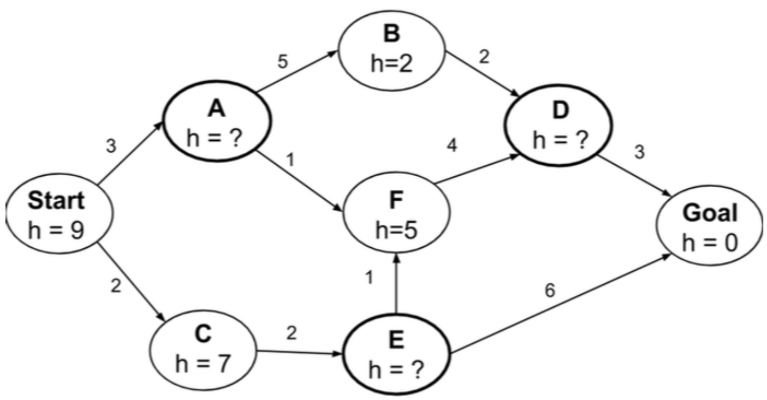
Q2: Missing Heuristic Values

Q2: Missing Heuristic Values

Consider the state space graph shown below in which some of the states are missing a heuristic value.



Determine the possible range for each missing heuristic value so that the heuristic is admissible and consistent. If this isn't possible, write 'x'. For each of the following parts, you receive credits only if *both* bounds are correct.

Part 1

0.0/2.0 points (graded)

$a_1 \leq h(A) \leq a_2$

a_1		a_2	
6	**Answer:** 6	6	**Answer:** 6

Explanation
We only need to check for consistency since admissibility is implied by consistency. A consistent heuristic is one such that $h(s) \leq c(s, s') + h(s')$. For the search graph above, this means that:
For $s = A$:
$h(Start) \leq c(Start, A) + h(A) \implies 6 \leq h(A)$
$h(A) \leq c(A, B) + h(B) \implies h(A) \leq 7$
$h(A) \leq c(A, G) + h(F) \implies h(A) \leq 6$ to be consistent

Submit You have used 0 of 2 attempts

Answers are displayed within the problem

Part 2

0.0/2.0 points (graded)
$d_1 \leq h(D) \leq d_2$

d_1		d_2	
1	**Answer:** 1	3	**Answer:** 3

Explanation
We only need to check for consistency since admissibility is implied by consistency. A consistent heuristic is one such that $h(s) \leq c(s, s') + h(s')$. For the search graph above, this means that:
For $s = D$:
$h(D) \leq c(D, G) + h(G) \implies h(D) \leq 3$
$h(B) \leq c(B, D) + h(D) \implies 0 \leq h(D)$
$h(F) \leq c(F, D) + h(D) \implies 1 \leq h(D)$ to be consistent

Submit You have used 0 of 2 attempts

Answers are displayed within the problem

Part 3

0.0/2.0 points (graded)

$e_1 \leq h(E) \leq e_2$

e_1		e_2	
5	**Answer:** 5	6	**Answer:** 6

Explanation

We only need to check for consistency since admissibility is implied by consistency. A consistent heuristic is one such that $h(s) \leq c(s, s') + h(s')$. For the search graph above, this means that:

For $s = E$:

$h(E) \leq c(E, G) + h(G) \implies h(E) \leq 6$

$h(C) \leq c(C, E) + h(E) \implies 5 \leq h(E)$

$h(E) \leq c(E, F) + h(F) \implies h(E) \leq 6$ to be consistent

Submit   You have used 0 of 2 attempts

Answers are displayed within the problem