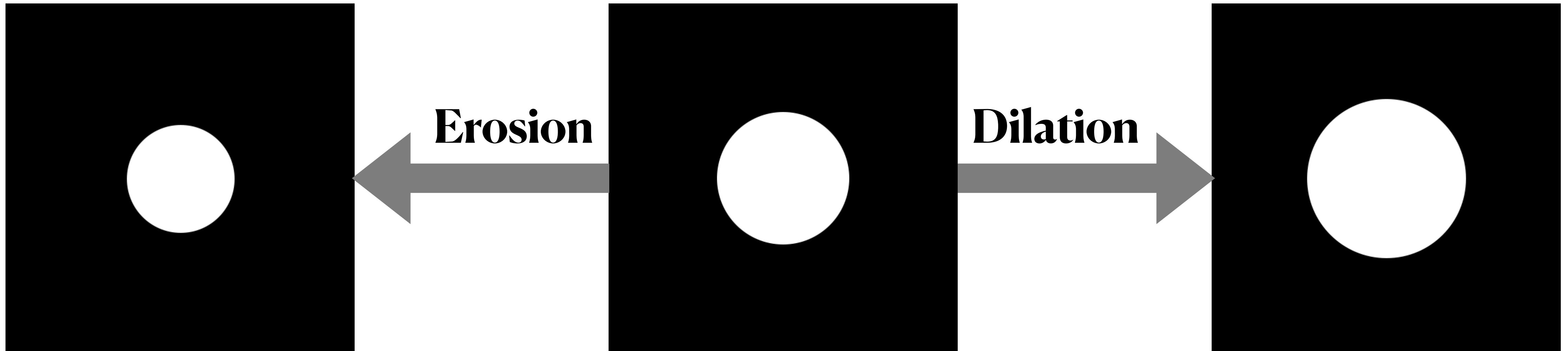


Morphological Filters

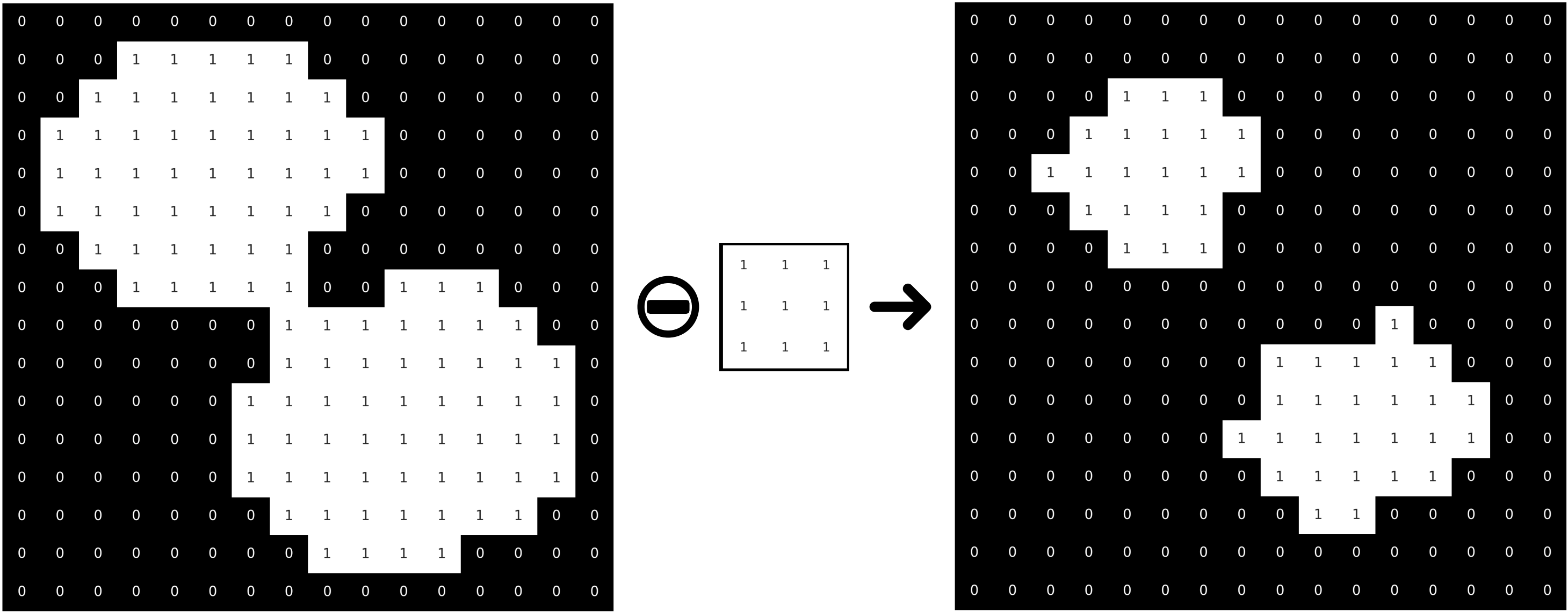
Two Primary Morphological Operations

Erosion

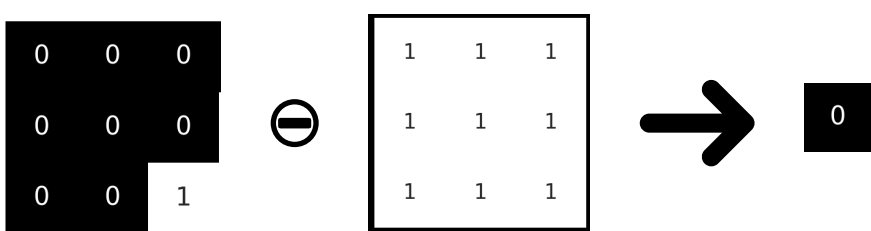
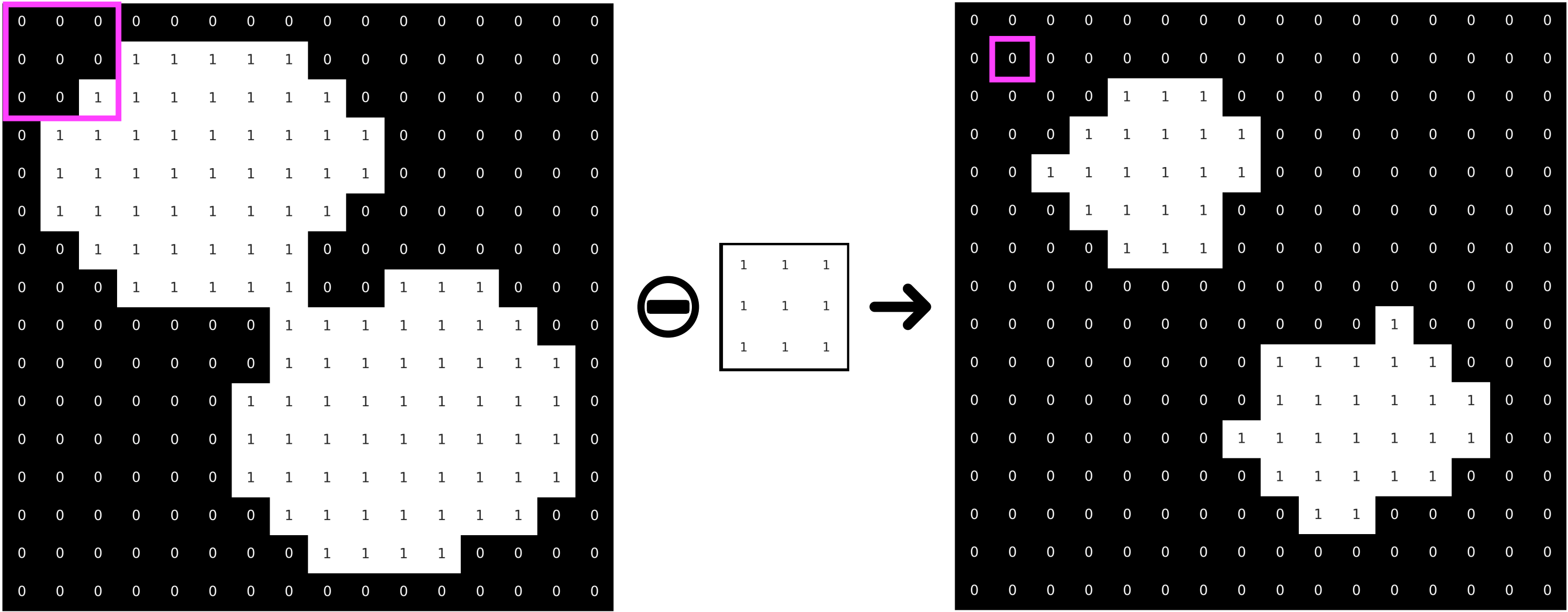
Dilation



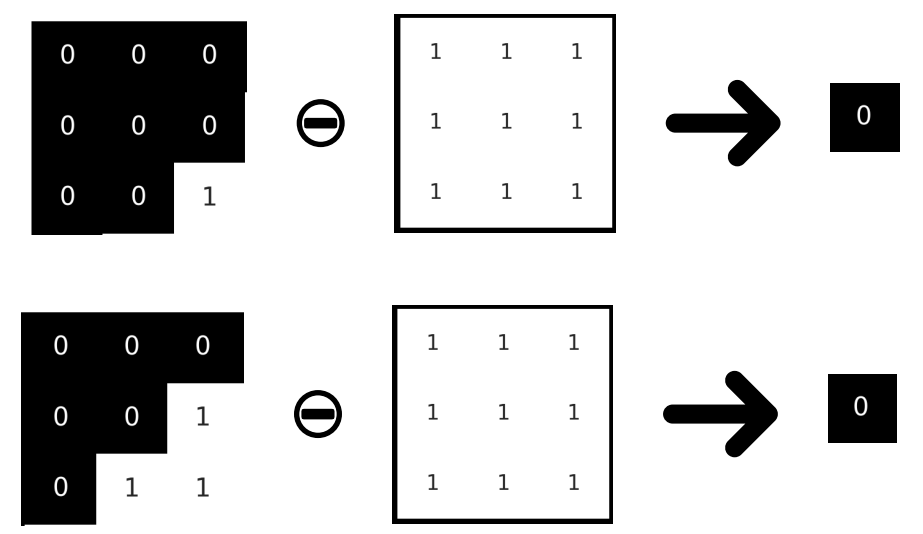
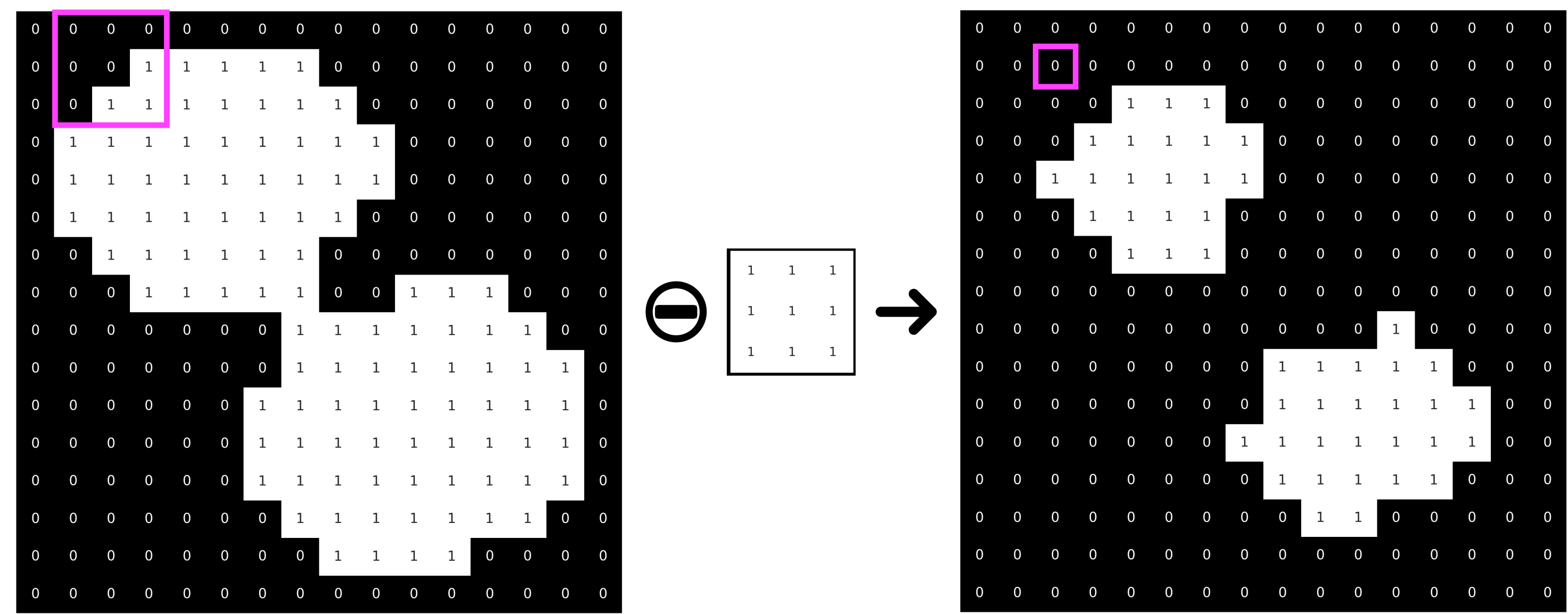
Erosion Operation



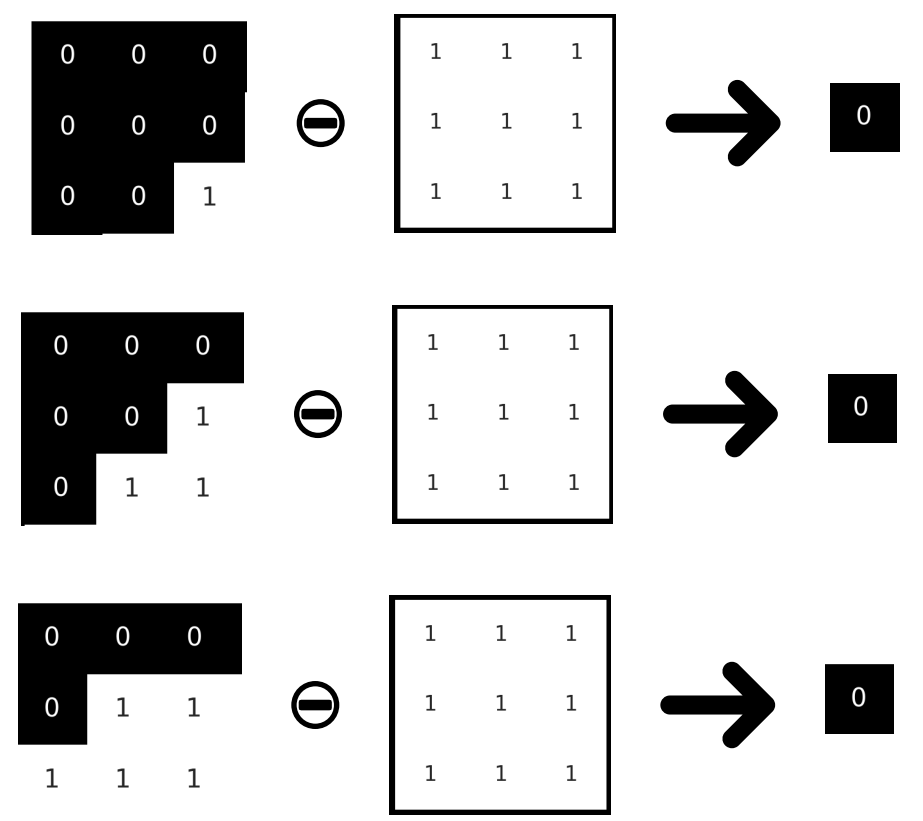
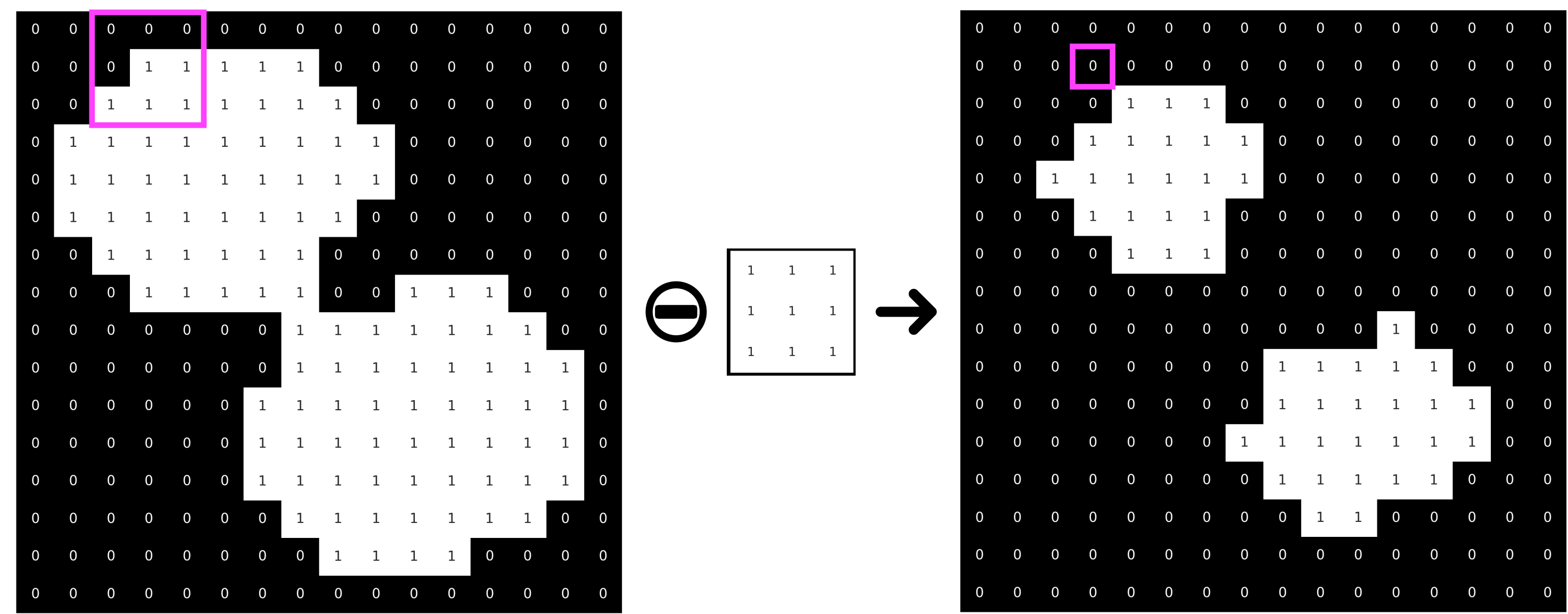
Erosion Operation



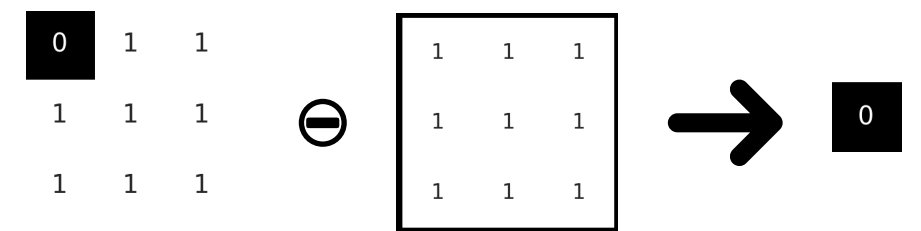
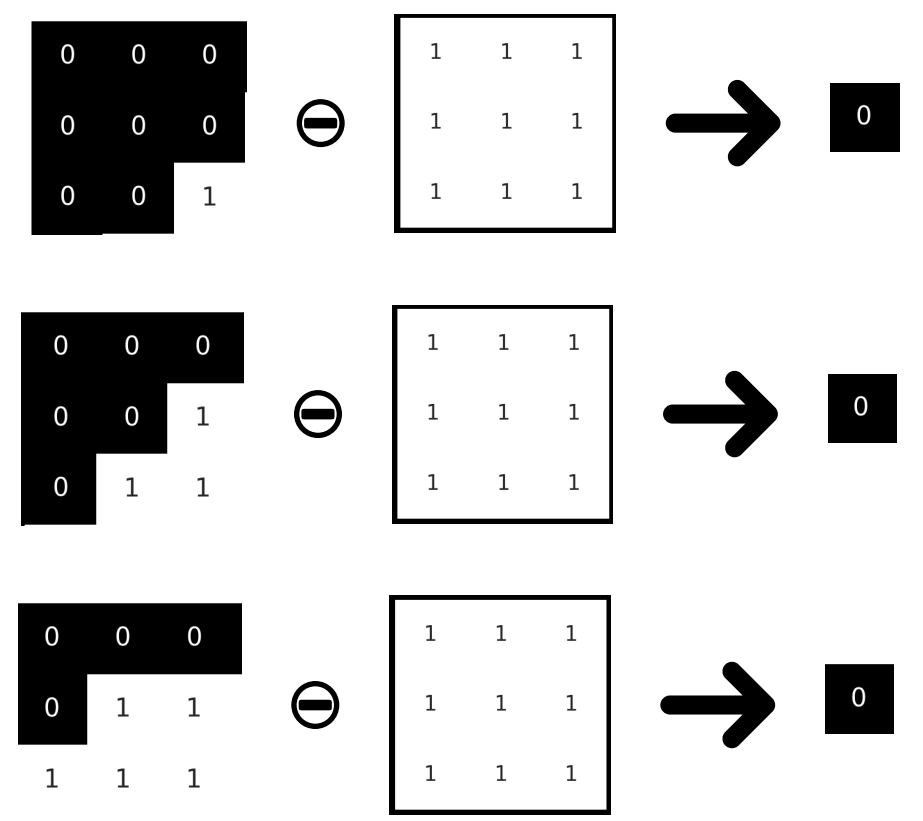
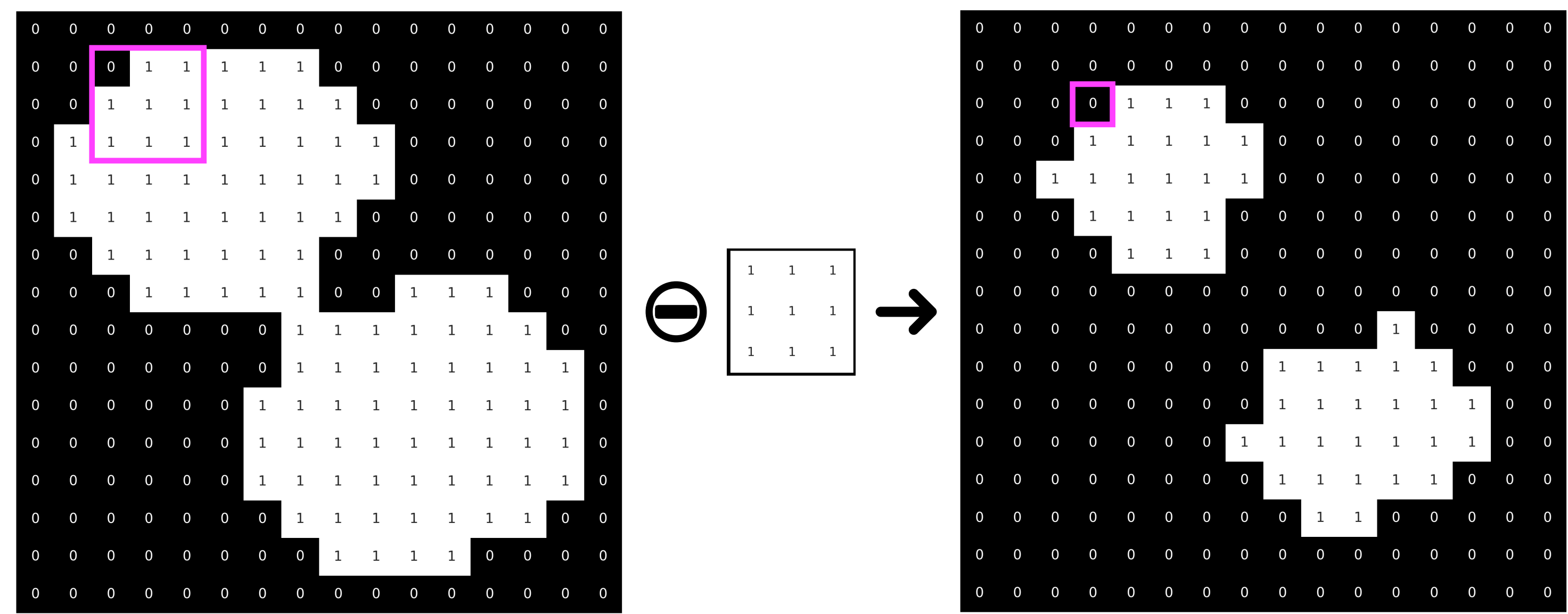
Erosion Operation



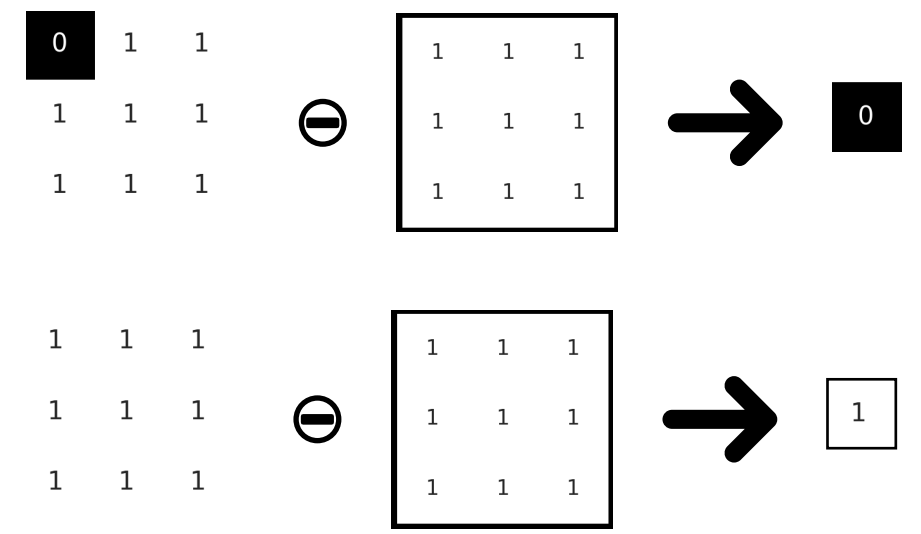
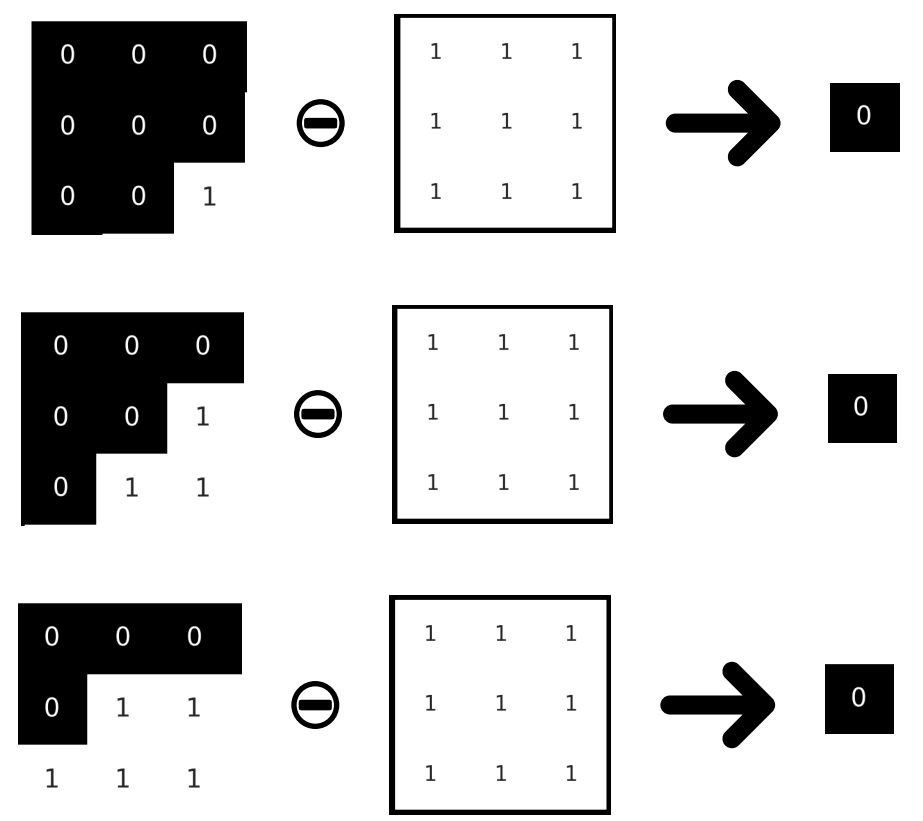
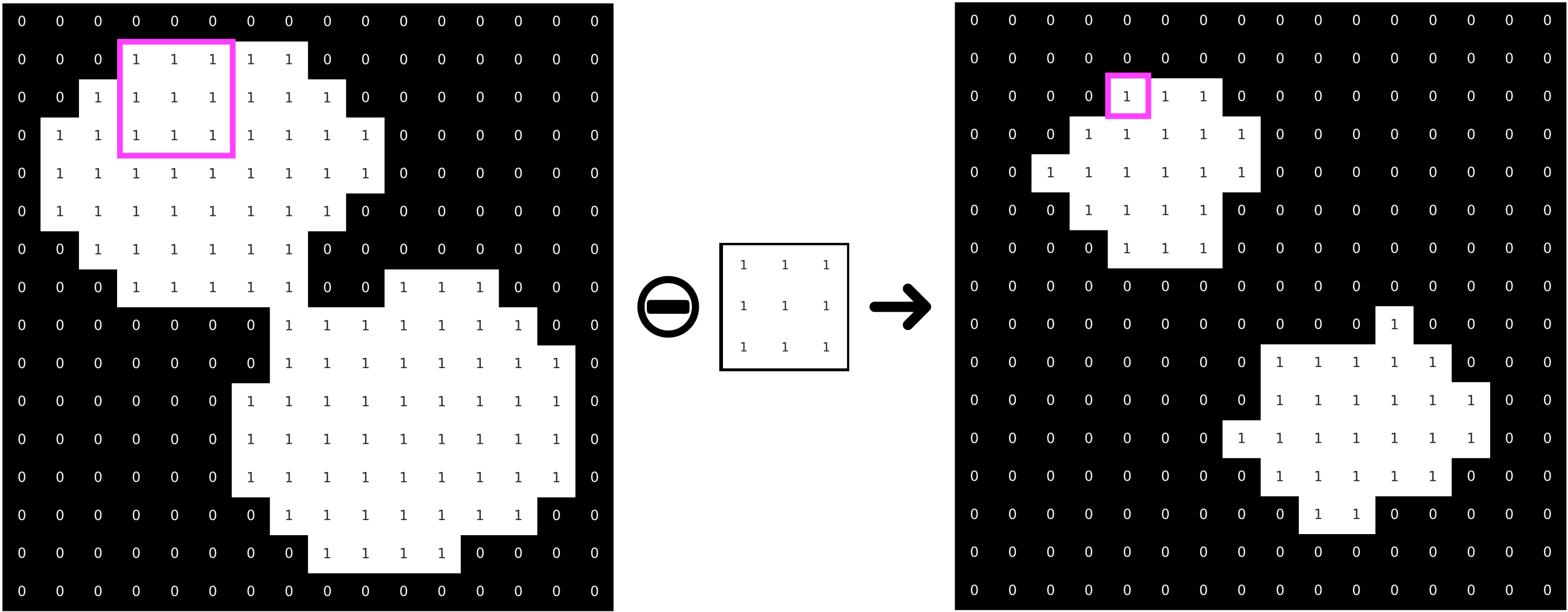
Erosion Operation

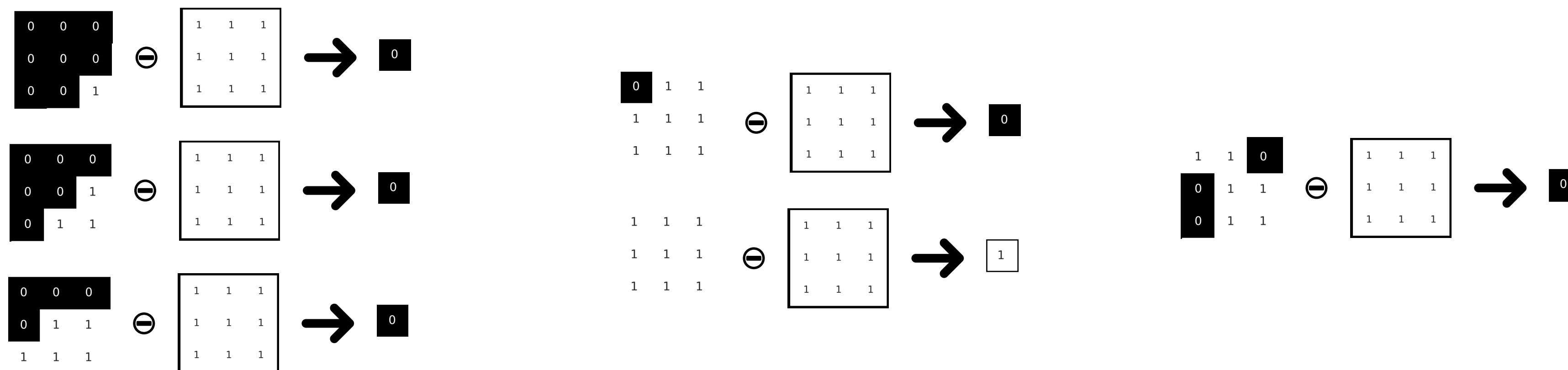


Erosion Operation

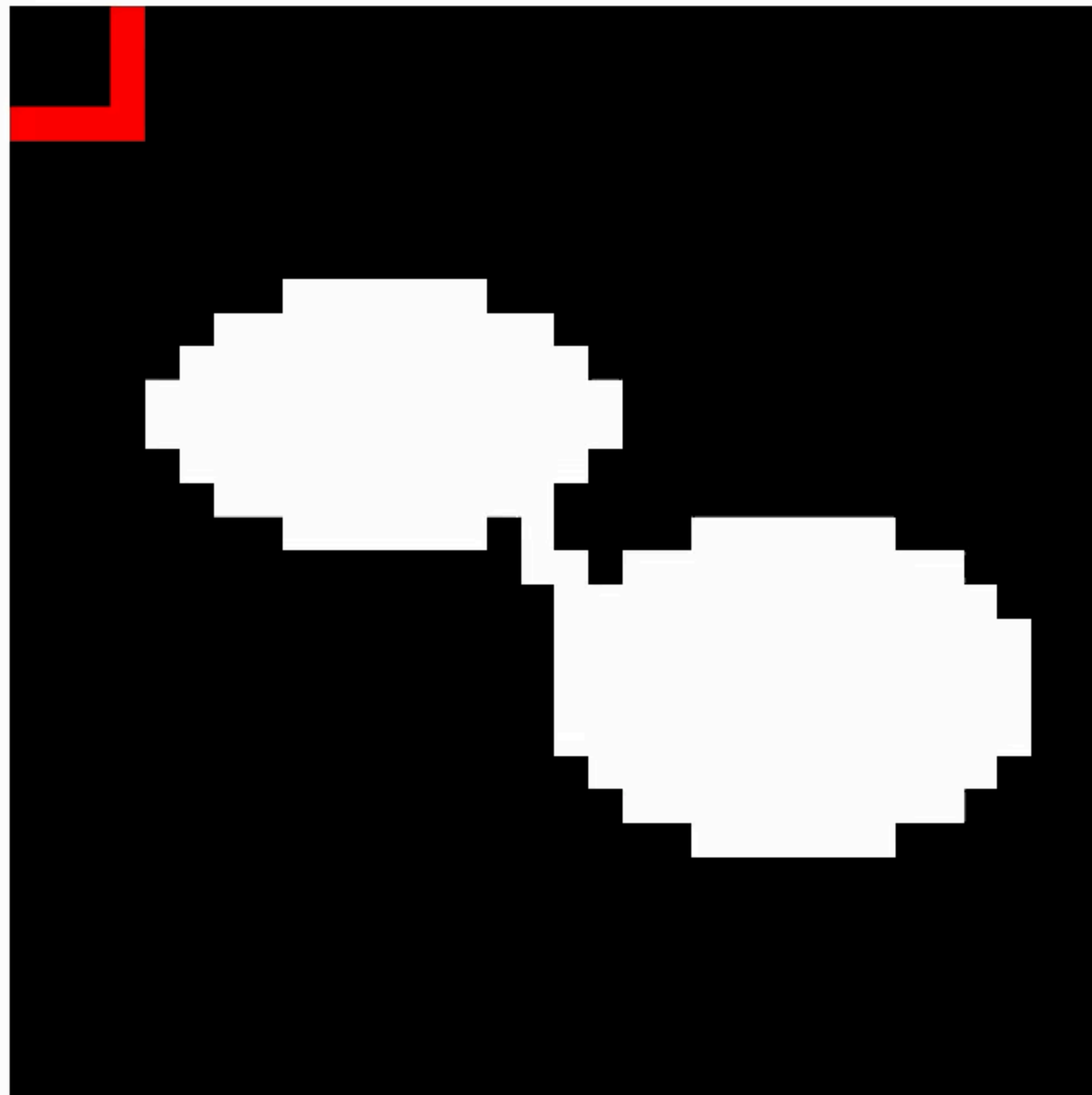


Erosion Operation

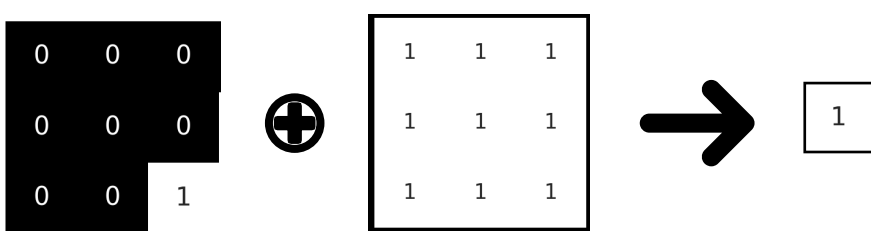
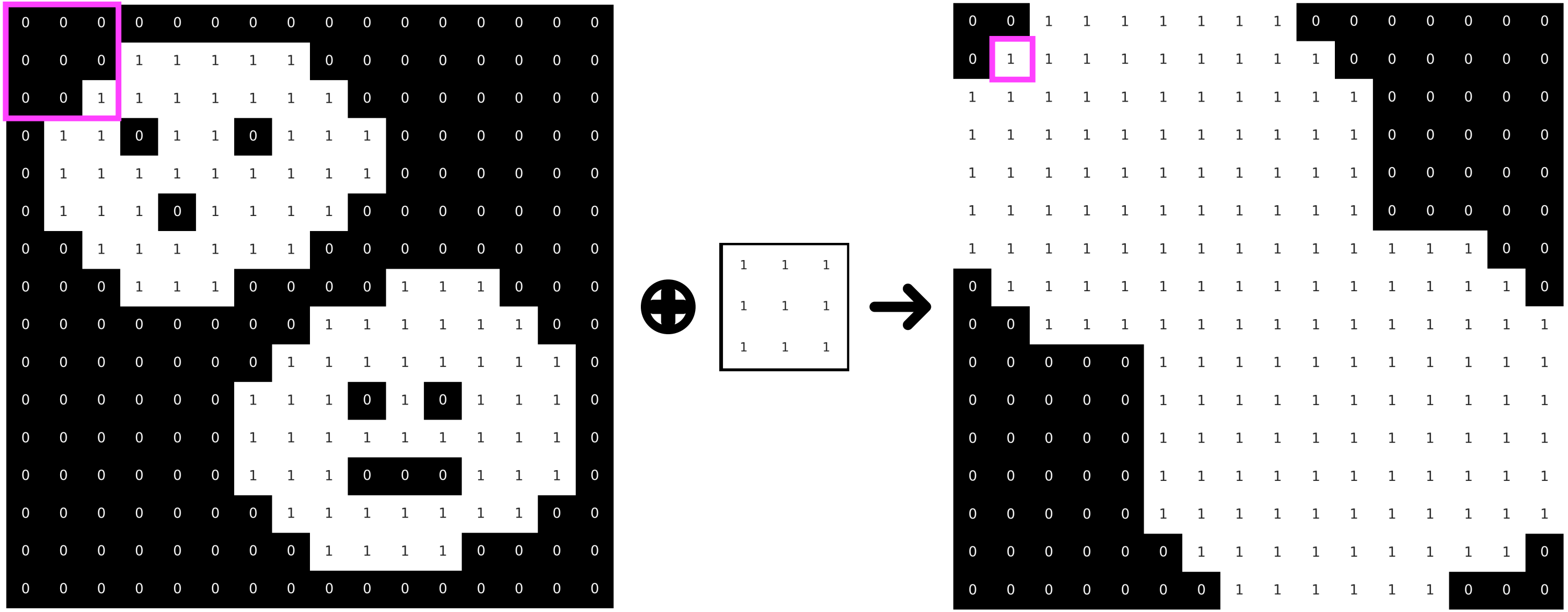




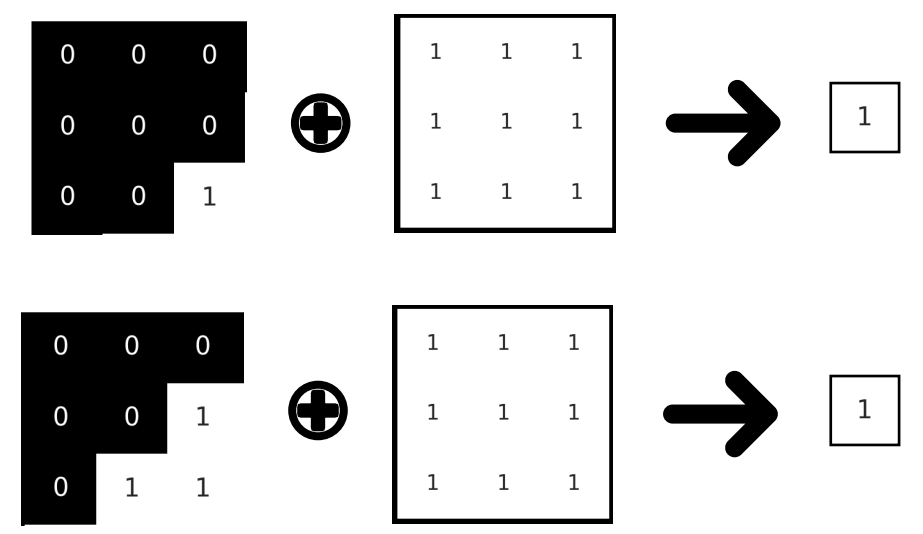
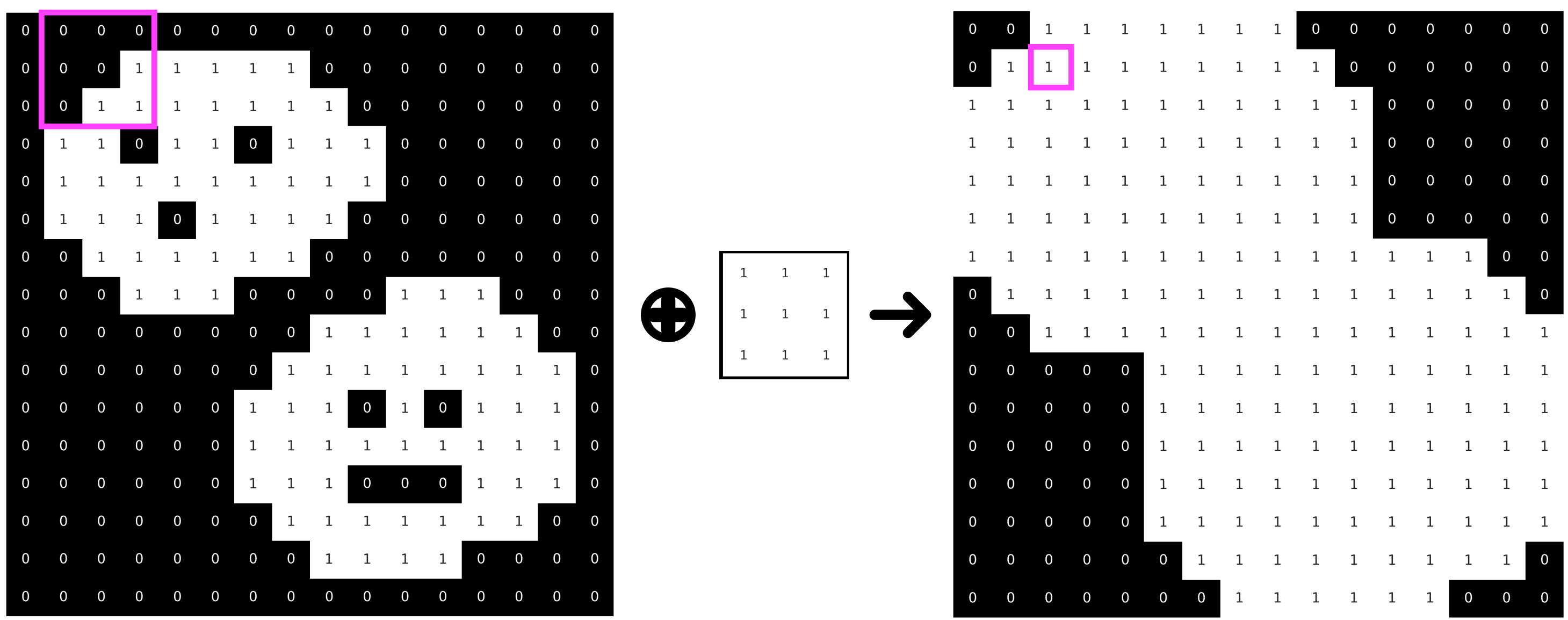
Erosion - The Movie



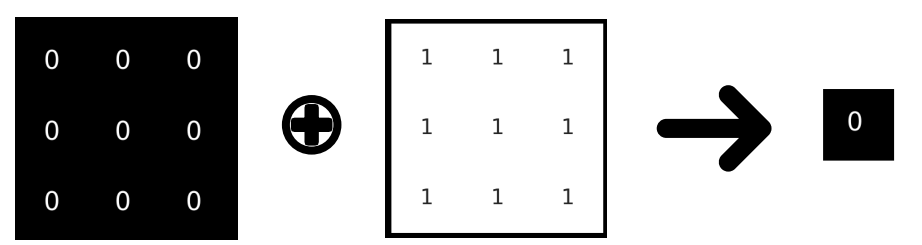
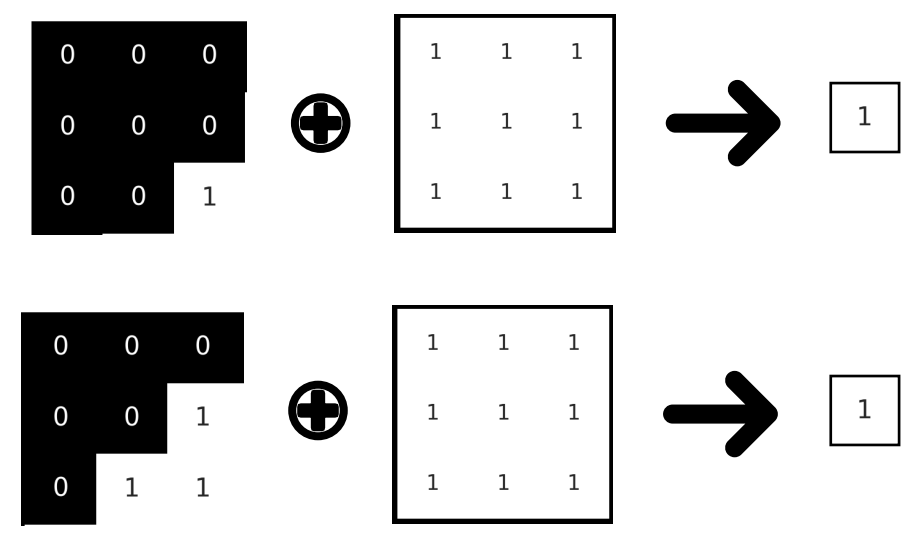
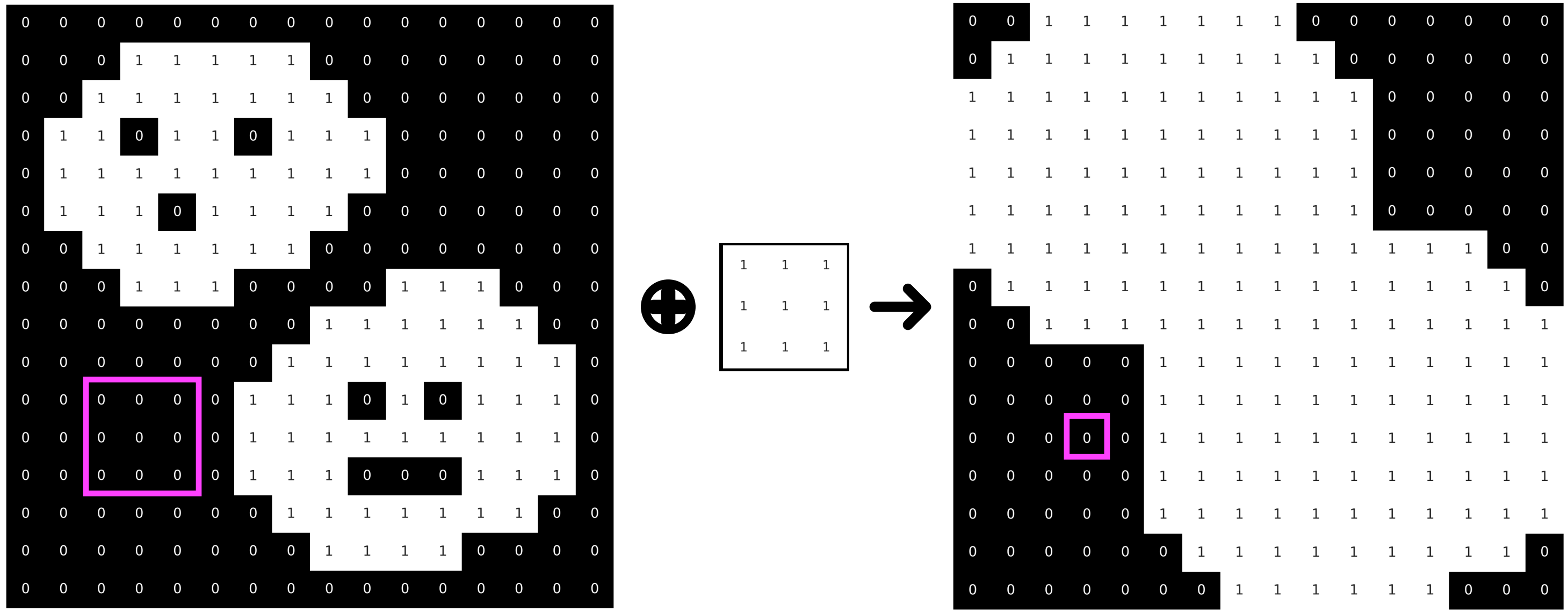
Dilation Operation



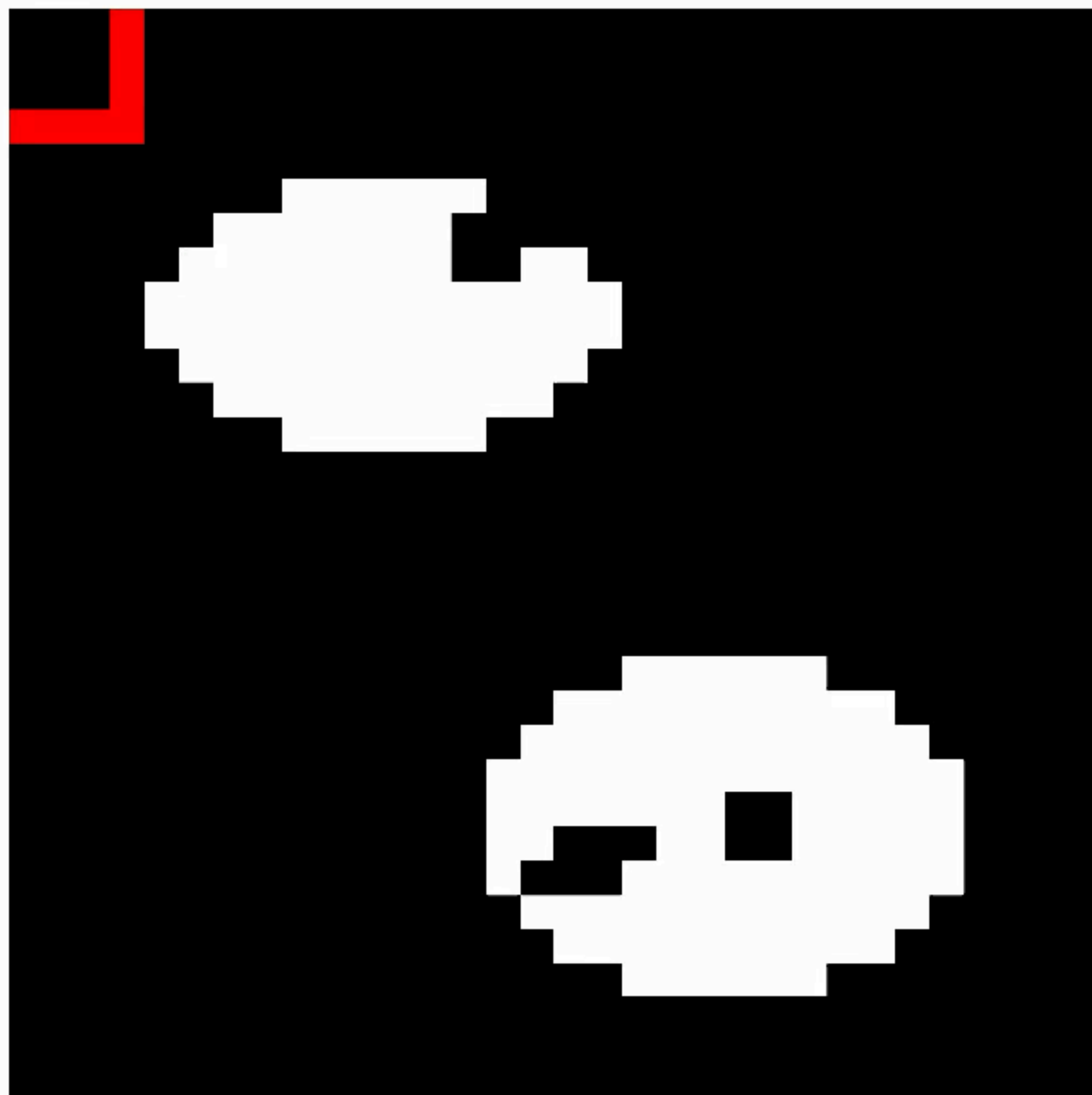
Dilation Operation



Dilation Operation



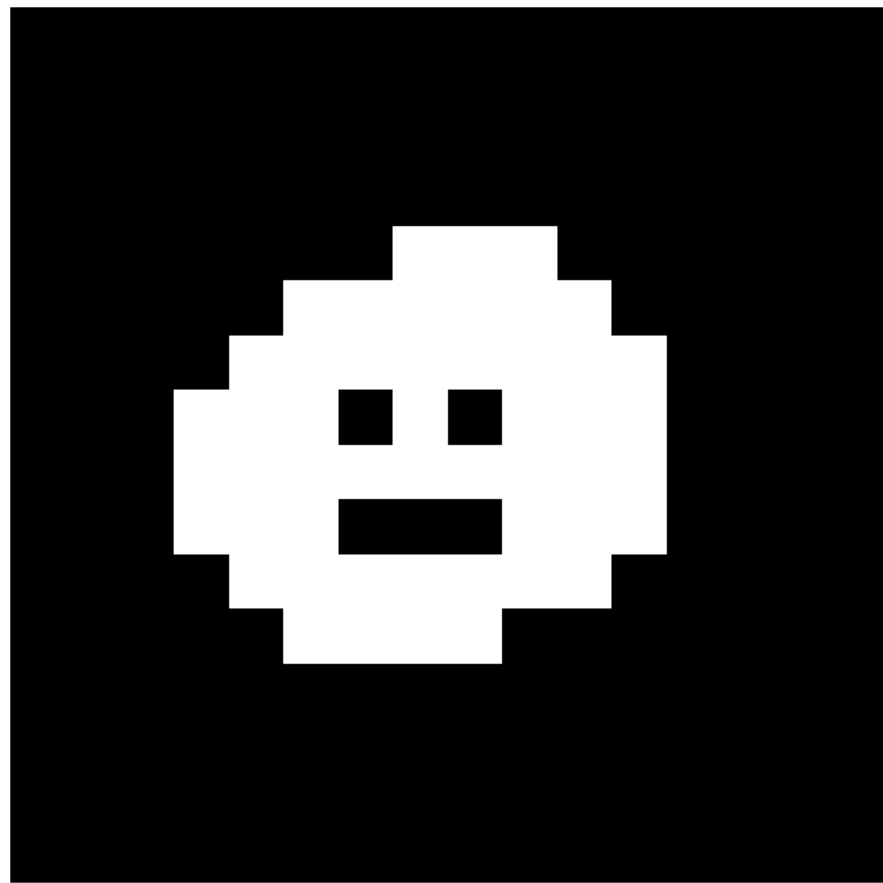
Dilation - The Movie



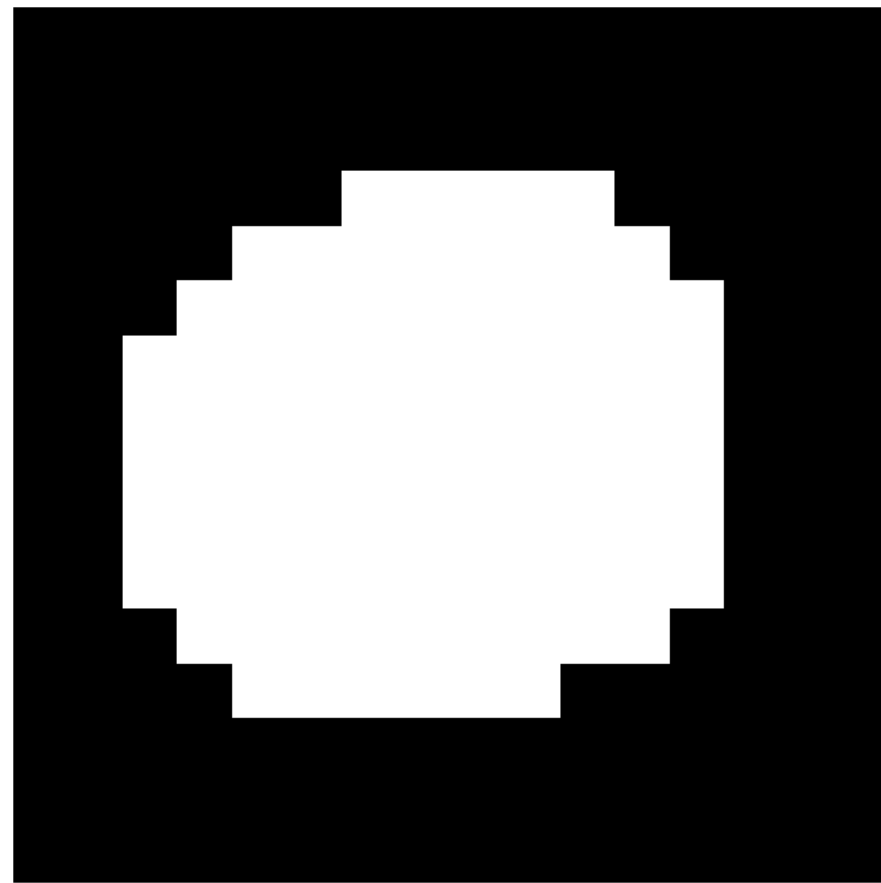
**But wait,
there is a problem.**

Together We Stand

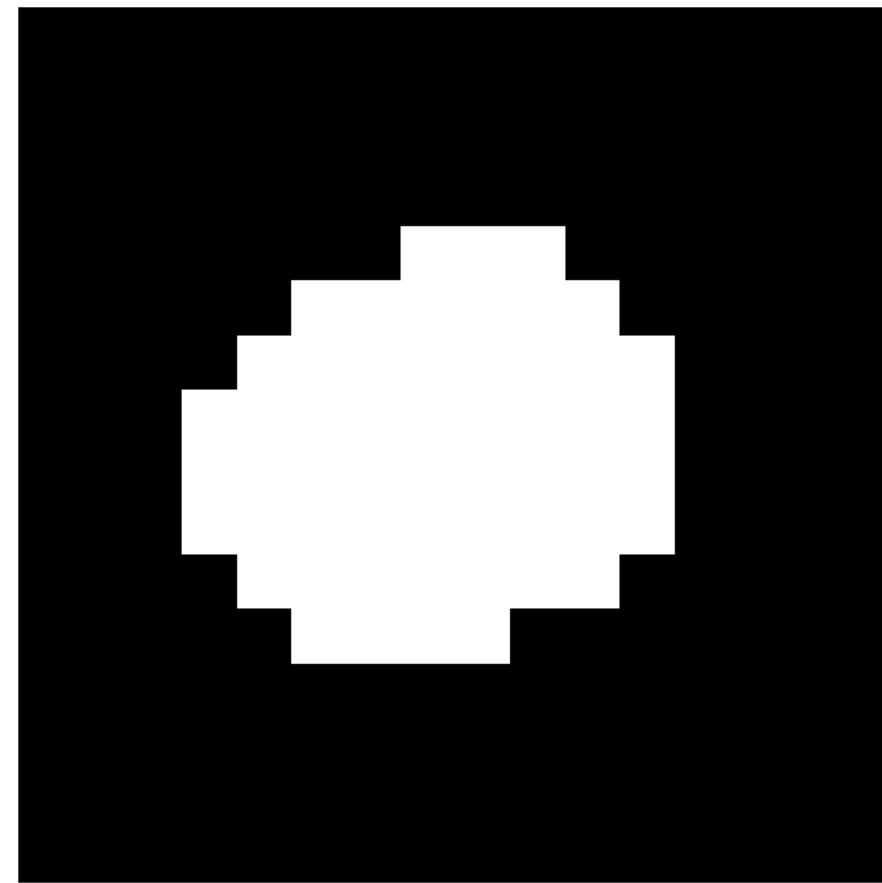
Main image



Dilated image

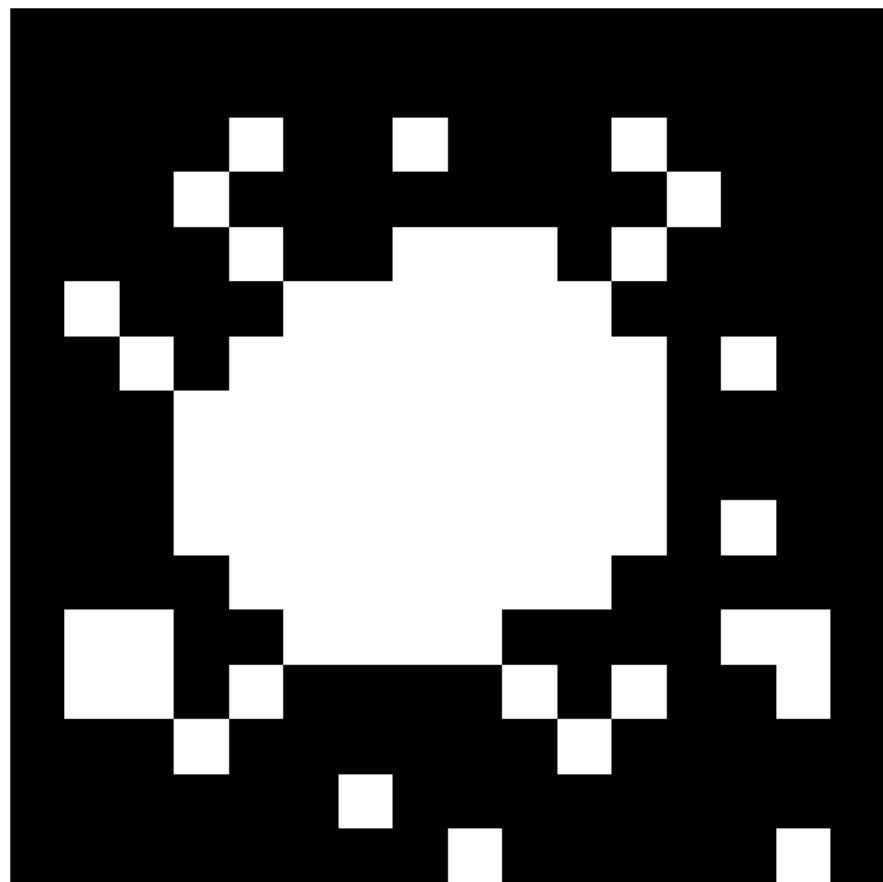


Closed image

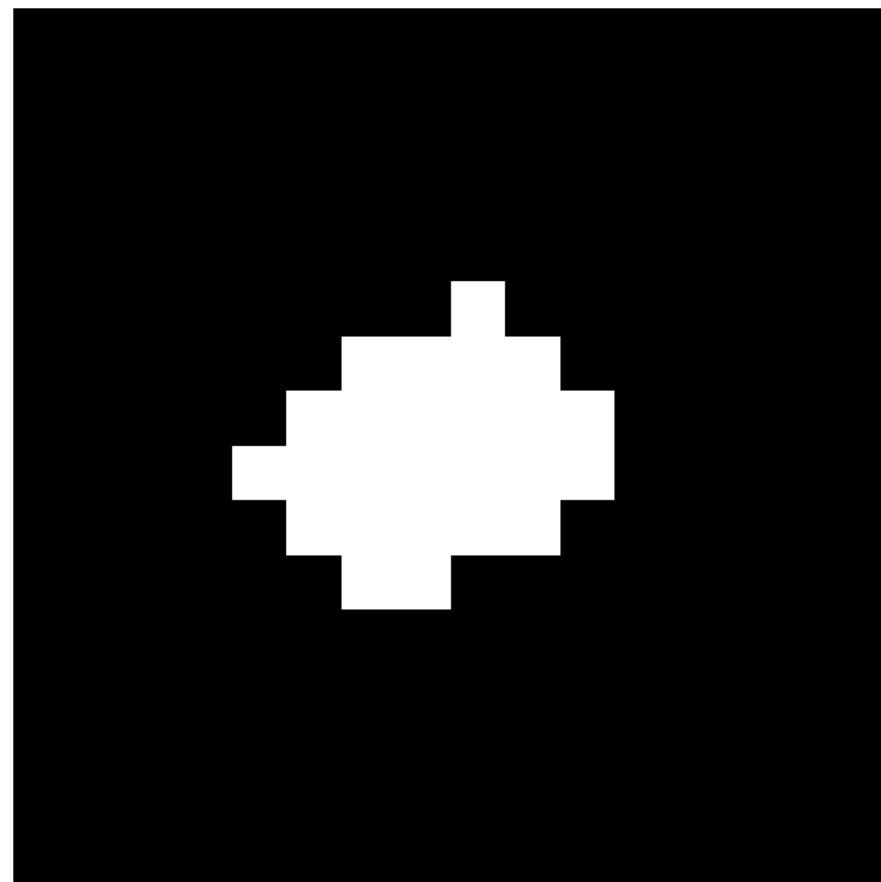


Closing:
Erosion of the dilation.

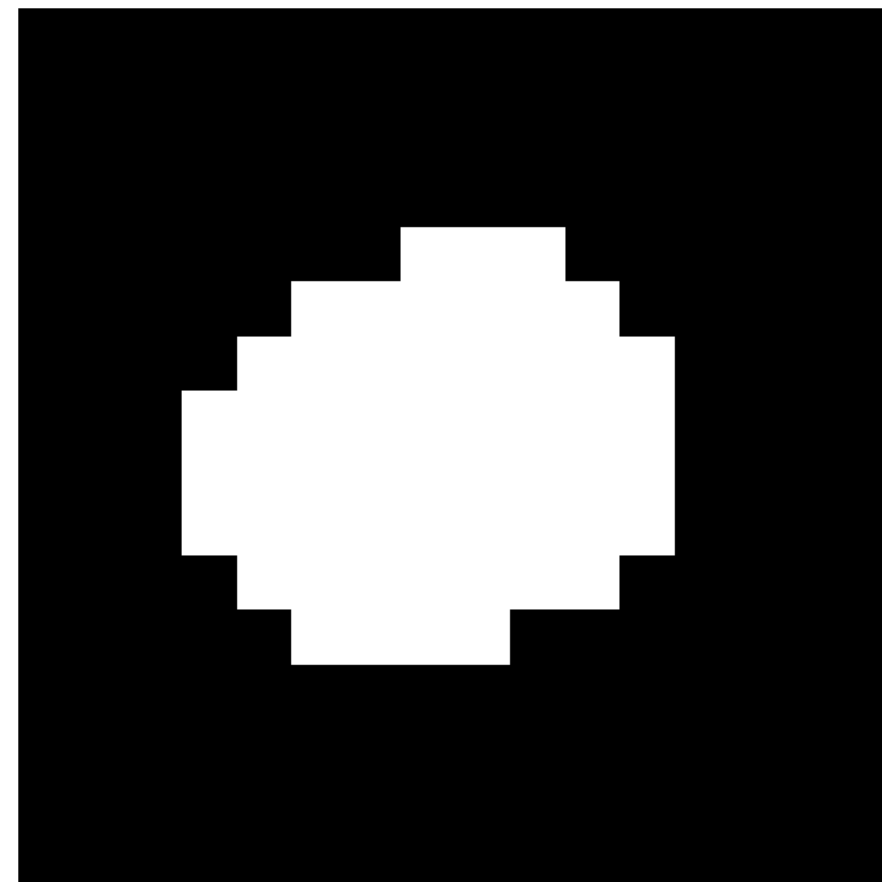
Main image



Eroded image



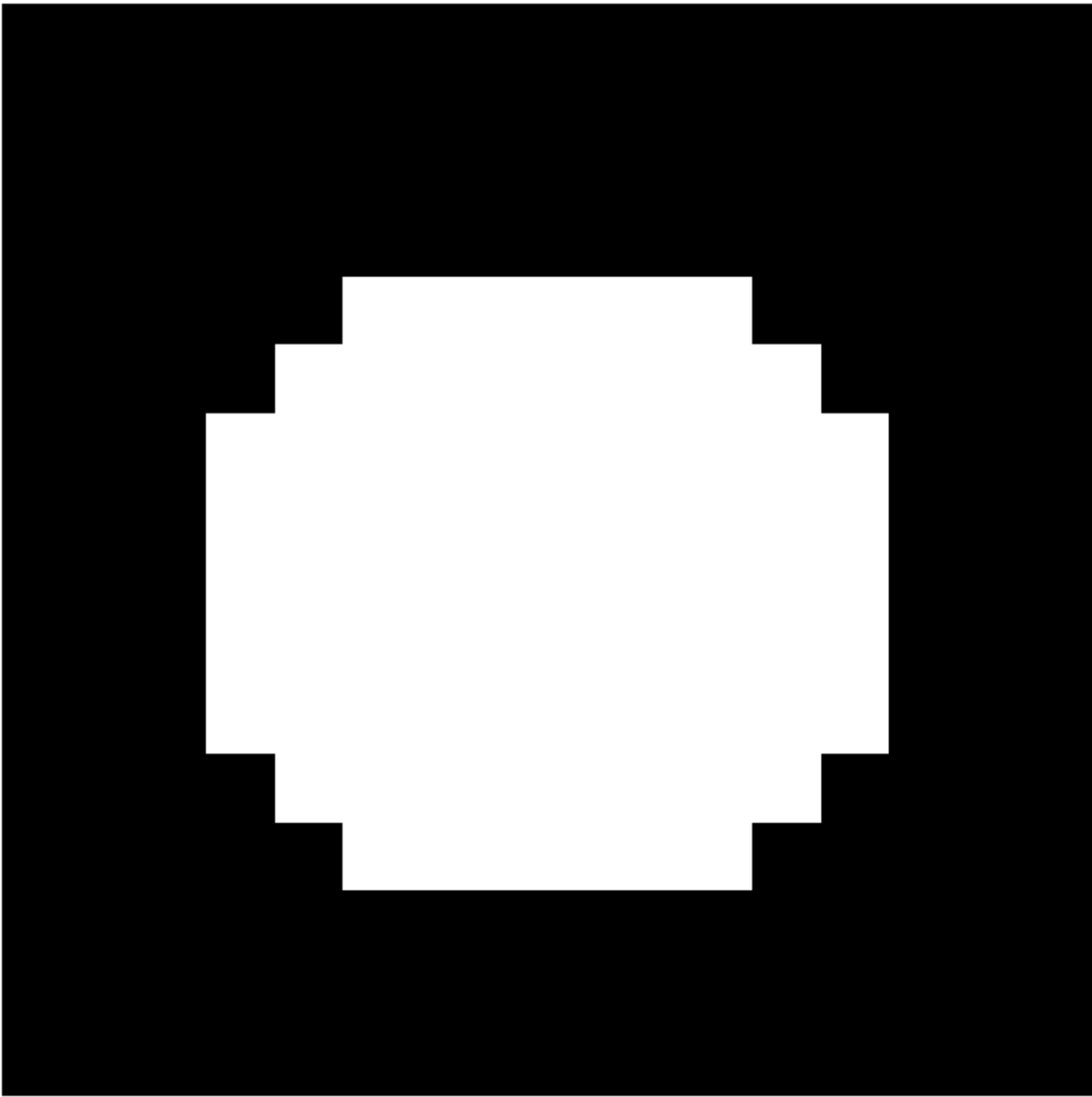
Opened image



Opening:
Dilation of the erosion.

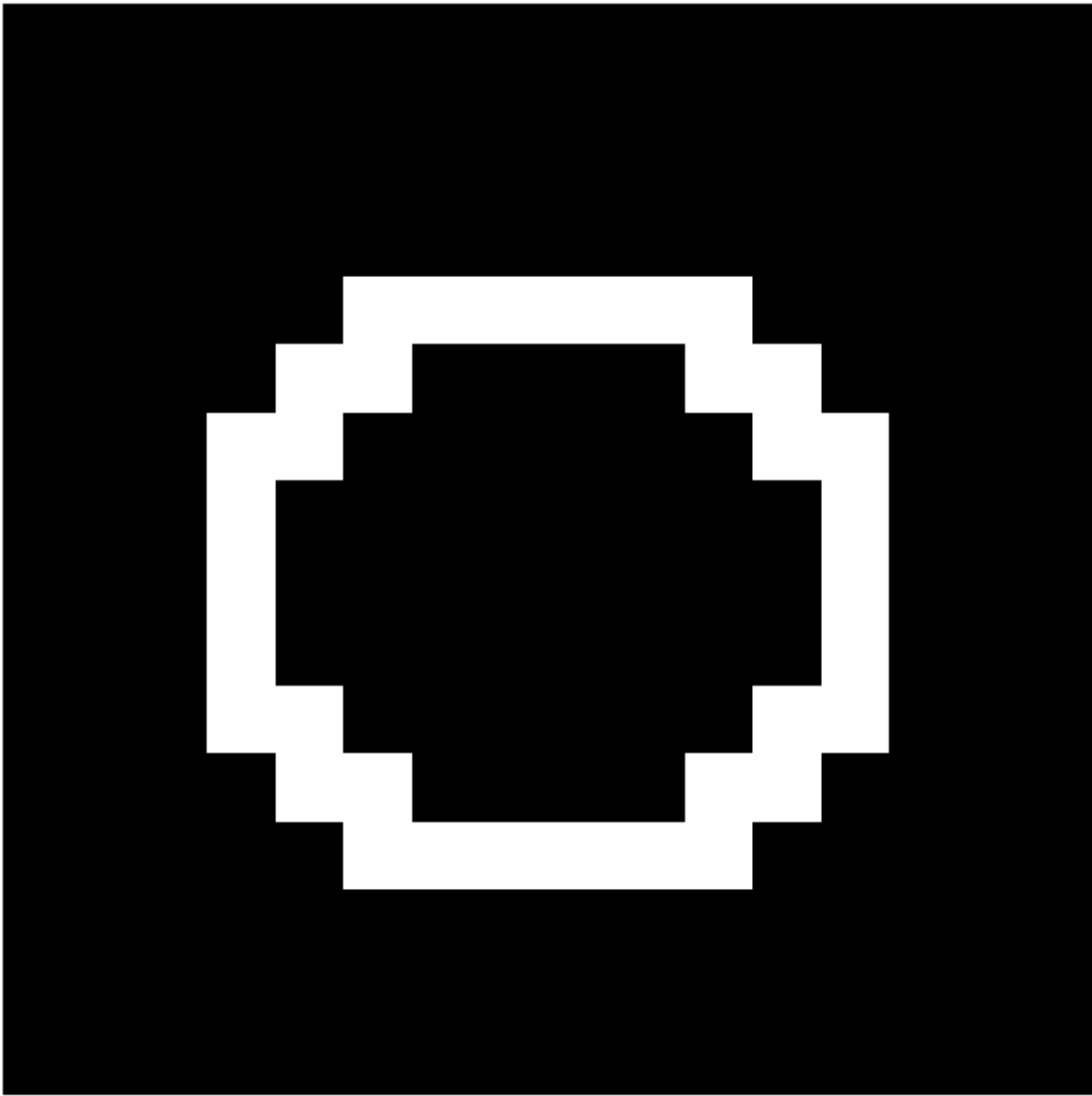
Bonus Example

Main image



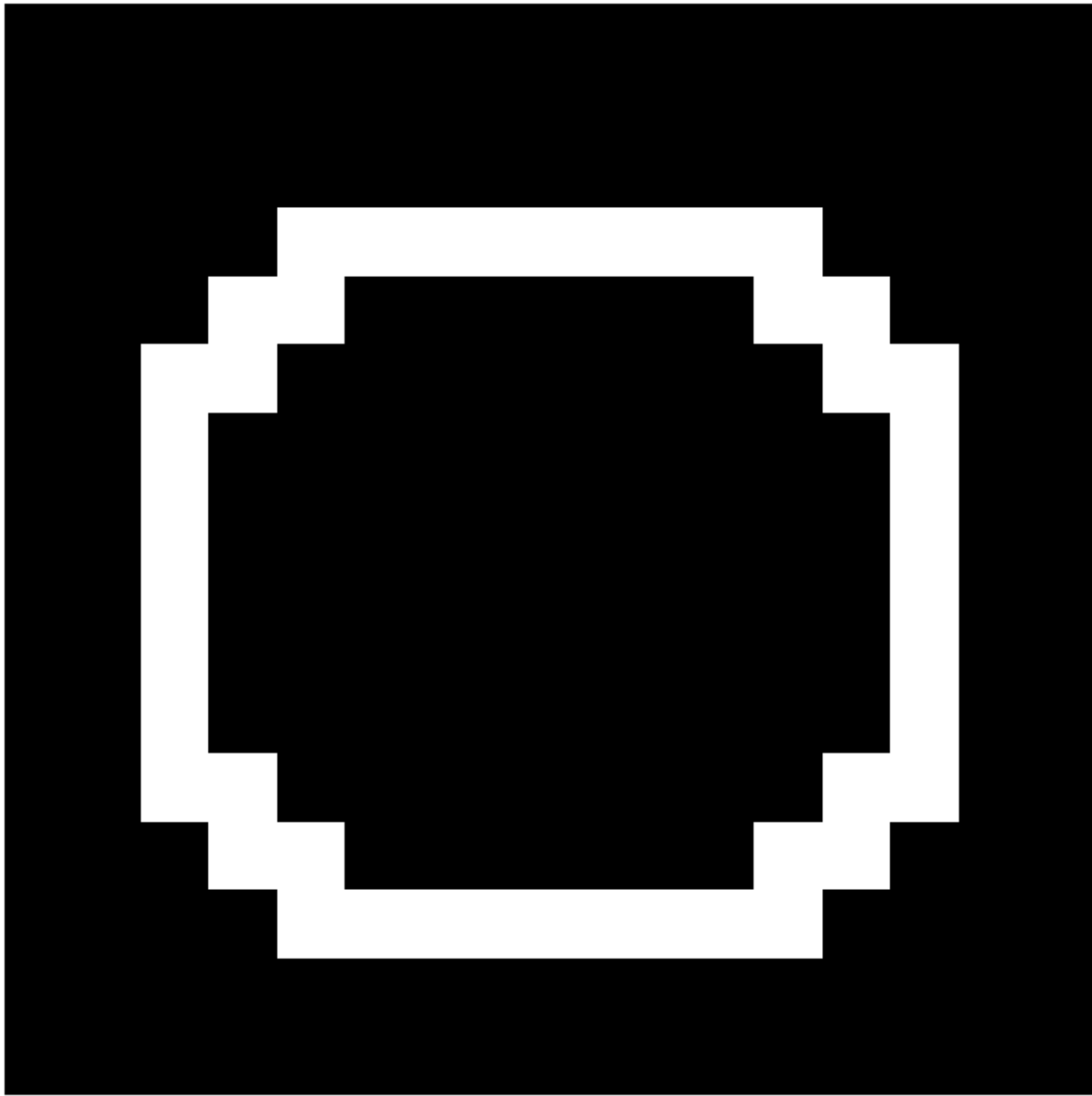
Inner edge

Erode more, dilate less, then subtract

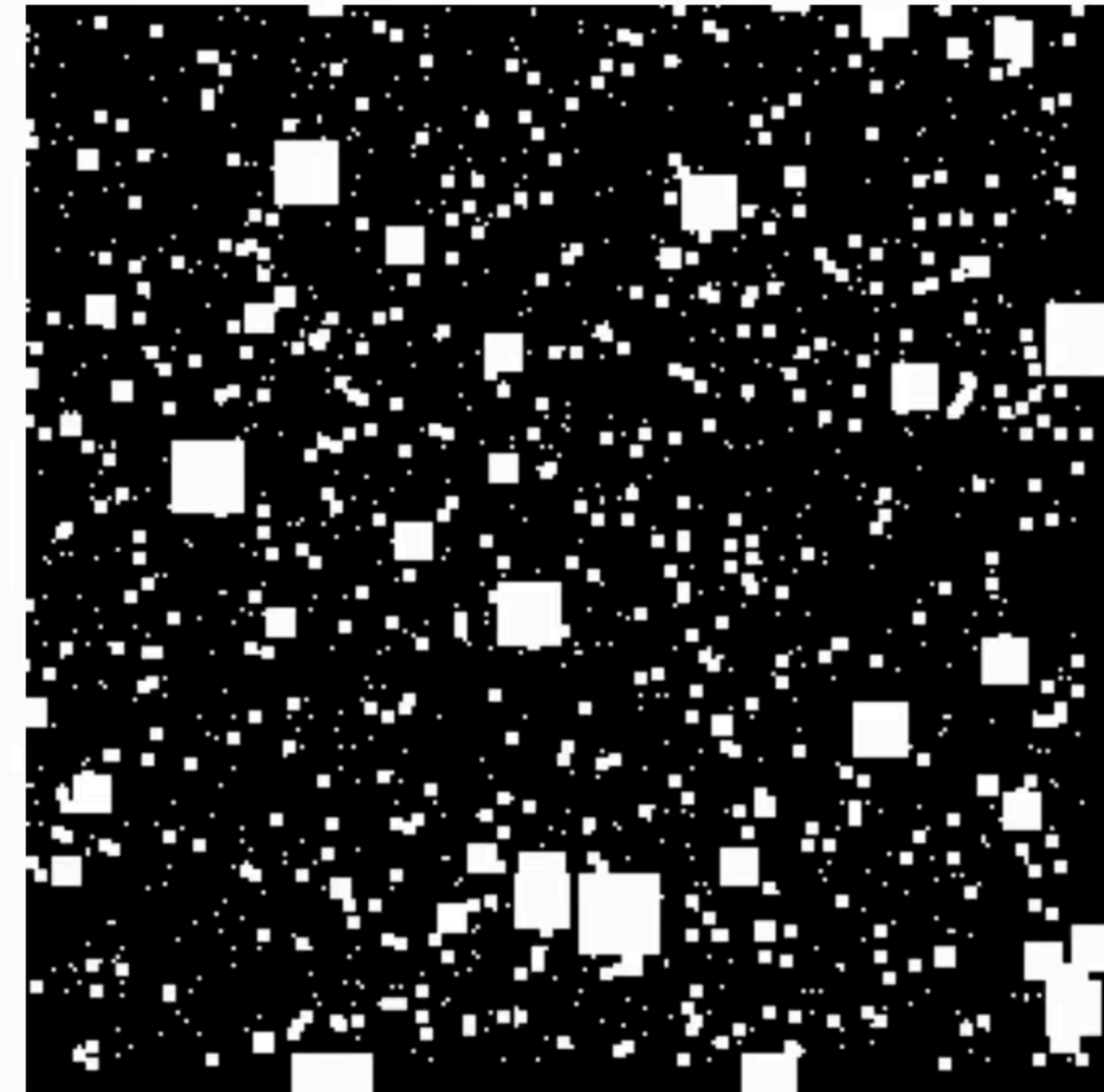


Outer edge

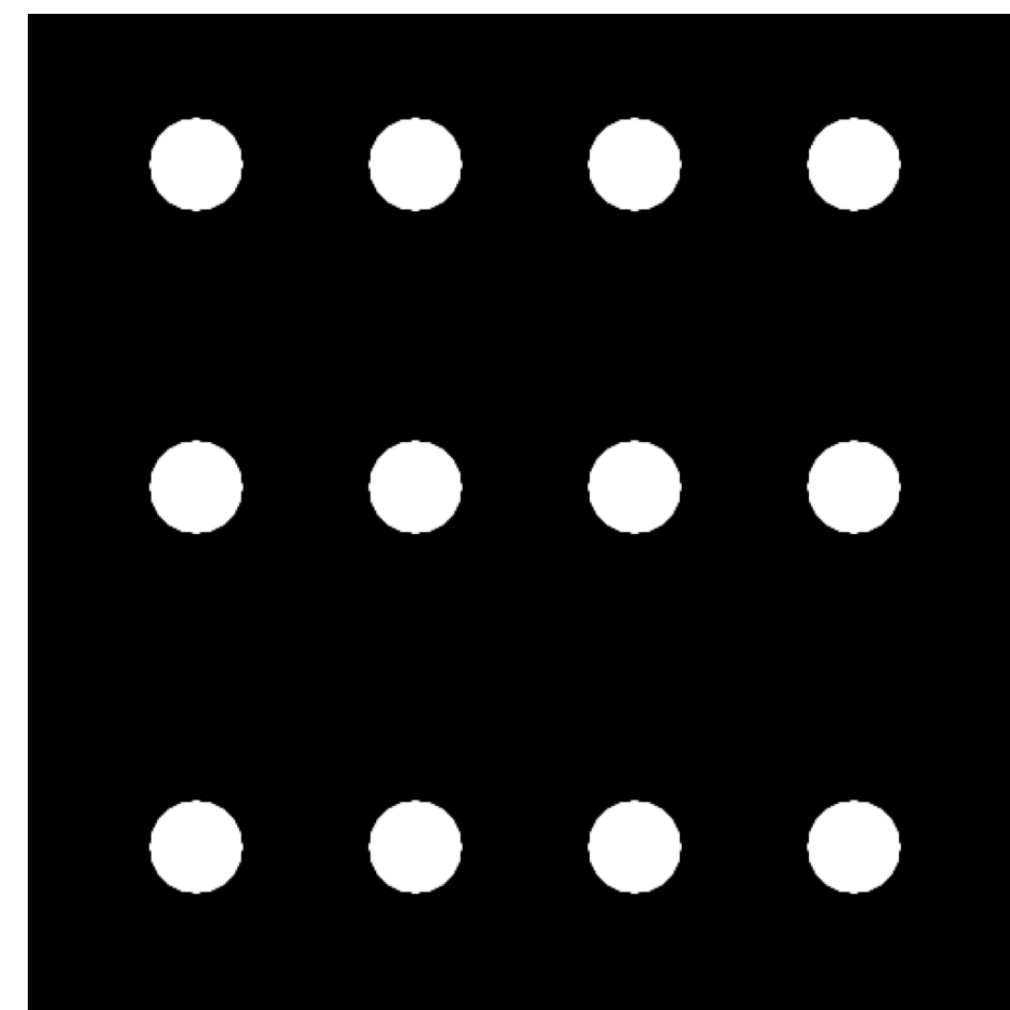
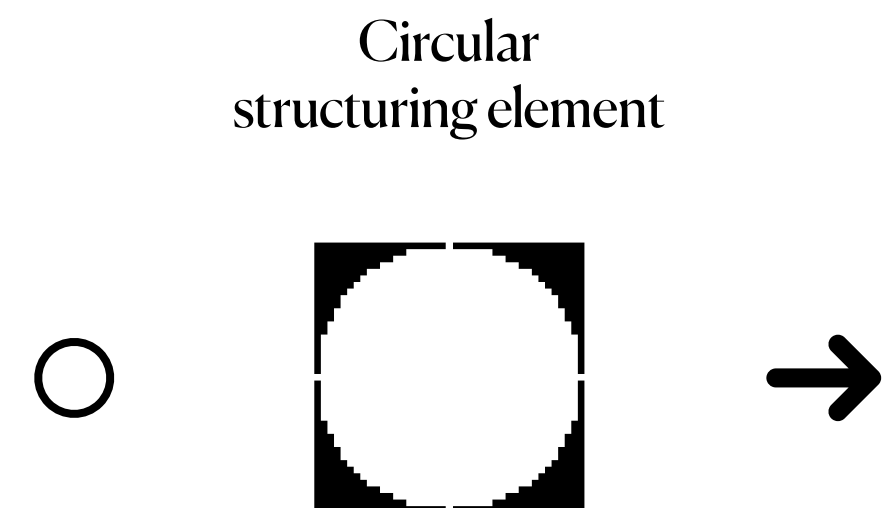
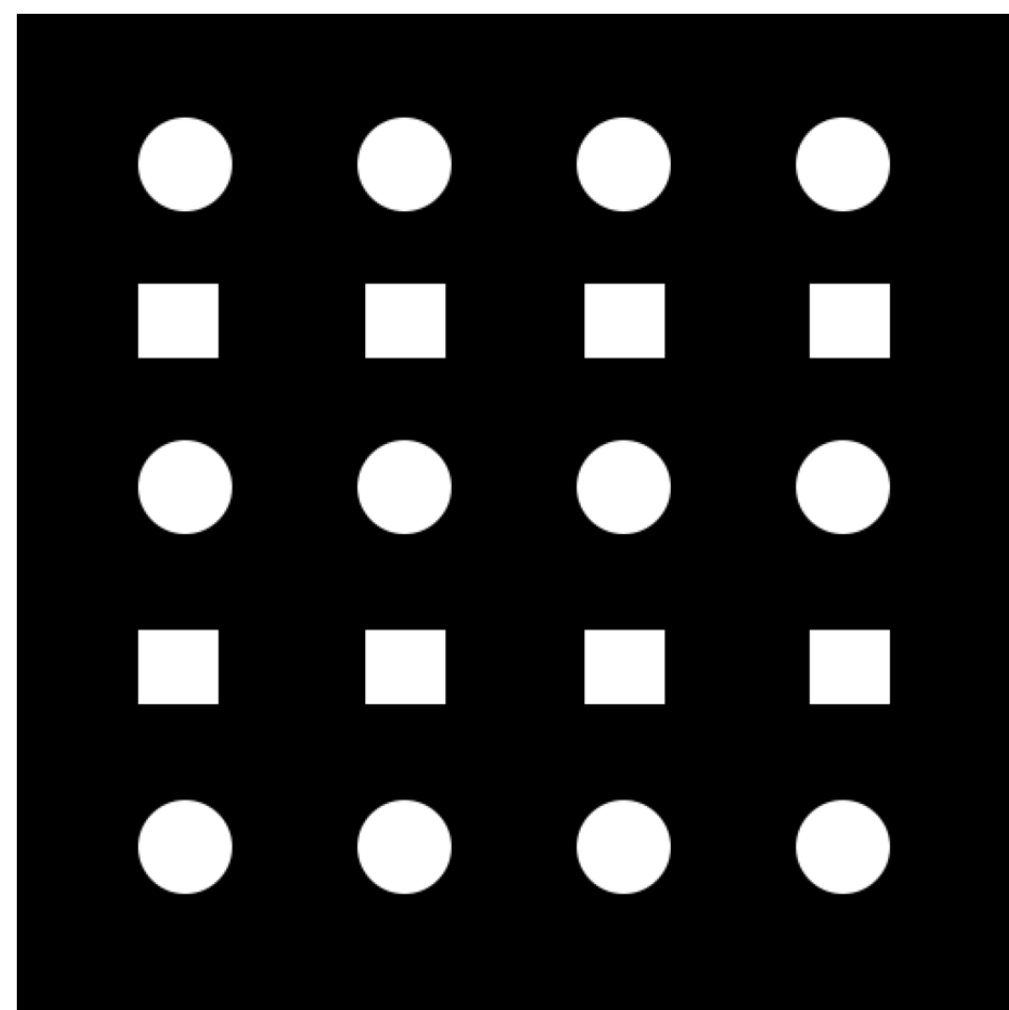
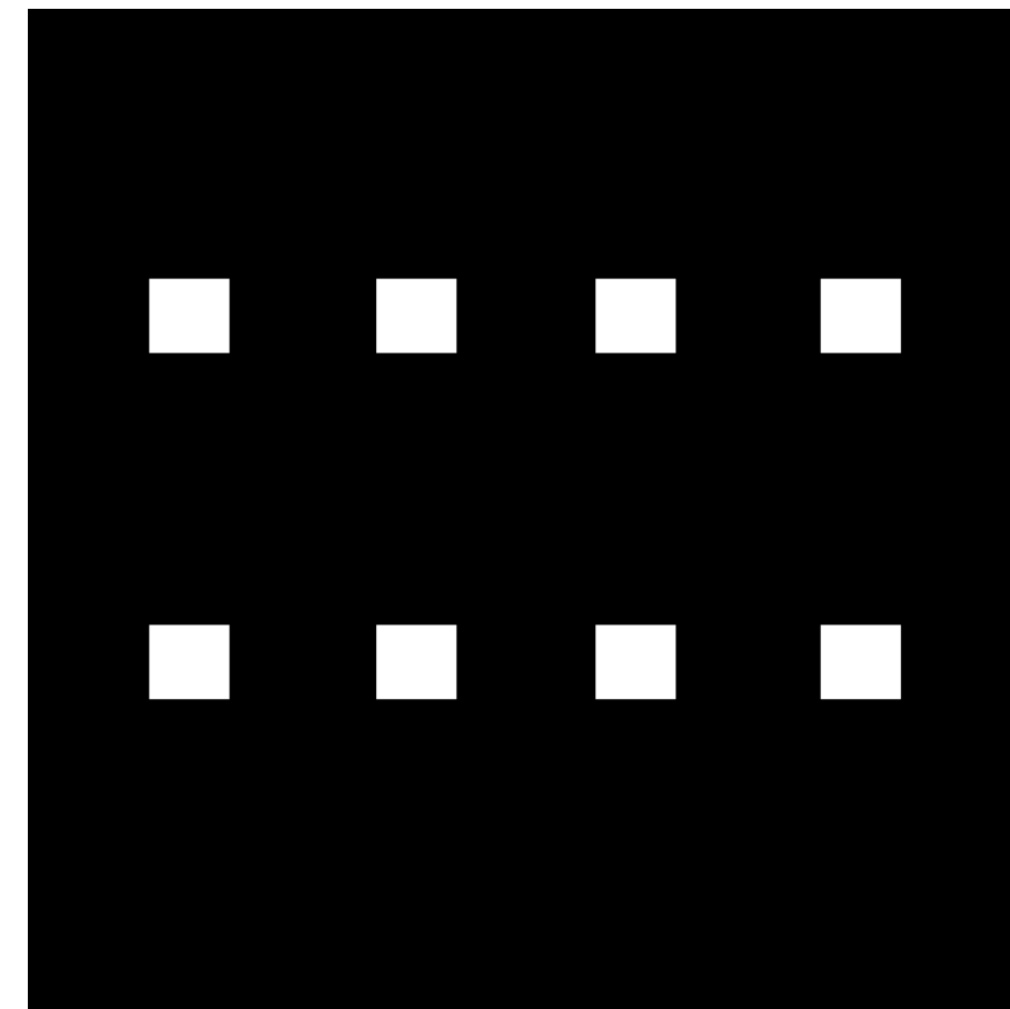
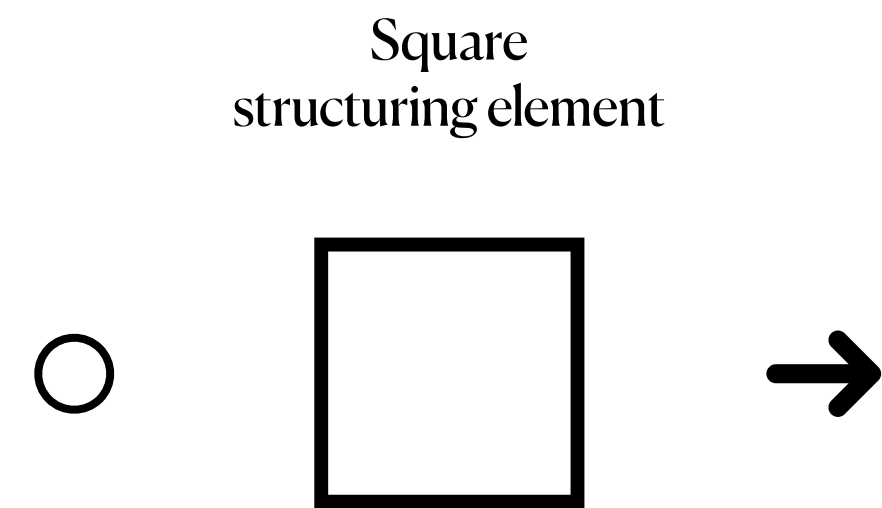
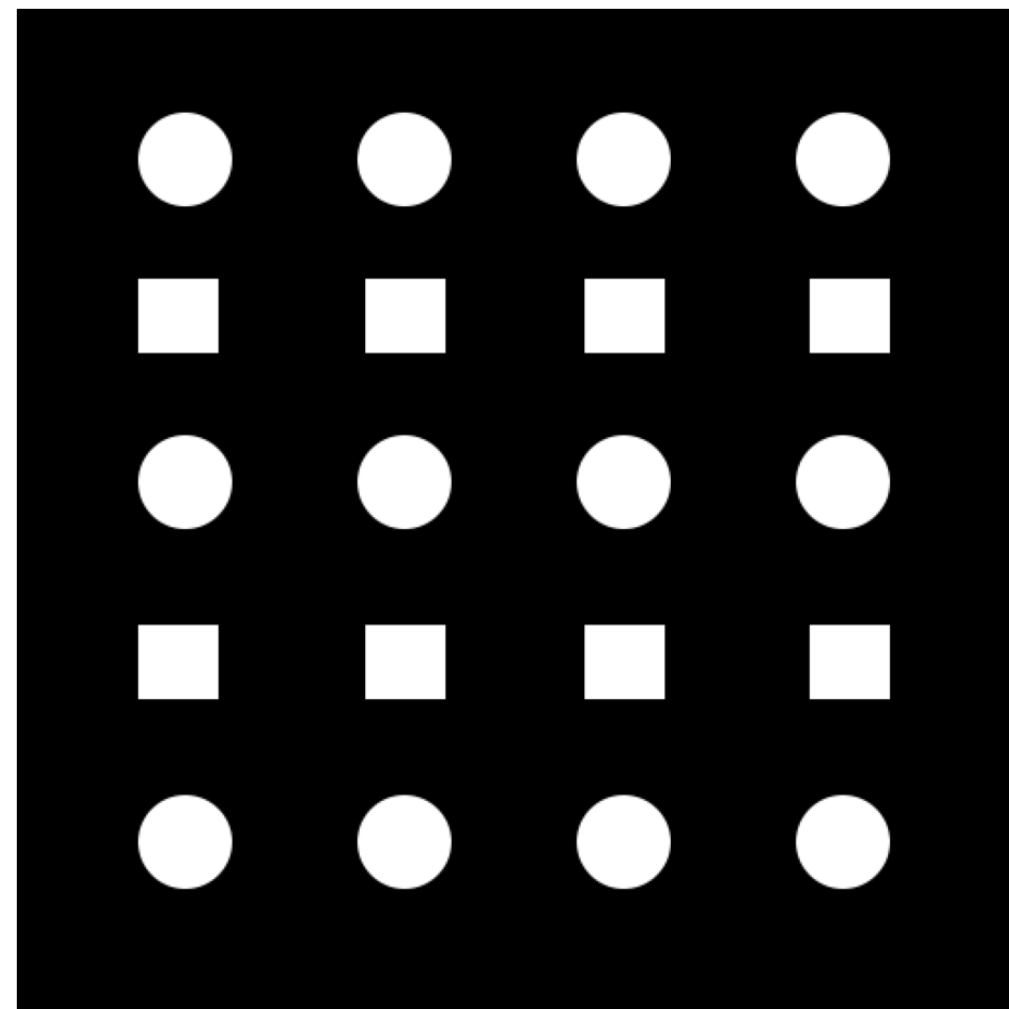
Dilate more, erode less, then subtract



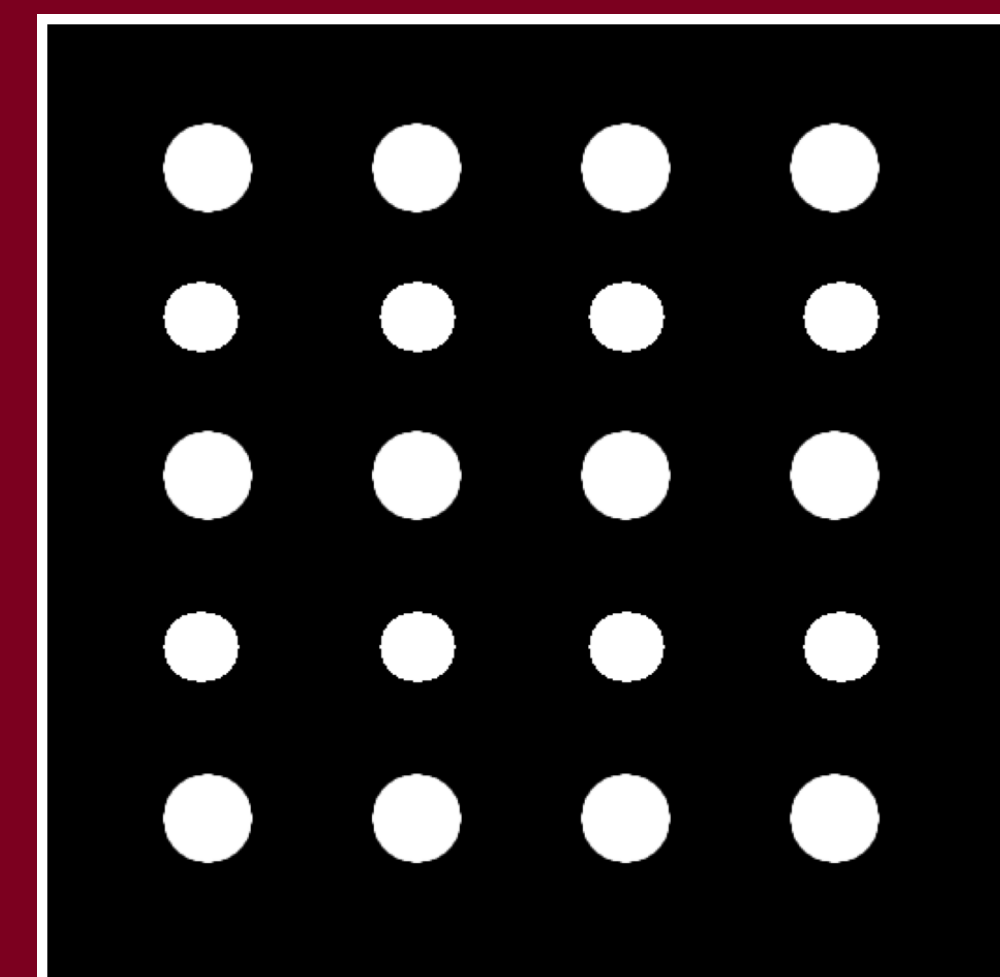
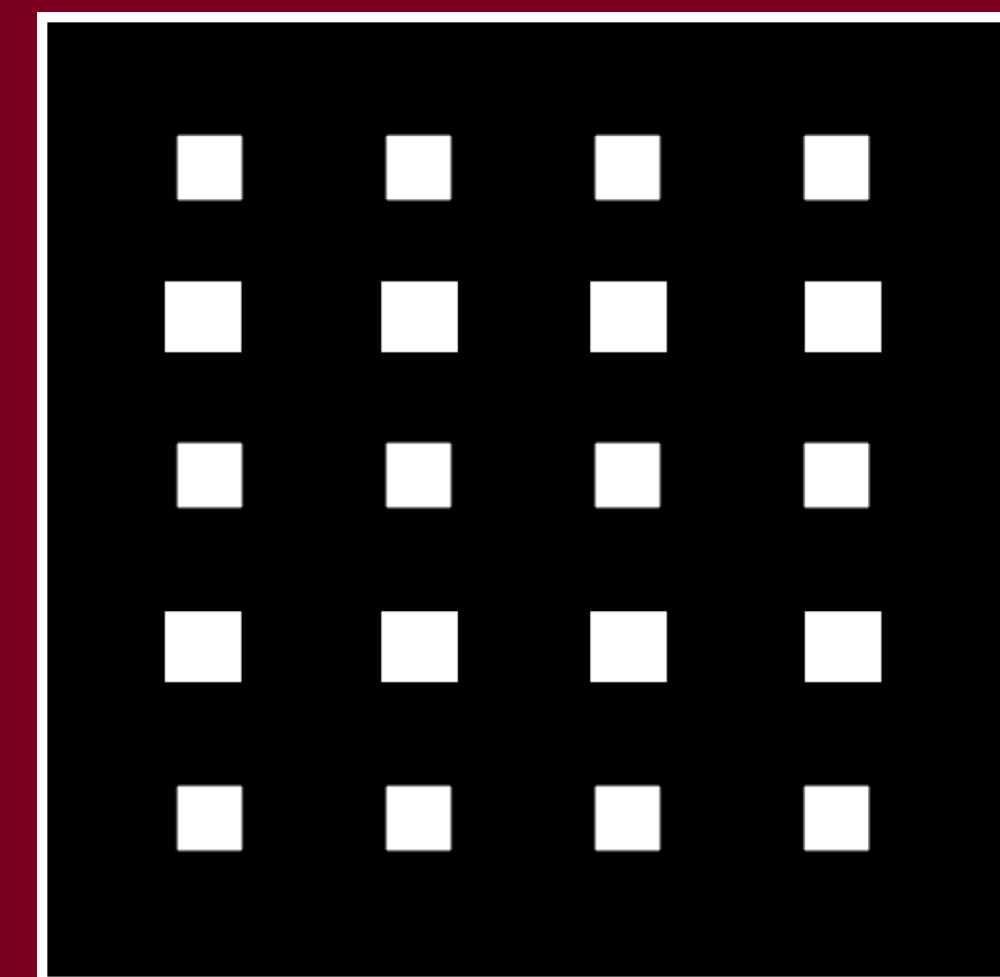
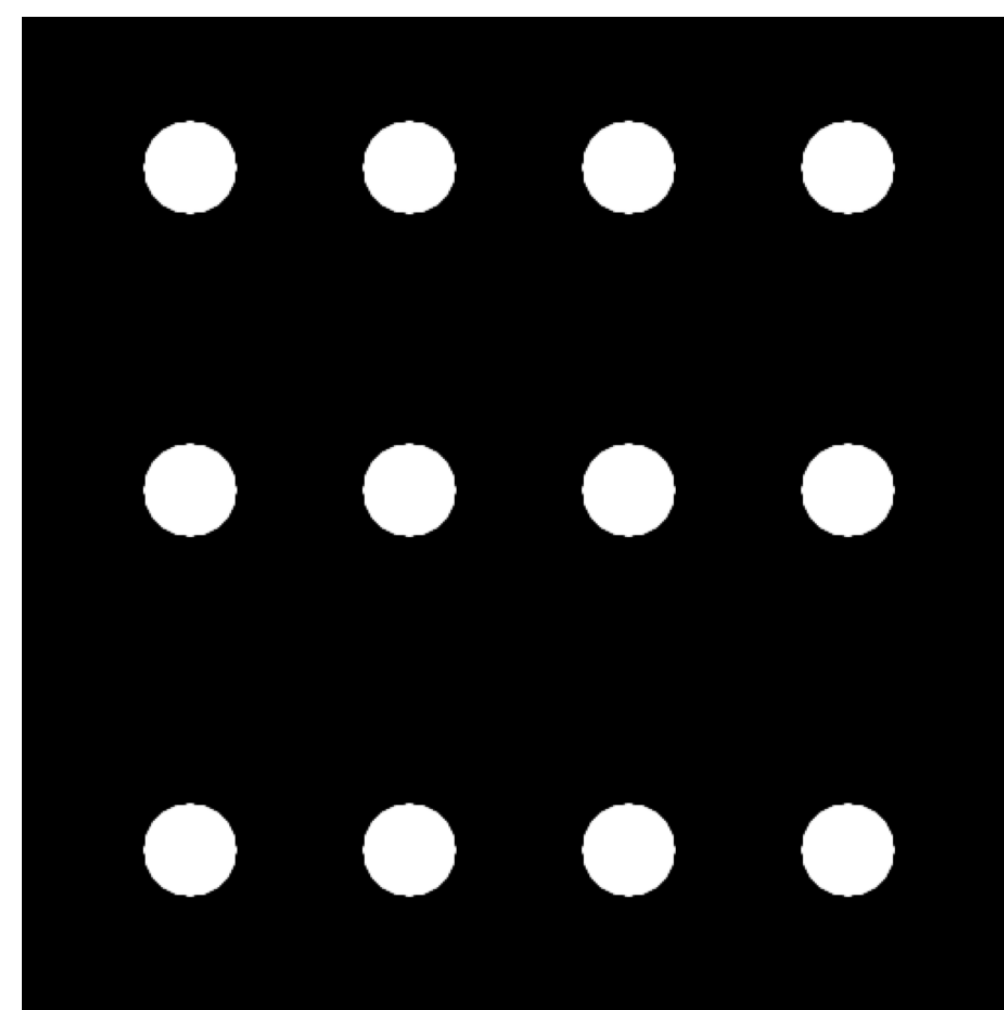
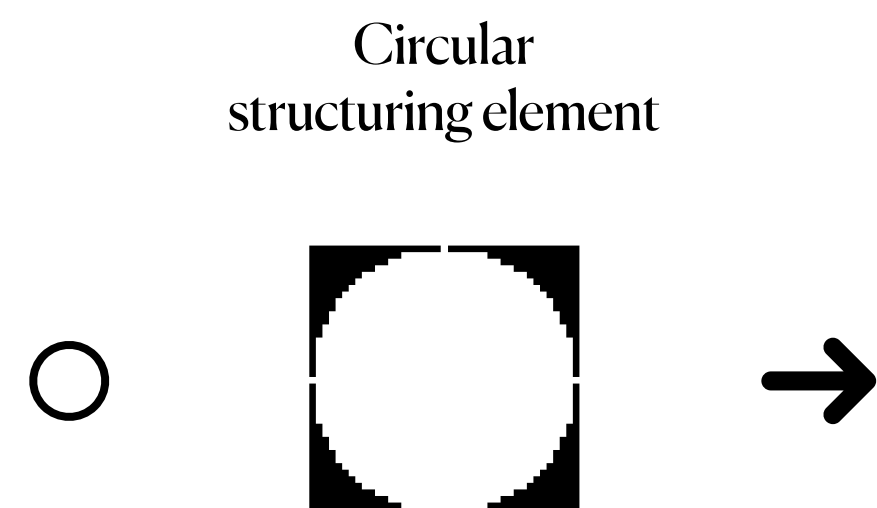
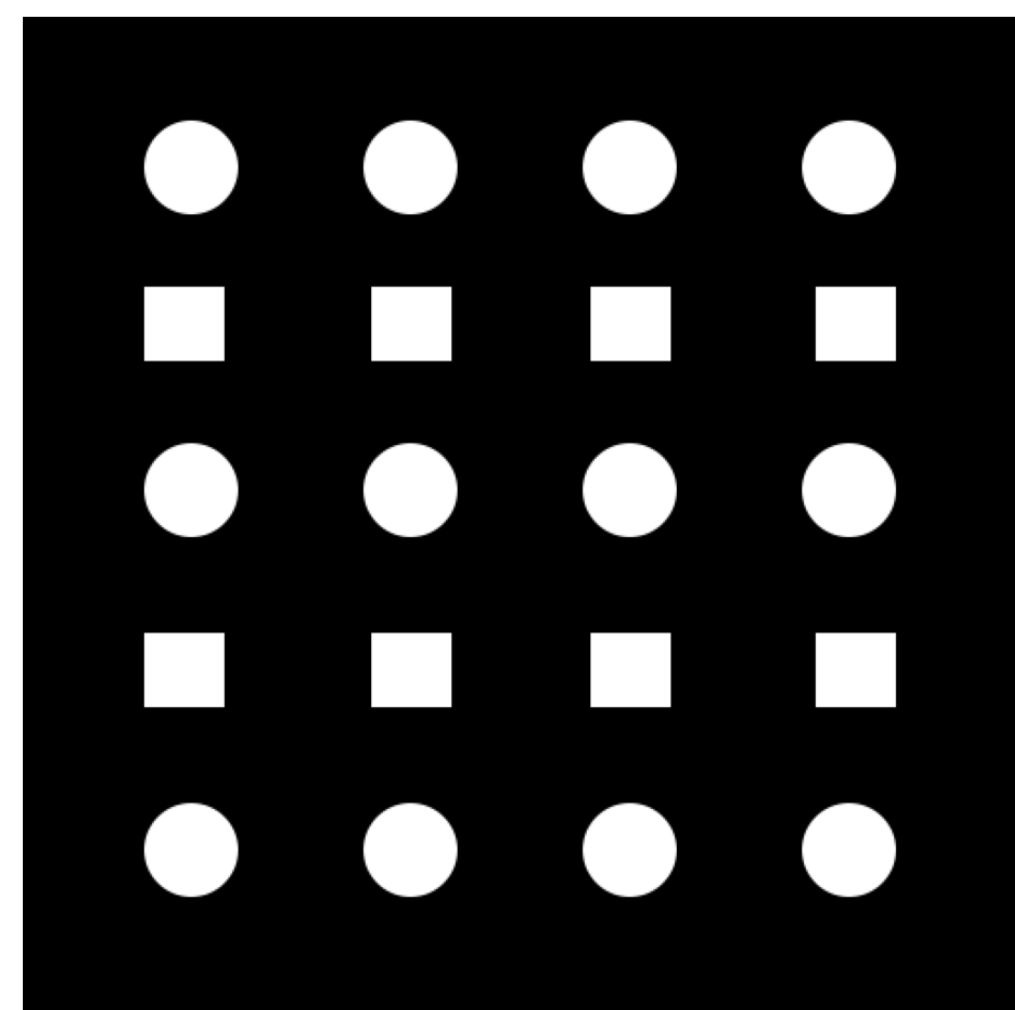
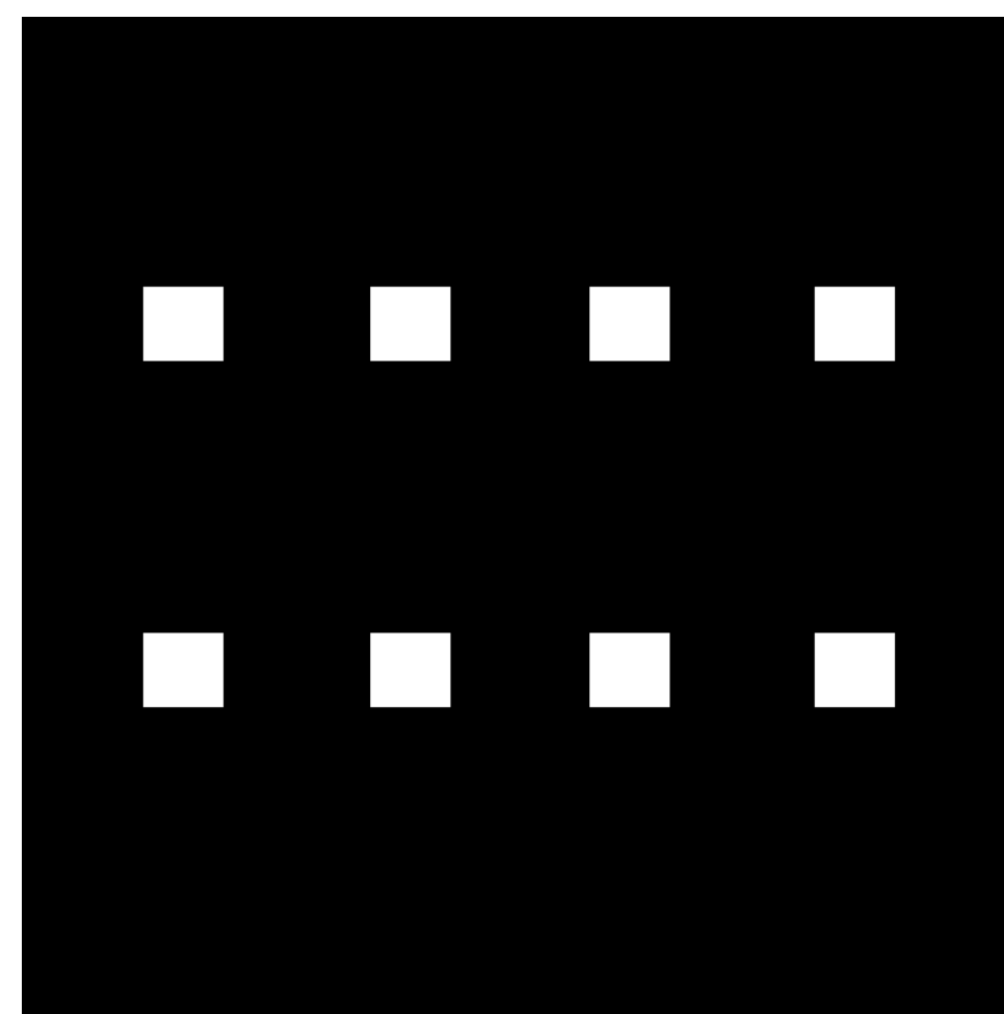
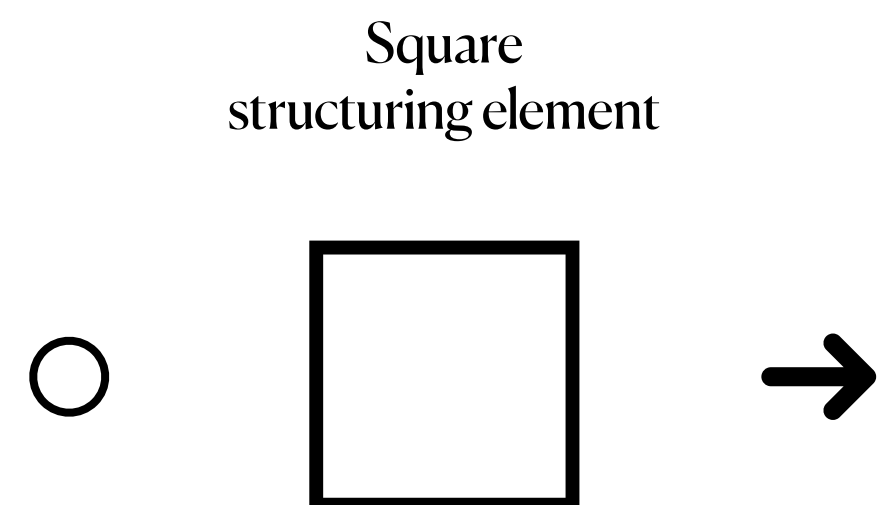
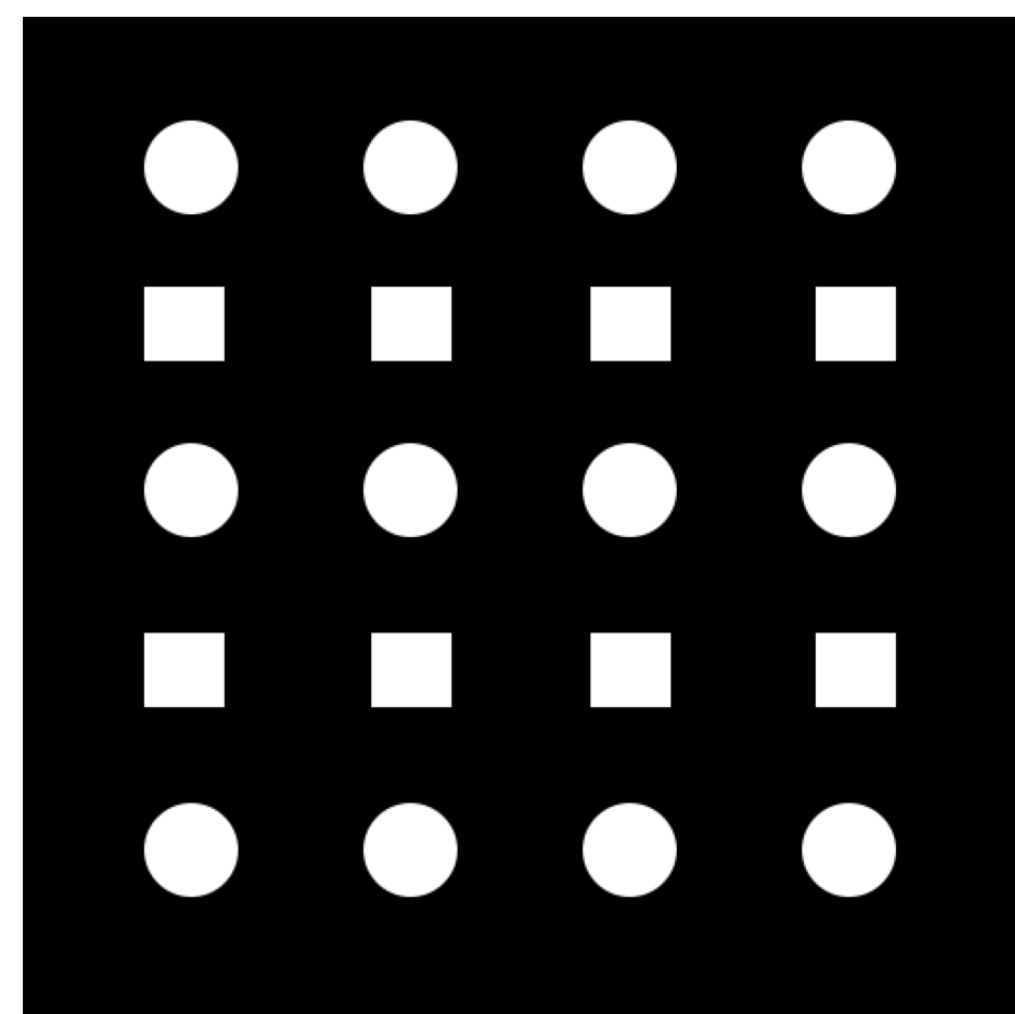
Structuring Element Size



Structuring Element Shape

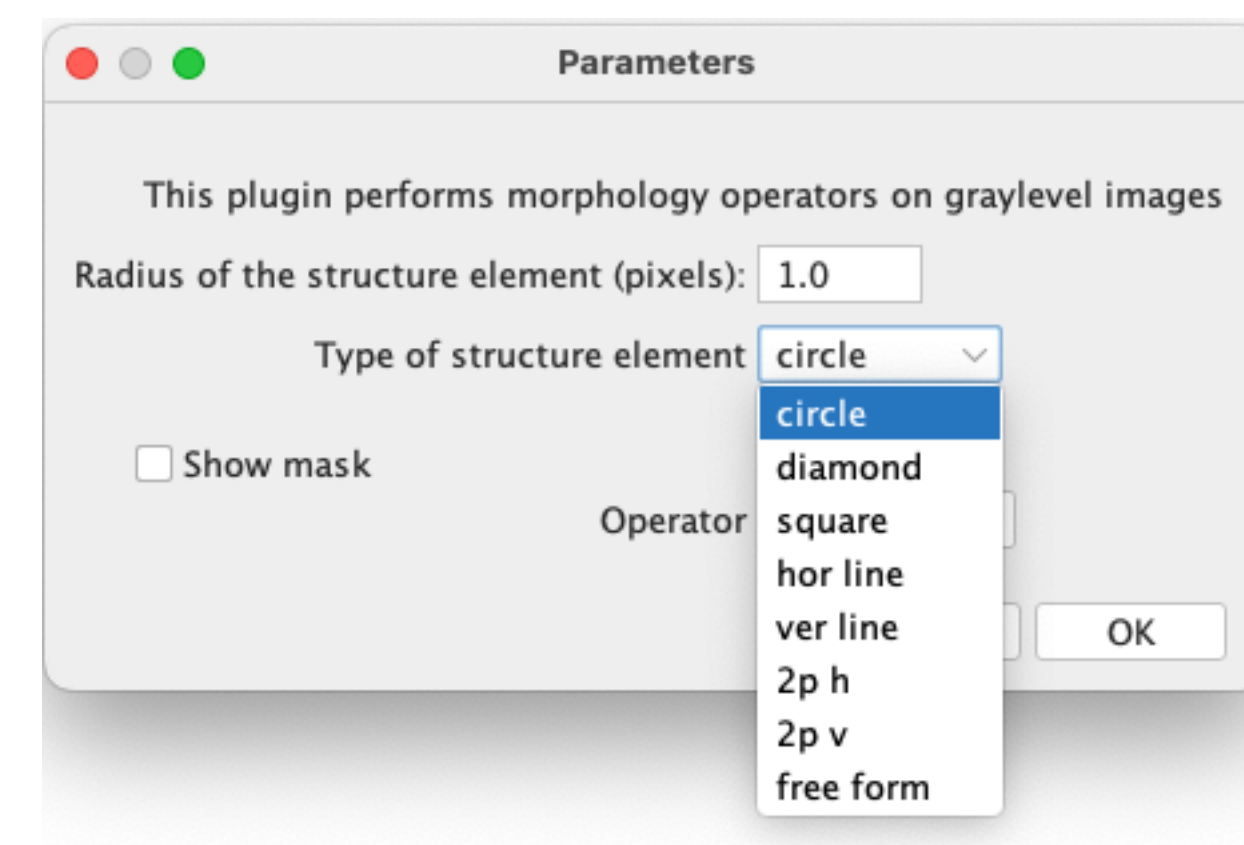
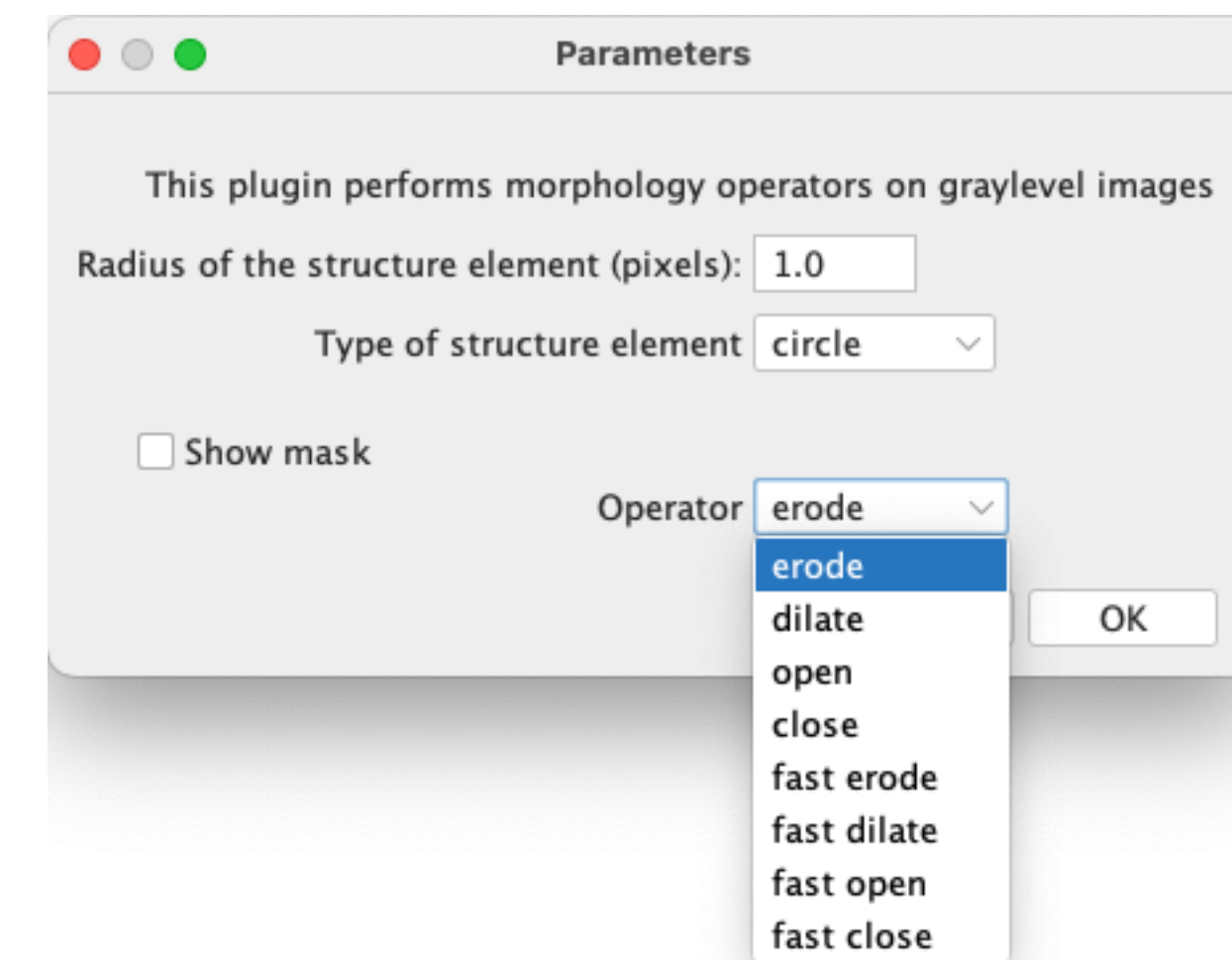
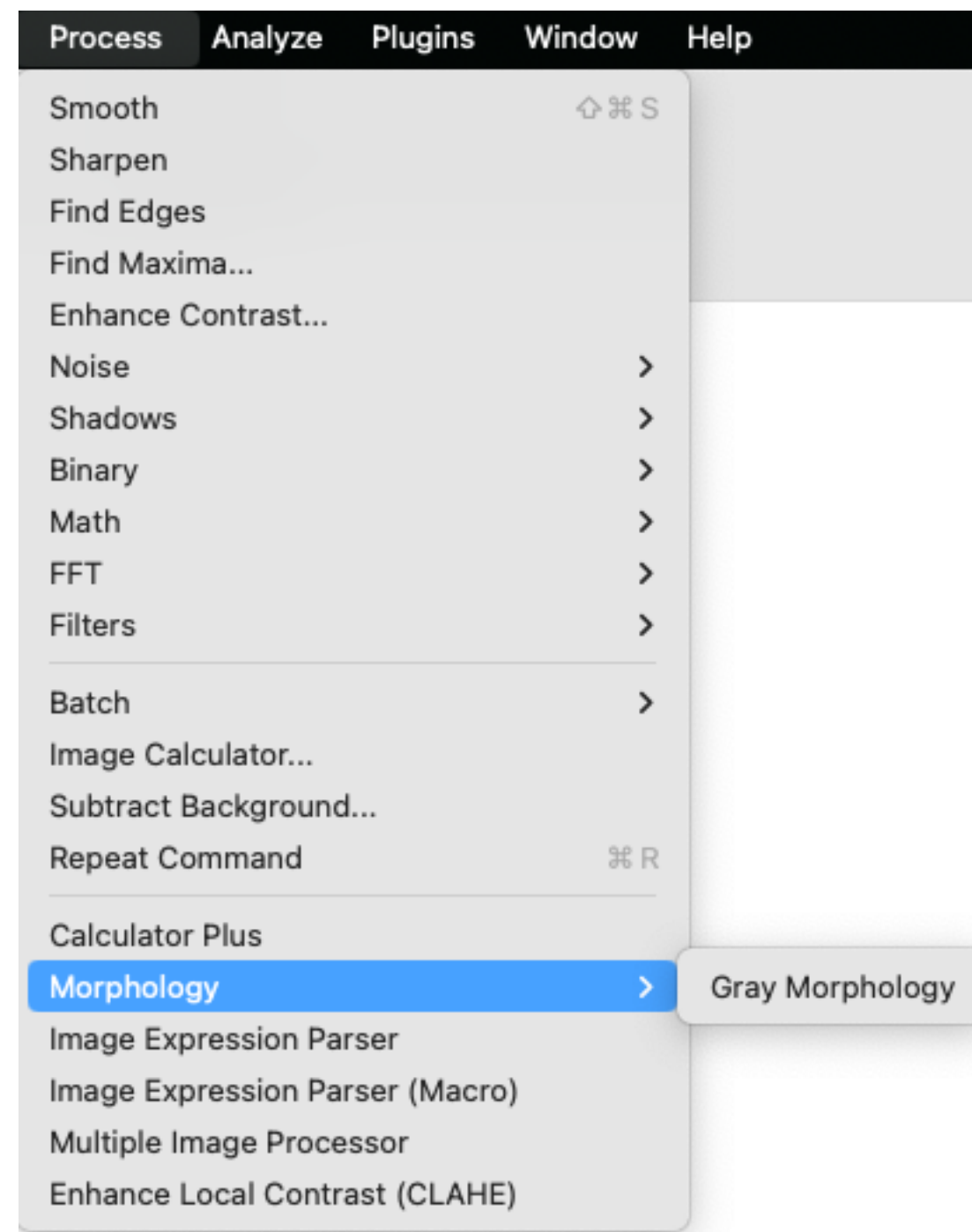
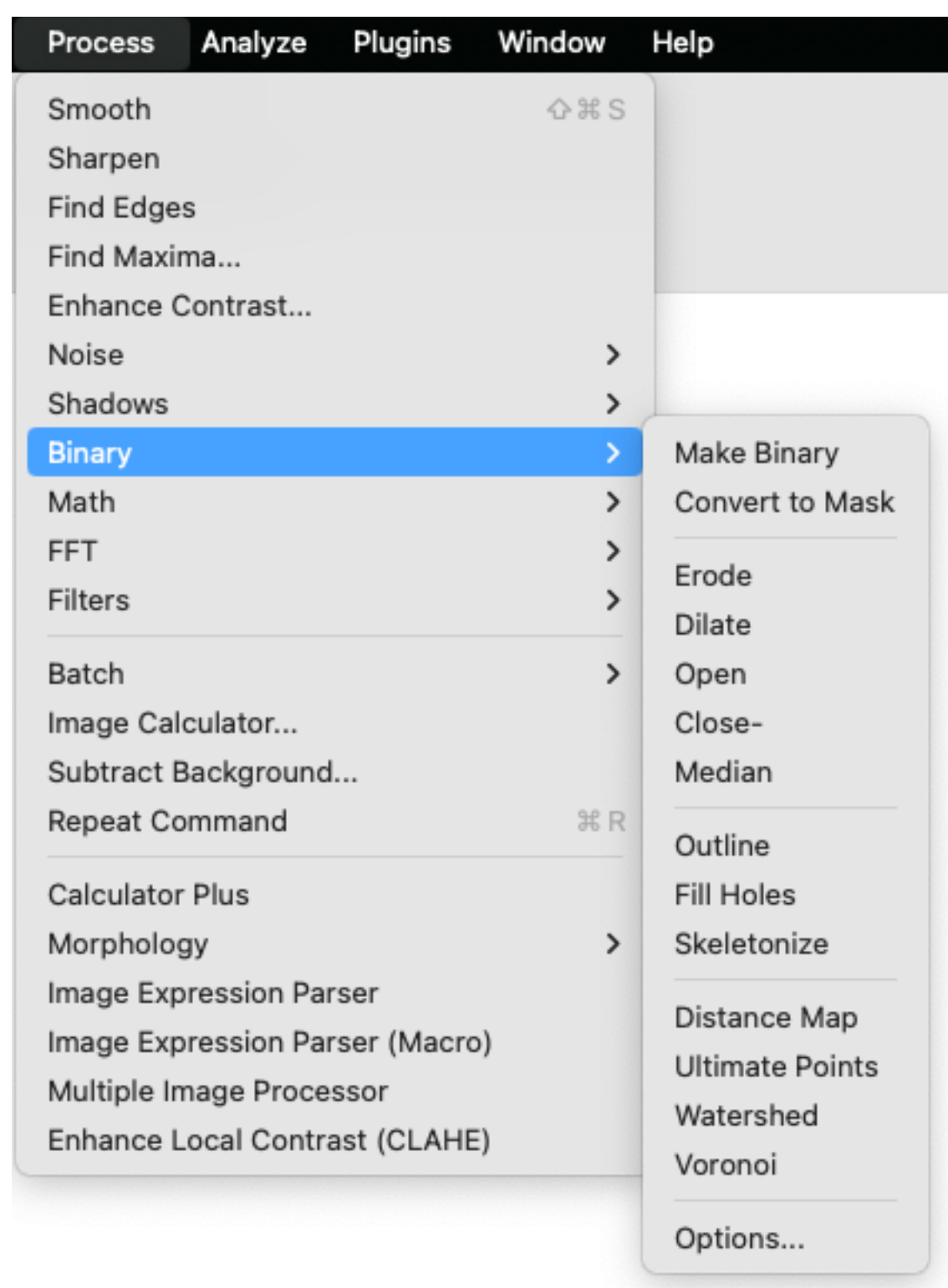


Structuring Element Shape



BE CAREFUL!

Morphology in Fiji



Morphology — exercises



3.4 - Morphological filters - Binary

3.5 - Morphological filters - Gray