Parallel computing

Project germ

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Over the past 50 years the speed of computers has increased exponentially with almost the same growth rate. The speed has doubled every 18 months. However, this tendency cannot hold forever. Physical laws put a limitation. For example, there is lower limit for the size of the transistors and upper limits for the heat dissipation and speed of memory access. This, coupled with the desire, to work with more sophisticated models requires new methods to be applied.

An obvious idea is to try to split the required computations in such a way that they can be carried out in parallel. When using N processors, one can hope to reduce the calculation time by a factor N compared to a non-parallel program.

Parallel computing is considered today to be a standard method for natural scientist to solve problems in areas as diverse as simulation of galaxy motion, climate modeling, biological sequence analysis and molecular dynamics.

The goal of this project is to solve a specific problem using parallel computing. The project team chooses the problem. As an idea may be mentioned the so-called N-body problem, which is to predict the motion of N objects that interact according to Newton's second law.

References:

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Introduction to Parallel Computing.
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