DEADLOCK AND TRAP ANALYSIS IN PETRI NETS*

Zhenyi Jin
Abbas K. Zaidi
Alexander H. Levis

ABSTRACT

Petri net theory has been a successful tool for the study of systems because it allows their detailed and precise mathematical representation. Analysis of Petri nets can reveal important information about the structural and dynamic behavior of the modeled system, and this information can then be used for evaluation and to suggest improvements or changes. This paper presents a new algorithm for calculating deadlocks and traps in Ordinary Petri nets. The algorithm is independent of the form of the Petri net being analyzed, and does not impose any structural restrictions as is the case with the rest of the reported algorithms. In an illustration of the usefulness of this type of analysis for C2 systems, the deadlocks and traps in a Petri net representing the decision process of an organization are shown to reveal certain logical errors in the set of decision rules.