In [1]:

```
import cv2
import numpy as np
```

In [2]:

```
src   = cv2.imread('./data/morphology.jpg', cv2.IMREAD_GRAYSCALE)
kernel= cv2.getStructuringElement(shape=cv2.MORPH_RECT, ksize=(3,3))
erode = cv2.erode(src,kernel,iterations = 5)
dilate = cv2.dilate(src,kernel,iterations = 5)
erode2= cv2.erode(dilate,kernel,iterations = 7)
##dilate2= cv2.dilate(erode2,kernel,iterations = 2)

cv2.imshow('src',    src)
cv2.imshow('erode',  erode)
cv2.imshow('dilate', dilate)
cv2.imshow('erode2', erode2)
##cv2.imshow('dilate2',    dilate2)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [3]:

```
src   = cv2.imread('./data/morphology.jpg', cv2.IMREAD_GRAYSCALE)
kernel= cv2.getStructuringElement(shape=cv2.MORPH_RECT, ksize=(3,3))
closing = cv2.morphologyEx(src,cv2.MORPH_CLOSE,kernel,iterations = 5)
opening = cv2.morphologyEx(closing,cv2.MORPH_OPEN,kernel,iterations = 5)
gradient = cv2.morphologyEx(opening,cv2.MORPH_GRADIENT,kernel)
#gradient=cv2.morphologyEx(opening,cv2.MORPH_GRADIENT,kernel, iterations=5)

tophat = cv2.morphologyEx(src,cv2.MORPH_TOPHAT,kernel,iterations = 5)
blackhat = cv2.morphologyEx(src,cv2.MORPH_BLACKHAT,kernel,iterations = 5)

cv2.imshow('opening',  opening)
cv2.imshow('closing',  closing)
cv2.imshow('gradient', gradient)
cv2.imshow('tophat',   tophat)
cv2.imshow('blackhat', blackhat)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [ ]:

```
```