

Modeling and Simulation of Flow Shop Scheduling Problem through Petri Net Tools

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Abstract : The Flow Shop Scheduling Problem (FSSP) is a typical problem that is faced by production planning managers in Flexible Manufacturing Systems (FMS). This problem consists in finding the optimal scheduling to carry out a set of jobs, which are processed in a set of machines or shared resources. Moreover, all the jobs are processed in the same machine sequence. As in all the scheduling problems, the makespan can be obtained by drawing the Gantt chart according to the operations order, among other alternatives. On this way, an FMS presenting the FSSP can be modeled by Petri nets (PNs), which are a powerful tool that has been used to model and analyze discrete event systems. Then, the makespan can be obtained by simulating the PN through the token game animation and incidence matrix. In this work, we present an adaptive PN to obtain the makespan of FSSP by applying PN analytical tools.

Keywords : flow-shop scheduling problem, makespan, Petri nets, state equation

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