

Prokaryote Growths (2)

U72212_en

A petri dish is represented as a grid of size $N \times M$, where:

- B represents a bacterium
- . represents an empty space

At each growth cycle, any bacteria spreads to its neighbouring positions in diagonal (up-left, up-right, down-left, down-right). Newborn bacteria are represented in lowercase ('b')

Write a function `growth_cycle(grid)` that, given an $N \times M$ matrix representing the initial state of the colony, returns the state of the petri dish after one growth cycle.

EXAMPLES

Example 1	
Initial state	After 1 cycle (new cells in lowercase)
. B .	. . b . b B .
. . . B . . .	. b . B b . b
B	B . b . b . b
. B .	. b . . . B .
.	 b . b
Example 2	
Initial state	After 1 cycle (new cells in lowercase)
.	. . b . b . . .
. . . B	. . . B . b . .
. . . . B . . .	. b b . B . . .
B	B . . b . b . .
Example 3	
Initial state	After 1 cycle (new cells in lowercase)
.	b . b . b .
. B . B . .	. B . B . .
B	B . b . b .
. B	. b . . . B
. B	 b B
.	 b .

Observation

- Process the dish positions from left to right and from top down. In case a cell is already occupied, it must not be overwritten with a newborn bacterium.
- It may be useful to write a function `inside(grid, p, q)` that returns `True` if position (p,q) is inside the limits of `grid`, and `False` otherwise.

Important: Submit only the function. If you have a main program, comment it out or embed it inside a conditional clause `if __name__ == "__main__":`

Problem information

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