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Exercise 06a. Implement a program 'exercise\_06a\_closing\_opening' that performs a closing-opening alternated filter of size 'i' using a square of size  $(2*i+1) \times (2*i+1)$ :

exercise\_06a\_closing\_opening i exercise\_06a\_input\_01.pgm exercise\_06a\_output\_01.pgm

Note: closing-opening( I ) refers to: closing( opening( I ) ).  
Note: 8-connectivity is assumed.

Some test images:

immed\_gray\_inv.pgm (input image)  
immed\_gray\_inv\_20051123\_clo2ope2.pgm (closing (opening (I)) with size 2, 8-connectivity)  
immed\_gray\_inv\_20051123\_clo4ope4.pgm (closing (opening (I)) with size 4, 8-connectivity)

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Exercise 06b. Implement a program 'exercise\_06a\_opening\_closing' that performs an opening-closing alternated filter of size 'i' using a square of size  $(2*i+1) \times (2*i+1)$ :

exercise\_06b\_opening\_closing i exercise\_06b\_input\_01.pgm exercise\_06b\_output\_01.pgm

Note: opening-closing( I ) refers to: opening( closing( I ) ).  
Note: 8-connectivity is assumed.

Some test images:

immed\_gray\_inv.pgm (input image)  
immed\_gray\_inv\_20051123\_ope2clo2.pgm (opening (closing (I)) with size 2, 8-connectivity)  
immed\_gray\_inv\_20051123\_ope4clo4.pgm (opening (closing (I)) with size 4, 8-connectivity)

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