Post-project Writeup - Mining

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Project Summary

The task was to create a package for a Zerg program that deploys Drones to a map and attempts to mine as many crystals as possible within the allotted time.

Challenges

As it would turn out, having an understanding of Dijkstra's and having written it twice in C was not overwhelmingly helpful when trying to do it again in Python. I mean, that isn't completely fair. It was helpful, but I still struggled most with the pathfinding algorithm as compared to any other aspect of the project. I had to rewrite the Map object three times entirely to get it properly working. Not to mention that the actual exploration code for each ScoutDrone made things unnecessarily complex as a result of having to incrementally path to the nearest available unexplored tile to reveal it.

Also of note was the ordering of the turns for each tick, which came into play with the Overlord pathfinding ScoutDrones. Because drones only receive their context object on the start of their turn, our ScoutDrones only move once every two turns when receiving single-tile paths every turn, because the Overlord doesn't get the new tile's context object until after it has already skipped its turn, meaning it spends one doing nothing. We could've rewritten things so that the scouts were semi-autonomous or even completely autonomous, but that would've required a near full rewrite on the back-swing and just ended up not being worth it.

Successes

I would like to think that we did a better job of staying object-oriented this time around, if for no reason other than because there is no main function to facilitate use of functions. Things sort of just fell into logical blocks in regards to methods being attached to certain objects in order to manipulate inherent data held within. It felt like good stuff. Overall, this project was complex, but some prior planning and a lot of refactoring got us through.

Lessons Learned

This project had a lot of moving pieces (and zerg), and writing a program to explore an unknown map to achieve some goal was satisfying. The time crunch really came into play this time around and I'm writing this project with less than half an hour to the final turn in, really ensuring that every feature is committed before that deadline. This would've been a more fun experience if it wasn't timed, as it was a nice challenge, but the time limit does add its own layer of complexity. More time spend laying out subclasses for holding data would be nice in the future, as our initial design layout had the big ones, but a lot of smaller subclasses were neglected, as we didn't assume we'd need a class for many of them.