ALGORITHMS FOR SOME BATCHING SCHEDULING PROBLEMS WITH BOUNDED SIZE OF BATCHES [1]

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We consider the following scheduling problem. The customer i places n_i orders to the manufacturer. Order O_{ij} requires a processing time p_{ij} and its due date is d_{ij}, $j = 1, \ldots, n_i$, $i = 1, \ldots, s$. The manufacturer produces the orders sequentially. For delivery to the customer orders are distributed to the batches. Time completion of the order is the time completion of the batch to which this order is placed. The number of batches is bounded by k, the number of orders in each batch does not exceed m (assuming $mk \geq n$).

In [3] for one customer case we prove polynomial solvability of maximum tardiness minimization problem ($T_{\max}$) and total completion time minimization problem (C_{Σ}). Also we show NP-hardness of total weighted completion time minimization problem ($C_{\Sigma w}$).

In this paper we propose the algorithm for finding an approximate solution and some polynomially solvable cases of total weighted completion time minimization problem in the case of one customer. Also we propose algorithms for three formulations of maximum tardiness minimization problem with several customers. These algorithms show good results during the computational experiment.

REFERENCES

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