python + AI

Introduction to Artificial Intelligence with Python

Search

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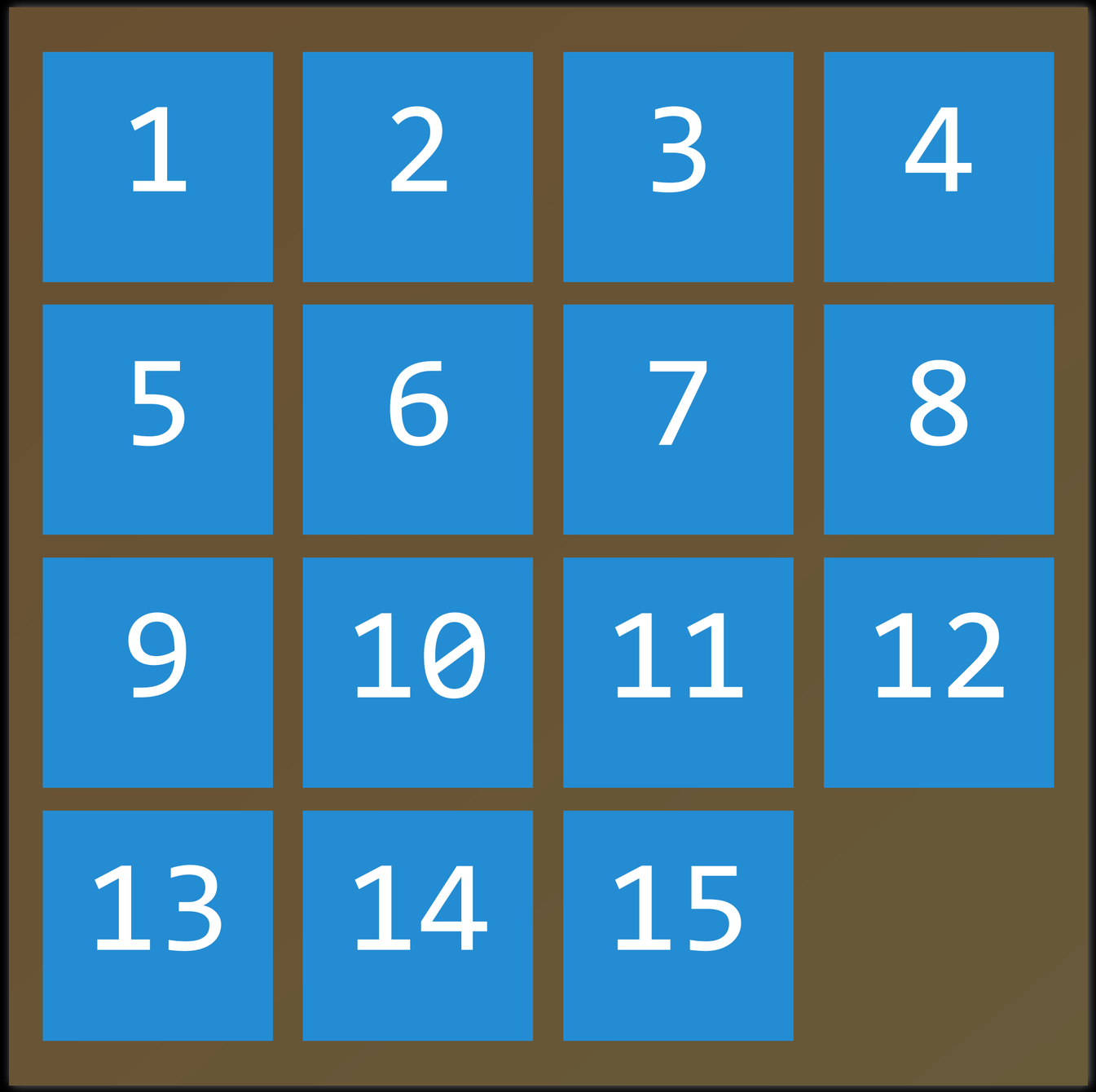

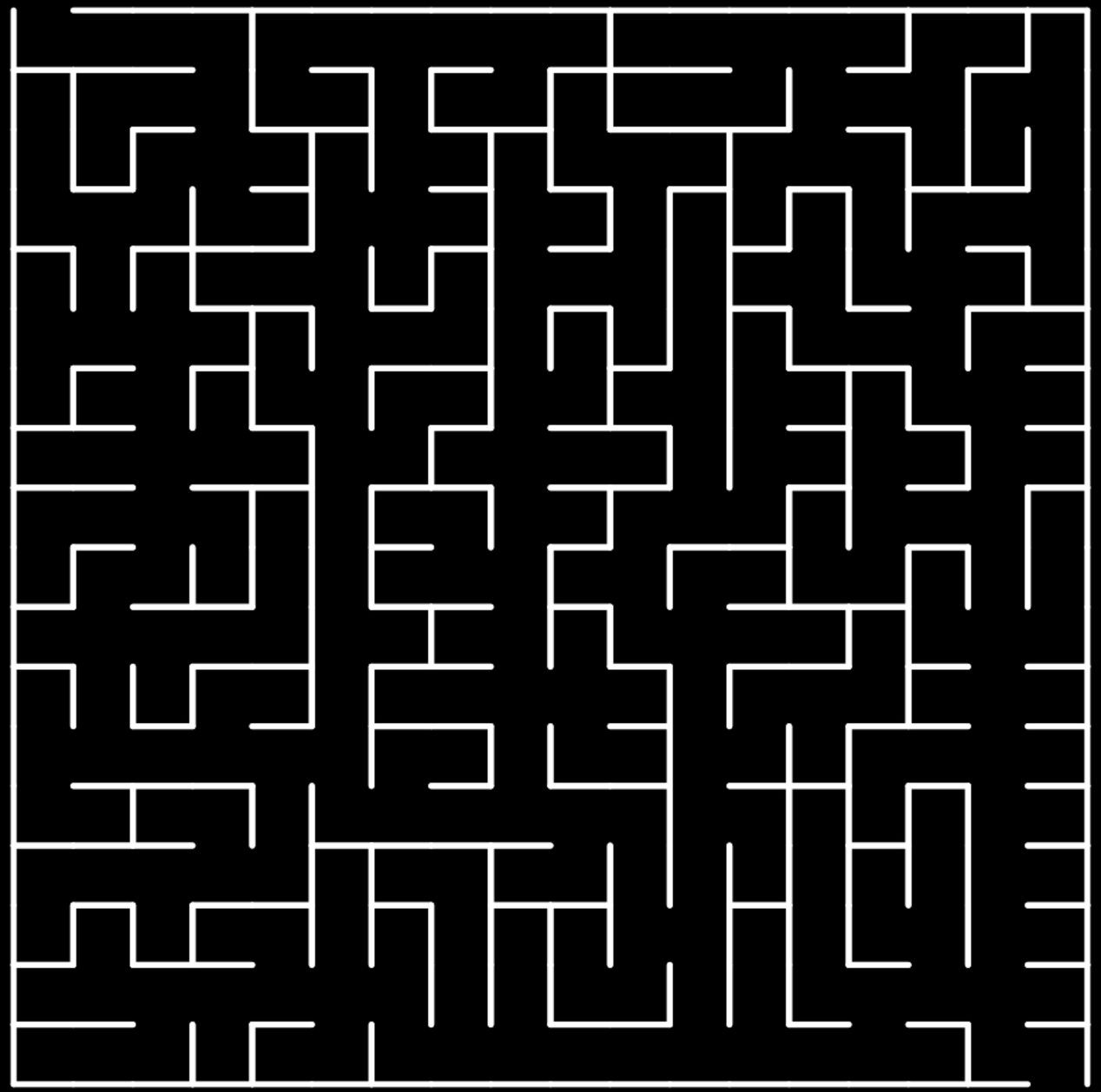

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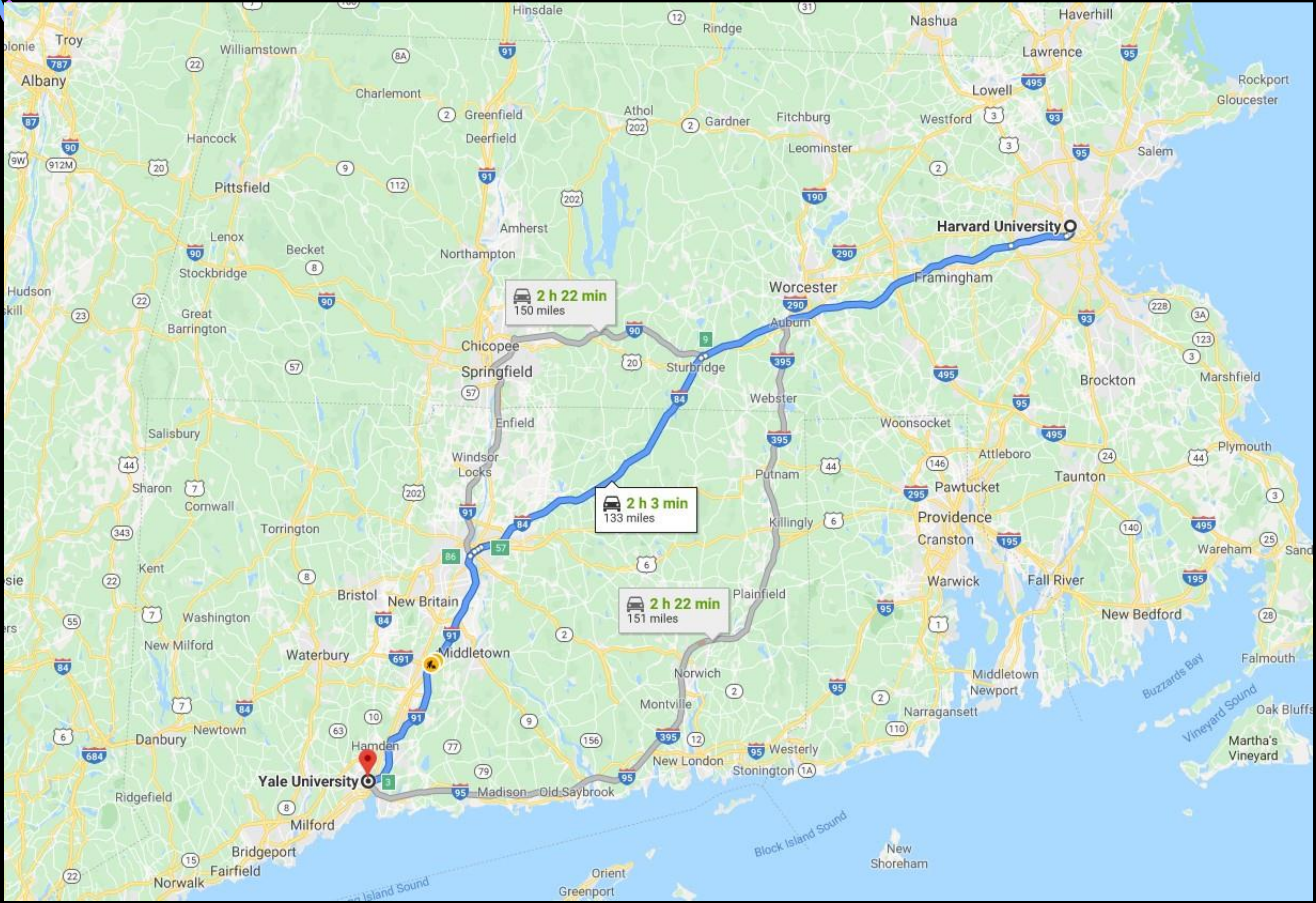
Harvard University
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Framingham
Springfield
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Sturbridge
Hartford
Middletown
New London
Providence
Albany
Pittsfield
Waterbury
New Haven
Bridgeport
Block Island Sound

Search Problems

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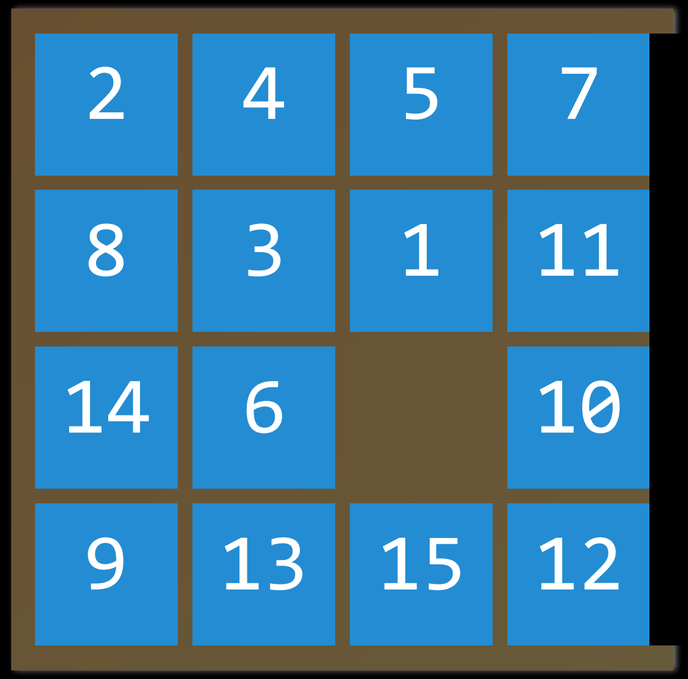
agent

entity that perceives its environment
and acts upon that environment

state

a configuration of the agent and its environment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8 3 1 11
14 6 10
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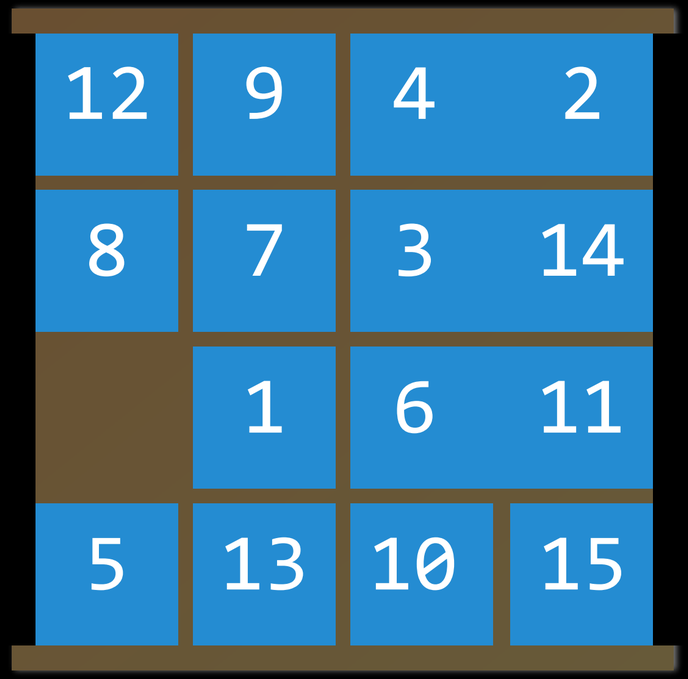
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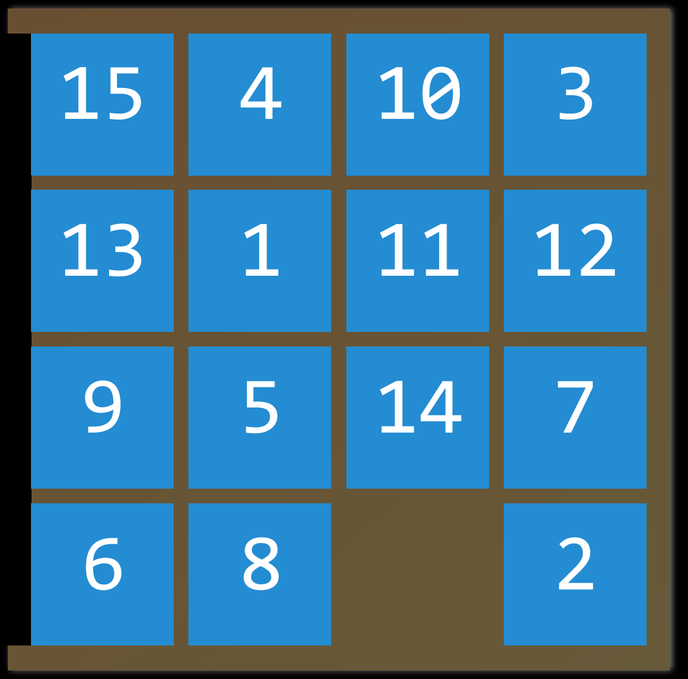
15 4 10 3
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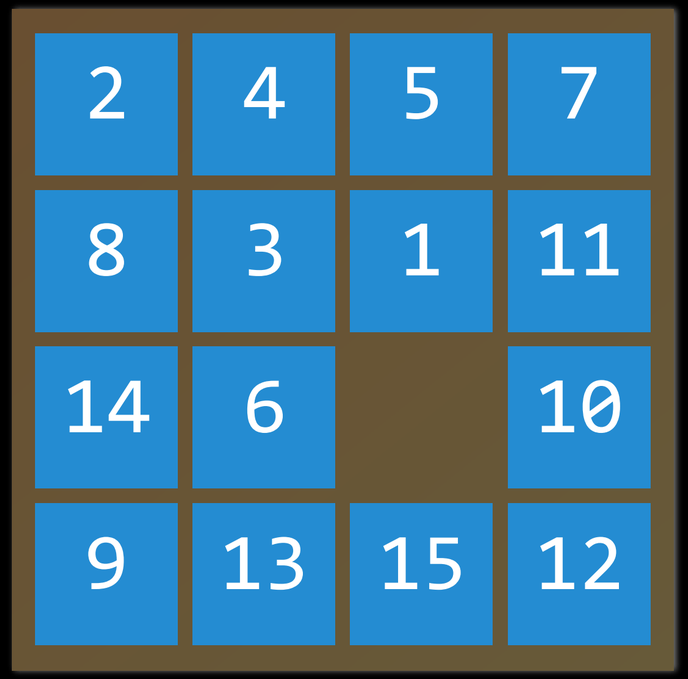
initial state

the state in which the agent begins

initial state



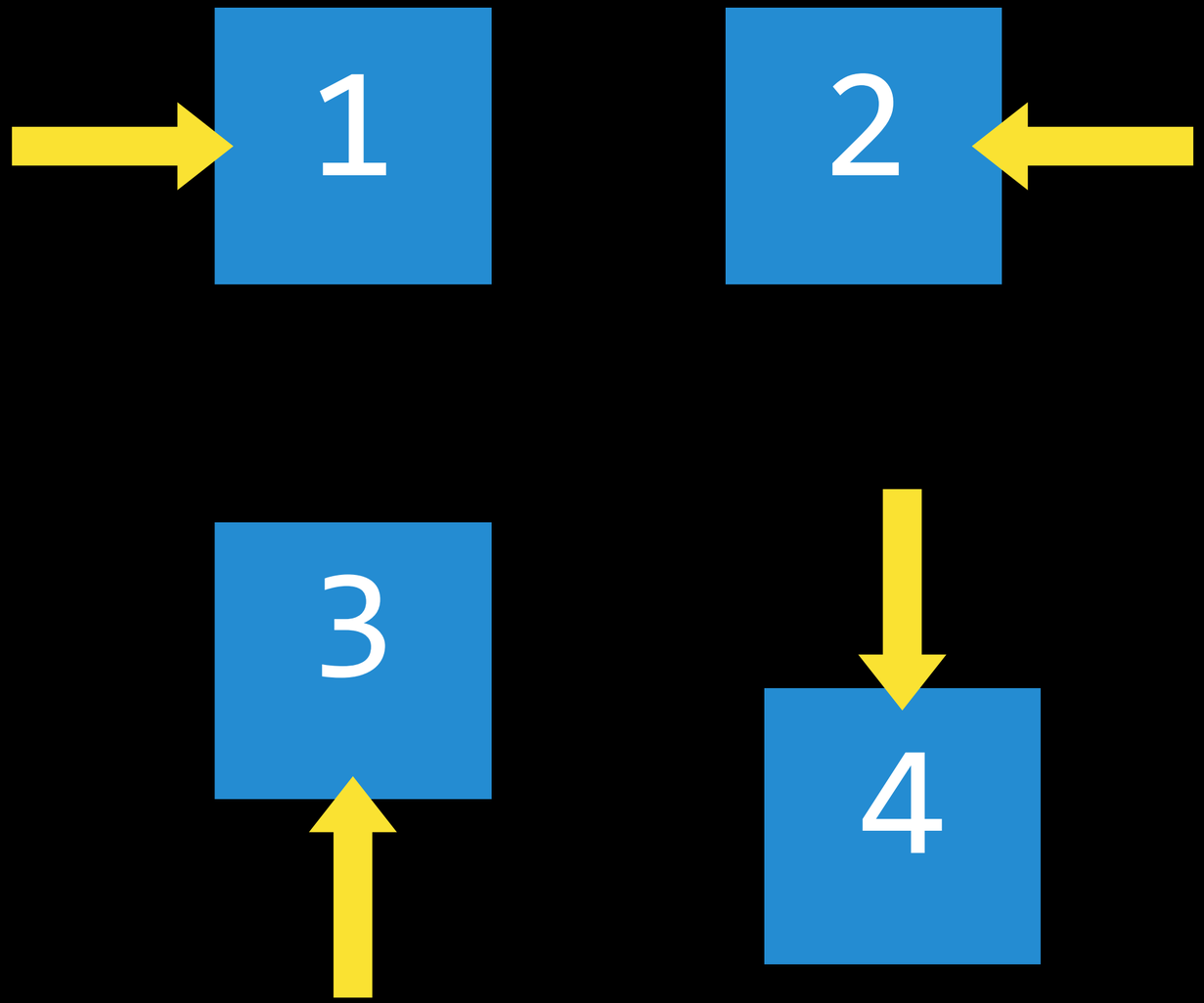
actions

choices that can be made in a state

actions

ACTIONS(s) returns the set of actions that can be executed in state s

actions



transition model

a description of what state results from performing any applicable action in any state

transition model

RESULT(s, a) returns the state resulting from performing action a in state s

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RESULT(

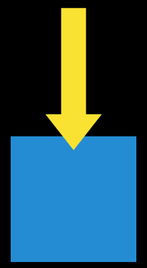
2	4	5	7
8	3	1	11
14	6	10	12
9	13	15	

, ) =

2	4	5	7
8	3	1	11
14	6	10	12
9	13	15	

RESULT(

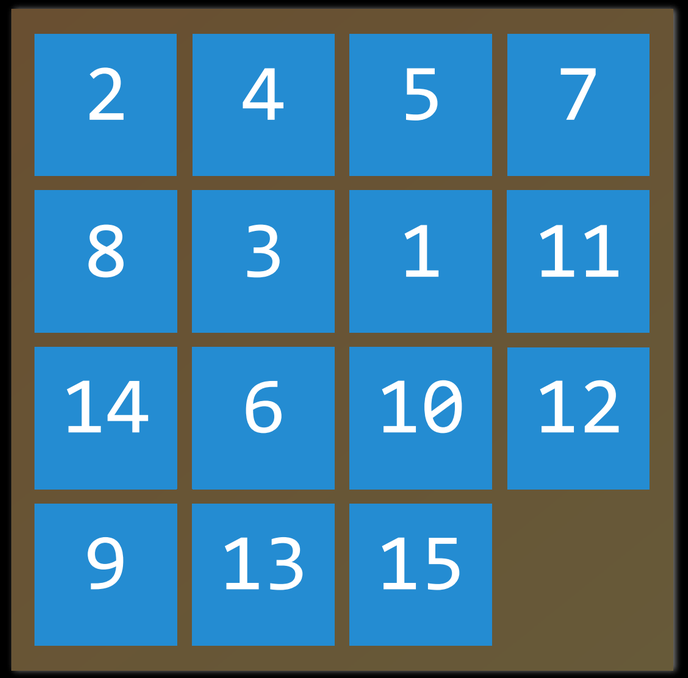
2	4	5	7
8	3	1	11
14	6	10	12
9	13	15	

, ) =

2	4	5	7
8	3	1	11
14	6	10	
9	13	15	12

transition model

RESULT(



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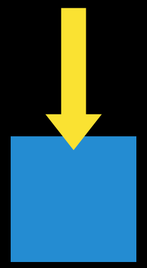

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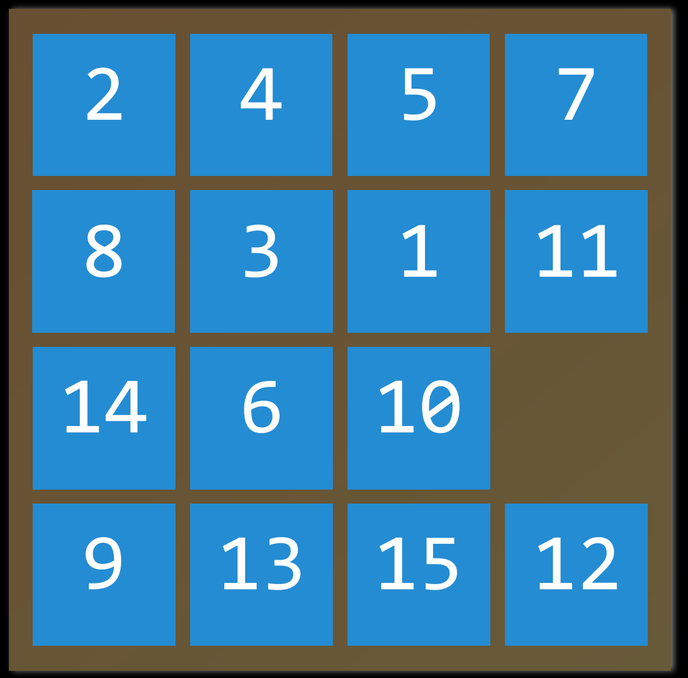
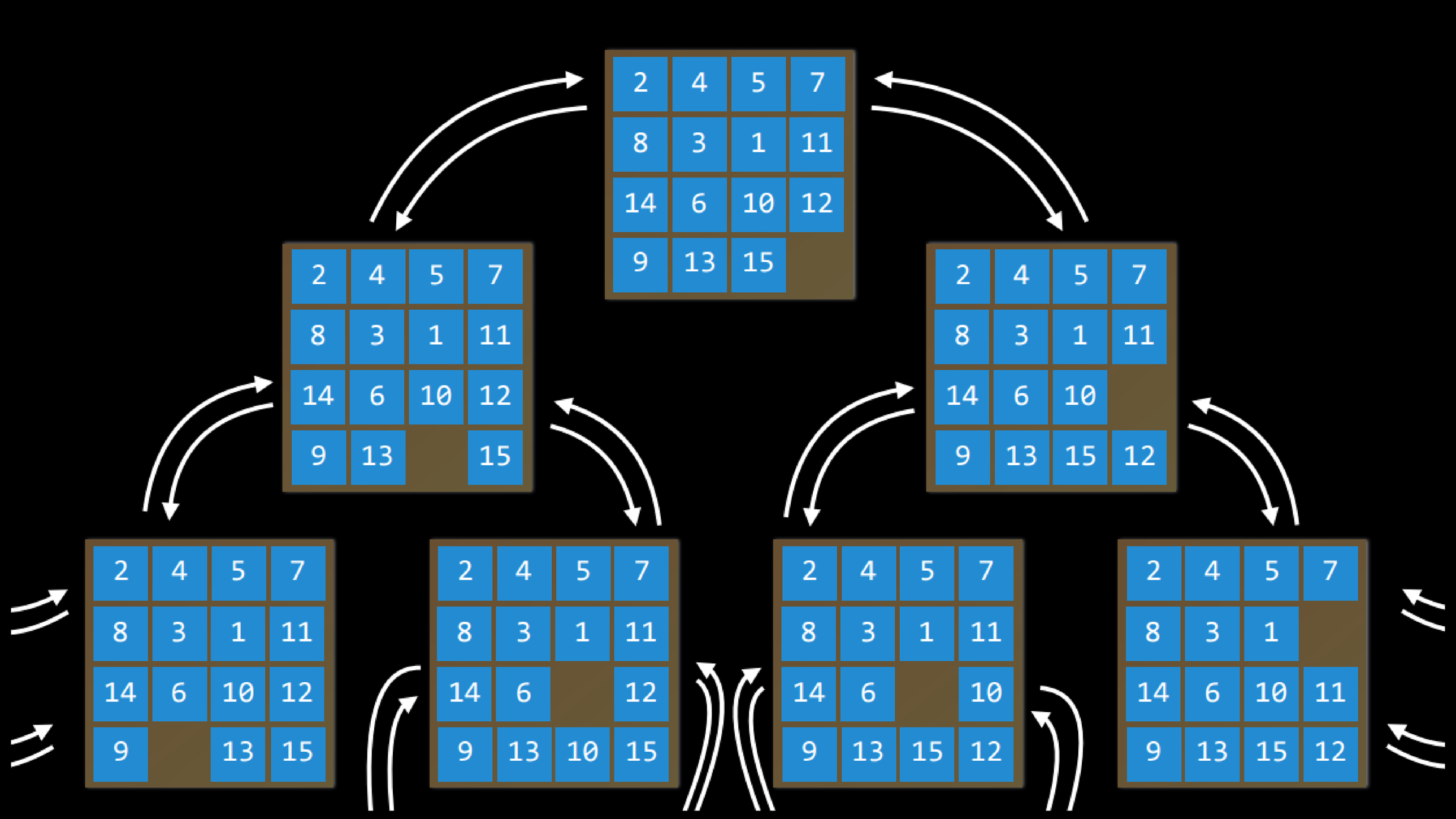


state space

the set of all states reachable from the initial state by any sequence of actions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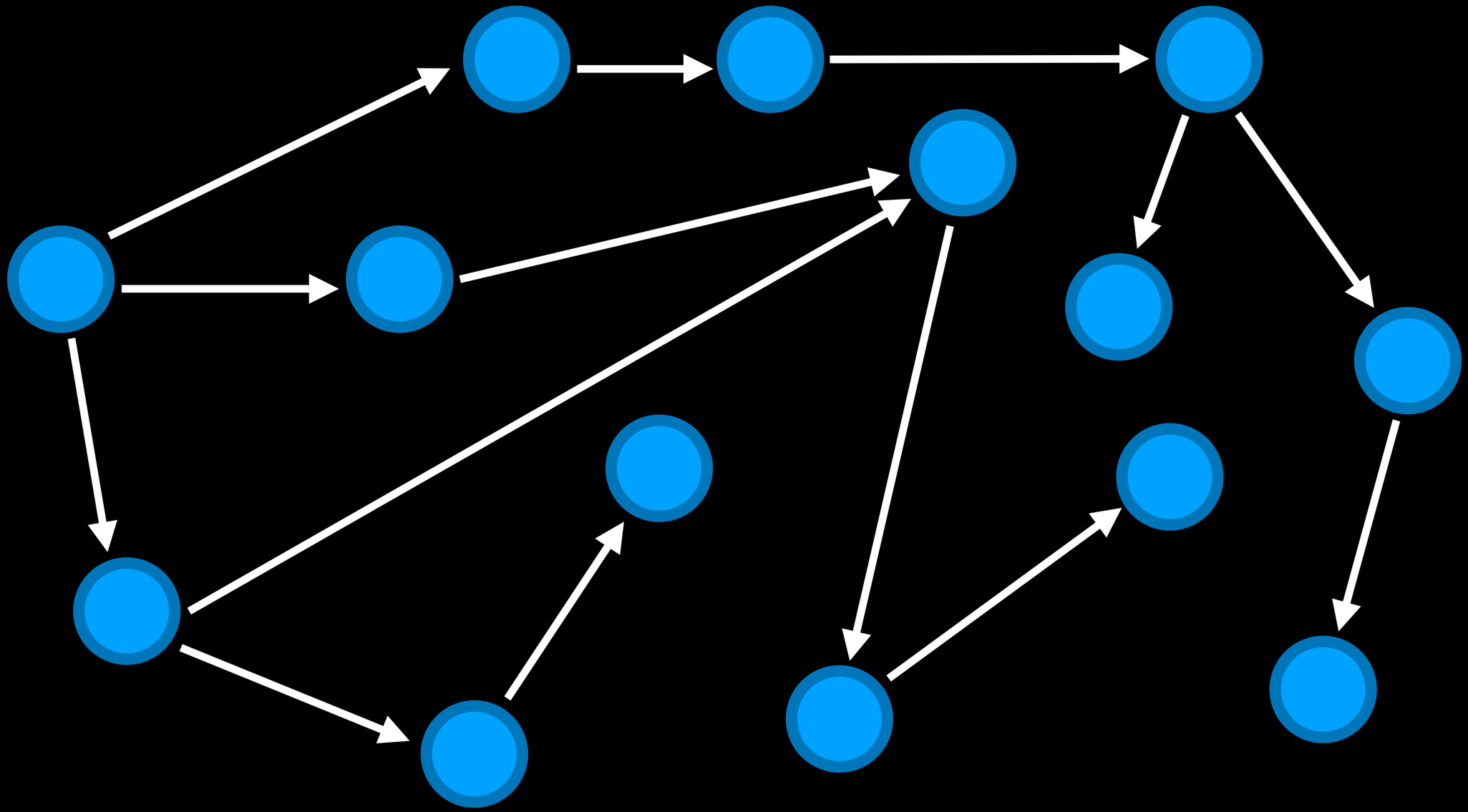
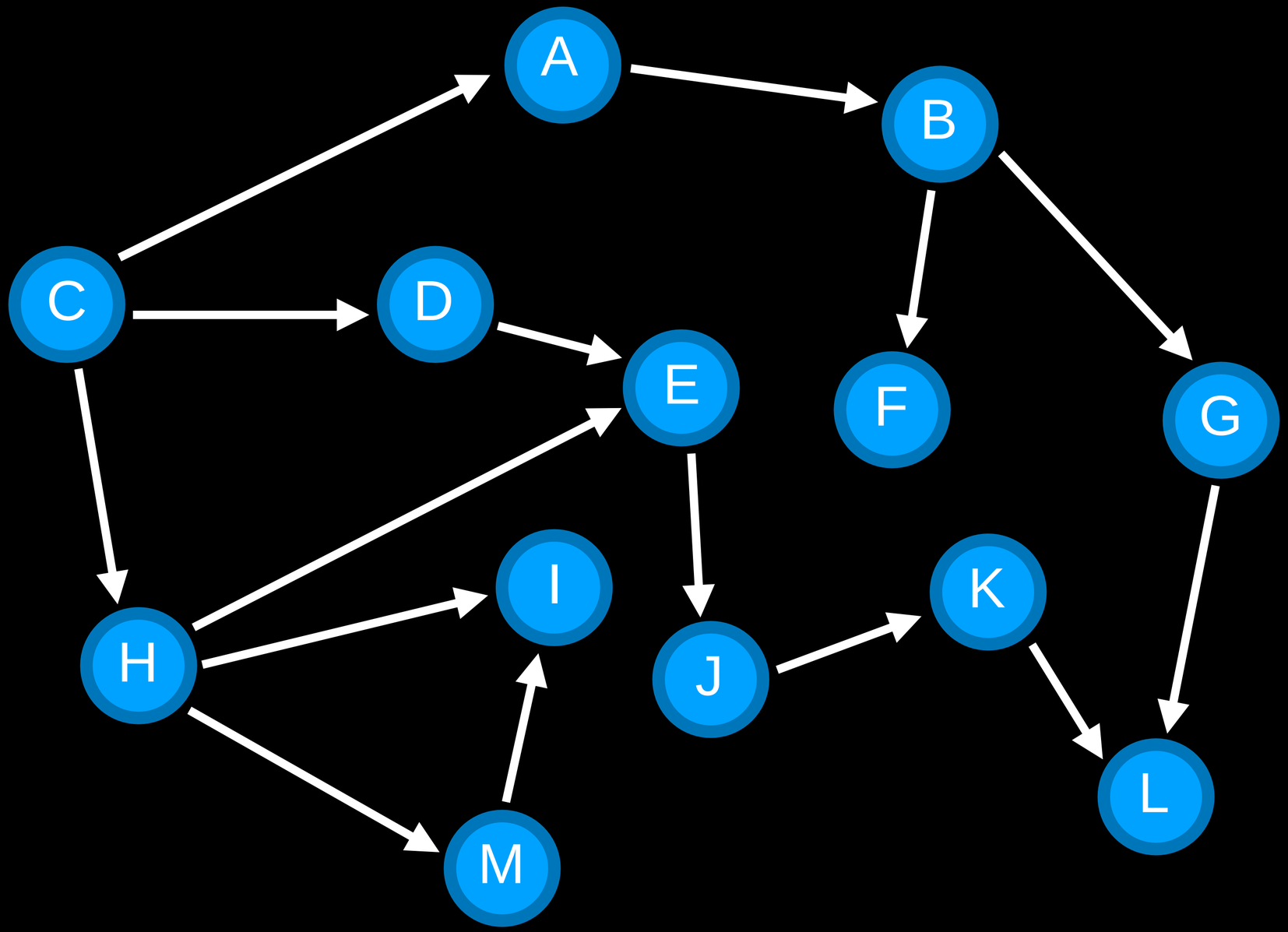


goal test

way to determine whether a given state is a goal state

path cost

numerical cost associated with a given path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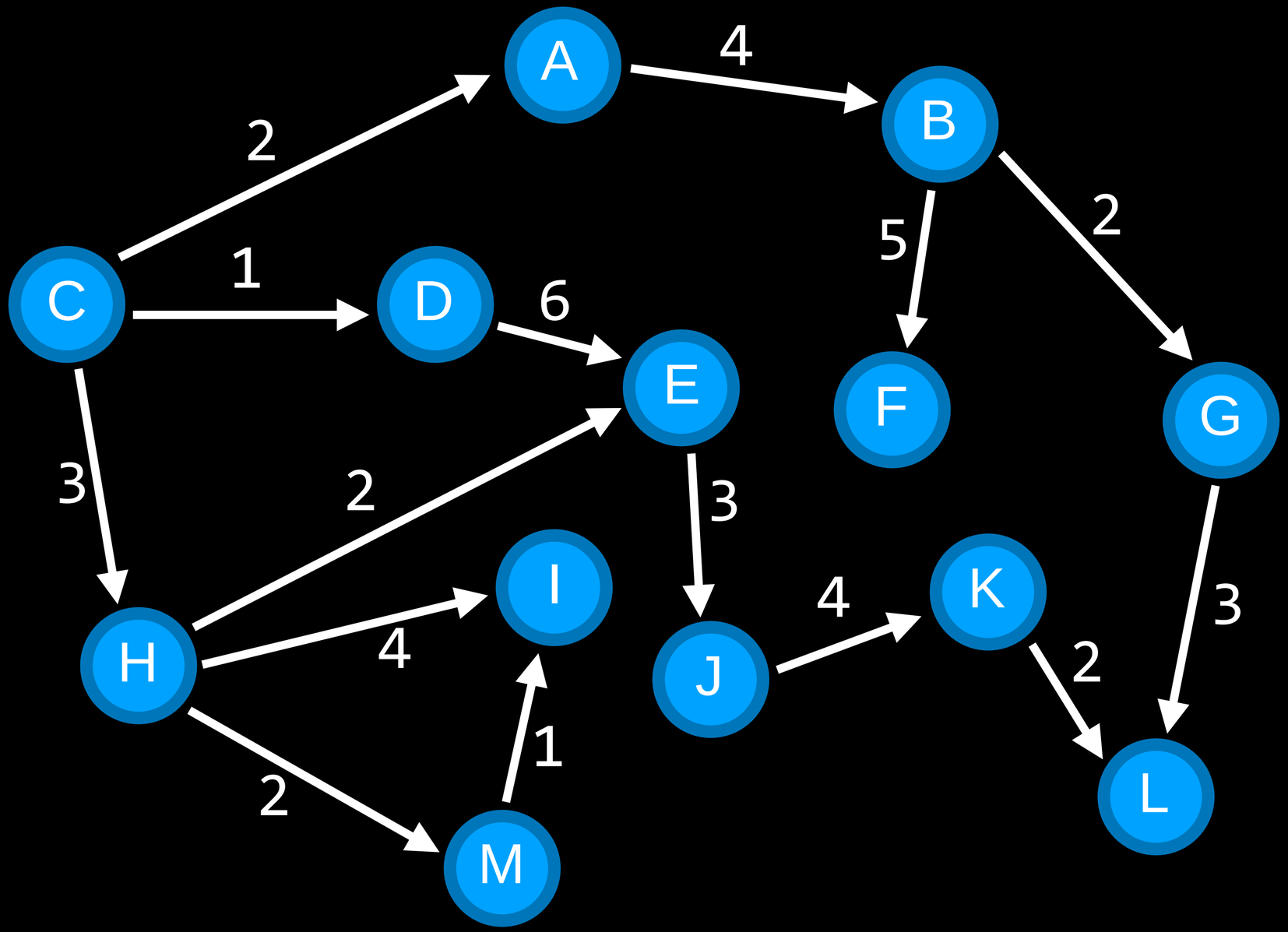
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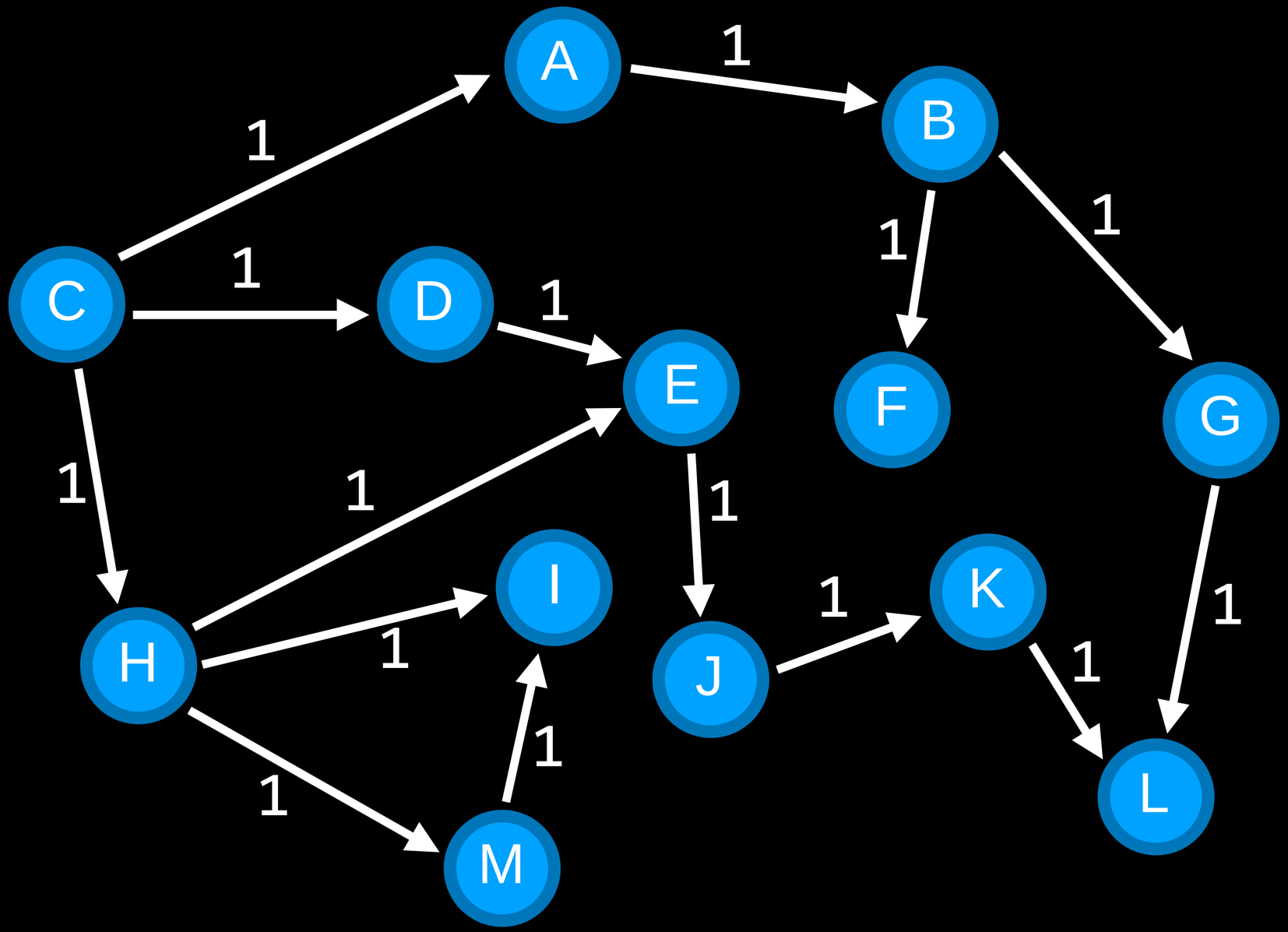
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Search Problems

- initial state
- actions
- transition model
- goal test
- path cost function

solution

a sequence of actions that leads from the initial state to a goal state

optimal solution

a solution that has the lowest path cost among all solutions

node

a data structure that keeps track of

- a **state**
- a **parent** (node that generated this node)
- an **action** (action applied to parent to get node)
- a **path cost** (from initial state to node)

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