ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING (A.A. 2018/2019)
11/10/2019 (2 hours)

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We want to solve the maze exiting game. The maze is composed by a rectangular grid where we have some positions occupied by walls (corresponding to unreachable positions)

Given a grid N x M, the initial position and the exit on a border of the grid, we want to find the shortest path to exit the maze.
Solve the problem by implementing the following search strategies:
Si risolva il problema implementando le seguenti strategie di ricerca:

- Breadth First
- Depth-First
- A*

Regarding positions on the border, we have the following rules:

- Left border: you can't go left
- Right border: you can't go right
- Upper border: you can't go up
- Lower border: you can't go down

Input.
N – Width of the grid
M – Height of the grid
K – Number of unreachable elements
V – Coordinates of unreachable elements
I – Initial position
G – Position of the Goal on the border of the grid

Output.
A representation of the grid with unreachable elements and the path computed for each algorithm. Use the following conventions:

- Unreachable elements are represented by 'o'
- Initial position is represented by 'i'
- Goal position is represented by 'g'
- Path is respresented by '*'

Output Example.

```
N = 5
M = 5
K = 2
V = [(2,2), (2,3)]
I = (1,1)
G = (4,3)

Breadth First
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|i| | | | |
-----------
|*|o|o| | |
-----------
|*| | | | |
-----------
|*|*|*|*|g|
-----------
| | | | | |
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Depth First
...
```