Team: CSAST

Analytics to increment in next sprint:

- **Analytic 1:** As a user, I want to be able to see a breakdown of the average confirmed cases, deaths, and recoveries for each country.
    - Hold array of each country aggregated data, and number of dates to divide
    - When inserting, add one to number to divide and add new data to aggregation
    - When deleting, minus from aggregation and subtract 1 from divide

- **Analytic 2:** As a user, I want to be able to pick a country and see when a vaccine was released for the country, and also examine a graph of confirmed cases before and after the vaccine release.
    - Hold 2D array of non-cumulative data for each country
    - Inserts will add to the internal array
    - Deletes will delete from the internal array
    - Vaccine data is stored at the front of each internal array

- **Analytic 3:** As a user, I want to be able to pick a country and examine graphs of confirmed cases, deaths, and recoveries next to another graph of a different input country
    - Hold 2D array of non-cumulative data for each country
    - Inserts will add to the internal array
    - Deletes will delete from the internal array

- **Analytic 4:** As a user, I want to be able to pick a country and examine a graph of confirmed cases and deaths over time to see how deaths trailed confirmed cases.
    - Hold 2D array of non-cumulative data for each country
    - Inserts will add to the internal array
    - Deletes will delete from the internal array

- **Analytic 5:** As a user, I want to be able to see the ratio of recovered cases to confirmed cases for any country I input (effective recovery rate). If no country is inputted, I want to see a ranking of the recovery rates for all countries.
    - Store aggregate array, divide cases by recoveries
    - Insert will add new data to aggregation
    - Delete will subtract new data from aggregation

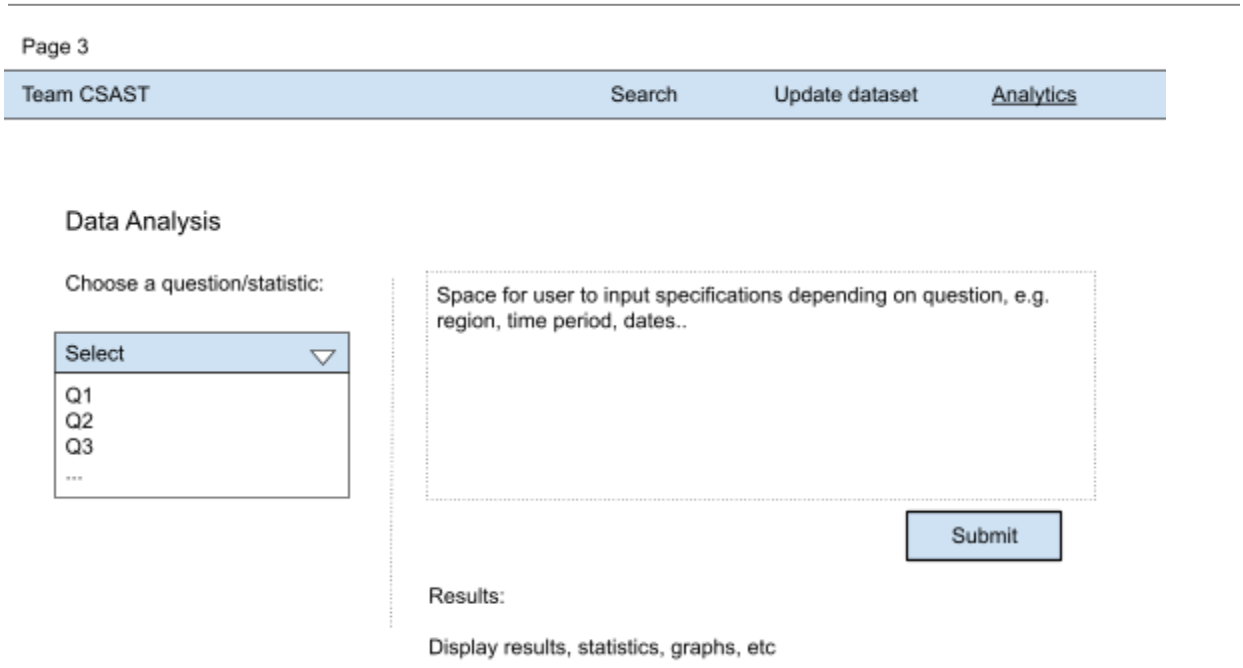
- **Analytic 6:** As a user, I want to be able to see the top 10 countries based on their maximum cases/deaths/recoveries of all time.
    - Hold an array of top 10 countries
    - Inserts will check if the inserted country belongs in the top 10. If not, just insert regularly. Else, compare each value in the top 10 to figure out where

to insert and shift the values down.
    - Deletes will check if the deleted country belongs in the top 10. If not, just delete regularly. Else, delete the specified value and shift down.

- **Analytic 7:** As a user, I want to be able to input a specific country and statistic and get back its maximum cases/deaths/recoveries (whatever statistic) and on which date it peaked, as well as a visual graph.
    - Store country,peakcases,peakrecovered,peakdeaths, and the dates of each in the 2D array at the end
    - On insert, check if there is higher peak, replace in array if so
    - On delete, if peak is deleted, search for the new peaks

- **Analytic 8:** As a user, I want to be able to see a table of the cumulative total amount of confirmed cases, deaths, and recoveries for the world on each day
    - Store world aggregation data for each day
    - Inserts add to the aggregation of that day
    - Deletes subtract from the aggregation of that day

GUI Design:



Test Cases:

- For all analytics, we will test each of them using the final commit from sprint 5, including inserting, updating, and deleting the dataset, and then we will test the same inputs using the incremental analytics and we will see if there is any speedup. We may implement a timer to have a concrete measure of speedup

Completed last sprint:

Front-End

1. Dropdown menu functionality; 4 more cases (Sabrina)
    - Wrappers for each case, css styling, prompts
2. Table Function that all analytics use: (Steven)
3. Analytic 5
    a. 2 cases-- make separate options
        i. Input a country, output specific rate (Alex)
            1. Display: prompt, text input, submit button
            2. Take in user input,, output rate (country name, percentage, recovery rate/time)
        ii. See ranking rate of all countries (Thomas)
            1. display a table of all recovery rates
4. Analytic 6: As a user, I want to be able to see the ranking of each country based on their maximum cases/deaths/recoveries of all time. (Steven)
    a. Display: prompt, dropdown menu to select statistic (All, cases, deaths, recoveries), submit button
    b. Populate data into 3 tables (wrap each)

5. Analytic 7: As a user, I want to be able to input a specific country and statistic and get back its maximum cases/deaths/recoveries (whatever statistic) and on which date it peaked, as well as a visual graph. (Steven)
    a. Display: prompt, text input (country), dropdown menu to select statistic, submit button
    b. Display data
        i. Peak date
        ii. Graph: Use chart.js to make a graph from data, possibly mark peak date (Thomas)

6. Analytic 8: As a user, I want to be able to see a table of the cumulative total amount of confirmed cases, deaths, and recoveries for the world on each day (Alex)
    a. Display: prompt, submit button
    b. Display table
7. Reformat & clean code (Steven)

Back-end

8. Analytic 5 (Thomas)
    a. Receive post of country input
    b. Calculate the recovery rate for that specific country (store it in an array) and send it in json format if the country is not empty .
    c. If country is empty, calculate recovery rate for each country (store it in array) and send it in json

9. Analytic 6 (Caleb)
    a. Receive post of input statistic to rank
    b. Find the maximum cumulative for the input statistic for each country
    c. Store the max in array
    d. Sort array from highest to lowest
    e. Return array in JSON format
10. Analytic 7 (Thomas)
    a. Receive post of country input and statistic input
    b. Search through the country data and find the date with the max new number of that statistic
    c. Send the result (date and max number) as well as array of country data in JSON format (for graph)
11. Analytic 8 (Caleb)
    a. Sum all cases/deaths/recoveries for each country on each day
    b. Store the sum in an array in each index representing the world data
    c. Send this array in json format to frontend

To-Do Next Sprint

Front-End

1. Analytics(search too)-- fix so that tables disappear upon new search (instead of having to refresh)
2. For analytics with chart, find a way to remake the charts once submitted again
3. For analytic 3, ask user for a statistic and make one graph for that statistic for each country instead of two separate graphs
4. Error catching-- if user enters a country/date that is outside of the data throw an error

Backend (Caleb and Thomas work together through live share on all)

- Create aggregate array
    - country,totalCases,totalDeaths,totalRecoveries,numDates
    - Will be sorted
    - For 1,5,6
- Create 2D array
    - Array of arrays of non-cumulative data for each country
    - Internal arrays: country,date,cases,deaths,recoveries
    - First object will have the vaccineDate and vaccine Name for country
    - Last object will be county,peakCases,casesDate,peakdeaths,deathsDate, peakRecoveries,recoveriesDate
    - For 2,3,4,7
- Create world data array
    - date,totalCases,totalDeaths,totalRecoveries
    - For 8
- Change Insert
    - *assume user enters data cumulatively
    - Aggregate array: user enters new data as totals for inputted country (replace), numDates++, shift up and down to proper place in sort
    - 2D array: newData - dataFromAggregate will be inserted into 2D array, check to see if new peak was achieved, replace peak if necessary
    - World data: add user data to the date in the world array
- Change Delete
    - Aggregate array: find delete in the 2D array, minus that data from aggregate totals, numDates--, shift position in array to keep sorted
    - 2D array: delete entry in 2D array. If peak, find new peak and append
    - World Data: find delete in 2D array, minus from totals on that date
- Change update
    - Same as delete, followed by an insert

- Analytic 1 will take the aggregate totals and divide by numDates for each country
- Analytic 2 will find country in 2D array and send to front, along with vaccine data
- Analytic 3 will find the two countries in 2D array and send selected statistic to front
- Analytic 4 will find the country in the 2D array and send to front
- Analytic 5 will take aggregate cases / aggregate recoveries
- Analytic 6 will output the first 10 in aggregate data
- Analytic 7 get peaks from the last object in 2D array
- Analytic 8 will output world aggregate array