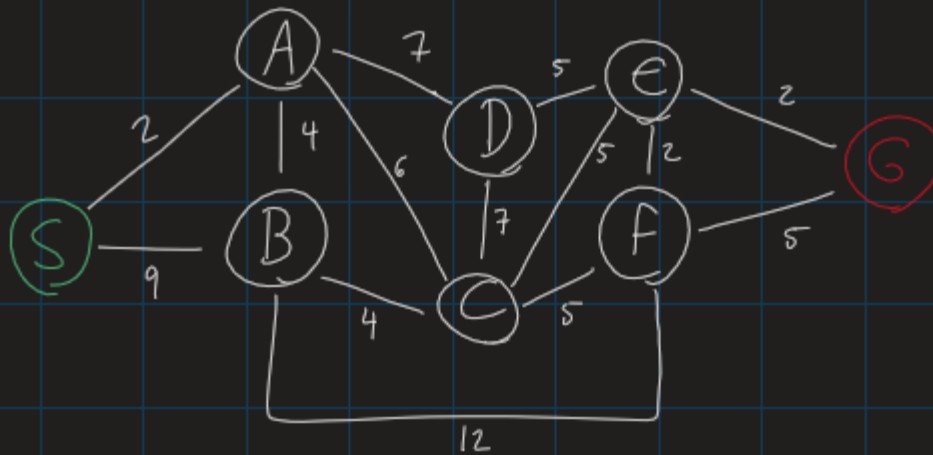


Theory Assignment 2

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Question 1



a)

Current Node	Open list	Closed list
-	(S,0,-)	
S	(A,2,SA), (B,9,SB)	(S,0,-)
A	(B,6,AB), (C,8,AC), (D,9,AD), (B,9,SB)	(S,0,-), (A,2,SA)
B	(C,8,AC), (D,9,AD), (B,9,SB), (C,10,CB), (F,18,BF)	(S,0,-), (A,2,SA), (B,6,AB)
C	(D,9,AD), (B,9,SB), (C,10,CB), (E,13,CE), (F,13,CF), (F,18,BF)	(S,0,-), (A,2,SA), (B,6,AB), (C,8,AC)
D	(B,9,SB), (C,10,CB), (E,13,CE), (F,13,CF), (E,14,DE), (C,16,DC), (F,18,BF)	(S,0,-), (A,2,SA), (B,6,AB), (C,8,AC), (D,9,AD)
B	(C,10,CB), (E,13,CE), (F,13,CF), (E,14,DE), (C,16,DC), (F,18,BF)	(S,0,-), (A,2,SA), (B,6,AB), (C,8,AC), (D,9,AD), (B,9,SB)
C	(E,13,CE), (F,13,CF), (E,14,DE), (C,16,DC), (D,17,CD), (F,18,BF)	(S,0,-), (A,2,SA), (B,6,AB), (C,8,AC), (D,9,AD), (B,9,SB), (C,10,CB)
E	(F,13,CF), (E,14,DE), (G,15,EG), (F,15,EF), (C,16,DC), (D,17,CD), (F,18,BF)	(S,0,-), (A,2,SA), (B,6,AB), (C,8,AC), (D,9,AD), (B,9,SB), (C,10,CB), (E,13,DE)
F	(E,14,DE), (G,15,EG), (F,15,EF), (E,15,FE), (C,16,DC), (D,17,CD), (F,18,BF), (B,25,FB)	(S,0,-), (A,2,SA), (B,6,AB), (C,8,AC), (D,9,AD), (B,9,SB), (C,10,CB), (E,13,DE), (F,13,CF)
E	(G,15,EG), (F,15,EF), (E,15,FE), (C,16,DC), (D,17,CD), (F,18,BF), (B,25,FB)	(S,0,-), (A,2,SA), (B,6,AB), (C,8,AC), (D,9,AD), (B,9,SB), (C,10,CB), (E,13,DE), (F,13,CF), (E,14,DE)
G	(F,15,EF), (E,15,FE), (C,16,DC), (D,17,CD), (F,18,BF), (B,25,FB)	(S,0,-), (A,2,SA), (B,6,AB), (C,8,AC), (D,9,AD), (B,9,SB), (C,10,CB), (E,13,DE), (F,13,CF), (E,14,DE), (G,15,EG)

following the path back,

$G \rightarrow E \rightarrow C \rightarrow A \rightarrow S$

The path is

$S \rightarrow A \rightarrow C \rightarrow E \rightarrow G$

with cost

$$2 + 6 + 5 + 2 = 15$$

6)

Current Node	Open list	Closed list
-	(S, 0, -, 11)	
S	(A, 2, SA, 14), (B, 9, SB, 15)	(S, 0, -)
A	(B, 6, AB, 12), (D, 9, AD, 14), (C, 8, AC, 18)	(S, 0, -, 10), (A, 2, SA, 14)
B	(D, 9, AD, 14), (C, 8, AC, 18), (F, 18, BF, 24)	(S, 0, -, 10), (A, 2, SA, 14), (B, 6, AB, 12)
D	(C, 8, AC, 18), (E, 14, DE, 21), (F, 18, BF, 24)	(S, 0, -, 10), (A, 2, SA, 14), (B, 6, AB, 12), (D, 9, AD, 14)
C	(F, 18, CF, 19), (E, 13, CE, 20)	(S, 0, -, 10), (A, 2, SA, 14), (B, 6, AB, 12), (D, 9, AD, 14), (C, 8, AC, 18)
F	(G, 18, FG, 18), (E, 13, CE, 20)	(S, 0, -, 10), (A, 2, SA, 14), (B, 6, AB, 12), (D, 9, AD, 14), (C, 8, AC, 18), (F, 18, CF, 19)
G		(S, 0, -, 10), (A, 2, SA, 14), (B, 6, AB, 12), (D, 9, AD, 14), (C, 8, AC, 18), (F, 18, CF, 19), (G, 18, FG, 18)

Following the path back

$G \rightarrow F \rightarrow C \rightarrow A \rightarrow S$

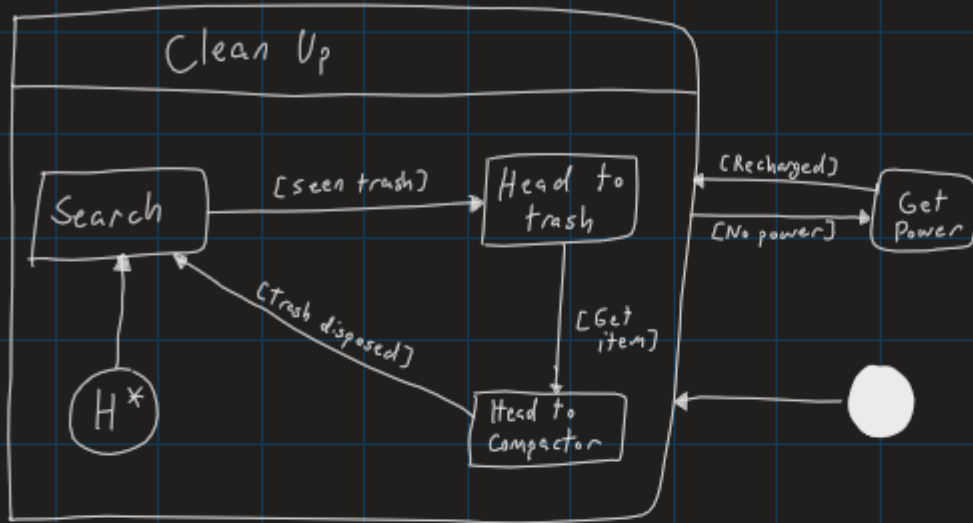
The path we get is

$S \rightarrow A \rightarrow C \rightarrow F \rightarrow G$

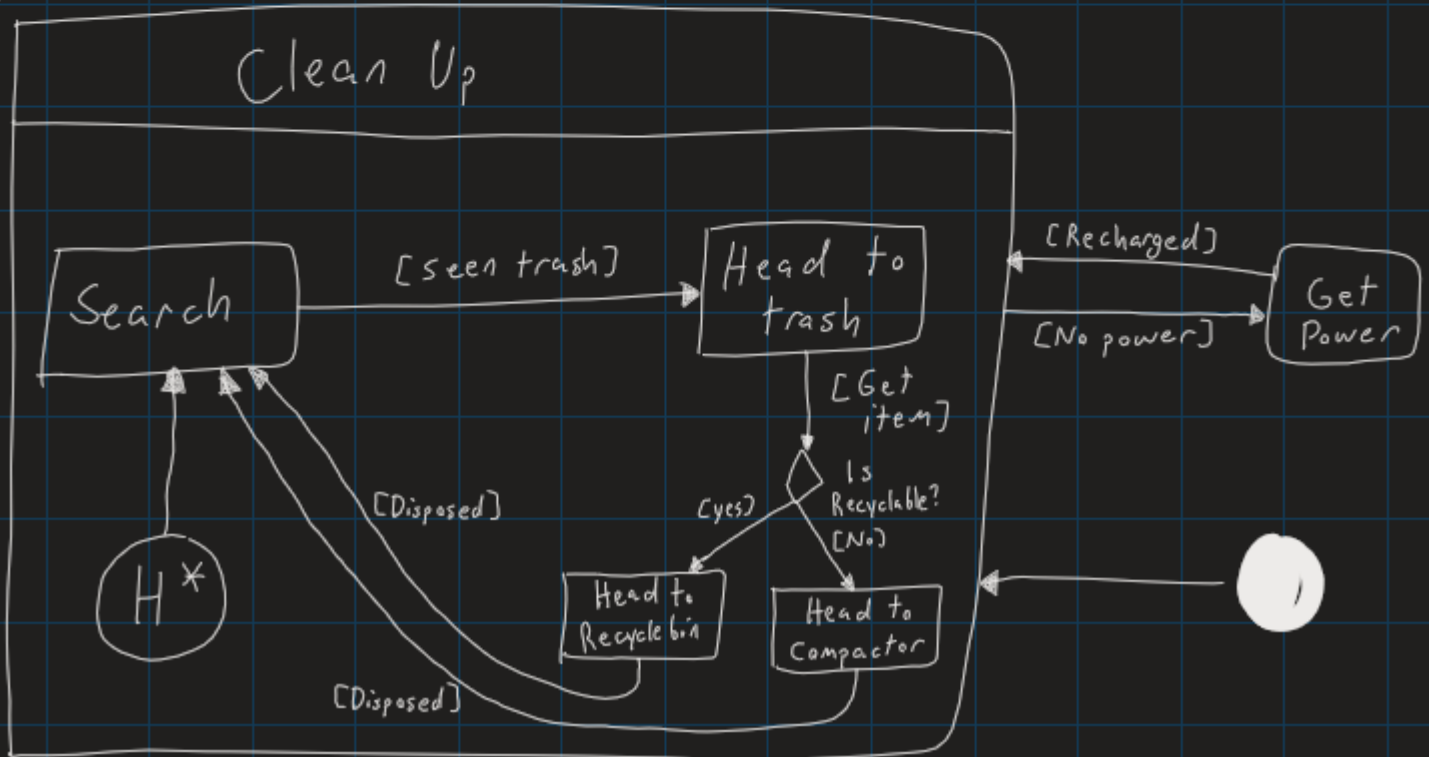
with cost

$$2 + 6 + 5 + 5 = 18$$

Question 2



a)



b)

