Planning Document

GIVEN:

- 4 Grade levels: 9, 10 , 11, 12
- 2 morning classes, Lunch break, 2 afternoon classes, clubs
- Classes cleaned during lunch
- Spare periods
- 10 subjects each with section A and B (20 classes and teachers tota)l
- 580 students total
- 5 teaching assistants
- Clubs: Board Game Club, Football, Soccer, Video Game Club, Band, Computer Science Club, Choir, Basketball, Badminton, Baseball

Given Assumptions:

- Students may participate in multiple clubs
- Students on spare will likely spend time with other students that have a spare period and are more likely to hang out with peers in the same grade.
- It is likely that students leaving a class after a period ends will bump into or be in close contact with the new students coming into that same class
- The teaching assistants change classrooms every period,
- Teaching assistants interact very closely with teachers.
- Students with the same last name may be related and therefore be in closer contact
- It is safe to assume that all extracurriculars run every day at the end of school, and that the majority of people signed up for them attend regularly
- base set of 20 classes are global for all students, there are no grade specific classes at this school
- as the age difference increases by 2, the chance of catching the virus increases by 50%
- a student's grade is directly proportional to their age (e.g grade 9 to 10 is an age increase of 1 year)
- If a infected person is in contact with non-infected, non-infected becomes infected
- If a non-infected person is in contact with room that an infected person has been in previously and not cleaned prior to arrival of non-infected person, non-infected becomes infected
- pre-existing health condition increases the risk of an individual catching the virus by 70%

Our Own Assumptions

- An infected person is likely to infect 3 people when in contact with a group
- People infected within the day can immediately infect other people

Infection Percentage (grade 9 = 14 years old, no health conditions, no siblings):

- Infected = 100%
- In a group with infected = (3/group size) %
- In direct contact with infected = 100%
- In group transition with infected = (group size/3)*(5/45) %
- In direct contact transition with infected = 100*(5/45)%
- Not infected = 0%

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Infection Percentage Multipliers (based on age, health, sibling relation) :

- Pre-existing health condition = 0.7
- Sibling with infected =
- Older than 14 year old (even): (1.5) ^((age -14)/ 2)
- Older than 14 year old (odd): (1.25)(1.5) ^((age -15)/ 2)
- ex:
  Let's say a 14 year old has a 5% infection, if they get older:
  16 year old : 1.5 * 5% = 7.5%
  18 year old: 7.5 * 1.5 = 11.25 %
  19 year old: 11.25% * 1.25 = 14.0625%

  16 year old: 5% * [1.5^((16-14)/2)] = 7.5 %
  18 year old: 5% * [1.5^((18-14)/2)] = 11.25 %
  19 year old 5% * [1.24*1.5^((19-15)/2)] = 14.0625%

Criteria for becoming infected:

- **Infection percentage >= 50%**

so if a person comes into contact with, say 30 people in the day, the chance of infection for each of those is 3/30? And the chance of infection for those that are older is 1.5 * 3 / 30?
In regards to the transition periods; Assume a regular period is 45 minutes and a transition is 5 minutes

Procedure:

2 MAJOR STEPS:

- **FIND THE LIKELYHOOD OF EACH PERSON AT THE SCHOOL GETTING THE VIRUS.**
  - **Find number of interactions each person has with people with virus throughout the day**
    - **Within classrooms**

    - **Within halls**
- **MODEL THE RATE OF INFECTION**

- Find the number of students which share the same class and increase their likelihood of getting the virus depending on the type of students within the class.

  Student name, period#: classname, <how many students they share the class with>, <how many students they share the class with with health problems>, <how many students they share the class with with the virus>

- Increase their likelihood of getting the virus if they have health conditions.
- Increase their likelihood of getting the virus if they have