Answer

**thinning**

**本次作業使用python, IDE為Spyder**

Description

1. Method of Algorithms of thinning operator
   1. Yokoi connectivity operator

It is same as HW6.Thus, I will not describe anymore.

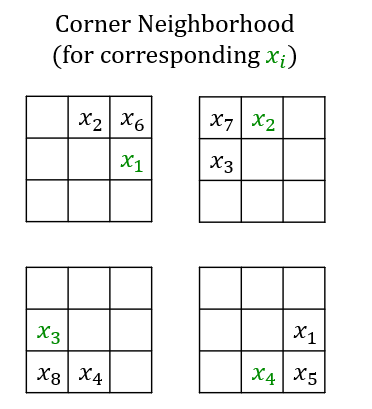
* 1. Pair Relationship operator

From the previous Yokoi array.

Let state= (**Yokoi number =’1’at least one of Yokoi number neighbor =’1’**)

If the state condition established, output 1, otherwise=2

* 1. Connected Shrink operator

for 4-connectivity

**Input** : A+B

**Let A=**operating of f(h())in every pixel of (original symbolic image)

**Let B=**output of pair relationship

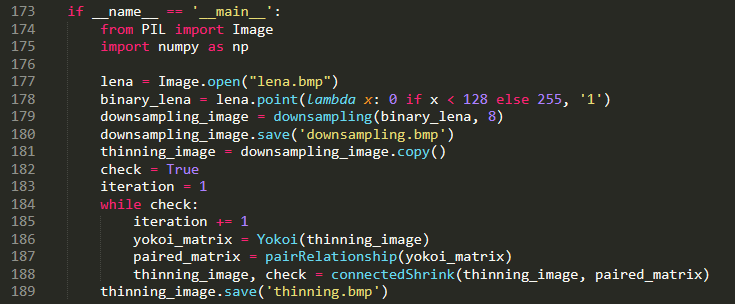
If the pixel in A =1 B = 1, then output pixel =0, which means delete

**Repeat step1, step2, step3 until the last output never changed**

1. Source Code Description

**主程式:**

先做binary ，再做downsample，再做 thinning(Yokoi+pairRelationship +connectedShrink )

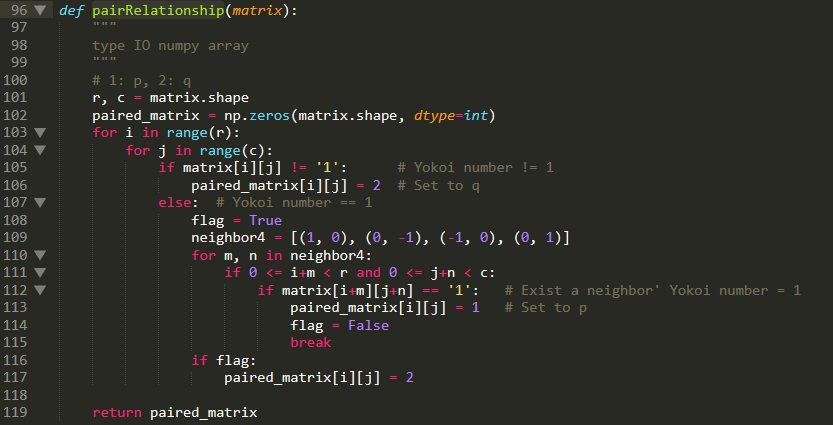


**Yokoi:**上次作業做過，不再重新說明

**pairRelationship:**

**如果yokoi matrix 的pixel 不等於’1’，output2，如果yokoi =’1’則4-connected也必須等於1**

**才會output=1，否則一律標為2**



**connectedShrink:**

**如果yokoi 是1，並且經過計算的f(h(原圖))也等於1則將output=0，並flag=1，繼續重複流程**

