

Data Structures and Algorithms

Lecture 11: Linked Lists - Grounded Header linked lists - Operations

Header Linked List

- A Header linked list is one more variant of linked list.
- In Header linked list, we have a special node present at the beginning of the linked list.
- This special node is used to store number of nodes present in the linked list.
- In other linked list variant, if we want to know the size of the linked list we use traversal method.
- But in Header linked list, the size of the linked list is stored in its header itself.

Types of Header Linked List

Types of Header linked list

- Grounded header linked list.
- Circular header linked list.

Structure – Header Linked list

```
struct node
```

```
{
```

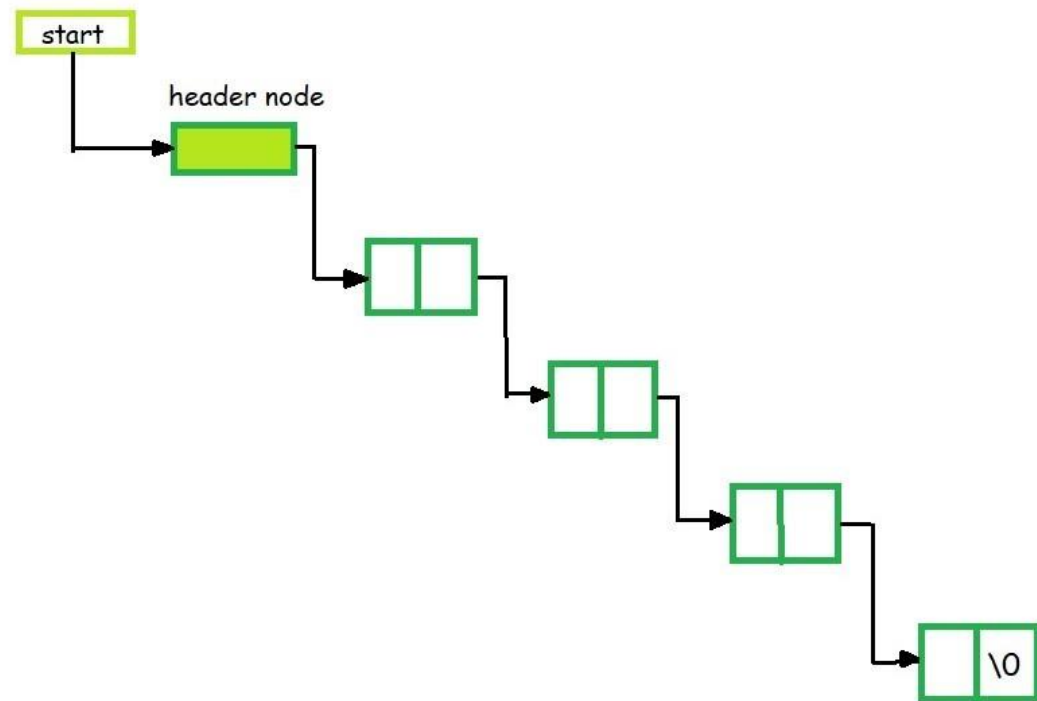
```
    int data;
```

```
    struct node *next;
```

```
};
```

Grounded Header Linked List

- It is a list whose last node contains the NULL pointer.
- In the header linked list the start pointer always points to the header node.
- `start -> next = NULL` indicates that the grounded header linked list is empty.
- The operations that are possible on this type of linked list are Insertion, Deletion, and Traversing.



Grounded Header Linked List

Advantages:

- **Space Efficiency:** By merging the header node with the first data node, grounded header linked lists save space by eliminating the need for a separate header node. This can be particularly beneficial when dealing with large linked lists where the memory footprint is a concern.
- **Simplicity:** The merging of the header node and the first data node simplifies the structure of the linked list. It eliminates the special case handling required for an empty list and reduces the number of pointers needed to traverse the list. This simplicity can lead to cleaner and more efficient code.
- **Improved Performance:** Grounded header linked lists can offer improved performance compared to traditional header linked lists. With a reduced number of pointers, accessing and traversing the list can be faster. Additionally, the elimination of the separate header node reduces the number of memory allocations and deallocations, potentially improving overall performance.

Recall:

Headed linked list – Grounded header linked list

