PROJECT PROPOSAL

Project Outbreak

Software Engineering, CSCE 3444, Summer 2020

The Outbreaks
Ty Rozell, Clint Wyatt, Ryan Schick

1. Project Overview

1.1.   Background

The project we have selected is a disease outbreak simulator. This topic was inspired by the current pandemic that is affecting the entire world. In working on this project, we hope to gain experience in researching a topic such as this and turning it into software that could be potentially helpful. Similar products that exist are the game Plague Inc. and GLEAM. Plague Inc. is a mobile game where you create a disease and try to wipe out Earth's entire population. GLEAM is a desktop app that simulates disease outbreaks.

1.2.   Project Description

The goal of our project is to create a disease simulator in the form of a web application. The program will visually show how a disease might spread in [where?] over a map of this region. The user of the app will be able to choose from a list of real-world diseases or experiment with their own customized disease. Important factors are things such as infection rate, mortality rate, susceptible groups and more. We plan to make the software easy to use so anyone can access it. The software could be used to help us predict how disastrous and costly a disease could be in [location] given the specifications as well as seeing a direct visual comparison on how previous diseases could affect us today.

1.3.　Tools and Technologies

The backend of this project will be written in JavaScript; using the Node and Express frameworks. The frontend will be done in HTML, CSS, bootstrap, and JavaScript. The database that will be used is MYSQL. For source control, we will be using Git to store the project on GitHub. The code files will be edited using Microsoft's Visual Studio Code on the Windows operating system. Any created or edited images will be edited with Adobe Photoshop. Since the project is a web application the user interface will be a web browser. Google Chrome will be used in development but the application will run in any modern browser.

2. Project Plan

2.1.　Project cost and effort estimates

We plan on taking these steps to complete the project:

First we will research data dealing with health, population and geography. Next we will plan the structure of the software based on the research we conducted. We will see classes and data structures we might need. This will be a lot of prep work in order to make sure we are not using any unnecessary time to rework and redesign when we're close to launching the website. From class we have learned that it is more cost and time efficient to find areas in our project that could be problems earlier on in development, rather than a few days/weeks before launch. What we hope to accomplish is having more steps in the preparation stage so that we have exactly what we need outlined.

Secondly, we will actually take those plans and turn them into code. We'll be using a combination of HTML, CSS, bootstrap, and JavaScript for front-end development and holding our data on the back-end in MYSQL. Most of our team knows a good amount of these languages so there won't be inefficient costs or time spent on learning the languages. Thankfully all we will need for our project will be open source and/or free to use as well as the IDE we will be using which is Visual Studio Code.

Lastly, we will perform tests on the code to mitigate as many bugs as possible before publishing the final project. We will utilize many resources while building this project. Some such as census data, maps, disease data, statistics, flight and travel data. According to the COCOMO model, the effort for this project will be 10.28 staff-months. The duration is 6.06 months and the lines of code for the project is 4 kloc. The required staff 2.

2.2. Project Timeline

#	Activity	Time estimate	
1	Activity	Time estimate	
2	1.1: Create Github repository	0	
3	1.2: Complete assignment 0	2	
4	1.3: Upload Sample javascript for disease modeling	3	
5	1.4: Create login and registration page	2	
6	1.5: Get express running	3	
7	2.1: Finish disease modeling logic	6	
8	2.2: Implement the front end with disease modeling logic	3	
9	2.3: Show data for disease modeling results	2	
10	2.4: Test project	2	
11	2.5: make any necessary changes	3	
12	3.1: Create necessary database tables	2	
13	3.2: Fill database with information on diseases	5	
14	3.3: Integrate the front end with the backend	5	
15	3.4: Make sure the backend is safe from hackers	3	
16	4.0: Finish		
17			

Milestones
1.1 Create Github repository
1.2 Complete first assignment
1.3 Get familiar with javascript on the front end
1.4: Implement the registration and login page
1.5: Get express running
2.1: Figure out how the diseases will spread
2.2: Code the frontend for the diseases
2.3: Get the data/results for the disease spreading
2.4: Test project for any imporvments or changes
3.1: Create all necessary database tables
3.2: Get all information for each disease
3.3: Integrate front end and backend
3.4: Secure the backend
4.0: Finish
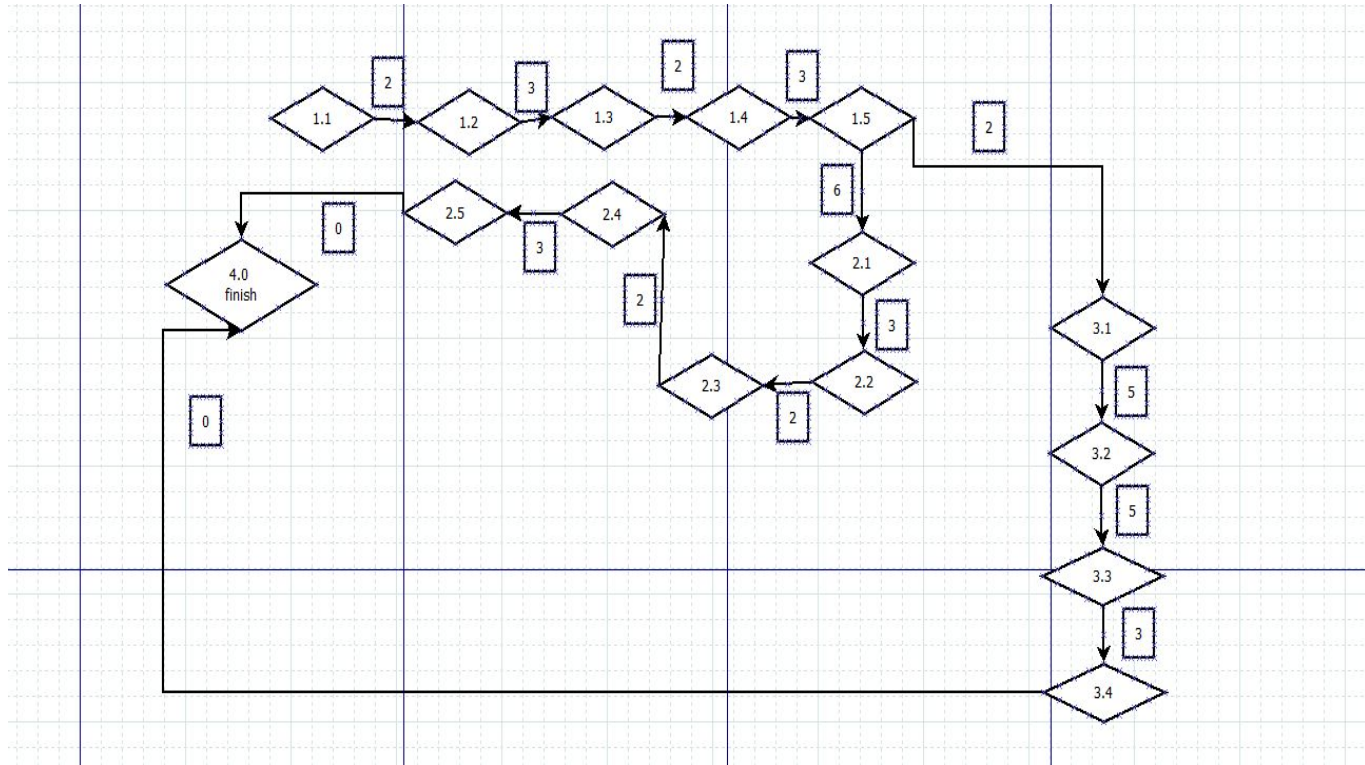
3. Risk Analysis

3.1. Generic Risk

There are a few risks involved with the making of this project. One, for example, is that there are no in person meetings due to the current pandemic. Many projects in the past that we have collaborated on have had at least two in-person meetings a week. Because of this change, we expect there to be risk and miscommunication on certain aspects of our project like design and efficiency. Another is that there could be communication issues due to poor internet connection and having jobs take up time throughout the semester. We have challenged ourselves to combat this by meeting up consistently and outside of given class time. We use groupme and discord in order to have lines of communication to reach out.

3.2.   Project Specific Risks

The general risk is the experience level of Javascript and Express. The group's experience in Javascript ranges from beginning to intermediate. For Express, the group's experience is beginning. We also don't have very much experience with building web applications and using frontend languages such as HTML and CSS. So overall, there will be a learning curve that we have to overcome before the project can progress. Another risk is that the project might not function as expected or be inaccurate.

4. Member Roles

Clint's Role will be the login page, the backend, some of the frontend, and some of the disease simulating logic. Ryan's role will be focusing on front-end design, user interaction, implementing logic of disease to accurately represent real diseases, and some of the backend development. Ty's role will be a flex role with a balanced mixture of both frontend and backend development. All members will be a part of the testing that will follow the development stage.