Week 4

8 試題

1 point

1 。
What is the equivalent algorithm for the following condition? a. Local beam search with k = 1 b. Simulated annealing with T = 0 c. Simulated annealing with T = ∞

- a: random walk; b: random walk; c: random walk
- a: greedy best first search; b: hill climbing; c: genetic algorithm
- a: DFS; b: random walk; c: BFS
- a: hill climbing; b: hill climbing; c: random walk

1 point

2 。
Which of the follows is **false**?

- The steepest descent takes the best neighbor after examining all successors.
- In the AND-OR search, AND node only needs to reach goal state in one of the leaves, OR node needs to reach goal state in all leaves.
- LRTA* always chooses the current best action.
- The simulated annealing always finds the global optimum if T decreases slow enough.

1 point

3 ◦
Consider LRTA*.

(a) Is LRTA* complete?

- No
- Yes

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1 point

4 ◦
(b) Corresponding to the above question,

how to ensure that LRTA* can find a global optimum?

- Need admissible heuristic at beginning
- Need beginning heuristic has relative error less than 10%
- Need all H value of goal state = 0
- Repeated trials

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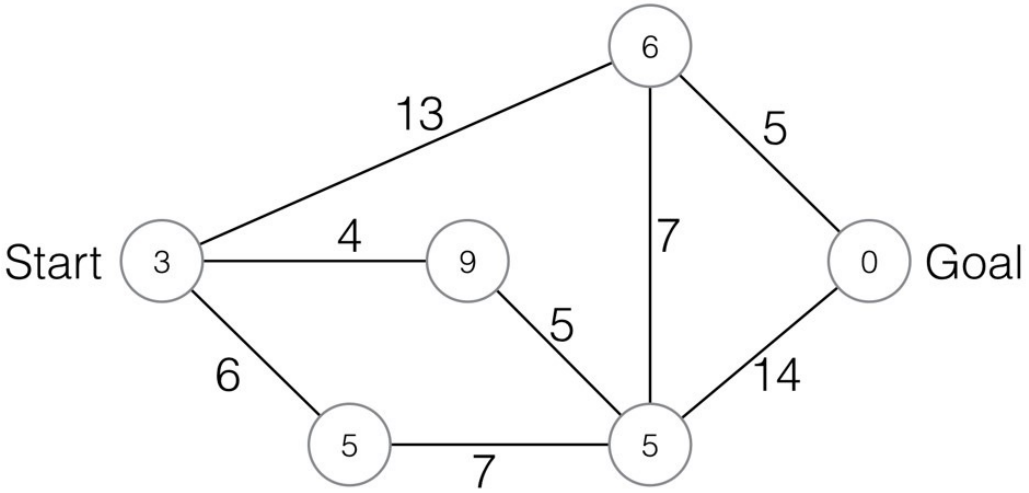
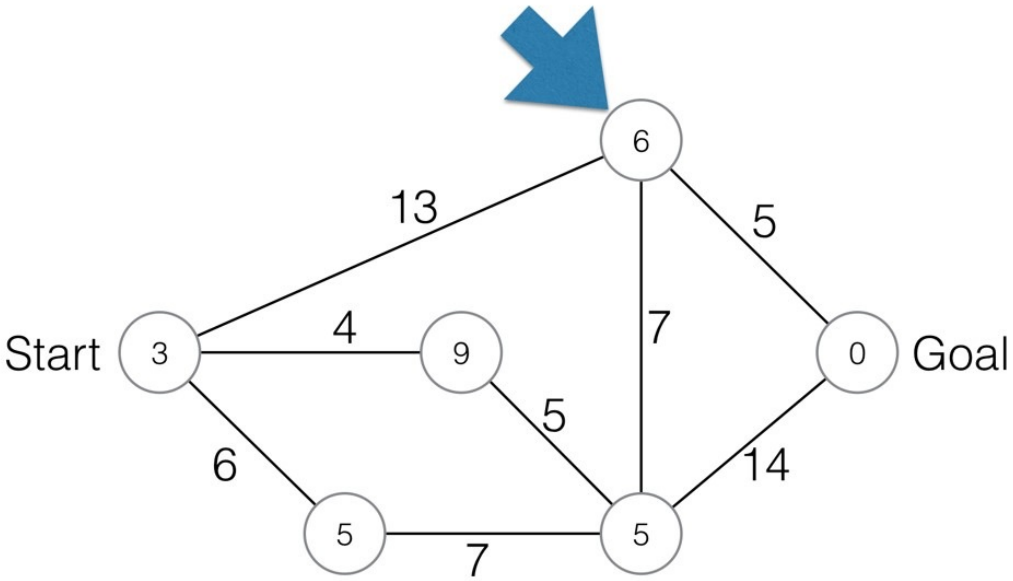
1 point

5 ◦

Run LRTA* with the agent initially being at the “Start” node.



(a) What is the H value of the node the agent at after 3 steps? (agent is at the node with the blue arrow)



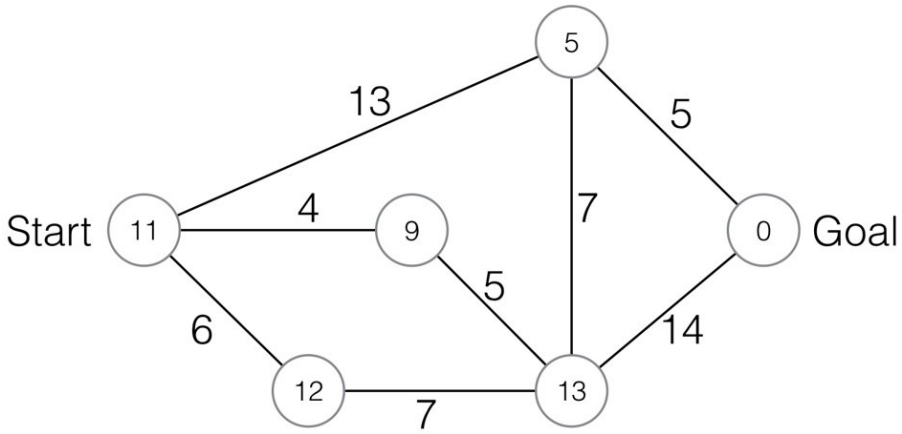
- 12
- 6
- 8
- 10

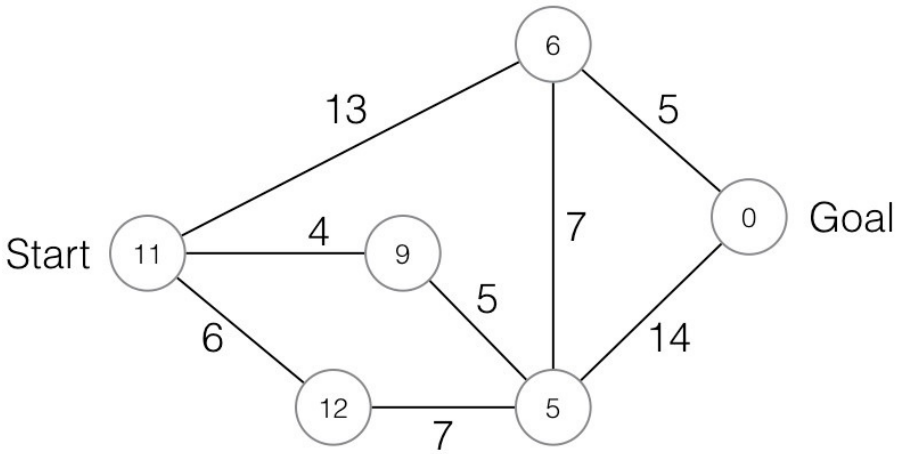
1 point

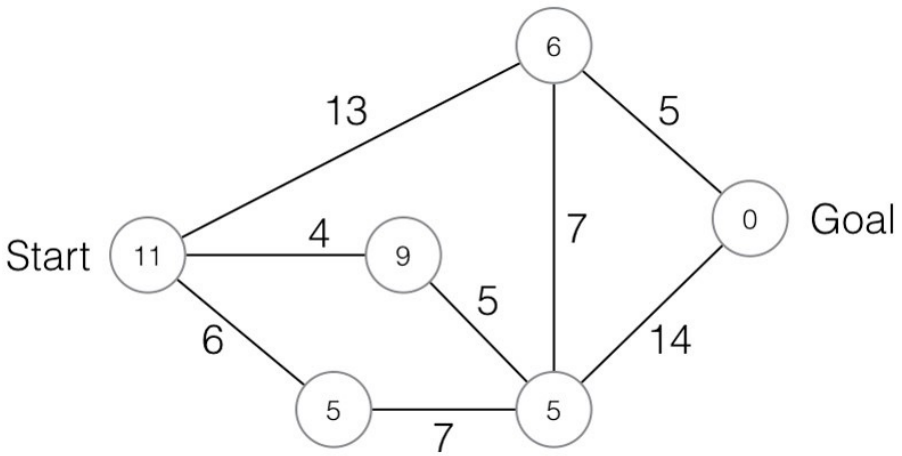
6 ◦

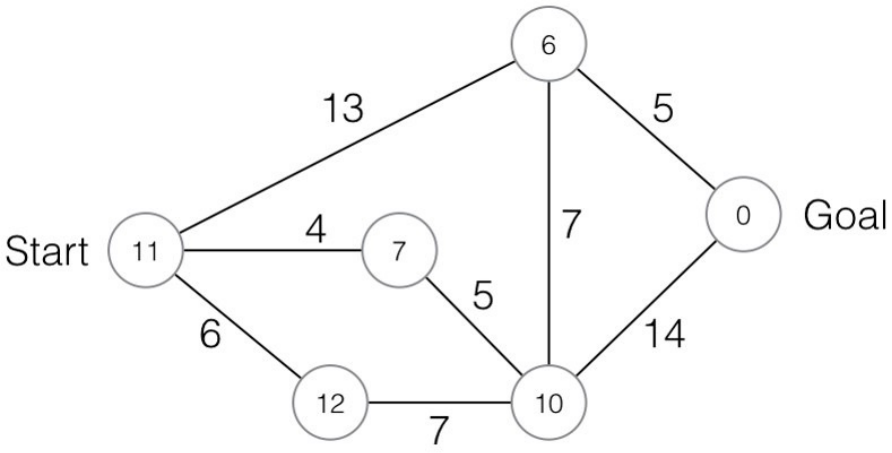
(b) Corresponding to the above question,

what's the H value on each node when the agent reaches the goal?





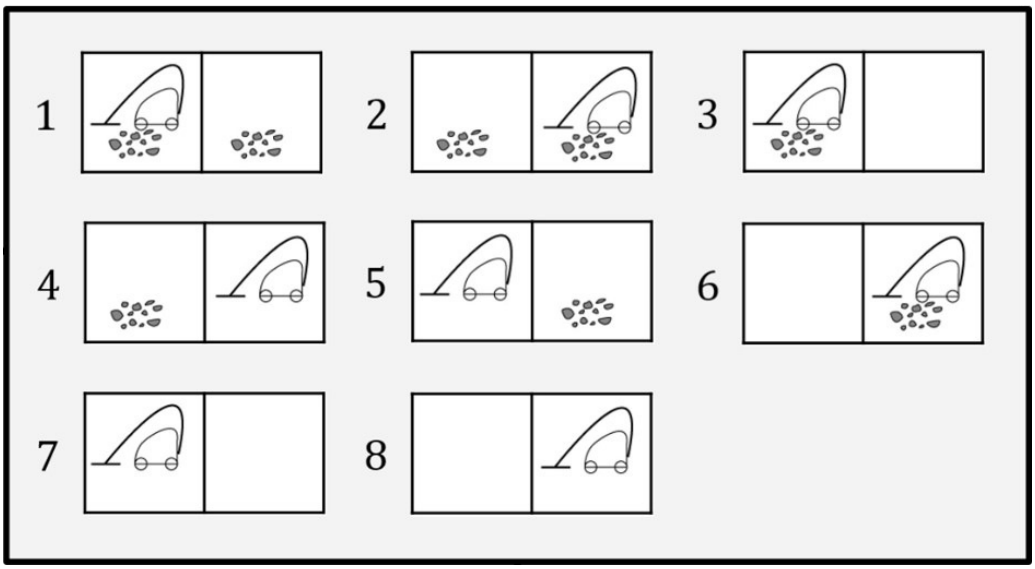




1 point

7 。

Consider the sensorless version of the non-deterministic action of vacuum world (when applied to a dirty square, the action clean the square and sometimes clean the dirt in an adjacent square as well; when applied to a clean square, the action sometimes deposits dirt on the square.). The initial belief state is as below, and actions are: LEFT, RIGHT, SUCK



(a) How many distinct belief states are there in the transition model of this problem?

- 3
- 10