THE ZBY1 SOLUTION

OEC2021: Team Rust - Programming

Defining The Problem

- We have a zombie apocalypse on our hands!
- The virus ZBY1 is responsible.
- We need to find a solution before the situation gets any worse.
- Major contributor to the spread is our schools

Citations

Openpyxl: https://www.toptal.com/developers/gitignore/api/python

Gitignore: https://openpyxl.readthedocs.io/en/stable/index.html

Defining The Problem

- Students and staff interact a lot!
  - Out and about between classes
  - Sharing food at lunch
  - Collaborating close together, and engaging with staff.
- If a child w/ ZBY1 goes to school, they’re likely to infect many others

The Solution

- Find out how and why this virus is spreading.
- Make correlations as to who could have been infected and by who.
- Focus on the schools and use their student records.
- Will help identify who might be affected case of a ZBY1 outbreak.

The Solution: High-Level

- Parse data provided and store it.
- Determine when and how interactions are made.
- Determine which classes infected students are in.
- Calculate the probability of spread in those classes.

The Solution: High-Level

- Make considerations when calculating:
  - Properties of school
  - Characteristics of ZBY1
  - Lunch and activities
  - Siblings

Design Process

- Determine how we will parse the data and how we will store the data.
- Determine how we will simulate interactions between students and staff.
- Determine how we will calculate probabilities of students transmitting the virus depending on the data given in the school records, characteristics of virus, and likelihood of transmission.

Design Process

- Determine ways of making correlations based on who they have interacted with, who already had the virus, whether they are student or staff, differentiating by grade.

Development Process Process

- Parse the data from the excel files.
- Store the data into appropriate data structures for access later on.
- Define attributes that a person will have to make correlations later based on probability.
- Simulated transmitting phases in each period and developed an algorithm to calculate probabilities of being infected if they have interacted with someone that has the virus and taking into account their previous interactions and characteristics of the virus.

Development Process Process

- Keep track of who may have infected each student and staff throughout the different phases
- Made correlations of who is most likely to get the virus, what attributes most correlate to a high probability of getting the virus.
- Went back to document the code and make it more readable.

DEMO

Q&A