ASSIGNMENT OF ARTIFICIAL INTELLIGENCE

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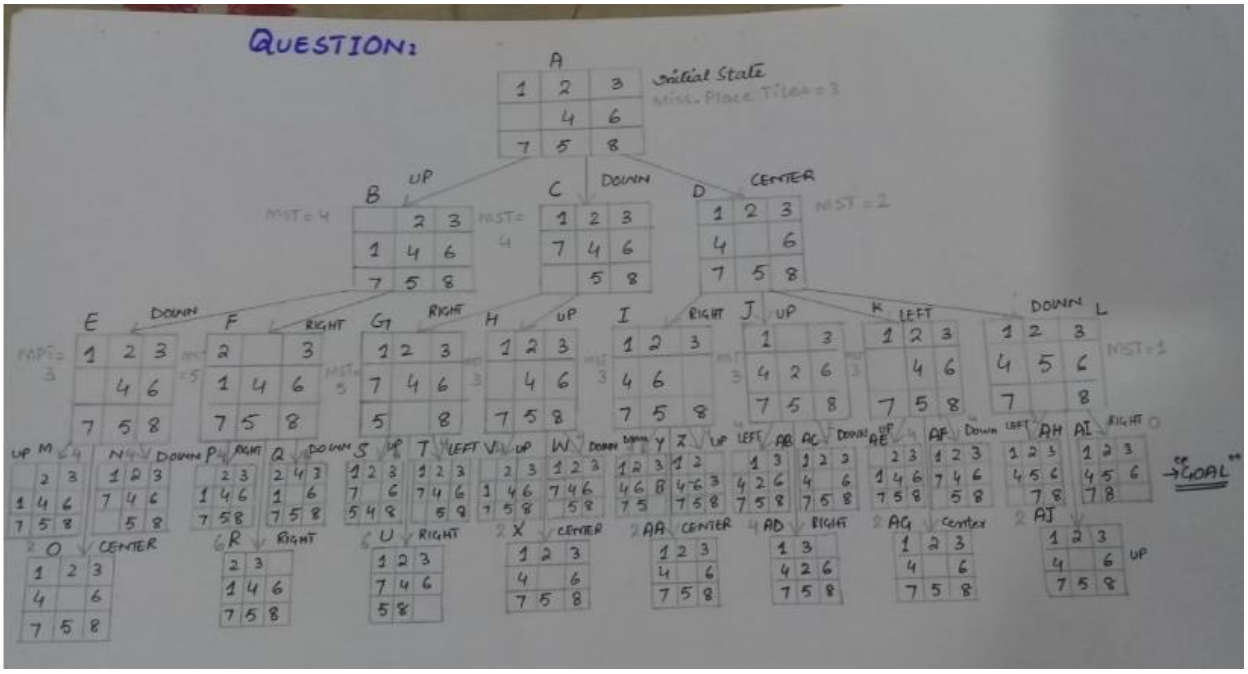
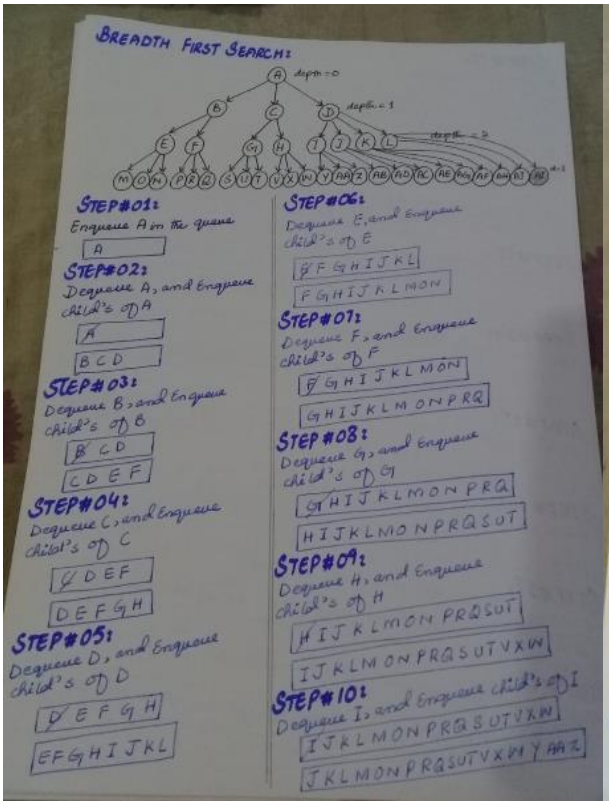
SUBMITTED BY: JAWERIA ASIF

SUBMITTED TO: MAM UMEMA HANI

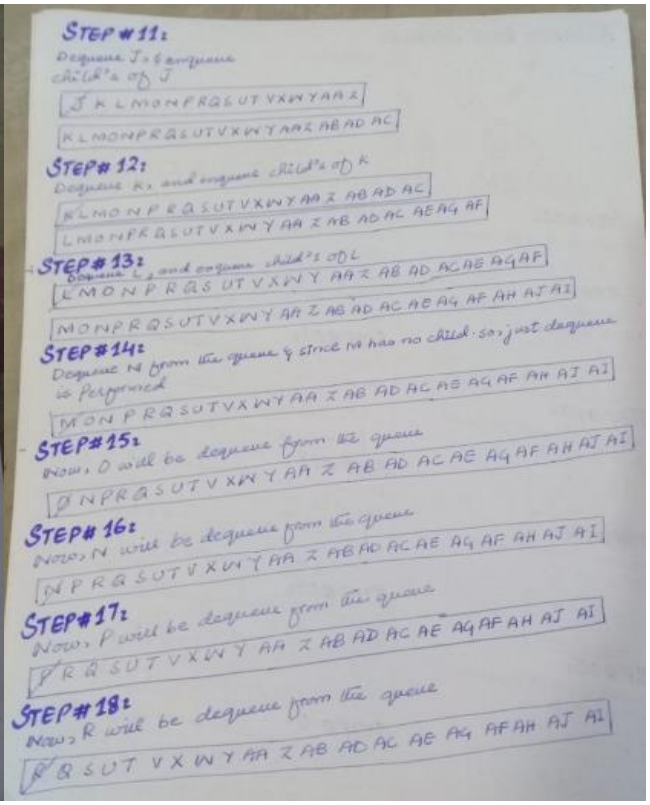
QUESTION: Initial state



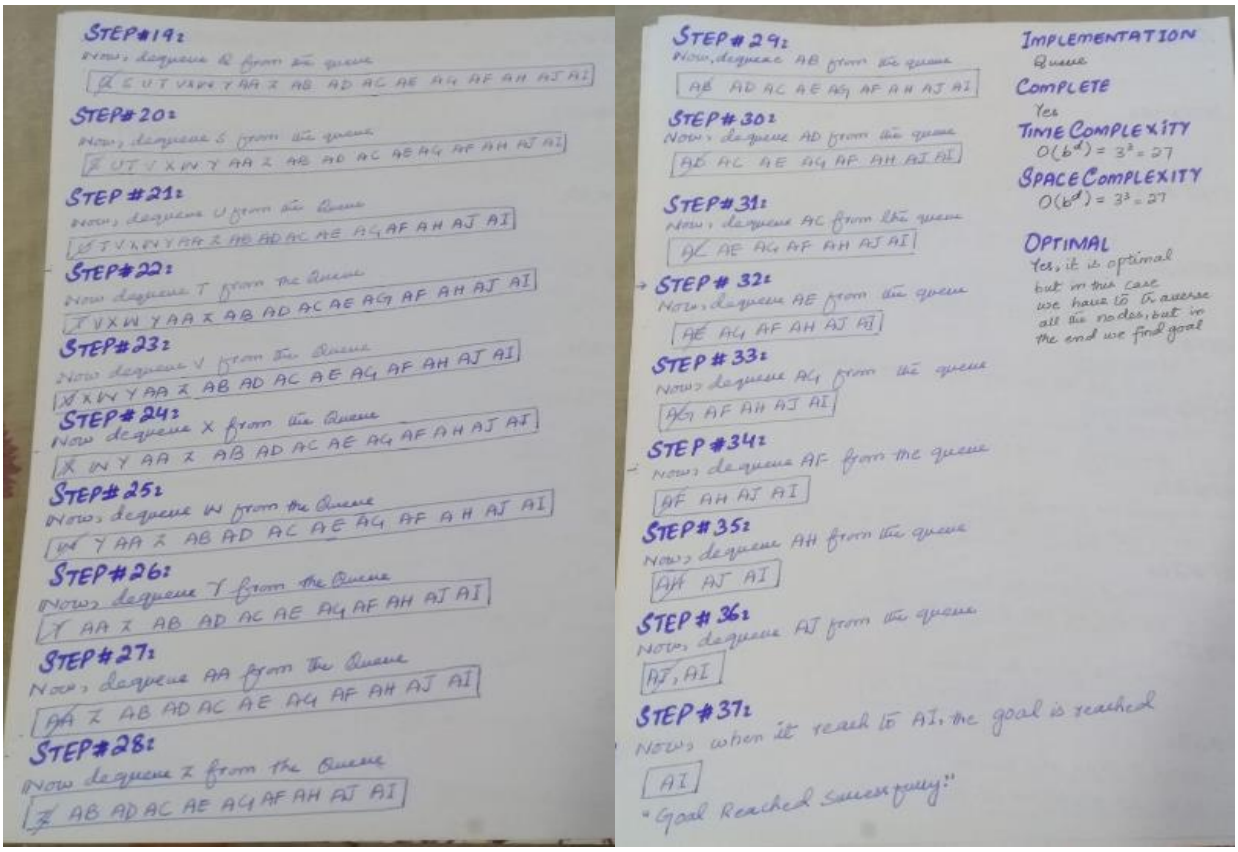
BREADTH FIRST SEARCH ALGORITHM:



(A)

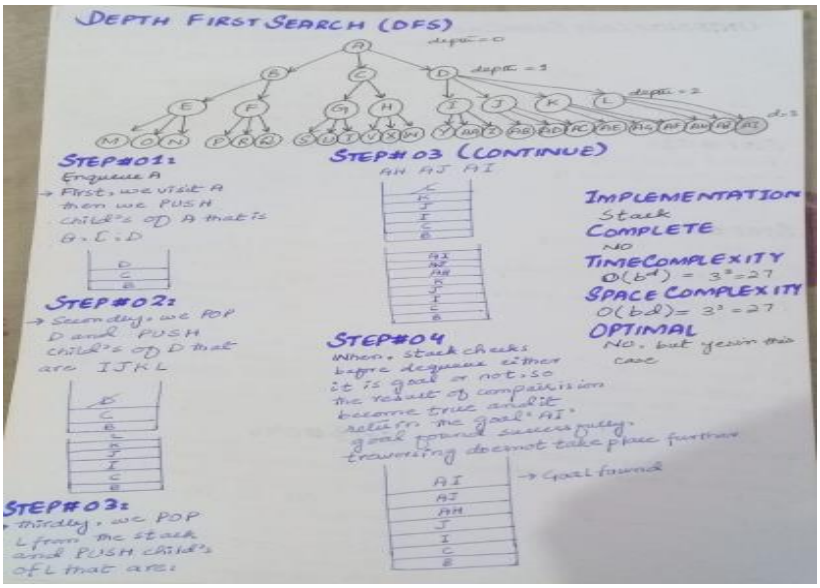


(B)

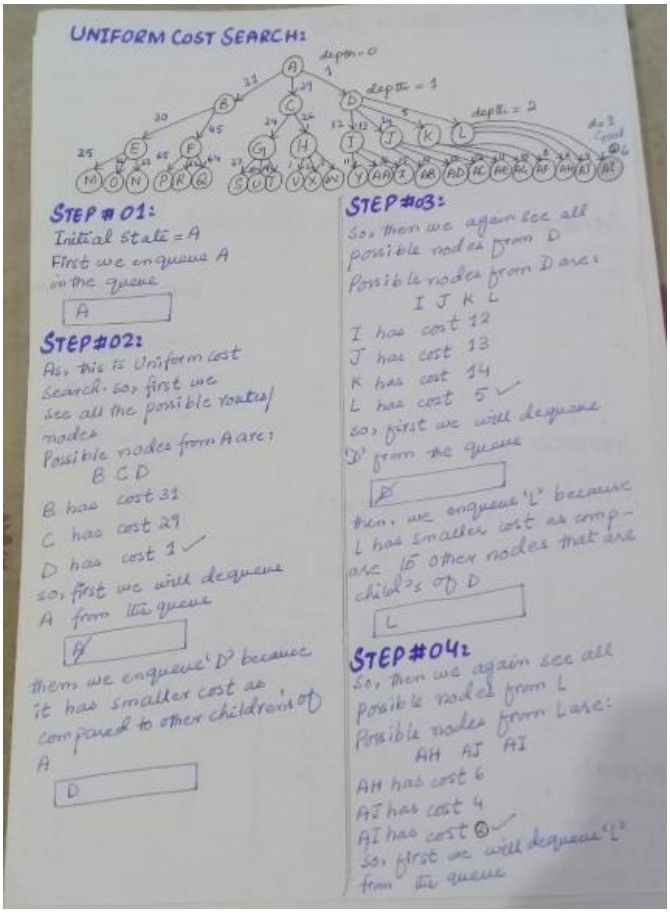

STEP#19:
Now, dequeue R from the queue
R E U T V X W Y AA Z AB AD AC AE AG AF AH AJ AI
STEP#20:
Now, dequeue S from the queue
S U T V X W Y AA Z AB AD AC AE AG AF AH AJ AI
STEP#21:
Now, dequeue U from the Queue
U T V X W Y AA Z AB AD AC AE AG AF AH AJ AI
STEP#22:
Now dequeue T from the Queue
T V X W Y AA Z AB AD AC AE AG AF AH AJ AI
STEP#23:
Now dequeue V from the Queue
V X W Y AA Z AB AD AC AE AG AF AH AJ AI
STEP#24:
Now dequeue X from the Queue
X W Y AA Z AB AD AC AE AG AF AH AJ AI
STEP#25:
Now, dequeue W from the Queue
W Y AA Z AB AD AC AE AG AF AH AJ AI
STEP#26:
Now, dequeue Y from the Queue
Y AA Z AB AD AC AE AG AF AH AJ AI
STEP#27:
Now, dequeue AA from the Queue
AA Z AB AD AC AE AG AF AH AJ AI
STEP#28:
Now dequeue Z from the Queue
Z AB AD AC AE AG AF AH AJ AI
STEP#29:
Now, dequeue AB from the queue
AB AD AC AE AG AF AH AJ AI
STEP#30:
Now, dequeue AD from the queue
AD AC AE AG AF AH AJ AI
STEP#31:
Now, dequeue AC from the queue
AC AE AG AF AH AJ AI
STEP#32:
Now, dequeue AE from the queue
AE AG AF AH AJ AI
STEP#33:
Now, dequeue AG from the queue
AG AF AH AJ AI
STEP#34:
Now, dequeue AF from the queue
AF AH AJ AI
STEP#35:
Now, dequeue AH from the queue
AH AJ AI
STEP#36:
Now, dequeue AJ from the queue
AJ, AI
STEP#37:
Now, when it reach to AI, the goal is reached
AI
"Goal Reached Successfully"
IMPLEMENTATION
Queue
COMPLETE
Yes
TIME COMPLEXITY
$O(b^d) = 3^3 = 27$
SPACE COMPLEXITY
$O(b^d) = 3^3 = 27$
OPTIMAL
Yes, it is optimal but in this case we have to traverse all the nodes, but in the end we find goal

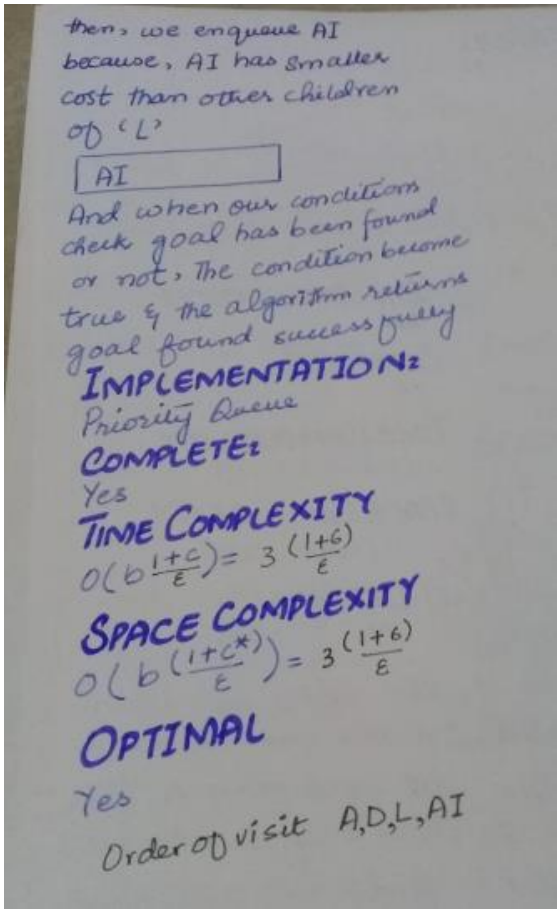
(C) (D)

DEPTH FIRST SEARCH ALGORITHM:

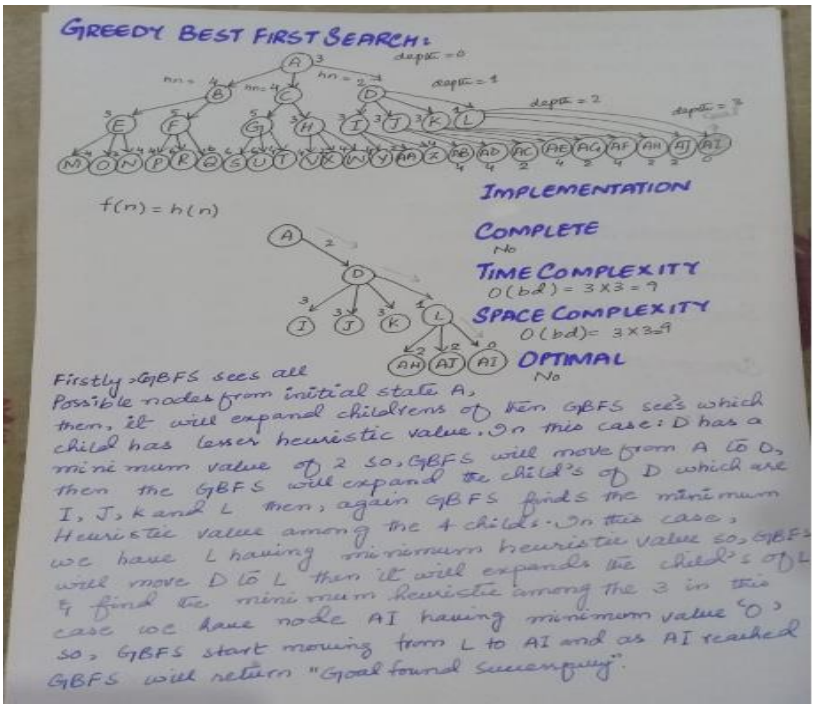


UNIFORM COST SEARCH ALGORITHM:

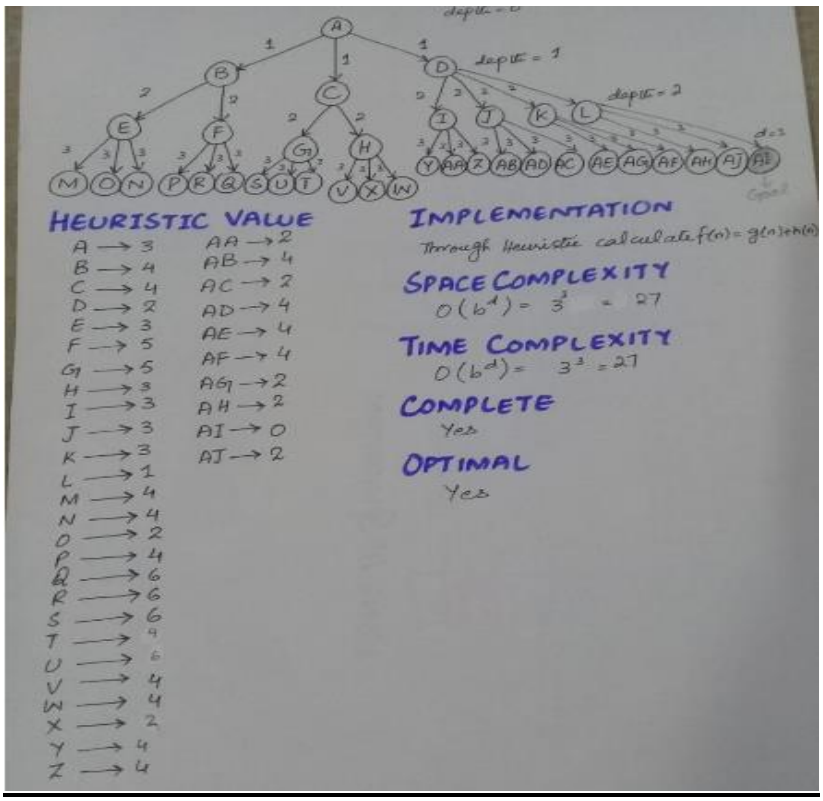




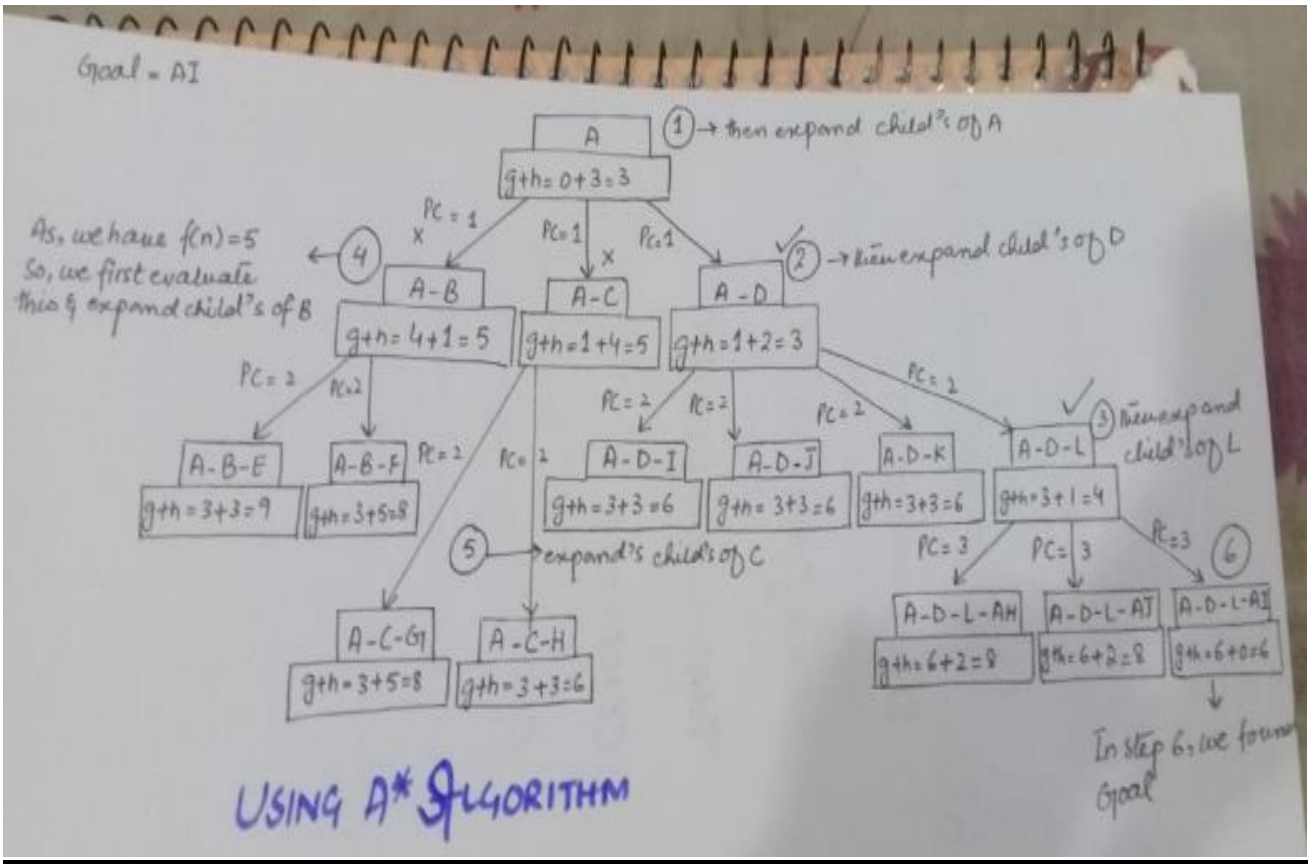
GREEDY BEST FIRST SEARCH ALGORITHM:



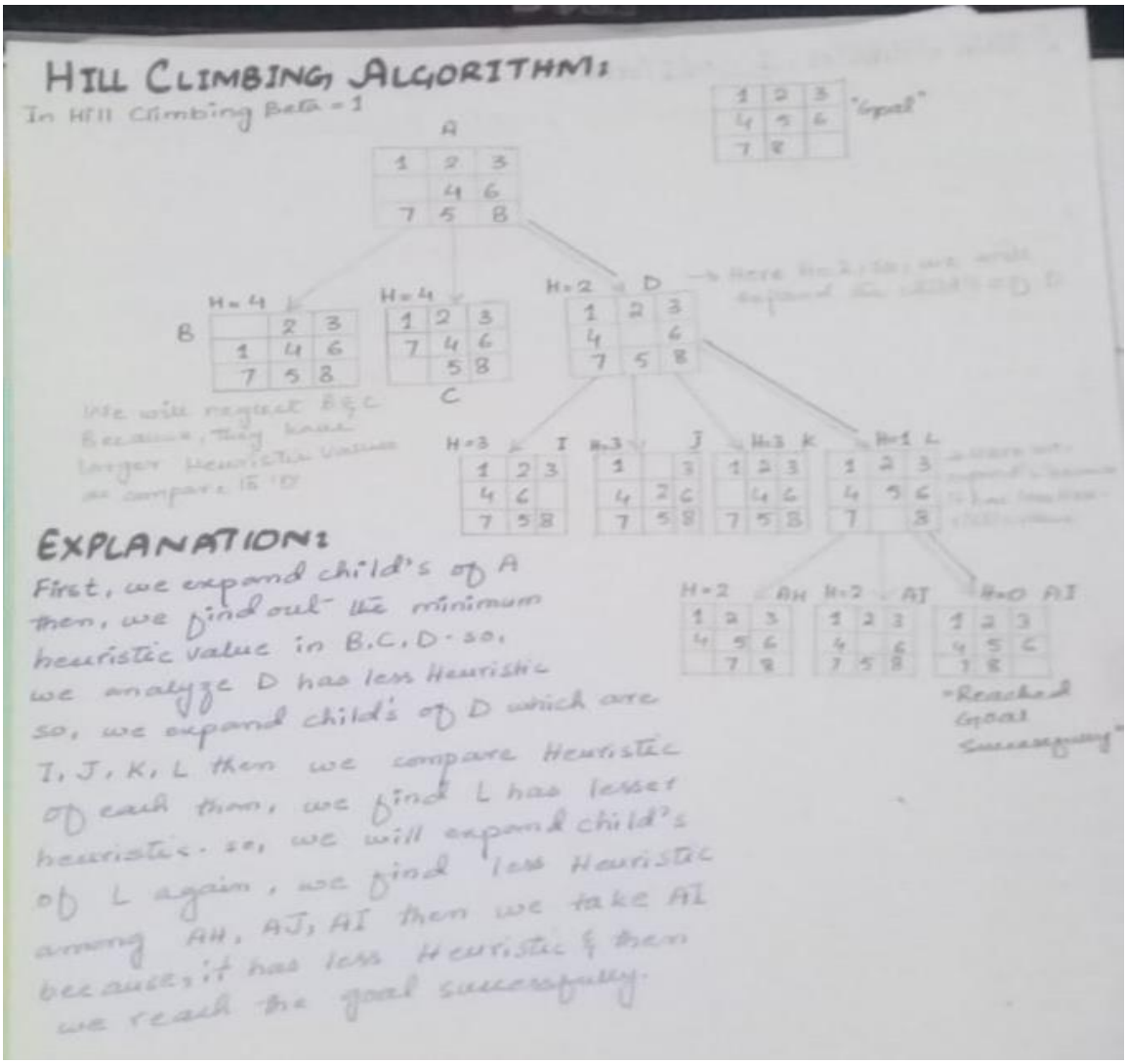
A* SEARCH ALGORITHM:



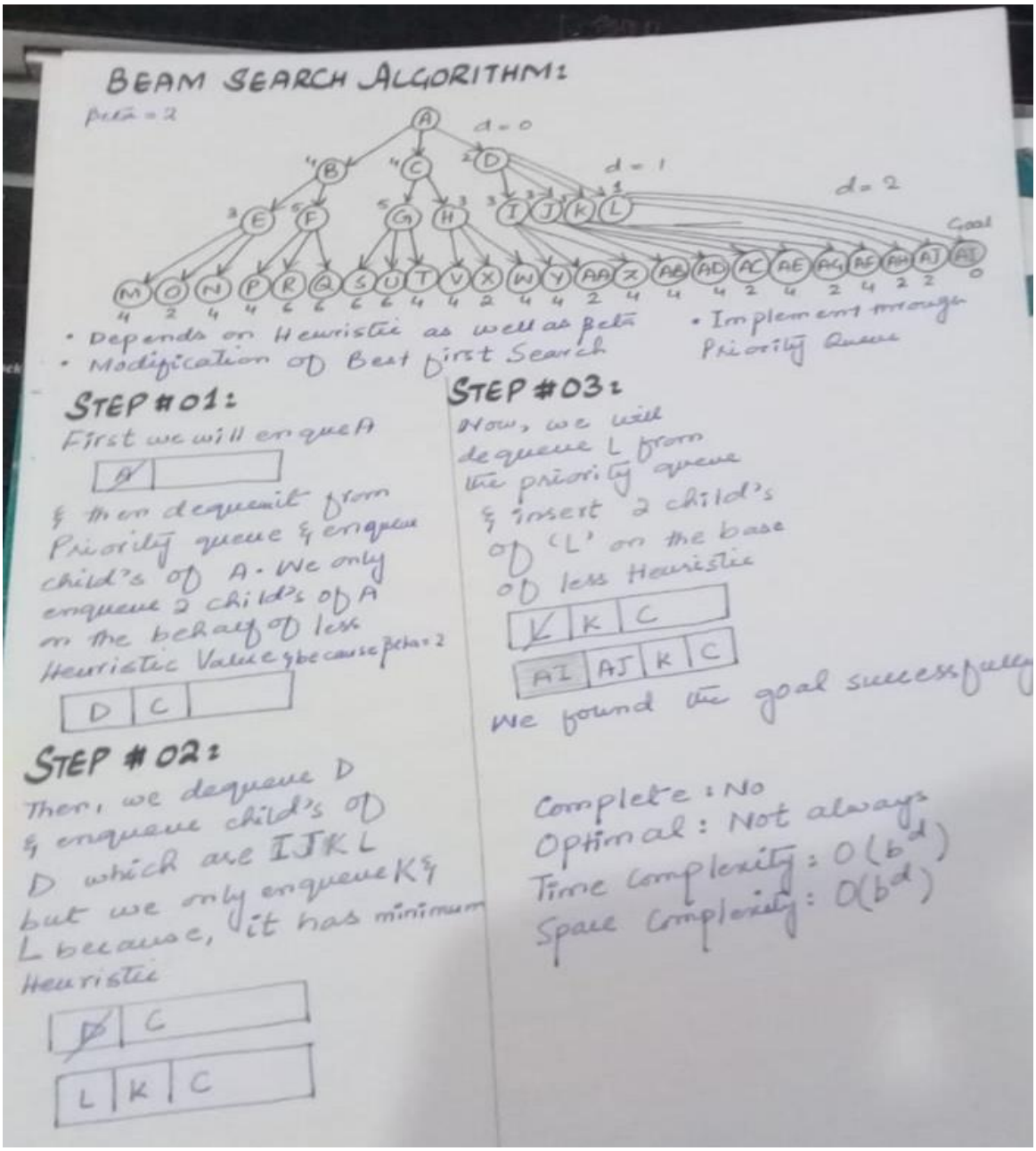
IMPLEMENTATION OF A* BY CALCULATING G(N):



IMPLEMENTATION OF HILL CLIMBING (LOCAL SEARCH):



IMPLEMENTATION OF BEAM SEARCH ALGORITHM:



IMPLEMENTATION OF GENETIC ALGORITHM: