

Algorithm Design
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Solution of Exercise C-2.4

The number of permutations of n numbers is $n! = n(n-1)(n-2)\dots 3 \cdot 2 \cdot 1$. The idea is to compute this product only with increments of a counter. We use a stack for that purpose. Starting with the call $\text{Enumerate}(0, S)$, where S is a stack of n elements. the pseudo code should be like that:

```
Algorithm Enumerate( $t, S$ ){  
     $k = S.\text{size}()$ ;  
    while (!  $S.\text{isEmpty}()$  ) {  
         $S.\text{pop}()$ ;  
         $t++$ ;  
         $S'$ : a new stack of size  $k - 1$   
        Enumerate( $t, S'$ );  
    }  
}
```