(a)

(i)

15 : ob 1111

3 : ob 0011

7 : ob 0111

14 : ob 1110

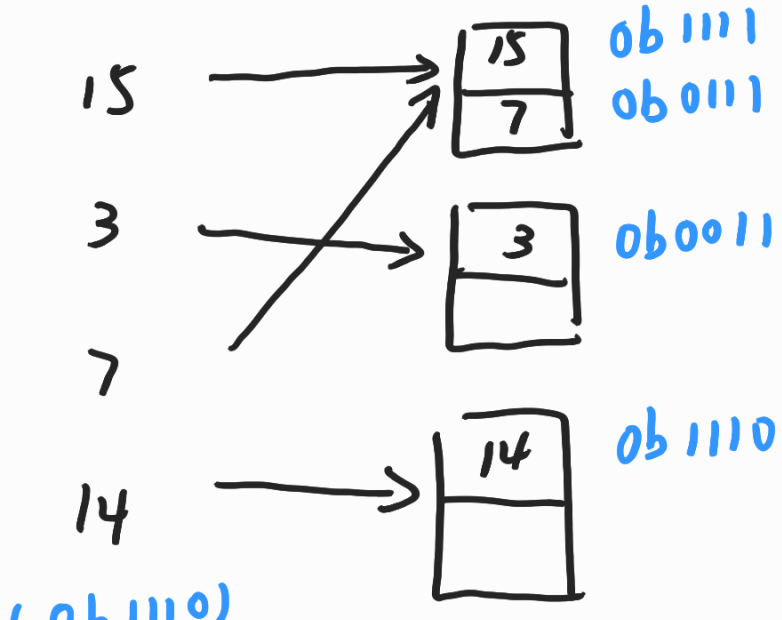
注意题干 g 使用 lowest bit.

g=1 , 15, 3, 7 ⇒ 同一 bucket. 溢出 (X)

g=2 , 15, 3, 7 ⇒ 仍同一个 bucket > 2 (X)

Answer : Global g=3

(ii)



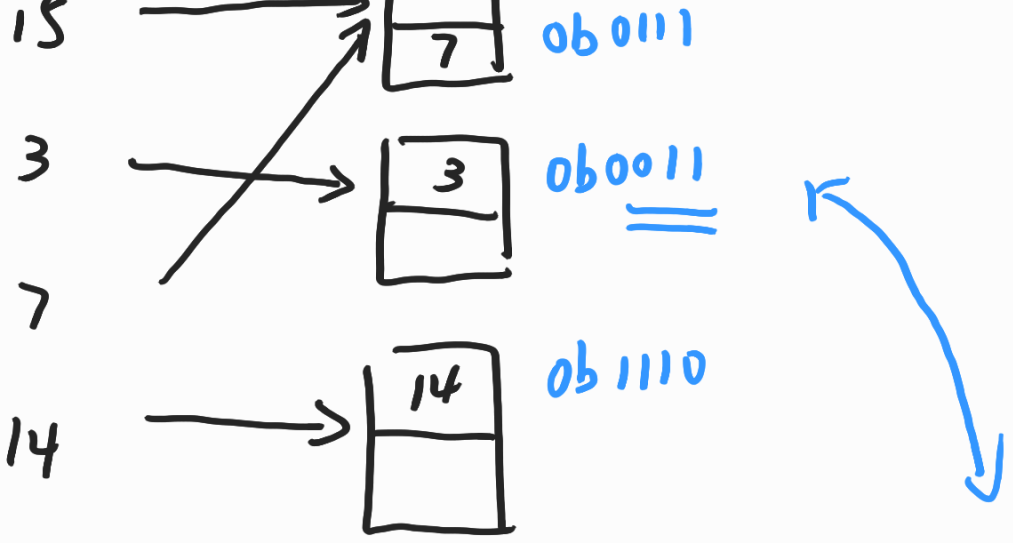
(ob 1110)

Local g = 1

需要看 local g 个 bit 找到该 bucket. (lowest)

Answer : local g = 1

(iii)



需要看最低位 3 bit 才可定位到

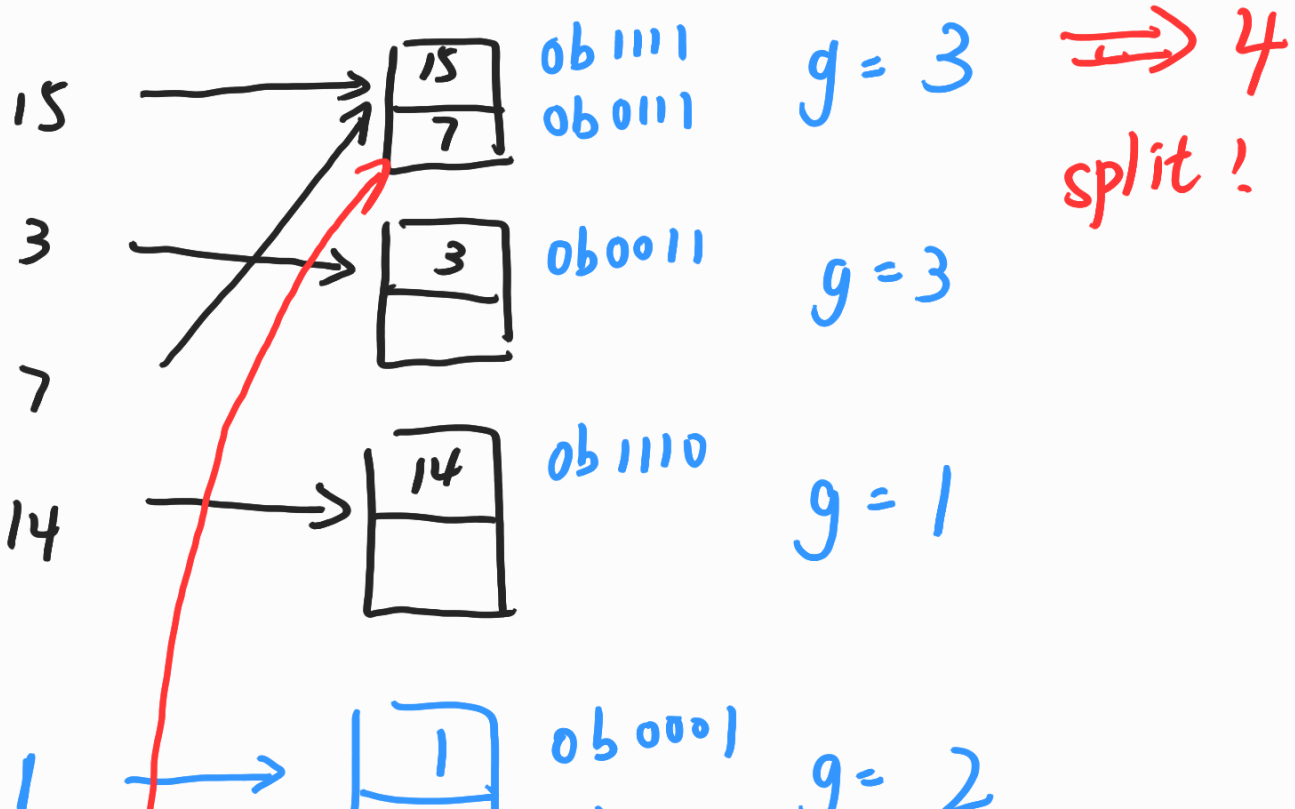
该 bucket

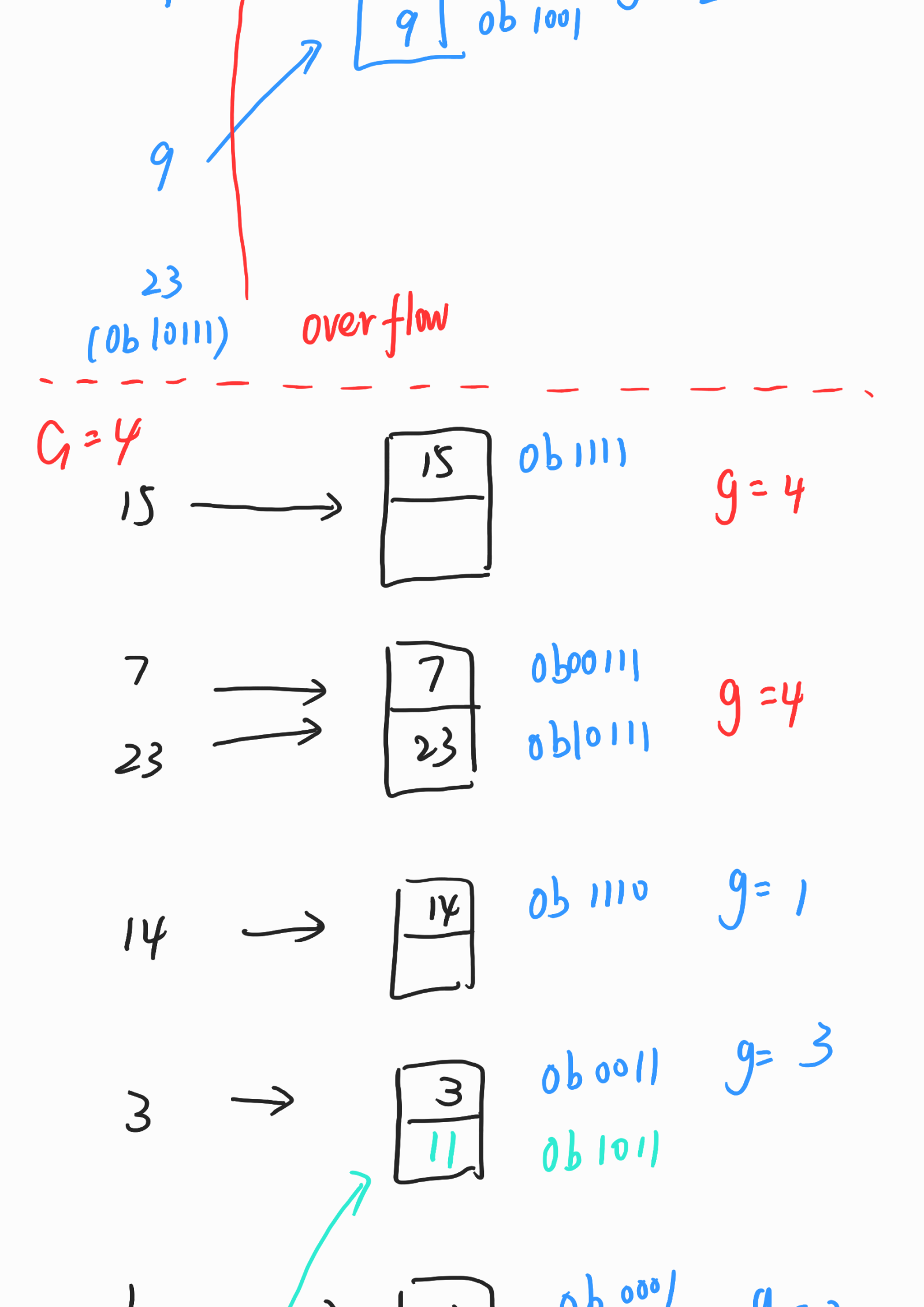
Answer : local $g = 3$

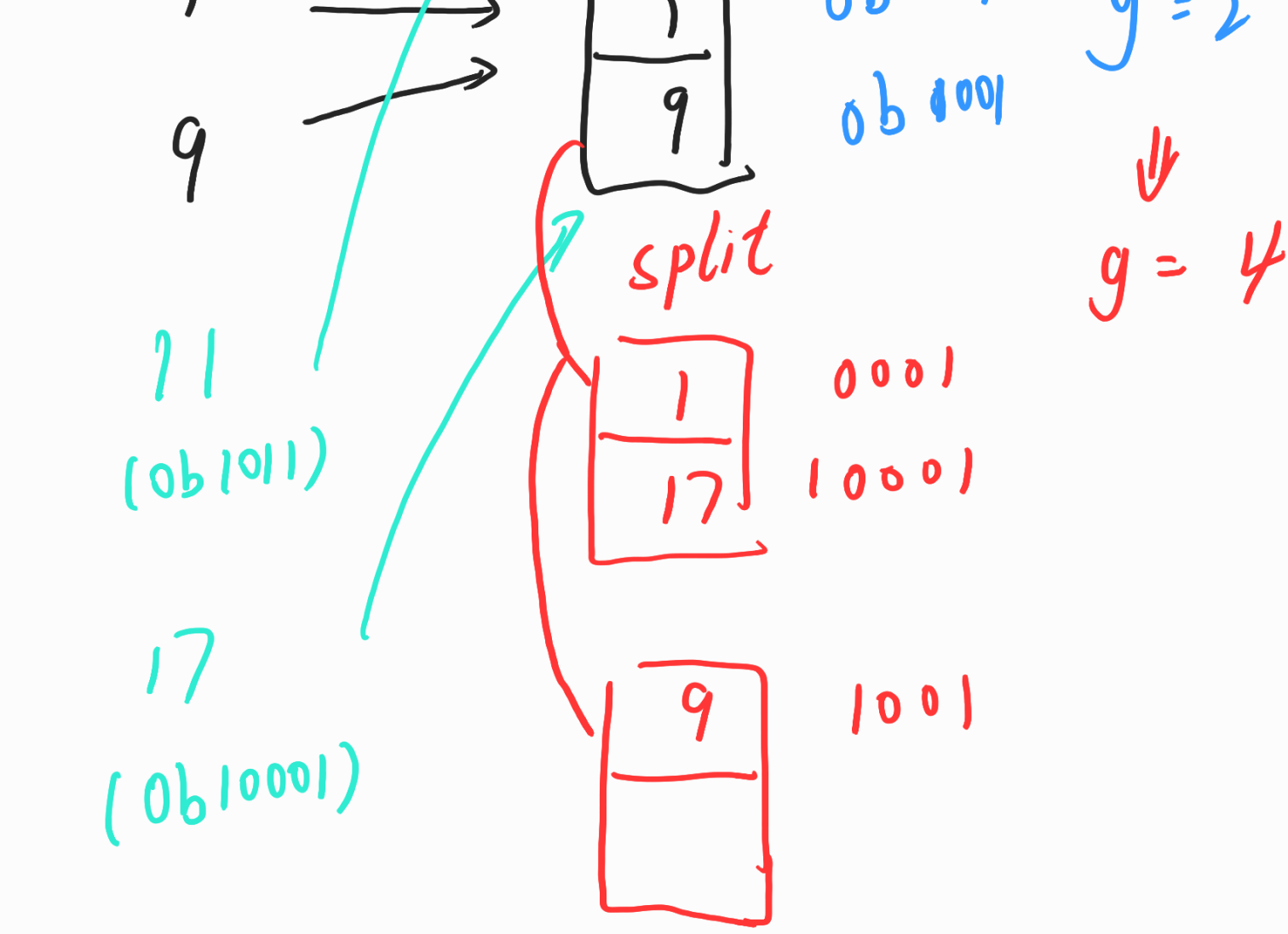
(b)

insert 1, 9, 23, 11, 17

G=3




9
0b 1001
9
23
(0b 10111)
overflow
G=4
15
15
0b 1111
g=4
7
23
7
23
0b0111
0b1011
g=4
14
14
0b 1110
g=1
3
3
11
0b 0011
0b 1011
g=3

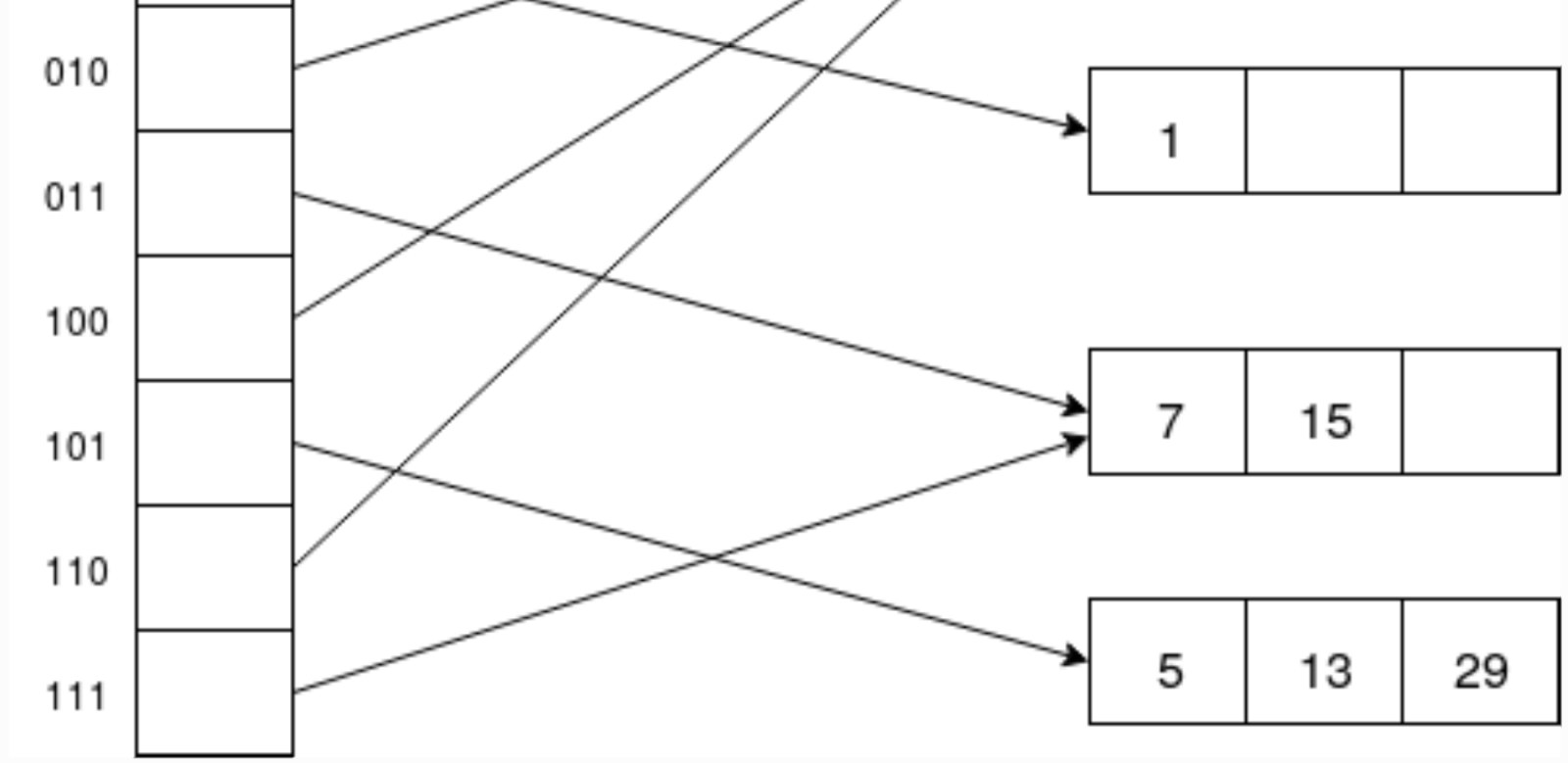


Answer : 17

(iii)

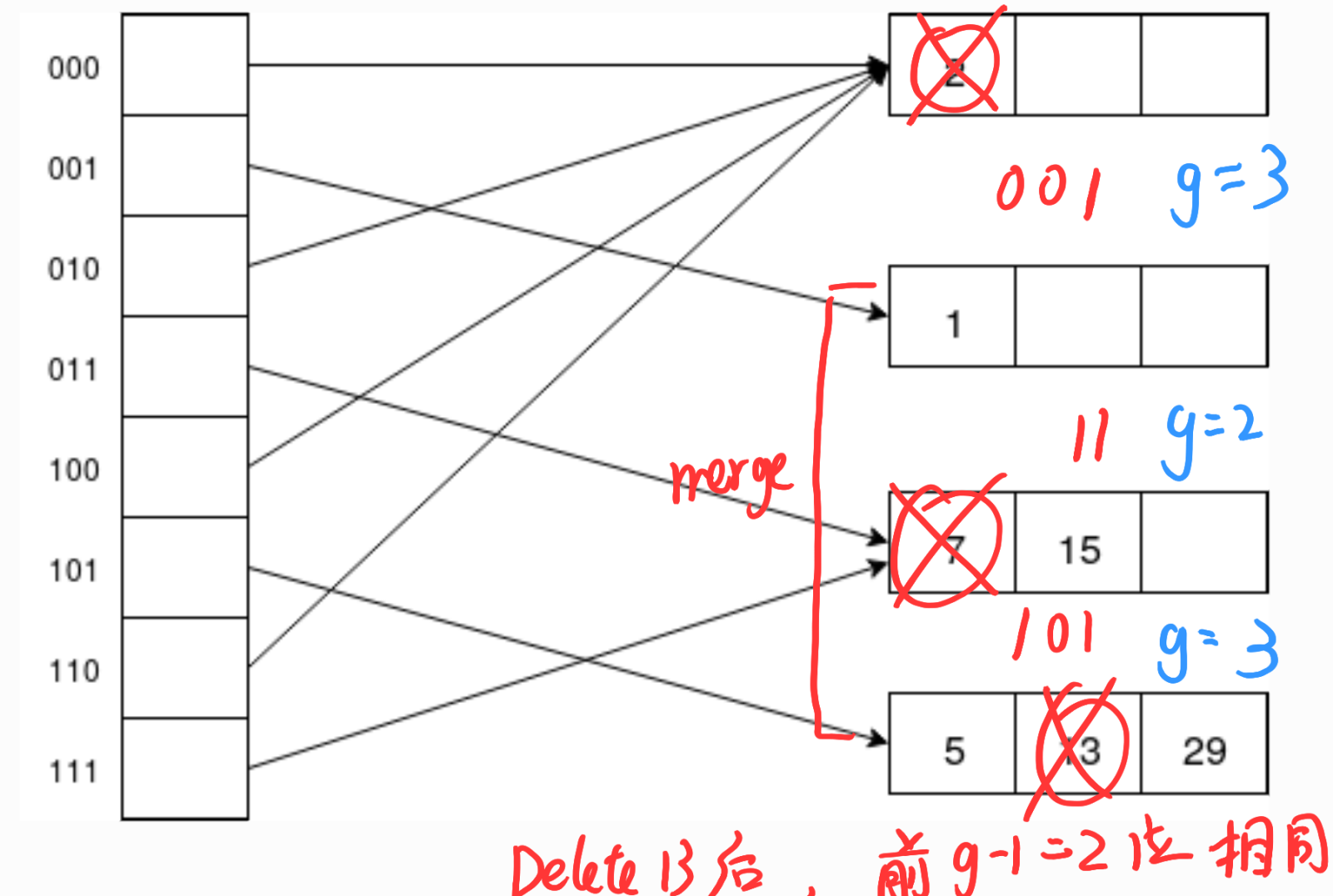
Answer : 由 (ii) 可得 23

(c)



delete 2 7 13 15 29

(i) $G_1=3$



0 g=1

001 g=3

11 g=2

101 g=3

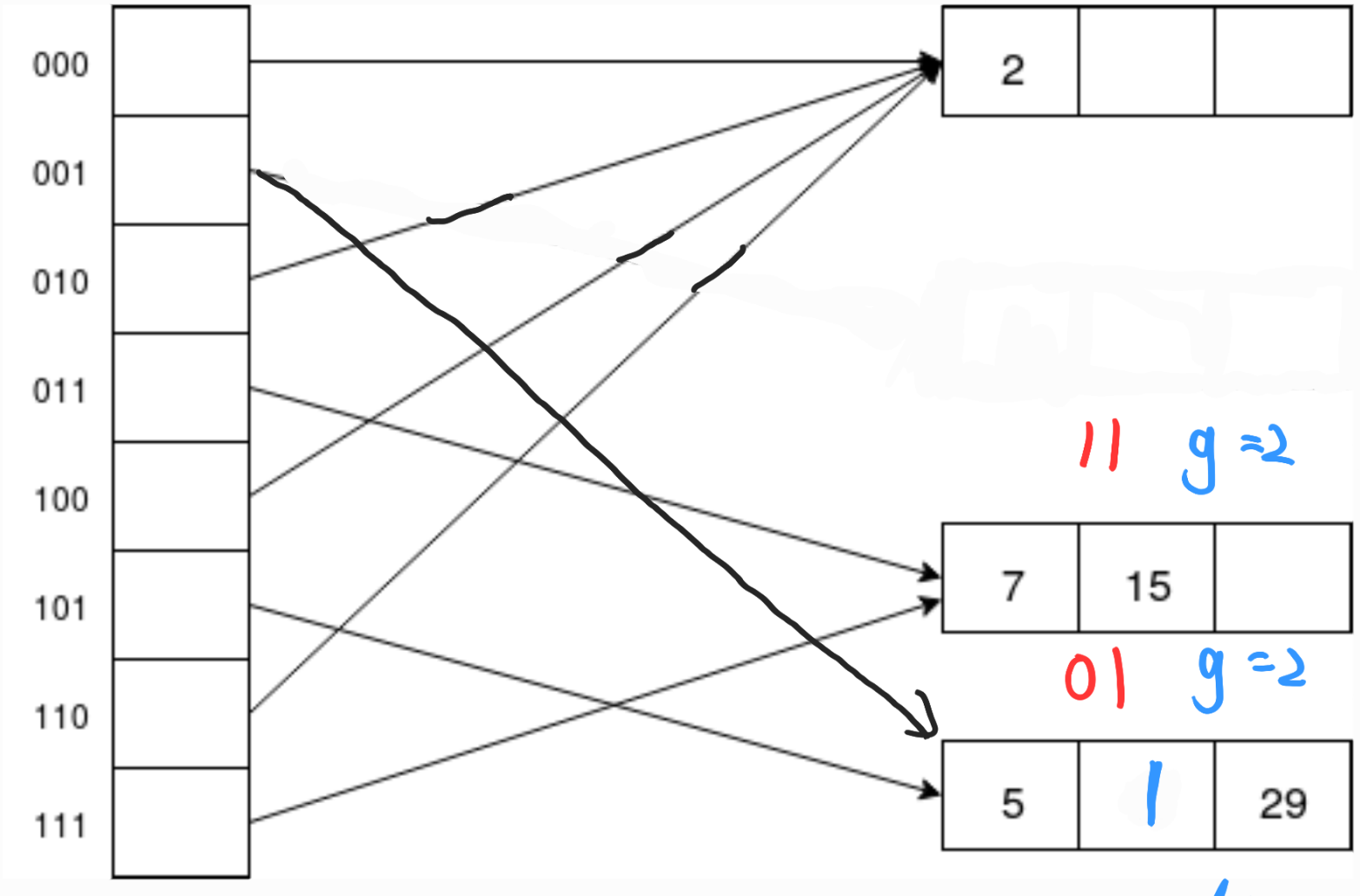
Delete 13后，前 g-1=2 比相同

且 2 bucket 元素个
数 = 3 ≤ 3

original $G_1 = 3$

$G_1 = 2$

merge



(merged)

Answer: (i) (ii) 均为 13.