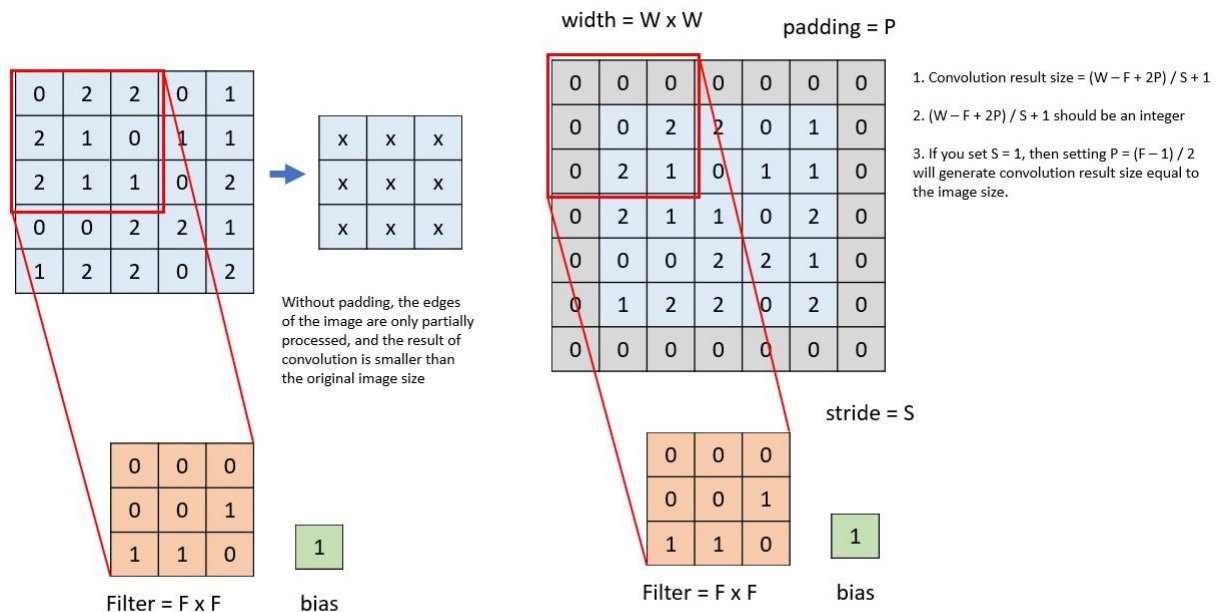**Padding:** When CNN processes an image padding is needed. Because padding extends the area of the image information and it helps CNN to accurately analyze the image.

Without padding, the edges of the image are only partially processed, and the result of convolution is smaller than the original image size

width = W x W   padding = P

1. Convolution result size = (W − F + 2P) / S + 1

2. (W − F + 2P) / S + 1 should be an integer

3. If you set S = 1, then setting P = (F − 1) / 2 will generate convolution result size equal to the image size.

stride = S

Filter = F x F   bias

There are two types of padding:

- Valid Padding
- Same Padding

Valid Padding: In valid padding no "0" is added. Input and output stays the way it is. Valid padding output size is smaller than same padding. Valid padding depends on kernel size, strides, etc.

Same Padding: In same padding "0" surrounds the input. After getting the output; "0" is added and make the output same size as input. Same padding depends on the input size.