Saturday, 30 October 2021 8:21 PM

Q Given an array (unsorted) containing the first N natural no. of length N. Given a no k, find the largest permutation of the array you can build by applying k- operations (at max) on it. In an operation, you can choose any 2 elements & swap them.

Eg: {1, 2, 3, 4} , k = 1

ans → {4, 2, 3, 1}

arr. length → 6
ele → (1 . . . 6)

N	N-1	N-2 . . .	

1 — N

first N natural no.

We already know the biggest & smallest no.

N N-1 N-2 . . .

Use a hash map

(key ele) (index)

k = 3

~~4~~ ~~2~~ 3 , ~~5~~
5 4 ~~4~~
2

→ 4 → ~~0~~ ~~4~~ 1
2 → ~~1~~ 4
3 → 2
1 → 3
5 → ~~4~~ 0

5 4 3 1 2

```
for (i=0; i<n; i++)
    input(arr[i])
    map[arr[i]] = i;

}
input (k)
el = n
while (k--) {

    int curr = el;
    int curr_idx = map[curr];
    int correct_idx = n- curr;
    int el_to_be_swapped = arr[correct_idx];
    swap( arr[curr_idx], arr[correct_idx]);
    map[curr] = correct_idx

    map[el_to_be_swapped] = curr_idx;

    el--;
}
```

Q String without AAA & BBB.

Write the most common letter first.

A = 6
B = 2 → aabaabaa

A, b → no. of a's & b's left to write.

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

a	a	b	a	a	b	a	a

while (~~a + b~~ > 0) {

a > b

check for aa ← b

a > b

check for bb

→ a > b

1

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

A → sorted
B → unsorted

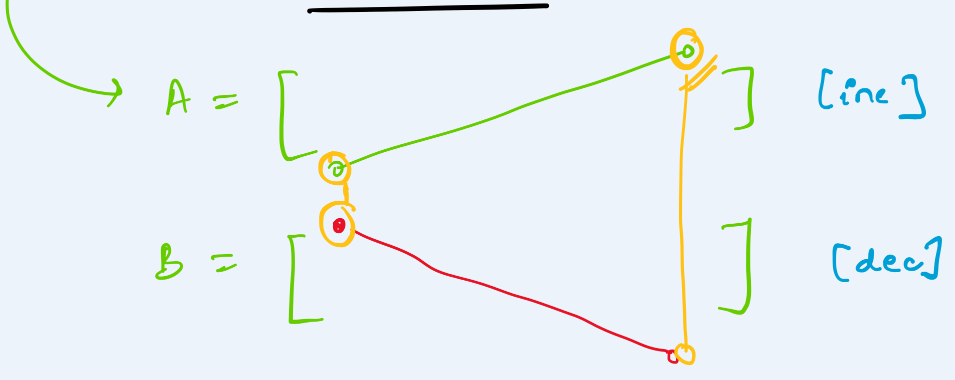
Shuffle B such that

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

where n is the array length.

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

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



let A & B be of size 2.

A_i, A_j B_i, b_j

$\boxed{i < j}$

let's assume $\boxed{B_i < B_j}$

$x = A_i \times B_i + A_j B_j$

Need to prove $\boxed{B_i > B_j}$

[2, 3]

$y = A_i \times B_j + B_i \times A_j$

x − y

$(A_i B_i + A_j B_j) - (A_i B_j + A_j B_i)$

we know $A_i \leq A_j$

If $x - y \geq 0$
$\Rightarrow x > y$

If x − y is −ve
$\Rightarrow y > x$

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

our ans was correct because $x \geq y$

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

$(B_i - B_j)(A_i - A_j)$

−ve To prove x > y

−ve

To make $x - y \geq 0$

we need $B_i - B_j$ to be also negative.

$\Rightarrow B_i - B_j < 0$

$\boxed{B_i \leq B_j}$