Task: Task 19

Title: Spike Extension Report

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# Instructions

# Author’s Note

I do not recall it being made clear to me that the extensions were to be discussed in separate reports to the base work of a spike. Whether this just wasn’t mentioned until a week or two or it was and I forgot, where I have done extensions to a task, I have discussed them in the same report as the base work for the task, in some cases alternating between adding a base feature and discussing it, then an extension feature, then back to a base feature, such that they’re entangled. Due to this, I’ll be pretty much referring back to those spike reports and summarising which extensions I did and how I went about them. For more detail on what I did for each task’s extensions, please look at the relevant spike report.

# Task 4: Goal-Oriented Behaviours and SGI

The extensions available for Task 4 were:

* Create an object-oriented version of the code and discuss the pros and cons.
* Create a console-based turn-based RPG.
* Complete the GOAP spike that looks at using a plan to overcome the limits of simple goal insistence.

For this task, I limited myself to converting the code to an object-oriented version of the code. I did a diagram of each class created for this, and briefly discussed the advantages of code being divided into objects that can be passed and manipulated, of inheritance and polymorphism, and the tiresome drawback of referring to methods or field within that class by self.X.

# Task 7: Tactical Analysis with PlanetWars

The extensions available for Task 7 were:

* Consider what extra information could be analysed and exploited in decision making.
* Explore the implications of and ways to exploit the fog of war view of the simulation environment.
* Discuss what asymmetrical game maps create in terms of game bias, game balance, and tactical opportunity.

For this task, I discussed (but didn’t implement any code for) each point raised. For the additional possible information, I noted that the number of ships in a fleet and which planets are or aren’t visible to the enemy due to the fog of war would be possible pieces of information to analyse. For the implications of the fog of war, I noted the possibility of building up an attack force just outside the opponent’s awareness and then attacking. On the question of asymmetrical maps, I noted the disparity in advantage afforded to each player on an asymmetrical map, and argued this was shown with one of the maps I collected data on in this task.

# Task 10: Tactical Steering

The extensions available for Task 10 were:

* Agents avoiding obstacles.
* Multiple hunters, and prey agents intelligently pick which hiding spot associated with an obstacle to use.
* Prey agents consider more than proximity to a hiding spot when picking a hiding spot, also accounting for its proximity to the hunters and if travelling to a spot will result in the prey crossing a hunter’s line of sight.
* Hunters chasing prey they can see, and eating them on contact, including the ability to respawn prey.

I attempted each of the extensions presented. For the obstacle avoidance extension, I couldn’t quite get feeler-lines-based object avoidance to work, so I adapted the idea and used the agent’s position and a point in front of them to check if something was within an avoidance radius, then calculate the force needed to avoid the obstacle if something was detected to be too close. Multiple hunters, consider multiple hiding spots per obstacle - discuss