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FACULTY OF EGINEERING & TECHNOLOGY

DATA STRUCTURE USING C

LECTURE -4

Umesh Kumar Gera
Assistant Professor
Computer Science & Engineering

OUTLINE

- Doubly Linked List operation
- Advantages
- Disadvantages
- MCQ
- References

OPERATION ON DOUBLY LINKED LIST

SN	Operation	Description
1	Insertion at beginning	Adding the node into the linked list at beginning.
2	Insertion at end	Adding the node into the linked list to the end.
3	Insertion after specified node	Adding the node into the linked list after the specified node.
4	Deletion at beginning	Removing the node from beginning of the list
5	Deletion at the end	Removing the node from end of the list.
6	Deletion of the node having given data	Removing the node which is present just after the node containing the given data.
7	Searching	Comparing each node data with the item to be searched and return the location of the item in the list if the item found else return null.
8	Traversing	Visiting each node of the list at least once in order to perform some specific operation like searching, sorting, display, etc.

ADVANTAGE AND DISADVANTAGE OF DOUBLY LINKED LIST

Advantages of linked list

Dynamic Data Structure:

The size of linked list increase and decrease during program execution.

No memory wastage:

In linked list memory will be allocated at the time of program execution so no memory wastage.

Easily insert and delete data:

In linked list you can insert any data at specific position and also delete any data from specific position.

Dis-Advantages of linked list

Need more memory:

For store data in linked list you need more memory space, you need memory space for both data and address part.

MCQ

1. In a circular linked list

a) Components are all linked together in some sequential manner.

b) There is no beginning and no end.

c) Components are arranged hierarchically.

d) Forward and backward traversal within the list is permitted.

2. A linear collection of data elements where the linear node is given by means of pointer is called?

a) Linked list

b) Node list

c) Primitive list

d) None

3. Which of the following operations is performed more efficiently by doubly linked list than by singly linked list?

a) Deleting a node whose location in given

b) Searching of an unsorted list for a given item

c) Inverting a node after the node with given location

d) Traversing a list to process each node

4. Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head and tail pointer. Given the representation, which of the following operation can be implemented in O(1) time?

i) Insertion at the front of the linked list

ii) Insertion at the end of the linked list

iii) Deletion of the front node of the linked list

iv) Deletion of the last node of the linked list

a) I and II b) I and III c) I,II and III d) I,II and IV

5. Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head pointer only. Given the representation, which of the following operation can be implemented in O(1) time?

i) Insertion at the front of the linked list

ii) Insertion at the end of the linked list

iii) Deletion of the front node of the linked list

iv) Deletion of the last node of the linked list

a) I and II

b) I and III

c) I,II and III

d) I,II and IV

REFERENCES

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