K.G.C.E.
Karjat - Raigad

Assignment 1(A)

Page No. :
Date :

KGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCEKGCE

Name:- Ruchita D. Gurav

Class:- BE/IT Roll No:- 21

Subject:- Is Lab Branch:- Batch:- I-1

Dop	DOC	remark	Sign

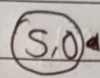
Assignment 1(A)

Q. 1)

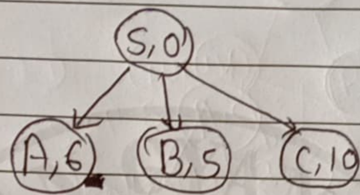
1.1)

→

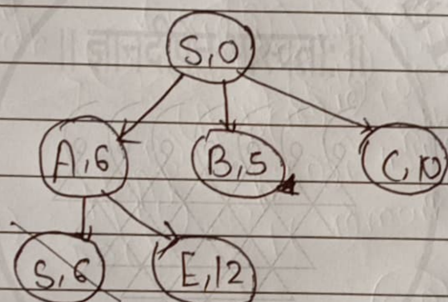
Step 0 :



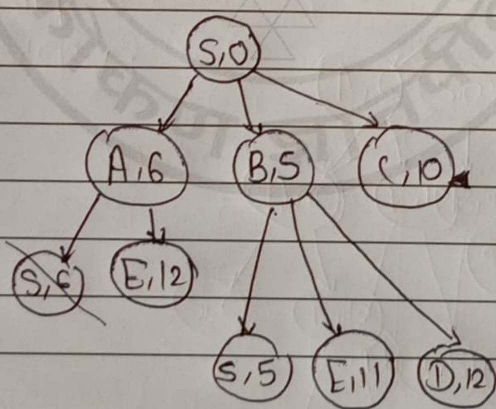
Step 1 :



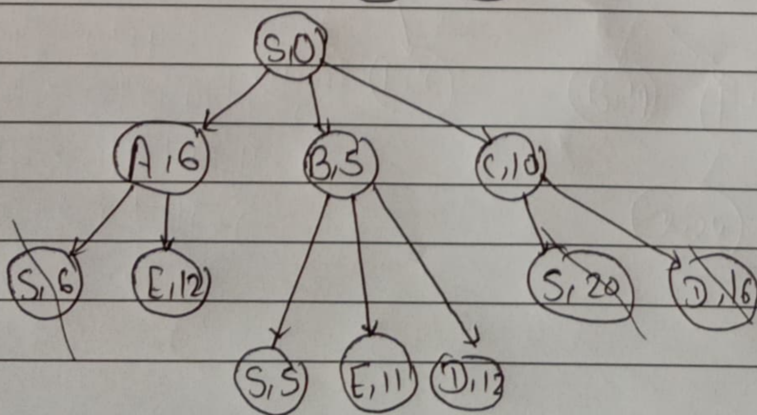
Step 2 :



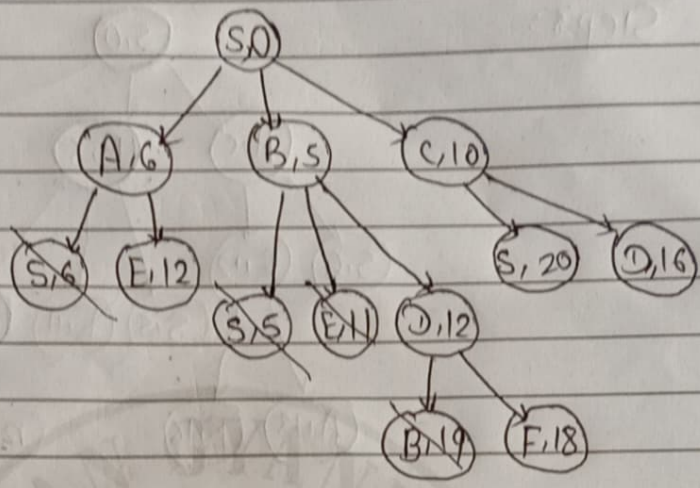
Step 3 :



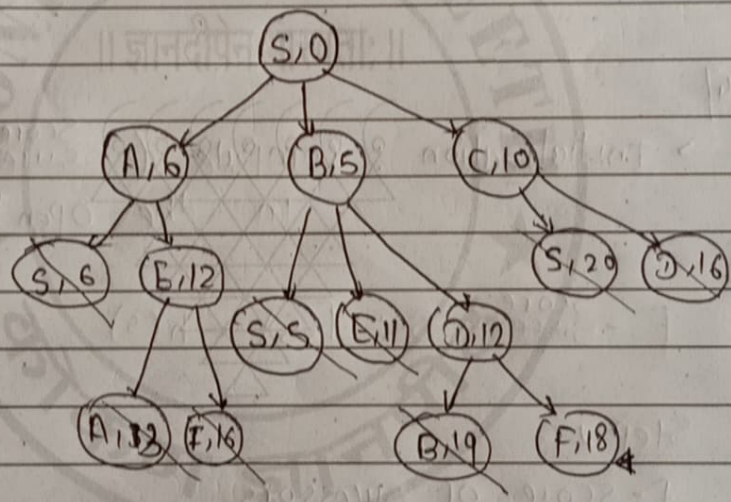
Ste4 :-



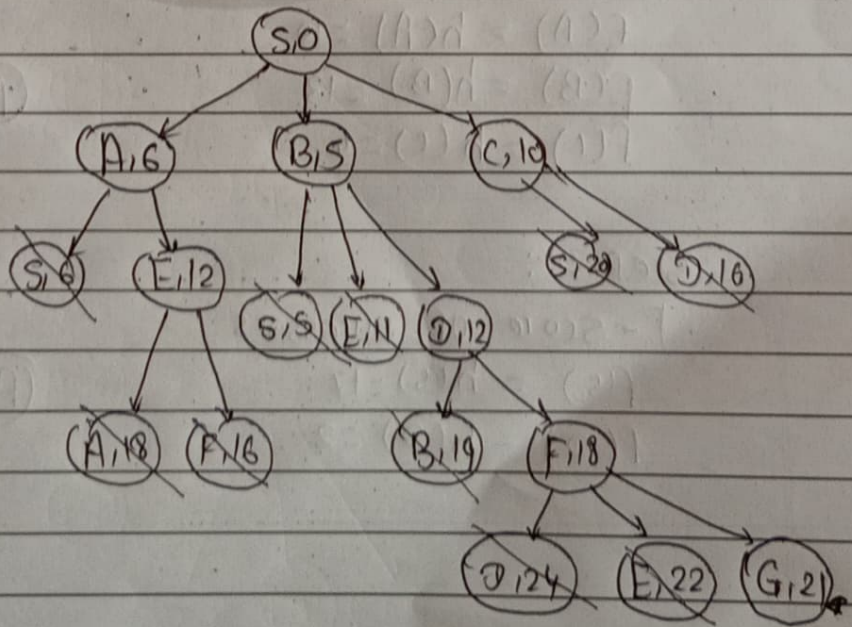
Step 5 :



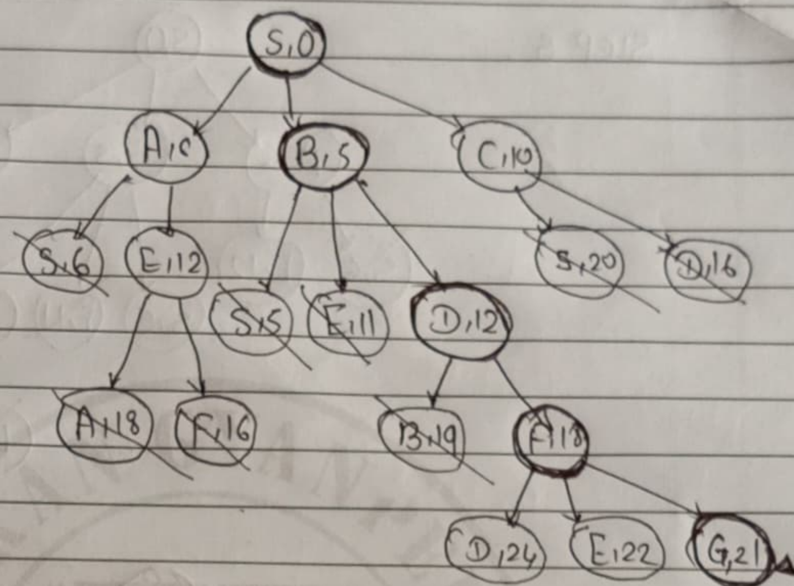
Step 6 :



Step 7 :



Step 8 :-



[1.4]

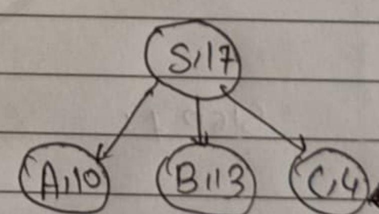
→ Initialization : Compute f score for S & put it in the open list.

F - score S : f(S) = h(S) = 17 (S,17)

Step 1 :-

f - score of sucessors

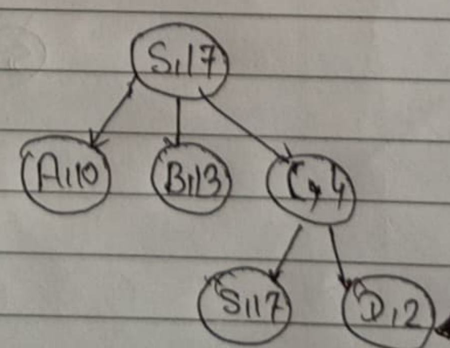
f(A) = h(A) = 10
f(B) = h(B) = 13
f(C) = h(C) = 4



Step 2 :

F - score of sucessors

f(S) = h(S) = 17
f(D) = h(D) = 2



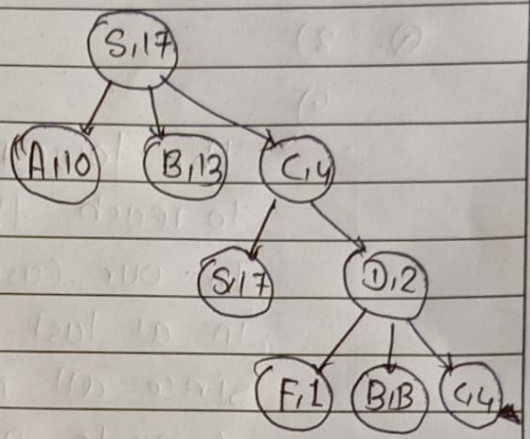
Step 3:

f - score of successor

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

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

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



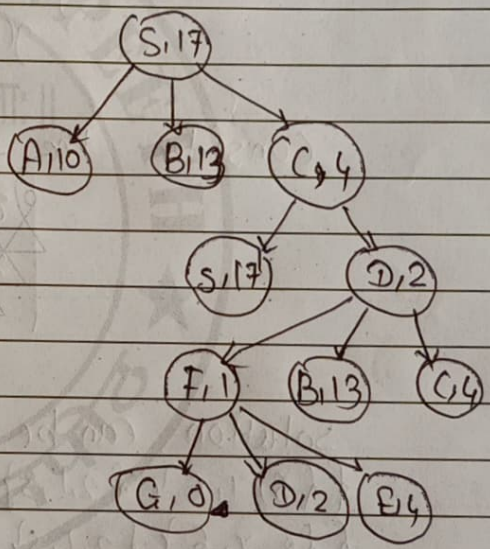
Step 4:

F-score of successor

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

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

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

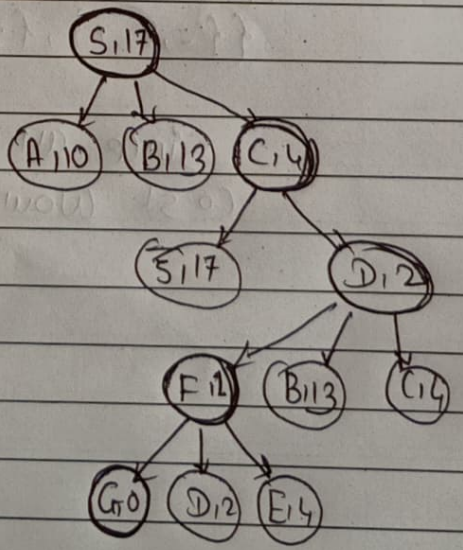


Step 5 :-

Solution is :-

$S \rightarrow C \rightarrow D \rightarrow F \rightarrow G$ 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 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 the following 8-puzzle instance :

8	7	6
2	1	5
-	3	4

Solution can be represented as :

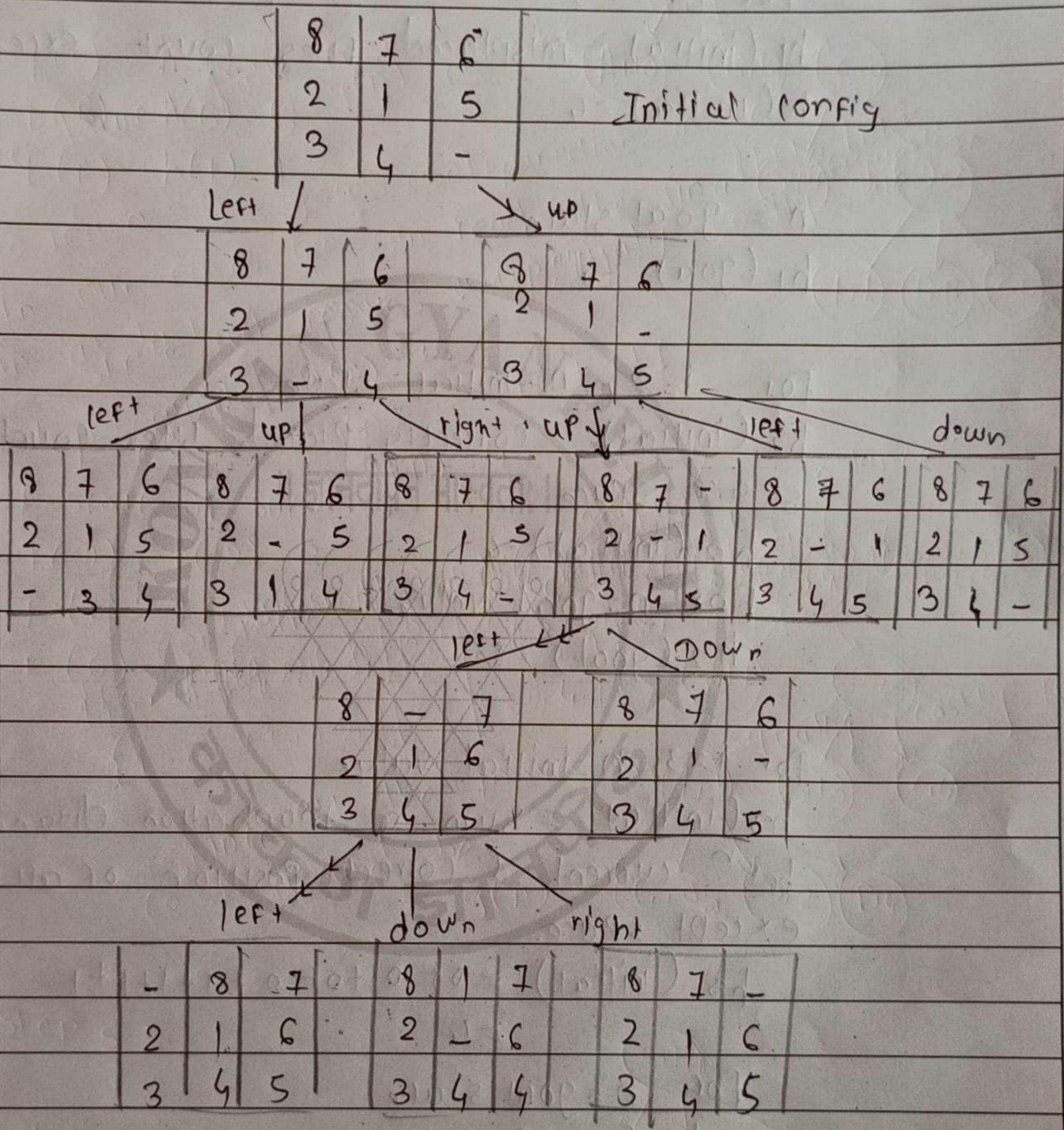
{{8,7,6} {2,1,5} {-,3,4}} → {{8,7,6} {2,1,5}, {3,-,4}} → {{8,7,6} {2,1,5} {3,4,-}} → {{8,7,6} {2,1,-}, {3,4,5}} → {{8,7,-} {2,1,5} {3,4,5}} → {{8,-,7} {2,1,6} {3,4,5}} → {{-,8,7}, {2,1,6}, {3,4,5}}

Since all the moves are equally costly the cost would be

$$g(n) = 6$$

c]

→



final configuration

e)

→ for i = 1 , n = initial state

h_1 (initial) = misplaced files count except spaces

h_1 (initial) = 4

n = goal state

h_1 (goal) = 0

For i = 2, n = initial state

h_2 (initial) = correctly placed files count except space.

h_2 (initial) = 4

For n = goal value

h_2 (goal) = 8

for i = 3, n = initial value

h_3 (initial) = sum of manhattan distance bet^n current & correct position of all tiles except space.

h_3 (initial) = 0 + 0 + 0 + 1 + 1 + 1 + 1

= 4

for n = goal state

h_3 (goal) = 0