Faculty of Computers and Information
Cairo UniversitySpring-2021

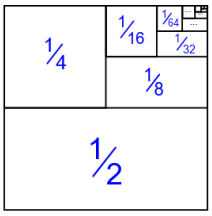
HPC / Parallel Processing- 2021
Assignment 4 – MPI & OpenMP
Sum of Convergent Series

Write c code to solve this problem using hybrid programming.

$$\sum_{n=1}^{\infty} \frac{1}{2^n} = \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \cdots = 1$$

This problem from n = 1 to infinite will converge to 1 at the end try to reach this result and print the error value as your expected result = 1 (error = expected - calculated)

$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \ldots = 1$



(We also show a proof using Algebra below)

$\frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \frac{1}{16} + \ldots$

Adds up like this:

Term	Sum so far
1/2	0.5
1/4	0.75
1/8	0.875
1/16	0.9375
1/32	0.96875
...	...

The sums are heading towards a value (1 in this case), so this series is **convergent**.

Deadline & Submission:

1. The assignment is in groups of maximum 2.
2. Code must be in C and openMP & you must run itbefore sending.
3. Cheating could lead to serious consequences.
4. Late submission is not allowed.
5. Deadline: Thurs. 10/6/2021 11:59 PM

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Grading Criteria :

Your code should be compiled without any errors or you will lose 50% of assignment grade, also the output of the run should be correct or you will lose 25% of the assignment grade.

Item	Points
Logic	2
mpi	4
openmp	4