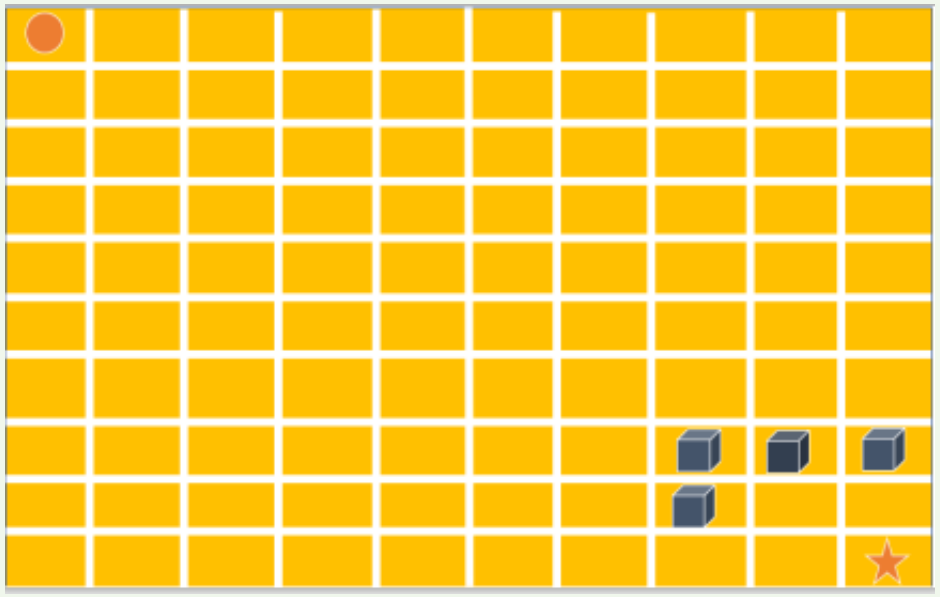
Amazon Coding Challenge Pathfinding on 2D Grid

Methodology



Visualize all possible routes rather than route number
Route number only is available from LeetCode 63. Unique Paths II
Numbered blocks are more convenient to express
For example:

1	2	3
4	5	6
7	8	9

3dim

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

4dim

Assumptions

The row number must be equal to the column number
Object can only move right or down
Object must has the same number of steps to the end
Limitations: Situations that require left or upward movement are not discussed

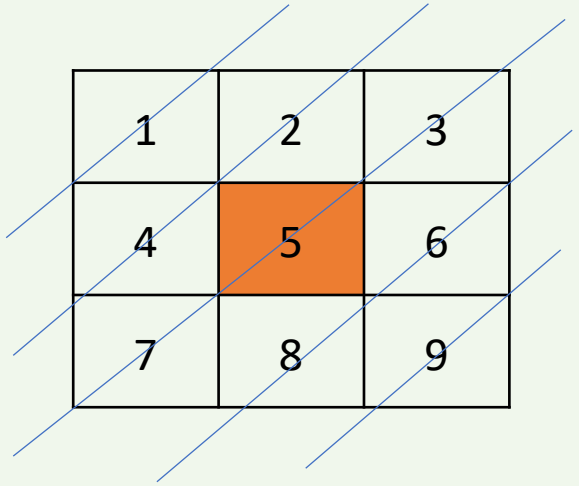
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

We do not discuss this example

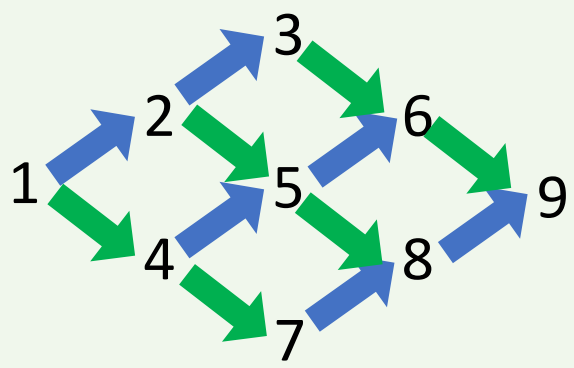
Objective

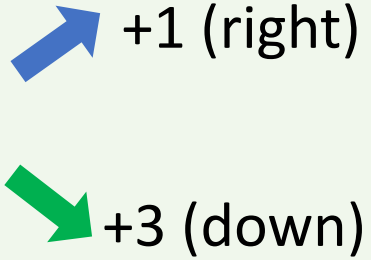
Show all possible routes in a easier way based on the unique path II algorithm

From 3dim example to generalized answer

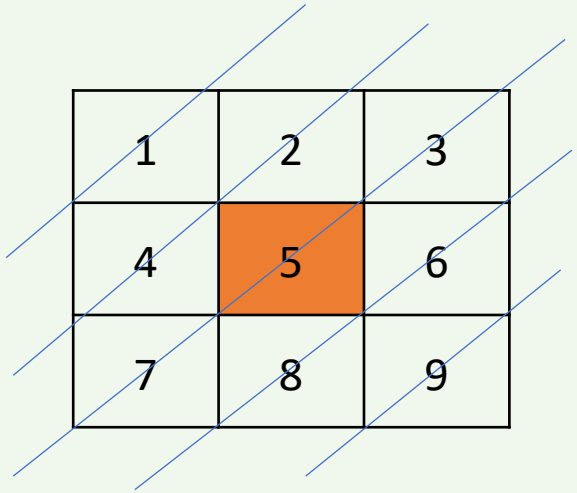


Upward: number+1
Downward: number+3
If object reach the boundary, only the 2nd type of motion is applied
Pick all the lists along the lines





From 3dim example to generalized answer



All list is: [[1], [2,4], [3,7], [6,8], [9]]
All vector product is:
[12369], [12389], [12769], [12789], [14369], [14389], [14769], [14789]
If each progression satisfies +1 or +3
It only have [12369], [14789]