

In the Game of Life implementation provided in the code from the web, the decomposition domain, or the way processors are assigned to the space, follows a simple 2D block decomposition scheme. The code divides the grid into equal-sized rectangular blocks and assigns each block to a different processor. This is evident in the decomp1d and decomp2d functions within the code, where the domain is divided into rows and columns respectively. For example, in the decomp2d function, the total number of rows and columns in the grid is calculated based on the number of processors available (procGrid[0] and procGrid[1]), and then each processor is assigned a rectangular block of the grid according to its rank. So, in summary, the shape of the decomposition domain is rectangular, with each processor responsible for a portion of the grid.

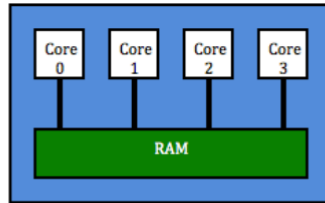


Figure 3: Shared memory, multiple cores on one chip.

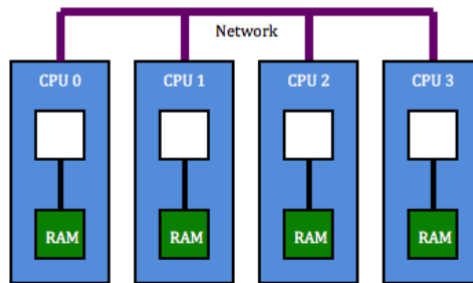


Figure 4: Distributed memory, multiple CPUs connected via network.

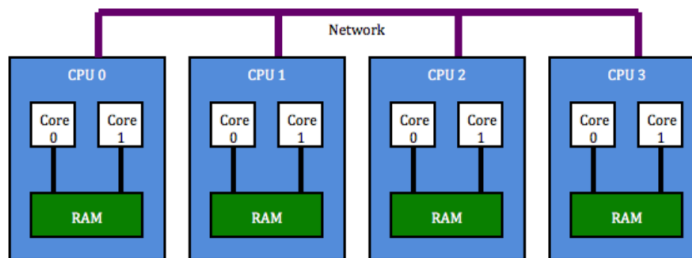


Figure 5: Hybrid, multiple multi-core CPUs connected via network.

## References:

Parallelization: Conway's Game of Life By Aaron Weeden, Shodor Education Foundation, Inc. - [http://www.shodor.org/media/content/petascale/materials/UPModules/GameOfLife/Life\\_Module\\_Document\\_pdf.pdf](http://www.shodor.org/media/content/petascale/materials/UPModules/GameOfLife/Life_Module_Document_pdf.pdf)