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Breadth First Search

Frontier	Node Popped	Successor Nodes
A	A	AE, AH
AE, AH	AE	AED, AEF
AH, AED, AEF	AH	AHG, AHI
AED, AEF, AHG, AHI	AED	AEDE
AEF, AHG, AHI, AEDE	AEF	AEFG
AHG, AHI, AEFG, AEDE	AHG	

Iterative-Deepening Depth First Search

Frontier	Node Popped	Successor Nodes	Depth
A	A		1
A	A	AE, AH	2
AE, AH	AE		2
AH	AH		2
A	A	AE, AH	3
AE, AH	AE	AED, AEF	3
AED, AEF, AH	AED		3
AEF, AH	AEF		3
AH	AH	AHG, AHI	3
AHG, AHI	AHG		3

Uniform Cost Search

Frontier	Node Popped	Successor Nodes

A(0)	A(0)	AE(5), AH(6)
AE(5), AH(6)	AE(5)	AED(6), AEF(8)
AH(6), AED(6), AEF(8)	AH(6)	AHG(11), AHI(8)
AED(6), AEF(8), AHI(8), AHG(11)	AED(8)	AEDE(8)
AEF(8), AHI(8), AEDE(8), AHG(11)	AEF(8)	AEFG(10)
AHI(8), AEDE(8), AEFG(10), AHG(11)	AHI(8)	
AEDE(8), AEFG(10), AHG(11)	AEDE(8)	
AEFG(10), AHG(11)	AEFG(10)	

Admissibility

This heuristic is admissible because by definition any h(n) should not overestimate the path to the goal from that node. I will show this to be true in the below table.

Node: n	h(n)	cost to goal
A	3	10
E	2	5
H	1	5
D	3	7
F	1	2
I	10	∞
G	0	0

Consistency

This heuristic is consistent because by definition any h(n) should not be greater than the sum of h(n`) and c(n,a,n`) where h(n`) is an adjacent node and c(n,a,n`) is the path cost from n to n`. I will show this is true in the below table.

Current Node: n	h(n)	Next Node: n`	h(n`)	Path Cost Between Them: c(n,a,n`)	h(n) <= c(n,a,n`)+h(n`)

A	3	E	2	5	3 <= 5+2 = true
A	3	H	1	6	1 <= 6+1 = true
E	2	D	3	1	2 <= 1+3 = true
E	2	F	1	3	2 <= 3+1 = true
H	1	I	10	2	1 <= 2+10 = true
H	1	G	0	5	1 <= 5+0 = true
D	3	E	2	2	3 <= 2+2 = true
F	1	G	0	2	1 <= 2+0 = true

Greedy Best-First Search

Frontier	Node Popped	Successor Nodes
A(3)	A(3)	AE(2), AH(1)
AH(1), AE(2)	AH(1)	AHG(0), AHI(10)
AHG(0), AE(2), AHI(10)	AHG(0)	

A* Search

Frontier	Node Popped	Successor Nodes
A(3)	A(3)	AE(7), AH(7)
AE(7), AH(7)	AE(7)	AED(9), AEF(9)
AH(7), AED(9), AEF(9)	AH(7)	AHG(11), AHI(18)
AED(9), AEF(9), AHG(11), AHI(18)	AED(9)	AEDE(10)
AEF(9), AEDE(10), AHG(11), AHI(18)	AEF(9)	AEFG(10)
AEDE(10), AEFG(10), AHG(11), AHI(18)	AEDE(10)	
AEFG(10), AHG(11), AHI(18)	AEFG(10)	