Assignment 1.A

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Rollno: 66

Batch: I3

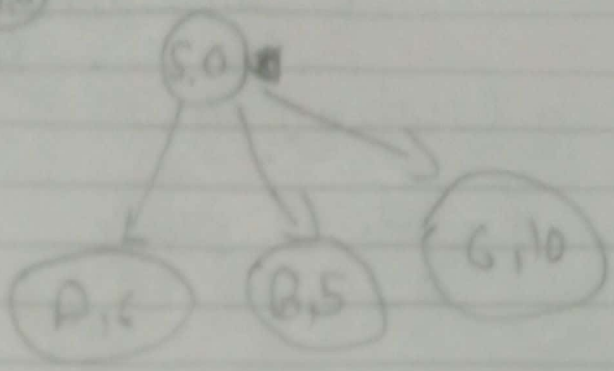
DoP	DoA	marks	Sign

Q.1)

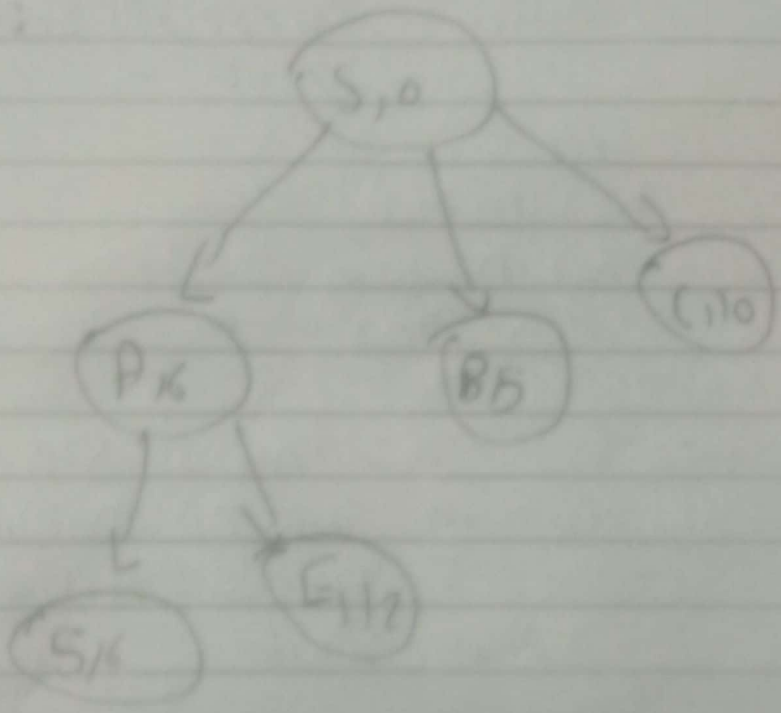
1.1)

Step 0: S,0

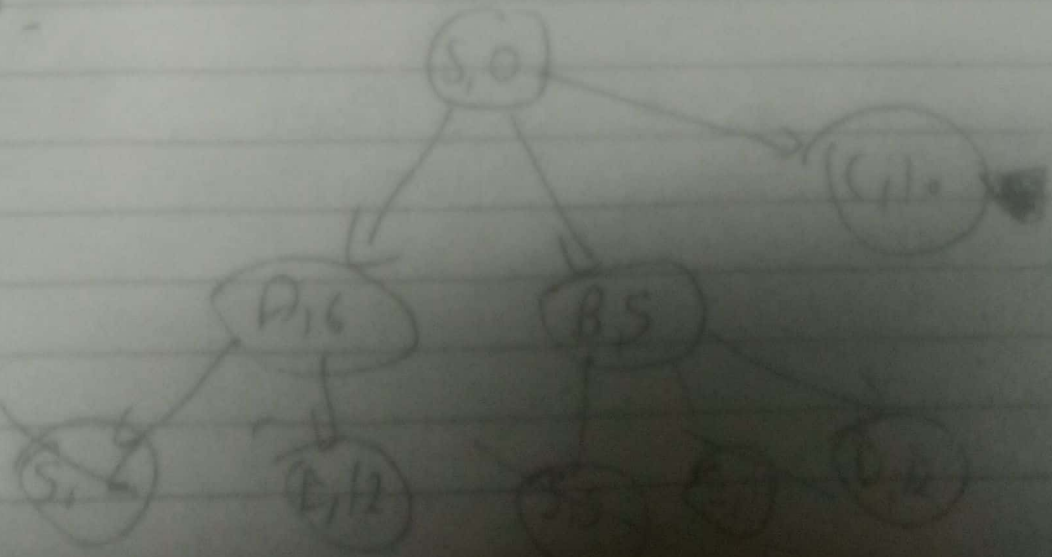
Step 1:



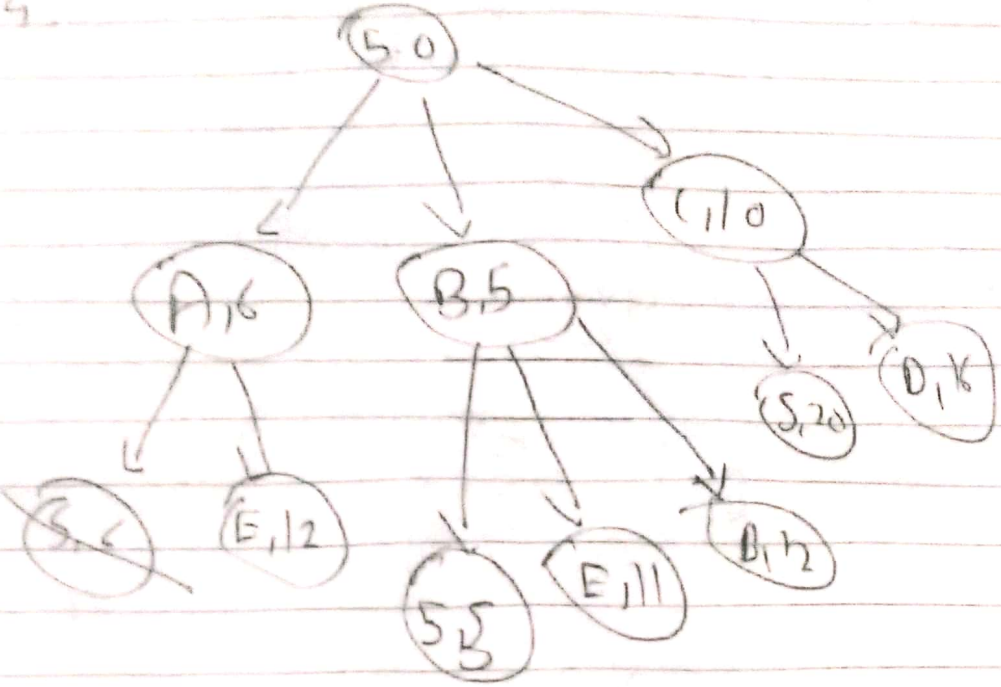
Step 2:



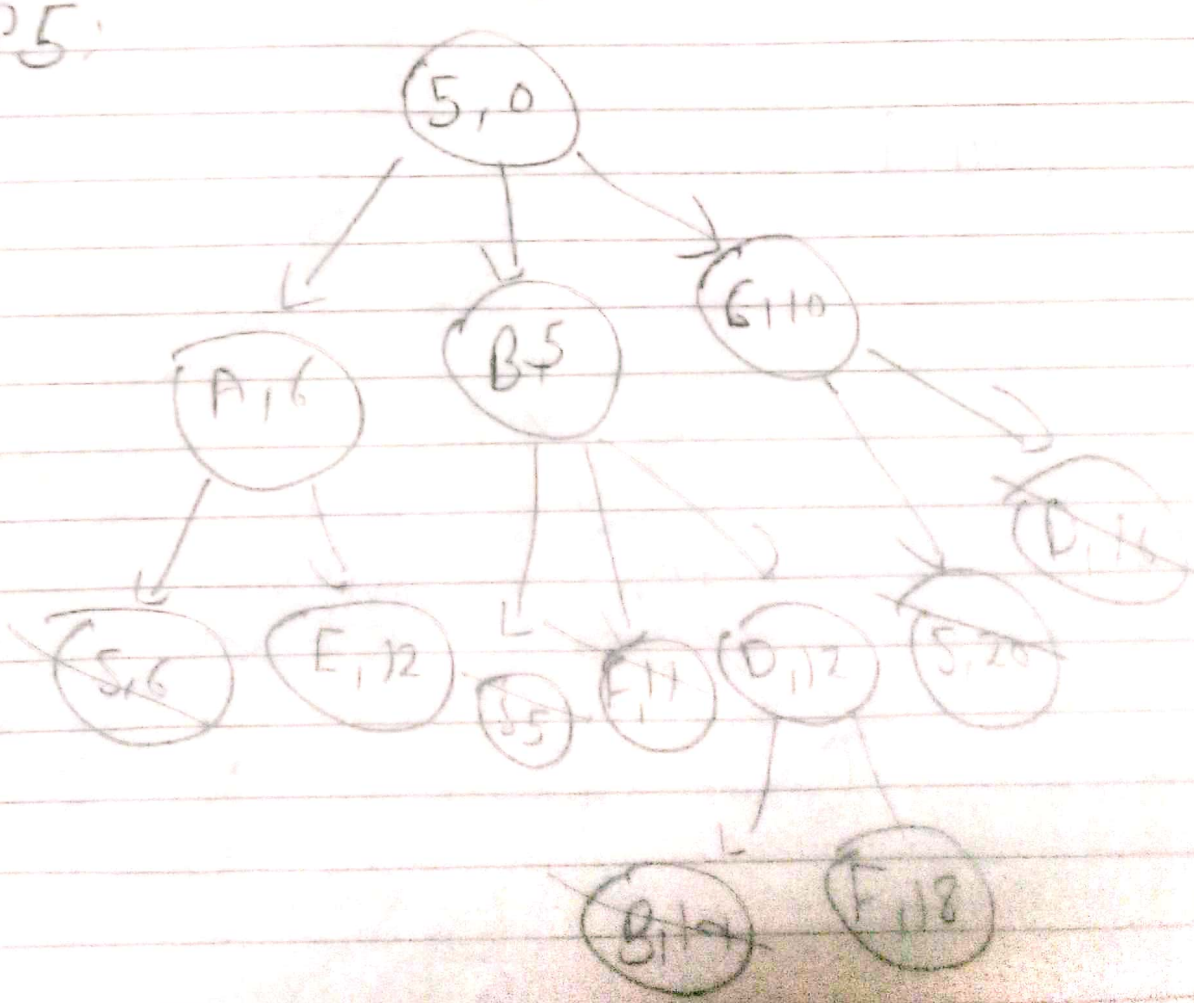
Step 3:



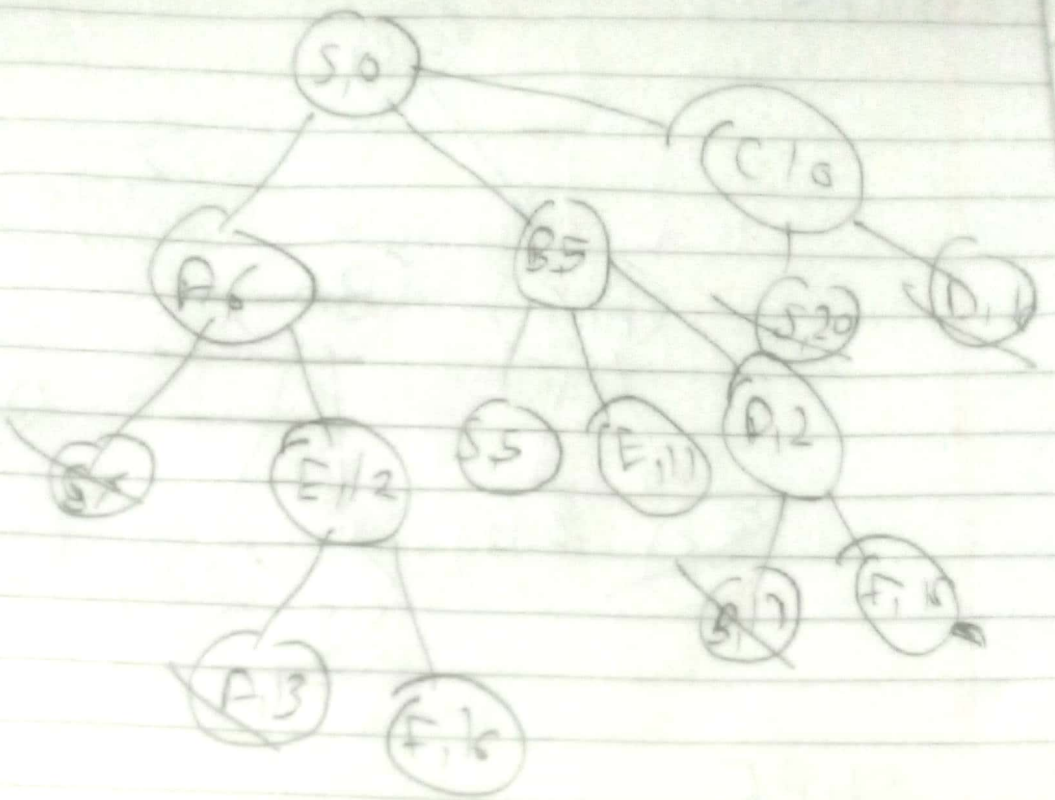
step 4:



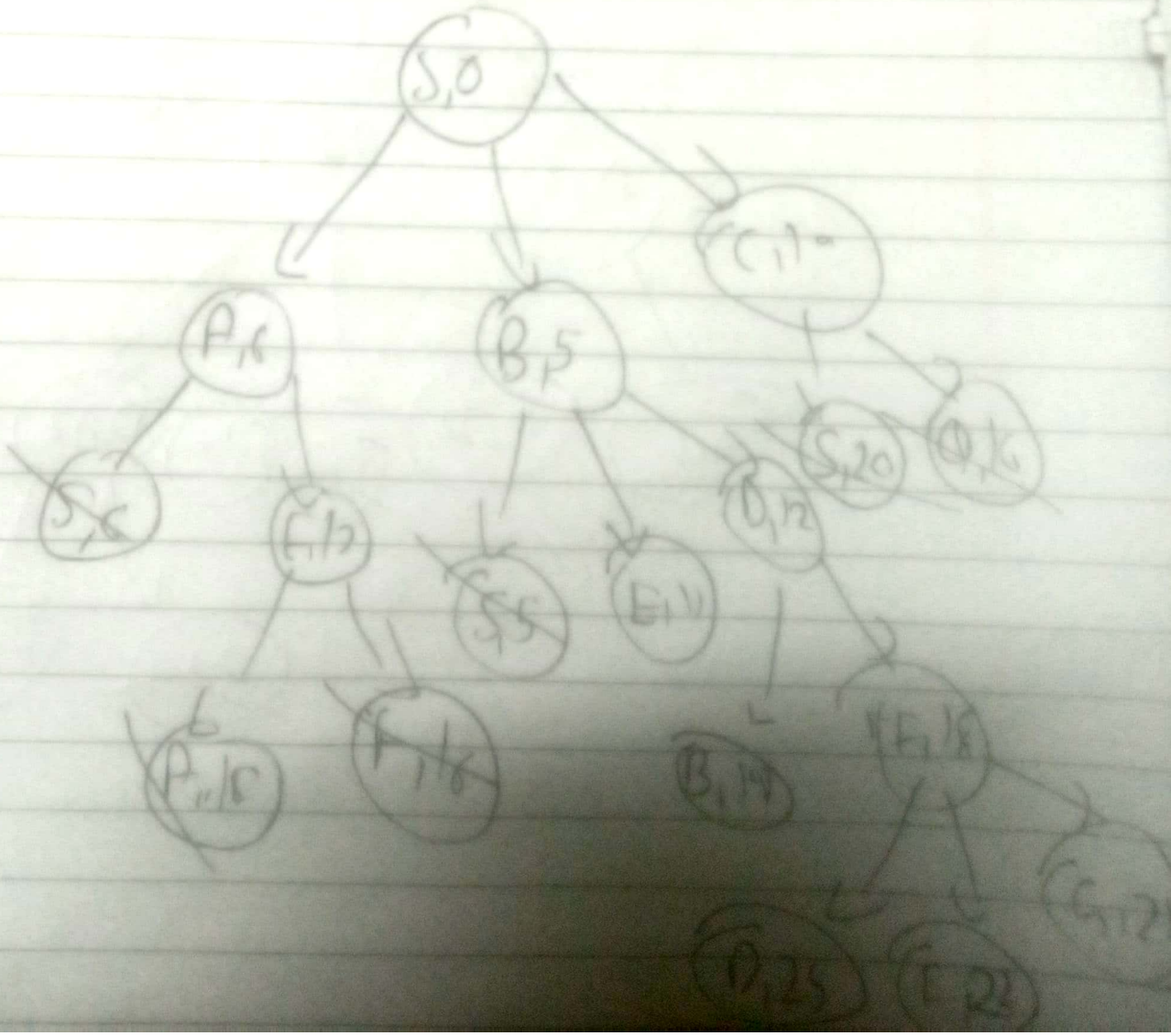
step 5:



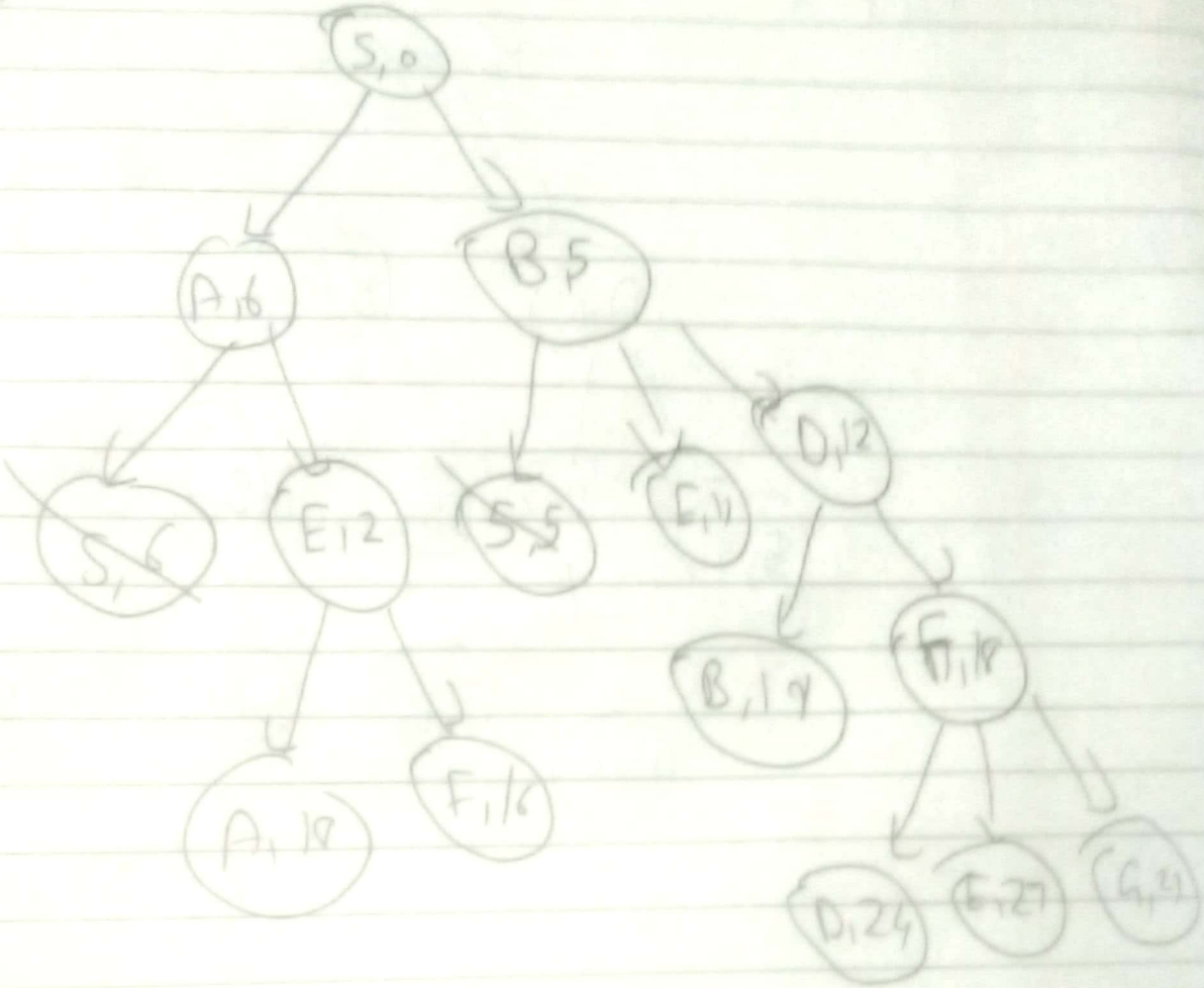
Step 6:



Step 7



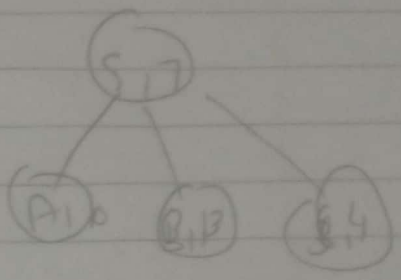
Step 8.



Q1. 14

Initialization : Compute h source to S & put it in OPEN list

F = f(source) = h(S) = 17



Step (1)

F = f(x) of successors

f(A) = f_2(A) = 10

f(B) = f_2(B) = 14

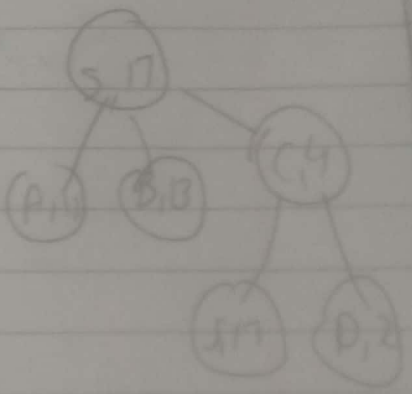
f(C) = f_2(C) = 4

Step 2:

F = Sort of successors

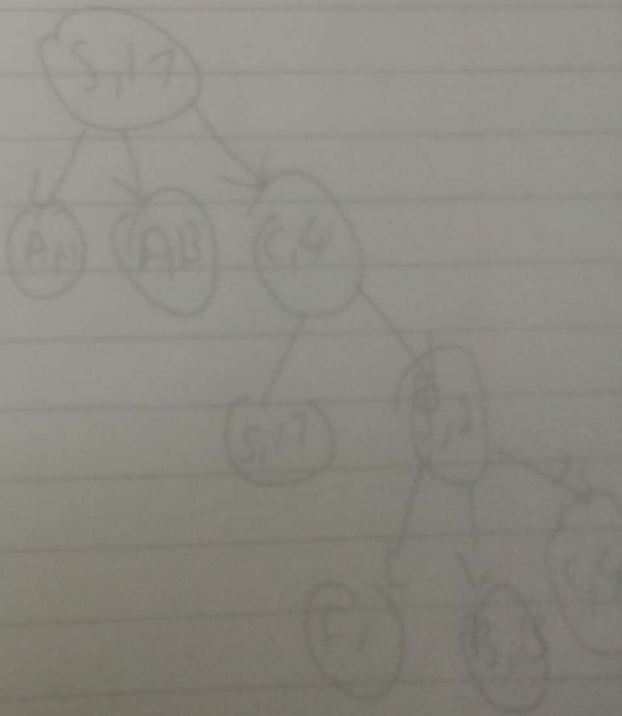
f(S) = f_2(S) = 17

f(φ) = f_2(φ) = 2



Step 3:

F = score of successor



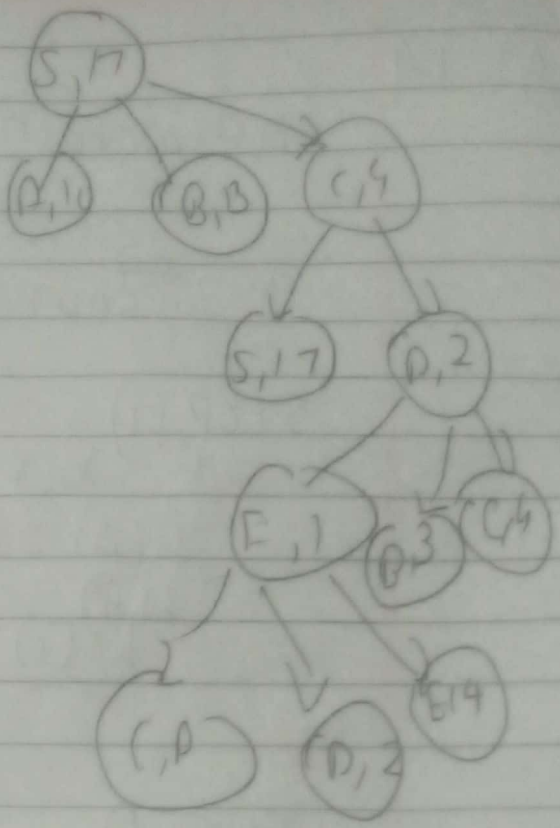
Step 4:

← Score of succs

$f(D) = B(D) = 2$

$E(E) = h_2(F) = 4$

$F(A) = h_2(G) = 0$



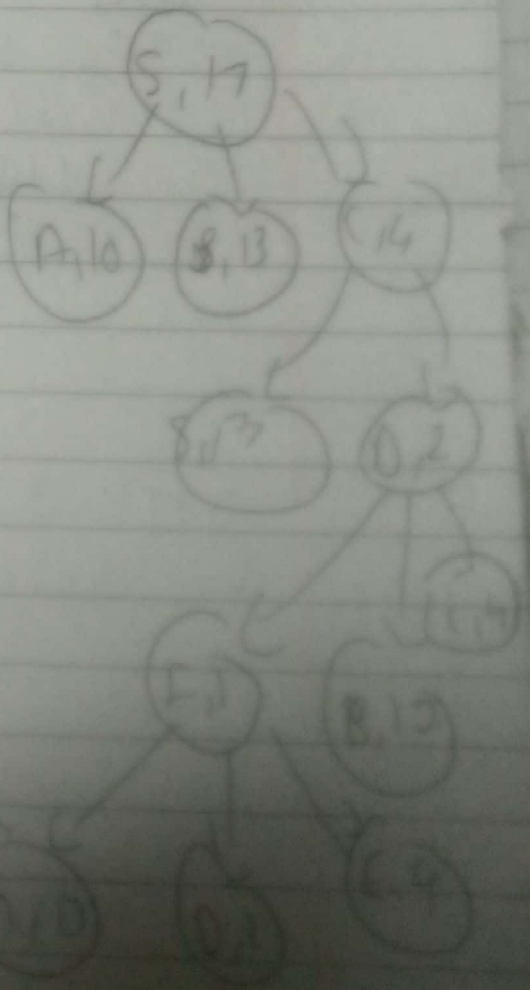
Step 5

Soln is

$S \rightarrow C \rightarrow D \rightarrow F \rightarrow G$ with

Soln cost = 10 + 2 + 3

= 15



Assignment 1.A

q2) Conside following instance of 8 Puzzle Problem

2 A)

8	7	6		-	8	7
2	1	5		2	1	6
3	4	-		3	4	5

Initial — First configuration

Considered Heuristic functions ~~be~~ defind belw
h1 : misplaced tiles count except space
h2 : correctly placed tiles count except space
h3 : instance?

A) The lowest path cost or g(n) can be cost to each the goal configuration in least steps in our cause, each the ~~fine~~ final configuration is at least moves up, UP LEFT, LEFT since all the move are equally be complete cm

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

$g(n) = 4$

Consided the following abitory 8 Puzzle instance give solved in ~~8 5~~ 6 steps

8	7	6
2	1	5
-	3	4

The function can be [illegible]

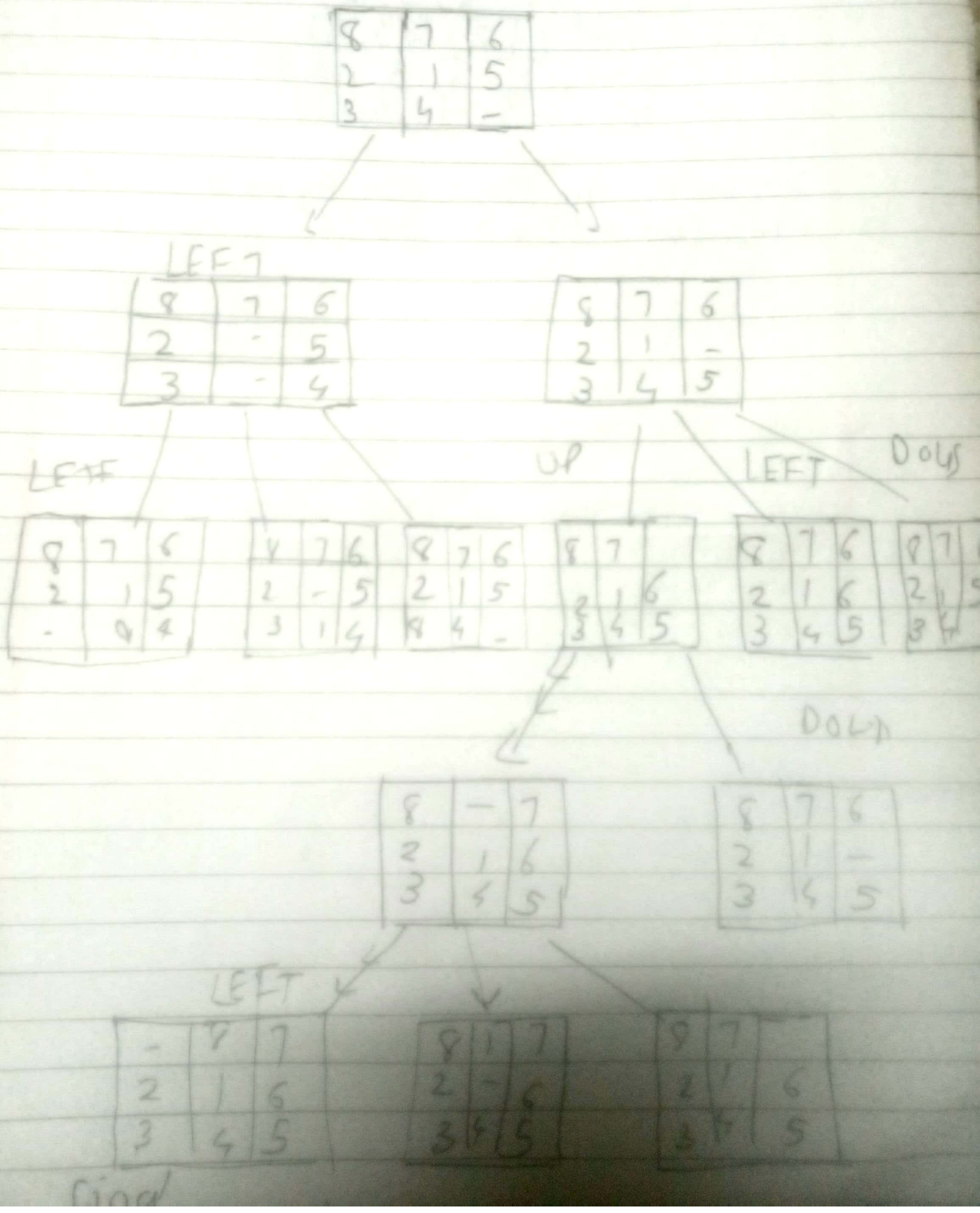
{5,8,7,6},{2,1,5},{-3,4,3} → {{8,7,6},{2,1,5},
{3,-4,3}}

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

{{8,7,-3},{2,1,6},{3,4,5}} → {{8,7,-3},
{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 9 (not 6)

Q2(d) Draw exhaustive state space tree of depth limited to 4 for instance of 8 puzzle problem in the question



Q2(a) complete h(n) when i=1, 2, 3 & n = initial state, goal state from question

for i = 1 , n = initial state
h_1(initial) = misplaced tiles count except space

h_1(initial) = 4

n = goal state
h_1(goal) = 0

for i = 2 , n = initial state
h_2(initial) = (correctly replaced tiles count except space
h_2(initial)) = 4
for n = goal state
h_2(goal) = 8

for i = 3 , h_1 = initial state
h_3(initial) = sum of manhatan distance between correct & correct position of all tiles except state

h_3(initial) = 0+0+0+0+1+1+1+1
= 4
for n = goal state
h_3(goal) = 0