

Coding exercise

Objective

You're dropped onto an island, starting at the very **middle** of an N by N terrain. Luckily you have a raft and a **map** showing the elevation of each square plot of land. The ocean at elevation 0 surrounds the island and lies all along the borders of the map (included in the map).

You can move directly `north`, `south`, `east`, or `west` to an adjacent plot, provided the **difference in elevation is at most one**. Larger differences indicate steep terrain which cannot be traversed carrying your raft. Determine `yes` or `no` if it's possible to reach the ocean and get away.

Input / Output of the code

Input

You are provided 10 files with different maps. The first line contains the size N of the map (N is odd). The next N lines contain N space separated integers that indicate the `elevation` of the cell. The last line contains the expected answer (`yes` or `no`). It is provided to ease your development and should not be used by your code.

Output

Your code should print `yes` if the ocean is reachable, `no` otherwise.

Technical information

We expect you to answer the question with a Python script (we will run it with python 3.10). You are provided with a skeleton of architecture in `can_escape.py`. You are allowed to freely modify it. You are allowed to use libraries that are popular or can be pip-installed (matplotlib, numpy, scipy, tqdm, click...)

Please answer the email with two things:

- Your python code file that can be used as script with a map file as input: `python can_escape.py <path-to-map-file>`
- In the body of the email, provide an **analysis of the complexity** of the your code with respect to the size N of the map.

Note: We know that ChatGPT and co can solve this problem, and we know very well their solutions. We are interested in your answer!