g_cost

⊗ ⊜ pygame window									
O	1	2	3	4	None	12	13	14	15
1	2	3	4	5	None	11	12	13	14
2	3	4	5	6	None	10	11	12	13
3	4	5	6	7	8	9	10	11	12
4	5	6	7	8	9	10	11	12	13
5	6	7	8	9	10	11	12	13	14
6	7	8	9	10	11	12	13	14	15
7	8	9	10	11	12	13	14	15	16
8	9	10	11	12	13	14	15	16	17
9	10	11	12	13	14	15	16	17	

Each box display a g_cost associated with the box, which is a cost to get to that specific tile. In this version of code, moving only occurs in either horizontal or vertical direction. Therefore, the g_cost is how many up-down, left-right moves were performed to get to that specific tile.

h_cost

8	руда	pygame window									
1	17	16	15	14	None	12	11	10	9		
17	16	15	14	13	None	11	10	9	8		
16	15	14	13	12	None	10	9	8	7		
15	14	13	12	11	10	9	8	7	6		
14	13	12	11	10	9	8	7	6	5		
13	12	11	10	9	8	7	6	5	4		
12	11	10	9	8	7	6	5	4	3		
11	10	9	8	7	6	5	4	3	2		
10	9	8	7	6	5	4	3	2	1		
9	8	7	6	5	4	3	2	1			

The h_cost is an estimation of the cost to get to the destination. The estimation is done by calculating Manhattan Distance, a sum of horizontal and vertical distance.

f_cost



The f_cost is the sum of g_cost and h_cost. It is the estimation of the cost to get to the destination from each tile.

Diagonal Move



In this case, Paul makes a diagonal move near the center of the map. While diagonal move is more costly, it is necessary in this case. If Paul does not make diagonal move, he has to move up few blocks away from the case due to vertical obstacle on the bottom center.

Jumping

80	pygam	ame window								
100	None	24	24	24	24	24	24	24	24	
18	None	24	None	24	24	24	24	24	24	
18	None	24	None	24	24	24	24	24	24	
18	None	24	None	24	24	24	24	24	24	
18	None	24	None	24	24	24	24	24	24	
18	None	24	None	24	24	24	24	24	24	
18	None	24	None	24	24	24	24	24	24	
18	None	22	None	24	24	24	24	24	24	
18	None	20	None	24	24	24	24	24	24	
18	18	18	None	24	24	24	24	24		

Jumping costs 8 move but in this case, it is necessary to avoid going all the way up to move around the obstacle.

Swamp

8	pygan	pygame window									
°	4	5	6	7	8	9	10	11	12		
1	5	6	7	8	9	10	11	12	13		
2	None	7	8	9	10	11	12	13	14		
3	None	8	9	10	11	12	13	14	15		
4	None	9	10	11	12	13	14	15	16		
5	None	10	None	12	13	14	15	16	17		
6	None	11	None	13	14	15	16	17	18		
7	None	12	None	14	15	16	17	18	19		
8	None	12	None	15	16	17	18	19	20		
9	10	11	None	16	17	18	19	20			

Going through a swamp tile costs 3 extra moves, but it is necessary in order to avoid a costly lava obstacle on the bottom.