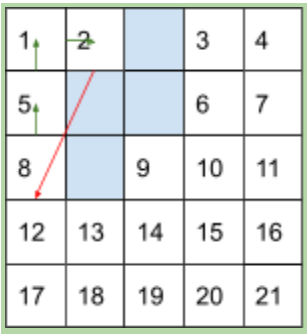
A.I.

Extra bonus tasks for First Assignment - Exploration in a simple environment

We have the same problem as in the previous assignment.

Extra taks:

1. For **50** extra points write the code so the drone does not jump (it moves similarly with the reality, from an adjacent empty square to an adjacent empty square).

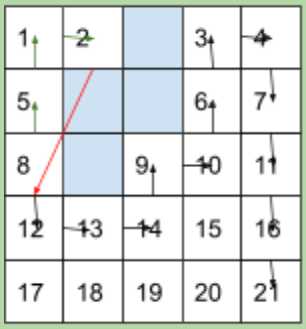


Consider a DFS from node 8 (the root)

1)		{8}
2)	8 out, in 5 and 12	=> {5, 12}
3)	5 out, in 1	=> {1, 12}
4)	1 out, in 2	=> {2, 12}
5)	2 out, nothing in	=> {12}
6)	12 out, 13 and 17 in	=> {13, 17}
7)	13 out, 14 and 18 in	=> {14, 18, 17}
8)	…	

   Observe the visited nodes. Until step 6 all are adjacent one to another, but at step 6 node 12 is not adjacent to node 2, so here the drone makes an impossible jump (it teleportates). Fix this problem!

2. For **50** points optimize the search (reduce the number of steps needed to complete the task). can be earned if the application is made more friendly, and with a proper layered architecture.



Consider a DFS from node 8 (the root)

…

6) 12 out, 13 and 17 in => {13, 17}

7) 13 out, 14 and 18 in => {14, 18, 17}

8) …

Follow from step 6 the visit order given by the arrows: 12, 13, 14, 9, 10, 6,3,4,7,11,16,21 and observe also that there is no need for us to visit the rest of them, since all the area is mapped.

So an optimisation would be to determine the minimum number of squares that the drone must visit in order to detect all map

Due time:

1 week (the third lab)

This is a bonus assignment, not mandatory!!

The solution can not be turned in after due time.