

1.18 Given an array $A = a_1 a_2 \dots a_n$ with an element a^* occurring more than $n/2$ times. If we remove two elements a_i and a_j that are non-equivalent from A , a^* is still a majority ①

count = 1

candidate = $a[0]$

for $i = 1$ to n :

if count = 0:

candidate = $a[i]$

count = 1

else if equivalent($a[i]$, candidate):

count += 1

else

count -= 1

return candidate

- check if candidate appears more than $n/2$ times

① Suppose that x does not appear in the first two elements then it must appear $n/2$ times in the remaining $n-2$ elements, x will appear more than $\frac{n-2}{2}$. Then $x = A[1]$ then x must appear more than $\frac{n}{2} - 1 = \frac{n-2}{2}$ times. ① satisfy.

$$O(n) + O(n) = O(n)$$