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OpenMP In The Multicore Era

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Abstract:
Dual-core machines are actively marketed for desktop and home computing. Systems with a larger number of cores are deployed in the server market. Some cores are capable of executing multiple threads. In future, high-end application developers will therefore need to design codes for execution on platforms whose nodes will be multicore, adding an additional level of parallelism to the hardware and an additional level of complexity to the application development process. Clearly, the future is multi- and many-core, many-threaded and highly parallel. OpenMP is a shared memory API that was designed to be a portable parallel programming interface for SMPs. It is increasingly expected to be a programming model of choice for exploiting the capabilities of multicore machines. In this presentation, we discuss the programming challenges posed by multicore technology. We then review the status of OpenMP, expected enhancements to its functionality and further work that may increase its usefulness for multicore programming

Speaker's Bio:
Dr. Chapman is a native of New Zealand who studied Mathematics and Computer Science in her home country, Germany and Northern Ireland, where she completed her Ph.D. on software support for distributed memory programming. She has been engaged in research on parallel programming languages and compiler technology for more than 15 years. In 2001, Dr. Chapman founded cOMPunity, a not-for-profit organization that enables research participation in the development and maintenance of the OpenMP industry standard for parallel programming. Since that time, she has been involved in the evolution of OpenMP. Her research group at the University of Houston has developed OpenUH, a reference compiler for OpenMP that is also used to explore language and compiler techniques for multithreaded programming.