

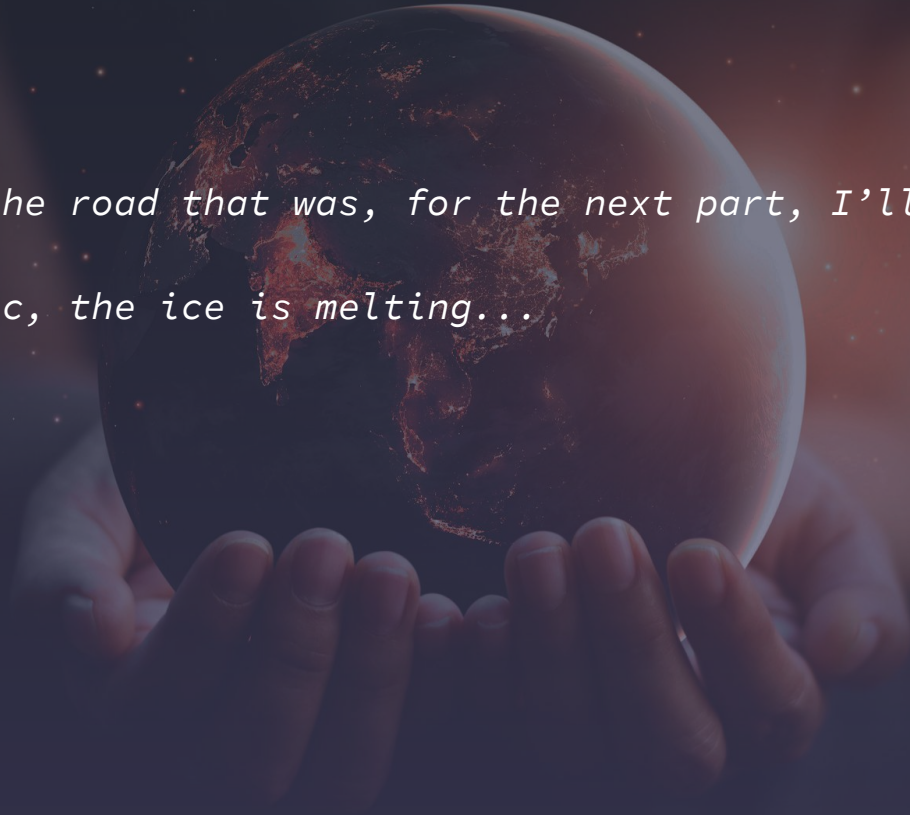
CATALYSTS
CODING
CONTEST

Level 2

A pair of hands is shown from the wrist up, holding a glowing, textured sphere. The sphere has a dark, almost black base color with intricate, reddish-brown, vein-like patterns that resemble a planet's surface or a skull's structure. The hands are positioned at the bottom, with fingers slightly curled around the sphere. The background is a dark, deep blue or black, filled with numerous small, out-of-focus white and yellow dots, suggesting a starry night sky or a digital space. The overall lighting is soft, with a warm glow emanating from the sphere, highlighting the texture of the hands and the sphere itself.

GladOS:

- *a small bump in the road that was, for the next part, I'll also tell you a joke.*
- *meanwhile, tic-toc, the ice is melting...*



The matrix will now also include information about which countries own the land.

Your task is to analyze their borders and calculate **the number of border cells** for each country.

The border of a country is defined as all the cells that belong to that country and are **adjacent** to **at least** one **cell** from a **different country**. Adjacency is considered in **4 directions**.

The cells located on the **bounds** of the matrix are considered to be **borders** since at least one of their adjacent cells is outside the country.

Input

rows cols

a_{00} c_{00} a_{10} c_{10} a_{20} c_{20} ...

a_{01} c_{01} a_{11} c_{11} ...

...

$a_{0\text{rows}-1}$ $c_{0\text{rows}-1}$ $a_{1\text{rows}-1}$ $c_{1\text{rows}-1}$... $a_{\text{cols}-1\text{rows}-1}$ $c_{\text{cols}-1\text{rows}-1}$

cols - number of columns

rows - number of rows

a_{xy} - altitude of world at col x and row y
(integer)

c_{xy} - country id of cell at col x and row y
(integer)

Output

bl_0

bl_1

bl_2

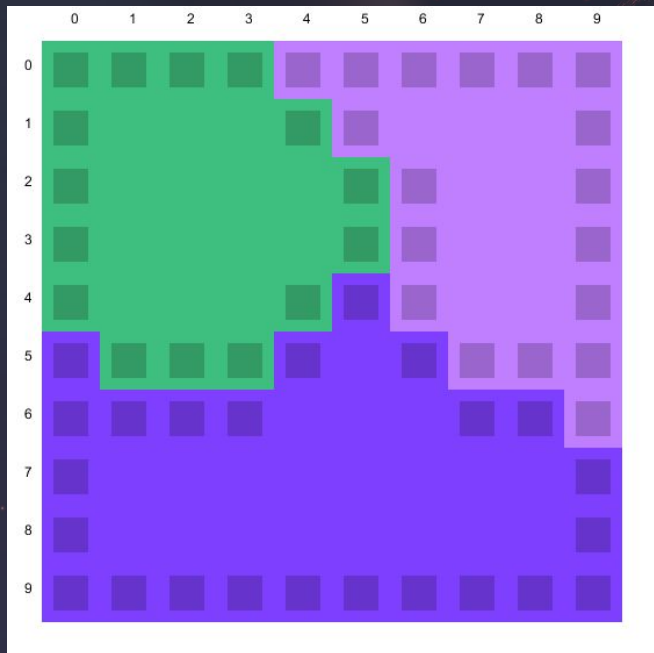
...

bl_{n-1}

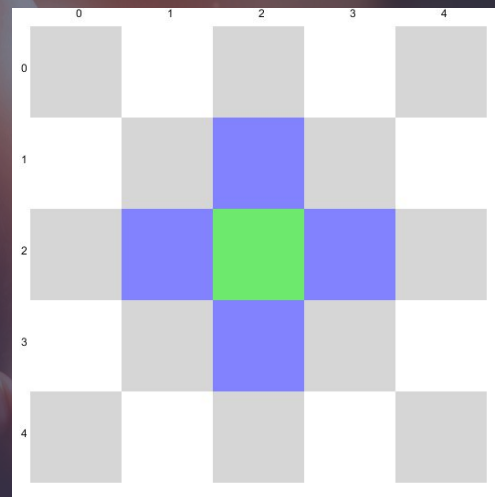
n - number of countries

bl_i - number of border cells of country
with id i

**It is guaranteed that country ids will span a
continuous range starting with 0**



Countries with their borders



Neighbours of (2,2)