Lec-8
06/01/25 4:31 PM

Given an integer array `nums`, rotate the array to the right by `k` steps, where `k` is non-negative.

Example 1:

```
Input: nums = [1,2,3,4,5,6,7], k = 3
Output: [5,6,7,1,2,3,4]
```

k=2

5 6 7 1 2 3 4 5

k=3

4 5 6 7 1 2 3

7 1 2 3 4 5 6

k=1 1 2 3 4 5 6 7 → 1 4

k=2 6 7 1 2 3 4 5 → 1 4 3

k=3 5 6 7 1 2 3 4 → 1 4 3

k=4 4 5 6 7 1 2 3

k=5 3 4 5 6 7 1 2

k=6 2 3 4 5 6 7 1

k=7 1 2 3 4 5 6 7

k=8 7 1 2 3 4 5 6

k=9 6 7 1 2 3 4 5

k=10 5 6 7 1 2 3 4

k=11 4 5 6 7 1 2 3

k=12 3 4 5 6 7 1 2

k=13 2 3 4 5 6 7 1

k=14 1 2 3 4 5 6 7 =

n%k

k=143 → 3

7 14 21 28 35
42 49 56 63
70 77 1191
58 105
112 119
126 133
140

7 → 143 → 3
140
3
k=k%n

x-y/N = (int)

1 2 3 4 5 6 7

5 6 7 1 2 3 4

k=k%n → 1 item

1 2 3 4 5 6 7

7 1 2 3 4 5 6 → 1 item

N=7
7-2=5

10 10 20 30 40 50 60 =
0 1 2 3 4 5 6

item=arr[0] → temp

= for(i=n-2 i>=0 i--)
arr[i+1]=arr[i]

i=5 arr[6]=arr[5]
i=4 arr[5]=arr[4]
i=3 arr[4]=arr[3]
i=2 arr[3]=arr[2]
i=1 arr[2]=arr[1]
i=0 arr[1]=arr[0]

arr[0]=temp

```
public static void Rotate(int[] arr, int k) {
    int n = arr.length;
    k = k % n;
    for (int j = 1; j <= k; j++) {
        int item = arr[n - 1];
        for (int i = n - 2; i >= 0; i--) {
            arr[i + 1] = arr[i];
        }
        arr[0] = item;
    }
}
```

N=7 k=2 acc2

i=5 arr[6]=arr[5]
i=4 arr[5]=arr[4]
i=3 arr[4]=arr[3]
i=2 arr[3]=arr[2]
i=1 arr[2]=arr[1]
i=0 arr[1]=arr[0]

k

40 20 30 40 50 60 70 → 50 60 70 10 20 30 40

50 60 70 40 30 20 10

40 30 20 10 70 60 50

50 60 70 10 20 30 40

50 60 70 40 30 20 10

N-k = 7-2=5

i=0

10 20 30 40 50 60 70

40 30 20 10 30 60 70

40 30 20 10 70 60 50

50 60 70 10 20 30 40

k=3

1 loop kelamin
5 baarin array
all element

[5, 3, 1, 2, 7, 4, 1, 6]

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

5 3 1 2 4 1 6

max

5 7 (5-2)

[5, 3, 1, 2, 7, 4, 1, 6]

left max 5 5 5 5 7 7 7 7
0 1 2 3 4 5 6 7

right max 7 7 7 7 7 6 6 6
0 1 2 3 4 5 6 7

i=0 min(L[0],R[0])-arr[0]=(5,7)-5=5
i=1 min(L[1],R[1])-arr[1]=(5,7)-3=2
i=2 min(L[2],R[2])-arr[2]=(5,7)-1=4
i=3 min(L[3],R[3])-arr[3]=(5,7)-2=3
i=4 min(L[4],R[4])-arr[4]=(7,7)-7=0
i=5 min(L[5],R[5])-arr[5]=(7,6)-4=2
i=6 min(L[6],R[6])-arr[6]=(7,6)-1=5
i=7 min(L[7],R[7])-arr[7]=(7,6)-6=6

for(i=1 i<n i++)
sum+=min(L[i-1],R[i])-arr[i]

R(n-1)=arr[n-1]

i=6 R[6]=max(R[7],arr[7])
i=5 R[5]=max(R[6],arr[6])
i=4 R[4]=max(R[5],arr[5])
i=3 R[3]=max(R[4],arr[4])
i=2 R[2]=max(R[3],arr[3])
i=1 R[1]=max(R[2],arr[2])
i=0 R[0]=max(R[1],arr[0])

[5, 3, 1, 2, 7, 4, 1, 6]

7 7 7 7 7 6 6 6
0 1 2 3 4 5 6 7

for(i=n-2 i>=0 i--)
R[i]=max(R[i+1],arr[i])

5 5 5 5 7 7 7 7
0 1 2 3 4 5 6 7

for(i=1 i<n i++)
L[i]=max(L[i-1],arr[i])

i=1 L[0]=max(L[0],arr[1])
i=2 L[1]=max(L[1],arr[2])
i=3 L[2]=max(L[2],arr[3])
i=4 L[3]=max(L[3],arr[4])
i=5 L[4]=max(L[4],arr[5])
i=6 L[5]=max(L[5],arr[6])
i=7 L[6]=max(L[6],arr[7])

2×2×2×1

2 4 3 1 5

4×3×5=60
2×2×5=20
2×4×5=40
2×4×3=24

60 20 40 24

1 2 3 4 5

1 3 6 8 24

1 3 6 8 24

1 3 6 8 24

1 3 6 8 24

10 20 30 40 50

R[4]=1
R[3]=R[3]×arr[3]
R[2]=R[3]×arr[2]
i=n-2 i>=0 i--
R[i]=R[i+1]×arr[i+1]

2 3 1 4 5
0 1 2 3 4

for(i=1 i<n i++)
L[i]=L[i-1]×arr[i-1]

L[0]=1
L[1]=L[0]×arr[0]
L[2]=L[1]×arr[1]
L[3]=L[2]×arr[2]

L[0]=1
L[1]=L[0]×arr[0]
L[2]=L[1]×arr[1]
L[3]=L[2]×arr[2]
L[4]=L[3]×arr[3]

1×60=60
1×60=60
2×30=60
6×10=60
24×2=48
48×1=48