|  |
| --- |
| def next\_permutation(L):      '''      Permute the list L in-place to generate the next lexicographic permutation.      Return True if such a permutation exists, else return False.      '''        n = len(L)        #------------------------------------------------------------        # Step 1: find rightmost position i such that L[i] < L[i+1]      i = n - 2      while i >= 0 and L[i] >= L[i+1]:          i -= 1        if i == -1:          return False        #------------------------------------------------------------        # Step 2: find rightmost position j to the right of i such that L[j] > L[i]      j = i + 1      while j < n and L[j] > L[i]:          j += 1      j -= 1        #------------------------------------------------------------        # Step 3: swap L[i] and L[j]      L[i], L[j] = L[j], L[i]        #------------------------------------------------------------        # Step 4: reverse everything to the right of i      left = i + 1      right = n - 1        while left < right:          L[left], L[right] = L[right], L[left]          left += 1          right -= 1        return True |

Here is an example:

|  |  |
| --- | --- |
| 1  2  3  4  5  6  7  8  9  10  11  12  13 | def example():      L = [1, 2, 3]        while True:          print(L)          if not next\_permutation(L):              break      #----------------------------------------------------------------    if \_\_name\_\_ == "\_\_main\_\_":      example() |

The output is:

|  |  |
| --- | --- |
| 1  2  3  4  5  6 | [1, 2, 3]  [1, 3, 2]  [2, 1, 3]  [2, 3, 1]  [3, 1, 2]  [3, 2, 1] |

**References**

0. https://algocoding.wordpress.com/2015/05/03/next-permutation-in-python-3-4/  
1. [Algorithm to find next greater permutation of a given string](http://stackoverflow.com/a/1622539) – dicussion on Stackoverflow.  
2. [Generation of permutations in lexicographic order](http://en.wikipedia.org/wiki/Permutation#Generation_in_lexicographic_order) – Wikipedia article.  
3. [std::next\_permutation Implementation Explanation](http://stackoverflow.com/a/11483392) – discussion on Stackoverflow.