

Spiral Matrix II

For this problem we must fill an $n \times n$ matrix spiral order with numbers from 1 to n^2 ; the approach is layer by layer spiral fill.

[Key Idea:]

- Maintain four boundaries: top, bottom, left, right.
- Fill in clockwise order:
 1. Left \rightarrow Right (top row)
 2. Top \rightarrow Bottom (right column)
 3. Right \rightarrow Left (bottom row)
 4. Bottom \rightarrow Top (left column)
- After each direction, shrink the boundary.

[Complexity:]

- Time: $O(n^2)$ - fill every cell once
- Space: $O(n^2)$ - matrix storage