CPSC 383

Enter group UCIDs and names here (if you worked with others) [submit your own copy]

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Week 9 (eighth week of tutorials)

Tutorial 1/2

**(I had to import**

from aegis import (

AgentID,

Location,

SLEEP,

)

from aegis.api.location import create\_location

**to complete this**

These questions all related to worksheet.world with 100 rounds and the example\_agent\_a3 with group Worksheet. You should reference the AEGIS API to help you answer these questions and write code in the example\_agent\_a3 (example\_agent.py) file and worksheet.world file.

1. If you start the worksheet.world
   1. how many agents (N) spawn at the one spawn point?
   2. What are group ID and agent ID of these N agents?
   3. What energy do these agent start with?
2. What if you add a spawn point at (0,4) and (4,0) to make a worksheet2.world?
   1. How many agents spawn at (0,0), (0,4), and (4,0)? Is this the same every time?
3. If you modify the seed in worksheet2.world to “12345” to make worksheet3.world?
   1. How many agents spawn at (0,0), (0,4), and (4,0)?
4. Run the simulation?
   1. How many rounds does it last?
   2. What is the state of each of the N agents at the end of the simulation?
5. MESSAGES
   1. How many messages does each agent get each round?
   2. If you copy and paste the SEND\_MESSAGE command below itself. How many messages does each agent get a round?
   3. Modify this second copied SEND\_MESSAGE command to only send to Agent 5 of the Worksheet group? How many messages does each agent get?
   4. Continue modify this second SEND\_MESSAGE command so that only Agent 2 sends this second message and only to Agent 3 of the Worksheet group? How many messages does each agent get?
6. COSTS
   1. Make the N agents all move NORTH\_EAST every command? What happens? What is the length of the simulation? (You can treat each spawn sub-group as one entity?)
   2. Remove the SEND\_MESSAGE commands. Does this change anything outside of no message arriving at agents?
   3. What would happen if you modified the code so agents moved NORTH\_EAST only if it was in the map, or otherwise moved to CENTER.
   4. What would happen if you modified the code so agents moved NORTH\_EAST only if it was in the map, or otherwise returned END\_TURN?
7. OBSERVING
   1. Does agent 1 know where the other N-1 agents are?
   2. How many agents are at OBSERVE(0,4) command at the start of a simulation run? (You can add and then remove this code once you have the answer to the OBSERVE questions.)
   3. What is the type of cell at OBSERVE(3,4) command at the start of a simulation run? (You can add and then remove this code once you have the answer to the OBSERVE questions.)
   4. How any agents to remove rubble at OBSERVE(4,4) command at the start of a simulation run? (You can add and then remove this code once you have the answer to the OBSERVE questions.)
   5. What is the signal list at OBSERVE(4,4) command at the start of a simulation run? (You can add and then remove this code once you have the answer to the OBSERVE questions.)
   6. Is a round 1 OBSERVE\_RESULT for OBSERVE (4,4) the same as round 2 OBSERVE (4,4)?
8. ENERGY
   1. What command would you send to gain energy when on top of the CHARGING\_GRID?
   2. How much energy does it required to remove the rubble to get to the first survivor at (4,4)?
   3. How much energy does it take to remove the rubble and save the two survivors at (4,4)?
9. DIGGING
   1. What is the sequence of operations needed to successfully save the survivors at (4,4) for the agent(s) spawning at (1,1)?
   2. How much energy do these agent(s) have left at the end?
10. What happens if you change back to worksheet2.world (can these same agent(s) at (1,1) save the survivor with the same sequence?