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基于动态反馈的标志位线性分析算法

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Abstract
Binary translation is applied for the legacy code porting. Binary code can be executed in different hardware platforms by binary translation. If the source platform uses condition code to change the execution flow, it is an important performance issue to handle the condition code translation. This paper presents the algorithm of Eflag linear analysis. The complexity of the algorithm is linear and the algorithm reduces much of the flag computing and increases the performance of the dynamic execution. Through dynamic profiling, the algorithm solves to eliminate the Eflag calculation in the basic indirect jump block. Some integer test cases are analyzed in spec 2000. The experimental results prove the efficiency of the EfLA (Eflag linear analysis) for large calculation program.

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摘要
二进制翻译可以用于解决遗产代码的迁移问题,也可以实现不同硬件平台之间软件的通用.如果源平台通过标志位进行条件跳转,那么如何处理标志位就成为翻译中的一个重要问题,对翻译的代码质量起着决定性作用.提出标志位线性分析算法,复杂度为线性,基本上能够消除所有的标志位冗余计算,提高了动态执行的效率.基于动态profiling技术,消除了间接跳转的基本块标志位冗余计算.分析了spec 2000中的大部分整点测试例子,实验结果表明,EfLA(Eflag linear analysis)算法对于大运算量的程序是非常有效的.

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