Linked List

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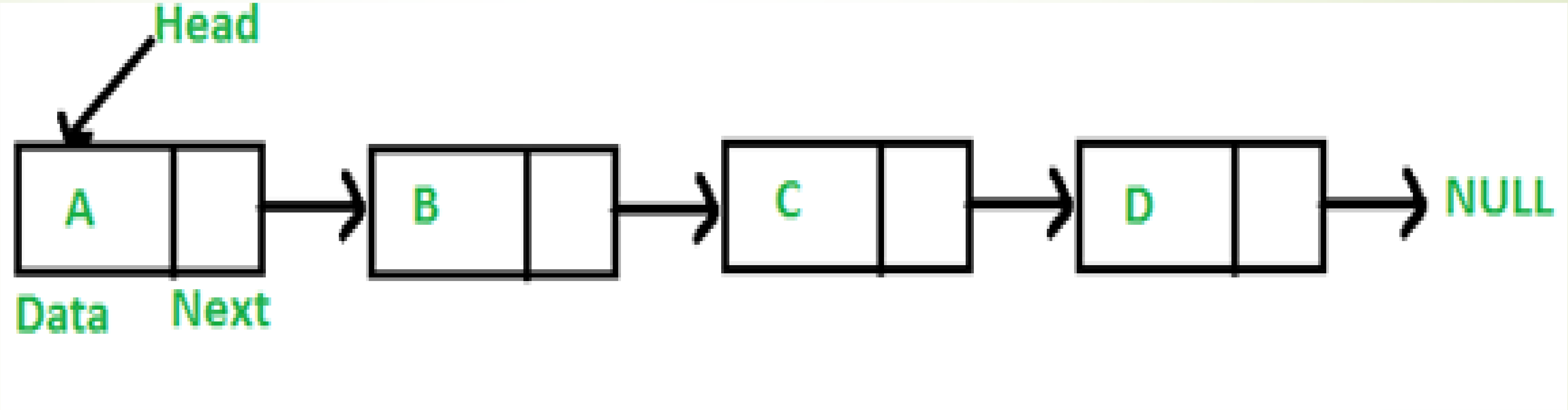
Introduction

- Linked List is a linear data structure and it is very common data structure which is collection of nodes which is divided in two parts. Data part and link to the next node.
- **Declaration of a node :**

```
Struct node{
int data;
struct node * next;
};
```

Diagram



Algorithm for SLL

1. **Insert a node at first**

    1. **Create a new node**

    Temp=malloc (sizeof (struct node))

    2. **Insert data**

    Temp->data=value

    3. **Adjust the pointer**

    Temp->next=NULL

    Start=temp

Insert a node at last

1.Traverse a SLL upto the NULL

Temp->next!=NULL

SLL will be traversed by statement temp=temp->next

2. **Create a new node**

q=malloc (sizeof (struct node))

3. Insert data

q->data=value

4. **Adjust the pointer**

Temp->next=q

q->next=NULL

Insert at specific position

1. **Traverse a SLL upto the specific position**

SLL will be traversed by statement temp=temp->next

2. **Create a new node**

r=malloc (sizeof (struct node))

3. **Insert data**

r->data=value

4. **Adjust the pointer**

r->next=Temp->next

temp->next=q

Doubly Linked List

DLL is a linear data structure which is collection of nodes which is divided in three parts. Data part and link to the next node and link to previous node.

Declaration of a node :

```
Struct dnode{
struct node * prev;
int data;
struct node * next;

};
```

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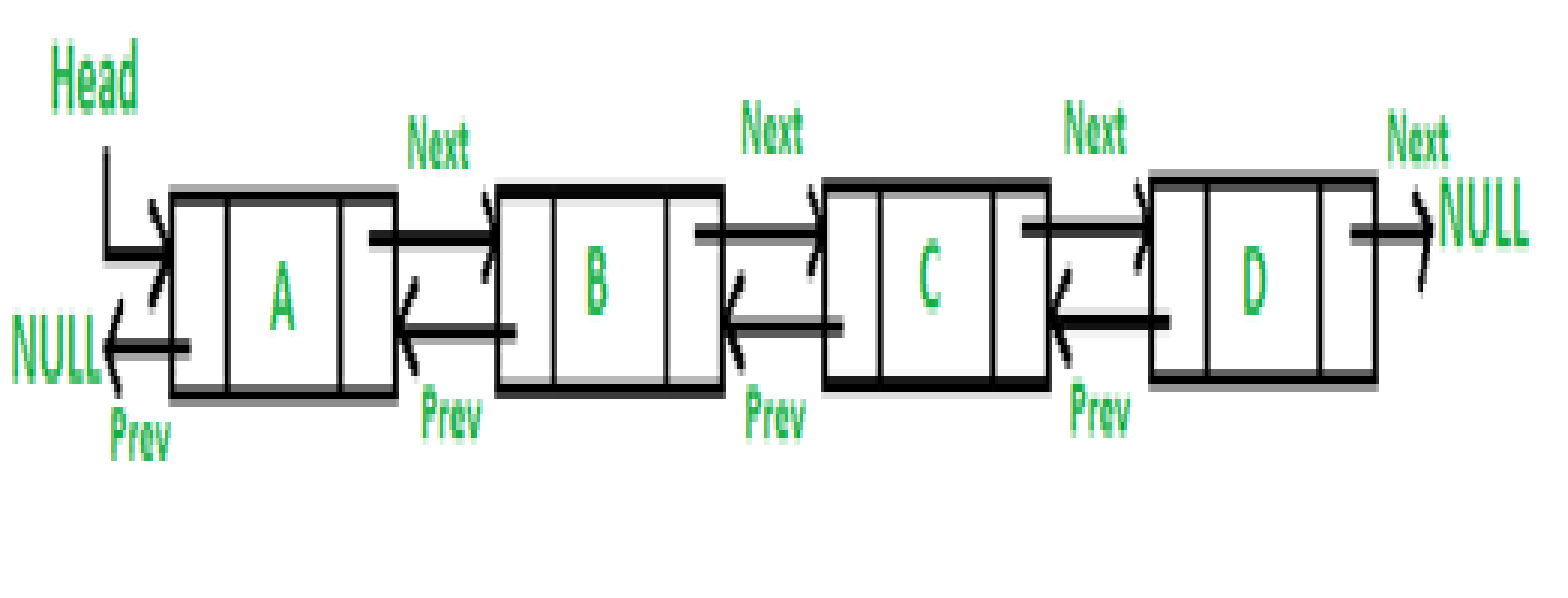
Diagram



Algorithm for DLL

- **1. Insert a node at first**

1. **Create a new node**

Temp=malloc (sizeof (struct node))

2. **Insert data**

Temp->data=value

3. **Adjust the pointer**

Temp->next=start

Temp->prev=NULL

Start->prev=temp

Start=temp

Insert a node at last

1.**Traverse a DLL upto the NULL**

Temp->next!=NULL

SLL will be traversed by statement temp=temp->next

2. **Create a new node**

q=malloc (sizeof (struct node))

3. **Insert data**

r->data=value

4. **Adjust the pointer**

Temp->next=q

q->prev=temp

q->next=NULL

Insert at specific position

1. **Traverse a DLL upto the specific position**

DLL will be traversed by statement temp=temp->next

2. **Create a new node**

r=malloc (sizeof (struct node))

3. **Insert data**

r->data=value

4. **Adjust the pointer**

r->prev=temp

r->next=Temp->next

r->next->prev=r

temp->next=r