Started on	Friday, 26 April 2024, 8:47 PM
State	Finished
Completed on	Friday, 26 April 2024, 8:56 PM
Time taken	8 mins 53 secs
Grade	**1.00** out of 1.00 (**100%**)

Question **1**

Correct

Mark 1.00 out of 1.00

Assuming the Gauss-Seidel parallel implementation on a distributed memory machine shown in the video with:

- Row-wise distribution of the matrix to P processors where each processor gets n/P consecutive rows;

- Task definition = Block of n/P consecutive rows, i.e. each processor executes a single (coarse grain) task.

Match each contribution to the parallel execution time on P processors (T_p) with the appropriate expression.

$T_p = T_{calculations} + T_{communications}$

In the video: $T_{communications} = T_{overheads}$ We could also call it $T_{datasharing}$

Notation: Since the section for defining answers does not allow the usage of subscripts and superscripts,

- The underscore "_" in the answers is used for introducing a subscript.
- The circumflex "^" in the answers is used for introducing a superscript.

T_{calc} =	n^2 x t_body ✔
T_U =	(t_s + n x t_w) x (P-1) ✔
T_L =	(t_s + n x t_w) ✔
$T_{communications}$ =	T_L + T_U ✔

Your answer is correct.

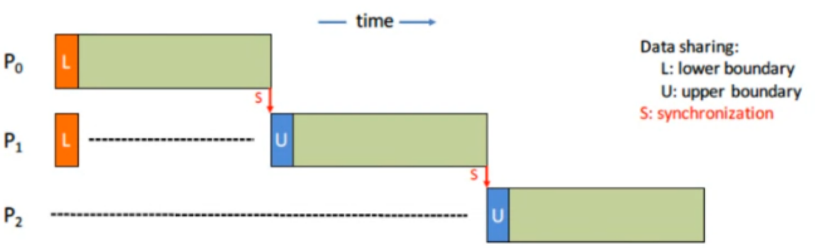
The correct answer is:
T_{calc} = → n^2 x t_body,

T_U = → (t_s + n x t_w) x (P-1),

T_L = → (t_s + n x t_w),

$T_{communications}$ = → T_L + T_U

Task definition = block of n/P consecutive rows



Data sharing time per segment ?

T_comm

$T_{overhead}$ = { transfer cost in a task with rows not from the border } =

= { lower boundary at the beginning + T_L

upper boundary during execution } $\rightarrow T_U$

$T_{overhead} = \overset{T_L}{\underbrace{(t_s + n \times t_w)}} + \overset{T_U}{\underbrace{(t_s + n \times t_w) \times (P-1)}}$ ->T_comm=T_L+T_U

$T_{calc} = P \times (n \times n/P) \times t_{body} = n^2 \times t_{body}$