

Permutation with repetition algorithm needed

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Given an arbitrary permutation of n distinct numbers, I know how to map it to a unique number within the range $(0, \dots, n! - 1)$. I know also how to do the inverse: given a number between $(0, \dots, n! - 1)$, construct the corresponding permutation.

Does someone know of an algorithm to do this for permutations with repetitions?

Suppose, for example, that I have m distinct numbers, each one repeated r_k times, $1 \leq k \leq m$.

Now

$$n = \sum_{k=1}^m r_k$$

and let

$$p = \prod_{k=1}^m r_k!$$

Then the desired range is $(0, \dots, n!/p - 1)$.

Thanks in advance.