

Brute force

1. Find the all permutation
2. Linear search of the target permutation

Time complexity

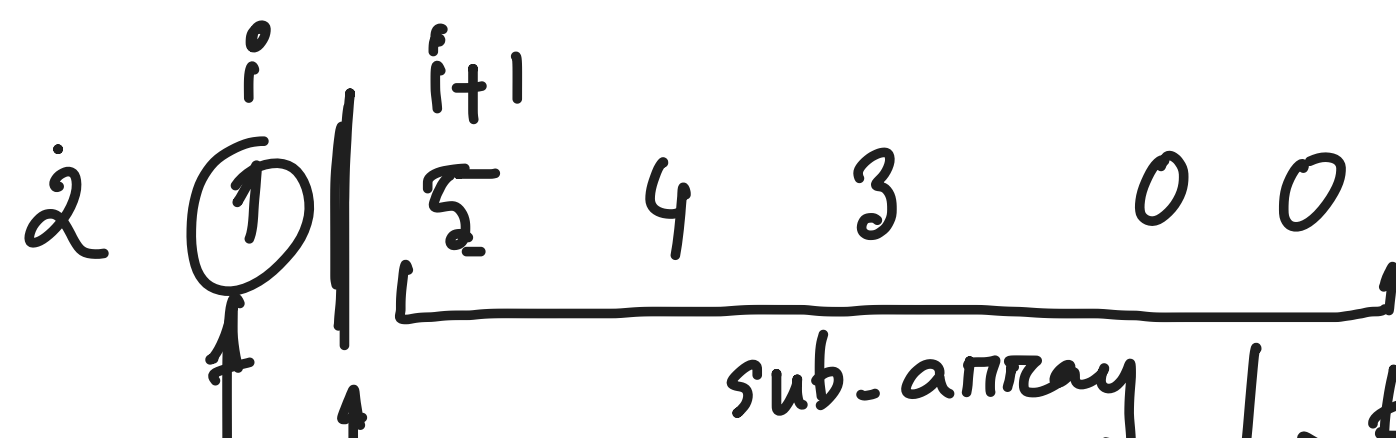
If there is N number of elements in the array

$N!$ → $N! \times N$ Extremely high
exponential complexity

Optimal solution

1. longest Prefix match
 $N[i] < N[i+1]$
2. Find $N[j] > N[i]$, but the smallest $N[j]$ among the sub-array which is greater than $N[i]$
3. Then sort the rest of the subarray in ascending order.

Finding the break-point.



→ Find the smallest $N[j]$ which is greater than $N[i]$ and swap.

→ Then sort the array

Pseudo code:

```

int ind = -1;
for i = n-2 to 0 {
    if (N[i] < N[i+1]) {
        ind = i;
    }
}
if (ind == -1) {
    reverse(N, 0, N.size()-1);
    return N;
} else {
    for i = n-1 to ind {
        if (N[i] > N[ind]) {
            swap(N[i], N[ind]);
            break;
        }
    }
    reverse(N, ind+1, n-1);
    return N;
}

```