

LECTURE 7

TIME MEASUREMENT

In order to measure the wall-clock-time in seconds of work of a part of a program, we may apply the *MPI* command

MPI_Wtime()

with nothing between the parenthesis. Typical use of this *MPI* command (in FORTRAN STANDARD) is as follows:

START OF THE TIME MEASUREMENT

TB = MPI_Wtime()

PROGRAM

END OF THE TIME MEASUREMENT

TE = MPI_Wtime()

TT = TE - TB

TM = TT/lp

call MPI_Reduce(TM, MEDIUM, 1, MPI_Real8,

MPI_SUM, 0, MPI_Comm_World, ierr)

if(s .eq. 0)then

write(,*)'MEDIUM TIME =', MEDIUM*

write(,*)'PROCESSOR TIME =', TT, ' s =', s*

else

write(,*)'PROCESSOR TIME =', TT, ' s =', s*

endif

Here:

- real*8 *TB, TE, TT, MEDIUM*
- integer *lp, s*
- *lp* - number of all processors in use, *s* - number of the processor in turn
- *TB, TE* - Wall-clock -time in seconds respectively at the moment of start and at the moment of end of running of the **PROGRAM** in the processor Nr. *s*
- *TT* - time of running the program in the processor Nr.*s*
- *MEDIUM* - the wall-clock-time in seconds, arithmetic medium time respect to the number of all processors *lp*. *MEDIUM* is sent to the processor of number **0**.

SPEEDUP - THE MEASURE OF SCALLING OF PROGRAMS

SPEEDUP=*sp*

$$sp = \frac{\textit{time of running the program on one processor}}{\textit{time of running the program on n processors}}$$

Ideal value of speedup is $sp = n$, but this almost never occurs. This is the case of the best possible scalling.