REVIEW - PARALLEL ALGORITHMS

•Give the correct definition of the execution time!

•Give a simple model of the communication time!

•Give the definitions of the speedup (S) and efficiency (E), let T1 and Tp be the execution time on one and p processors, respectively!

•Select the correct list of Single Computer Model (Von Neuman) components!

REVIEW - PARALLEL ALGORITHMS (cont.)

•Suppose that for finishing a complex repetitive task, e.g.,car production, time *T* is needed for one person. Let this task be divided into *k* equally time-demanding subtasks, and for each of them a specialised worker be assigned. When the first and the second car will come from the production line?

•Suppose that the current computer performance is 10^13. According to the Moore's law that states that the computer performance doubles each one and half year, when the performance would be 10 times greater?

REVIEW - PARALLEL ALGORITHMS (cont.)

•Let a program Pr be composed of sequential part Sq and a parallel part Pp that can be ideally parallelized: Pr = Sq + Pp. On a single processor Sq takes 5% of the total CPU time, Pp can be implemented in 95% of the total execution time. What is the maximal speedup that can be reached with an arbitrary large number of processors? What is the name of this law?

•Why the load in a parallel program has to be distributed evenly among processors? Because the slowest processor dictates the execution time.

•Methodology for Designing Parallel Algorithms is composed of four stages, list they!

REVIEW - PARALLEL ALGORITHMS (cont.)

•Give the expression for the step execution time on P processors for an implementation of finite differences on 3-D domain with NxNxZ points, 6 points stencile, calculation time Tc for a single floating point operation and communication time model Ts+Tw. Suppose that the domain is decomposed in 2-D.

•How many interactions must be computed in pairwise interactions problem with N particles, supposing that interactions are symmetric?