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An Optimized Approach to Generate the Possible States of Football Tournaments Final Table

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Abstract : This paper focuses on possible states of a football tournament final table according to the number of participating teams. Each team holds a position in the table with which it is possible to determine the highest and lowest points for that team. This paper proposes an optimized search space based on the minimum and maximum number of points which can be gained by each team to produce and enumerate the possible states for a football tournament final table. The proposed search space minimizes producing the invalid states which cannot occur during a football tournament. The generated states are filtered by a validity checking algorithm which seeks to reach a tournament graph based on a generated state. Thus, the algorithm provides a way to determine which team's wins, draws and loses values guarantee a particular table position. The paper also presents and discusses the experimental results of the approach on the tournaments with up to eight teams. Comparing with a blind search algorithm, our proposed approach reduces generating the invalid states up to 99.99%, which results in a considerable optimization in term of the execution time.

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