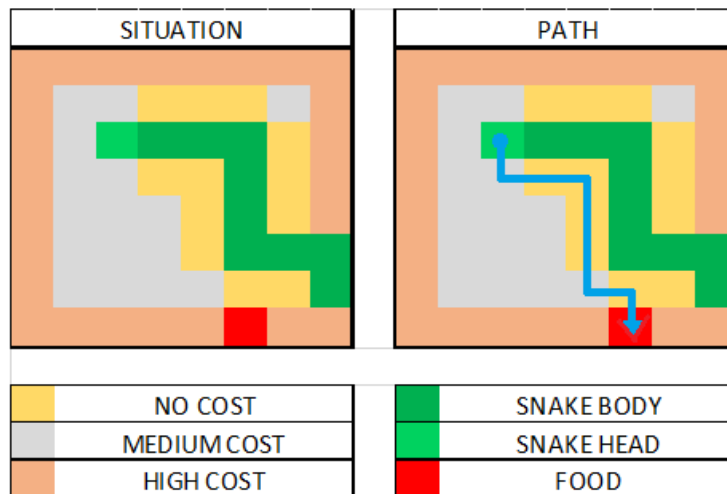


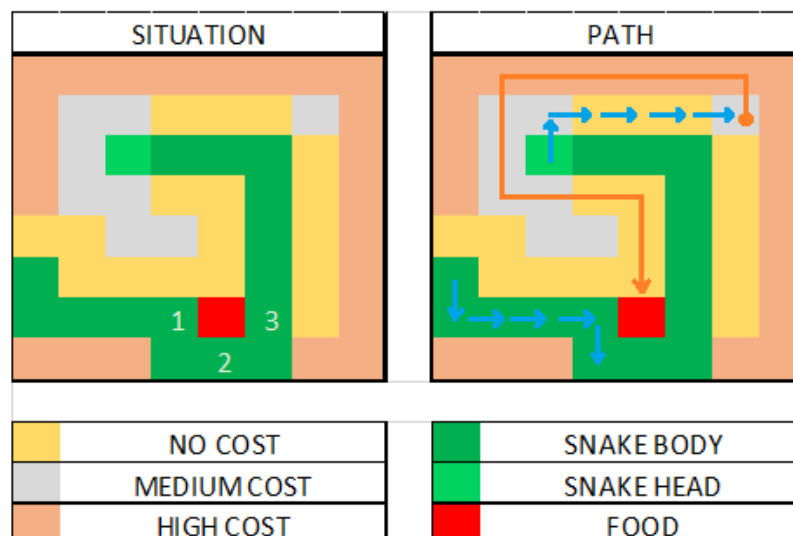
SNAKE PROJECT – ALTRNATIVE A* APPROACH

Instead of the complete grid to have unit cost, a weighted grid was used with the following features:

1. Nodes neighboring the Edges had a high cost
 - i. These nodes were to be avoided to prevent the snake trapping itself, leaving an exit route for difficult situations
2. Nodes neighboring Snake Body had no cost
 - i. Encouraged to visit these nodes for more compact & ordered movement
 - ii. Decreases gaps between Snake Body to reduce chance of food spawning encircled by snake body
3. All other non-obstacle nodes have a medium cost
 - i. Prioritized more than Edge Nodes , but less than Nodes neighboring Snake Body



Although A* provides a path to food, it isn't always the best decision to pursue it immediately. If the food is neighbored by at least 3 non-available nodes (obstacles & snake body), it would be a safer choice to stall and move further away from node in an ordered manner until there is a certain exit route after eating the food. It moves away based on shared influence from heuristic from food being maximum and cost of neighboring node being minimum.



RESULT OF CHANGES

Length of Snake						
	OBSTACLES ON MAP			NO OBSTACLES		
Game	DANCE MIN	DANCE MAX	WEIGHTED GRID	DANCE MIN	DANCE MAX	WEIGHTED GRID
1	14	24	31	21	28	34
2	25	16	28	23	25	31
3	18	26	27	22	27	32
4	28	21	23	26	30	25
5	18	21	25	27	35	36
6	24	27	23	24	36	31
7	19	29	31	23	31	29
8	18	30	25	19	23	32
9	25	21	24	23	30	35
10	19	22	26	32	16	27
11	25	16	30	18	25	30
12	18	21	23	14	28	34
13	27	26	24	32	29	28
14	22	20	28	37	24	32
15	30	30	24	27	22	31
16	26	33	27	28	33	32
17	28	17	23	28	24	26
18	19	26	24	30	18	35
19	21	19	26	17	25	33
20	30	23	24	26	20	35
Average	22.7	23.4	25.8	24.85	26.45	31.4

DANCE MIN : Un-weighted Grid and move closer to food when there is no A* path

DANCE MAX : Un-weighted Grid and move further away from food when there is no A* path

WEIGHTED GRID : Weighted Grid and move based on minimum cost of neighboring node and maximum distance from food when there is no A* path