

# A New Approach to Solve Just-In-Time Scheduling Problem

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**Abstract:** The just-in-time (JIT) scheduling problems which minimize the earliness-tardiness penalty have been paid attention for many years and have intensive researches since they are applied in practical applications and involve exciting theoretical problems. For the former case, the main motivation comes from measuring the quality in inventory management and production management: an item should be produced only when it is required. In reality, the earliness penalty implies the loss caused by deterioration of goods, storage cost and insurant cost, while the tardiness penalty implies contract penalties, dissatisfaction of customers, loss of sales, loss of goodwill, etc. These scheduling problems can be modeled traditionally by using the mixed 0-1 integer linear programming (MILP) which is known as NP-hard problem. In this study, we try to give a better performance for solving one of these JIT scheduling problems. A new approach which reformulates MILP as a DC (difference of convex functions) program via an exact penalty technique is proposed. We apply then DC algorithms (DCA) that works in a continuous domain but provides mixed integer solutions. The preliminary experimental results implemented are promising.

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