

# Game of life

This assignment is intended to check your Full stack skills and general development practices.

## General Guidelines

1. The output for this assignment should be a working project that can run locally on a laptop.
2. You should push the code to some online repository (Github, Bitbucket) and send us the link. Ideally, try to use version control with commits that outline your progress (not a must).
3. Technology
  - a. Backend - Node.js
  - b. Frontend - React
4. Use proper TypeScript

## How we'll review your work

This exercise contains basic requirements and some advanced (bonus) requirements, you are not expected to complete all optional requirements, do as much as time allows, and keep in mind that we value quality over feature-complete code. You can leave some features aside, but write them out in the project's README with an idea of how you'd approach the implementation. The goal of this coding assignment is to help us identify what you consider good code. Try to avoid using hacks and tricks that you would absolutely not use in production code. You should strive to deliver quality, production code that you are proud of, rather than just something that works.

We will review your work with the following topics in mind:

1. **Architecture:** How clean is the separation of concerns between UI and "business" logic code.
2. **Correctness:** Does the application do its job? If there's anything missing, does the README explain why it is missing and how you might implement it?
3. **Code Quality & Clarity:** Is the code simple and easy to understand? Are there any code smells or other red flags? Does the code follow general modern JS guidelines and idioms? Does object-oriented code follow key principles such as the single responsibility principle? Is the coding style and naming generally consistent with the language's guidelines?
4. **Production-ready:** There shouldn't be (really) sharp edges when using the product. Are errors handled correctly? Did you plan with scaling in mind?
5. **Responsiveness:** The application should feel as responsive as possible to the user.

In general, try to keep attention to details, care about the user experience and about writing elegant code. Prefer better code than a perfect UI.

## The Assignment

Implement “Game Of Life” ([wiki](#)).

The game logic should be written on the server and the client should only communicate with the server in order to represent the state of life.

The game board size is 50x50.

The server

1. Should be updating the state of life in place (meaning, the game board should be updated at the same time)
2. Should be able to perform the actions sent by the client described below

The UI should

1. Allow the player
  - a. to select elements on the grid (aka “the initial state”)
  - b. to press “Next”
    - i. Which update the state of life once
  - c. to press the “Reset” button, unsetting the initial state (only when the game is stopped)
  - d. to press the “Start” / “Stop” button (once the initial state is selected / once the same is started, respectively)
    - i. Once started, the game will continue until there is no life left (or the “Stop” button is pressed)
2. Show the number of generations (steps) of life
3. Show a popup when all the life is dead

## Advanced requirements (Bonus points)

Note: these aren’t sorted by priority - select the ones you think can best express your abilities (3 items max)

1. Use React Context API for state management (if necessary)
2. Use React Query for sending requests to the server
3. Use styled components for styling
4. Build a more sophisticated UI
5. Deploy the app: client can be hosted for free on Netlify and the server on Heroku (also for free) but any other hosting solutions will be accepted.

# README

Write a README to accompany the code. It should address the following:

1. The general architecture of the application.
2. The reasoning behind the main technical choices.
3. Things you didn't implement or trade-offs you made. This can also include details about how you would implement things differently if you were to spend more time on the assignment or if it was for production use.

Feel free to add any more details.

Good luck! :)