

In [1]:

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

In [2]:

```
src = cv2.imread('./data/lena.jpg', cv2.IMREAD_GRAYSCALE)

dst1= cv2.boxFilter(src, ddepth=-1, ksize=(11, 11))
dst2 = cv2.boxFilter(src, ddepth=-1, ksize=(21, 21))

cv2.imshow('src', src)
cv2.imshow('dst1', dst1)
cv2.imshow('dst2', dst2)

cv2.waitKey()
cv2.destroyAllWindows()
```

In [3]:

```
src = cv2.imread('./data/lena.jpg', cv2.IMREAD_GRAYSCALE)

dst1= cv2.medianBlur(src, ksize = 7)
dst2 = cv2.blur(src, ksize=(7, 7))
dst3 = cv2.GaussianBlur(src, ksize=(7, 7), sigmaX=0.0)
dst4 = cv2.GaussianBlur(src, ksize=(7, 7), sigmaX=10.0)

cv2.imshow('src', src)
cv2.imshow('dst1', dst1)
cv2.imshow('dst2', dst2)
cv2.imshow('dst3', dst3)
cv2.imshow('dst4', dst4)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [4]:

```
src = cv2.imread('./data/lena.jpg', cv2.IMREAD_GRAYSCALE)

dst1= cv2.boxFilter(src, ddepth=-1, ksize=(11, 11))
dst2 = cv2.boxFilter(src, ddepth=-1, ksize=(21, 21))

dst3 = cv2.bilateralFilter(src, d=11, sigmaColor=10, sigmaSpace=10)
dst4 = cv2.bilateralFilter(src, d=-1, sigmaColor=10, sigmaSpace=10)

cv2.imshow('src', src)
cv2.imshow('dst1', dst1)
cv2.imshow('dst2', dst2)
cv2.imshow('dst3', dst3)
cv2.imshow('dst4', dst4)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [5]:



```
src = cv2.imread('./data/lena_gray.jpg', cv2.IMREAD_GRAYSCALE)
srcn = cv2.imread('./data/lena_gray_noise.jpg', cv2.IMREAD_GRAYSCALE)

dst1 = cv2.blur(srcn, ksize=(7, 7))
dst2 = cv2.GaussianBlur(srcn, ksize=(7, 7), sigmaX=3.0)
dst3 = cv2.bilateralFilter(srcn, d=-1, sigmaColor=5, sigmaSpace=5)
dst4 = cv2.medianBlur(srcn, ksize = 3)

cv2.imshow('src', src)
cv2.imshow('srcn', srcn)
cv2.imshow('dst1', dst1)
cv2.imshow('dst2', dst2)
cv2.imshow('dst3', dst3)
cv2.imshow('dst4', dst4)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [ ]:

