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Create a software application that helps with floor layout:

Following operations should be possible:

Add a floor plan:

a. User enters an array of coordinate pairs: (a1, b1), (a2, b2), (a3,b3), (a4, b4)
b. Application validates the input
    i. Assumptions:
        1. Points provided go clockwise starting from one of the corners of the room.
        2. Adjacent Room walls form right angles.
        3. Corners lie on a Cartesian grid.
        4. At least 4 corners must be present.
    ii. Validations:
        1. Coordinates are integers.
        2. Walls do not intersect.
        3. No diagonal walls.
        4. Room has a finite area.
c. Examples:
    i. (1,1), (2,2) -> illegal, as it would result in the wall going diagonally. Illegal, as it only has two corners.
    ii. (1,1), (1,2), (2,2), (2,1) -> Legal. It is a square.
    iii. (1,1), (1,2), (0,2), (0,1) -> Illegal. With assumption 1 this would lead to an infinite room.
    iv. (1,1), (1,2,),(0,2),(0,3),(2,3),(2,1) -> Legal, L shaped room.

Level 1: Create a web application that accepts data through an html form. Web application also draws accepted rooms using html5 canvas
Level 2: Create a CRUD application that allows storing legal rooms and allows to recall previously added rooms. Any recalled room must be displayed on an html canvas.

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How to submit your work:

Since part of the review is automated make sure that your application complies with following API:

POST /validateRoom
Request Body:

```
{       “room” : [
        {“x” : integer_value, “y”: integer_value},
        {“x” : integer_value, “y”: integer_value},
        ...
        {“x” : integer_value, “y”: integer_value}
        ]
}
```

Response body:
If room is valid:

```
        {       “room” : [
                {“x” : integer_value, “y”: integer_value},
                {“x” : integer_value, “y”: integer_value},
                ...
                {“x” : integer_value, “y”: integer_value}
                ]
        }
```

If room is valid:

```
        {“error”: reason_why_room_is_invalid}
```

Integer_value - any integer value.
reason_why_room_is_invalid - plaintext description of which rule is broken.

Select a level at which you want to execute this assignment.
Upload the source code to your gitlab account. Invite reviewers to the project.
The project should include a maven pom.xml file to manage dependencies and build easily.
The project may also include docker-compose.yml in order to run in a container

Use java 8
Do not use any libs that require reviewer to install new Idea plugins (e.g. lombok).
First thing reviewer does is “mvn clean package” make sure it works on a freshly downloaded codebase.
Make sure that jar file is runnable.
Add some example requests, so that reviewer can easily verify that your application works.
If your application needs a database - provide it as a docker-compose configuration or at least dockerfile.
Use port 8080 for the web application.