$a_1 \ldots a_n$

n

%on

0 1 ..... n-1

V_1 V_2

$\times$ $x+1$

4

0 1 2 3

1 3

n-1

5

0 1 2 3 4

$a \ldots a_{nc}$

$\sum a_i = n$

$LCM(a_1, \ldots a_c) \le \frac{n}{2}$

$b+3$

$a + b + c = n$

$LCM(a, b, c) \le \frac{n}{2}$

if $n\%3 == 0$

Take $n/3$ 3 times

if $n\%4 == 0$

$\frac{n}{2}, \frac{n}{4}, \frac{n}{4}$

$n \nmid 3$ $n \nmid 4$

5 7 10

2.5

if $n\%2 = 1$

$1, \frac{n-1}{2}, \frac{n+1}{2}$ $\quad lcm = \frac{n-1}{2} < \frac{n}{2}$ ✓

if $n\%2 = 0$

.) if $n\%4 = 0$

$\frac{n}{2}, \frac{n}{4}, \frac{n}{4}$ ✓

.) if $n\%3 = 0$

$\frac{n}{2}, \frac{n}{3}, \frac{n}{3}$

.) $n|2$ $n\nmid 4$ $n\nmid 3$

$n = 2^{k}$. $k > \ldots$

$n = 10 = 2 \cdot 5$

2 4 5

8 4 2 1

1 1 1

1 0 0

$n = 2^{k+1} * 3$

$n\%4 = 0$!

2^{k-1}

2^{k-1}

3

$n/3$ $n/3$ $n/3$

$n = 14$

$\lfloor \frac{n}{4} \rfloor * 2$ $\lfloor \frac{n}{4} \rfloor * 2$ 2

6 6 2

$n = 2 \cdot 11$

$n = 22$

10 10 2

$\lfloor \frac{n}{4} \rfloor * 2, \lfloor \frac{n}{4} \rfloor * 2, 2$

---

6 4

2 2 1 1

---

8 5

2 2 2 2 1

if $n\%k == 0$

$\frac{n}{k}, \ldots \frac{n}{k}$ k.

if $(n-1)\%(k-1) == 0$

5 p p p p 1

$p \le \frac{n}{2}$

$a_1 \ldots a_n$

a_1 a_2 a_3 | ... (...

no a_i is a factor of p_i

i.e. for all factors different

parity of factors

6 8 1 24 8

2 3 2^3

$p^{a_1} \ldots p_n^{a_n}$ $\Rightarrow \prod p_i : [p_i \% 2 = 0]$

number

---

we can use dsup up to 20 elements ...

We have:

V_1 .. .. V_n

Minimize number of copies of any elt.

V_1 V_2 V_2 V_2 V_1 V_1

⇓

4 division points

6 2 2 8 3 1 3 6 3 3 7

8 1 1 1 1 1 1 1 1 1 1

number 6 2 2 2 1 1 3 3 3 1 7

6 conflicts

⇓

4 solved by k

solved by division

How many conflicts can we solve with grouping?

2

Find min p s.t.:

1. conflicts solved by adding into p parts

2. + k

$\ge$ conflicts

Then answer is p

We have conflicts − k

conflicts left

What's the min # flights for that?

Change one 1 1 1 1 1

DP_{ij} = best score on first i elements with j changes.

2 3 3

18 6 2 4 1

2 6 2 1 1