Can a group has 2 “celebrities” ?? -- .> NO

Suppose the opposite, call that A and B;

By definition of celebrity, A knows B. A is a celebrity --- > A doesn’t know B.

Given a group G & a candidate, is C a celebrity.

For all x (belongs to ) (G – { epsilon} )，

{

if x doesn’t know C, return false;

if c knows x, return false;

}

Return true;

For all c (which belongs to G)

{

if c is a celebrity. //2n

Return true;

}

Return false;

If n == |G|, how many compares?

L 🡨 copy of G

While |L| > 1

{

Let a, b be arbitrary distinct elements of L;

If a knows b

Remove a from L;

Else

Remove b from L;

}

// n – 1 so far

C 🡨 sole element

If c is celebrity // 2n – 2 = 2(n – 1);

Return true;

Else

Return false;

Growth rate not exact estimate; (how you react to larger input cases);

“Write only memory”.

O(n): linear. 2\* data 🡪 2\*time;

Max = A1; // one operation

for i = 2 to n: //(almost n iterations)

If max < Ai

Max = Ai;

Return max;

# of ops is a linear function of array size n; 🡪 O(n)

O(log n) 🡪 2x data ——》 +1 operation;

O(n ^ k) 🡪 polynomial (If K constant)

O(2 ^ n) 🡪 +1 data, 2x as long time;

Hypothetical:

F(n) = n^2, n <= 100;

100\* n, n > 100;

Efficient

Correct.