First module: final exercise

Write a code that, given a 2D distribution of equal-mass particle, in a square of size L, implements a quad-tree (hierarchical subdivision of the square in four squares having size L/2 at the first level, 64 of size L/4 at the second level etc).

The leaves of the tree should be the particles.

Et each level of the tree, the tree-node should contain the total number of particles and the center of mass.

These data should be written in output.

As initial conditions, adapt the code written to solve Supplementary exercise 1 in lecture VII (file lecture8.ipynb).