The study of an easy-to-use DBR and BM system

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Abstract

The concept and advantages of the Drum-Buffer-Rope (DBR) scheduling and buffer management (BM) system are now widely accepted and recognized by the industrial communities. Therefore, there are several types of commercial DBR and BM business solution software such as OPT21TM, DISASTERTM, Visual DBRTM, SynchronoTM, DrummerTM, etc., on the market. However, prior to implementation of any of these, factories must first gather a complete data set for their perspective throughput nets. This means that the users will be required to enter and maintain a complicated database and the degree of difficulty of the entire software system implementation process will also increase. Furthermore, it is also unrealistic to maintain the accuracy of these dynamic data in the fast-paced and competitive business environment. Therefore, in this article, we have proposed the Easy-to-Use DBR and BM system concept. The term 'Easy-to-Use' refers to the fact that users will be required to enter and maintain a minimal set of fundamental data to satisfy the factories' operation needs. The system framework mentioned in our article contains the full and complete function of the DBR and BM system but with very limited data maintenance by the users. Therefore,

with
less procedural complexity, this system can produce a higher range of operational
application and can attract higher interest from the users. The concept of simplified throughput net design proposed in our article cannot only be used as a
reference when factories develop their own information systems, but can also
provide a new design model and algorithm for the system software developers as
well. Since the database maintenance is significantly simplified, the factories can
quickly adapt to any changes in the dynamic, rapid-changing, and highly competitive production environment. In the article, we first describe the concept
of the Easy-to-Use DBR and BM system and the steps to simplify the information
system by using a simple throughput net. We then explain the system framework
and design methodology. At the end, we have used a prototype system to demonstrate and to verify the applicability and efficiency of the concept and
framework mentioned in our article.

Keyword：Theory of constraints; Drum－Buffer－Rope; Buffer management; Information system; Throughput net