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①

(Q: NO. 1 a)

Linked List

A Linked List is a list whose elements may not occupy continuous memory location and whose elements are connected by means of links between them.

Example:

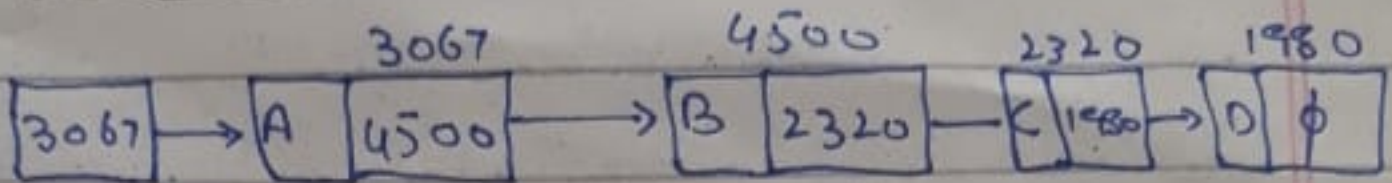
Consider the history ~~location~~ selection of web browsers where it creates a linked list of web pages visited. So that when you check history or press ok button, the previous nodes data is fetched.

②

(Q. NO: 1 b)

One way linked list.

Execution:



① $P \leftarrow \text{getnode}(3067)$

② $\text{Head} \leftarrow P$

③ $\text{info}(P) \leftarrow \text{data}$

3067 \leftarrow A

4500 \leftarrow B

2320 \leftarrow C

1980 \leftarrow D

④ $\text{Link}(P) \leftarrow \phi$

3067

4500

2320

1980

$q \leftarrow 3067 \leftarrow 4500 \leftarrow 2320 \leftarrow 1980$

⑥ $y \cdot y \cdot y \cdot y \cdot \sqrt{v}$

⑦ $P \leftarrow \text{getnode}$

$P \leftarrow 4500 \leftarrow 2320 \leftarrow 1980$

⑧ $\text{Link}(q) \leftarrow P(4500)(2320)(1980)$

⑨ goto (3)

⑩ exit.

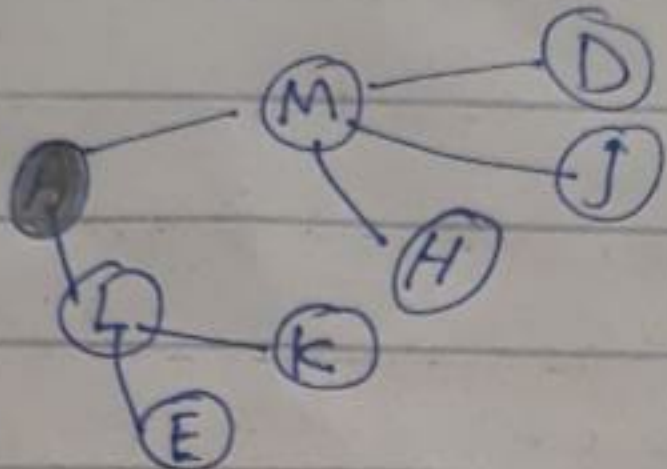
3

(Q: NO: 2)

Apply Depth - first Technique on the given tree?

Sol

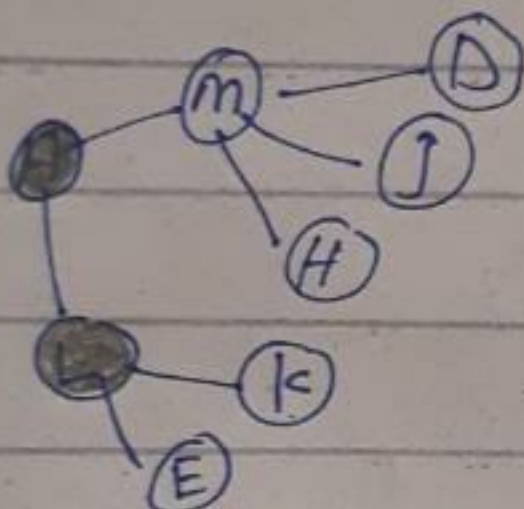
step 1



A

O.S \Rightarrow A

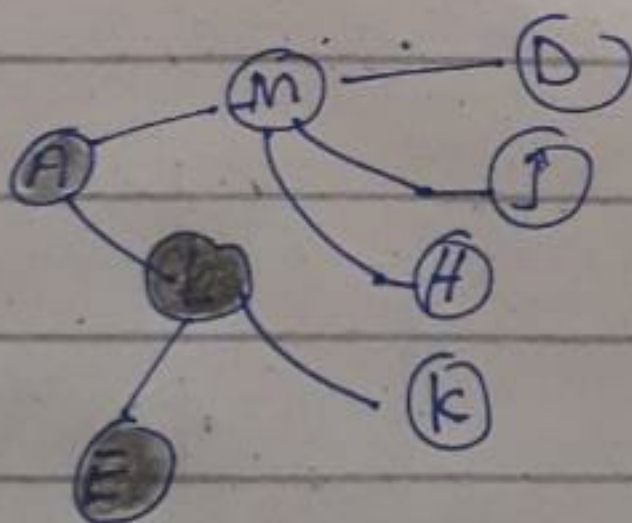
step 2



A L

O.S \Rightarrow A . L

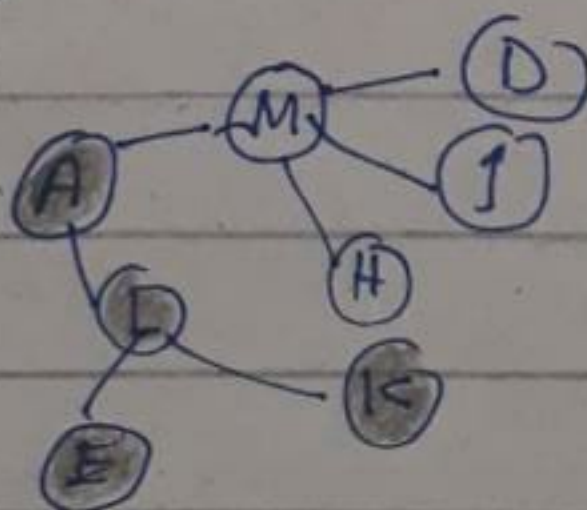
step 3



A L E

O.S. A . L . E

step 4

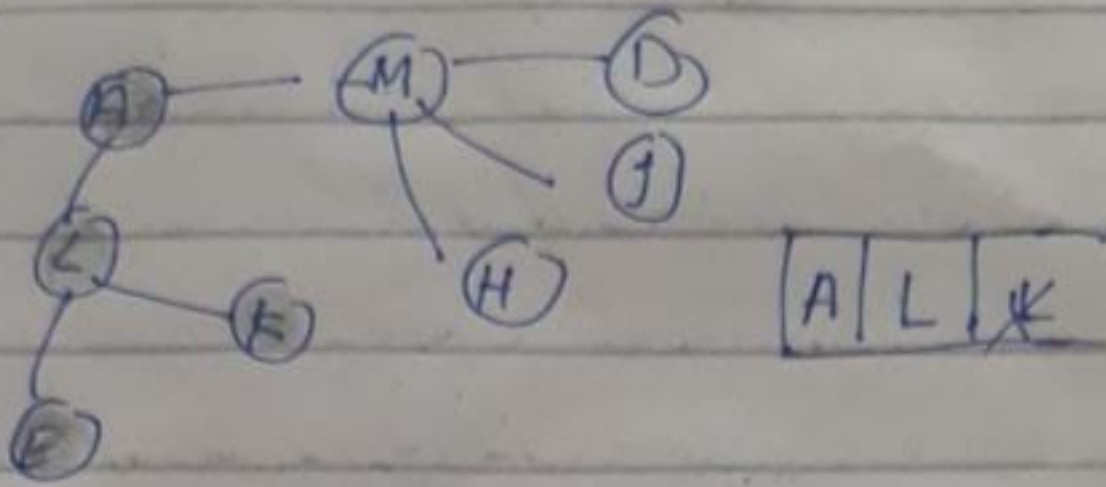


A L E K

O.S = A L . E . K

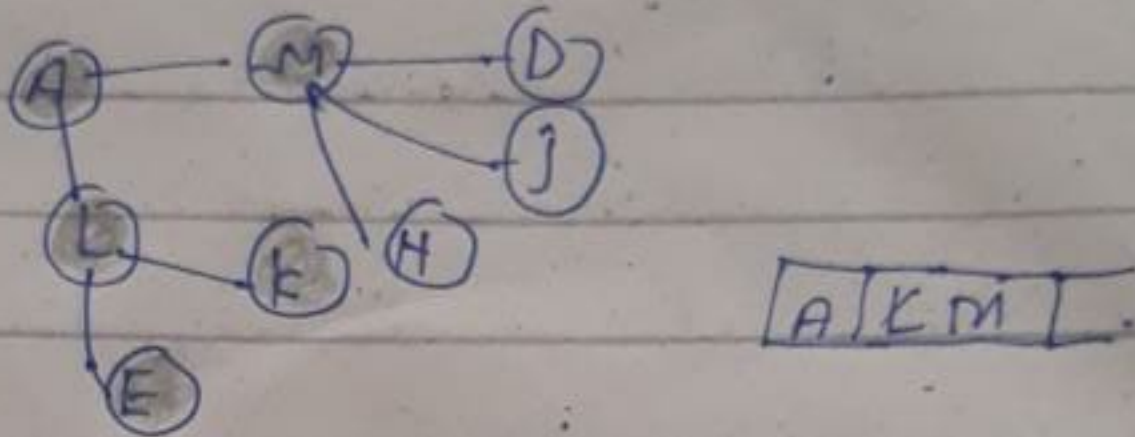
(4)

step 5



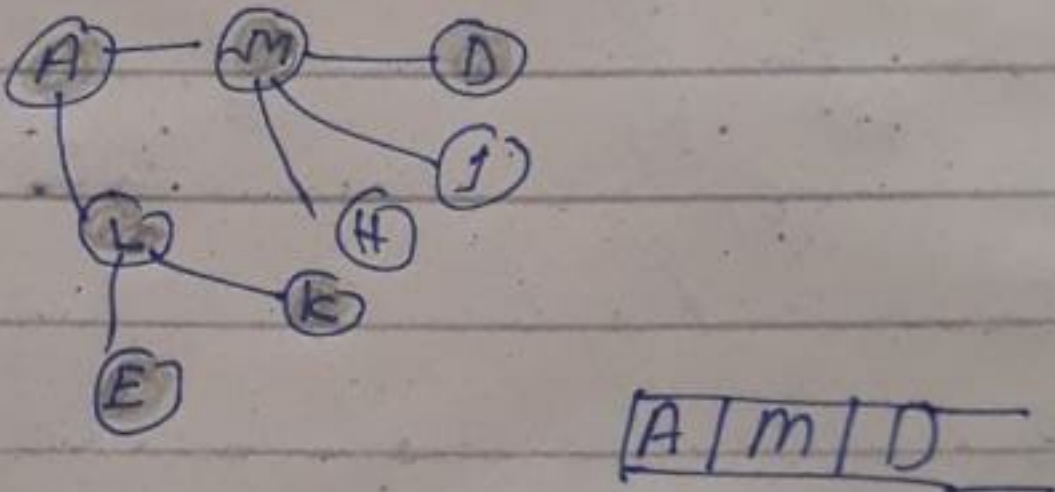
O.S. = A L E K

step 6



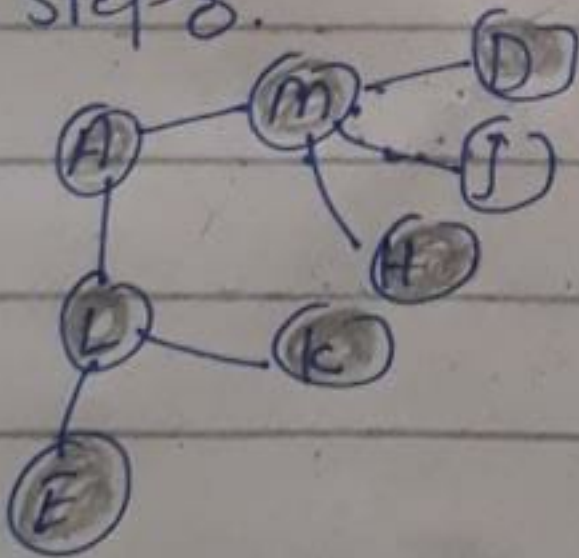
O.S. = A L E K M

step 7



O.S. = A L E K M D

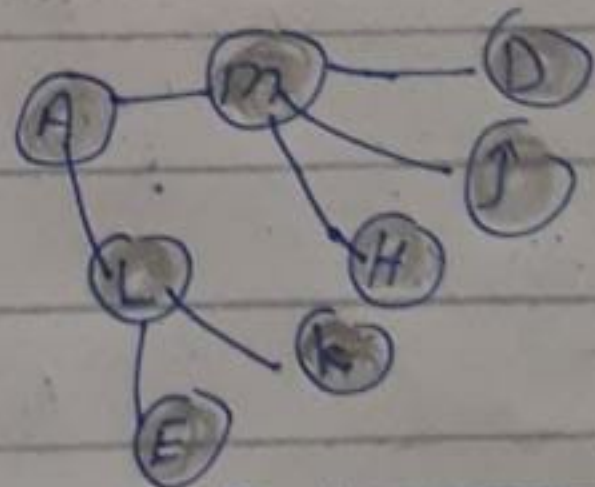
step 8



A | M | H

O.S. = A L E K M D H

step 9



A | M | H | J

O.S. = A L E K M D H J

(5)

Q. No: 3

How would you be deleting a Queue? Give some real life example.

Queue is:

A sequential list in which elements are inserted from one end and are deleted from other end called Queue.

Explanation is:

Queue is an abstract data structure. A Queue is open at both its ends. One end is always used to insert data (enqueue) and the other is used to remove data (dequeue).

Queue follows first in first out methodology. i.e. the data item stored first will be accessed first.

The end from where an element can be inserted is called Rear of the Queue.

The end from where an element can be deleted called front of the Queue.

(6)

Memory Representation of Queues?

A linear array $q[]$ is used to represent a Queue

Two variable (behaving like pointers)

F and R are used to denote front and Rear of $q[]$

Real life example:

(i) Auto mobites waiting to pass through a signal make up a queue.

(ii) People waiting to submit bills at a bank window.