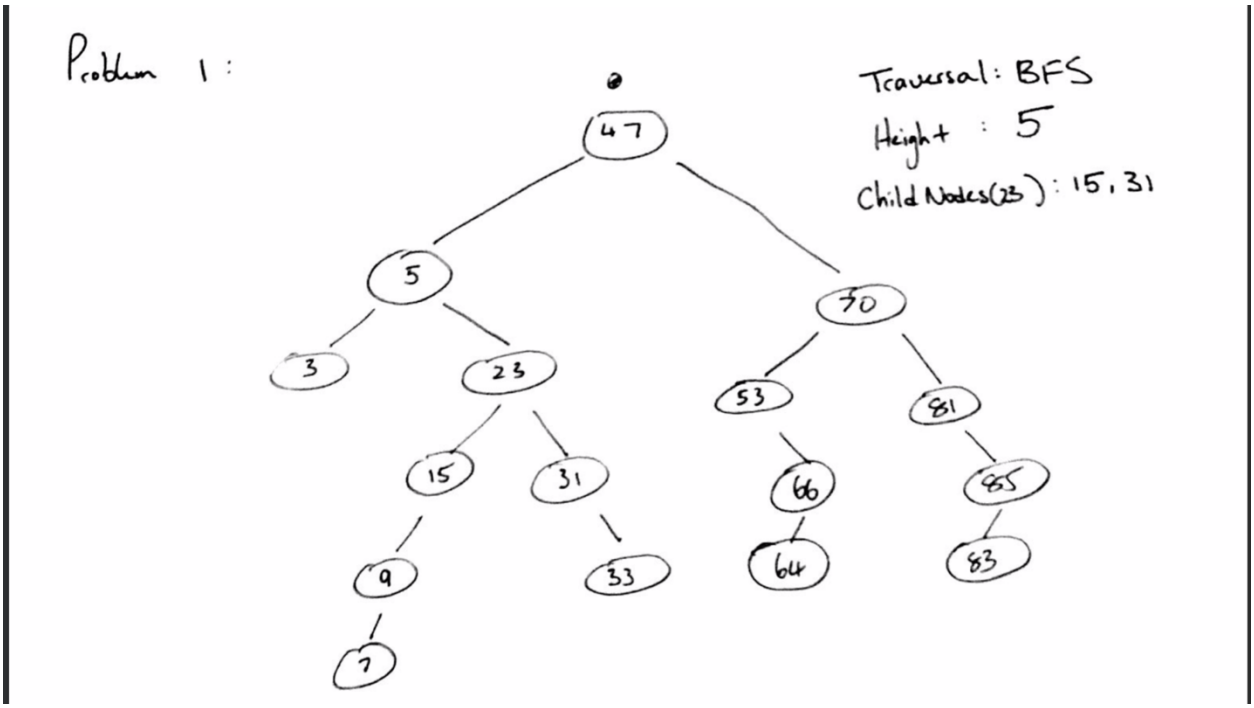
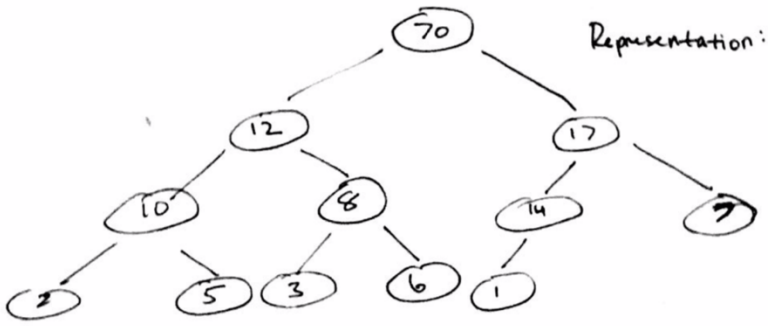
Question 1: Binary Search Tree

Problem 1:



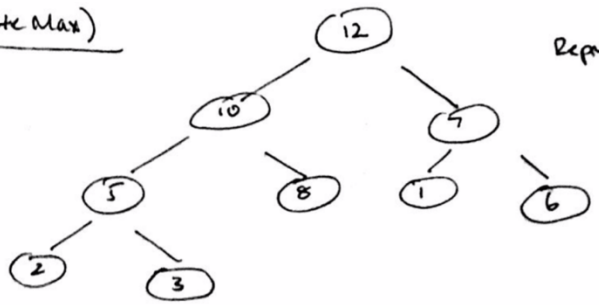
Question 2: Binary Max Heap

Problem 2:



Representation: 70, 12, 17, 10, 8, 14, 7, 2, 5, 3, 6, 1

3. (Delete Max)

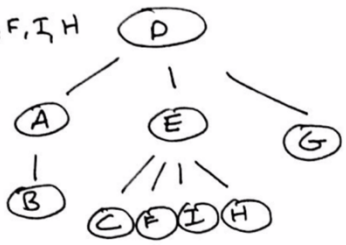


Representation: 12, 10, 7, 5, 8, 1, 6, 2, 3

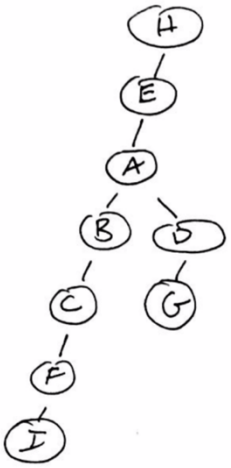
Question 3: Graph Traversals

Problem 3:

BFS: D, A, E, G, B, C, F, I, H



DFS:



H, E, A, B, C, F, I, D, G

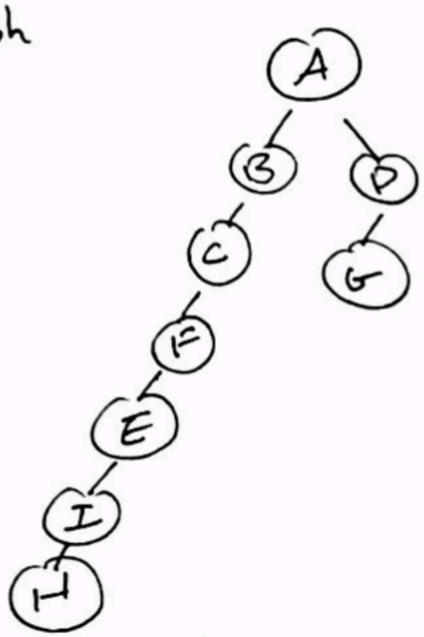
Problem ...

Question 4: Topological Sort

Problem 4:

Cannot do topological graph due to multiple cycles

DFS: A, B, C, F, E, I, H, D, G



Question 5: Shortest Path

Node	Shortest Distance from S	Previous Node
S	0	
A	1,7	S,D
B	3	A
C	5,5,7	B,E,F
D	4,8	S,G
E	3,7,11,14	A,D,G,H
F	6,7	E,I
G	6	S
H	12	G
I	6,18	E,H
t	9,9,10	C,F,I

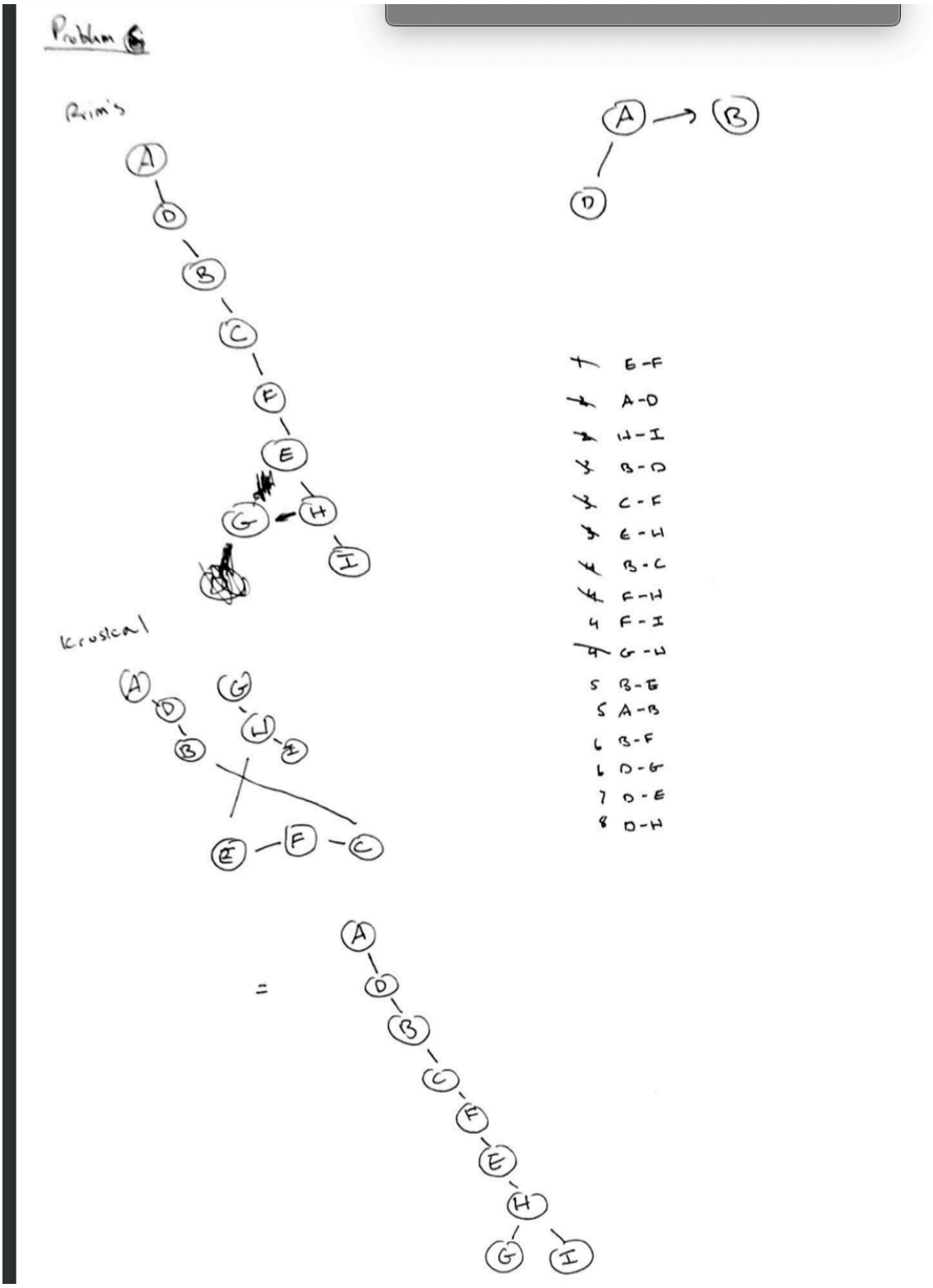
There are 3 shortest paths from S to t.

S-A-B-C-t

S-A-E-C-t

S-A-E-F-t

Question 6: Minimum Spanning Tree



Question 7: Hash Tables

Linear probing

0	1	2	3	4	5	6	7	8	9	10
13	94	39	16	44	88	11	5	12	23	20

Quadratic probing

0	1	2	3	4	5	6	7	8	9	10
44	12	13	5	88	23	94	39	11	16	20

Double Hashing

0	1	2	3	4	5	6	7	8	9	10
44	12	13	88	16	11	23	5	20	39	94