Finonex Home Assignment

The objective of this assignment is to implement the backend logic for Conway's Game of Life. Conway's Game of Life is a cellular automaton devised by the British mathematician John Horton Conway in 1970. The "game" is a zero-player game, meaning that its evolution is determined by its initial state, requiring no further input. One interacts with the Game of Life by creating an initial configuration and observing how it evolves.

Task Description:

You are required to implement a backend service that simulates the evolution of Conway's Game of Life. The service should provide endpoints for the following functionalities:

1. **Initialize Board**: This endpoint should allow the client to initialize the game board with an initial configuration of cells.
2. **Retrieve Current Board State**: This endpoint should return the current state of the board after a specified number of generations.
3. **Evolve Board**: This endpoint should trigger the evolution of the board by one generation.

Rules of the Game:

- Any live cell with fewer than two live neighbors dies, as if by underpopulation.
- Any live cell with two or three live neighbors lives on to the next generation.
- Any live cell with more than three live neighbors dies, as if by overpopulation.
- Any dead cell with exactly three live neighbors becomes a live cell, as if by reproduction.

Additional:

- Use react for front side implementation and node.js for the backend.
- Implement additional functionalities such as saving and loading game states.
- Implement the backend service as a RESTful API with appropriate error handling and validation.
- Extra points on advanced and optimized algorithm implementation.

Good luck 😊