

# Next Greater Element - III

## 556. Next Greater Element III

Solved

Medium Topics Companies

Given a positive integer  $n$ , find the smallest integer which has exactly the same digits existing in the integer  $n$  and is greater in value than  $n$ . If no such positive integer exists, return  $-1$ .

Note that the returned integer should fit in **32-bit integer**, if there is a valid answer but it does not fit in **32-bit integer**, return  $-1$ .

Example 1:

Input:  $n = 12$   
Output:  $21$

Example 2:

Input:  $n = 21$   
Output:  $-1$

Constraints:

- $1 \leq n \leq 2^{31} - 1$

We have to use the characters in the given  $n$ , and have to make a bigger number than the input,

If can't form  $\rightarrow$  return  $-1$

Ex:  $(9, 7, 5, 1, 3) \rightarrow (9, 7, 5, 3, 1)$   
is next biggest number

//idea-1

Iterate from  $n+1$  till you get the answer & check for every integer if occurrences of digits same or not

Suppose,  $38 \rightarrow$  is our given array ('3', '8')

Iterate from  $39$  to ...  $(83), 84$

When you get answer return it  
which is greater  $> 38$  & occurrences are same

//idea-2 (Optimal)

Let us take an example:

12 145  $\rightarrow$  12 154

12154 > 12145

If we want the next greater element of this number, we swap last 2 digits

For your info  $\Rightarrow$

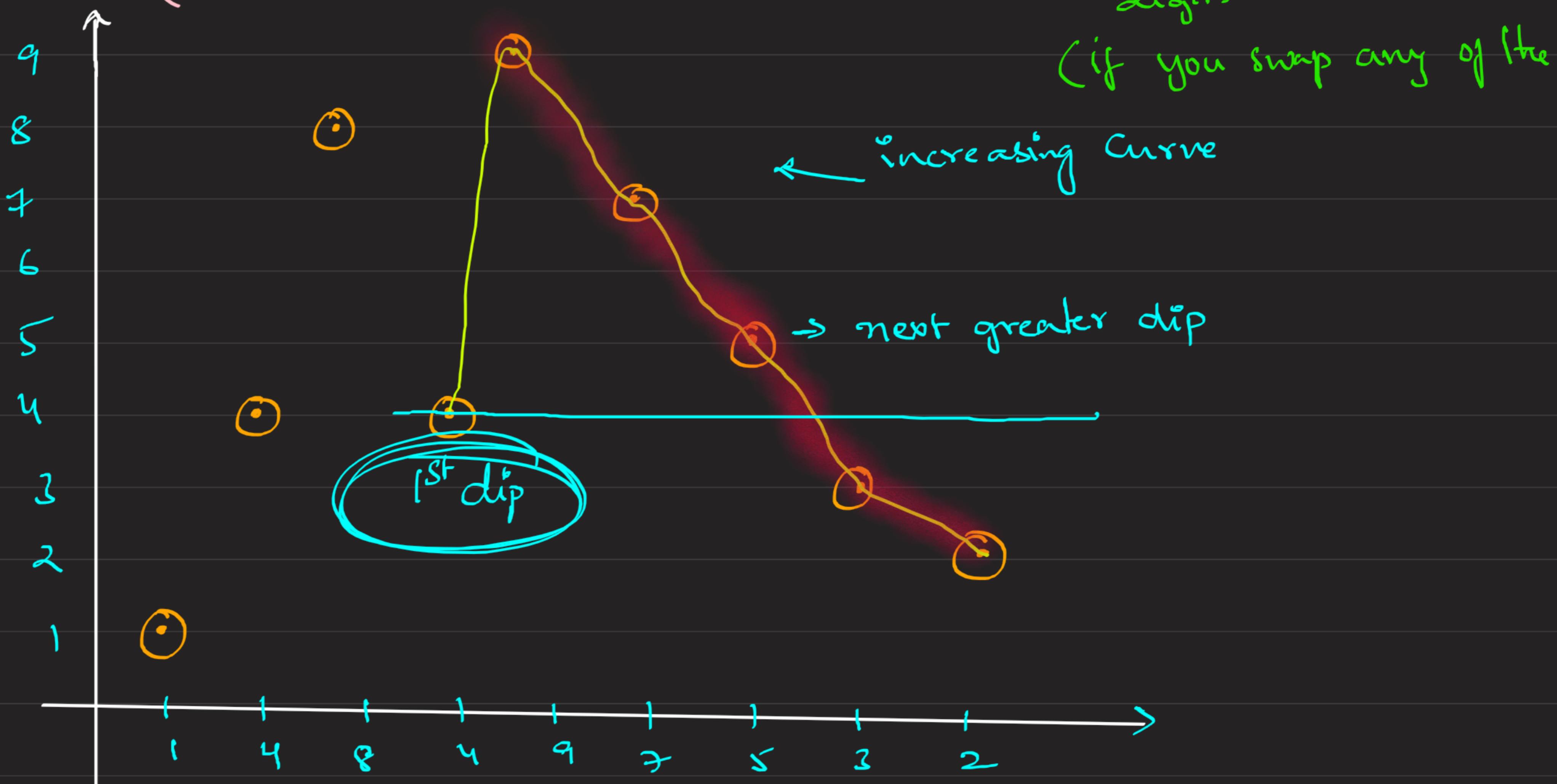
```
char arr[] = (n+"").toCharArray();
int m = arr.length;
```

$\rightarrow$  Convert give integer  $n$  to char array

An observation here is,

As we want to do minimum increment, we target smaller place value  
and swap them

Ex: (1, 4, 8, 4, 9, 7, 5, 3, 2)



\* So, the most important point is  $\Rightarrow$  look for 1<sup>st</sup> dip & swap it with the next greater number in right side portion

Ex: (1, 4, 8, 4, 9, 7, 5, 3, 2)  
first dip

look for next greater element for 4 in right portion

Ex: 1 4 8 4 9 7 5 3 2

↑

$9 > 4 \checkmark$   
So, 9 may be our answer

$7 < 9 \& 7 > 4$   
So, 7 might be our best answer

$5 < 7 \& 5 > 4$   
 $\rightarrow$  same 5 also

swap(4, 5)

1 4 8 5 9 7 4 3 2  
Sort this portion after swap

Our ans will be ready

1 4 8 4 9 7 5 3 2

↑

1 4 8 4 9 7 5 3 2

↑

1 4 8 4 9 7 5 3 2

↑

$3 < 4$ , so before 3, which is 5 is next greater element than up