Quiz 5 **Name:** _____
Oct/25/2021 **On your left:** _____
CS 280: Fall 2021 **On your right:** _____
Instructor: Lan Xu

Instructions:
Please answer the questions below. Show all your work. This is an open-book test. NO discussion/-collaboration is allowed.

Problem 1. (20 points) *Transpose Convolution*
1. Use a 5×5 transpose convolution, stride 2 and padding 1 , what is the size of the output feature map for a 5×5 input feature map.

Solution 1:
$N_{\text{out}} = (N_{\text{in}} - 1) \times \text{stride} - 2 \times \text{padding} + \text{dilation} \times (\text{kernel\_size} - 1) + 1 = 11$
Solution 2:
Let the output feature size be X by X, since the transpose convolution can be regraded as the inverse convolution, so
$N_{\text{in}} = \left\lfloor \frac{X + 2 \times \text{padding} - \text{dilation} \times (\text{kernel\_size} - 1) - 1}{\text{stride}} + 1 \right\rfloor$
$X = 11$ or 12

2. Given the following input and kernel:

1	7
4	5

input

3	2	9
4	6	1
7	5	6

kernel

Compute the transpose convolution output.(stride 2, padding 1)

Solution:

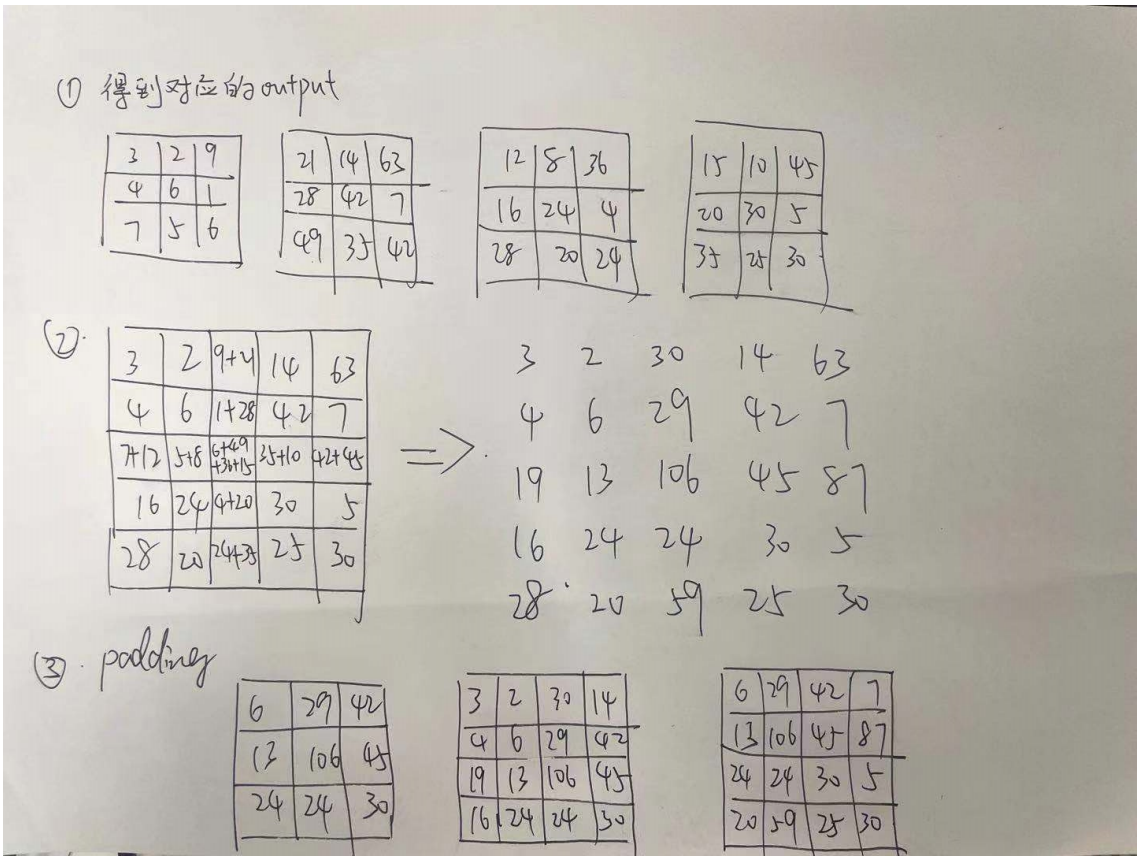

Figure 1: sol2