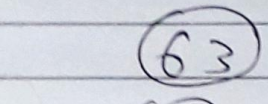
Priyansh Salian

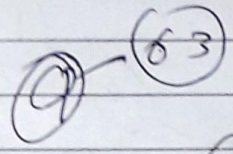
Assignment 2

1. 63, 9, 19, 18, 108, 99, 81, 45, 12, 106

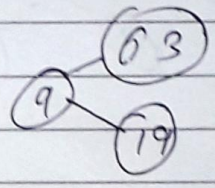
Step 1 :- Insert 63



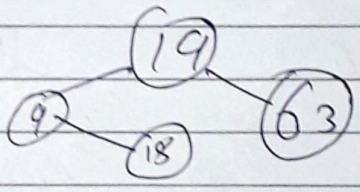
Step 2 Insert 9



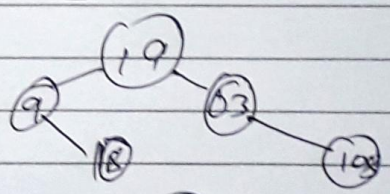
Step 3 Insert 19



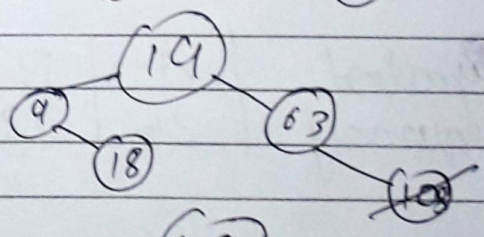
Step 4 Insert 18



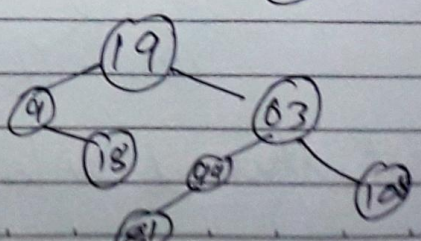
Step 5 Insert 108



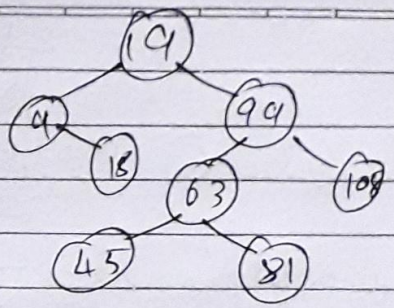
Step 6 Insert 99



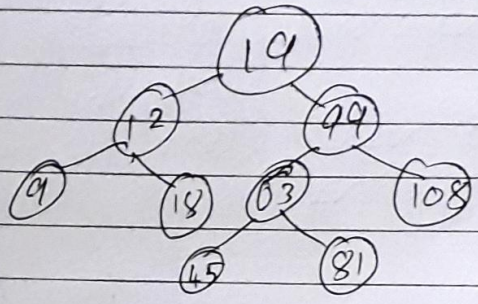
Step 7 Insert 81



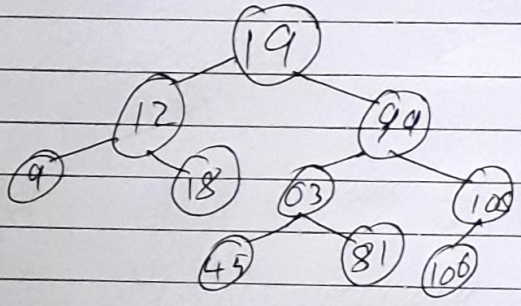
Step 8: Insert 45



Step 9 Insert 12



~~Insert 1~~
Step 10 Insert 100

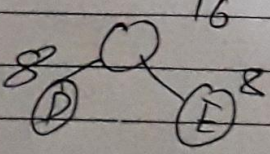


2.

Ans:

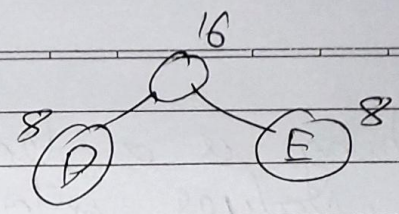
Symbol	A	B	C	D	E
Frequency	24	12	10	8	8

Step 1 Select D & E & and form a tree



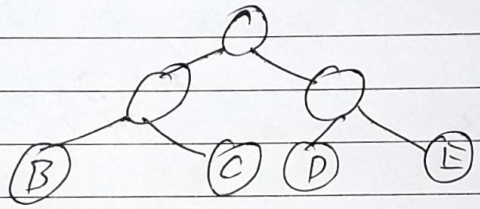
Insert this into the priority queue

A B C



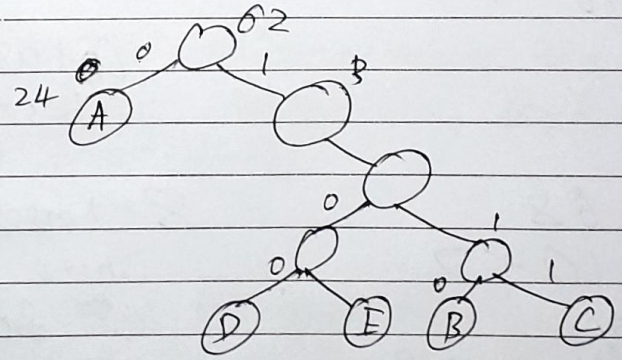
Step 2: Delete B & C and insert back into priority queue

Step 3: Delete (B-C) & (D-E) from the tree



Insert them in priority queue

Step 4: Delete (A) & [D-E and B-C]



Symbol	Frequency	Code
A	24	0
B	12	110
C	10	111
D	8	100
E	8	101

3.

Ans: Hashing is a technique of mapping keys, values into hash table by using a hash function. It is done for faster to access to elements.

Size = 10

63, 82, 94, 77, 53, 87, 23, 35, 10, 44

1. Insert 63
   = 63 % 10 = 3

2. Insert 82
   = 82 % 10 = 2

3. Insert 94
   94 % 10 = 4

4. Insert 77
   77 % 10 = 7

5. Insert 53
   53 % 10 = 3
   Collision here at 3
   (53+1) % 10
   = 4
   Collision again
   (53+2) % 10
   = 5

6. Insert 87
   = 87 % 10 = 7
   Collision
   (87+1) % 10 = 8

7. Insert 23
   23 % 10 = 3
   collision
   24 % 10 = 4
   Collision, 25 % 10 = 5
   collision, 26 % 10 = 6

8. Insert 35
   There is no collision at 8 so
   35 % 10 = 9

9. Insert 10
   10 % 10 = 0

10. Insert 44
    44 % 10 = 4

5. i Topological sorting for directed acyclic graph is a linear ordering vertices such that every edge u, v - vertex comes before v in ordering

ii. It is not possible if graph is not DAG

iii. There can be more than one topological sorting for a graph

iv. This first vertex in topological sorting is always a vertex within indegree as 0

v. This is used in data sterlization

vi. This is used in instruction sheduling

vii. This is used in determining the order of compilation tasks compiling task to perform in makefiles.

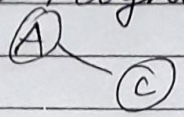
4.

Ans Post Order - D E F B G L J K H L A
In Order - D B F E G A G C L J H K

i. From the post order +ve last element is the node element since its L R V treatment.

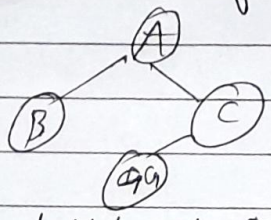
(A)

ii. C will be the right child of A

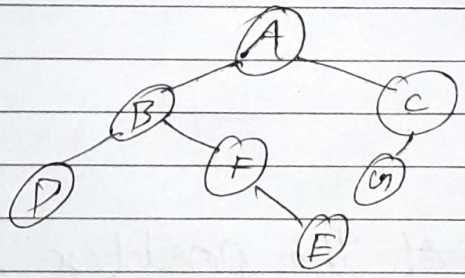


~~iii. After~~

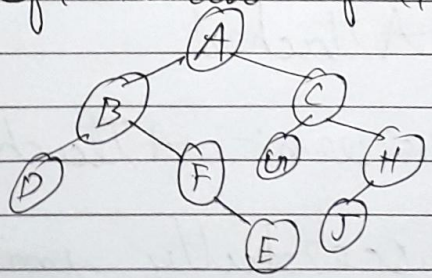
iii. B is left child of C & B is left child of A



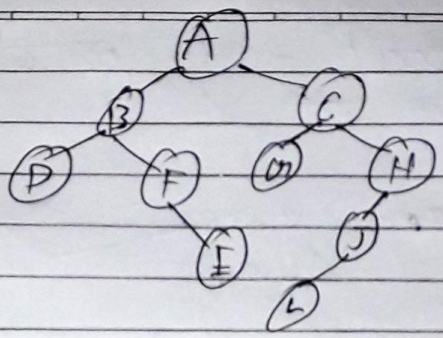
iv. D is left child of B and F & E are right child of B & F respectively



v. J is left child of H



vi. L is left child of J



11. K is right child of H