

Recall the 'Gray-code' like listing of all the permutations of $1, 2, \dots, n$. This list starts with the permutation $12 \cdots n$ (*) and each subsequent permutation differs from its predecessor by exactly one swapping of adjacent entries. Let $n = 9$. What is the rank of the permutation 192837465 in this list?

(*) Here by writing $a_1 a_2 \cdots a_n$ we mean the permutation that maps 1 to a_1 , 2 to a_2 and so on. This is called the word form of the permutation.