$$3 \quad 2 \quad 5 \quad 7 \quad 4$$

Step:1 $\quad k_{i-1} = 5 \atop k_i = 7$ $\Big\}$ $\boxed{i = 4}$

Step:2 $\quad k_j = 7, \quad j = 4$

Step:3 : Swap k_{i-1} and k_j (

$$\underline{3 \ 2 \ 7 \ 5 \ 4} \atop i = 1 \ 2 \ 3 \ 4 \ 5$$

Step:4

Reverse all the element in $k_{(i)} \dots k_n$.

$$k_4, k_5$$

$$32754 \rightarrow 32745$$
$$\quad\quad\quad \downarrow \ \downarrow$$
$$\quad\quad\quad 4 \ 5$$

$$\overset{1\ 2\ 3\ 4\ 5\ 6}{6\ 3\ 2\ \underline{5}\ 4\ 1}$$

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

$$\begin{array}{cccccc} \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1 & 2 & 3 & 4 & 5 & 6 \end{array}$$

$[2, 5, 4, 1]$

$j =$

Step: 1 $i = 4$, Find the largest i $\ni$

$k_{i-1} < k_i$.

$k_{i-1} = 2$

$k_i = 5$

Step: 2 Find the largest j, $k_{i-1} < k_j$

for, $j = 5$ $k_{i-1} = 2 < 4 = k_j$.

Step: 3 Swap k_{i-1} and k_j.

$\Rightarrow 632541 \rightarrow 634521$

step: 4: Reverse $k_i, k_{i+1}, \ldots k_n$ i., k_4, k_5, k_6. $\Rightarrow$ 634125

$$6\ 3\ 4\ 1\ \textcircled{2}\ \underline{5}$$

Step: 1 $i = 6,$

$$\left.\begin{array}{l} k_{i-1} \ne \textcircled{2} \\ k_{\cancel{k}i} = 5 \end{array}\right\} \Rightarrow k_{i-1} < k_i.$$

Step: 2: $j = 6, \quad k_j = \textcircled{5}$

$$k_{i-1} < k_j.$$

Step: 3   Swap k_{i-1} & $k_j.$

$$6\ 3\ 4\ 1\ 2\ 5 \rightarrow 6\ 3\ 4\ 1\ 5\ 2$$

Step: 4: Reverse

$$k_i, k_{i+b}, \cdots k_n$$

$$\rightarrow k_6,$$

There is no numbers to reverse

$$\Rightarrow 6\ 3\ 4\ 1\ 5\ 2 \text{ is the required next permutation.}$$

1) Write a function to find the next permutation of a given sequence of numbers.

Eg. [3, 2, 5, 7, 4]

2) List all permutation of a given word in lexicographical order.