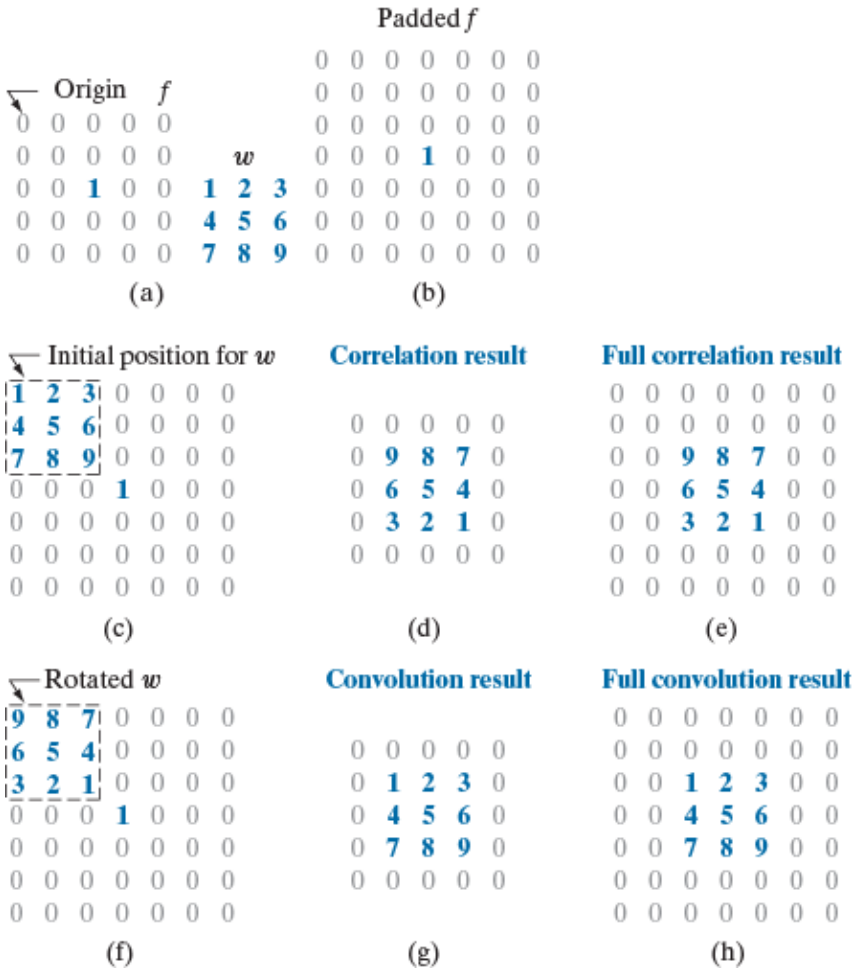


**Fig 1**

If the kernel and image are of sizes $m \times n$ and $M \times N$, respectively.

- To get the cropped result with a matrix size of M*N (the same like f)

We pad the image with a minimum of $(m- 1)/ 2$ rows of 0's at the top and bottom and $(n - 1)/ 2$ columns of 0's on the left and right.

- To get the extended result with a matrix size of $(m+M-1)*(n+N-1)$

We pad the image with a minimum of $(m-1)$ rows of 0's at the top and bottom and $(n-1)$ columns of 0's on the left and right.

More details in the digital book (DIP 4th edition) 158-159.

In the PowerPoint slide of Lecture 3, we now replace it with Fig 1 in the previous page. The original slide below will not be used in future.

# Correlation and Convolution (2D)