Problem-Solving with Karel

Announcements

- Programming Assignment #1 Out:
  - Karel the Robot / Karel Writeup: Due Friday, January 17 at 3:15 PM
    - **Recommendation:** Try to get `CollectNewspaperKarel` and `StoneMasonKarel` completed by Monday.
  - Email: Due Sunday, January 19 at 11:59PM
- Sign up for section!

  http://cs198.stanford.edu/section

  Signups close this Sunday at 5PM.

Friday Four Square

- Good snacks!
- Good company!
- Good game!
- Good fun!
- **Today at 4:15 in front of Gates.**

Revisiting `HurdleJumpingKarel`

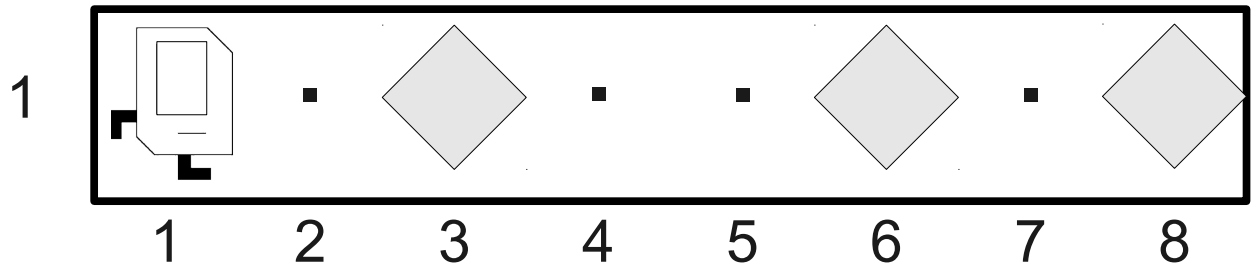
The `if` statement

```
if (condition) {
... statements to run if condition holds ...
}
```

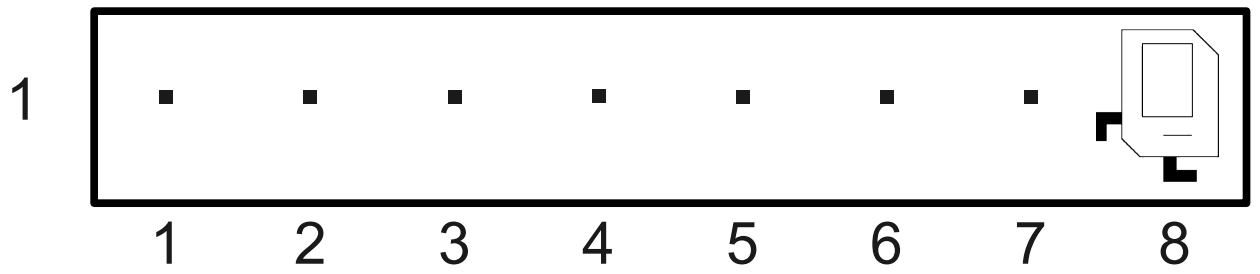
```
if (condition) {
... statements to run if condition holds ...
} else {
... statements to run if condition doesn't hold ...
}
```

RowSweepingKarel

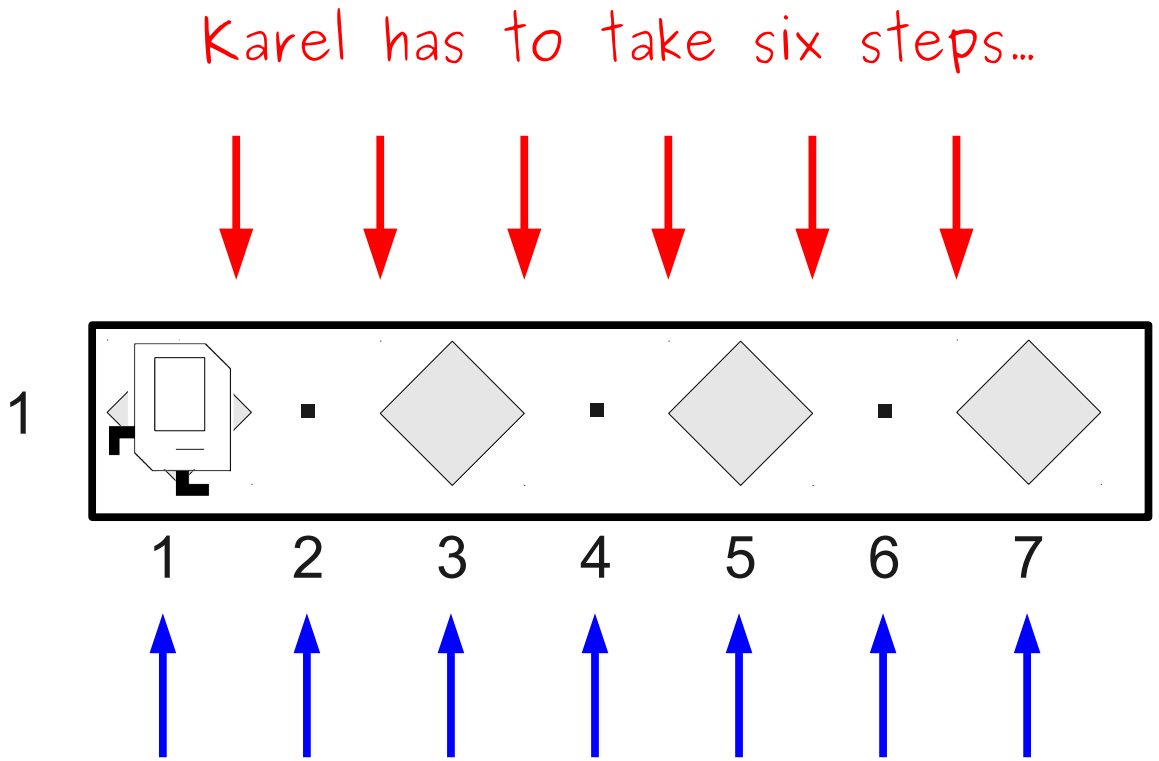
Before



After



Let's Code it Up!


Karel has to take six steps...
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1
2
3
4
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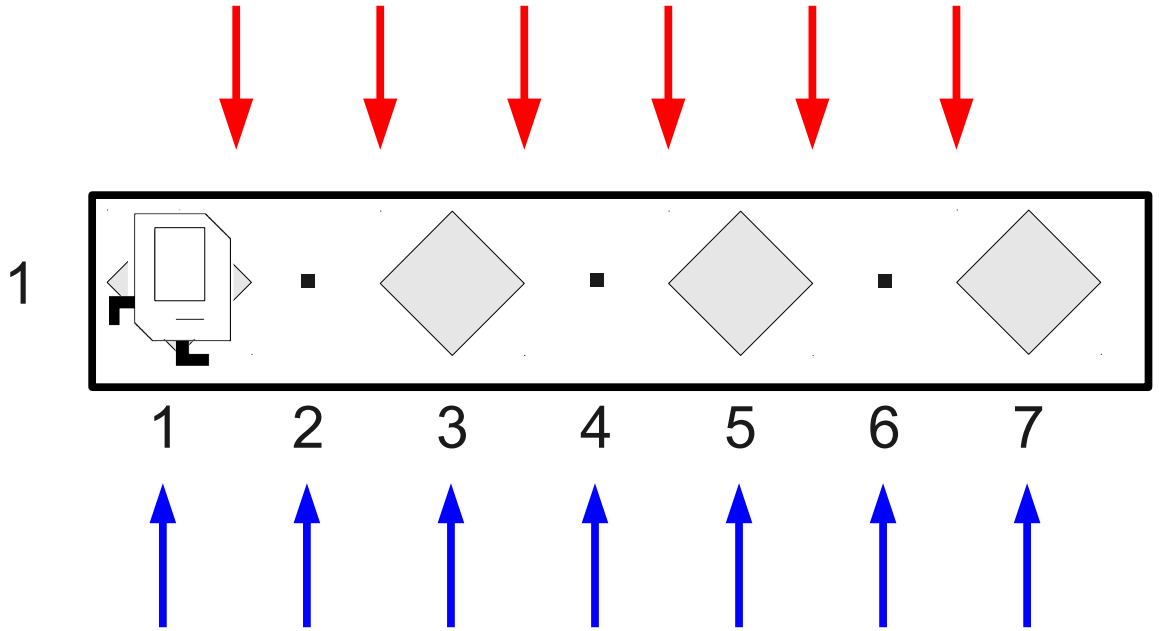
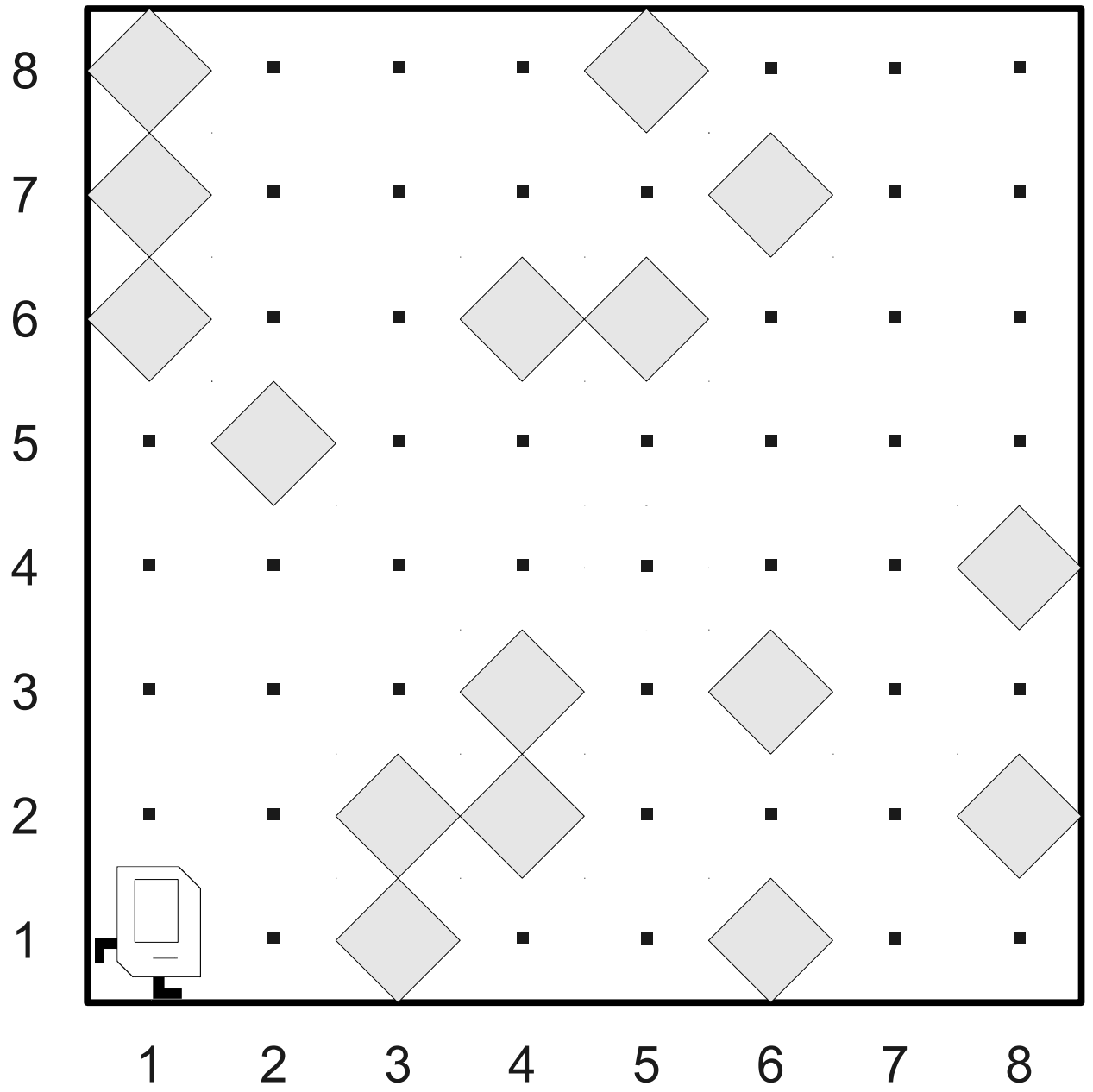
7

Karel has to take six steps...



...but has to sweep seven corners.

A More Elaborate Problem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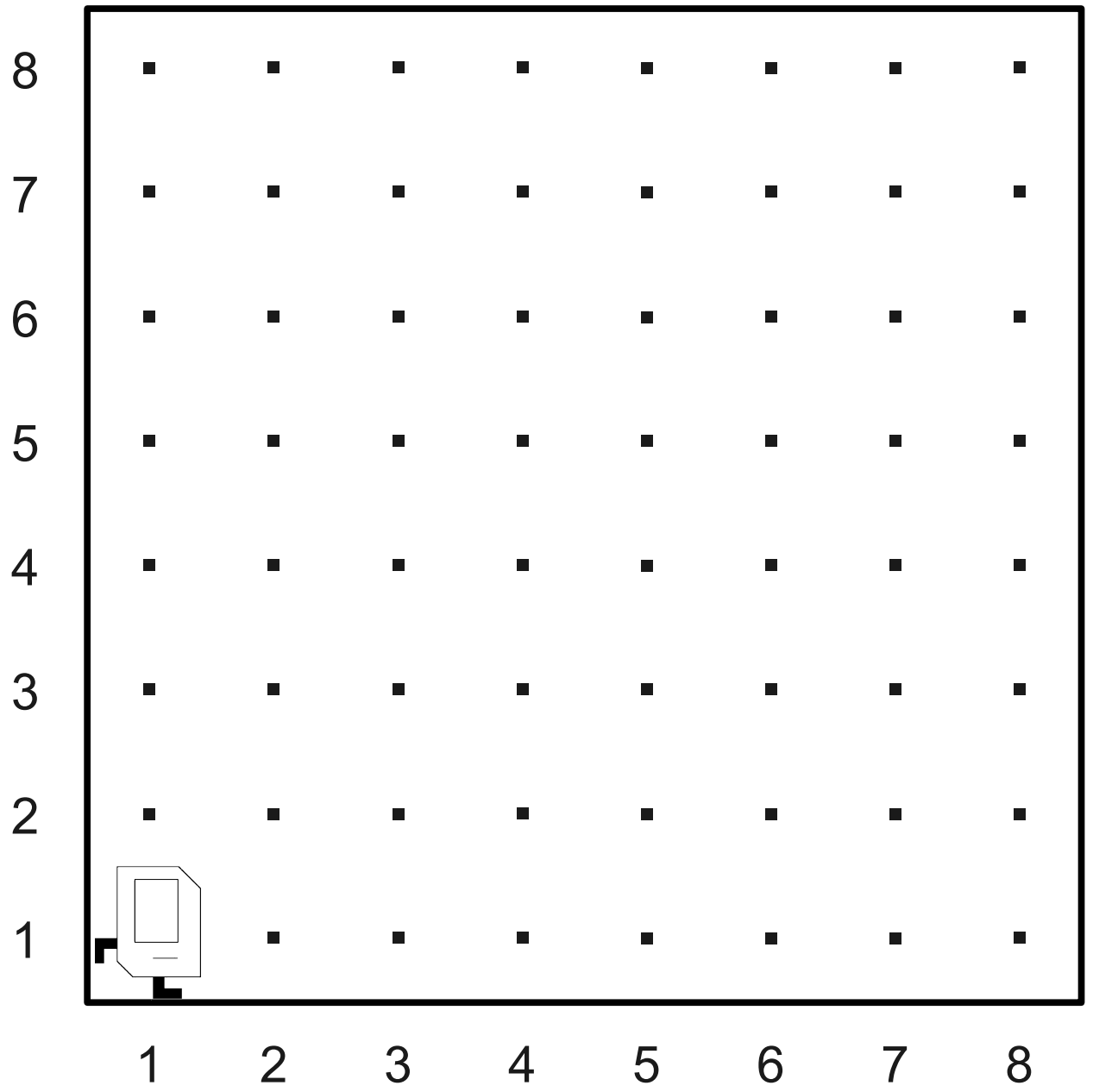
1 2 3 4 5 6 7 8

RoombaKarel

The Problem

- Setup:
  - Karel begins at (1, 1) facing East.
  - Karel's world has no walls in it.
  - Each corner has zero or one beepers.
- Goal:
  - Karel's world is free of beepers.
  - Karel's location does not matter.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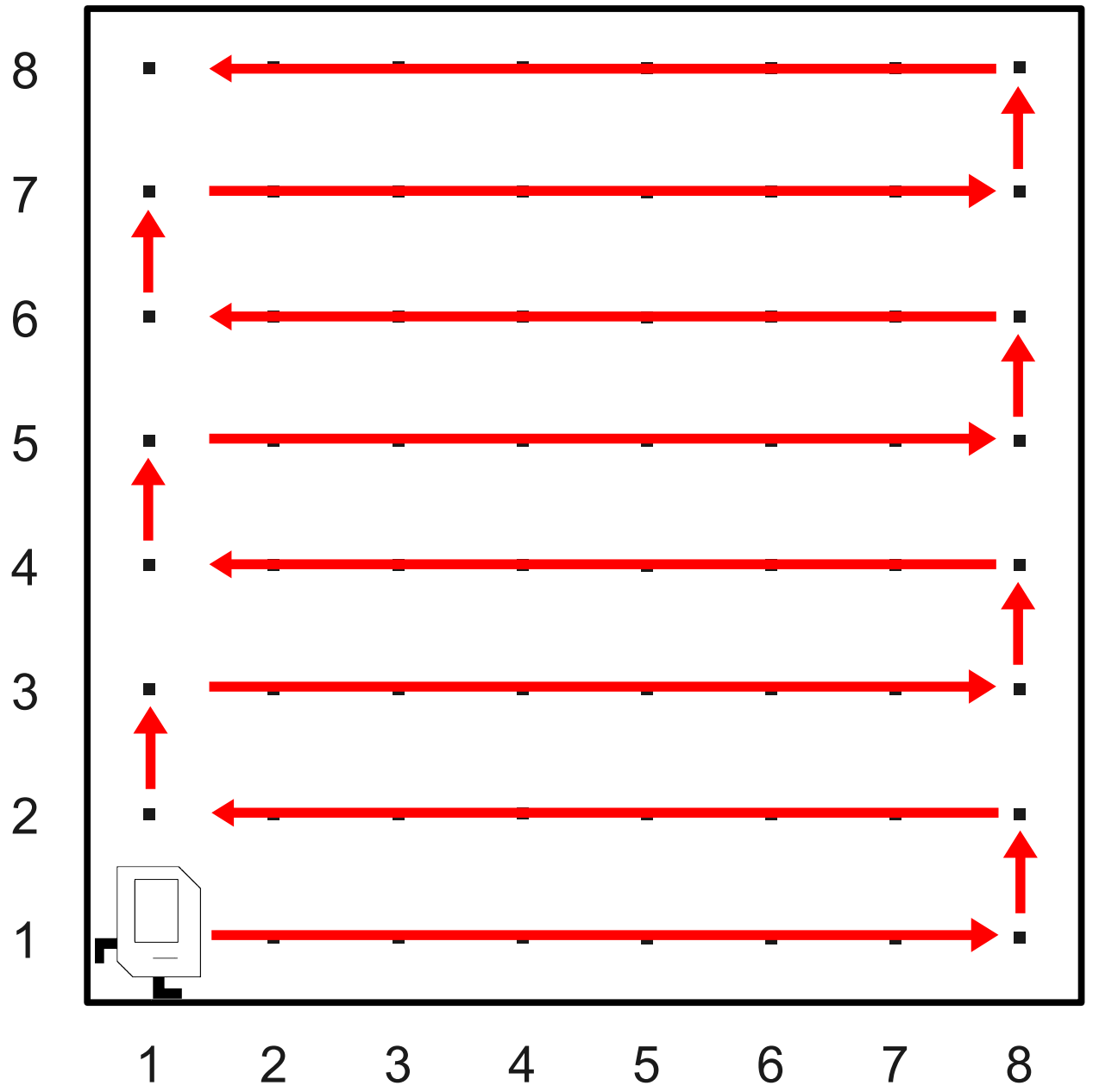
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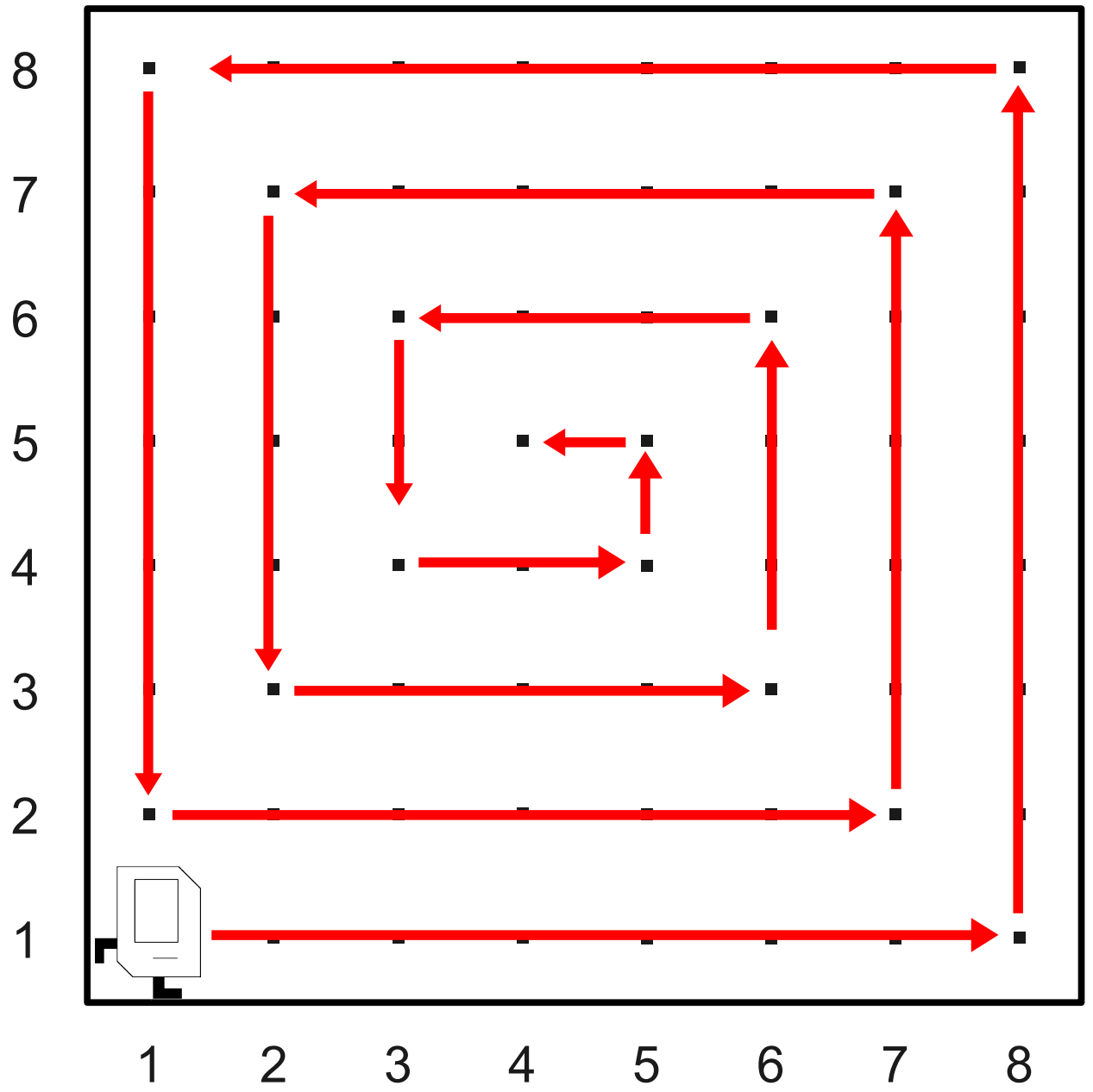
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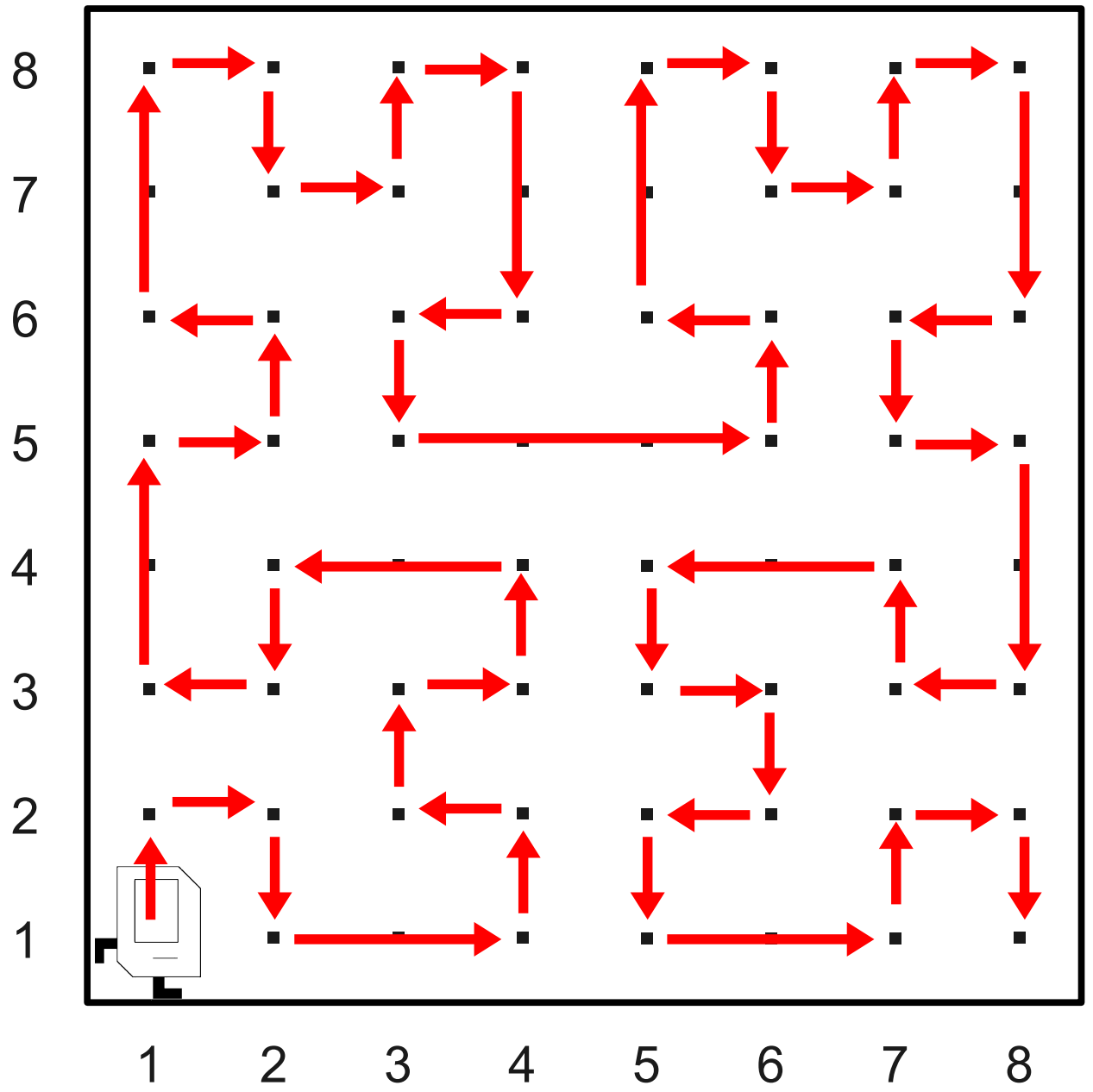
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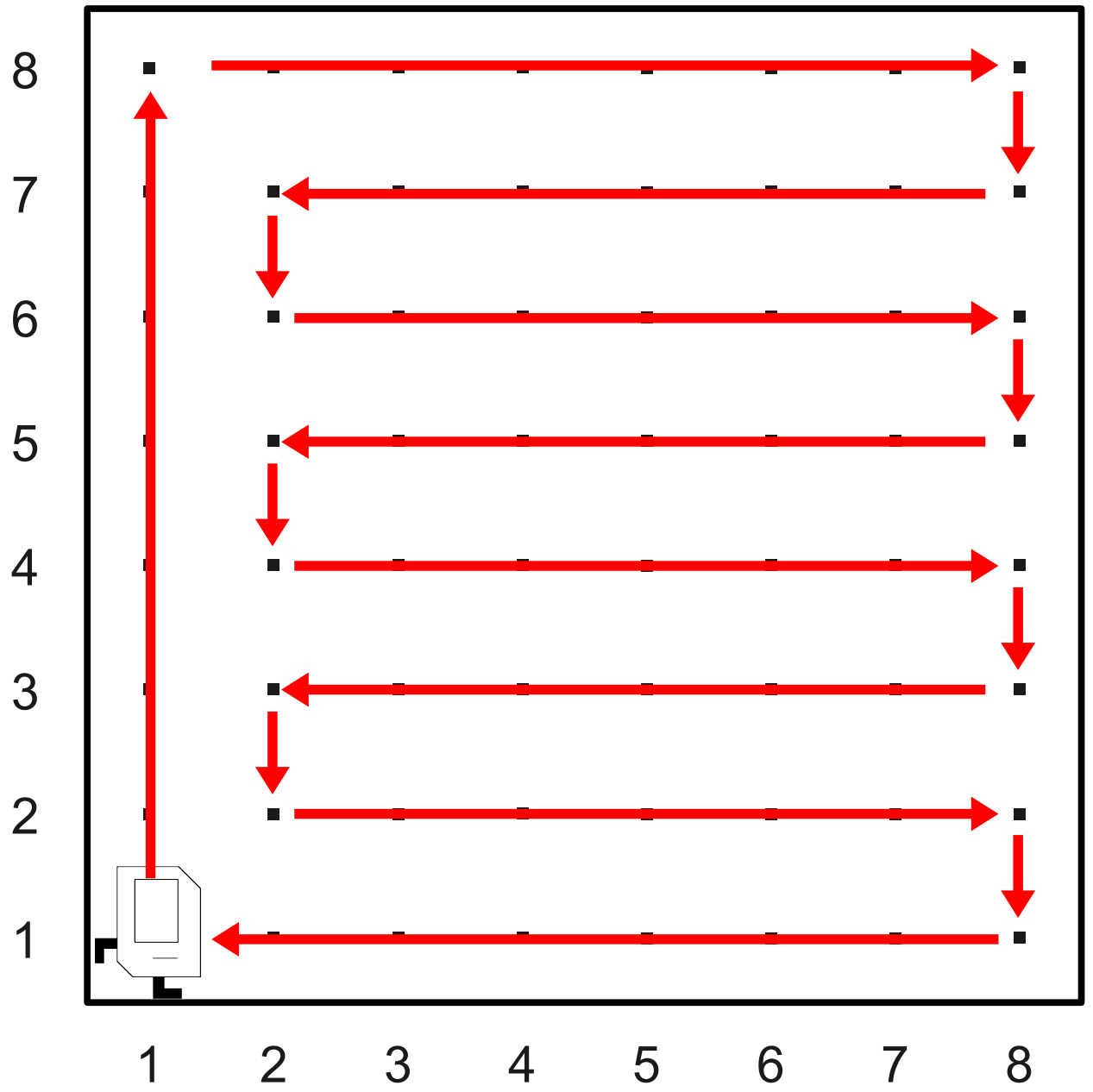
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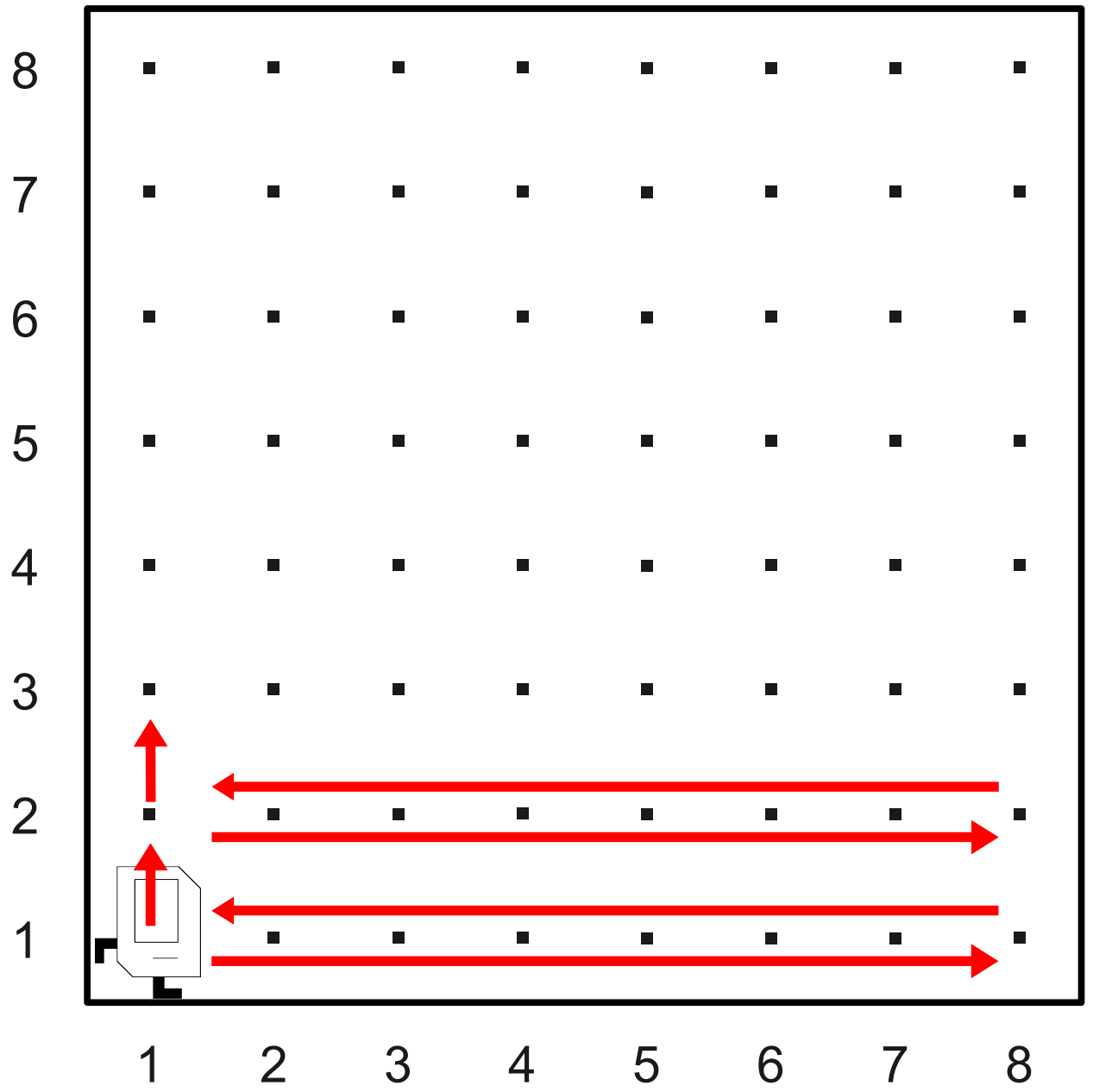
Algorithms

- An **algorithm** is a process for solving some problem.
- Named for 9th-century Persian mathematician محمد بن موسى الخوارزمي, (Muhammad ibn Musa **al-Khwarizmi**).
- There are many algorithms for solving each problem; each offers tradeoffs.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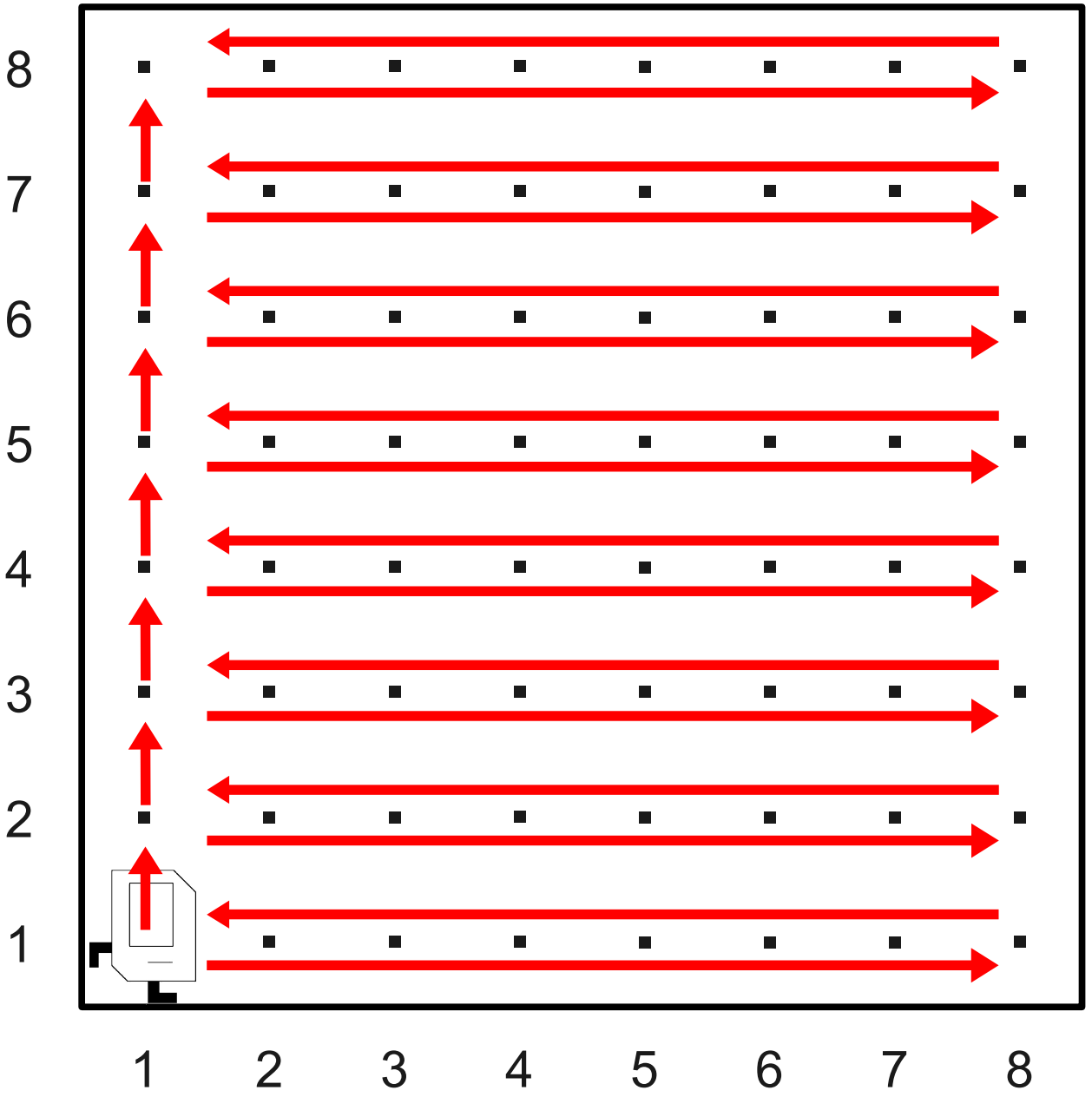
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