

Pilots SPOT \rightarrow

$$n \rightarrow \text{even}$$

Captain \longrightarrow

Assisten

Salary of youngest
first

age of Captain $>$ age of assistant

for a plans crew

$\int^{n/2}$ plane
cross

→ for pilot at id i → he/she can never become a captain (because we won't be able to find a younger assistant)

→ for any id j → if from 0 to $j-1$ we got equal no. of ass & cap then pilot at j will be ass always

→ if every pilot has 2 choices → let's take
both of them. (Subset Sum)

[① pick as assistant
② pick as captain]

→ if i already $\frac{1}{2}$ assistant then rest all will be
captains

$f(a, c, i)$

$$\left\{ \begin{array}{l} \text{if } (i == n) \rightarrow \underline{\underline{\text{ret } 0}} \\ \text{if } (a == n/2) \\ \quad f(a, c+1, i+1) + \text{cap}[i] \\ \text{if } (a == c) \\ \quad f(a+1, c, i+1) + \text{ass}[i] \\ \text{else} \\ \quad \min(f(a+1, c, i+1) + \text{ass}[i], \\ \quad \quad f(a, c+1, i+1) + \text{cap}[i]) \end{array} \right.$$

$$x = a - c$$



$$f(x, i) = \quad x = -0$$

$$f(1, i+1) + \text{ass}[i]$$

$$x = \frac{1}{2}$$

$$f(x, i+1) + \text{cap}[i]$$

else

$$\min \left(f(x-1, i+1) + \text{cap}[i], f(x+1, i+1) + \text{ass}[i] \right)$$

multiset



bitwise xor

ra

↓
a set with repeated elements

$$2 \wedge 2 = 0$$

$$2 \wedge 2 \wedge 2 = \underline{\underline{2}}$$

$\{1, 2, 2, 3, 5, 2, 2\}$

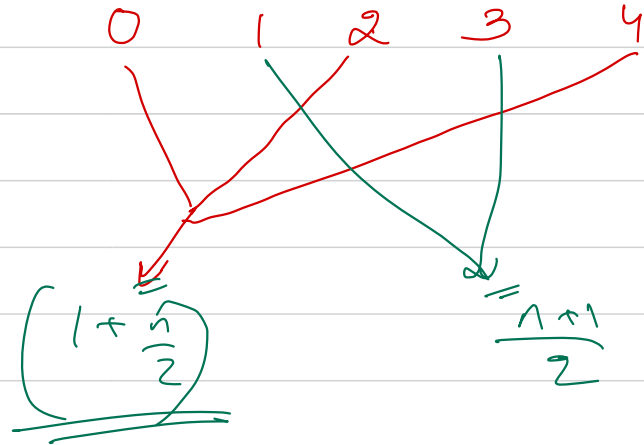
$2 \rightarrow 4$

Bitwise xor

\downarrow
 $\{1, 3, 5, 2, 2\} \rightarrow \leftarrow \text{same}$

$\{1, 3, 5, 2, 2, 2, 2\} \rightarrow \hookrightarrow$

no. of accuses



df



unique
elements

2¹² → 4096

4500

→ 12 - 13 bit

($a \wedge b \wedge c \dots$)

→

13 bit

2¹³

bit wise xor at max

8192

4096
2

8192

$dp[i][j] \Rightarrow$

all the element
how many sets
until bit twice
xor as j

$$\left\{ \begin{array}{l} \underline{\underline{dp[i-1][j] \times \binom{1+n}{2}}} \quad \underline{\underline{\text{not pick}}} \\ + \\ \underline{\underline{dp[i-1][j \wedge a[i]] \times \binom{n+1}{2}}} \quad \underline{\underline{\text{pick}}} \end{array} \right.$$

$a[i]$ \wedge (xor till prev elem) $= j$

$$a \wedge b = c$$

$$b = c \wedge a$$

$$dp[n][j]$$

Prime sieve

$$H = [1 \rightarrow 8192]$$

prime

$$dp[n][j]$$

$$10 \times 8192 \times 1000 \leq 10^8$$

for all x

$$0, 1, 2, 3, 4, \dots, x$$

$$y = y = y = y \dots$$

$$\underline{a^0 a = 0}$$

$$\underline{\frac{x+1}{2}}$$

$$1 + \frac{x}{2}$$

b



1

