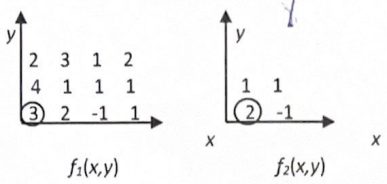
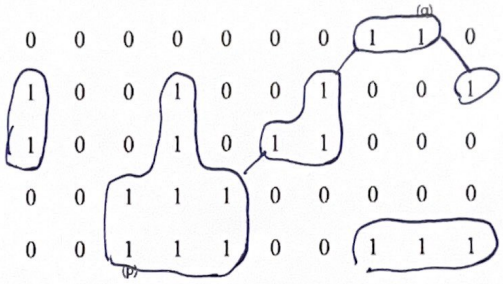
Digital Image Processing – Quiz 1 2022/10/12

(1) What are the results of convolution $f_1(x,y) * f_2(x,y)$ and correlation $f_1(x,y) \circ f_2(x,y)$? Using ◯ to represent the origin point of (0,0).



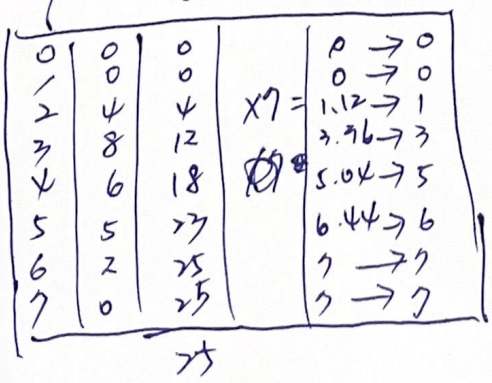
(2) If the V set is defined as {1}, (a) please decide how many connected components for the following image under 4-adjacent, 8-adjacent, and m-adjacent? (b) what is the minimum distance between (p) pixel and (q) pixel under 4-adjacent, 8-adjacent, and m-adjacent definitions?



(3) A gray level image with size of 5x5 and 8 (0~7) different intensity levels, please use histogram equalization approach to enhance the contrast, and show the newly enhanced image.

3	3	5	5	6
3	3	5	5	6
2	3	5	4	4
2	3	4	4	3
2	2	4	4	3

(4). How to design an image processing system to perform OCR (optical character recognition) tasks to recognize the following document image.



Historically, certain computer programs were written using only two digits rather than four to define the applicable year. Accordingly, the company's software may recognize a date using "00"