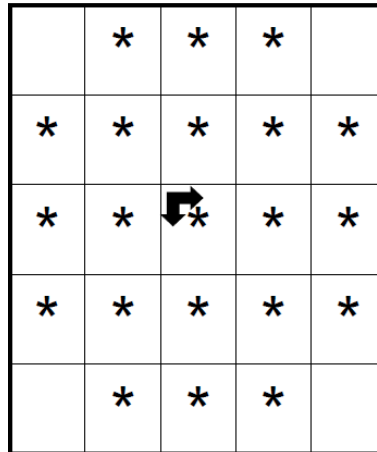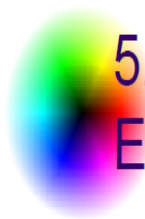# Computer Version HW5

Write programs which do gray-scale morphology on a gray-scale image(lena.bmp):

(a) Dilation

5.5.1 Gray Scale Dilation and Erosion (cont')

- gray scale dilation: surface of dilation of umbras
- dilation of *f* by *k*: denoted by

$$f \oplus k = T\{U[f] \oplus U[k]\}$$

(b) Erosion

5.5.1 Gray Scale Dilation and Erosion (cont')

gray scale erosion: surface of binary erosions of one umbra by the other umbra

$$f \ominus k = T\{U[f] \ominus U[k]\}$$

(c) Opening
　　先 erosion 再 dilation

(d) Closing
　　先 dilation 再 erosion