Zombie Apocalypse

Description

After the nuclear war, a strange and deadly virus infected the planet, producing mindless zombies. These zombies now wander the world, converting any remaining living creatures they find into zombies as well.

The world is represented by an n x n grid on which **zombies** and **creatures** live. The location of zombies and creatures can be addressed using zero-indexed x-y coordinates. The top left corner of the world is `(x: 0, y: 0)`. The horizontal coordinate is represented by x, and the vertical coordinate is represented by y.

At the beginning of the program, a single zombie awakes and begins to move around the grid following a sequence of movements. Valid movements are **U**p, **D**own, **L**eft, and **R**ight. The movement sequence is represented by a string of single character movements, e.g. `RDRU` (Right, Down. Right, Up).

Zombies can move through the edge of the grid, appearing on the directly opposite side. For a 10x10 grid, a zombie moving left from (0, 4) will move to (9, 4); a zombie moving down from (3. 9) will move to (3, 0).

Each time a zombie takes a step, the new location should be logged, e.g.:
`zombie 0 moved to (2,3).`

If a zombie occupies the same square as a creature, the creature is transformed into another zombie.

Each time a zombie infects a creature, this should be logged, e.g.:
`zombie 0 infected creature at (3,3)`

The creatures are aware of the zombie's presence but are so frightened that they never move.

Once a zombie has completed its movement, the first newly created zombie moves using

the same sequence as the original zombie, then the second newly created zombie moves, and so on, in order of infection. Each zombie performs the same sequence of moves. Once all zombies have completed moving, and the final positions of all zombies and creatures should be output, the program ends.

For Backend

Your task is to write a program with a RESTful API that runs the above simulation:

1. **The request contains the following input parameters:**
   - dimensions of the grid (N),
   - the initial position of the zombie,
   - a list of initial positions of the creatures,
   - and a list of moves the zombies will make

2. **The response contains the following results:**
   - All positions of zombies
   - All positions of creatures, if no creature is left, can return empty

All inputs, logs and outputs are not limited to a particular format. Data in API is suggested to use JSON. Example input and output:

input	output
```{ "gridSize": 4, "zombie": { "x": 3, "y": 1 }, "creatures": [{ "x": 0, "y": 1 }, { "x": 1, "y": 2 }, { "x": 1, "y": 1 }], "commands": "RDRU" }```	```{ "zombies": [{ "x": 1, "y": 1 }, { "x": 2, "y": 1 }, { "x": 3, "y": 2 }, { "x": 3, "y": 1 }], "creatures": [] }```

For Frontend

Your task is to build single page to let user input the following four parameters and when clickling 'Submit', call the api from backend and then show the positions of Zombies and creatures (refer to the response from API in backend part**) in a grid on UI with the given dimensions.**

- dimensions of the grid (N),
- the initial position of the zombie,
- a list of initial positions of the creatures,
- and a list of moves the zombies will make

The UI don't need to be fancy and you are free to choose any lib or framework you like and you have to use React.js or other frameworks based on React.js.