Assignment No : 1A

STANDARD
PAGE NO.
DATE:

* Name :- Sunil. G. Bhare
* Class :- BE-IT
* Sem :- VII
* Roll No :- 07
* Subject :- JS LAB

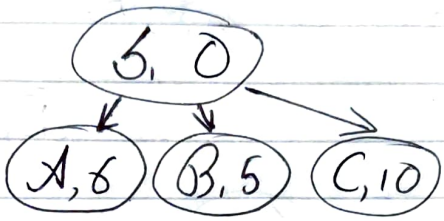
DOP	DOA	Sign	Remark

Assignment - 1(A)

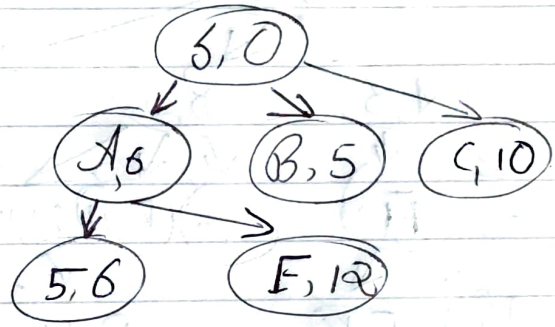
Q1
1.1 →

Step 0:

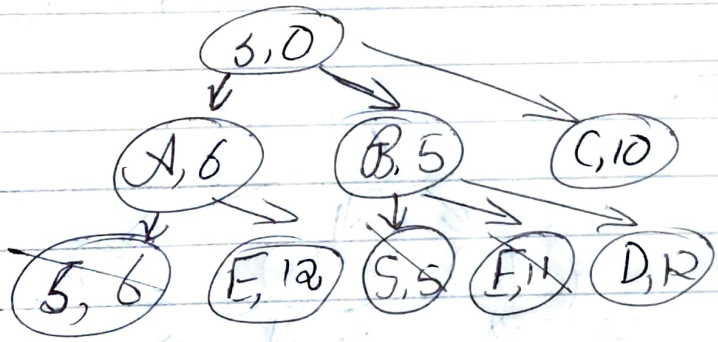
Step 1:-



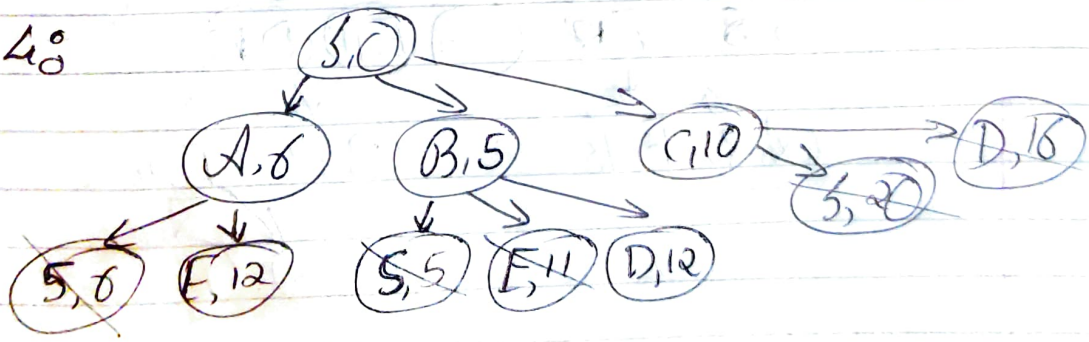
Step 2:



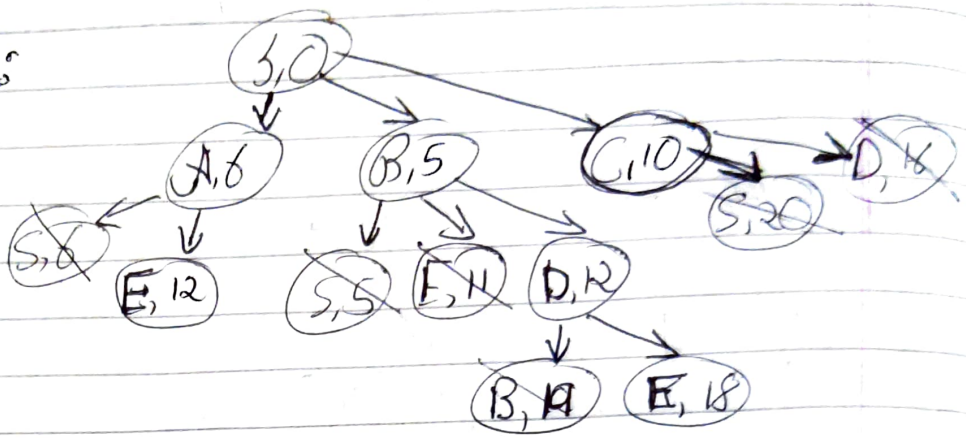
Step 3:



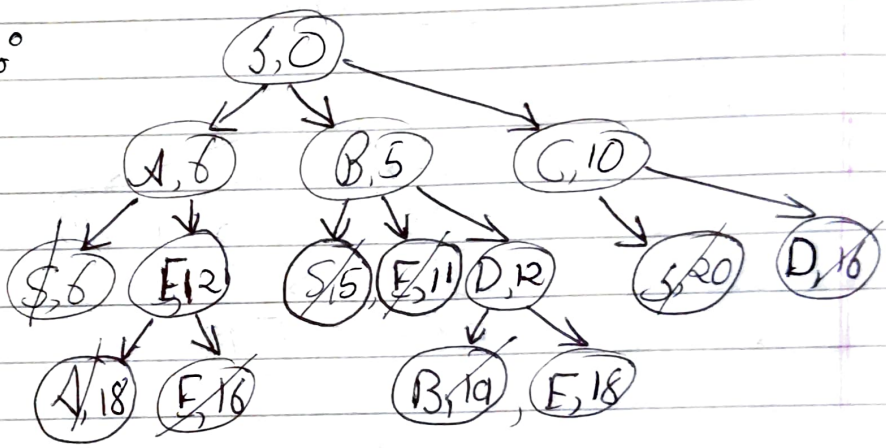
Step 4:



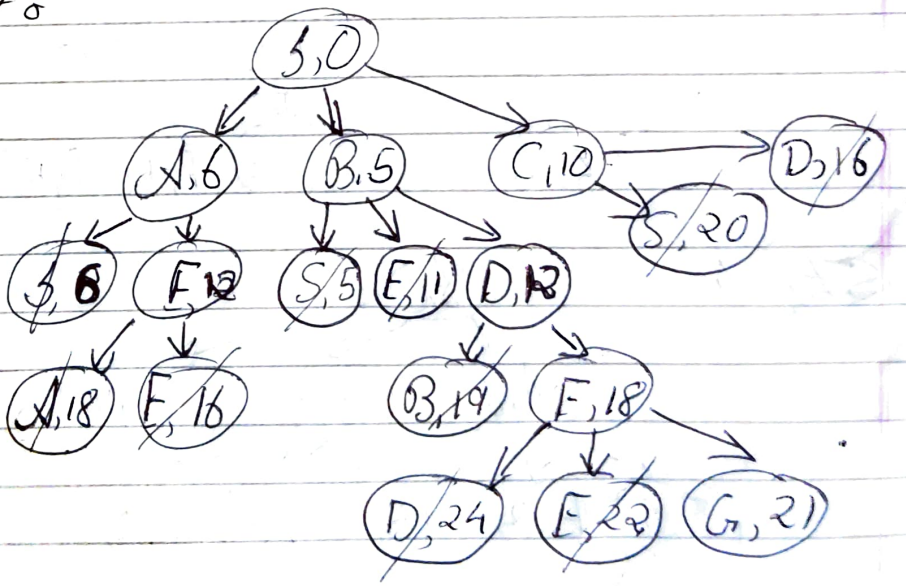
Step 5:



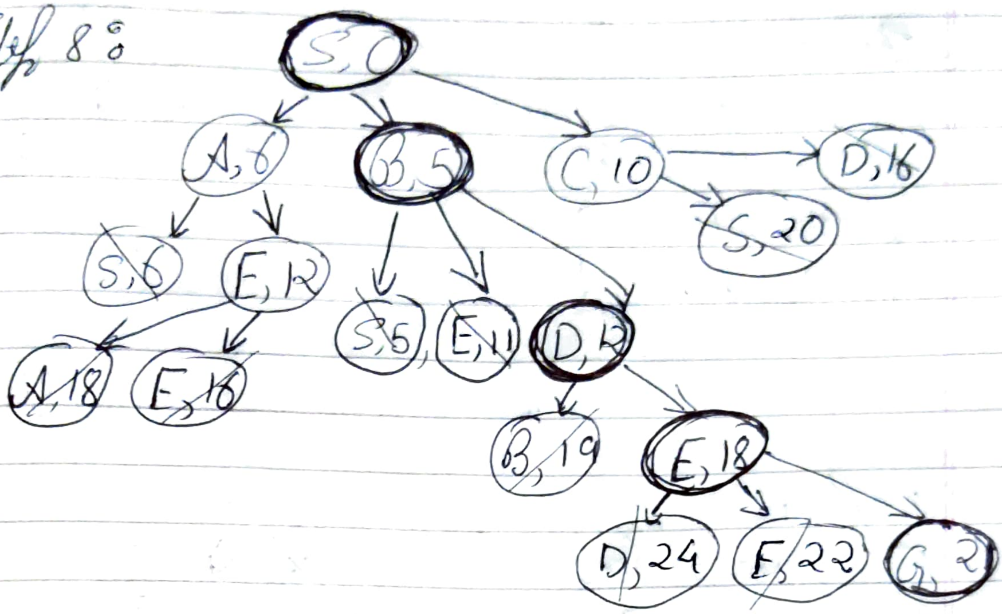
Step 6:



Step 7:



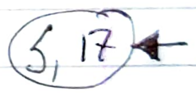
Step 8:



1.4) ⇒

Initializatⁿ: Compute of Score for SS put it in the openlist

F- Score S: $f(S) = h(S) = 17$



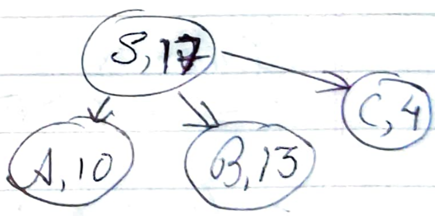
Step 1:

F = Score of Successor

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

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

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

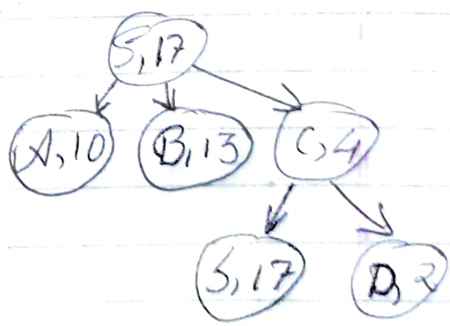


Step 2:

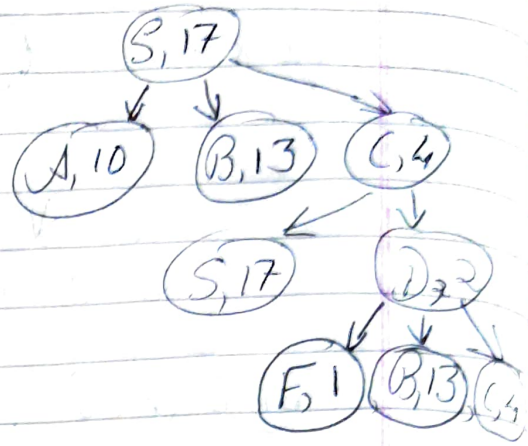
F = Score of Successor

$f(S) = h(S) = 17$

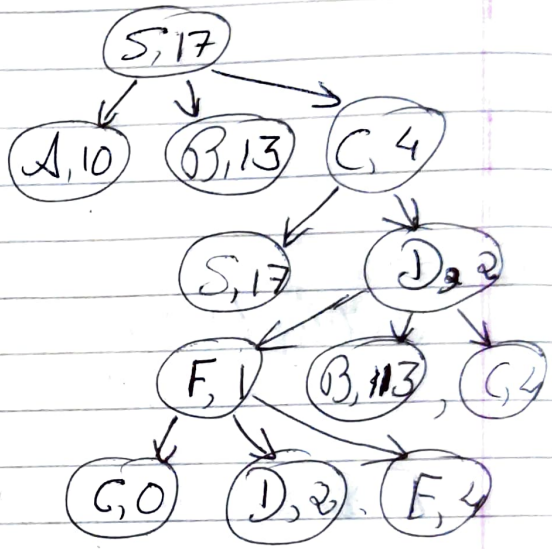
$f(D) = h(D) = 2$



Step 3:
f - Score of Successor
$f(C) = h(C) = 4$
$f(B) = h(B) = 13$
$f(F) = h(F) = 1$

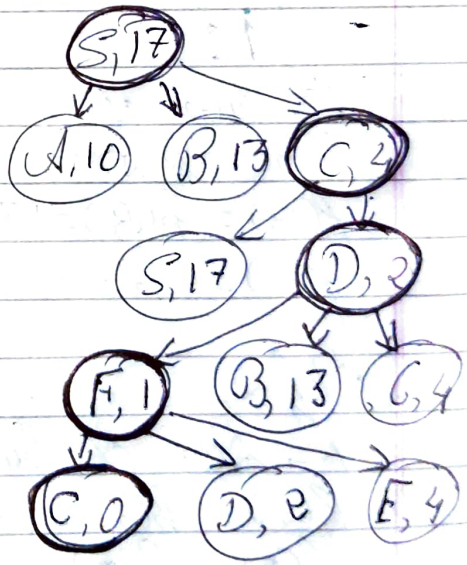


Step 4:
F - Score of Successor
$f(D) = h(D) = 2$
$f(E) = h(E) = 4$
$f(G) = h(G) = 0$



Step 5:
Solution is :-
$S \rightarrow C \rightarrow D \rightarrow F, G$ with

Solution cost = 10 + 6 + 6 + 3
= 25



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, 6}} ->

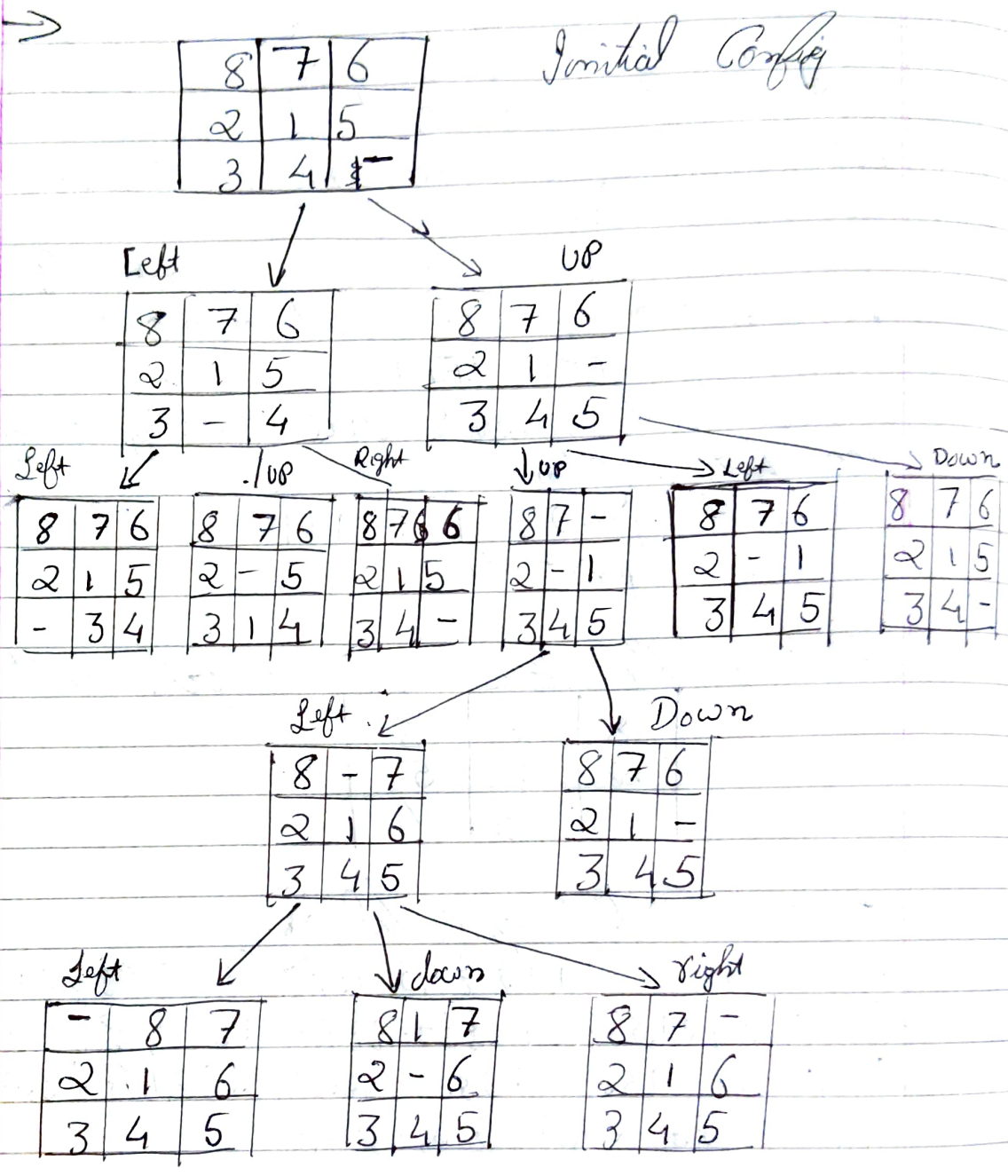
{{8, 7, -} {2, 1, 5} {3, 4, 5}} -> {{8, -, 7} {2, 1, 6} {3, 4, 5}} ->

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

Since all the moves are equally costly the cost would be

$$g(n) = 60$$

C →



Trivial Configuration

c) ⇒

For $i = 1$, D = initial State

h_1(initial) = Misplaced tiles count except space

h_2(initial) = 4

n = goal State

h_1 = (goal) = 0

For $i = 2$, n = initial State

h_2(initial) = currently displaced tiles count except space

h_2(initial) = 4

For (n) = goal State

h_2(goal) = 8

For $i = 3$ n = initial State

h_3(initial) = Sum of manhattan dist between Current & Correct position of all tiles except space

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

= 4

For n = goal State

h_3(goal) = 0