DesignMPI

Goal:

Make Game of Life with MPI to allow it run parallel

Design:

Make a 4n \* 4n board, each 4 by 4 sub board is in one process.

Divide a board into 4 by 4 sub board, then assigned each board to a process.

Each process: exchanges all the data each of them needed called ghost cell, include 4 sides and 4 corners.

(Make sure all processes get the data they need)

Each process: calculates live and dead cell, then update the sub board.

Wait all process finished

Modules:

Each process grubs their own sub board:

Read the right subset of the board and save it into the center of 5 by 5 matrix

Communication module: (ring)

Send most left column (: n) to process on the left,

receive

Send most right column (: 1) to process on the right,

receive

Send most button column (n :) to process below it,

receive

Send most top column (1 :) to process on the top,

receive

Send

Calculate live and dead cell:

Composed all ghost cell into a 5\*5 matrix, include 4 sides and 4 corners.

Computer all the life cell and dead cell

Wait:

Wait all threads finished, then start the next.