

同时多线程处理器的指令调度器设计

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摘 要: 同时多线程处理器 SMT (Simultaneous Multi-Threading) 是用于图形、图像及数字信号处理的一种可以实现指令级并行(ILP)和线程级并行(TLP)的轻核处理器.针对这种处理器提出了一种结构简单的动态指令调度器,用于避免四个活跃线程中指令间的结构冲突和对一些特殊指令的不同要求的调度.结果表明, SMT 处理器中的指令调度器通过调度各线程的执行先后顺序,四个线程被选中的概率均接近 25%.

关键词: 多核处理器; 同时多线程; 动态调度; 图形处理算法; 指令级并行; 线程级并行

The Design of an Instruction Scheduler in a Simultaneous Multi-threaded Processor

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Abstract: The simultaneous multithreaded processor is for graphics, image and digital signal processing and can be realized instruction-level parallelism(ILP) and thread-level parallelism(TLP) of light-core processors. The design of such a processor simple structure dynamic instruction scheduler is presented here for avoiding structural conflict between the four active threads instruction and some special instruction of the different requirements of scheduling. The results showed that, SMT processor instruction scheduler scheduled for execution by the order of each thread, four threads probability of being selected are close to 25%.

Key words: multi-core processor; SMT; dynamic schedule; graphics processing algorithms; ILP;TLP

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