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Code:

根據投影片上 yokoi 的 4 連通方式計算出 kernel 內需要是什麼值，沒有使用 padding 的方式，取而代之的是要分 case 計算，最後再把 pixel 依序代入 h function 計算出 a1~a4，最後就可以算出所求，並使用 showText 在 stdout print 出結果。

```
9  def h(b, c, d, e):
10     if(b == c and b == d and b == e):
11         return 'r'
12     elif(b == c and (b != d or b != e)):
13         return 'q'
14     return 's'
15
```

```
38     for i in range(row):
39         for j in range(col):
40             if DS_lena[i][j] != 0:
41                 if i == 0:
42                     if j == 0:
43                         x7, x2, x6 = 0, 0, 0
44                         x3, x0, x1 = 0, DS_lena[i][j], DS_lena[i][j+1]
45                         x8, x4, x5 = 0, DS_lena[i+1][j], DS_lena[i+1][j+1]
46                     elif j == col - 1:
47                         x7, x2, x6 = 0, 0, 0
48                         x3, x0, x1 = DS_lena[i][j-1], DS_lena[i][j], 0
49                         x8, x4, x5 = DS_lena[i+1][j-1], DS_lena[i+1][j], 0
50                     else:
51                         x7, x2, x6 = 0, 0, 0
52                         x3, x0, x1 = DS_lena[i][j-1], DS_lena[i][j], DS_lena[i][j+1]
53                         x8, x4, x5 = DS_lena[i+1][j-1], DS_lena[i+1][j], DS_lena[i+1][j+1]
54                 elif i == row - 1:
55                     if j == 0:
56                         x7, x2, x6 = 0, DS_lena[i-1][j], DS_lena[i-1][j+1]
57                         x3, x0, x1 = 0, DS_lena[i][j], DS_lena[i][j+1]
58                         x8, x4, x5 = 0, 0, 0
59                     elif j == col - 1:
60                         x7, x2, x6 = DS_lena[i-1][j-1], DS_lena[i-1][j], 0
61                         x3, x0, x1 = DS_lena[i][j-1], DS_lena[i][j], 0
62                         x8, x4, x5 = 0, 0, 0
63                     else:
64                         x7, x2, x6 = DS_lena[i-1][j-1], DS_lena[i-1][j], DS_lena[i-1][j+1]
```

```

64         x7, x2, x6 = DS_lena[i-1][j-1], DS_lena[i-1][j], DS_lena[i-1][j+1]
65         x3, x0, x1 = DS_lena[i][j-1], DS_lena[i][j], DS_lena[i][j+1]
66         x8, x4, x5 = 0, 0, 0
67     else:
68         if j == 0:
69             x7, x2, x6 = 0, DS_lena[i-1][j], DS_lena[i-1][j+1]
70             x3, x0, x1 = 0, DS_lena[i][j], DS_lena[i][j+1]
71             x8, x4, x5 = 0, DS_lena[i+1][j], DS_lena[i+1][j+1]
72         elif j == col - 1:
73             x7, x2, x6 = DS_lena[i-1][j-1], DS_lena[i-1][j], 0
74             x3, x0, x1 = DS_lena[i][j-1], DS_lena[i][j], 0
75             x8, x4, x5 = DS_lena[i+1][j-1], DS_lena[i+1][j], 0
76         else:
77             x7, x2, x6 = DS_lena[i-1][j-1], DS_lena[i-1][j], DS_lena[i-1][j+1]
78             x3, x0, x1 = DS_lena[i][j-1], DS_lena[i][j], DS_lena[i][j+1]
79             x8, x4, x5 = DS_lena[i+1][j-1], DS_lena[i+1][j], DS_lena[i+1][j+1]
80
81         a1 = h(x0, x1, x6, x2)
82         a2 = h(x0, x2, x7, x3)
83         a3 = h(x0, x3, x8, x4)
84         a4 = h(x0, x4, x5, x1)
85         alist = [a1, a2, a3, a4]
86
87         if alist.count('r') == 4:
88             yokoi_lena[i][j] = 5
89         else:
90             yokoi_lena[i][j] = alist.count('q')
91     else:
92         yokoi_lena[i][j] = 0
93     showText(yokoi_lena)

```

Result:

複製上記事本後截圖。