Project_1 Design Proposal
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I. Description

Germ Games

In the same way armed forces take part in war games, I expect countries will participate in regular "germ games" following the outbreak of Covid-19. This game is a simplified version where the player is coordinating global efforts against an unpredictable, spreading virus. At each turn, the player makes decisions on behalf of the 7 continents, alotting finite productivity to various actions (research_vaccine, produce_mask, build_hospital, educate_population) each of which has a unique impact on that continents rate of spread. Continents can also set binary policies (close_border, shelter, full_lockdown) which impacts the continent's productivity output per turn, the rate of infection, and the population happiness.

II. Classes

Continent: A class where each instance is one of the 7 continents. Not sure whether the player will control one, whereas the others are automated or whether they control all...

- Instance Attributes
    - avg temp
    - population
    - geographical size
    - population density
    - GDP/productivity_points
    - Population_happiness
        - Impacted by policies and education, and virus spread, if it drops below a certain point, adds in *chaos*, dropping productivity and increasing infection rate.
- Methods
    - research_vaccine(self, productivity_points)
        - This has no impact on the spread, but as you add resources to it, the chances of you finding a "cure" increase dramatically. If you alot no resources, there is no chance you find a cure/ultimately win the game.
    - produce_mask(self, productivity_points)
        - This greatly impacts the *spread rate* of the virus, combined with education for a 2x impact of both.
        - potentially can send to other countries, if excess but increases likihood of virus uptick.
    - build_hospitals(self, productivity_points)
        - This actively degrades the inftected population, however can result in more outbreaks if your mask count is low.
    - educate_population(self, productivity_points)
        - This greatly impacts the *spread rate* of the virus, combined with produce_mask for 2x impact of both.
    - close_border
        - Increases unhapiness, decreases spread rate if continents level of virus is low enough. Otherwise has no effect on spread.
    - Shelter
    - Lockdown

Virus: A class where each instance is a case of the virus.

- Class Attributes
    - Reacts to the attributes and actions of the continent in the same way.
    - Count - Whats the global infection rate? Determines if you win (hits 0) or lose (hits all population)

- Instance Attributes
    - Location: which continent?
- Method
    - spread(self,)
        - Will spread based on it's located continent factors as well as population hapiness
    - die(self,)
        - Will die after 14 days

Chance/Dumb_luck: So much of a virus is unkown to us, our ability to fight it largely depends on dumb luck. This class produces instances of randomness that interact throughout the continent and virus classes

- Methods
    - Rand(self)

People: As I work through this, realizing that populations will likely need to be a class of their own.

- Instance Attributes
    - location
    - Infected
- Methods
    - Heal
        - Depends on number of hospitals
    - Infect others
        - Depending on education level and masks available in their continent.

III. Gameplay

Heatmap will be shown each turn to help visualize how they're doing.

Continent 1 – 1 case
Continent 2 – 2 cases
Etc.

Day 1 - Outbreak! A new virus has emerged, and the international germ games are underway. Help coordinate the global fight by setting policies you think will help reduce infection, find a cure all while keeping the world out of chaos.

You have 4 points to allot to different avenues to fight the virus, including producing masks, researching a vaccine, building hospitals and educating folks on how to avoid infection.
How many points to produce mask? **2**
How many points to research a vaccine? **2**
That's all your points, hope you thought it through!
Now let's set a policy, do you want your borders to close? **No**
Vacationers sure will be happy to see that, hope they don't get sick though! Next, do you want to order work-from home? **Yes**
Ok that will cost you productivity, but probably will keep folks happy. Time will tell…
…1 month later
Continent 1 – 100 case

- 2 masks produced
- No vaccine found…

Continent 2 – 2000 cases
Etc.
Ouch – that's a big spike, lets allot those points and see if we can't fight this virus off.
How many points to produce mask? **2**