A SURVEY ON A GENERALIZATION OF BINARY SEARCH

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In this talk we discuss a problem of searching for an element in a partially ordered set. This problem is a generalization of binary search in a sorted array and can be stated as follows. For a given partial order \( (X, \leq) \) and an unknown element \( x \), the goal is to locate \( x \) in \( X \) by asking the minimum number of queries in the worst case. Each query is a question of such form: Does it hold \( x \leq t \) where \( t \in X \)? This problem is completely solved in case of tree-like partial orders for which linear time algorithms are known [3, 4]. An interesting generalization involves introducing non-uniform query times and in such case one wants to minimize the worst case duration of a search strategy. In such scenario, the problem is NP-complete for trees [1, 2]. We discuss several known results for this version of the problem.

Keywords: binary search, edge ranking, partial orders.

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References


