OpenMP Spring Bonus (Gives bonus points for the final Exam!)[1]
Please send codes + brief report + timings before 03.05.2019 to spataro@unical.it
Mail subject : [APSD Spring Bonus – Name Surname]"
(**NO mails considered with different email subject!)**

1. Simple embarrassingly parallel 2D Matrix computation (es: A and B are 1000 x 1000 double value matrices):

    a. $A(i, j) = 5*i^3 + 5*\pi*j^6$
    b. $B(i, j) = (10/3)*A(i,j)$

2. Given three vectors A, B and C, compute (if needed adopt padding, critical sections, reduction, etc):
- C= A + B.
- Scalar product between C and B.

3. Calculation of PI

    A. Standard method (numerical integration + critical section + padding)

    B. Reduction

    C. Monte Carlo

4. Find an element in a vector (Extra BONUS - WOW! be careful !)

5. Implement a simple version of the Game of Life (no need of graphic output). Remember slides for implementation hints (main and support matrixes, etc).

    – http://en.wikipedia.org/wiki/Conway's_Game_of_Life

    – http://www.youtube.com/watch?v=XcuBvj0pw-E

    – http://pmav.eu/stuff/javascript-game-of-life-v3.1.1/

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After implementing the versions adopting OpenMP instructions (`pragmas`, `parallel for`, etc), take timings and speed-up by:
 a) **varying the dimensions** of the considered data structures/point (depends on the problem). Start by chosing an appropriate problem dimension.
b) **varying the number** of threads .
c) changing worksharing construct scheduling (static, dynamic, etc) where applicable.

E.g. (Sum Vec – Static Scheduling):
Timings (seconds)

Threads	1000000	10000000	100000000	1000000000	
1					
2					
4					

Speed-up (Ts/Tp)

Threads	1000000	10000000	100000000	1000000000	
1					
2					
4					

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1   Write a brief one/two page report of what was done + spreadsheet file. Send everything to spataro@unical.it by May 3[h], 2019. Please use appropriate multi-core machines paying attention to the number of adopted threads! (i.e., 8 for a 4+4 hyperthread i7)