

A Genetic Algorithm to Schedule the Flow Shop Problem under Preventive Maintenance Activities

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Abstract : This paper studied the flow shop scheduling problem under machine availability constraints. The machines are subject to flexible preventive maintenance activities. The nonresumable scenario for the jobs was considered. That is, when a job is interrupted by an unavailability period of a machine it should be restarted from the beginning. The objective is to minimize the total tardiness time for the jobs and the advance/tardiness for the maintenance activities. To solve the problem, a genetic algorithm was developed and successfully tested and validated on many problem instances. The computational results showed that the new genetic algorithm outperforms another earlier proposed algorithm.

Keywords : flow shop scheduling, genetic algorithm, maintenance, priority rules

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