DSP in VLSI Design
Homework (I)

Introduction to Digital Signal Processing Systems

Deadline: Oct. 5

1. Please prove that the circuits in Page 49 and Page 50 are equivalent.

2. Consider a 2D moving average filter for an image, which can be shown as the following equation:

$$y(i, j) = \sum_{m=-1}^{1} \sum_{n=-1}^{1} x(i + m, j + n),$$

$$i, i + m \in [0, W]$$

$$j, j + n \in [0, H]$$

where x(i,j) is the input image, y(i,j) is the filtered image, and W and H are the width and height of the image, respectively. Please draw the dependence graph.

Please deliver the homework to the TA:

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除非為程式作業，作業盡量繳交紙本格式，不過要交電子檔也沒關係