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CSC415-02
Assignment 3
3/4/2019

Social Issue: Racism

Project Title: Racial Bias Reporter

Project Option: Option 2

Implementation:

The project will be implemented via a **web application**. Languages and frameworks to be used will include the following:

- Ruby
- Rails
- PostgreSQL
- JavaScript
- HTML

Project Idea:

The idea for this project is to provide a fast, simple, and secure method for college students to report incidents of racial bias they have experienced on campus directly to their schools and to gain access to the appropriate supportive services and information.

Project Discussion:

Today, acts and expressions of racism should not be tolerated, especially on collegiate campuses, which should be environments that promote tolerance and wellbeing among students. Many college campuses likely have resources for students to report incidents of racial bias, but these resources may be hard to find, difficult to navigate, or may not even be solely dedicated to reporting incidents of racial bias. Some schools may not have these resources at all.

The concept behind this application is to provide a one-stop solution for college students to report incidents of racial bias directly to their school. This project will be innovative because it will provide a direct avenue of communication between victims of racial bias and their schools without making these victims sift through .edu webpages to find the appropriate resources they need for their individual school. Victims of racial bias will be able to simply visit one webpage, select their school, and fill out a form about their experienced incident. On this form victims can describe the incident, and may indicate if they would like their report to remain anonymous,

which may be a concern for some students who do not want their bias incidents reported on by school newspapers or school-wide emails. After a student submits an incident report, school officials will be able to see the report and launch investigations, privately reach out to the victims, and provide supportive services such as counseling.

This project will be an interesting approach to eliminating racism and racial bias from college campuses by providing a quick, easy, and secure method for students to report racial bias incidents directly to school faculty and administration. By giving victims of racial bias a quick and convenient way to report such issues to their schools, hopefully more victims will be encouraged to report their experiences with racial bias when they might not have done so otherwise. By encouraging victims to report these incidents to their schools, schools can gain a greater understanding of how much racial bias occurs on their campus, why this bias is happening, who needs access to supportive services, and how to stop such incidents of racial bias in the future.

Algorithms:

The algorithms I will implement in this project are as follows:

- Bias Report Submission: This will be the primary algorithm of the application and will handle the submission of bias report information. The functionality of this algorithm will consist of aggregating input data from a user, storing that data in an appropriate data structure, and reflecting this new content in the view seen by the user's school when they log onto the site. Depending on the information entered by the user, the data may be stored in a special location of the data structure (such as if the report is marked 'urgent', for example) or may simply be appended to the structure.

- User Login Verification: To use the site and view submitted bias reports, school faculty must be able to securely log in. This will involve username and password validation checks.

- Bias Report Searching: When multiple bias incidents are reported to a school, faculty/administration at the school will likely need to search for specific incident reports at various times. Therefore, I will implement an algorithm for searching for specific reports based on various traits of the report, such as when it was submitted, the contents of the report, etc.

- Bias Report Sorting/Filtering: Faculty at schools would likely appreciate the ability to sort or filter a list of bias reports based on various traits. This will make it easier to find reports in a large list. This functionality will be handy as new incident reports are submitted to a school, since the list of reports can be filtered based on which reports are new (and thus need attention) and which reports are old/resolved and do not need attention.

Data Structures:

The following data structures will be used for this application:

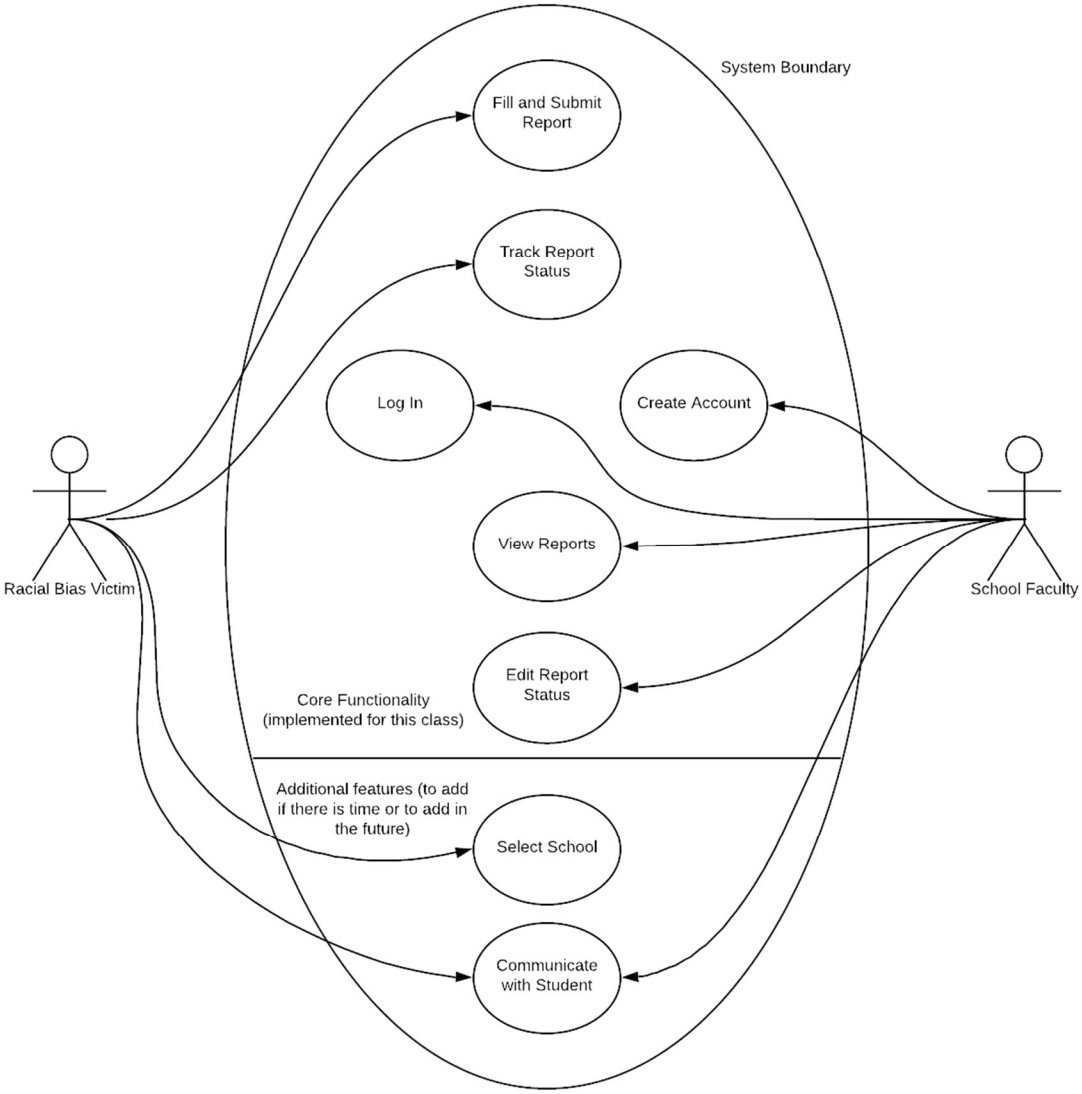
- Linked list: A linked list will serve as the primary structure for storing and retrieving bias incident reports on a per-school basis. These linked lists will hold custom "report" objects that will contain all user submitted information for that user's report. A linked list will offer reliable performance for several different operations, such as retrieving reports in the order in which they were submitted, storing an undetermined number of reports, and searching for a specific report based on specified criteria. At worst, a linked list can be displayed to the user and searched by the user in linear time complexity, making this a good choice for the purposes of this app as opposed to other options.
- Hash table: One of my goals with this application is to eventually support multiple schools, allowing students from multiple schools to use this site. If I reach this phase during this semester, a hash table will be used to store lists of incident reports for each supported school. This will make accessing each school's list of reports quick, since each list of reports can be hashed by the name of the school to which those reports pertain.

New Software Engineering Concepts:

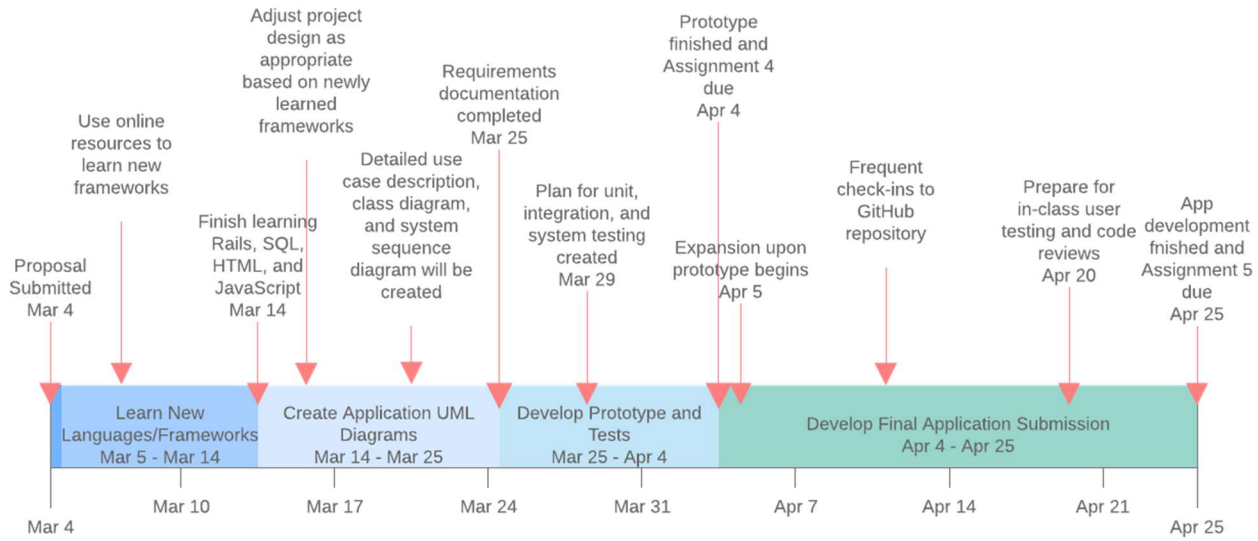
During this project, I expect to directly learn the process of requirements elicitation. We experienced this process when we visited Mercer Street Friends, but at that time we did not necessarily have to talk one-on-one with a stakeholder. However, in this project I will be in direct contact with stakeholders, and plan to reach out to the administrative personnel at TCNJ who handle racial bias incidents on campus, such as the Bias Response Team, to elicit requirements for the application from these experts on the subject. This process of forming use cases and requirements by communicating with stakeholders will allow me to reinforce what I have already learned regarding the requirements analysis and elicitation process of software engineering.

Additionally, I plan to learn more about software testing, which is a vital part of the software engineering process. We talked about software testing in class, but I anticipate that I will gain much more experience with the process of testing during the development of this application, since I will need to perform unit, integration, and system testing in a systematic and maintainable fashion.

Use Case Diagram:



Project Timeline:



Online resources will be used to learn the new languages/frameworks of Rails, SQL, HTML, and JavaScript. These resources will consist of the following:

- **www.codecademy.com** (for intro to SQL and HTML)
- **www.railstutorial.org** (extensive free-to-access book about using Ruby on Rails)
- **www.javascript.info** (the best JavaScript tutorial site I have found)

GitHub repository:

A private repository has been created for this project on GitHub. A wiki page for the repository has also been created.

- Name: bias-reporter
- Path to project: https://github.com/brianrentsch/bias-reporter.git