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Intelligent Systems Task 2

Part 1:

I felt like part 1 was definitely the easiest and went the smoothest. I did precompute some lines, but it seemed as though it would be fine. I was using the same Bezier curve approach I took before, and so I generated the lines I needed to create one arc and then generated subsequent arcs as the fish reached the end. It ended up working rather well, though there were some sharper turns the fish were taking than I would have liked. The cons of the way I approached it was that it was way more complicated later down the line which I did not realize until I was well into the project. I could definitely improve upon the smoothness of how the fish actually move. The fish never reached the edge of the world in part 1. When I ended up implementing part 2 however, sometimes the fish would traverse outside the bounds of the world, but they always smoothly come back. I could not figure out how to fix it in time as my computer crashed Wednesday afternoon and I've had to rewrite the entire assignment in a few hours.

Part 2:

My collision detection and avoidance works a lot of the time, but fails in a few specific cases. Due to my usage of the Bezier curves, it was really hard to actually get the fish to avoid each other. In the beginning I was having problems that the fish would actually collide and then stick together. I overcame this by giving a cooldown time on collision avoidance so that the fish actually had time to get away from each other, but this also introduced the possibilities that a fish could collide with another after just avoiding another fish. This was not ideal. I could definitely go back and rework this whole section to make everything much smoother. I could probably get a bit better results by tweaking some of the radius numbers, but I think I might have to take a whole different approach to smoothing the curve to actually be able to do something that works much better.

Part 3:

I'm not sure how well this works. Sometimes it seems as though my dolphin will not see the fish, but it will definitely chase the fish when it encounters them. I think my detection is a bit off with the way that the field of view is enforced. I calculated field of view by "cheating". I had the dolphin pass it's coordinates and orientation to the fish manager which told it the nearest fish that it could see so that the fish could be chased. I decided to have and ADD dolphin. I did manage to make the dolphin 1.5 times faster, though when it was chasing the fish, that value was unclear as I generated many extra points using the Bezier curve code I am using.

Part 4:

This part was not quite there. I have the dolphin behaving properly by jumping out of the water, etc, not chasing fish while jumping, etc. but there are lots of bugs. The biggest one is that the dolphin jumps out of the water and only gets a half arc in before immediately and discontinuously slamming back to Y = 0. The logic works out, but I need to play with the curving code some more and tweak the dolphin to get it to look right. I think my approach actually works out very well, just needed more time to work on it.

Overall, I feel I did an ok job on this task. I feel pretty robbed that my computer crashed and I was unable to recover my work. I feel that if I had not had to rewrite this in a much shorter amount of time than I had allotted and actually spent I would have done much better.