

→ $\begin{matrix} 1 & 3 & 12 \\ 0 & x & \emptyset, 3, 12 \\ x & x & x & x & x & i \\ k & k & k & k & k & \end{matrix}$

$[1, 3, 12, 0, 0]$

k = index - non-zero
 i = pickup element from 0th index to n-1

$\begin{matrix} 1 & 3 & 12 & 0 & 0 \\ 1 & 0 & 3 & 0 & 12 \\ x & x & x & x & i \\ k & k & k & k < n \\ & & & & k \end{matrix}$

$k = 0$
 $i = 0$

$0! = 0$
 $1! = 0$
 $0! = 0$
 $3! = 0$
 $12! = 0$

$k = 0$

```
for (i = 0; i < nums.length; i++) {
    if (nums[i] != 0) {
        nums[k] = nums[i];
        k++;
    }
}
```

```
while (k < nums.length) {
    nums[k] = 0;
    k++;
}
```

$\begin{matrix} 12 & 3 & 0 & 0 \\ \emptyset, 1, \emptyset, x, 12 \\ x & x & x & k & x \\ k & & & & \end{matrix}$

$\begin{matrix} 1 & 3 & 12 & 0 & 0 \\ 1 & 0 & 3 & 0 & 12 \\ x & x & x & x & i \\ k & k & k & k & \end{matrix}$

$[3, 2, 2, 3], \quad val = 3$

$$\begin{aligned} & [3, 2, 2, 3] \\ & [2, 2] \end{aligned}$$
$$\text{val} = \underline{3}$$

$\left[\frac{2}{\cancel{5}}, \frac{2}{\cancel{2}}, \left(\frac{2}{\cancel{1}}, 3 \right) \right]$
 $\frac{1}{\cancel{2}}, \frac{1}{\cancel{4}}, \frac{1}{\cancel{2}}, \frac{1}{\cancel{2}}$
 $\frac{1}{\cancel{2}}, \frac{1}{\cancel{4}}, \frac{1}{\cancel{2}}, \frac{1}{\cancel{2}}$
 $\frac{1}{\cancel{2}}, \frac{1}{\cancel{4}}, \frac{1}{\cancel{2}}, \frac{1}{\cancel{2}}$

val = 3

$$[1, 2, 3, 1]$$

$[1, 2, 2, 3] 0$

Arrays.sort(nums)

```
for (i=0; i<nums.length; i++) {
    if (nums[i] == nums[i+1]) {
        return true
    }
}
```

get even faster