

Write a function to delete a Linked List

Algorithm: Iterate through the linked list and delete all the nodes one by one. Main point here is not to access next of the current pointer if current pointer is deleted.

Implementation:

```
#include<stdio.h>
#include<stdlib.h>
#include<assert.h>

/* Link list node */
struct node
{
    int data;
    struct node* next;
};

/* Function to delete the entire linked list */
void deleteList(struct node** head_ref)
{
    /* deref head_ref to get the real head */
    struct node* current = *head_ref;
    struct node* next;

    while (current != NULL)
    {
        next = current->next;
        free(current);
        current = next;
    }

    /* deref head_ref to affect the real head back
    in the caller. */
    *head_ref = NULL;
}
```

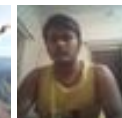
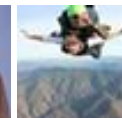
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```

}

/* Given a reference (pointer to pointer) to the head
of a list and an int, push a new node on the front
of the list. */
void push(struct node** head_ref, int new_data)
{
    /* allocate node */
    struct node* new_node =
        (struct node*) malloc(sizeof(struct node));

    /* put in the data */
    new_node->data = new_data;

    /* link the old list off the new node */
    new_node->next = (*head_ref);

    /* move the head to point to the new node */
    (*head_ref) = new_node;
}

/* Driver program to test count function*/
int main()
{
    /* Start with the empty list */
    struct node* head = NULL;

    /* Use push() to construct below list
    1->12->1->4->1 */
    push(&head, 1);
    push(&head, 4);
    push(&head, 1);
    push(&head, 12);
    push(&head, 1);

    printf("\n Deleting linked list");
    deleteList(&head);

    printf("\n Linked list deleted");
    getchar();
}

```

Time Complexity: O(n)

Space Complexity: O(1)

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Himanshu Dagar · 3 months ago

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maresh · 5 months ago

Recursive solution for the same problem.

```
void deleteList(struct node **head)
{
    if(*head)
    {
        deleteList(&(*head)->next);
        free(*head);
        *head = NULL;
    }
}
```

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jayasurya j → maresh · 3 months ago

i have a doubt! can u explain me *head = NULL ... does this mean ever

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anon · 7 months ago

I haven't understood the last line in the deleteList function. When I run the funct and call a function to find the length of the list it gives the correct length.

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So my question is what happens if we do not write the last line in deleteList an

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asunel • 7 months ago

@GeeksforGeeks: Is it possible to delete a linked list having a loop without ren

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nitin • a year ago

```
#include<stdio.h>
#include<malloc.h>

struct node
{
    int data;
    struct node * link;
};

void insert1(struct node **p,int data)
{
    struct node *temp,*t;
    temp=(struct node *)malloc(sizeof(struct node));
    temp->data=data;
    temp->link=NULL;
    if((*p)==NULL)
    {
        *p=temp;
    }
    else
```

[see more](#)

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Ankit Malhotra • a year ago

A simple tail recursive C++ function instead of head recursion examples seen

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passes to next.

```
void rdellist (node * &ptr) {  
    if (!ptr) return;  
    node * temp = ptr->next;  
    delete ptr;  
    rdellist (ptr = temp);  
}
```

Recursion is best avoided with loops where feasible so

```
void dellist (node * &ptr) {  
    node * temp;  
    while (ptr) {  
        temp = ptr->next;  
        delete ptr;  
        ptr = temp;  
    }  
}
```

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Harsh Agarwal • a year ago

A recursive code:

```
void delete_list(node1 *start)  
{  
    if(start==NULL)  
    {  
        printf("Empty linked list...\n");  
    }  
}
```

```

        return;
    }
    node1 *p=start;
    if(p->link==NULL)
        free(p);
    else
        delete_list(p->link);
    p->link=NULL;
}

```

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Ankit Malhotra → Harsh Agarwal • a year ago

Segmentation Fault. After free(p) reference to p->link is invalid.

```

/* Paste your code here (You may delete these lines if not wr

```

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abhishek08aug → Ankit Malhotra • a year ago

Corrected version :)

```

/* Function to delete the entire linked list */
void deleteList(struct node** head_ref)
{
    if(*head_ref==NULL) {
        return;
    } else {
        deleteList(&((* head_ref)->next));
        free(*head_ref);
    }
}

```

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neelabhsingh → abhishek08aug • a year ago

In recursive time complexity will be $O(n)$ but space com $O(n)$.

Abhishek there is some improvement in your code. If you infinite. In if condition is only for to reach last node then : reaching start node you free. But in your function you pa pointer. But you did not make it NULL. If i am wrong plz

```
NODE * deleteList(NODE **start)
```

```
{
if(*start==NULL)
{
printf("Now head is NULL");
return NULL;
}
else
{
deleteList(&((*start)->next));
free(*start);
return NULL;
}
}
```

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Sunil • a year ago

A recursive algorithm to delete the linked list :)

```
void delete_list(struct node** node)
{
    if(NULL == *node)
```



```
    return;
delete_list((*node)->link);
free(*node);
}
```

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Gupta → Sunil • a year ago

Wrong code.. U just need 2 pass d adress. make it simple..

```
void deleteNode(struct node* head)
{
if(head==NULL)
return;
else
{
delete(head->next);
free(head);
}
}
```

```
/* Paste your code here (You may delete these lines if not wri
```

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neelabhsingh → Sunil • a year ago

In recursive time complexity will be $O(n)$ but space complexity will be ir

```
/* Paste your code here (You may delete these lines if not wri
```

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abhishek08aug → Sunil • a year ago

 wrong code Sunil. you should change

```
delete_list((*node)->link);
```

to

```
delete_list(&((*node)->link))
```

Check my code above.

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kpnigalye • 2 years ago

[sourcecode language="C++"]

/* Delete a linked list */

```
void DeleteList(struct LinkedListnode*& head_ref)
```

```
{
```

```
struct LinkedListnode* current = head_ref;
```

```
if(head_ref == NULL)
```

```
return;
```

```
while(current!=NULL)
```

```
{
```

```
struct LinkedListnode* temp = current;
```

```
current = current->next;
```

```
cout<<"Node deleted is: "<<temp->data<<endl;
```

```
delete temp;
```

```
}
```

```
head_ref = NULL;
```

```
}
```

```
/* Recursive way to delete a linked list */
```

[see more](#)

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amitp49 • 2 years ago

Recursive solution for the same can be...

```
/* Function to delete the entire linked list */  
void deleteList(struct node** head_ref)  
{  
    if(head_ref==NULL)  
        return;  
    if(( *head_ref)->next)  
        deleteList(&( *head_ref)->next);  
    free( *head_ref);  
    *head_ref = NULL;  
}
```

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Yogendra Singh Vimal → amitp49 • 9 months ago

i think @amitp49 that ur code is a Li'L bit wrong...u Should write if(*hea

instead of,

if(head_ref==NULL) ,

as here double pointer " head_ref " receives the address of a single po
the address of the single pointer but here our intention is towards the a
which can be achieved by writing *head_ref.

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