Name :- Ankita S. Digaskar

Class :- BE - IT

Roll No :- 16

Subject :- IS lab

Assignment No:- 1A

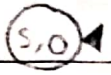
DATE / /

Q.1

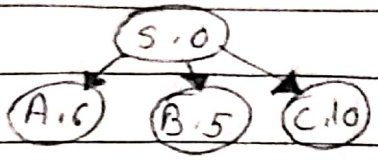
1.1

→

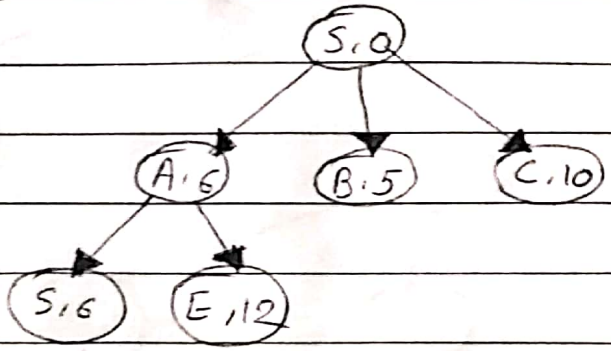
Step 0 :



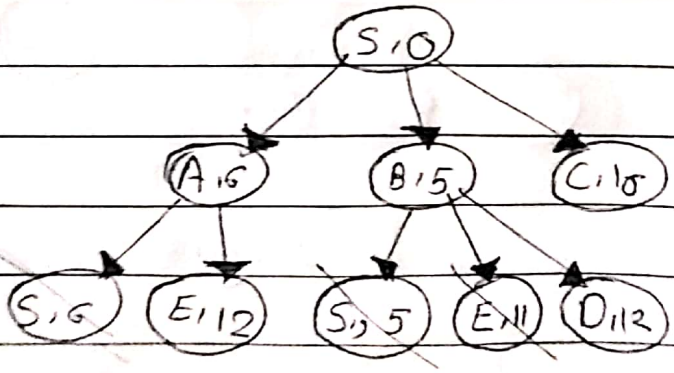
step 1 :



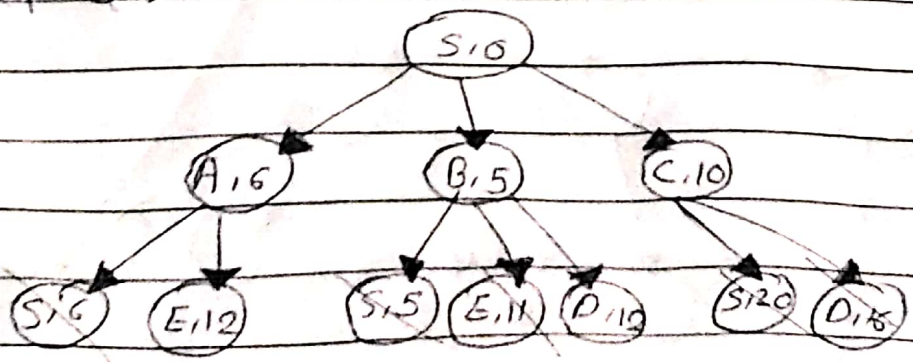
step 2 :



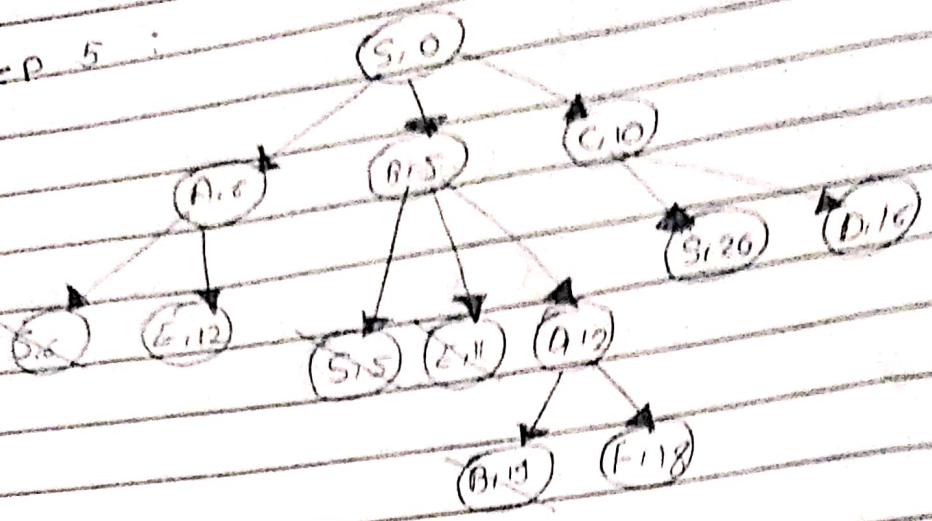
Step 3 :



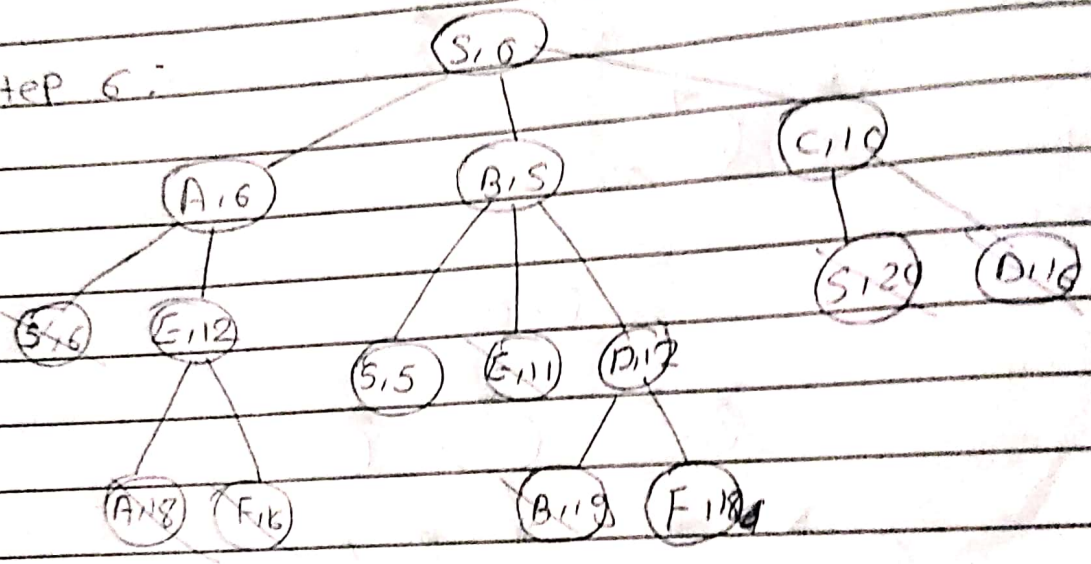
Step 4 :



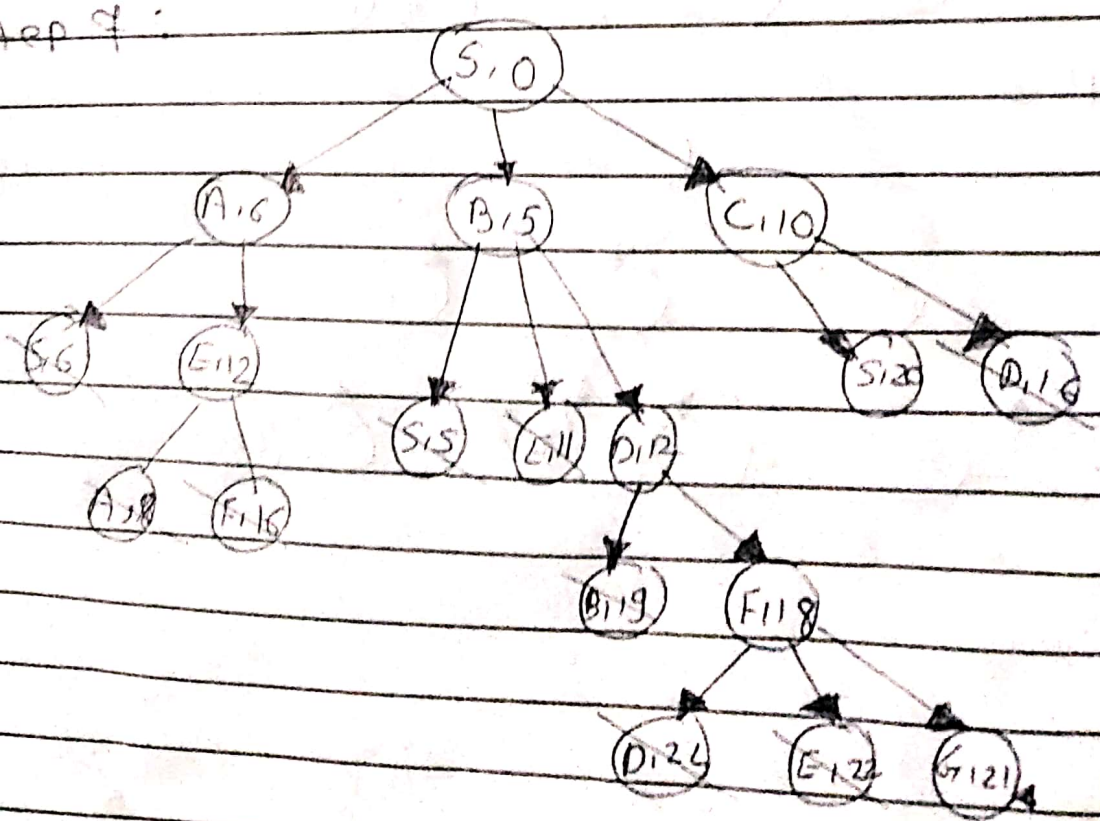
Step 5 :



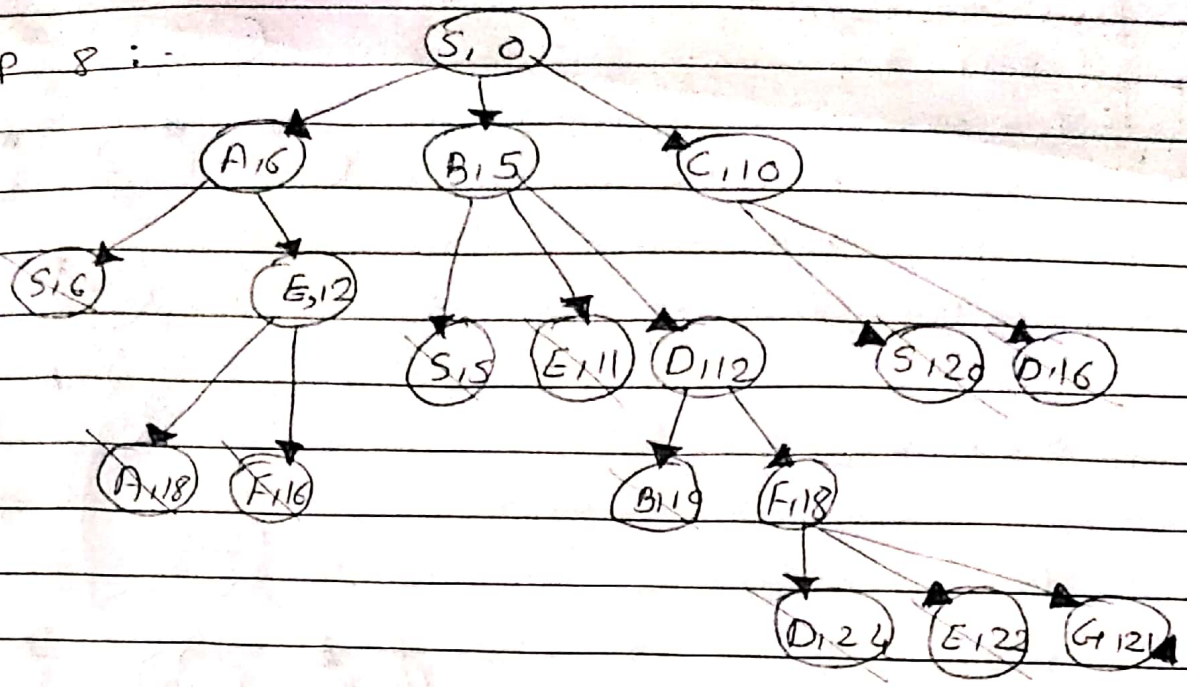
Step 6 :



Step 7 :



Step 8 :-



4

Initialization :- Compute f server for S and Put in the openlist.

F - server S . f(S) = h(S) = 17 (S,17)

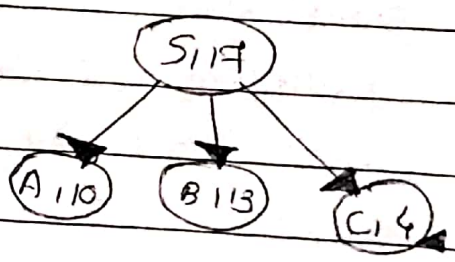
Step 1 :

F - server of successor

f(A) = h(A) = 10

f(B) = h(B) = 19

f(C) = h(C) = 4

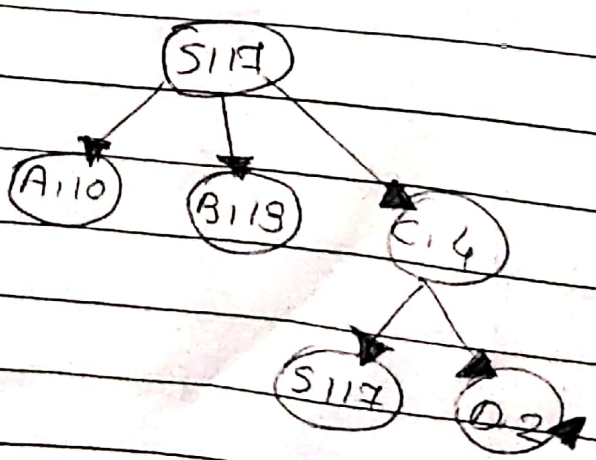


Step 2

F - server of successor

f(S) = h(S) = 17

f(Q) = h(Q) = 2



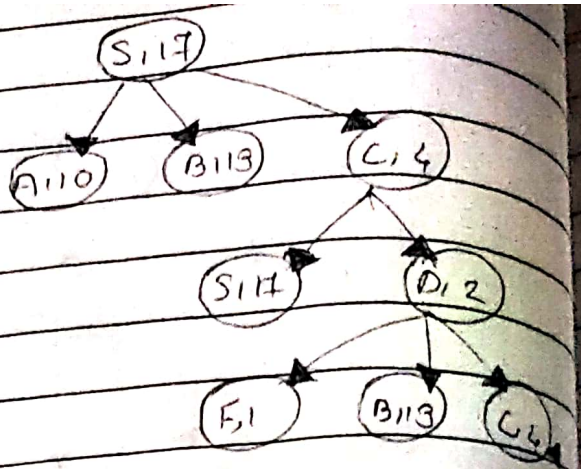
Step 3 :

F - server of successor

$f(C) = h(C) = 4$

$f(B) = h(B) = 13$

$f(F) = h(F) = 1$



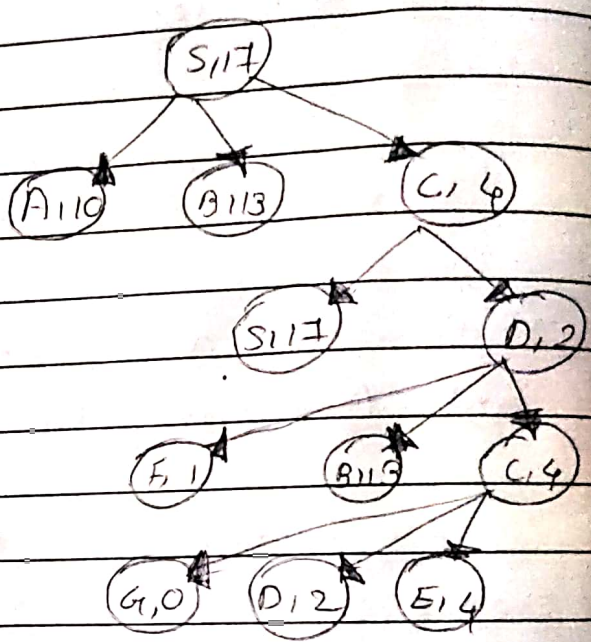
Step 4 :

F - server of successor

$f(D) = h(D) = 2$

$f(E) = h(E) = 4$

$f(G) = h(G) = 0$



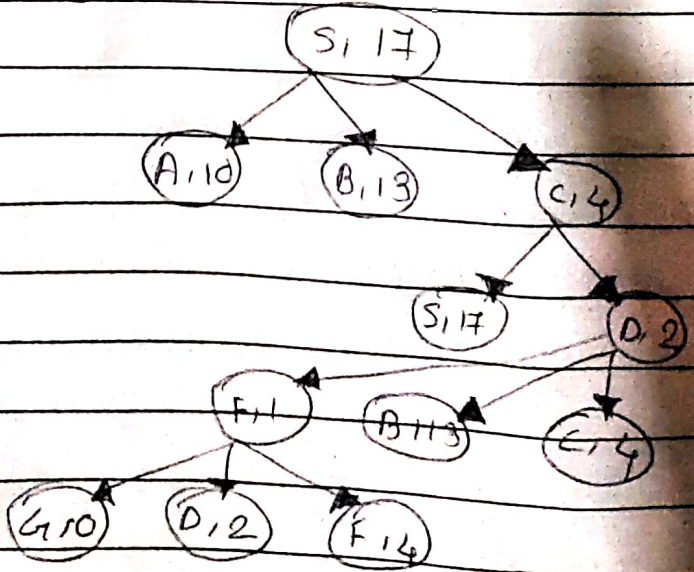
Step 5 :

solution is :-

S → C → D → F → G with

solution cost = 10 + 6 + 6 + 3

= 25



Q.2

a)

→ The lowest path cost g(n) can be the cost to reach the goal configuration in least steps.

In our case, we can reach the final configuration in at least 4 moves. UP, UP, LEFT, LEFT since all moves are equally costly, we compute g(n) as

g(n) as

$g(n) = 1+1+1+1$

$g(n) = 4$

consider an following - Puzzle instance :-

8	7	6
2	1	5
-	3	4

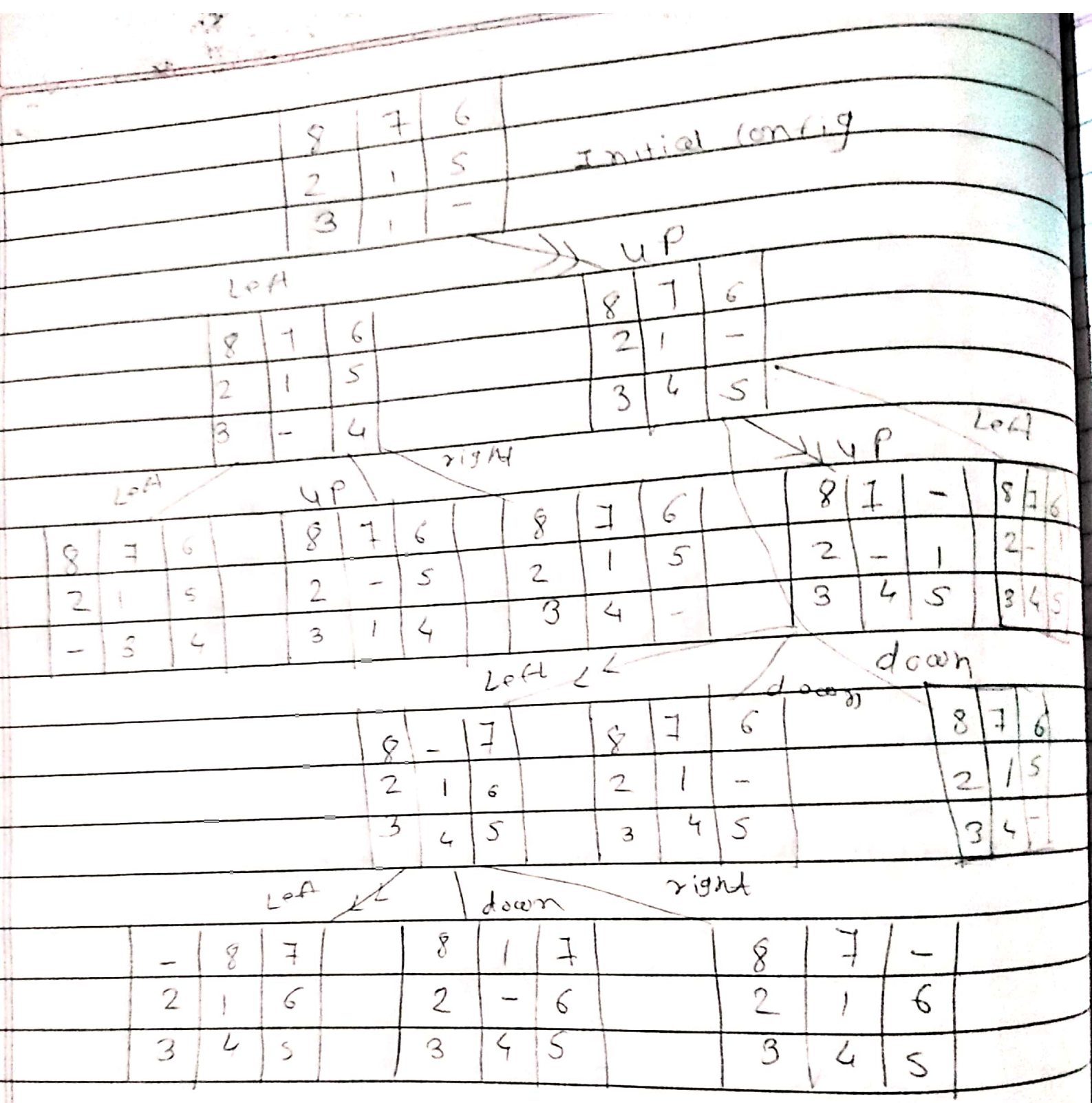
Solution can be represented as:

{ { 8,7,6 } { 2,1,5 } { -3,4 } } → { { 8,7,6 } { 2,5 }, { 3,-4 } } →

{ { 8,76 } { 2,1,5 } { 3,4,-3 } } → { { 8,7,6 } { 2,1 }, { 3,4,5 } } → { { 8,7,- } { 2,1,5 } { 3,4,5 } } → { { 8,-7 } { 2,1,6 } { 3,4,5 } } → { { -8,7 } { 2,1,6 }, { 3,4,5 } }

since all the moves are equally costly the cost would be

$g(n) = 6$.



final configuration

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For i=1 , n = initial state

h3 (initial) = sum of manhattan dist between current and correct po first of all tiles except space.

for (initial) = 0+0+0+0+1+1+1+1

= 4

for n = goal state

h3 (goal) = 0