Technical Report

Parallelism in Ada: General Model and Ravenscar

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Abstract

Parallel programming is expected to become more the norm as multi-core and many-core processors gain more widespread use. Ada has always had excellent concurrency support, but could be improved in the area of parallel programming. Specifically, divide and conquer parallelism via parallel loops and subprograms are difficult to write without some sort of library support. In this paper we describe a proposal that combines the use of task pools and parallelism managers to provide parallelism capabilities to real-time Ada applications, including Ravenscar applications. This work complements the syntax enhancements that we previously proposed, so that together they facilitate the writing of parallel applications.