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"Detecção de Predicados Conjuntivos Generalizados e Propriedades Sobre Fluxo de Controle de Programas Paralelos Distribuídos"

This work presents the problem of detection of global predicates, more specifically the detection of generalized conjunctive predicates (GCP), and properties on control flows of distributed parallel programs. In this context, a global state, that satisfies the established local predicates and linear states of the communication channels of the processes that participate in the parallel distributed execution must be detected. We also presented algorithms to detect behavioral patterns or the causality relationship among the events in a distributed parallel program, that are represented by an event causal chain. Those algorithms are used to analyze distributed parallel programs. The algorithms DETEC_GCP and EVENT_N_ORDER_ KNOWLEDGE were proposed to detect these properties. They were compared with some existing algorithms to solve these problems concerning the complexities of local time, memory and message. In order to illustrate the proposed algorithms performance some parallel distributed programs were chosen to be analyzed by the proposed algorithms (DETEC_GCP and EVENT_N_ORDER_ KNOWLEDGE) and by the existing algorithms. All algorithms were developed in the programming language C and the library MPI and were executed on an IBM SP/2 computer. The theoretical and experimental results show several advantages of the proposed algorithms.