A.)

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B.)

Our strategy has three main components to it. When the game first starts, we attempt to colonize as much of the solar system as possible, by sending one person to a nearby neutral planet immediately when we see it and have more than one person on the current planet. The second component we address is attacking enemies. After performing many test trials, we found that if our current population is greater than 85% of a neighboring enemy planet’s population, attacking the enemy with 30% of our current population is an effective strategy. The third component we addressed is moving population among our own planets. Ideally, we would want to send population from a less important planet to a more important planet when the less important planet has a high population. We hypothesized that the number of edges a planet has is one indicator of how important the planet is, so we used a priority queue to find the most important planet between a given planet and its neighbors that we own. If the planet is surrounded by neighbors we own, has a high population, and a neighboring planet has more edges, we send 0.1% of our population to the neighboring planet. Just as we hypothesized, implementing this last component improved our original strategy by about 7% against AI2 and AI3.

C.)

For our strategy, we decided to implement a hashmap, a list, and a queue. We chose to use a hashmap in order to store all of the planets with the key being the planet ID and the value, the actual object of the planet. We chose to implement this because it allows direct look up for planets throughout our Strategy. We used a List to hold the planets that we owned. This allowed easy traversal as well as organization for our takeTurn method. Rather than traversing through all of the planets (held in the hashmap) in order to decide if we want to send ships, only traversal of our list is necessary, optimizing our strategy. Lastly, we implemented a priority queue in order to store and rank the planets owned by us based on the amount of edges the planet has. We chose to implement this because in order to advance our population across the map, it is crucial to push population towards the center in order to act as a central hub.

D.)

N/A...We only submitted one strategy.

E.)

N/A...We did not use any external libraries.

F.)

This is a very specific case, but when a planet has a lot of edges and is far away from opponent planets, rather than sending people near the opponent planets, planets neighboring the planet with many edges continue to send people to this planet. In a perfect situation, these planets would realize not to send people to the neighboring planet with many edges, because although this planet is labeled as important, in reality it is not. Other than this minor problem, our strategy is fairly defensive, but works well in the test trials.