Sunday, 19 December 2021 12:05 PM

Q. Largest permutation after atmost k swaps

array of size → n

[1, 2, ... n]

n = 5 6x, 7x ....

[1 .. 5]

k

largest permutation k swaps

arr = [4, 5, 2, 1, 3]

k = 3

n = 6

6

MSD LSB

[1 — 5] n = 5

xx

n	n-1	n-2	.....

first N natural no.

We already know the largest & smallest no.

n n-1 n-2 ...

Hashmap n

Key, value

↓ ↓

ele index

k = 2

n-th n-1

~~4~~ ~~2~~ 3 1 ~~5~~

5 4

4	~~2~~
2	1
3	2
1	3
5	~~4~~

1 ~~4~~ 4

~~4~~ 2 swap (4th idx, 0th idx)

0

[5 4 3 1 2]

Q. String without AAA or BBB

Integers a b

s = a + b

'a' → a char

'b' → b char

aaa

bbb

a = 4, b = 1 a + b → 5

s = aabaa

a > b

a > b

a = ~~4~~ b = ~~1~~

~~2~~ 2

1

string → a a b a a b a a

a = ~~3~~ 2 1 b = ~~7~~ ~~6~~ 5 4 2

string b b a b b a b b a b b

Q. Given 2 same length arrays, out of them one is sorted and other is unsorted.

A → sorted

B → unsorted.

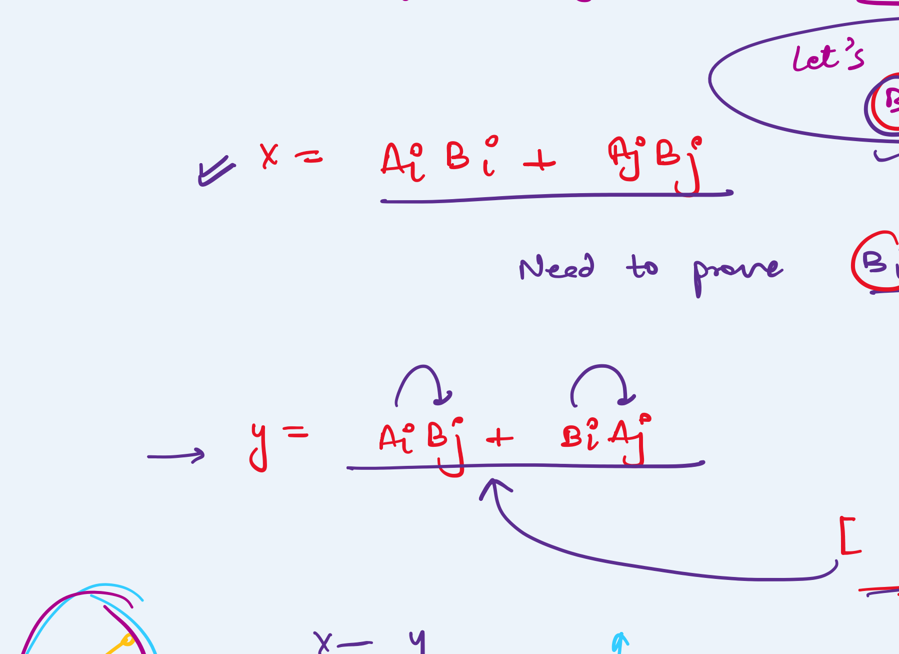
Shuffle B such that

$$\sum_{i=0}^{n-1} A_i * B_i$$ is min as possible

where n is the array length.

A = [-1, 0, 3, 4, 7]

B = [11, -2, 5, 1, 12]



A = [inc]

B = [dec]

greedy

A = [-1, 0, 3, 4, 7]

B = [12, 11, 5, 1, -2]

let A & B be of size 2.

A_i, A_j B_i, B_j

$\boxed{i < j}$

let's assume $B_i < B_j$

$x = A_iB_i + A_jB_j$

Need to prove $B_i > B_j$

$y = A_iB_j + B_iA_j$

$[B_j \ B_i]$

$x - y$

$(A_iB_i + A_jB_j) - (A_iB_j + A_jB_i)$

we know $A_i < A_j$

if $x - y \geq 0$

$\Rightarrow x > y$

if $x - y$ is -ve

$\boxed{y > x}$

If we can prove $x - y \geq 0$

our ans will correct

because $x > y$

$(A_iB_i + A_jB_j) - (A_iB_j + A_jB_i)$

$A_i(B_i - B_j) - A_j(B_i - B_j) \geq 0$

$(-2)(-3) \geq 0$

$(B_i - B_j)(A_i - A_j) \geq 0$

?? -ve -ve

$A_i < A_j$

$A_i - A_j < 0$

To make $x - y > 0$

we need $B_i - B_j$ → -ve

$B_i - B_j < 0$

$\boxed{B_i < B_j}$

Q. Ram dev (HW)