## A Heuristic Approach for the General Flowshop Scheduling Problem to Minimize the Makespan

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**Abstract :** Almost all existing researches on the flowshop scheduling problems focus on the permutation schedules and there is insufficient study dedicated to the general flowshop scheduling problems in the literature, since the modeling and solving of the general flowshop scheduling problems are more difficult than the permutation ones, especially for the large-size problem instances. This paper considers the general flowshop scheduling problem with the objective function of the makespan (F//Cmax). We first find the optimal solution of the problem by solving a mixed integer linear programming model. An efficient heuristic method is then presented to solve the problem. An ant colony optimization algorithm is also proposed for the problem. In order to evaluate the performance of the methods, computational experiments are designed and performed. Numerical results show that the heuristic algorithm can result in reasonable solutions with low computational effort and even achieve optimal solutions in some cases.

Keywords : scheduling, general flow shop scheduling problem, makespan, heuristic

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