Finding Alternate Paths for Robots in Dynamic Environments

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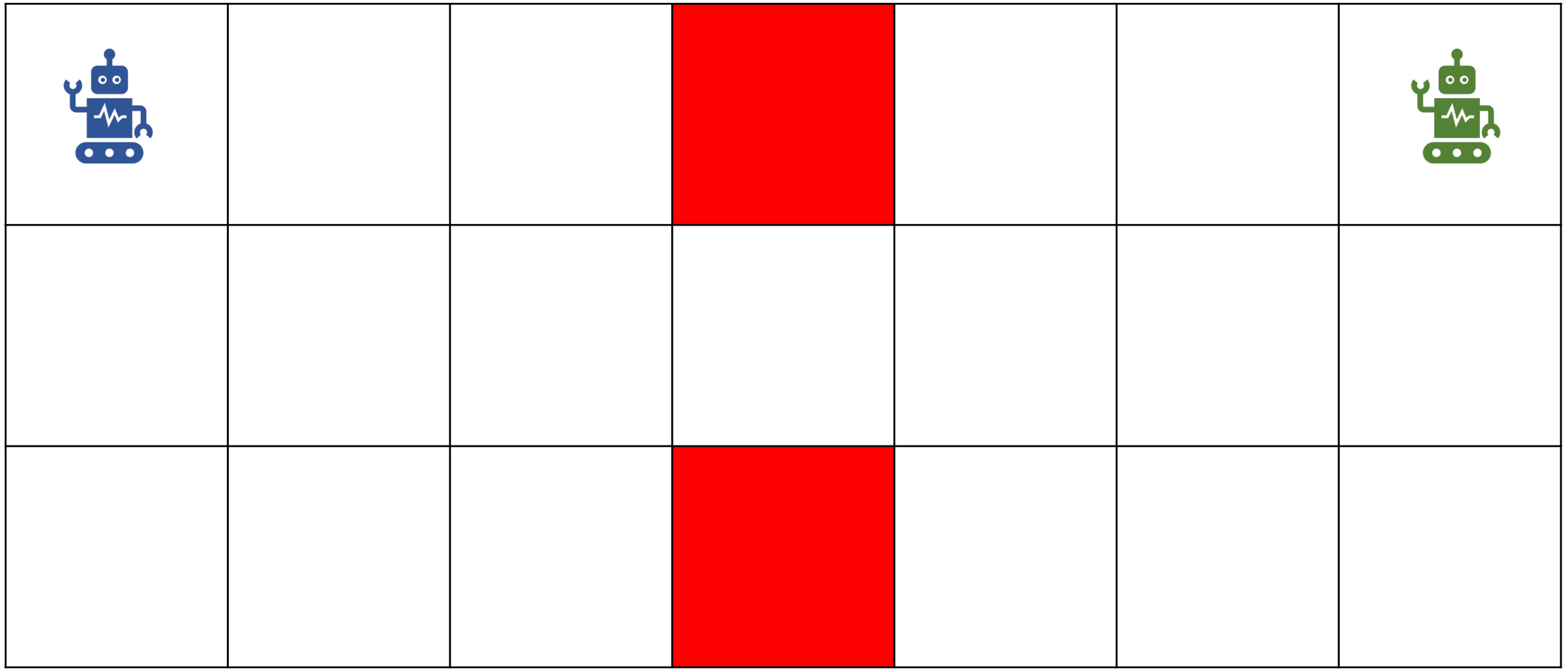
Robots are Dumb



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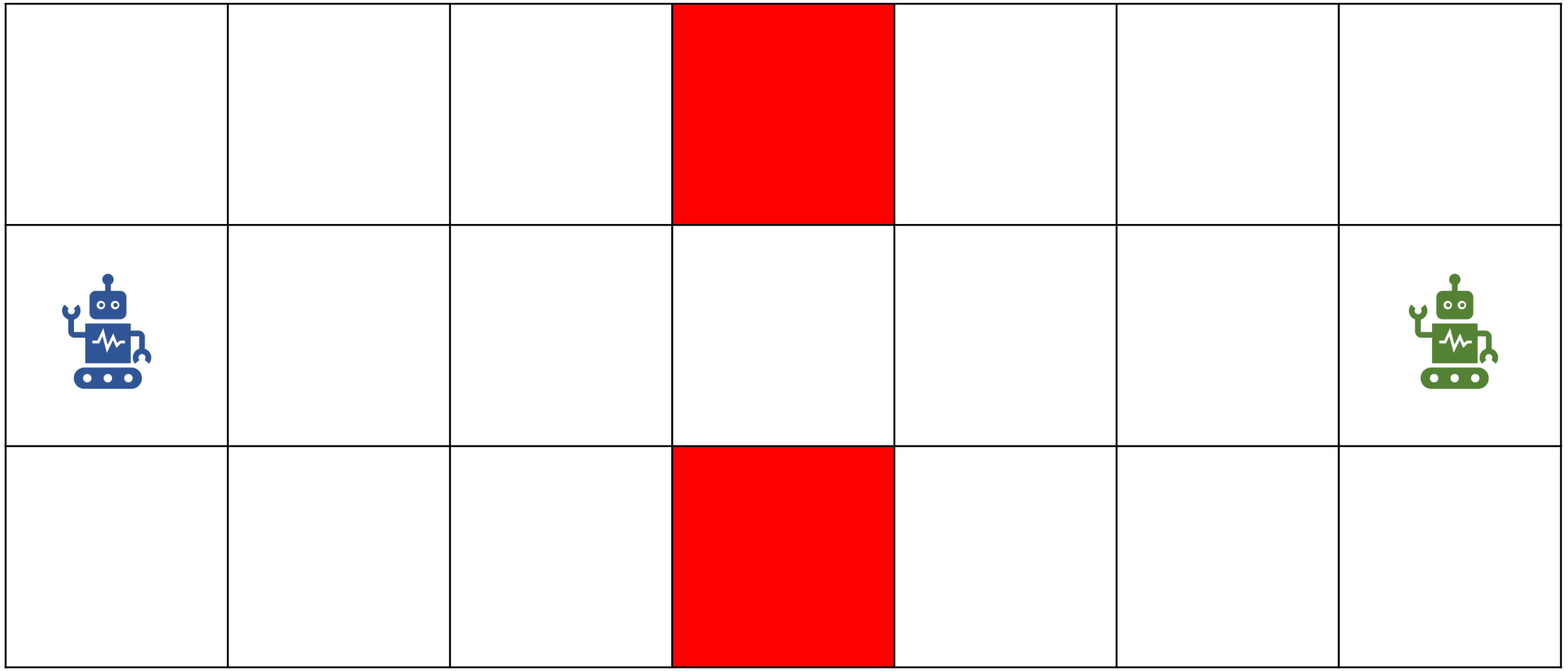

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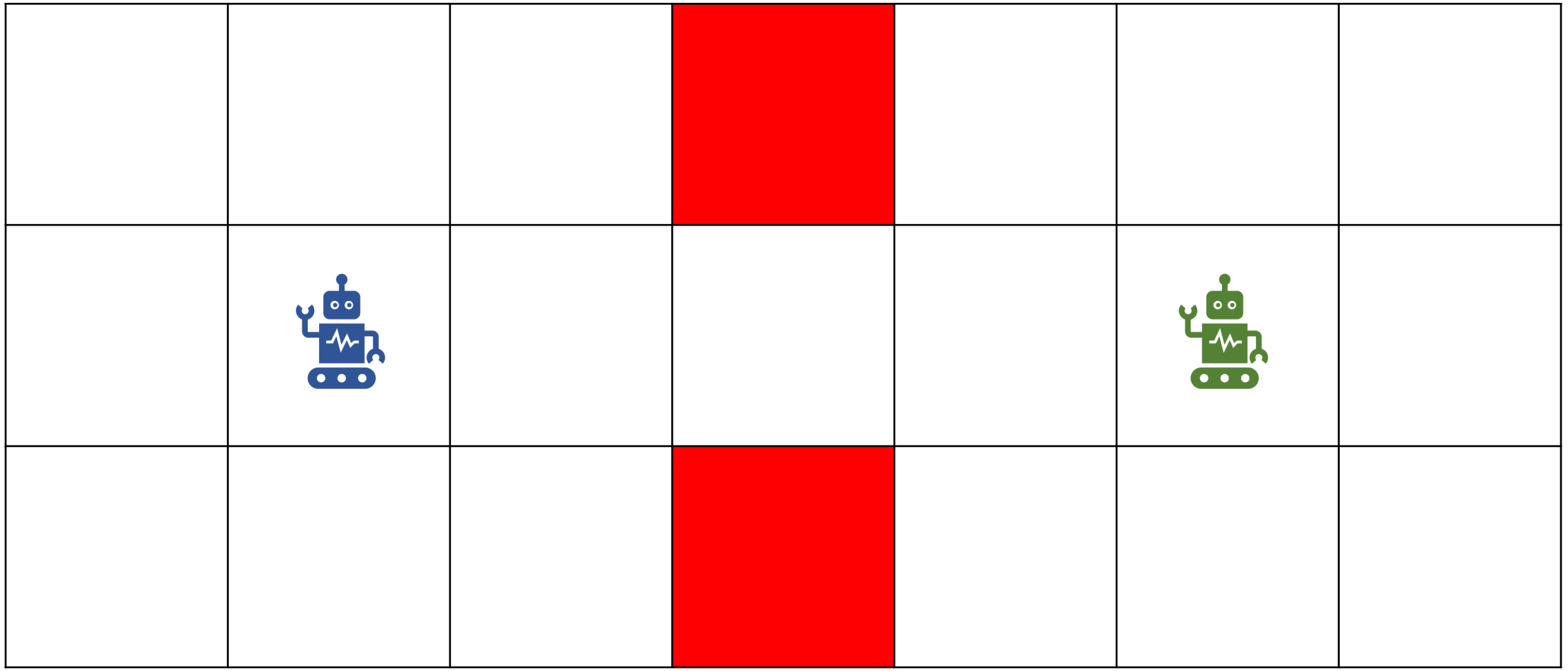

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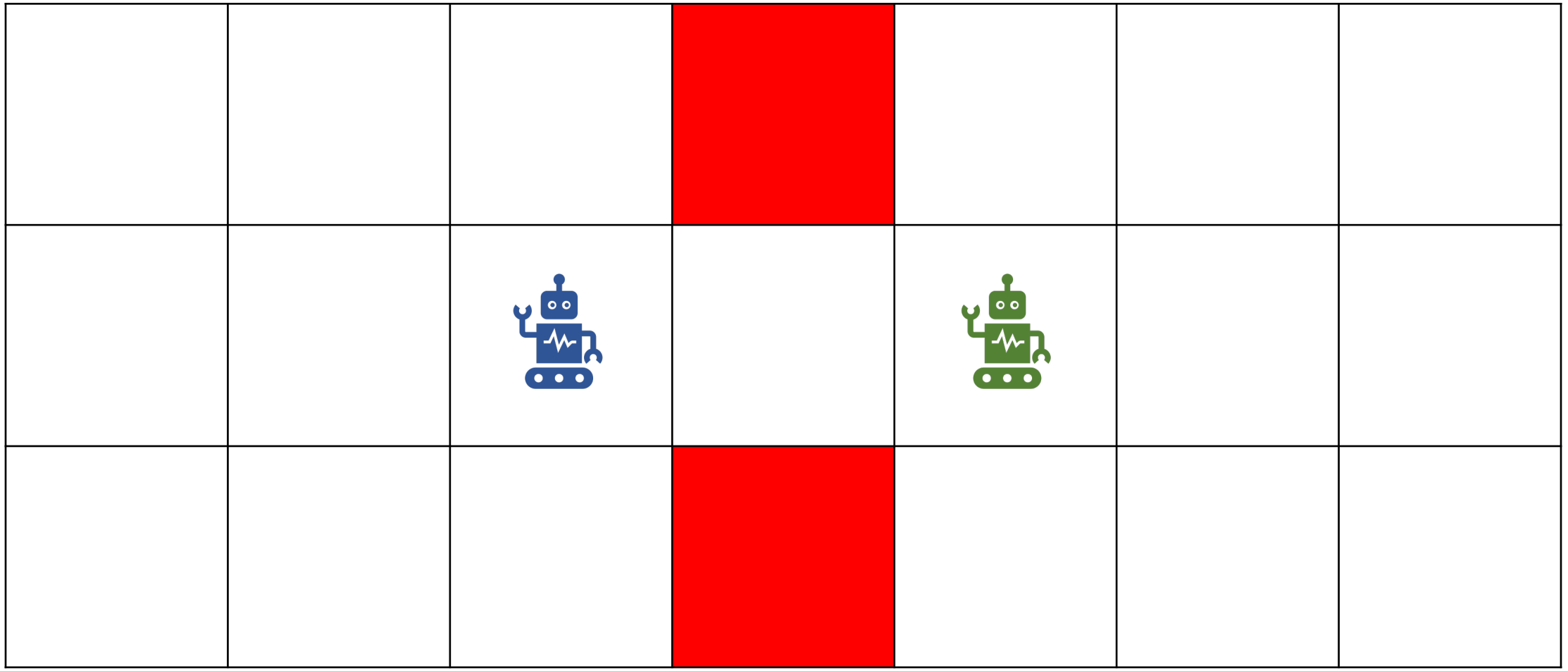

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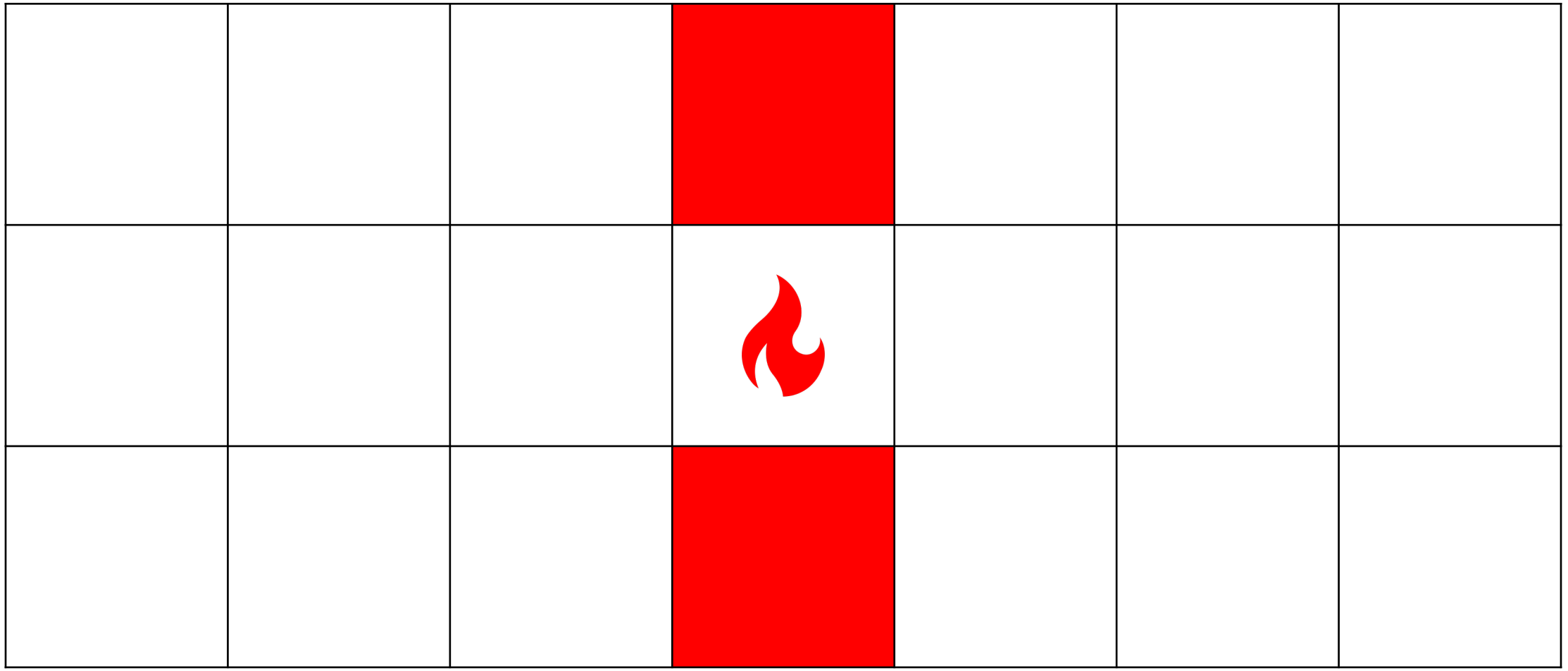
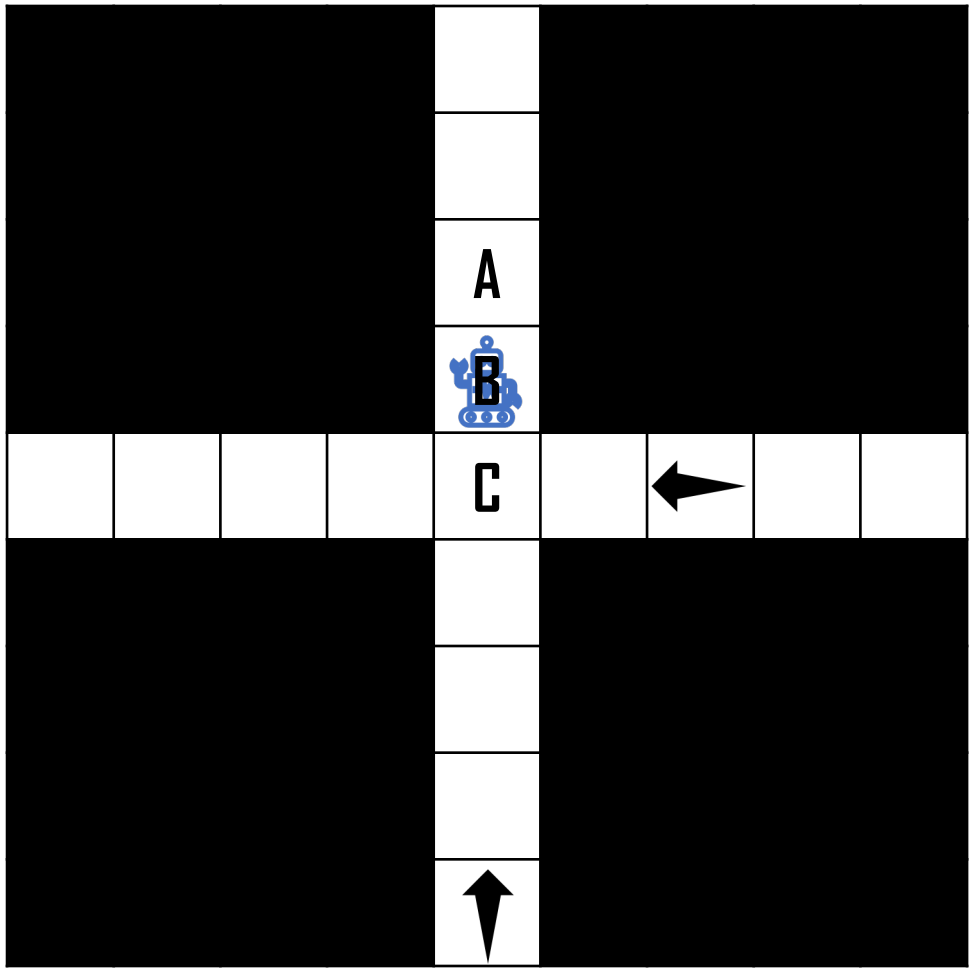
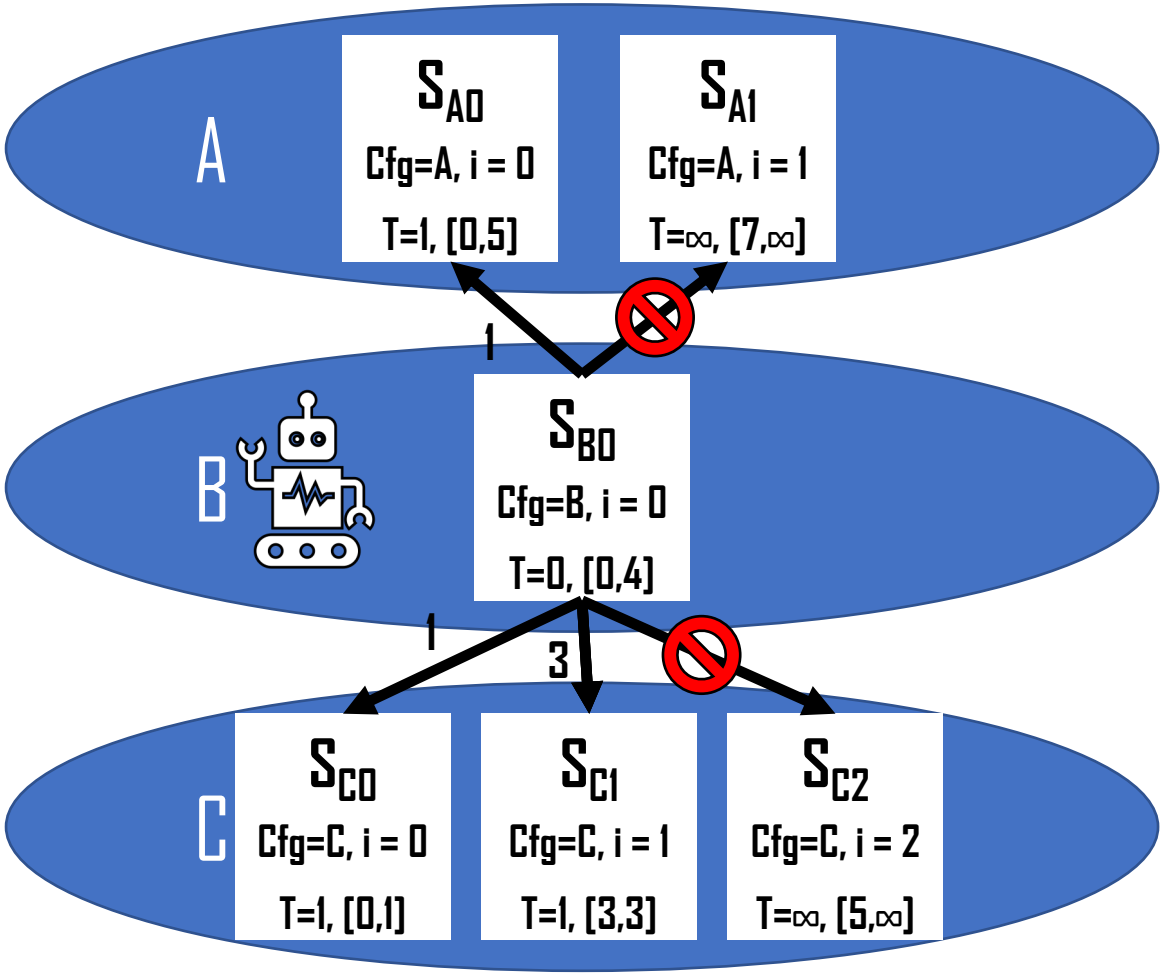


Safe Interval Path Planning (Phillips et al.) T = 0





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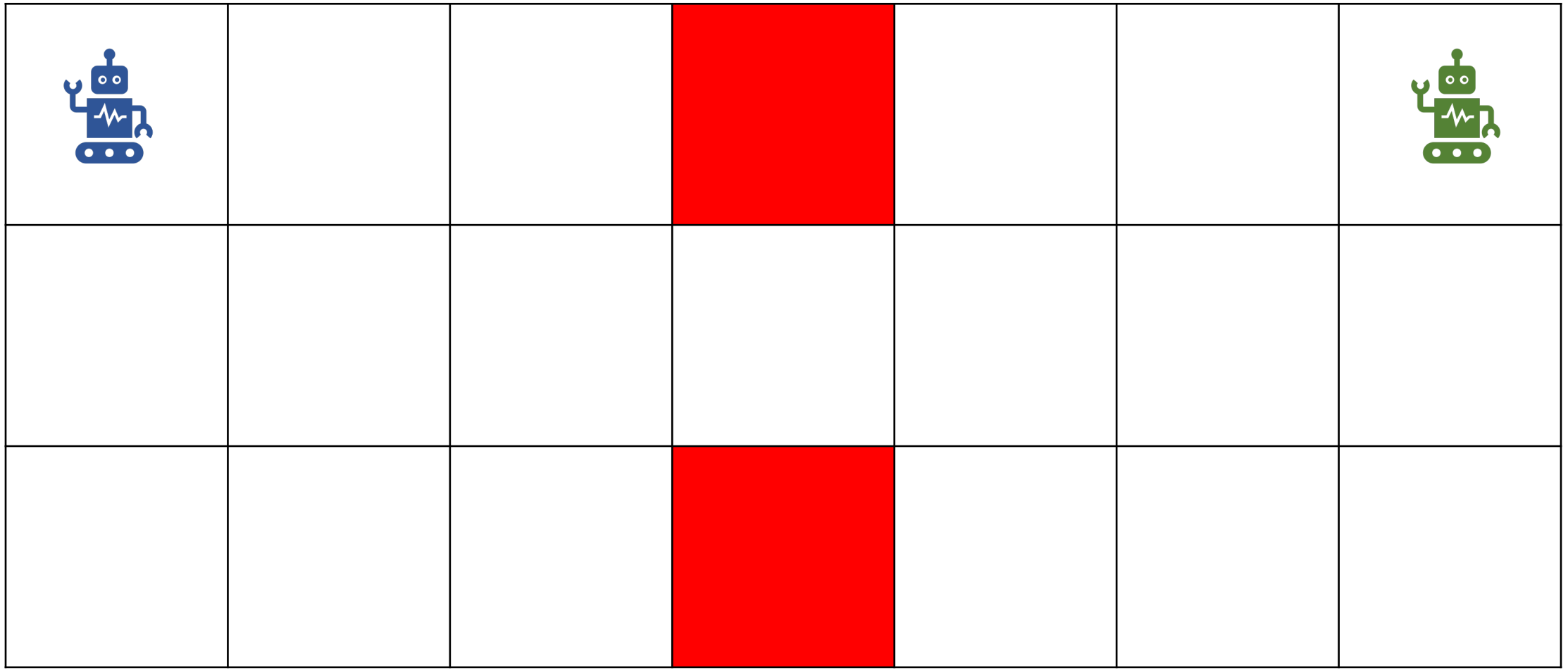

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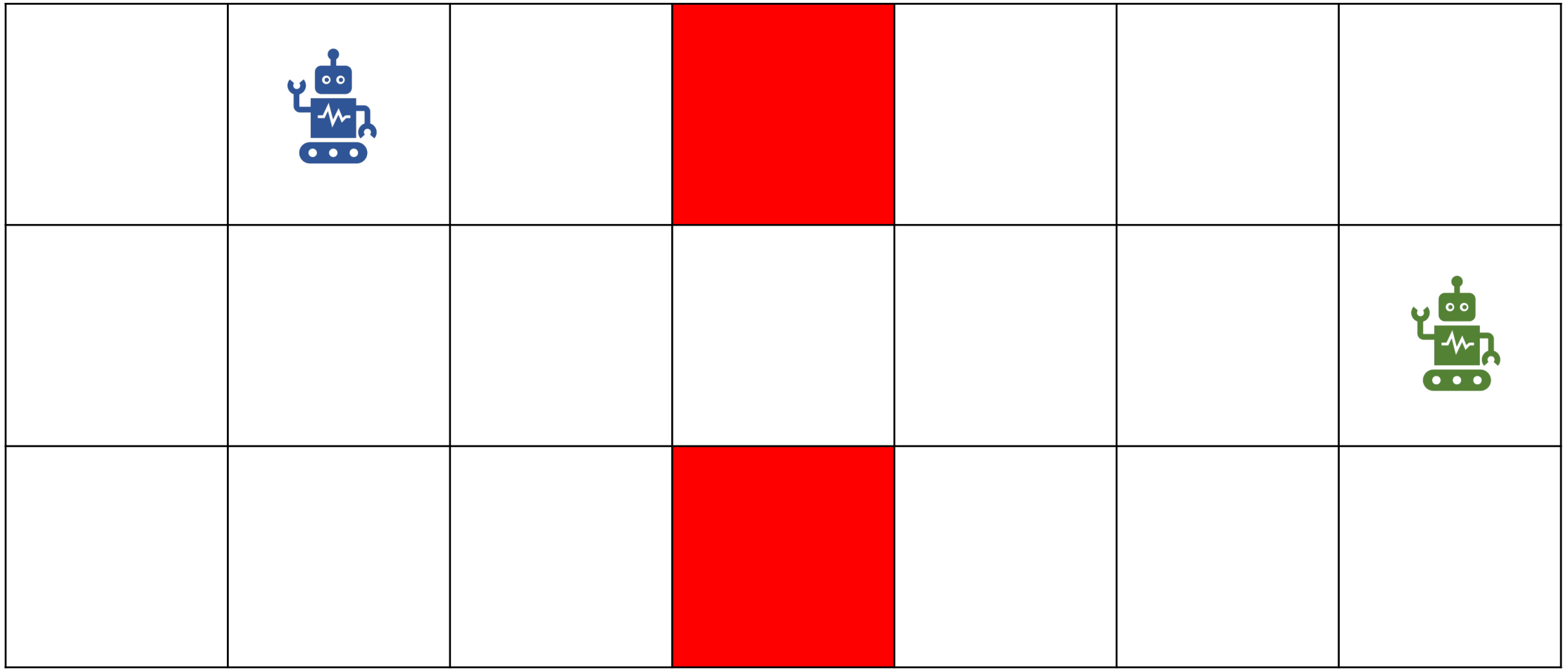

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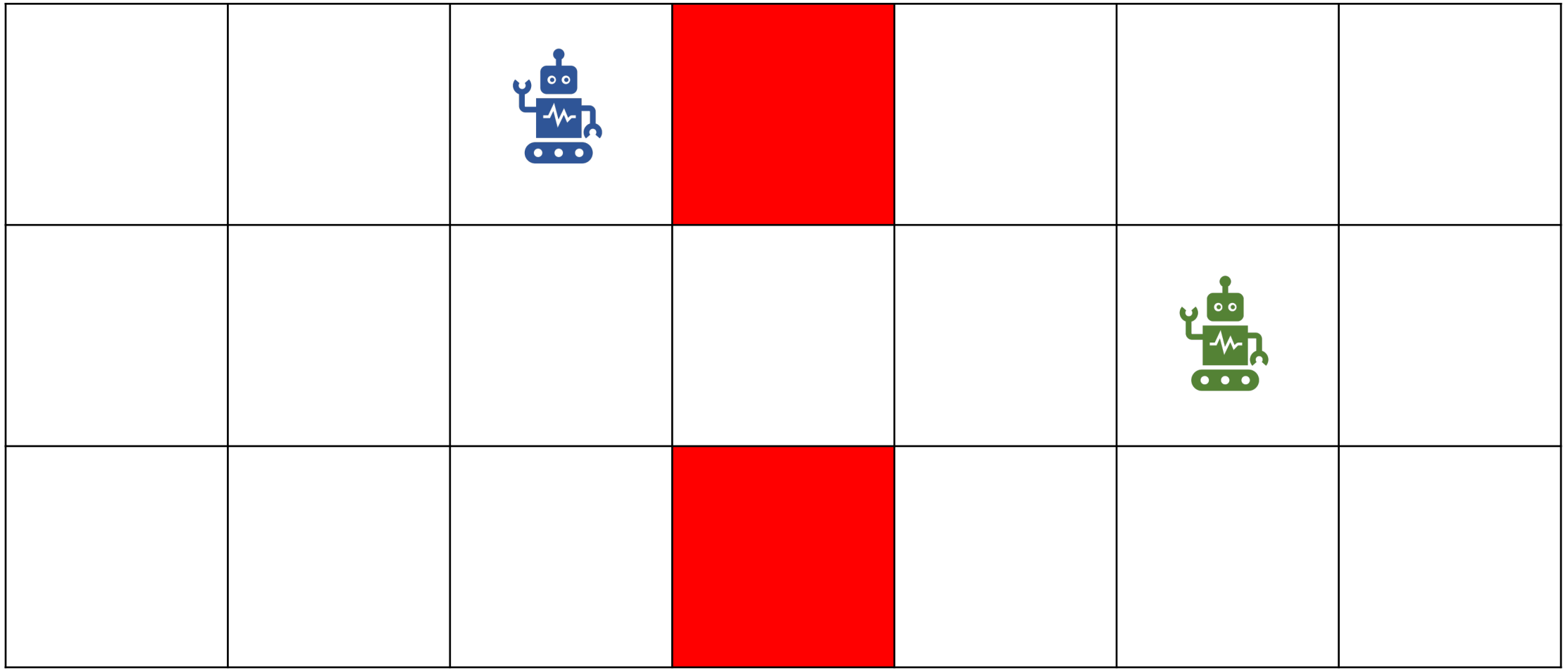

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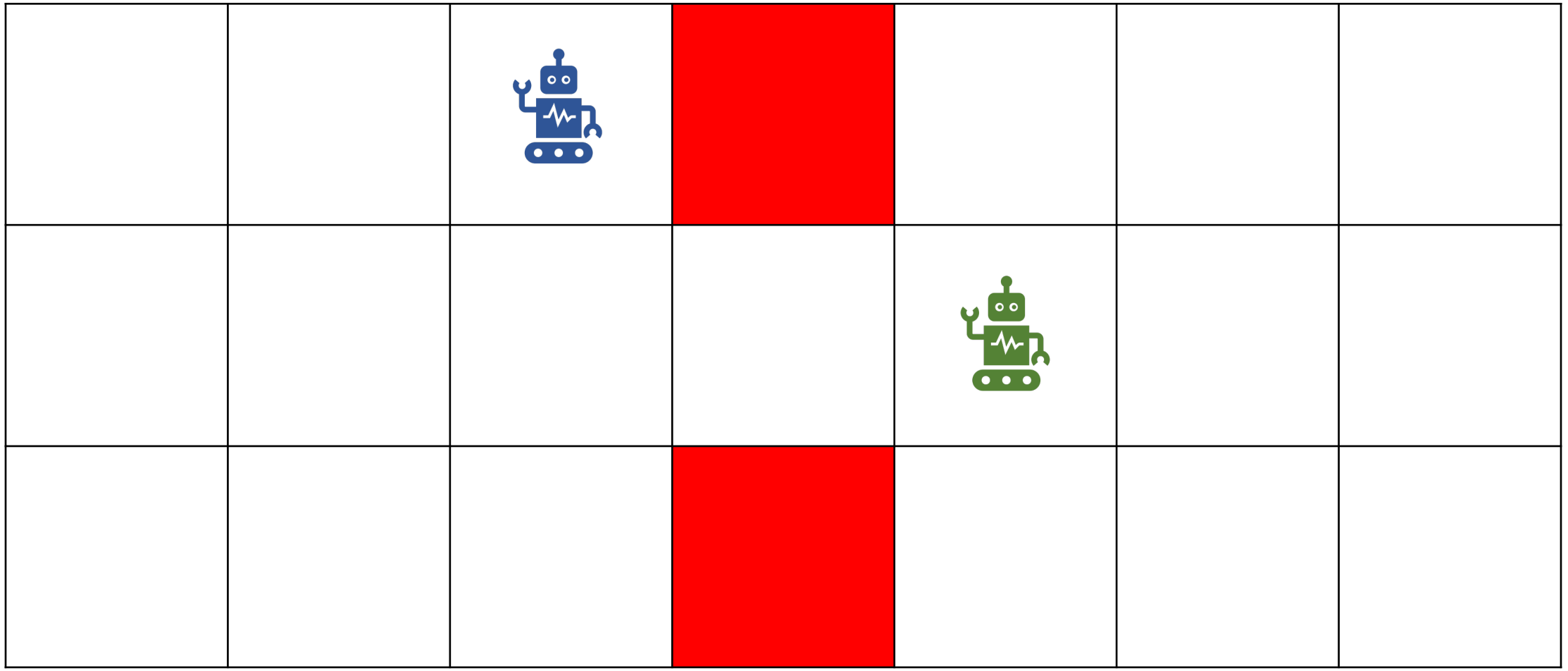

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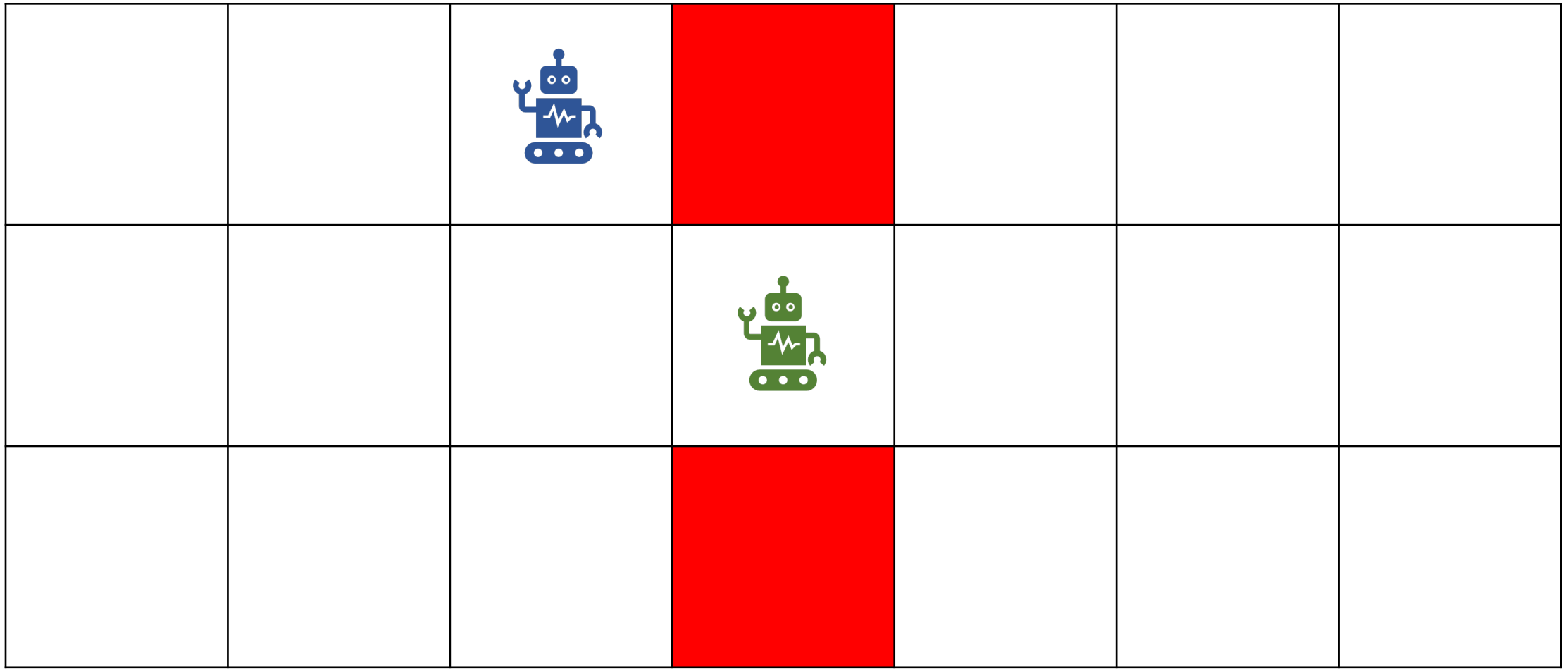

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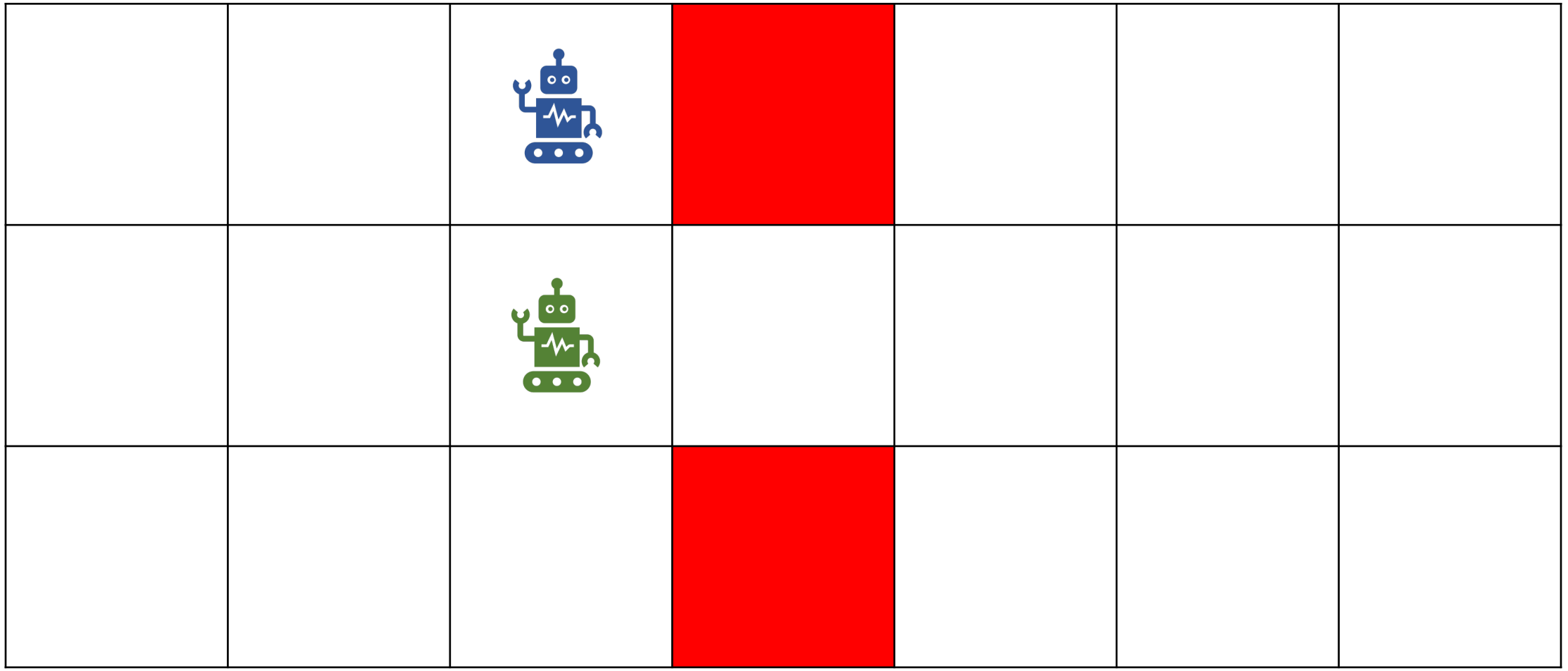

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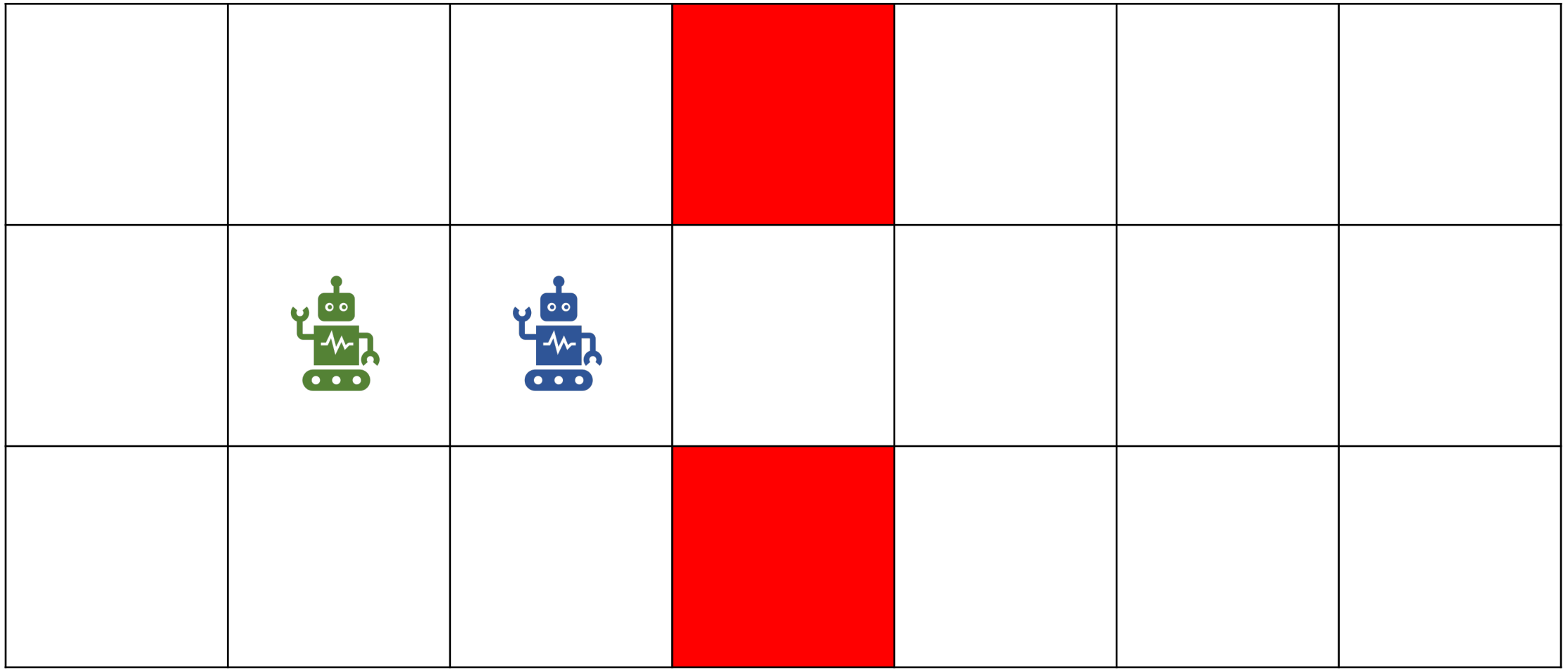

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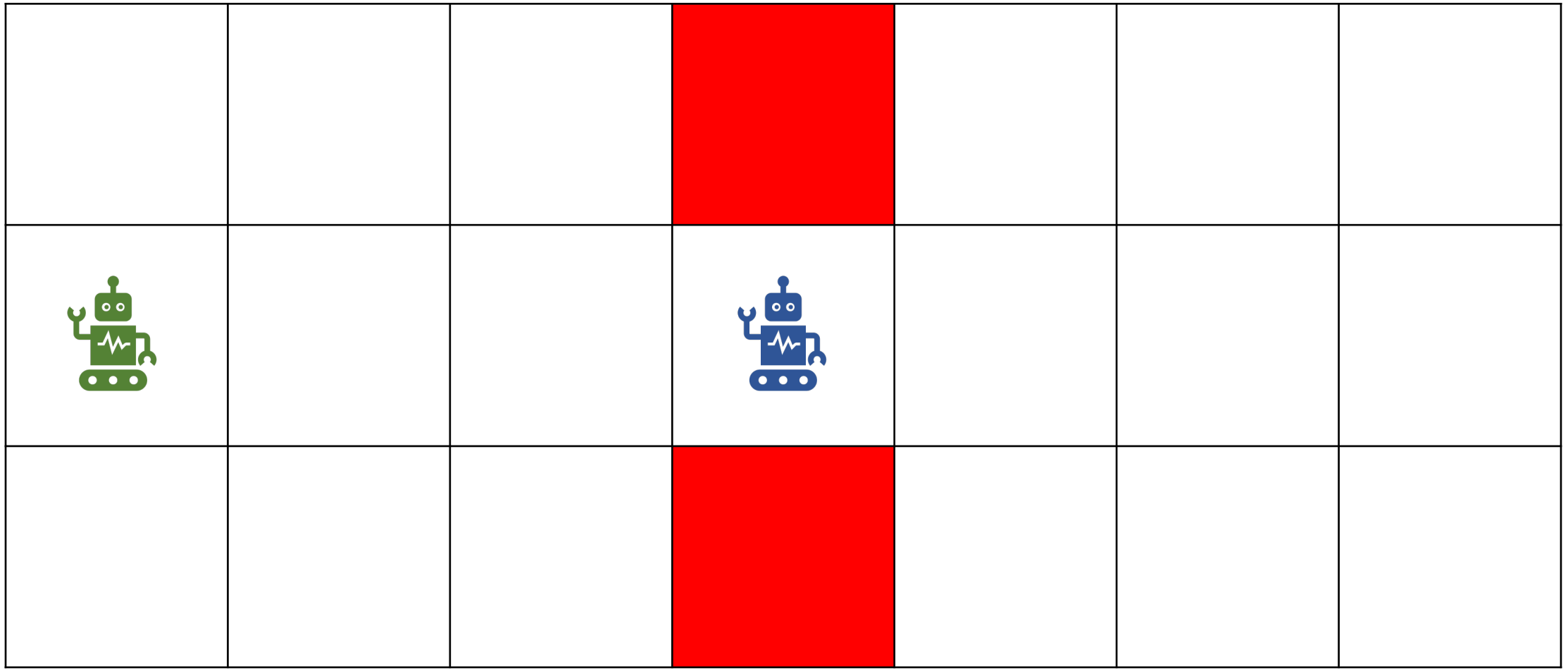

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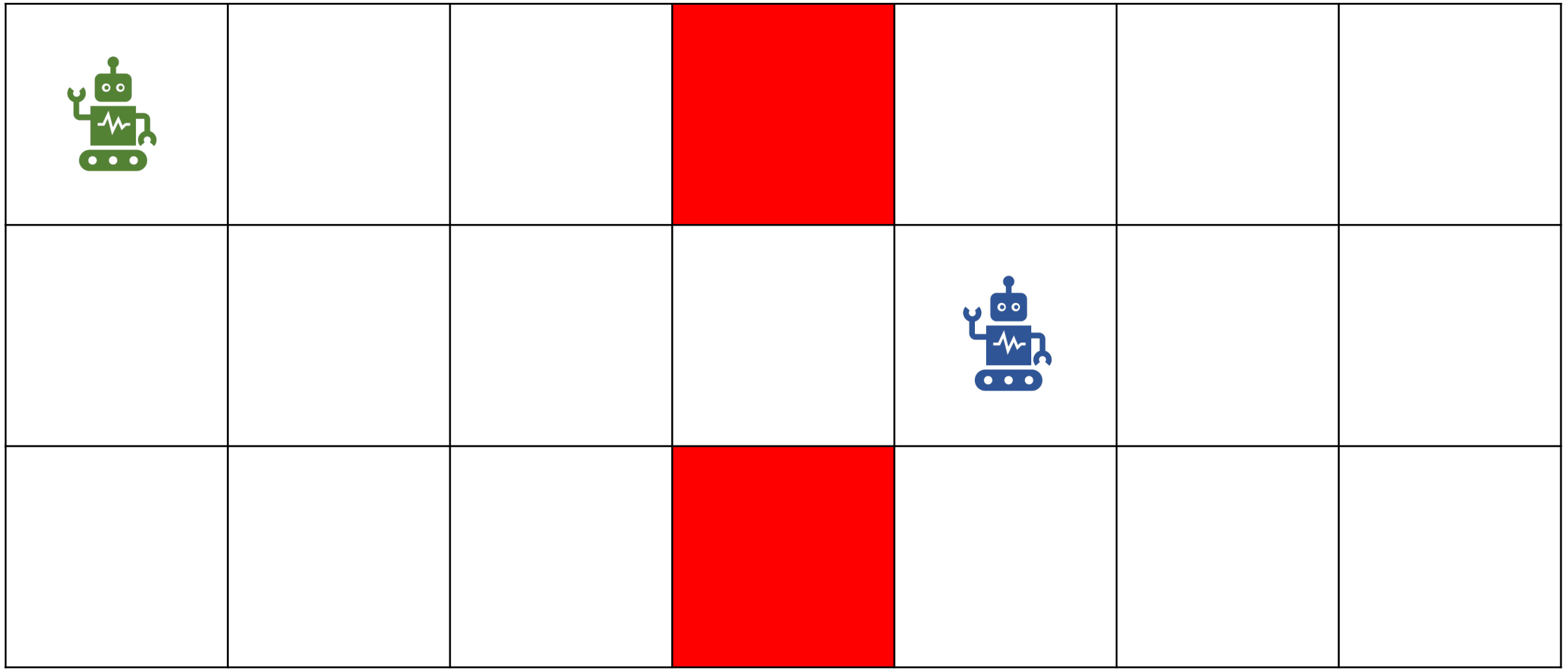

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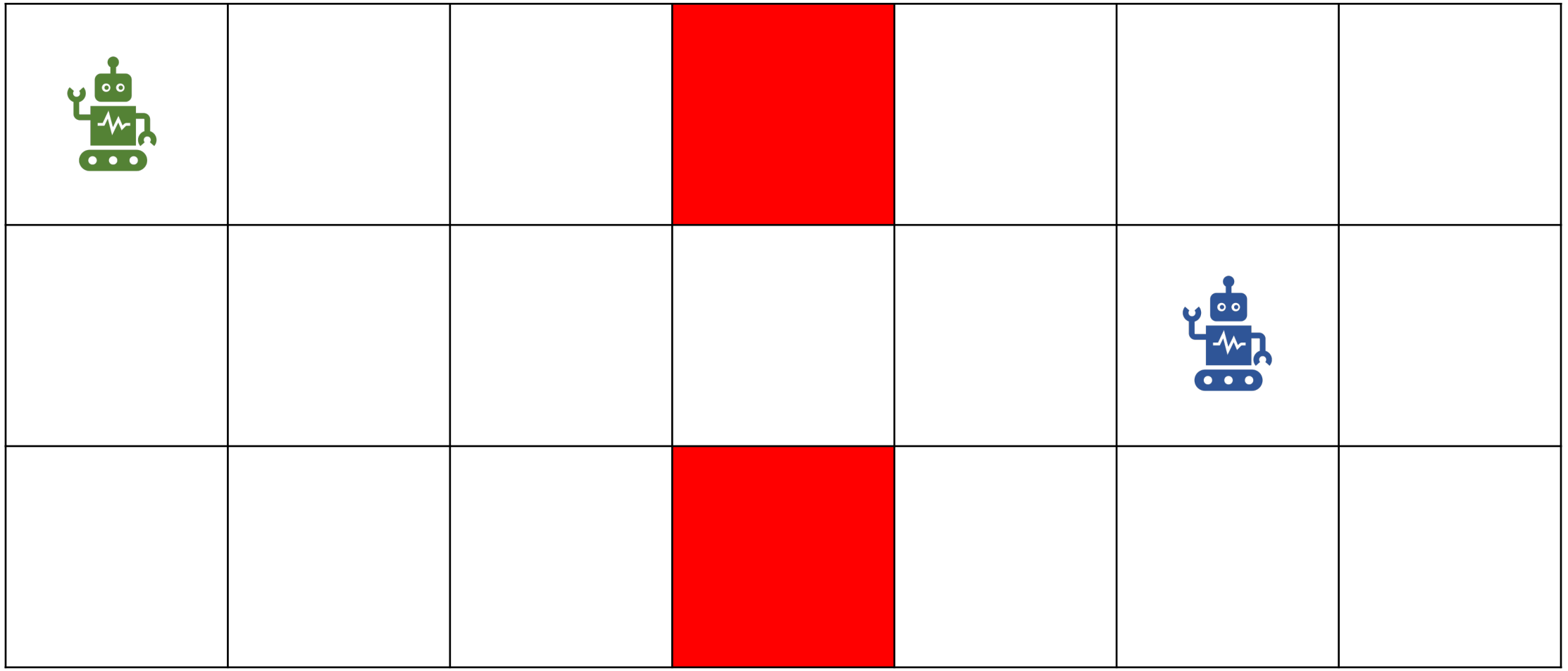

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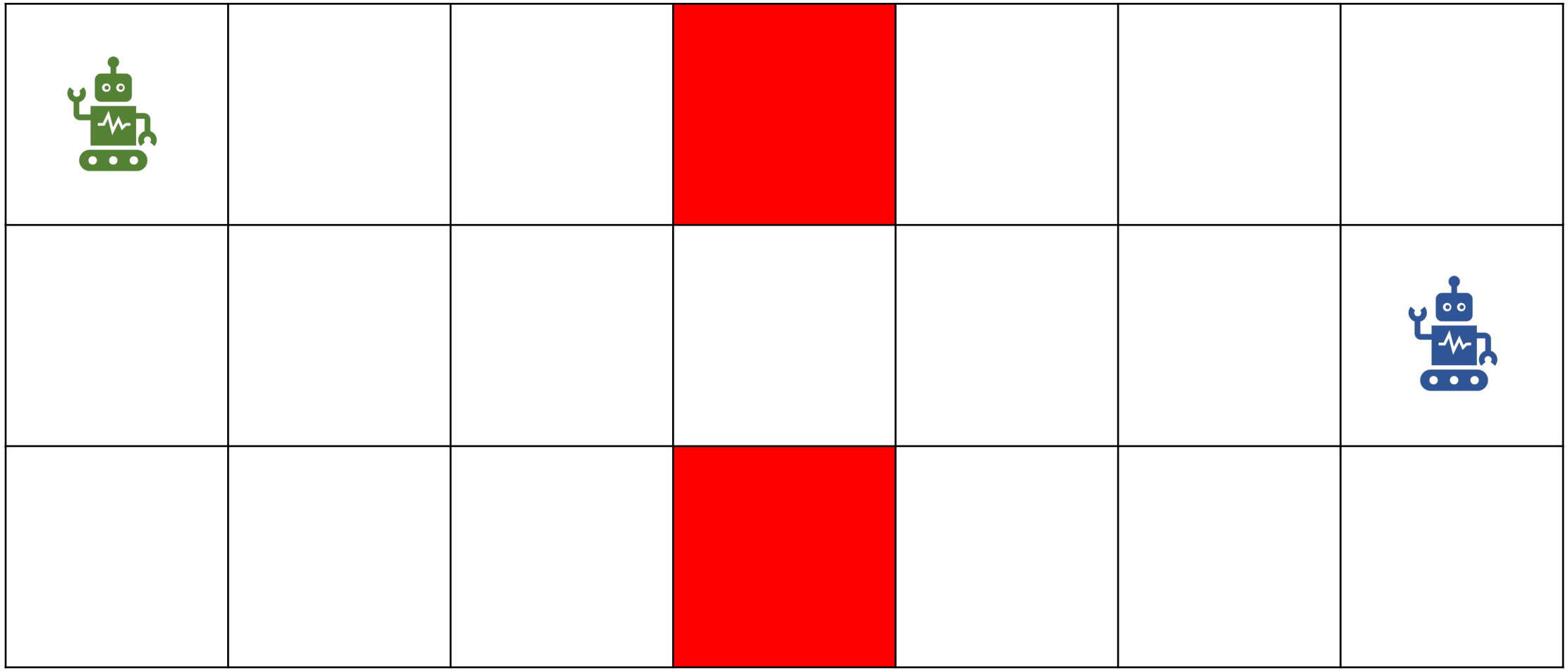

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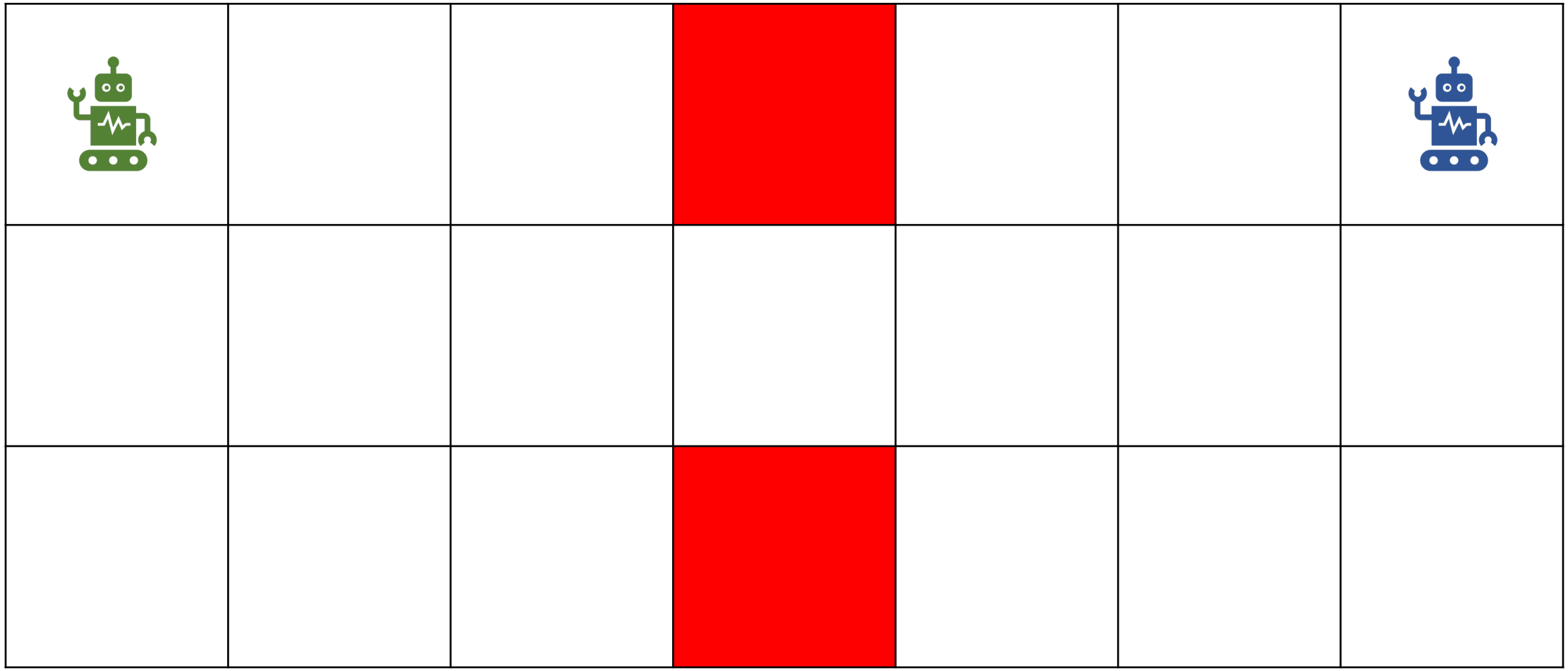
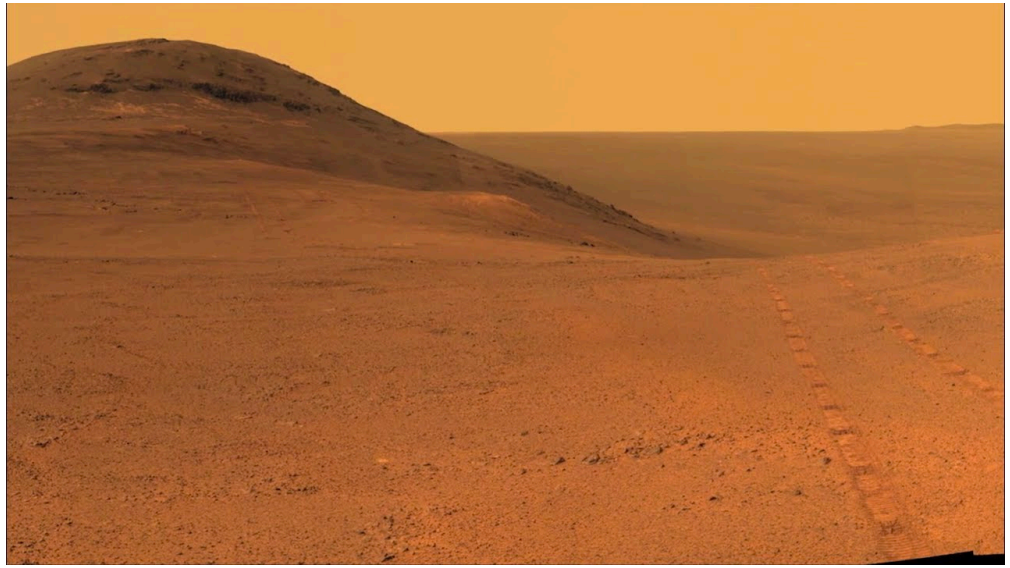


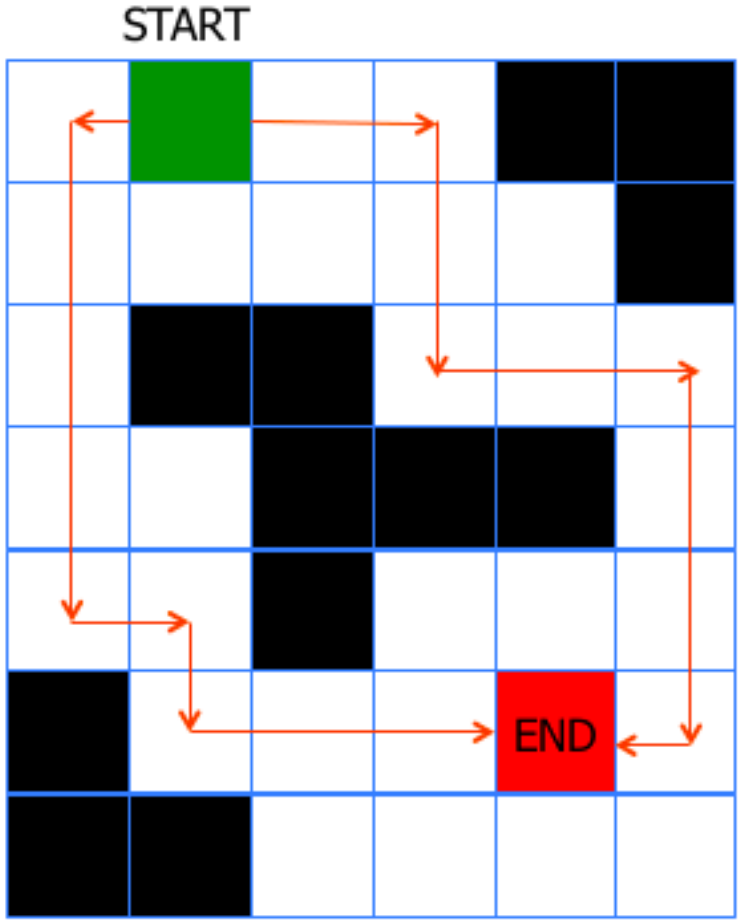
Safe Interval Path Planning Issues

- Assumes the only goal is to find a time-minimal trajectory
- Assumes robots can wait in place
- Assumes robots can stop and accelerate instantaneously



Our Method

- Uses safe interval path planning, but allows robots to choose between paths
- Iteratively generates alternate paths to points of interest (collisions, goals, etc.)
- More efficient than looking for all sub-optimal paths and picking the one that fits your constraints
- Waiting in place is an option, not a necessity



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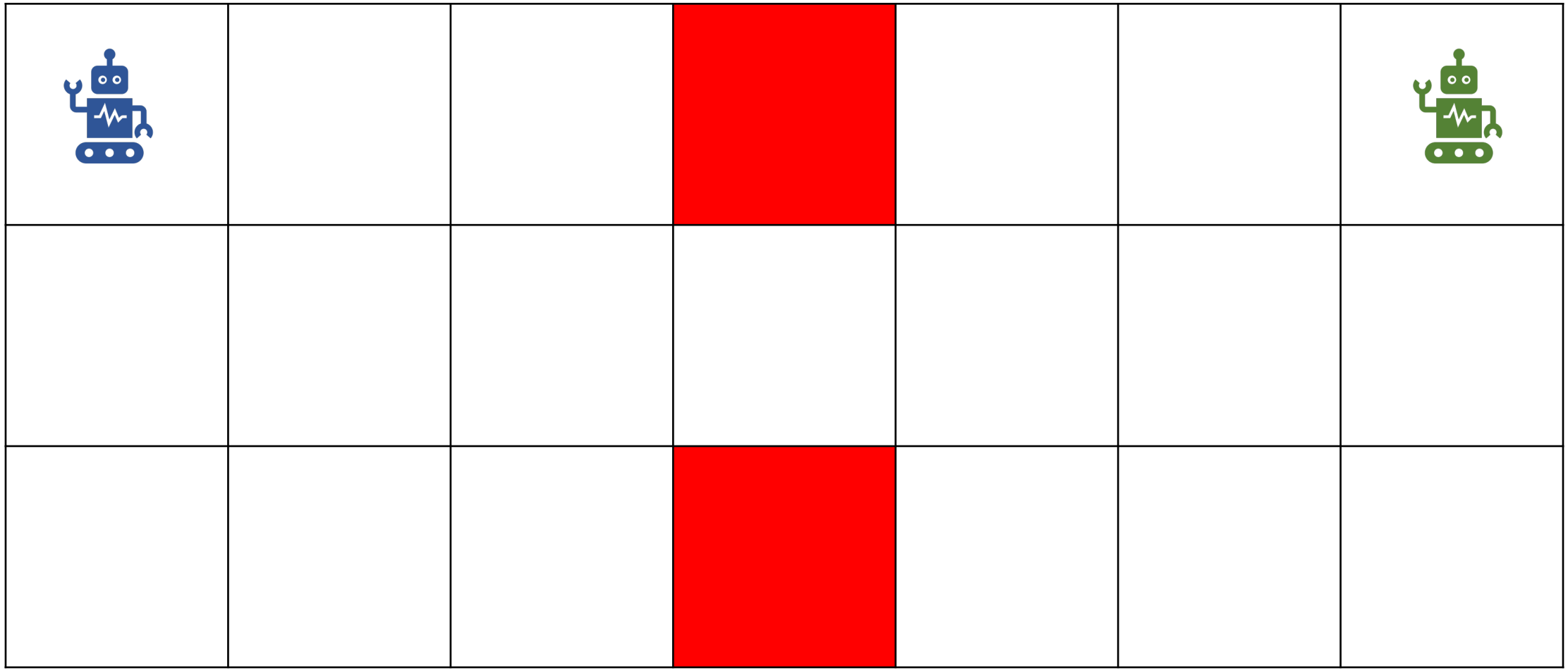

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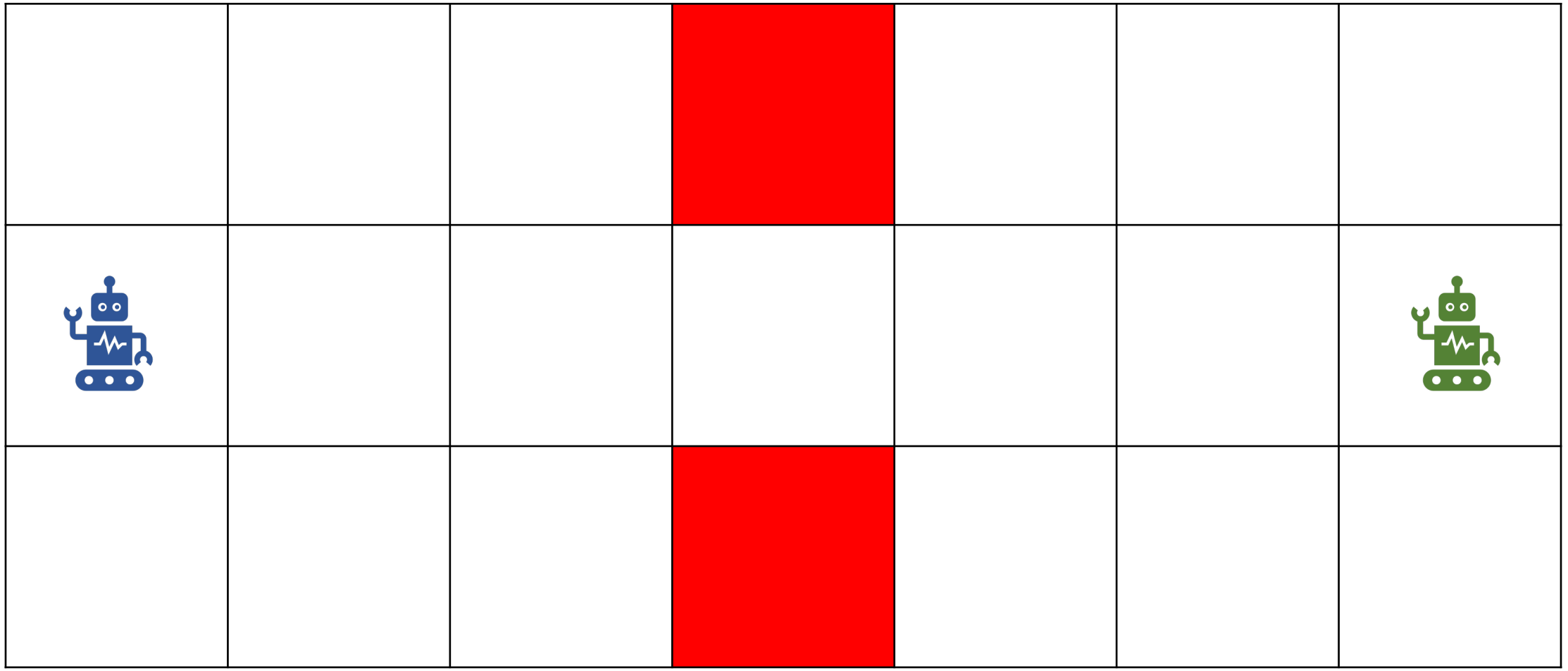

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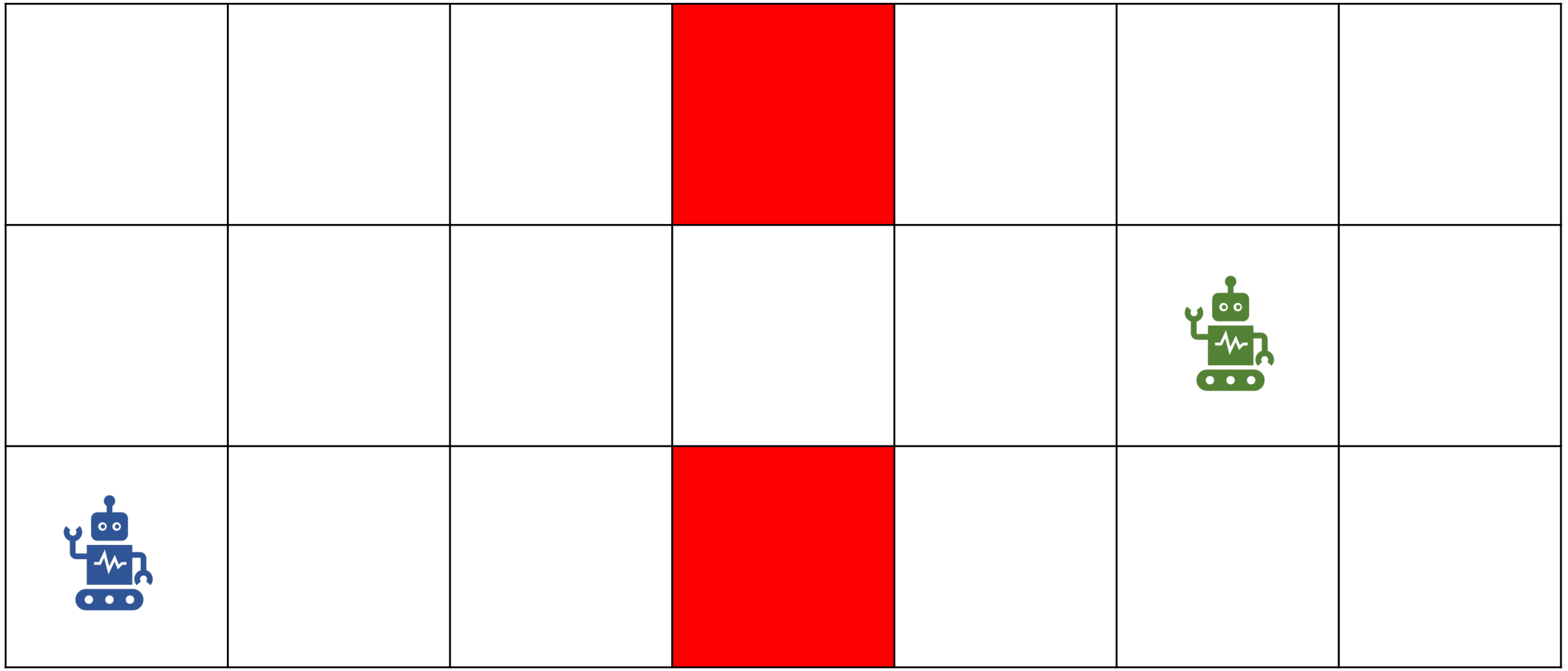

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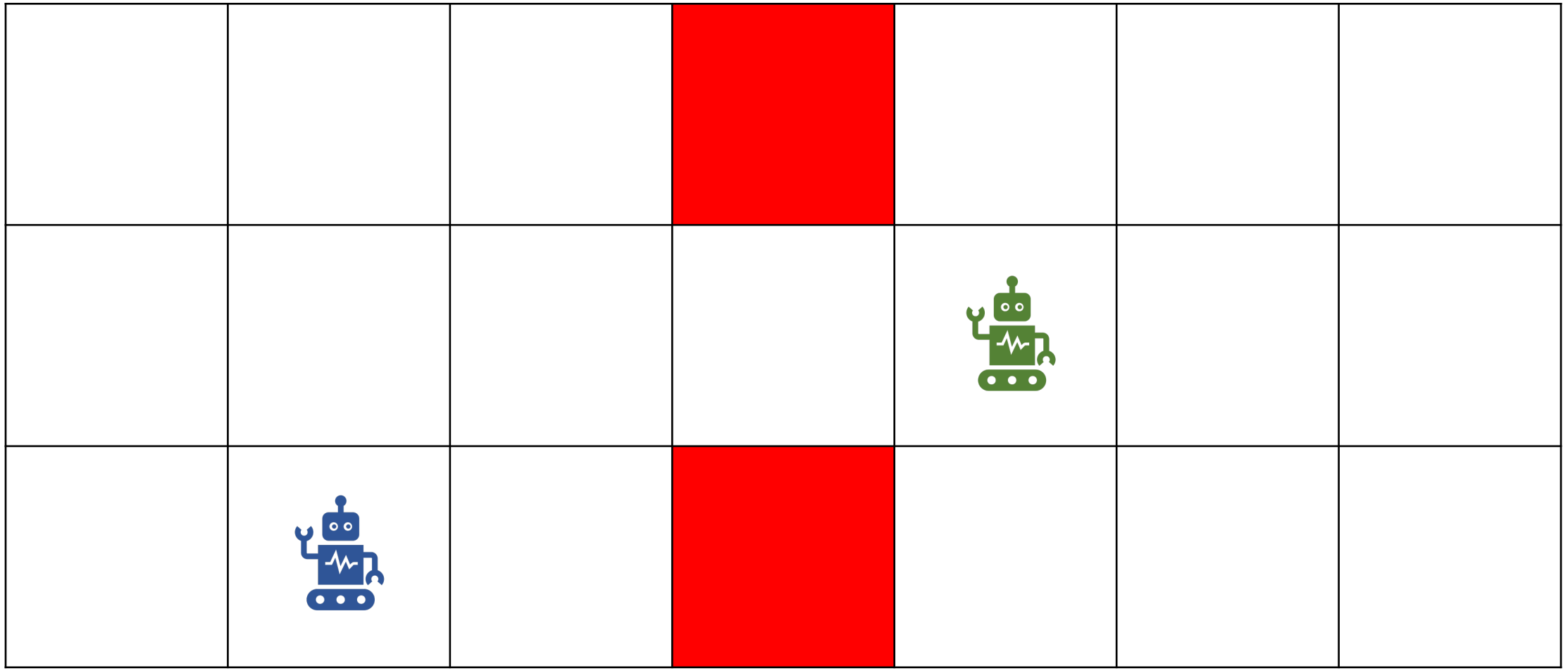

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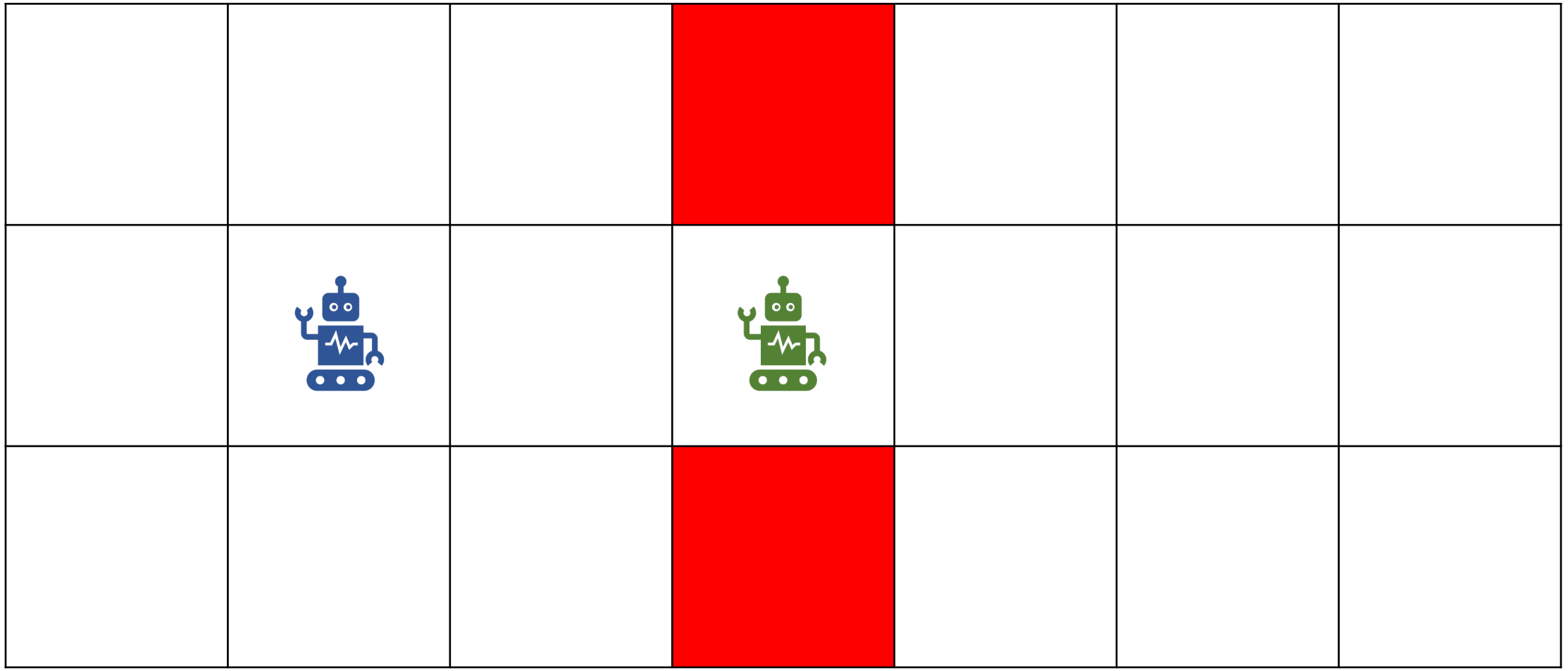

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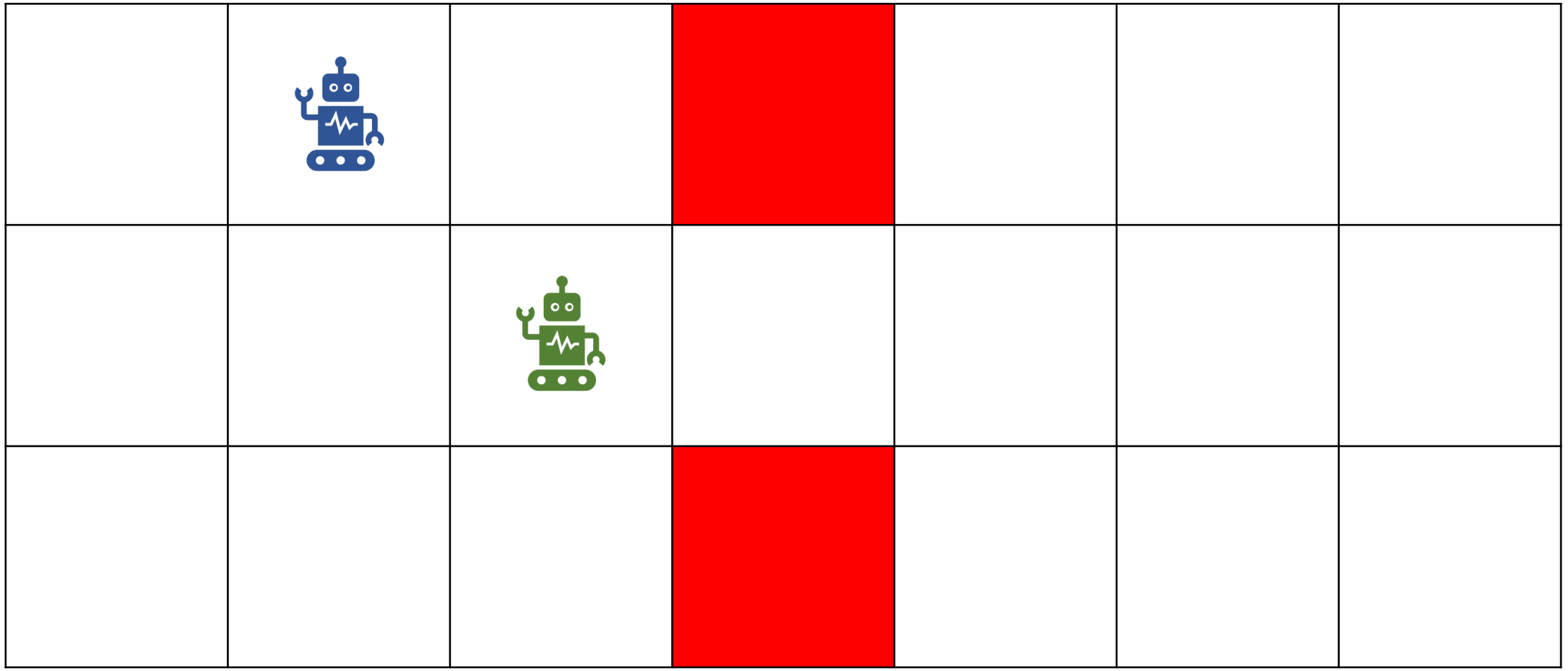

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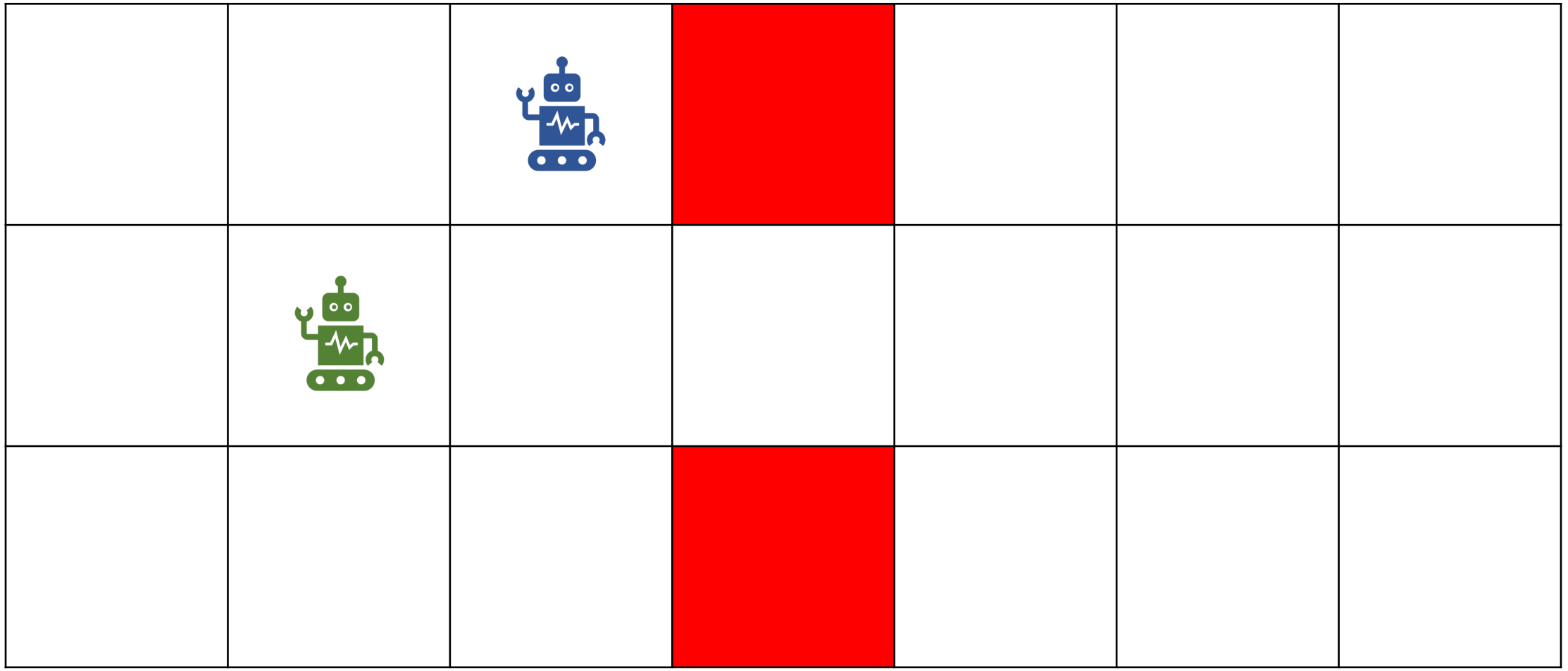

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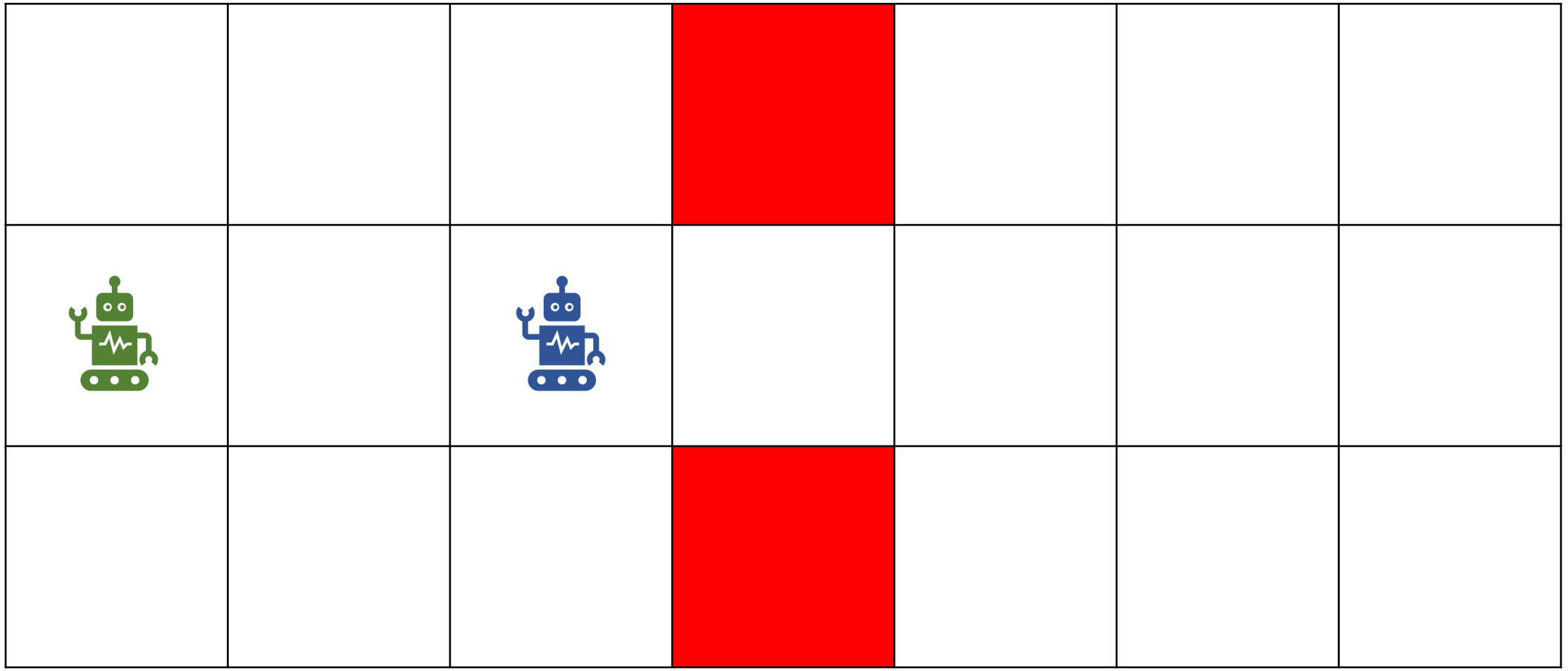

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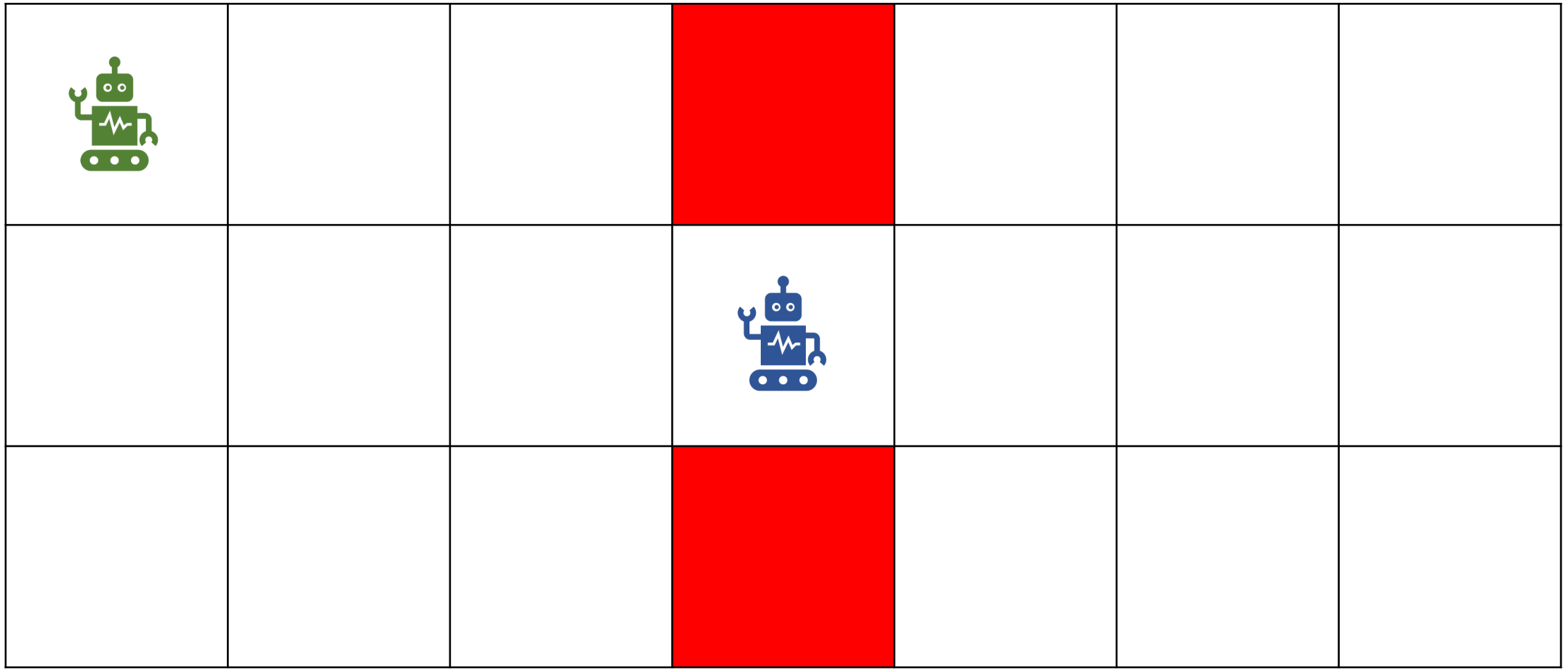

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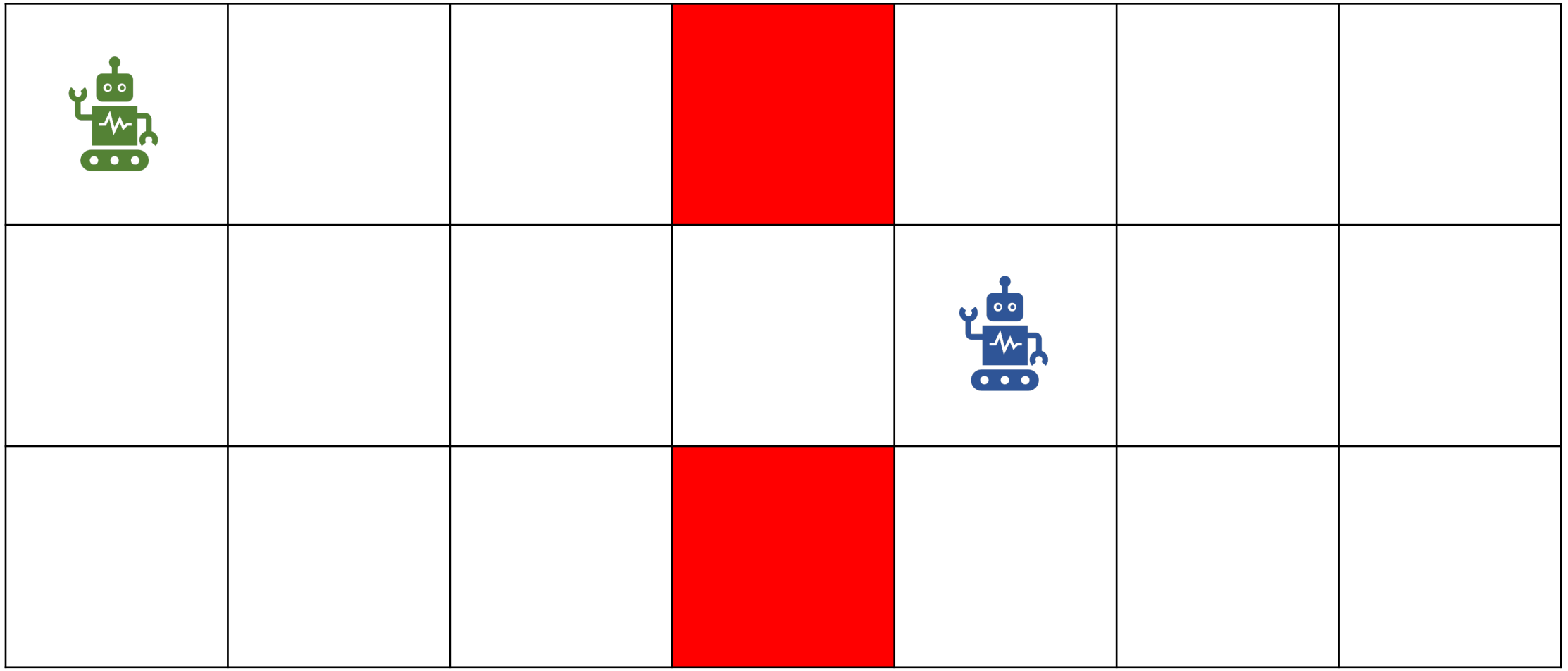

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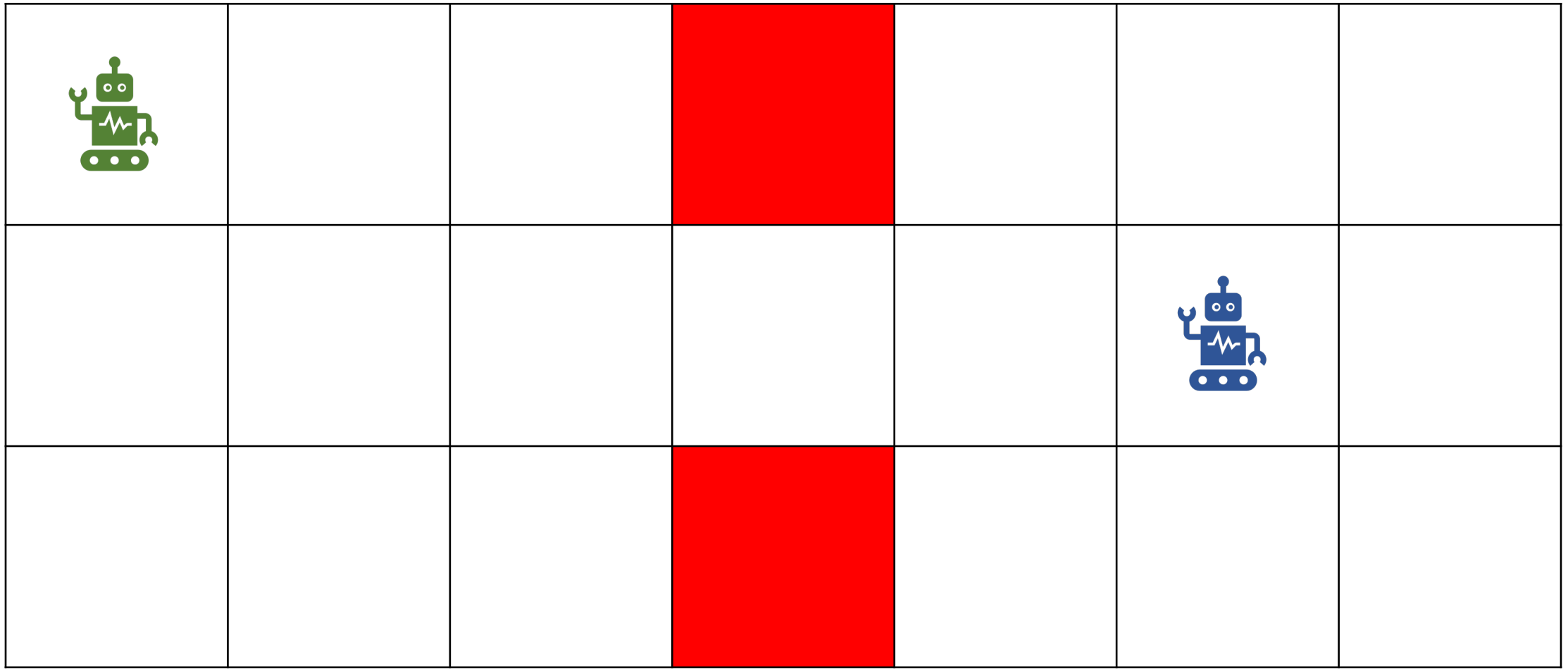

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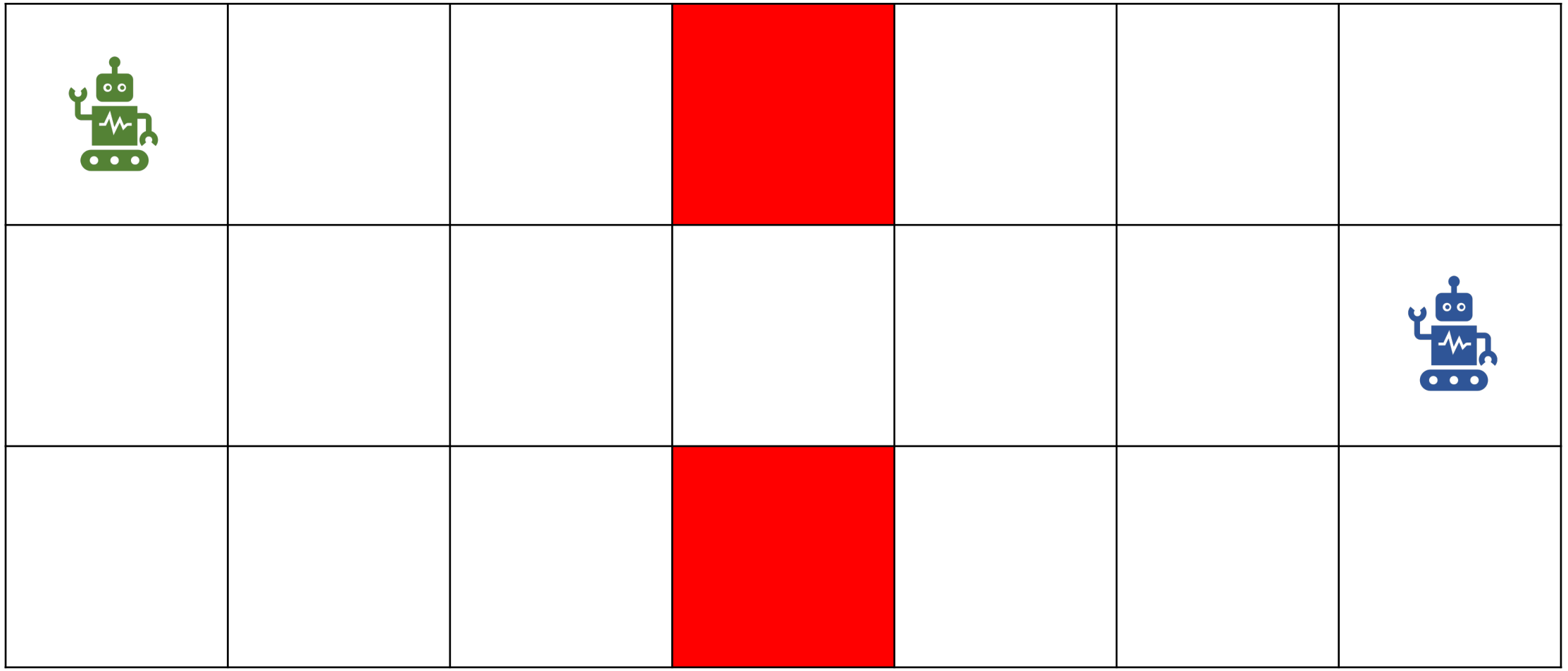

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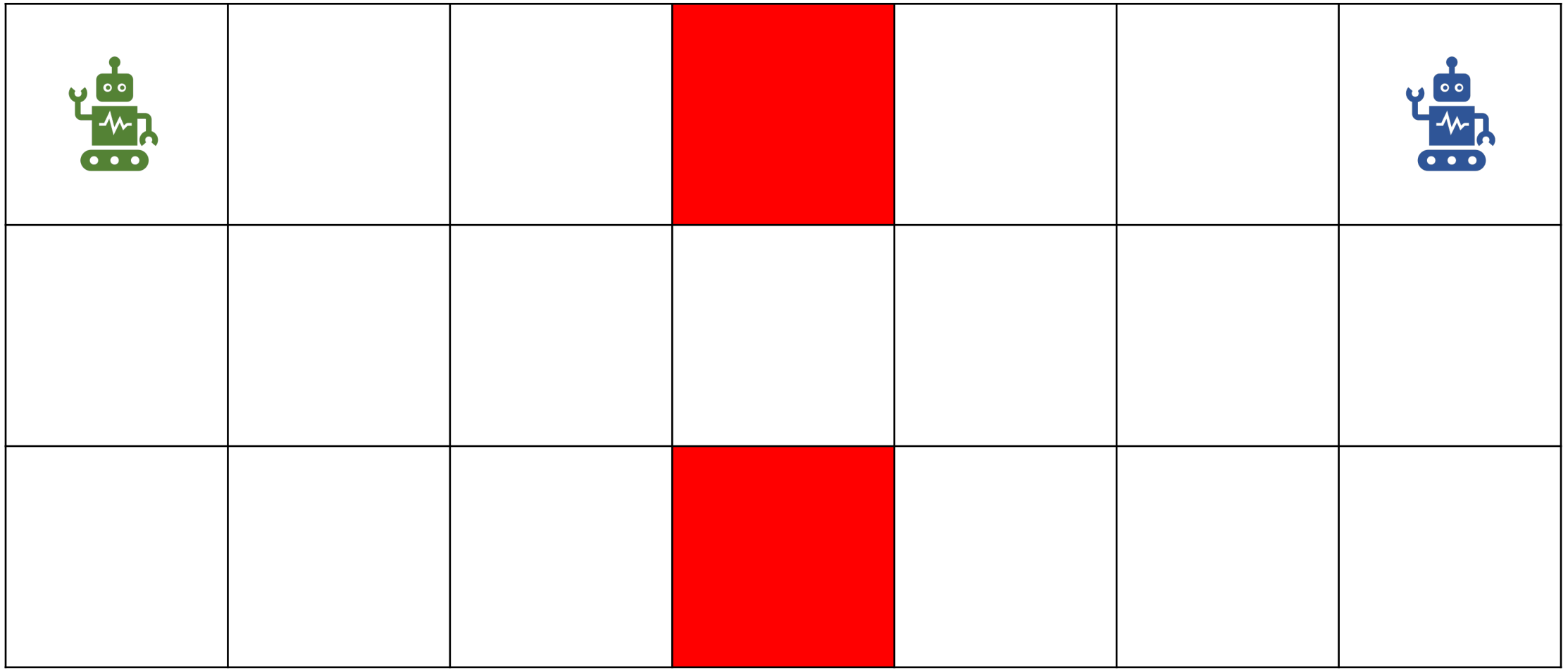
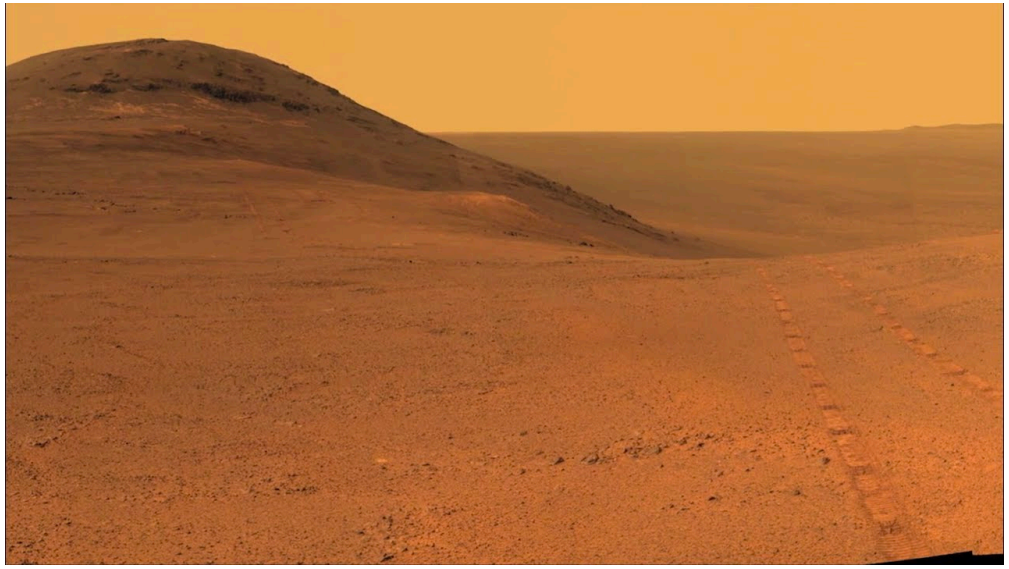


Why?

- Stopping and accelerating may be expensive or impossible
- The robot could do other things while it waits for its path to clear
- The robot may need to refuel if it waits for too long
- The roadmap may not encode all of the information necessary to find an optimal solution



Thank you!

Dr. Nancy M. Amato
Summer Predoctoral Program
Parasol
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Questions?

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