

Name :- Kunal G. Bachtote

class :- B.R / ST

Roll No :- 02

Subject :- TS lab.

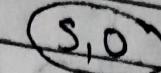
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Assignment - 1 (A)

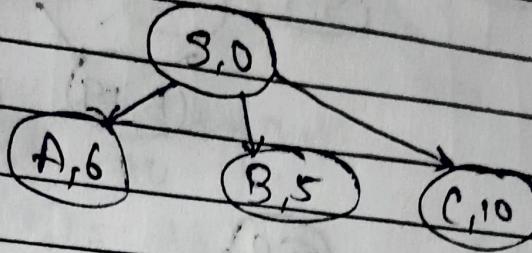
Q1.

1.)

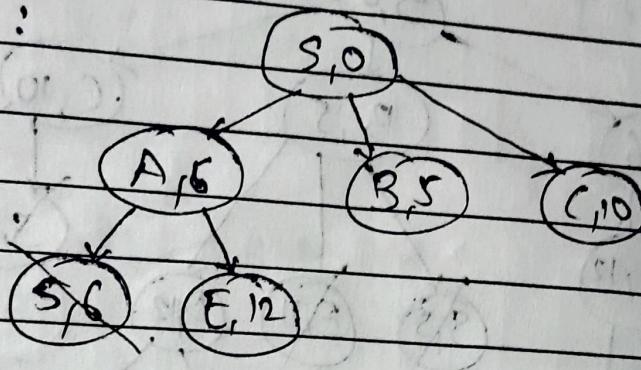
Step 0:



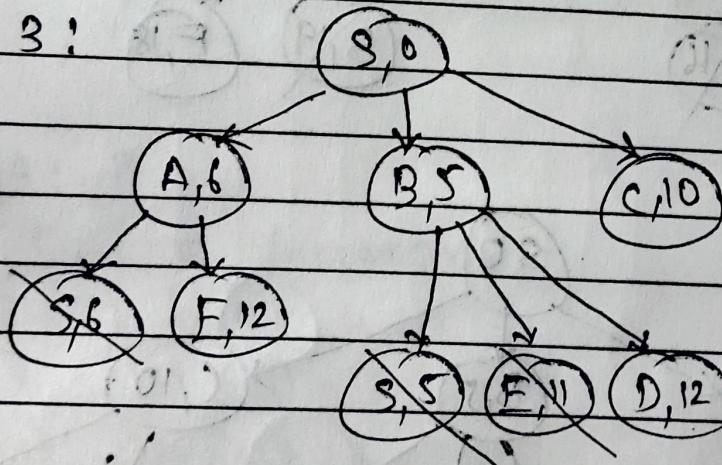
Step 1:



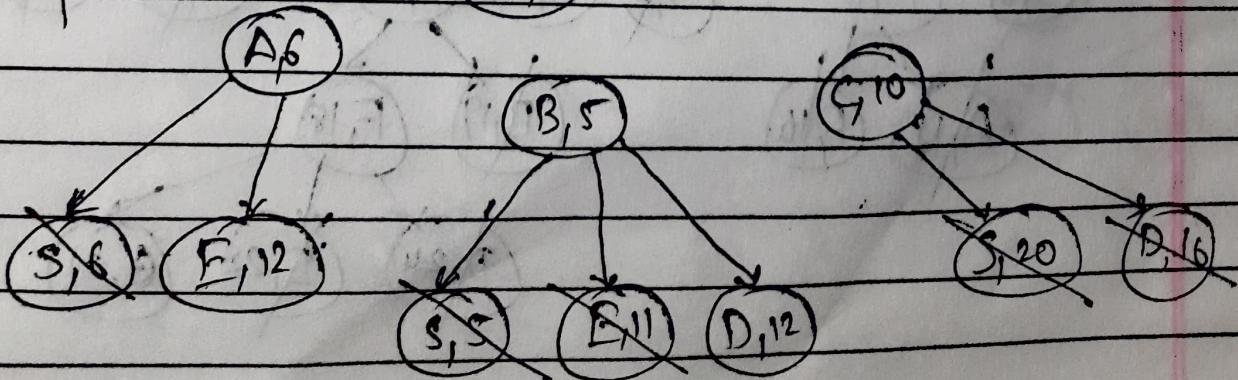
Step 2:



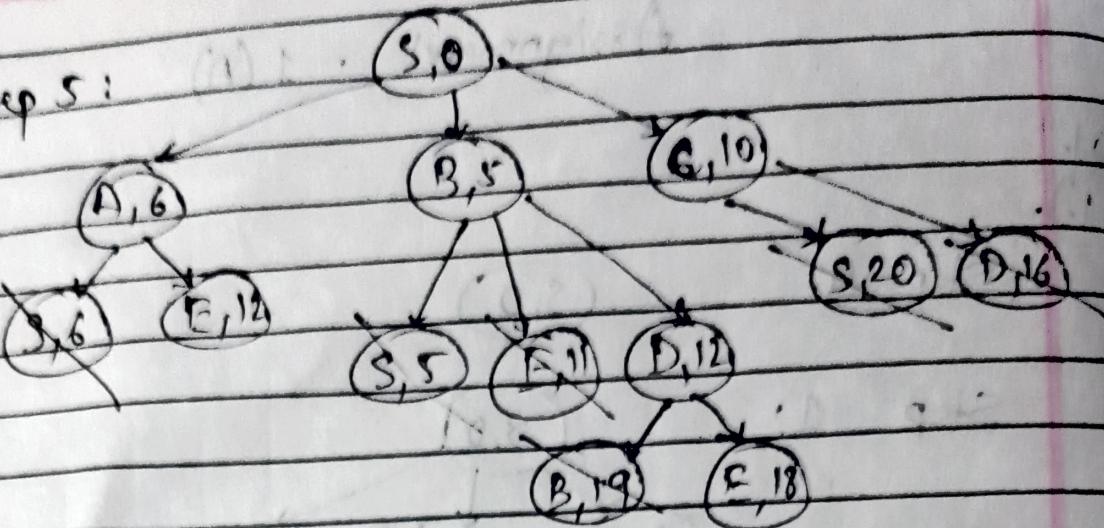
Step 3:



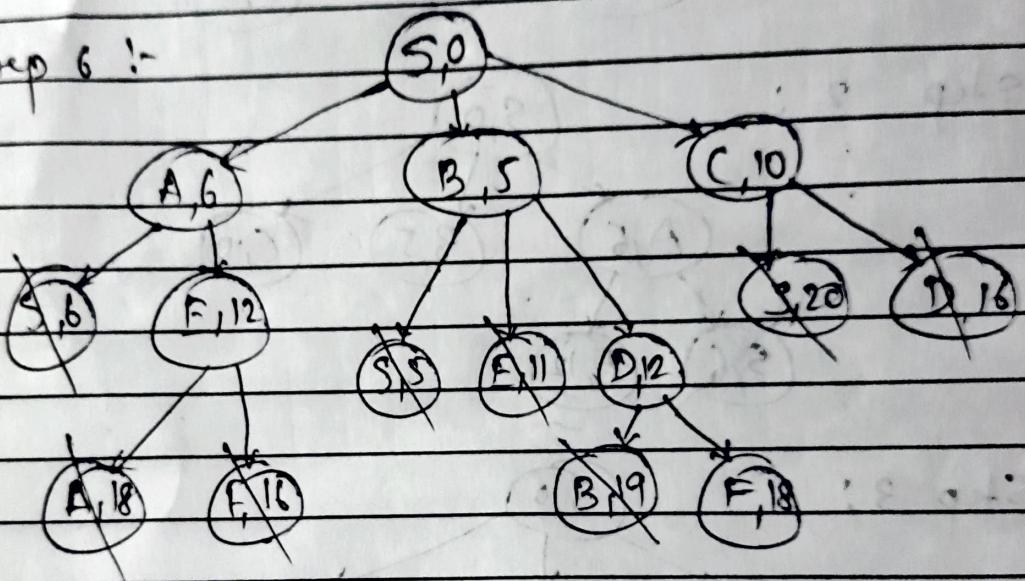
Step 4:



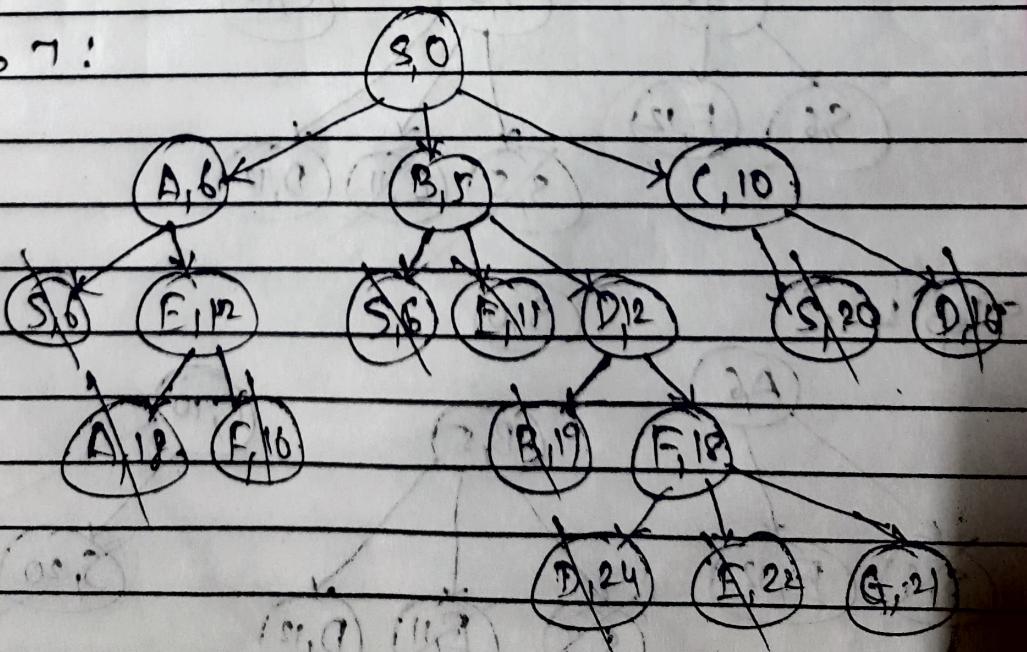
Step 5 :-



Step 6 :-



Step 7 :-



1.4).

Initialization: Compute f_{start} for 'S' & put it in the openlist.

\rightarrow Since $S : f(S) = h(S) = 17$

$S, 17$

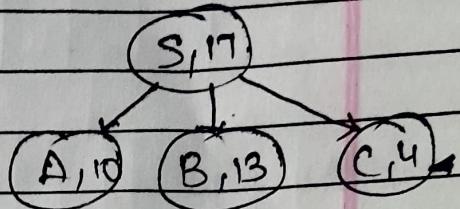
Step 1:

f - Sum of successors.

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

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

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

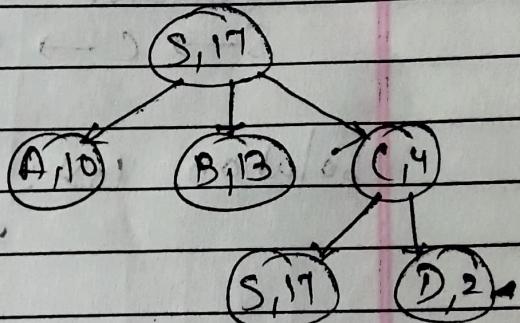


Step 2:

f - Sum of successors.

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

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



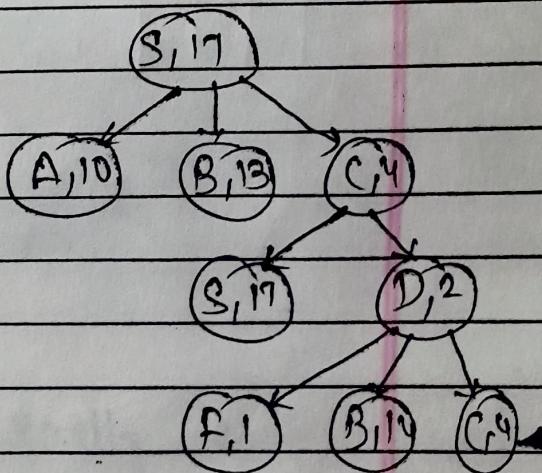
Step 3:

f - Sum of successors.

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

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

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



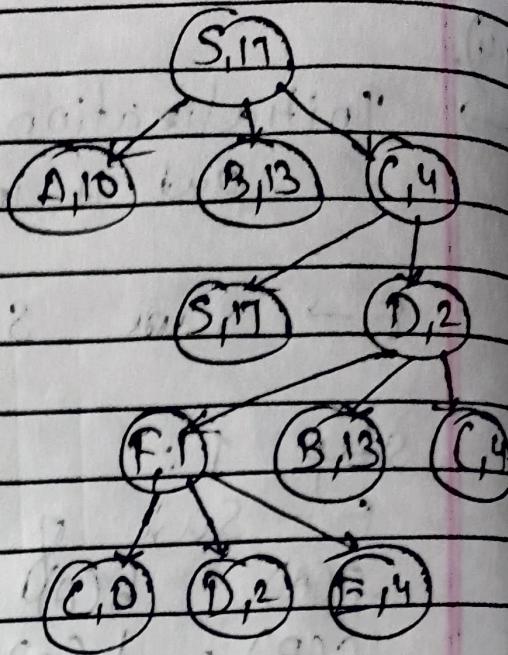
Step 4:

F - Set of Successor

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

$$f(E) = h(E) = 4$$

$$f(G) = h(G) = 0$$



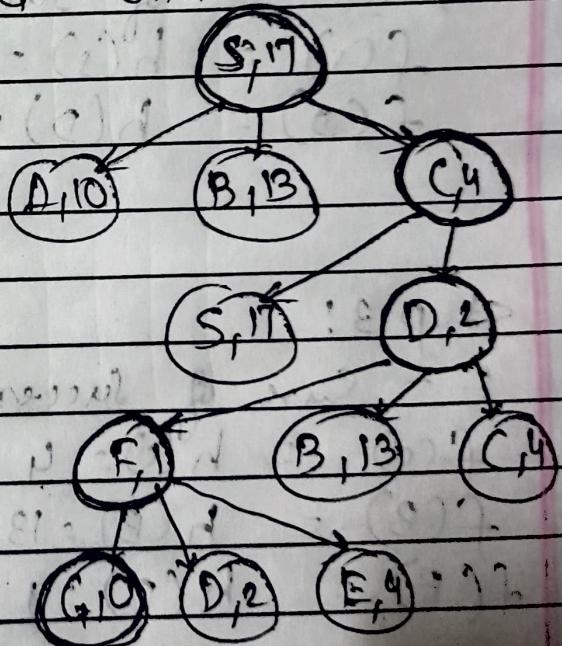
Step 5:

Solution is:

$$S \rightarrow C \rightarrow D \rightarrow F \rightarrow G \text{ with }$$

Solution cost: $10 + 6 + 6 + 3 =$

$$= 25$$



(e).

→ for $i=1$, $n = \text{initial state}$

$h_1(\text{initial}) = \text{misplaced tiles count except space}$

$h_2(\text{initial}) = 4$

$n = \text{goal state}$

$h_1(\text{goal}) = 0$

for $i=2$, $n = \text{initial state}$

$h_2(\text{initial}) = \text{directly misplaced tiles count except space}$

$h_2(\text{initial}) = 4$

for $n = \text{goal state}$

$h_2(\text{goal}) = 8$

for $i=3$, $n = \text{initial state}$

$h_3(\text{initial}) = \text{sum of manhattan distance between current & correct position of all files except space}$

$h_3(\text{initial}) = (0+0+0+0+1+1+1)$
 $= 4$

for $n = \text{goal state}$

$h_3(\text{goal}) = 0$