Design and Post-Mortem

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Diagram(s) and description of attacker behavior and methods with description (100-300 words)

1. The Attacker will look for the nearest pills when left alone.
    a. If the normal pills are gone, looks for power pills
2. If a defender is close enough to the attacker while vulnerable, and there is enough time left, the attacker will hunt that specific defender
3. The 2 closest defenders are highlighted, but if two are basically on top of each other, ignore the farther one. If they get too close, by default, the attacker will run, however, if any of these conditions are fulfilled, it undergoes their steps instead.
    a. If a defender's possible locations are intersecting with the attacker's possible locations, by default, the defender will go away from the closest defender.
        i. If the defenders are approaching the attacker from two different sides, the attacker will go towards the nearest junction with 3 or more exits, and then he will go in a direction they are not in.
            1. If there is a power pill that is closer than a junction, given that it has more than two exits, he will go to that instead.
        ii. If the nearest defender is in the same direction as a pill, the attacker will instead go towards the farthest pill

I did not use any separate methods, though that would have helped a lot. As seen above, the behavior was characterized mostly by the 2 default states (eating pills or walking away from a defender), with most of the code looking at the fringe cases, where

Identifications of successes ("what went right") and failures ("what went wrong") (~300 words)

Something that went right is that I was able to successfully get the attacker to eat the defenders and run from them at the perfect times, and I was able to get the attacker to escape towards junctions when getting approached or to run towards power pills when trapped. While I was able to reduce the amount of time that the attacker got trapped. As such, something that still did not work completely that I spend a large majority of my time on is that the attacker is in fringe cases unable to escape when stuck in junctions, and the attacker would not consider going backwards sometimes when stuck while the defender behind it was faced away. Also, if the attacker left the last pills on the top side of the map and died, the attacker would never be able to get back to the top and I have not found a solution yet.

Reflection on project (one per student; 100-300 words)

While I was able to get the attacker to get an average of 6677.7 points, its score was also slightly variable with some large outliers like 2300 and 17340. Additionally, I feel like I had some noticeable issues with the attacker just dying because I did not give him any logic for his specific issue (as seen through watching the 2300 trial), even though the average was enough.

Even though the project still feels unfinished, I feel like the attacker was to an extent successful at playing Ms. Pacman and even more so than me. While it took a few hours over multiple days it was still much more of an enjoyable experience than I expected.