Assignment 1A

Name :- Shubhangi A. Kolekar

Class :- BE. IT

Roll No:- 31

Subject :- Is Lab

D.O.P	D.O.A	Remark	Sign

Assignment 1A

Q. 1.

1.1]

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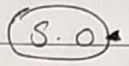
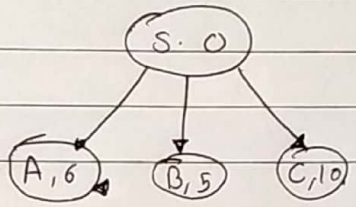
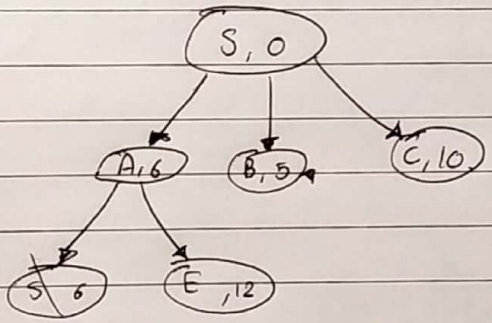
Step 0.



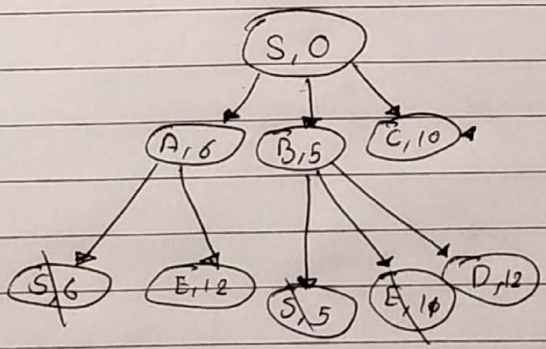
Step 1 :-



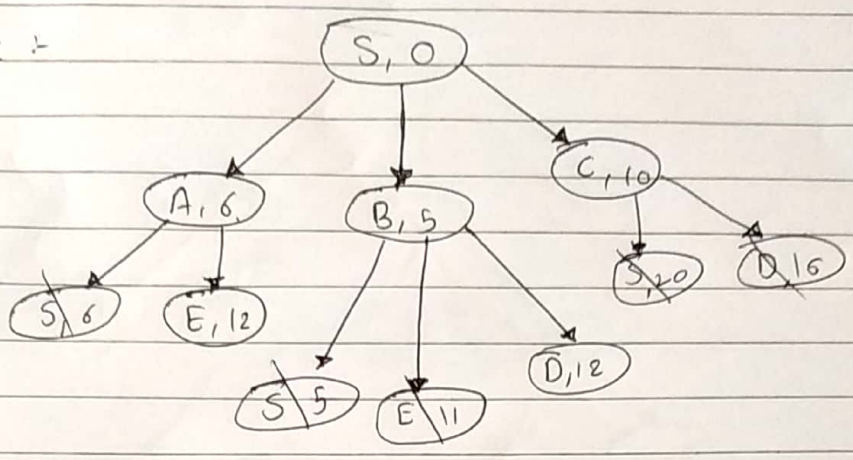
Step 2 :-



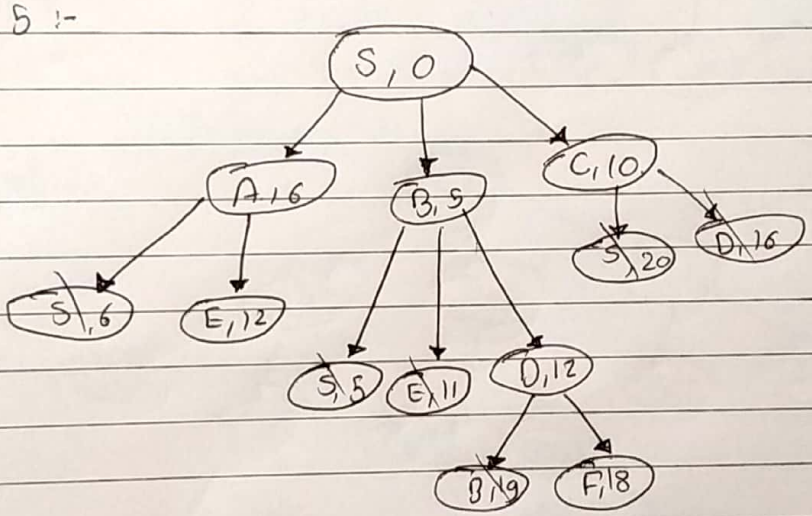
Step 3 :



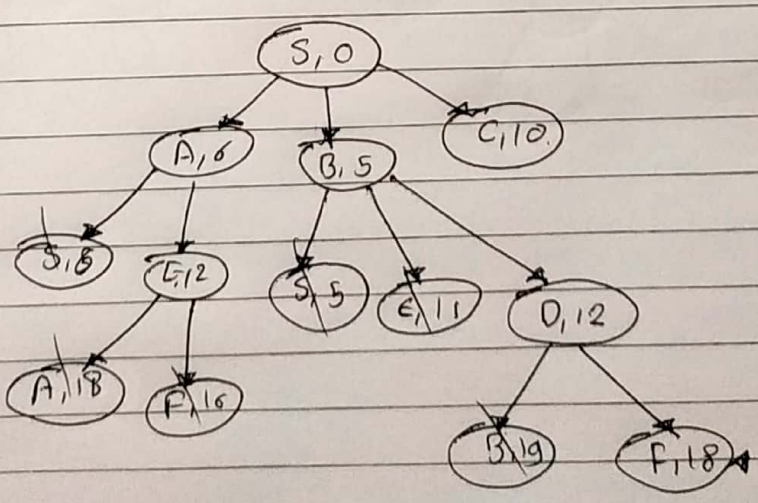
Step 4 :-



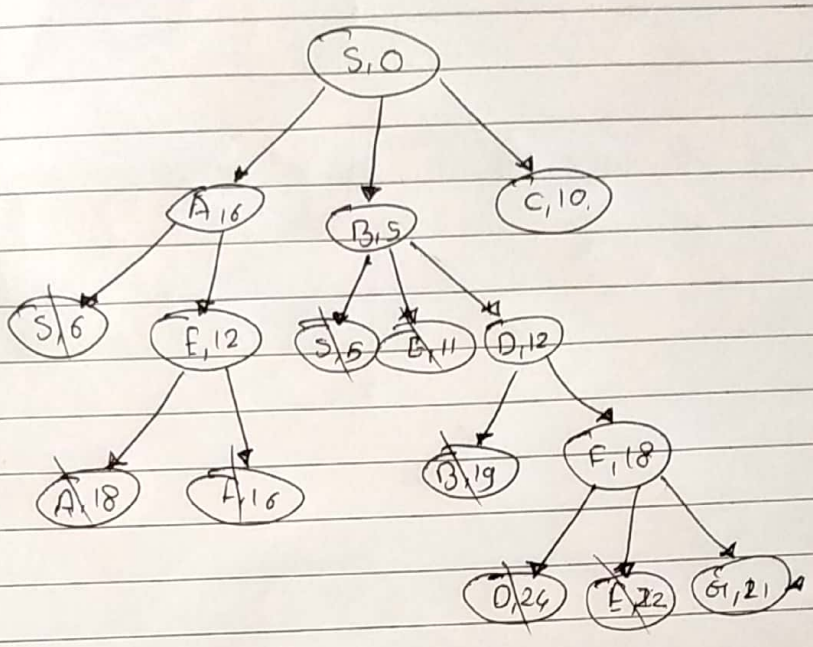
Step 5 :-



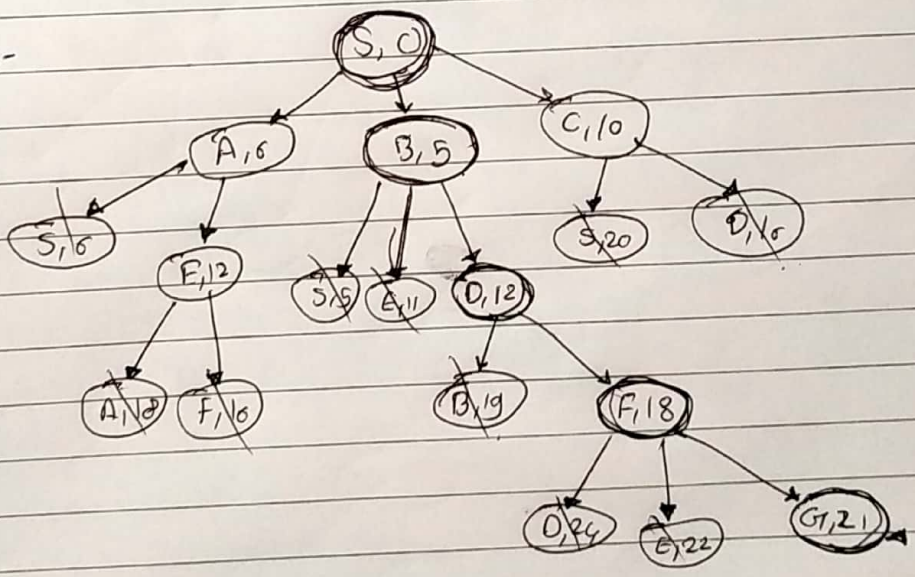
Step 6 :-



Step 7 :-



Step 8 :-



1.4.]

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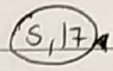
Initialigation :- Compute and ~~score~~ for s and ~~put~~ it in the openlist

F- Secure S : $f(s) = h(s) = 17$



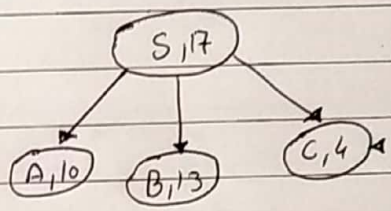
Step 1:

F = Score of sucessors

$f(A) = h(A) = 10$

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

$f(c) = h(c) = 4$

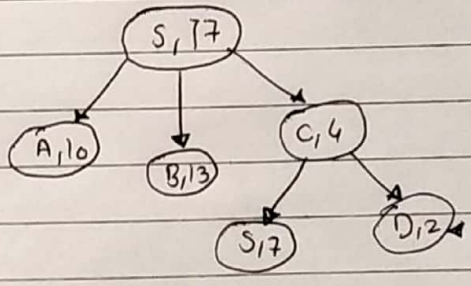


Step 2:

F - Score of succors

$f(s) = h(s) = 17$

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



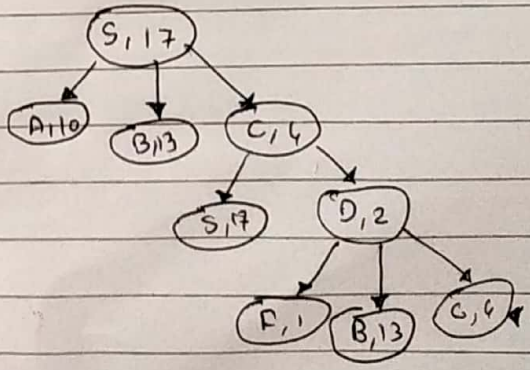
Step 3 :-

F - Score of sucesser

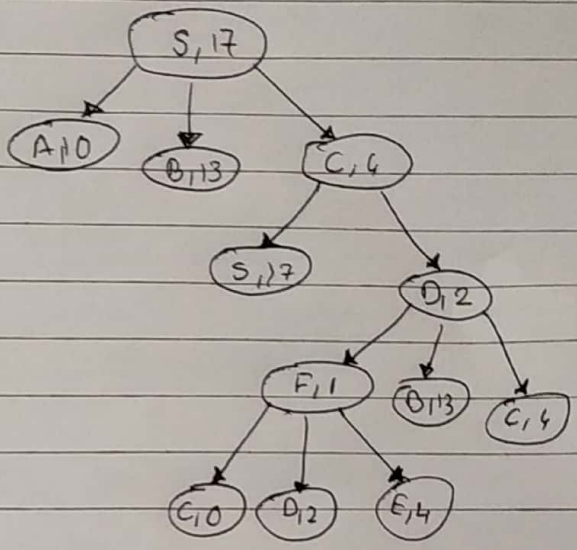
$f(c) = h(c) = 4$

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

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



Step 4 :-



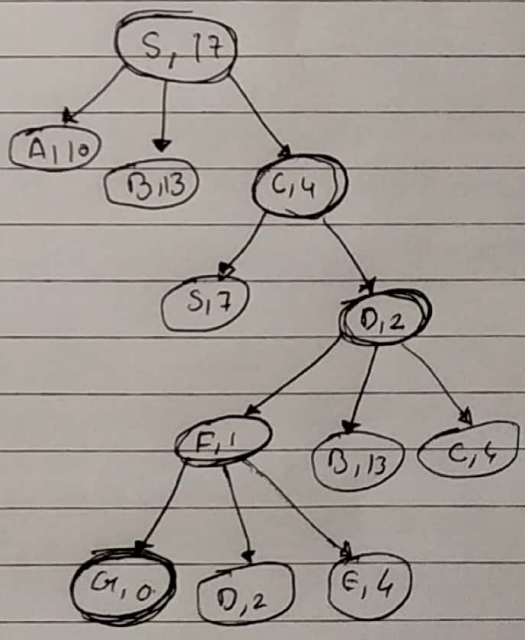
F - Scoure of successors

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

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

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

Step 5 :-



Solution is

S → C → D → F → G with

Solution Cost = 10, 6 + 6 + 3

= 25

8.2 Consider following instance of 8 puzzle problem.

8	7	6
2	1	5
3	4	-

Initial Configuration

-	8	7
2	1	6
3	4	5

Goal Configuration

Consider theristic functions defined below.

h1 : Misplaced files count except space.
h2 : Correctly placed tiles count except space.
h3 : Sum of manhattan distance between current and correct position of all times except space

a] In 8 puzzle problem we are concerned with getting to goal configuration within least number of steps. All moves are thus equally costly. Define g(n) in you own words. What will be the cost of 6 step solution to some arbitrary 8 puzzle instance?

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

In our Case, we can reach the final Configuration in atleast 4 modules. UP, UP, LEFT, LEFT Since all the moves are equally Costly, we Compute g(n) as

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

Consider the following ~~addre~~ arbitary 8 puzzle instance which gives solution in 6 steps

8	7	6
2	1	5
-	3	4

The Solution can be represented as:
{ {8,7,6}, {2,1,5}, {3,4}} → {{8,7,6}, {2,1,5}, {8.3,-4}}
{ {8,7,6}, {2,1,5}, {3,4,-}} → {{8,7,6} {2,1,-}, {3,4,5}} → {{8,7,-}, {8.1,6}, {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

$$g(n) = 6.$$

Ans c) Draw exhaustive state space tree of depth limited to 4 for instance 8 puzzle problem in the question.

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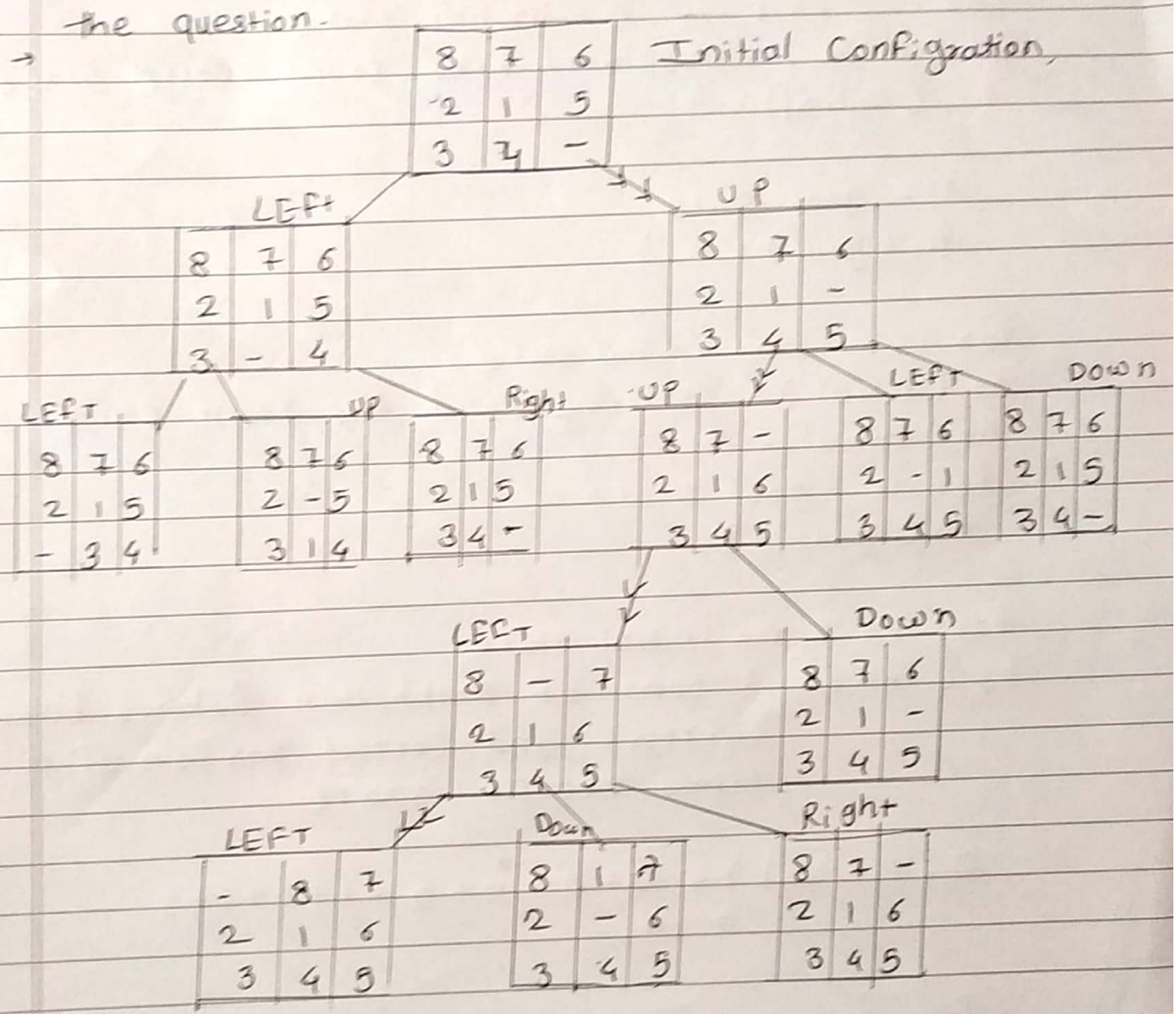

e)

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For i = 1 , n = initial state

h_1 (initial) = misplaced Files count except space

h_1 (initial) = 4

n = goal state

h_1 (goal) = 0

For i = 2 , n = initial state

h_2 (initial) = Correctly placed tiles count except space.

h_2 (initial) = 4

For n = goal state

h_2 (goal) = 8

For i = 3, n = initial state

h_3 (intial = Sum of manhattan distance between Current and Correct position of all times except space

For (initial) = 0 + 0 + 0 + 0 + 1 + 1 + 1 + 1

= 4

For n = goal state

h_3 (goal = 0