



< Назад к неделе 1

× Уроки

этот курс: Parallel Programming in Java

Пред.

Дальше

1 Task-level Parallelism

1.4 Multiprocessor Scheduling, Parallel Speedup

Lecture Summary: In this lecture, we studied the possible executions of a Computation Graph (CG) on an idealized parallel machine with P processors. It is idealized because all processors are assumed to be identical, and the execution time of a node is assumed to be fixed, regardless of which processor it executes on. A *legal schedule* is one that obeys the dependence constraints in the CG, such that for every directed edge (A, B) , the schedule guarantees that step B is only scheduled after step A completes. Unless otherwise specified, we will restrict our attention in this course to schedules that have no *unforced idleness*, i.e., schedules in which a processor is not permitted to be idle if a CG node is available to be scheduled on it. Such schedules are also referred to as "greedy" schedules.

We defined T_P as the execution time of a CG on P processors, and observed that

$$T_{\infty} \leq T_P \leq T_1$$

We also saw examples for which there could be different values of T_P for different schedules of the same CG on P processors.

We then defined the parallel speedup for a given schedule of a CG on P processors as $Speedup(P) = T_1 / T_P$, and observed that $Speedup(P)$ must be \leq the number of processors P , and also \leq the ideal parallelism, WORK/SPAN.

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