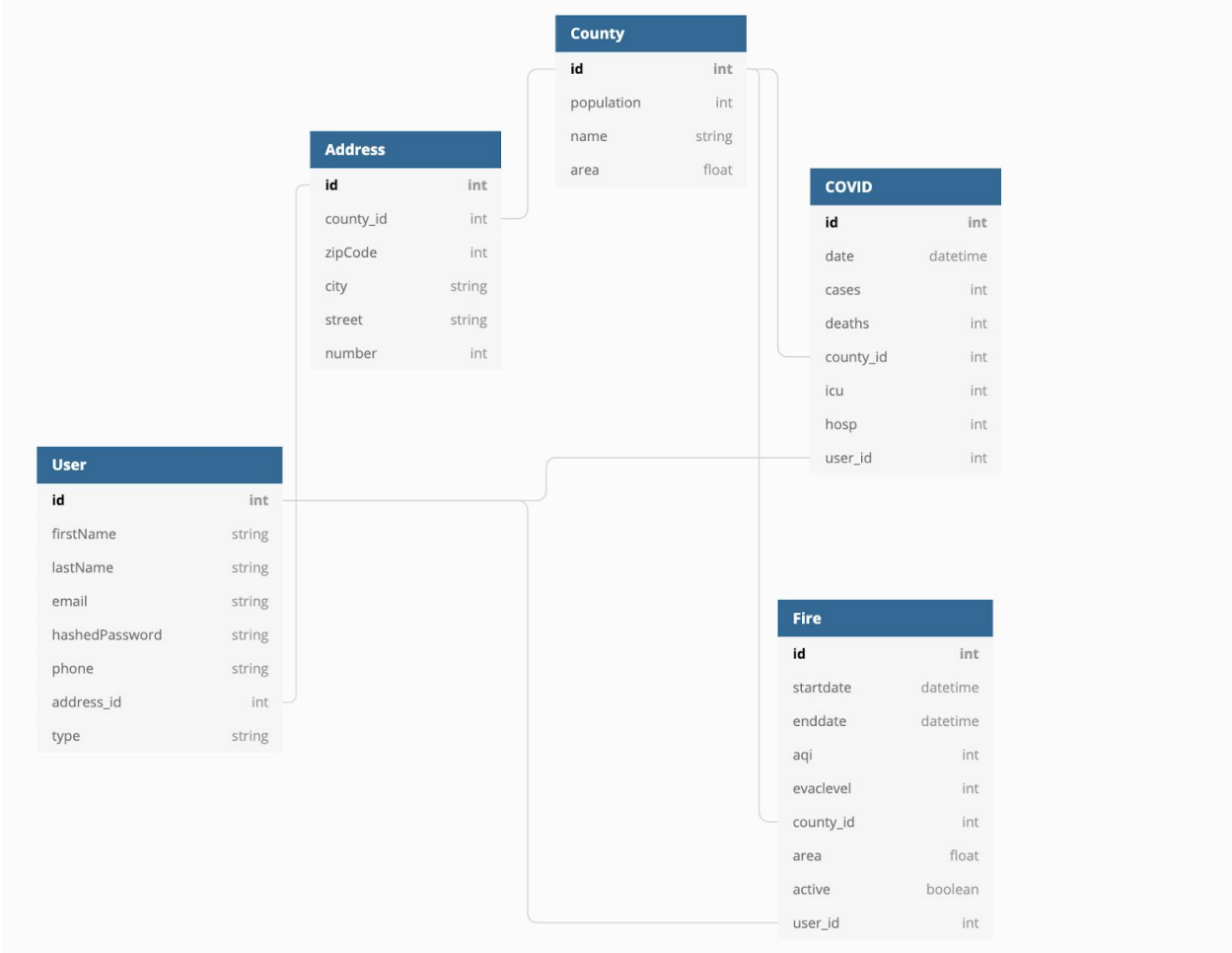
| **ADDRESS - Detailed location** | | |
|---|---|---|
| id | Int | Auto incremented by My SQL |
| county | countyId | Location's county |
| zipcode | Int | Location's zip code |
| city | String | Location's city |
| street | String | Location's street |
| number | Int | House number |

| **COVID** | | |
|---|---|---|
| id | Int | Auto incremented by My SQL |
| date | timestamps | Date of the metrics |
| cases | Int | Number of new cases at this date |
| deaths | Int | Number of deaths at this date |
| county | countyId | Metrics location |
| icu | Int | Number of ICU at this date |
| hosp | Int | Number of hospitalizations at this date |
| user | UserId | User who uploaded data |

| FIRE | | |
|---|---|---|
| id | Int | Auto incremented by My SQL |
| startdate | timestamps | Start date of the fire |
| endate | timestamps | End date of the fire |
| aqi | Int | Air Quality Index |
| EvacuationLevel | Int | Emergency level |
| county | countyId | Fire location |
| area | Float | Area of burn (ha) |
| active | Boolean | Is the fire still active |
| user | UserId | User who uploaded data |
| name | String | Name of fire |

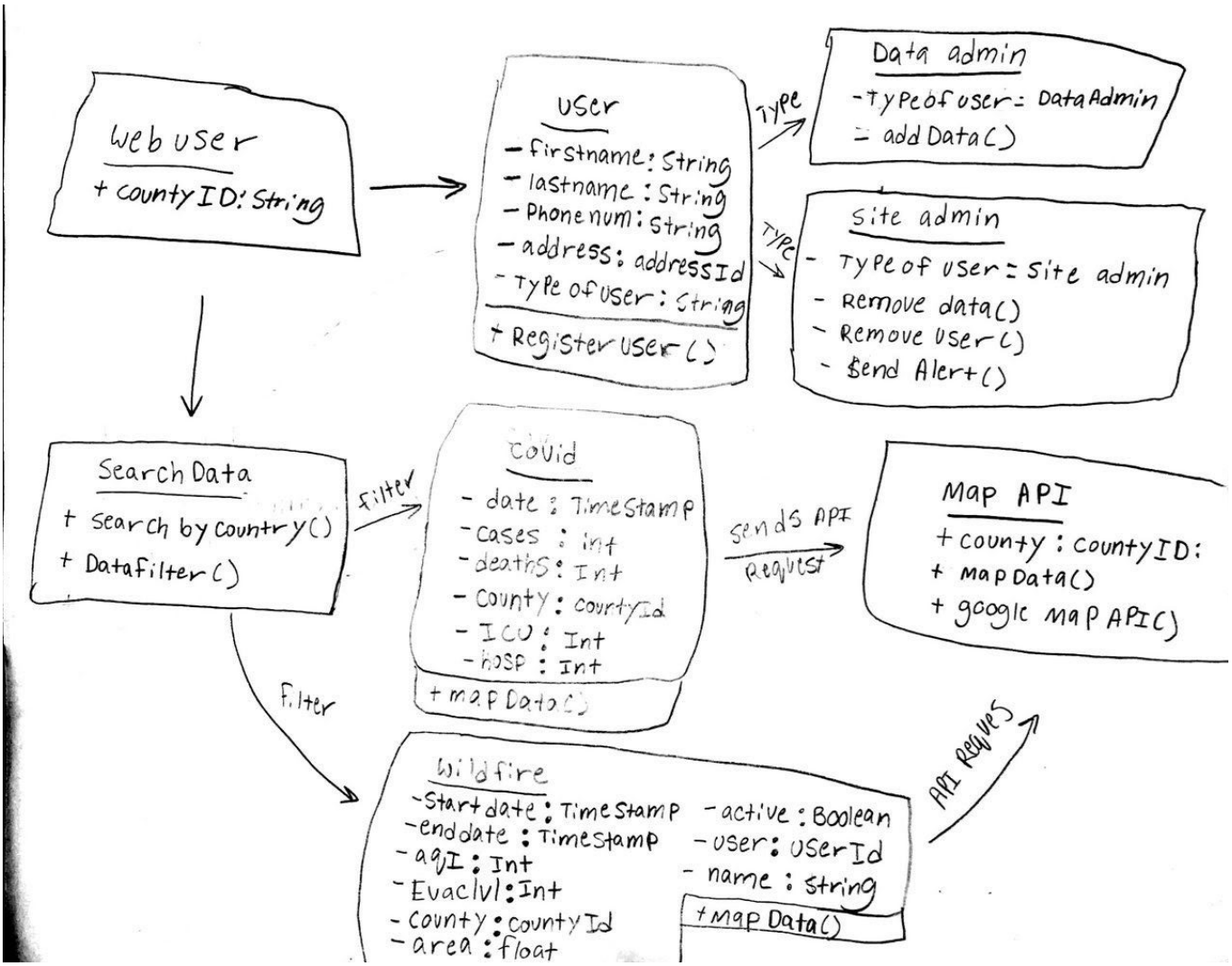
| COUNTY | | |
|---|---|---|
| id | Int | Auto incremented by My SQL |
| population | Int | Total population of county |
| name | String | Name of County |
| area | Float | Total County area (ha) |
| latitude | Float | Latitude |
| longitude | Flat | Longitude |

Below is a diagram illustrating the relationships between schemas:

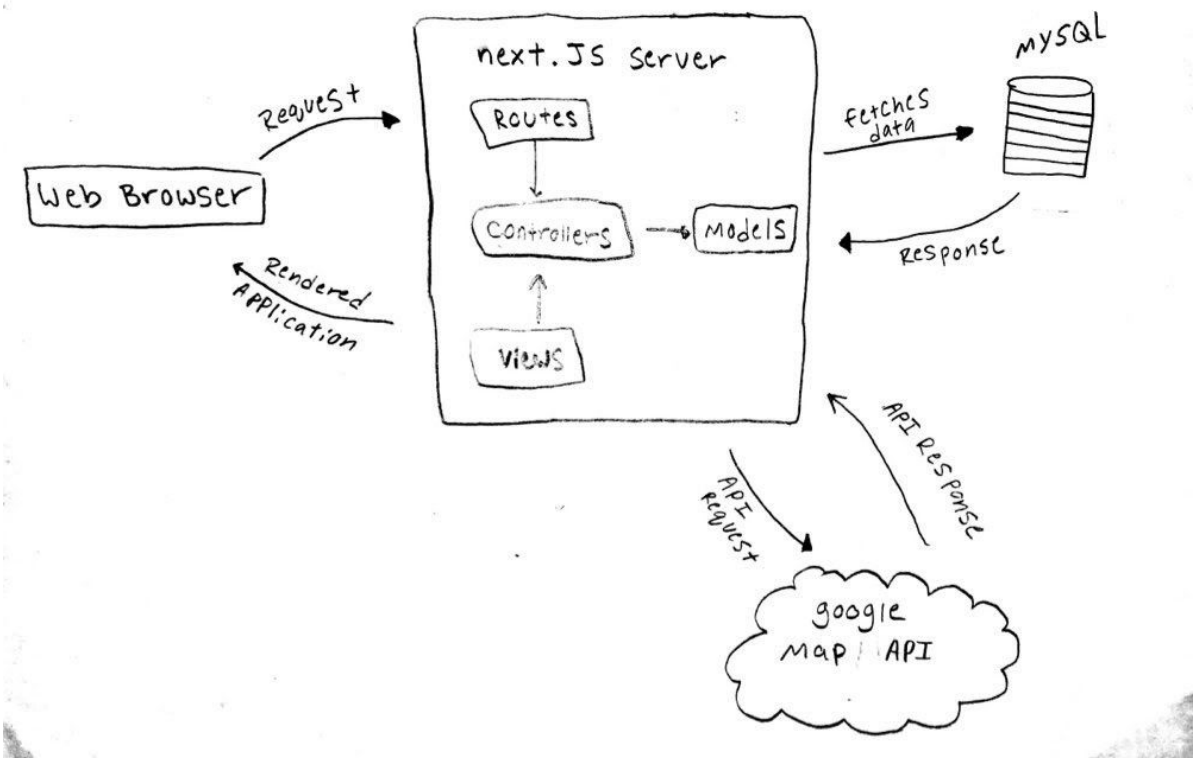


## 4. High Level UML Diagrams

a) *High-level UML class diagrams* for implementation classes of core functionality, i.e. functionality with provided interfaces. Focus on the main high-level classes only (one or at most two levels deep). This must reflect an OO approach to implementing your site

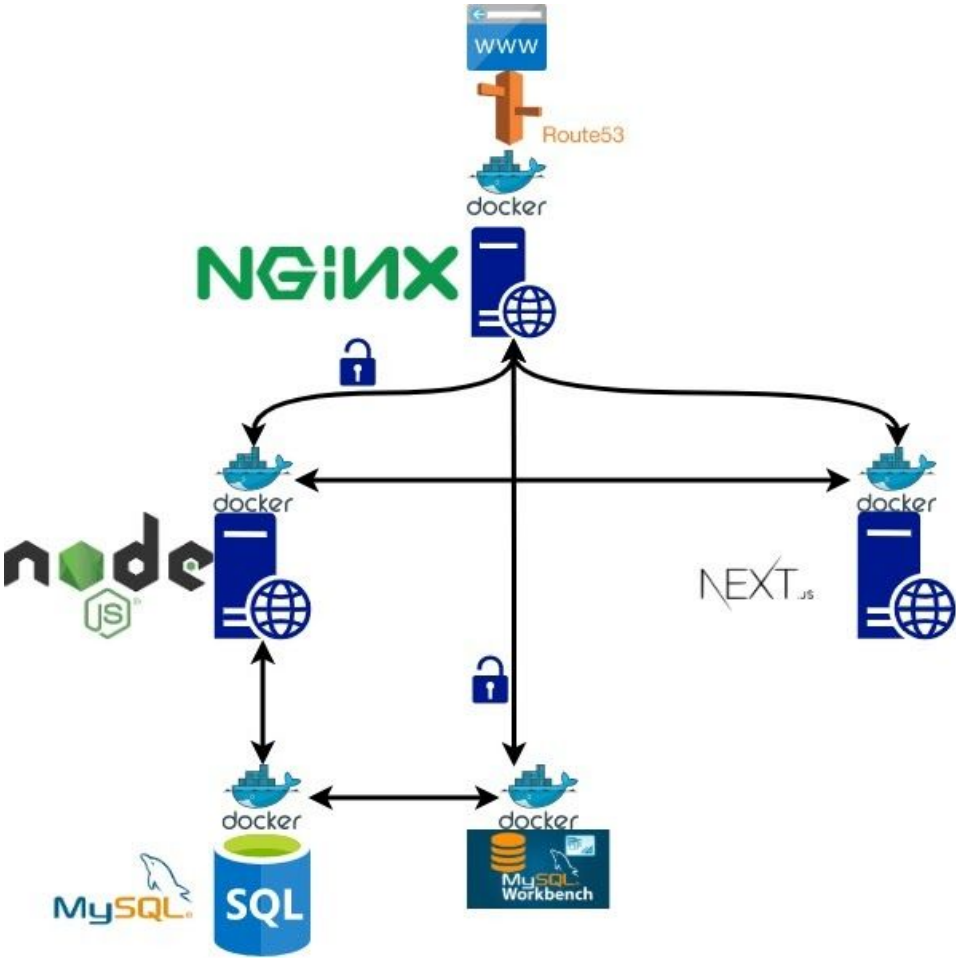



b) *UML Component and deployment diagrams*




Typical end user HTTP and HTTPS traffic is initially routed through Route53 to the NGINX container, where it is further routed to the NEXT.js frontend or the Node.js backend. Site administrators with proper authentication can also access the MySQL Workbench container through the NGINX container.

Requests involving database access proceed first through the Node.js backend, then to the MySQL container. County employees have expanded access to the backend to perform operations such as updating COVID counts or uploading fire data, but do not have site administrative access.




**5 .Identify actual key risks for your project at this time**

***<u>Skill Risks:</u>***

Members have expressed several risks:

-Not having worked with the chosen tools:
Read docs and help each other. Also use zoom or discord to do live meetings if some members have more experience than others.

-Not having deployed a website:

Again, read docs and ask other members for help. Find other outside resources.

-Difficulties with documentation:
Use tools that will help with documentation. Split up work between members but also come together to review

***Schedule risks:***

Risk: We have to deal with time differences.

Solution: Luckily we only have 2 time zones to deal with so it is not very hard to organize as long as we have clear communication. There need to be compromises as necessary. We need to be careful that everyone understands times of meetings in their time zone.

***Teamwork risks:***

Risk: “It works on machine”

Solution: Hopefully docker will help with this.  Otherwise we just need to be willing to help each other and read documentation carefully.

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Risk: Lack of communication or missed deadlines by certain members

Solution: We need to hold each other accountable. If someone is not communicating and/or missing deadlines there should be communication with them that they are not meeting expectations. As a last resort the CEO should be contacted.

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Risk: Difficulties when it comes to the backend members communicating with the front end members and making sure things come together properly.

Solution: Make sure the setup and architecture are sound right from the beginning. Making sure to plan everything out before the actual coding. There may need to be extra meetings just dedicated to this.

***Technical risks:***

Risk: We are using many tools and they may interact in a weird way with each other.

Solution: Not quite sure yet, search the internet for solutions.

## 6. Project management

We will use Space, a tool released by Jetbrains, helping teams in collaboration and development processes for project management.

We are meeting every Friday to take stock on the project progression and assign tasks to each team member. In Space, we will define it as a weekly meeting so that everybody can see eventual changes.

We will also use Space for task management. We will create a checklist for every milestone. In Space, a task is called an issue.
Every issue has a title, a description, a definition of done, a status, a due date, and a checklist. Before every milestone, we will assign issues to every team member.

There is six status for an issue:

- **Backlog:** Issue identified but not in the scope for a milestone
- **Ready to dev:** Issue scoped for a milestone and assigned to a team member
- **In progress:** Issue started by the team member
- **In review:** Issue waiting for review (Github Pull Request)
- **Testing:** Issue merged in the development branch
- **Production:** The issue is done and merged on the master branch

We use Discord for communication. We defined various text channels such as #front-end, #back-end, #resources, and more, to organize our conversations.