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Artificial Intelligence and Expert System (Sec: G)

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MRV and Degree Heuristic with Forward Checking

Using degree heuristic, we found a sequence

	MP(5)	GUJ(3)	MAH(3)	RAJ(3)	UP(2)	CHG(2)
Initially	RGB	RGB	RGB	RGB	RGB	RGB
	(R)	GB	GB	GB	GB	GB
	(R)	(G)	B	B	GB	GB
	(R)	(G)	(B)	B	GB	G
	(R)	(G)	(B)	(B)	(G)	(G)

Here, we found that MP has the highest degree heuristic value. So we started coloring with MP. We used forward checking for finding adjacency values and reduced colors from adjacency nodes. When we found same MRV for two nodes than we used degree heuristic value. Node with highest degree heuristic value will be effected first.

Greedy Best-fit Search Algorithm

The Initial State:

→ (S)

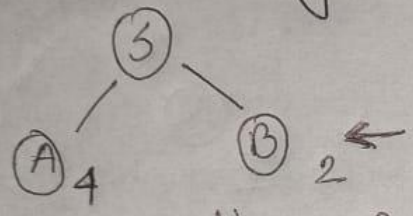
Heuristic Value H(SLD)

S = 7 ; A = 4

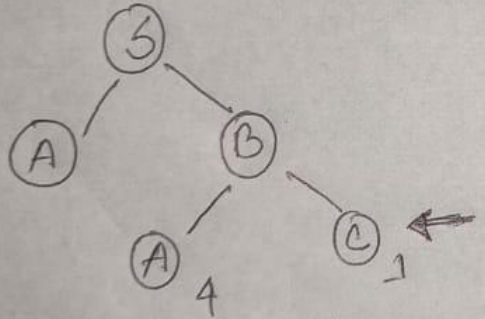
B = 2 ; C = 1

D = 0

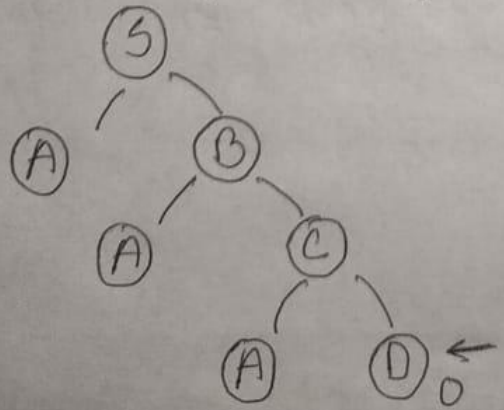
After Expanding S:



After Expanding B:



After Expanding C:

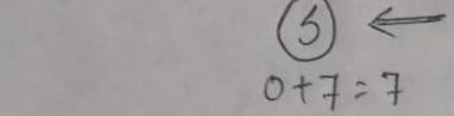


Description:

Here, we can see that the initial state is S. After Expanding S there are two nodes A and B. B has less SLD value. So next we will expand B. After expanding B there are A and C. C has less SLD value. After expanding C we've found D with SLD value of 0. So we've found our goal state.

A* Search Algorithm

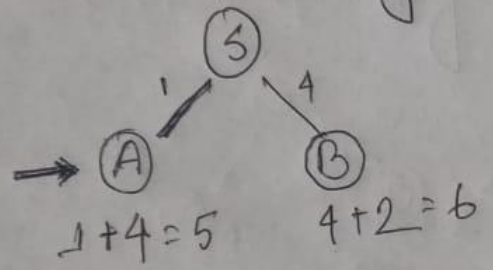
The Initial State:



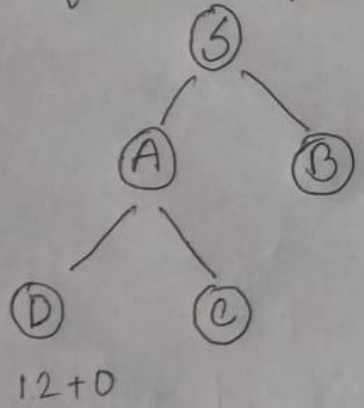
$f(n) = g(n) + h(n)$

: Actual Cost + SLD

After Expanding S:



After Expanding A:



Description:

Here, we used A* search algorithm which is more efficient than Greedy BFS. Because in greedy BFS there are many nodes which has no connection with the goal state. But adding the actual path cost with the sld value the algorithm became more efficient.

We started with initial state S. After expanding S we got A and B. A has less f(n) value than B. After expanding A we got C and D. D has sld value of 0. So we found our goal state.