① Hill climbing Search

→ How to apply Hill climbing algorithm from Initial state to Goal state using local and Global Heuristic function.

Ex:

Start

A
D
C
B

Goal

D
C
B
A

→ we have to use either * local (where we consider immediate consequences – decide what to do)

(or)

Global heuristic function.

↓

Consider global info – what will happen in future based on that we will select the operator where we can go from start → Goal state.

Local Heuristic function

+1 – if a block is in right position – each block

-1 – If its not – each block.

↓

Start

0	A	-1
	D	+1
	C	+1
	B	-1

Goal

4

D	+1
C	+1
B	+1
A	+1

→ we are expecting A should be the first from ground but not there, so for B -1, but c is above B so +1, D is above C like we expect in goal so +1, But A is not supposed to be above A so -1 like that.

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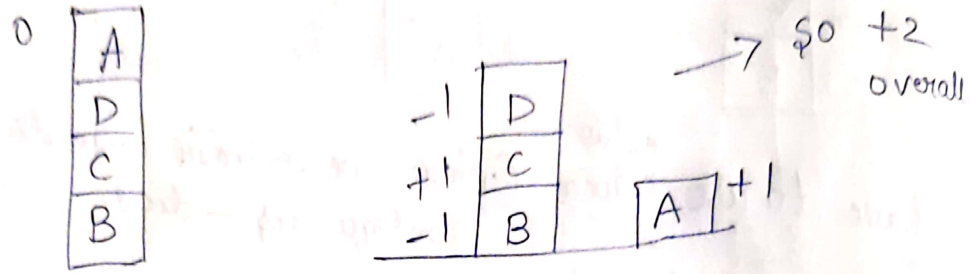
→ Now, using this local information we have go from local start to Goal.

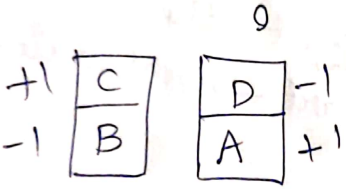
→ we have to apply different operators at the start state so we can go to goal state.

So,

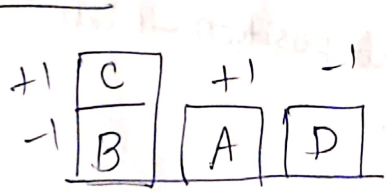
First step ① Bring A → ground



step ②



step ③



— local optimum

→ we ended up here with local optimum, so we cant move further.

→ disadvantage of using local Heuristic function.

Now, we use

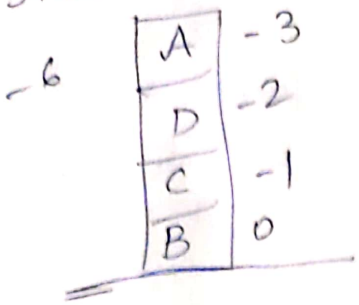
→ Global Heuristic function.

→ +1 — for each block has the Correct Support structure — every block.

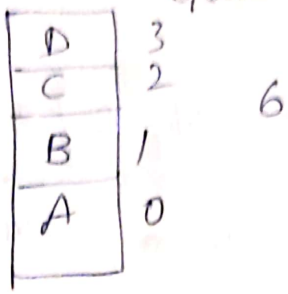
-1 — wrong Support structure — every block

(3) page no.

Start

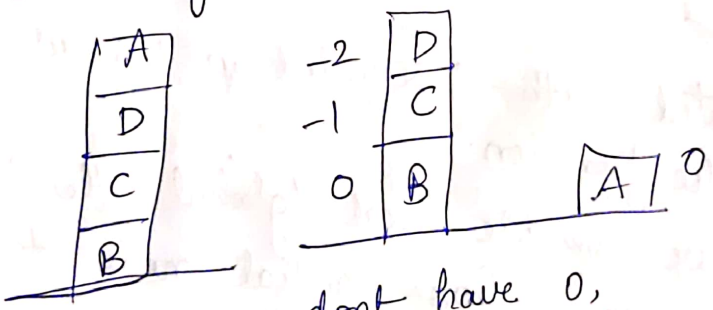


Goal



→ Here, below B we dont have anything 0
, below C, B present its in wrong position so -1
, below D, C and B are there and are not correctly placed, so -2,
→ below A, (D, C, B) are there, all of them are wrongly placed, so value of A is -3.
so total value -6
→ Like wise for Goal state +6

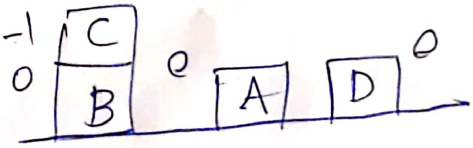
Now,
we are moving A to ground



→ Now, Below B we dont have 0,
C wrongly placed so -1
D wrongly placed -2
total value is -3.

→ total 2 possibilities → D on ground
→ D on top of A

→ move D to ground



total -1

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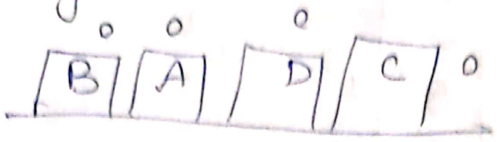
Now,

→ con ground

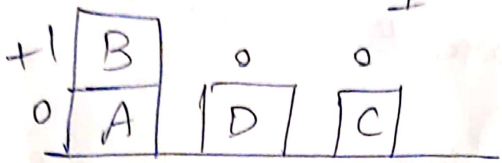


all 0, better than previous

→ Now,

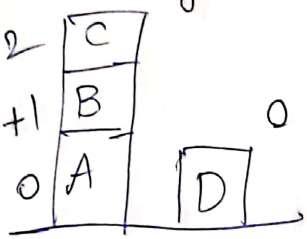
→ B on top of A

1 — total value of state



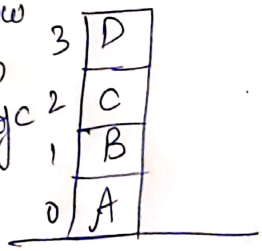
→ C on top of B

3 — total state value



→ Now D on top of C

6 → total state value.



Here, we started with −6 & ended up +6 using Global Heuristic function.

→ Like this we can use local / global Heuristic functions to move from initial node to the goal node.