Assignment No: 1A

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Class: B.E IT

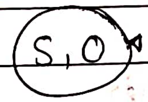
Roll no: 62

Subject: IS LAB

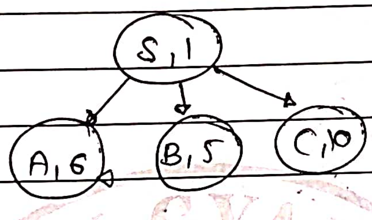
DOP	DOA	marks	Sign

Q. 1]

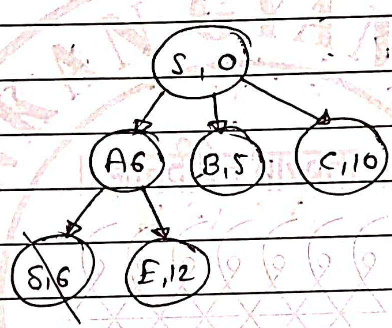
1.1] → Step 0:



Step 1:



Step 2:



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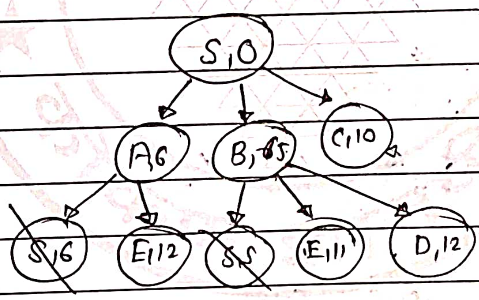
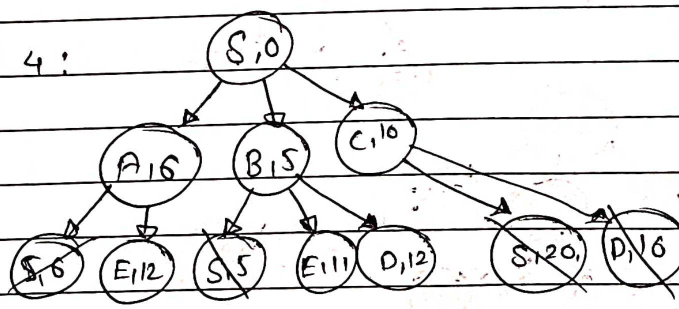
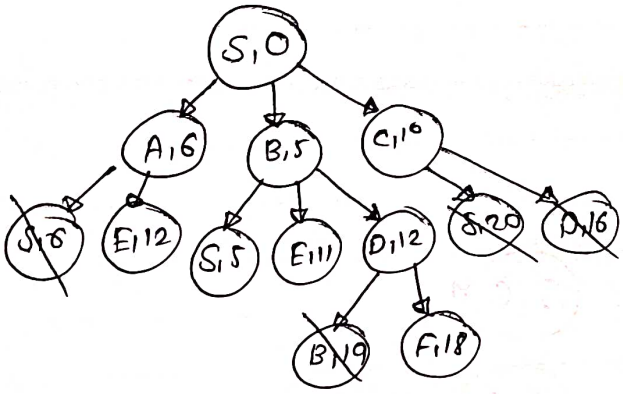


Step 4:



Step 5 :



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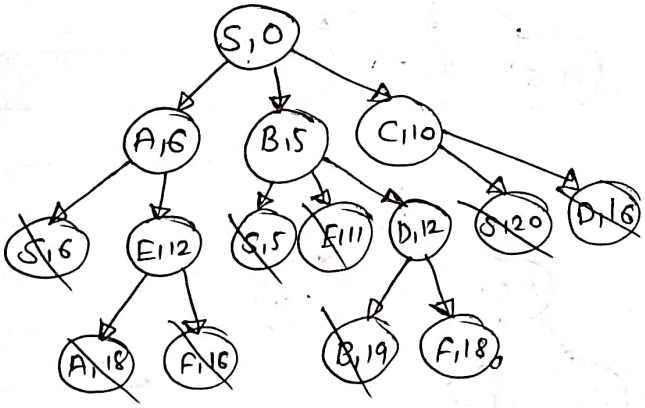

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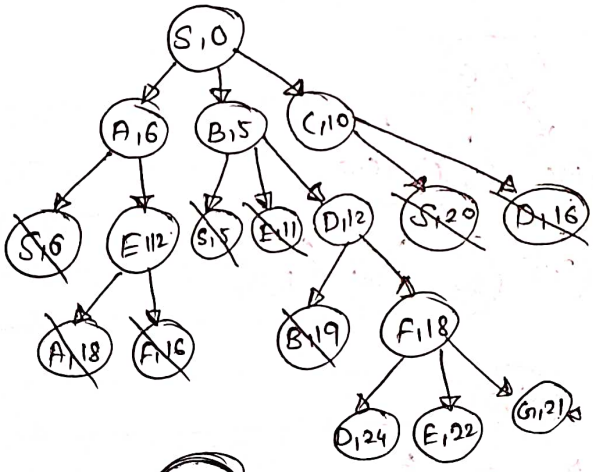
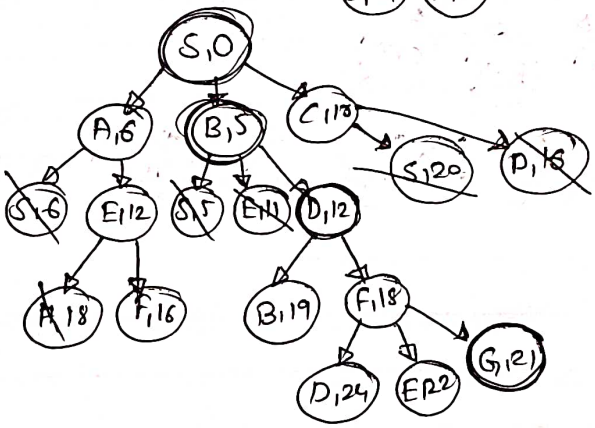


Step 8 :



1.4) Initialization : Computer F-source for S & put it in Openlist.

F- source S: $F(S) = h(S) = 17$ (S,17)

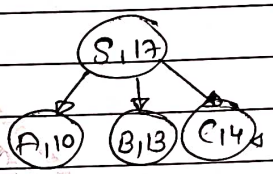
Step 1 :

F- Source of successors

$F(A) = h(A) = 10$

$F(B) = h(B) = 13$

$F(C) = h(C) = 4$

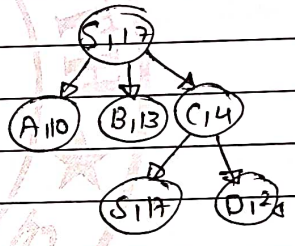


Step 2:

F source of successors

$F(S) = h(S) = 17$

$F(D) = h(D) = 2$



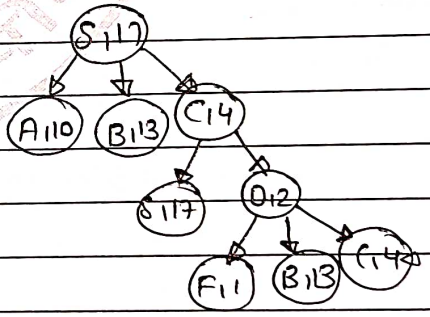
Step 3:

F-source of successor

$F(C) = h(C) = 4$

$F(B) = h(B) = 13$

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



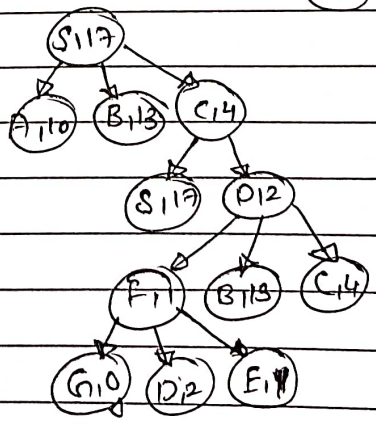
Step 4:

F-source of successor

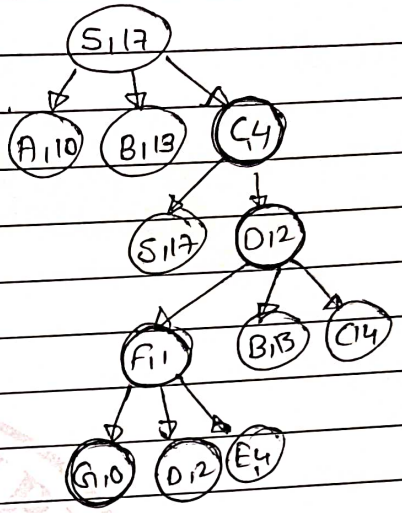
$F(D) = h(D) = 2$

$F(E) = h(E) = 4$

$F(G) = h(G) = 0$



Step 5:



Solution is:
S → C → F → G with
Solution: 10 + 6 + 6 + 3
= 25

Q. 2]

a] lowest path g(n) can be cost to reach goal configuration in least steps. In our code, we can reach final configuration in at last 4 moves:
UP, UP, LEFT, LEFT. Since all moves are equally costly, we compute, g(n) as

g(n) = 1 + 1 + 1 + 1
g(n) = 4

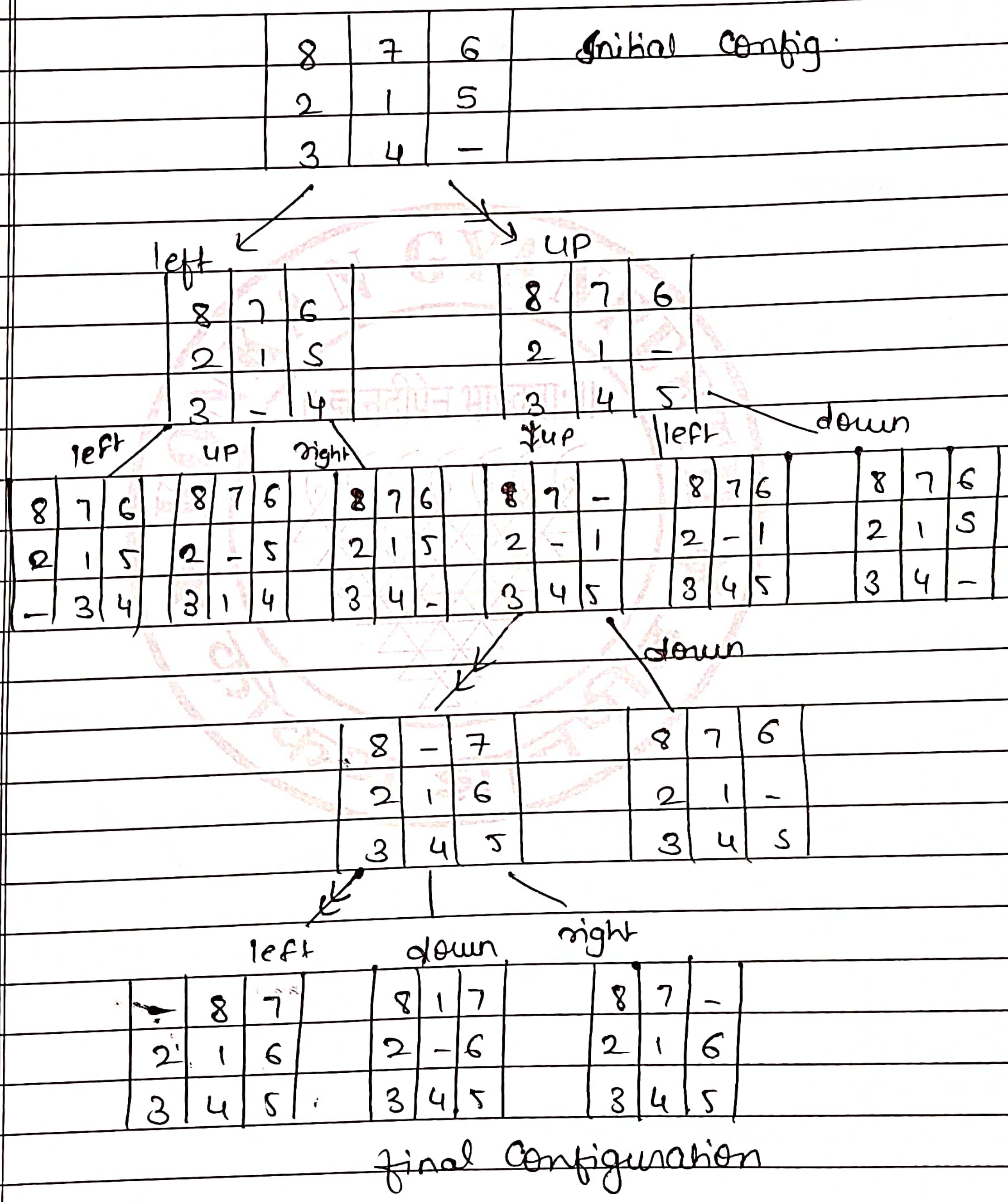
Consider following 8-puzzle instance:

8	7	6
2	1	5
-	3	4

Solution can be represented as
{ {8,7,6} {2,1,5} {-,3,4} } → { {8,7,6} {2,1,5}, {3,-,4} } →
{ {8,7,6} {2,1,5} {3,4,-} } → { {8,7,6} {2,1,-}, {3,4,5} } →
{ {8,-,7} {2,1,6} {3,4,5} } → { {-,8,7} {2,1,6}, {3,4,5} }

Since all moves, are equally costly, cost would be $g(n) = 6$

c)



e) for i = 1 n = initial state

h1(initial) = Misplaced files count except space.

h2(initial) = 4

n = goal state

h1(goal) = 0

for i = 2 n = initial state

h2(initial) = 4

for n = goal state

h2(goal) = 8

for i = 3, n = initial state

h3(initial) = Sum of dist. between current & correct posision of all files except space.

h3(initial) = 0+0+0+0+1+1+1+1

= 4

for n = goal state

h3(goal) = 0