Exercises

1. Implement a function that receives an image and a kernel as parameters, and returns the input image filtered using the input kernel. Consider that the image is 0 outside its bounds.

2. Use the function implemented in the previous exercise to filter an image of lenna:

   - With the box filters of orders 3, 5, 7
   - with Bartlett filters of orders 3, 5, 7
   - with Gaussian filters of order 3, 5, 7
   - with Laplacian filters of order 3, 5
   - with Highpass filters obtained from subtracting the blurred image from the original image, of order 3, 5, 7

3. Perform edge enhancement operations in a blurred image of Lenna.

4. Use NUMPY.FFT and NUMPY.IFFT to convert an image to frequency domain, and back.

5. Implement a lowpass and highpass filter in the frequency domain, and then convert back to spatial domain. Compare with the results obtained in 2.A, 2.B and 2.C (for the lowpass), and with 2.D and 2.E for the highpass. Compare also the runtimes.