*Stage IIIa –* ***Elaboration: Requirements Modeling and Analysis***

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1. **Security**

One of the possible security issues that may be encountered is cross-site scripting. Cross-site scripting is when a third party tries to inject malicious code into a program. This is accomplished by utilizing attack strings in order to inject malware. This could be applicable to the SOAP project since there could be vulnerabilities in the client side script and possibly the access controls of the database. Due to the nature of SOAP, its interface demands efficient queries to pull data. As a result, the development team must learn to optimize existing queries, or create new queries in order to develop graphical representations of data. All developed queries and algorithms must be as simple as possible, in order to allow for a more streamlined maintenance process.

1. **Backup and Recovery**

Github and git shall be utilized for collaboration within the development team, as well as the creation of milestones and versions for each incremental build. Each member of the development team will have access to SOAP's source code, and shall use GitHub in order to back up changes to the original code. All members of the development team will regularly merge their changes to their team's repository, in order to ensure the main repository is up to date. The initial pull of SOAP will not be backed up on the virtual machine, instead, the development team will use the initial commit in the Github repository as a backup.

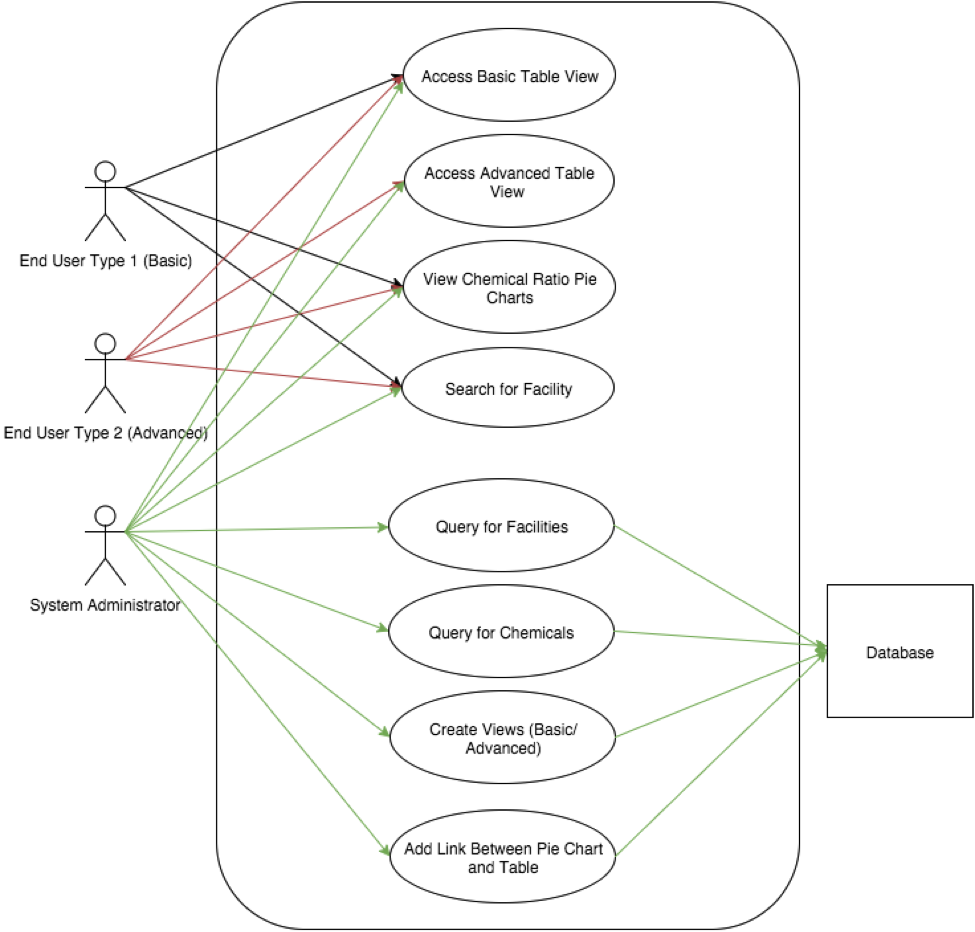
1. **Legal Issues**

As with any software product there is the possibility of legal issues arising as the software is developed and updated. Liability and negligence can become a reality when the data of the system is misrepresented. In the SOAP project, this issue could manifest in the misrepresentation of pollution data. If chemical data is outdated or confusingly displayed, it would not only be a liability of the factory, but also negligence on the developer’s behalf. The residents of the counties could file reports of chemical abuse based on wrong data which could result in factory shutdown or suspensions pending investigations.

1. **Applications**

The goal of the SOAP project is to allow the residents of New Jersey to be able to learn, share, and possibly contribute to the awareness of the pollution in their area across the state. This project will work towards the improvement of SOAP’s overall layout. These improvements will allow the user to have a better understanding and visual representation of the chemical usage and content at each of the factory locations. Interactive and detailed layouts would help users properly locate information regarding pollution in their area.

1. **Use Case Diagram**



1. **Step-by-Step Description**

*Use Case:* Access basic table view

*Primary actors:* End user type 1 (basic), End user type 2 (advanced), System administrator

*Goal in context:* view and interact with tables with basic, uncomplicated information that does not need prior knowledge for use

*Preconditions:* System needs to be working, tables need to be visible and have to be up to date

*Trigger:* the user wants to view basic chemical information

*Scenario:*

1. The user accesses the SOAP website
2. The user navigates to the chemical page by pressing the buttons “Data” and then “Chemicals” that are on the top bar
3. The system displays basic chemical information to the user by chemical name
4. The user can view the chemicals under the headings “Chemical Name”, “Carcinogenic”, and “Metal”

*Exceptions:*

1. Server is not working

*Open Issues:* Will users find all of the basic information they are looking for?

*Use Case:* Access advanced table view

*Primary actors:* End user type 2 (advanced), System administrator

*Goal in context:* view and interact with tables with more advanced information that is targeted at users with a higher understanding of the chemicals and have more advanced needs for the information

*Preconditions*: System needs to be working, tables need to be visible and have to be up to date

*Trigger:* the user wants to view advanced chemical information

*Scenario:*

1. The user accesses the SOAP website
2. The user navigates to the chemical page by pressing the buttons “Data” and then “Chemicals” that are on the top bar
3. The system displays basic chemical information to the user by chemical name
4. The user can view the chemicals under the headings “Chemical Name”, “Carcinogenic”, and “Metal”
5. The user can click a button that says “Advanced Chemical Table”
6. The system displays more advanced information for the chemicals
7. The user can view the chemicals under the headings “Chemical Name”, “Carcinogenic”, “Metal”, “Clean Air Act”, and “PBT”

*Exceptions:*

1. Server is not working

*Open Issues:* Will users find all of the advanced information they are looking for?

*Use Case:* View chemical ratio pie charts

*Primary actors:* End user type 1 (basic), End user type 2 (advanced), System administrator

*Goal in context:* view and interact with pie charts that display chemical ratios in each facility

*Preconditions*: System needs to be working, tables need to be visible and have to be up to date, pie charts need to be functioning

*Trigger:* The user wants to see the ratios of chemicals in a facility

*Scenario:*

1. The user accesses the SOAP website
2. The user navigates to the facilities page by pressing the buttons “Data” and then “Facilities” that are on the top bar
3. The system displays facility information to the user by facility name
4. The user can view the facilities under the headings “Facility Name”, “Address”, “County”, “Parent Company”, “Danger Level”, “Brownfield”, and “Pie Chart”
5. The user can click a link to whatever pie chart they wish to view under the “Pie Chart” heading
6. The system displays a pie chart of the chemical ratios in that facility
7. The user can view the pie chart and the percentages of each chemical in that facility

*Exceptions:*

1. Server is not working

*Open Issues:* Will the pie charts have a limit of how many chemicals will be shown in it?

*Use Case:* Search for facility

*Primary actors:* End user type 1 (basic), End user type 2 (advanced), System administrator

*Goal in context:* Search for a facility by name

*Preconditions*: System needs to be working, tables need to be visible and have to be up to date, Search bar needs to be functioning, facility needs to exist in the database

*Trigger:* The user wants to see all of the information for a specific facility

*Scenario:*

1. The user accesses the SOAP website
2. The user navigates to the facilities page by pressing the buttons “Data” and then “Facilities” that are on the top bar
3. The system displays facility information to the user by facility name
4. The user can view the facilities under the headings “Facility Name”, “Address”, “County”, “Parent Company”, “Danger Level”, “Brownfield”, and “Pie Chart”
5. The user can use the search bar on the page to search for a specific facility by name, or the user can press the “Options” button on the search bar to search for the facility using different information than the facility name

*Exceptions:*

1. Server is not working
2. The facility does not exist

*Open Issues:* Will the database be updated for new facilities?

*Use Case:* Query for Facilities

*Primary actors:* System administrator

*Goal in context:* Create a query in the database to make pie charts for each facility and link them to the corresponding facilities in the table

*Preconditions*: A facility needs to exist in the database, database needs to be connected to the server, system administrator needs to have access to the VM with the correct permissions

*Trigger:* The system administrator wants to create pie charts for facilities and connect them to the corresponding facilities in the SOAP website

*Scenario:*

1. The system administrator logs into the VM with username and password
2. The system administrator navigates to the correct file to write the pie chart queries
3. The system administrator writes the queries required to connect the pie charts to each facility
4. The system administrator commits the changes to the database

*Exceptions:*

1. The query does not work
2. The system administrator does not have a valid username or password
3. The query does not commit to the database

*Open Issues:* Will the database be committed with the changes?

Will each facility have correct and usable chemical information?

Will chemical information be updated in the database, so the pie charts will also need updating?

*Use Case:* Query for Chemicals

*Primary actors:* System administrator

*Goal in context:* Create a query in the database to make pie charts of the chemical ratios in each facility

*Preconditions*: A facility needs to exist in the database, chemical information for each facility needs to be accurate, database needs to be connected to the server, system administrator needs to have access to the VM with the correct permissions

*Trigger:* The system administrator wants to create pie charts of the chemical ratios for facilities and connect them to the corresponding facilities in the SOAP website

*Scenario:*

1. The system administrator logs into the VM with a username and password
2. The system administrator navigates to the correct file to write the pie chart queries
3. The system administrator creates queries for finding and putting the chemical ratios in each facility in pie charts
4. The system administrator writes the queries required to connect the pie charts to each facility
5. The system administrator commits the changes to the database

*Exceptions:*

1. The query does not work
2. The system administrator does not have a valid username or password
3. The query does not commit to the database

*Open Issues:* Will the database be committed with the changes?

Will each facility have correct and usable chemical information?

Will chemical information be updated in the database, so the pie charts will also need updating?

*Use Case:* Create Basic & Advanced Views

*Primary actors:* System administrator

*Goal in context:* To generate different views; both basic and advanced.

*Preconditions*: System needs to be working, tables need to be visible and have to be up to date

*Trigger:* The system administrator wants create two different views for the users so that the information is clearly understandable by all users

*Scenario:*

1. The system administrator logs into the VM with username and password
2. The system administrator navigates to the correct file to write the view queries for the basic facilities table (including just the attributes: name, address, county, danger level, Pie chart)
3. The system administrator navigates to the correct file to write the view queries for the basic chemicals table (including just the attributes: chemical name, carcinogenic, metal)
4. The system administrator navigates to the correct file to write the view queries for the advanced facilities table (including just the attributes: name, address, county, parent company, danger level, brownfield, Pie chart)
5. The system administrator navigates to the correct file to write the view queries for the advanced chemicals table (including just the attributes: chemical name, carcinogenic, clean\_air\_act, metal, pbt)
6. The system administrator writes the queries required to connect the table to the new views
7. The system administrator commits the changes to the database

*Exceptions:*

1. Server is not working
2. The views didn’t get created properly

*Open Issues:* Adding and removing attributes from the table view in the UI. Making the table view dynamic

*Use Case:* Add the facilities pie chart to the facilities information page

*Primary actors:* System administrator

*Goal in context:* Incorporate a pie chart into the facilities data page

*Preconditions*: System needs to be working, tables need to be visible, link to facilities page needs to be working, data the pie chart utilizes has to be up to date

*Trigger:* The system administrator wants show the pie chart for the facility data on the page so that it is easily readable by the users

*Scenario:*

1. The system administrator logs into the VM with username and password
2. The system administrator navigates to the correct file for the facility data
3. The system administrator adds the appropriate html for the Pie Chart and the SQL queries for the appropriate facility
4. The system administrator commits the changes to the database

*Exceptions:*

1. Server is not working
2. the queries are not written properly
3. The pie chart is not properly linked with the corresponding facility

*Open Issues:* The SQL queries for each of the pie charts, and making sure that it is showing properly;

1. **Analysis Class Diagram**

AnalysisClass.png

1. **Server Information**

Server: csc415-team04

sysadmin Password: SESpring04

Lindsey Abramson

* student1
* Password: SESpring04

Arielle Aponte

* student2
* Password: SESpring04

Cassandra Budson

* student3
* Password: SESpring04

Beau LaManna

* student4
* Password: SESpring04

Brittany Reedman

* student5
* Password: SESpring04

Warren Seto

* student6
* Password: SESpring04