Break & Quiz

Q 1.1: Consider finding the fastest driving route from one US city to another. Measure cost as the number of hours driven when driving at the speed limit. Let ***h*(*s*)** be the number of hours needed to ride a bike from city s to your destination. ***h*(*s*)** is

- A. An admissible heuristic
- B. Not an admissible heuristic

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- A. An admissible heuristic No: riding your bike take longer.
- **B. Not an admissible heuristic**

Break & Quiz

Q 1.2: Which of the following are admissible heuristics?

(i) $h(s) = h^*(s)$

(ii) $h(s) = \max(2, h^*(s))$

(iii) $h(s) = \min(2, h^*(s))$

(iv) $h(s) = h^*(s)-2$

(v) $h(s) = \mathrm{sqrt}(h^*(s))$

- A. All of the above
- B. (i), (iii), (iv)
- C. (i), (iii)
- D. (i), (iii), (v)

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Q 1.2: Which of the following are admissible heuristics?

(i) $h(s) = h^*(s)$

(ii) $h(s) = \max(2, h^*(s))$ No: $h(s)$ might be too big

(iii) $h(s) = \min(2, h^*(s))$

(iv) $h(s) = h^*(s)-2$ No: $h(s)$ might be negative

(v) $h(s) = \text{sqrt}(h^*(s))$ No: if $h^*(s) < 1$ then $h(s)$ *is bigger*

- A. All of the above
- B. (i), (iii), (iv)
- **C. (i), (iii)**
- D. (i), (iii), (v)

Break & Quiz

Q 2.1: Consider two heuristics for the 8 puzzle problem. $\boldsymbol{h_1}$ is the number of tiles in wrong position. $\boldsymbol{h_2}$ is the l_1/Manhattan distance between the tiles and the goal location. How do $\boldsymbol{h_1}$ and $\boldsymbol{h_2}$ relate?

- A. $\boldsymbol{h_2}$ dominates $\boldsymbol{h_1}$
- B. $\boldsymbol{h_1}$ dominates $\boldsymbol{h_2}$
- C. Neither dominates the other

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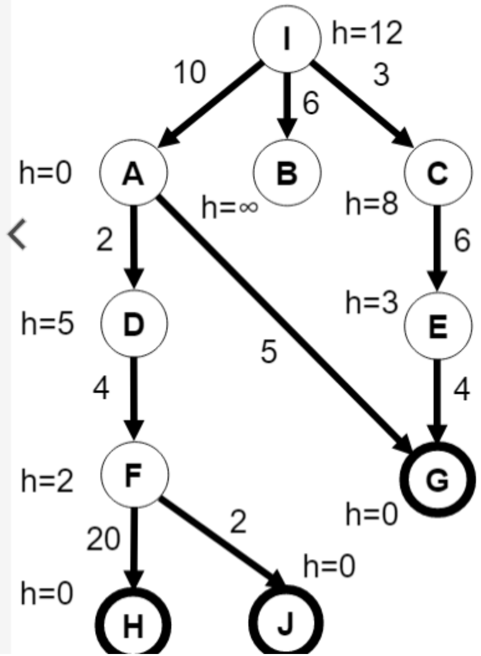
- **A. h_2 dominates h_1**
- B. h_1 dominates h_2 (No: h_1 is a distance where each entry is at most 1, h_2 can be greater)
- C. Neither dominates the other

Break & Quiz

Q 2.2: Consider the state space graph below. Goal states have bold borders. ***h*(*s*)** is show next to each node. What node will be expanded by A* after the initial state I?

- A. A
- B. B
- C. C



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