A Simple Recursive Framework to Generate Gray Codes for Weak Orders in Constant Amortized Time

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Abstract : A weak order is a way to rank n objects where ties are allowed. In this talk, we present a recursive framework to generate Gray codes for weak orders. We then describe a simple algorithm based on the framework that generates 2-Gray codes for weak orders in constant amortized time per string. This framework can easily be modified to generate other Gray codes for weak orders. We provide an example on using the framework to generate the first Shift Gray code for weak orders, also in constant amortized time, where consecutive strings differ by a shift or a symbol change.

Keywords : weak order, Cayley permutation, Gray code, shift Gray code
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