

Max Product of Three Numbers

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arr → 1 3 4 2 7 5

max. product of three numbers → $\begin{matrix} \text{max1} \\ \text{max2} \\ \text{max3} \end{matrix}$

all number are +ve

$$\text{product} = \text{max1} * \text{max2} * \text{max3}$$

$$\text{product} = 7 * 5 * 4 = 140 \text{ Ans}$$

$\begin{matrix} \text{max1} \\ \text{max2} \\ \text{max3} \end{matrix}$ $\begin{matrix} \text{min1} \\ \text{min2} \end{matrix}$

arr → -5 -6 1 2 4 3

$$\text{product} = \text{max1} * \text{max2} * \text{max3} = 4 * 3 * 2 = 24 \text{ max}$$

$$\begin{matrix} [- * - = +ve] \\ [+ * - = -ve] \\ [- * + = -ve] \\ [+ * + = +ve] \end{matrix}$$

from three number 2 can be negative

$$= -6 * -5 * 4 = 120$$

Result

$$\text{max1} * \text{max2} * \text{max3} \text{ VS } \text{min1} * \text{min2} * \text{max3}$$

Ans

How to find max1, max2, max3, min1, min2 in single iteration.

arr \rightarrow 1 3 -3 2 -4 -6 4 0 ↑

max1 = ~~∞~~ ~~1~~ ~~3~~ 4

max2 = ~~∞~~ ~~1~~ ~~2~~ 3

max3 = ~~∞~~ ~~-3~~ ~~1~~ 2

min1 = ~~∞~~ ~~1~~ ~~-2~~ ~~-4~~ -6

min2 = ~~∞~~ ~~2~~ ~~1~~ ~~-3~~ -4

max1

4

max2

3

max3

2

min1

-6

min2

-4

max \rightarrow [max1 * max2 * max3 vs max1 * min1 * min2]

Max Chunks to make array sorted

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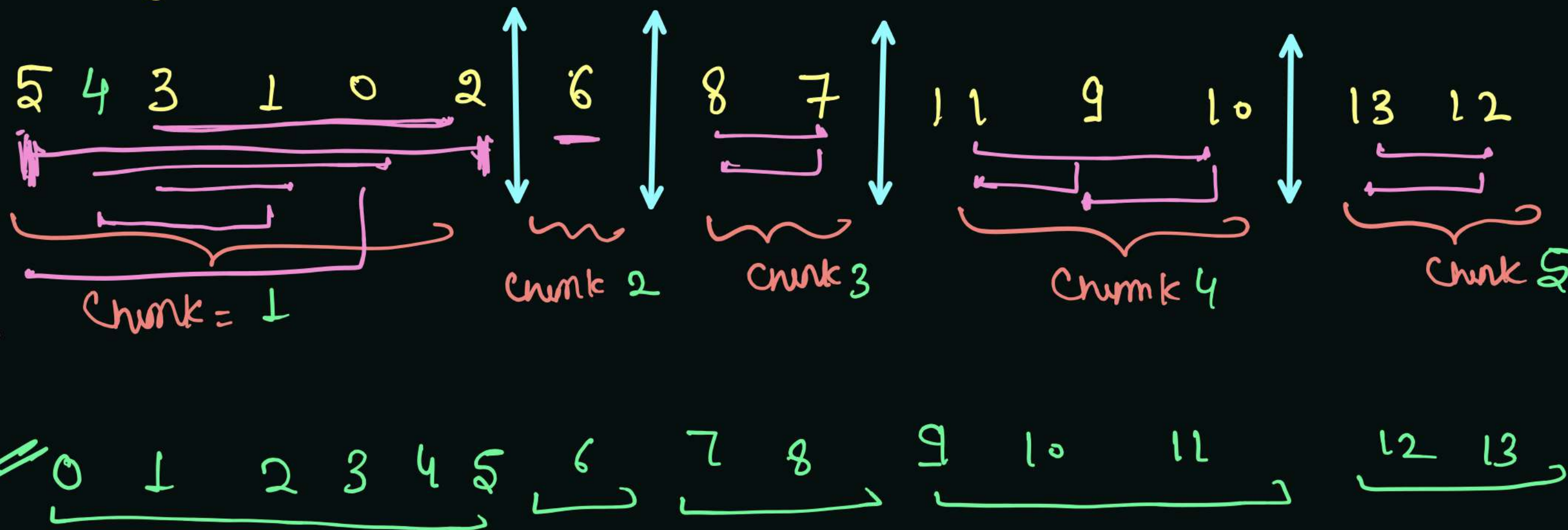
Elements of array \rightarrow 0 to length-1 Randomly arranged.

Make max partition in array so that after sorting every individual position, the whole array will be sorted. rearrangement of partition is not allowed.

array.

Impact
Chaining
technique

Sort
Individual \rightarrow
Chunks

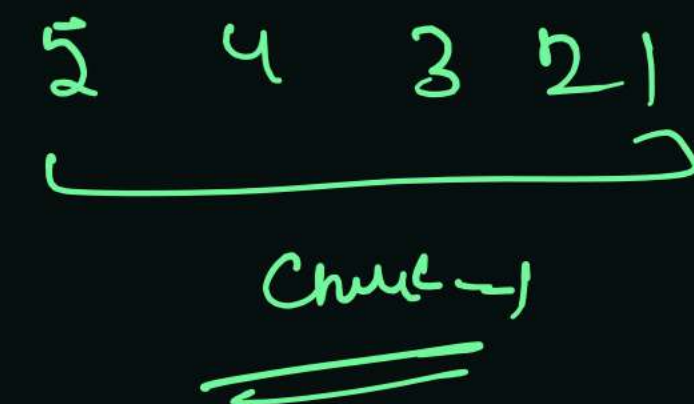


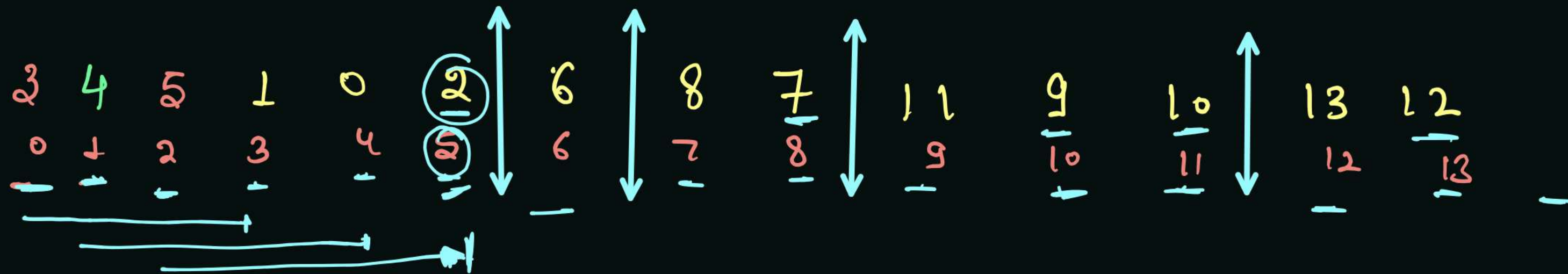
Chunk cat = 5



max. chunks = sorted = length

min chunks = Decreasing order = 1





max = ~~3~~ ~~4~~ ~~5~~ ~~6~~ ~~8~~ ~~7~~ ~~11~~ ~~9~~ ~~10~~ 13

max = i
chunk count + 1

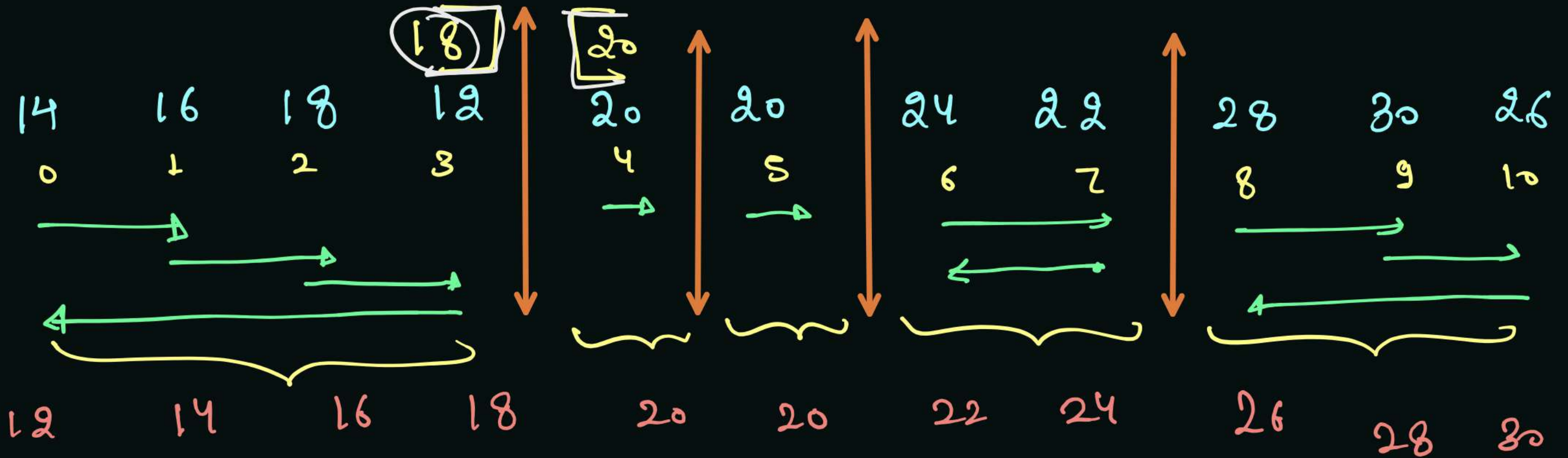
count = ~~0~~ ~~1~~ ~~2~~ ~~3~~ ~~4~~ ~~5~~ ~~6~~ ~~7~~ ~~8~~ ~~9~~ ~~10~~ ~~11~~ ~~12~~ ~~13~~

Max chunks to make array sorted 2

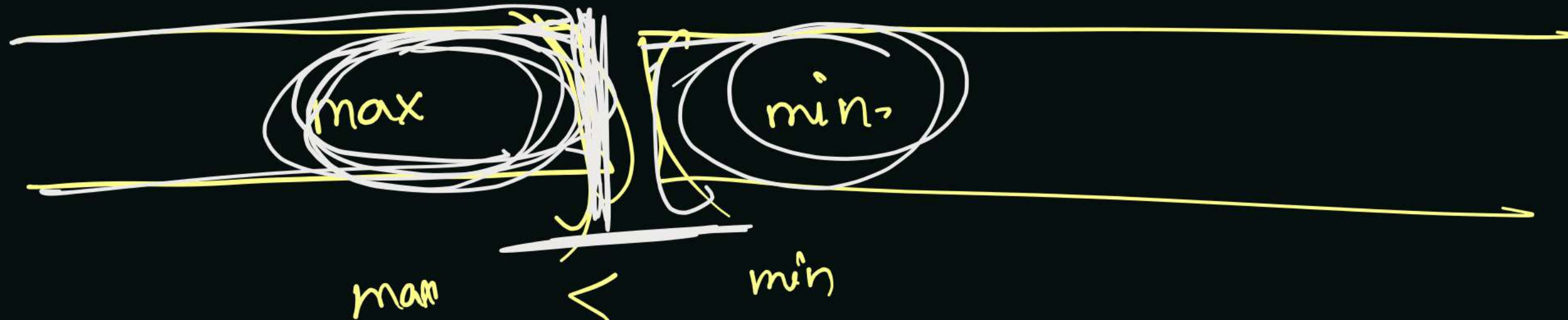
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chunk = 1

array →

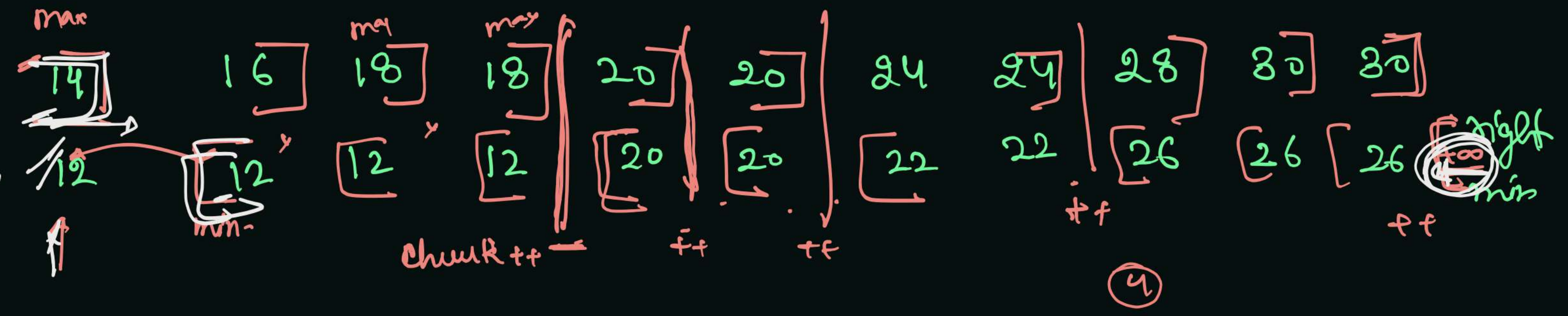


sorted →



left max

chunks = 1, initialise



Max number at least twice of others

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max 1

max 2.

$$\max 1 \geq 2 * \max 2$$

 all elements must be smaller than half

otherwise \rightarrow return \textcircled{f} .

Reverse Vowels of Strings

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String → str = "a b b e o u e d d m o o r t u e i s t e o n"

Char - array

a e o u e o o u e i e o

reverse vowels

o e i e u o o e u o e a

final output → "o b b e i e u d d m o o r t e u o s t e a n"

Result

position of vowels are swapped

"qltsabb eo edmoort ue isteonmr"

$mnrst q \cdot l pwyz bcd$
 \uparrow \uparrow
 l r

```

while (left < right) {
    while (arr[left] != vowel) {
        left++;
    }
    while (arr[right] != vowel) {
        right--;
    }
}

```

```
Swap (arr, left, right);
```

left = 1

सिद्ध-;

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