

Prokaryote Growths (1)

W13157_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, each bacterium spreads to its neighboring cells in horizontal and vertical directions (i.e., up, down, left, right).

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 boldface)
. B .	. . . BBBB
. . . B . . .	B . BBBB .
B	B B . B . B .
. B .	B . . . BBB
. . . . . . .	. . . . . B .
Example 2	
Initial state	After 1 cycle (new cells in boldface)
. . . . . . . .	. . . B
. . . B . . . .	. . BBB
. . . B	B . BBB
B	B B . B
Example 3	
Initial state	After 1 cycle (new cells in boldface)
. . . . . . .	. B . B . . .
. B . B . . .	B B B B .
B	B B . B . B
. B	B . . . BB
. B	. . . . BB
. . . . . .	. . . . . B

Observation

- In order to avoid spreading newly born cells, use a new matrix to store the new status of the dish.
- 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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