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| **SC 385  Semester Project**  **Grading Rubric** |
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| The table below shows how I will be breaking down the points for the semester project.  **I must be able to compile and run your project in order to grade it!  If it does not compile, I will not try to fix errors to get it to compile.**  I will give partial credit for this project, so even if you are unable to complete all of it, turn in what you have. |
| |  |  | | --- | --- | | **Simulation Events** | **Points** | | Keeps track of time (10 turns/day) | 3 | | Pheromone decreases by half each day | 2 | | Simulation ends properly | 3 | | Simulation capable of running in continuous mode or turn-by-turn mode | 5 | |  |  | | **Output** |  | | GUI is used (either the one I provided or one you built on your own).  If you built your own GUI, it clearly indicates what is going on in the simulation.  *Please note that if I am unable clearly tell whether your program is performing correctly, it will affect the number of points I am able to give you for the other aspects of the project.* | 10 | |  |  | | **Colony Environment** |  | | A 27 x 27 grid is provided for the ants to move around in and perform their required duties.  Any data structure used to model this grid is acceptable. | 6 | | The environment has some way to store food, pheromone, and ants. | 3 | |  |  | | **General Ant Properties** |  | | Ants have appropriate life spans, and die when life spans are over | 4 | | Ants perform one action per turn | 4 | |  |  | | **Queen Ant** |  | | Queen consumes 1 unit of food per turn | 2 | | Queen does not move from her original location | 2 | | Queen hatches one new ant each day | 5 | | Frequencies of each new ant type are correct | 1 | |  |  | | **Scout Ants** |  | | Capable of moving in all directions; movement not impeded by closed nodes | 3 | | Open closed nodes | 5 | | Newly opened nodes have appropriate chance of containing food | 1 | |  |  | | **Forager Ants** |  | | Maintains movement history | 3 | | Capable of random movement, when appropriate | 2 | | Move toward highest pheromone concentration when not carrying food | 3 | | Move toward queen when carrying food | 2 | | Deposit pheromone appropriately when carrying food | 2 | | No pheromone deposited when searching for food | 2 | | Capable of picking up food when in node with a food source | 2 | | Capable of transporting food | 2 | | Drop food when in queen's node | 2 | |  |  | | **Soldier Ants** |  | | Move towards a Bala ant in an adjacent node, if there is a Bala ant in an adjacent node; otherwise, move randomly | 3 | | Attack Bala when in node with one or more Bala ants | 5 | | Frequency of hits/frequency of misses is approximately 50/50 | 2 | |  |  | | **Bala Ants** |  | | Move randomly when not in node with a non-Bala ant | 3 | | Attack non-Bala ant when in node with one or more non-Bala ants | 5 | | Frequency of hits/frequency of misses is approximately 50/50 | 2 | | Bala ants enter colony only at periphery | 1 | |  |  | | **Total** | **100** | |