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Solution for the non-circular case

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 - Define hash $h(A_i)$ of a prefix to be $\sum_{j=1}^{i} h(a_j)$.
 - If no hash collisions then A_i is a permutation of B_i if and only if $h(A_i) = h(B_i)$.

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Solution for the circular case

• For each hash value z, let s(z) be number of indices $0 \le i < n$ such that $h(A_i) - h(B_i) = z$.

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Statistics at 4-hour mark: 11 submissions, 5 accepted, first after 01:51