Linked List

(17/12/2022)

Code:

```
#include<stdio.h>
#include<stdlib.h>
struct NODE
{
    int data;
    struct NODE *link;
};
typedef struct NODE node;
node *start;
void create()
{
    int ch;
    node *new,*curr=NULL;
    start=NULL;
    start=(node *)malloc(sizeof(node));
    curr=start;
    printf("Enter the element:");
    scanf("%d",&start->data);
    while(1)
    {
        printf("Add another element (1 for yes 0 for no)?");
        scanf("%d",&ch);
        if(ch)
        {
```

```
            new=(node *)malloc(sizeof(node));
            printf("Enter the element:");
            scanf("%d",&new->data);
            curr->link=new;
            curr=new;
        }
        else
        {
            curr->link=NULL;
            break;
        }
    }
}
void insert_beg()
{
    node *new;
    new=(node *)malloc(sizeof(node));
    printf("\nEnter element:");
    scanf("%d",&new->data);
    if(start==NULL)
    {
        start=new;
        new->link=NULL;
        return;
    }
    new->link=start;
    start=new;
}
void insert_end()
{
    node *new,*temp;
    new=(node *)malloc(sizeof(node));
```

```
    printf("\nEnter element:");
    scanf("%d",&new->data);
    if(start==NULL)
    {
        start=new;
        new->link=NULL;
        return;
    }
    temp=start;
    while(temp->link!=NULL)
        temp=temp->link;
    temp->link=new;
    new->link=NULL;
}
void insert_pos()
{
    node *new,*temp;
    int pos,i=0;
    new=(node *)malloc(sizeof(node));
    printf("\nEnter element:");
    scanf("%d",&new->data);
    printf("\nEnter position:");
    scanf("%d",&pos);
    if(pos==1)
    {
        new->link=start;
        start=new;
        return;
    }
    temp=start;
    while(i<(pos-1)&&temp->link!=NULL)
    {
```

```
        temp=temp->link;
        i++;
    }
    if(i==(pos-1))
    {
        new->link=temp->link;
        temp->link=new;
        return;
    }
    if(temp==NULL)
        printf("\nInvalid Position");
}
void display()
{
    node *temp;
    if(start==NULL)
    {
        printf("Linked list is empty");
        return;
    }
    temp=start;
    while(temp!=NULL)
    {
        printf("%d\t",temp->data);
        temp=temp->link;
    }
}
void main()
{
    int choice;
    while(1)
    {
```

```
        printf("1.Create 2.Insert at the beginning 3.Insert at the end
4.Insert at a given position 5.Display 6.Exit\n");
        printf("Enter your choice:");
        scanf("%d",&choice);
        switch(choice)
        {
           case 1:create();
                 break;
           case 2:insert_beg();
                 break;
           case 3:insert_end();
                 break;
           case 4:insert_pos();
                 break;
           case 5:display();
                 break;
           case 6:exit(0);
                 break;
           default:printf("Wrong choice\n");
        }
     }
}
```

For Delete

```
#include<stdio.h>
#include<stdlib.h>
struct NODE
{
    int data;
    struct NODE *link;
};
typedef struct NODE node;
node *start;
void create()
{
    int ch;
    node *new,*curr=NULL;
    start=NULL;
    start=(node *)malloc(sizeof(node));
    curr=start;
    printf("Enter the element:");
    scanf("%d",&start->data);
    while(1)
    {
        printf("Add another element (1 for yes 0 for no)?");
        scanf("%d",&ch);
        if(ch)
        {
            new=(node *)malloc(sizeof(node));
            printf("Enter the element:");
            scanf("%d",&new->data);
            curr->link=new;
            curr=new;
        }
```

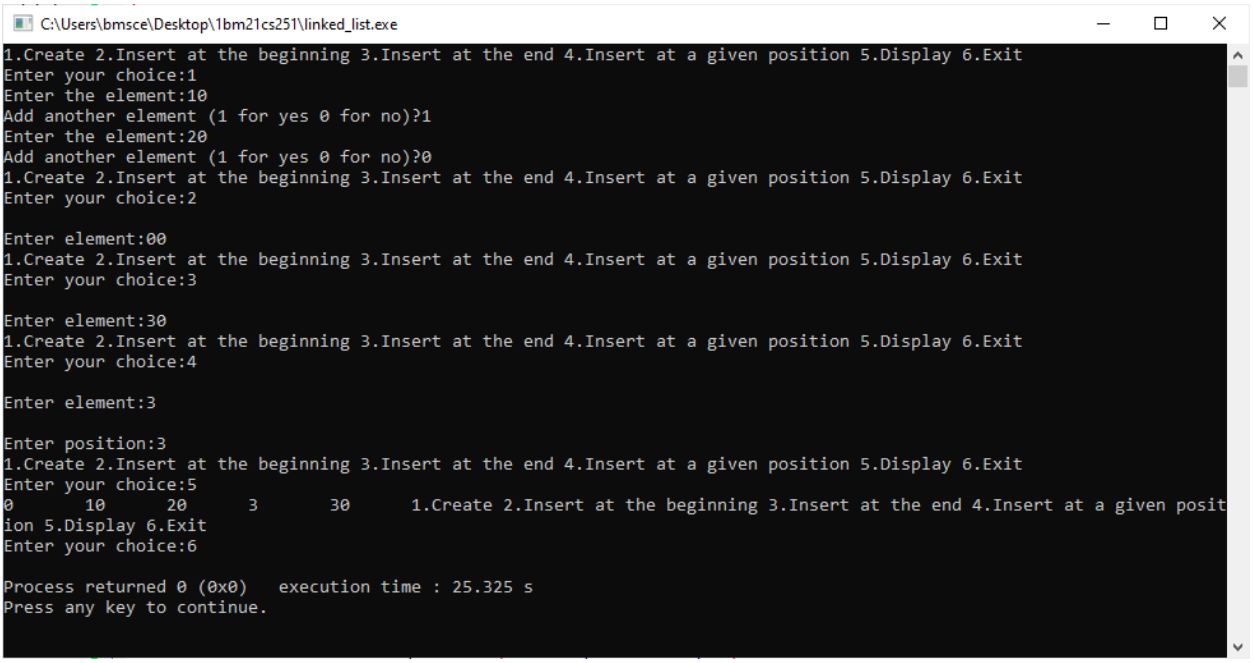
```
        else
        {
            curr->link=NULL;
            break;
        }
    }
}
void del_beg()
{
    node *temp;
    if(start==NULL)
    {
        printf("Linked list is empty");
        return;
    }
    temp=start;
    start=start->link;
    free(temp);
}
void del_end()
{
    node *next,*temp;
    if(start==NULL)
    {
        printf("Linked list is empty");
        return;
    }
    if(start->link==NULL)
    {
        free(start);
        start=NULL;
        return;
```

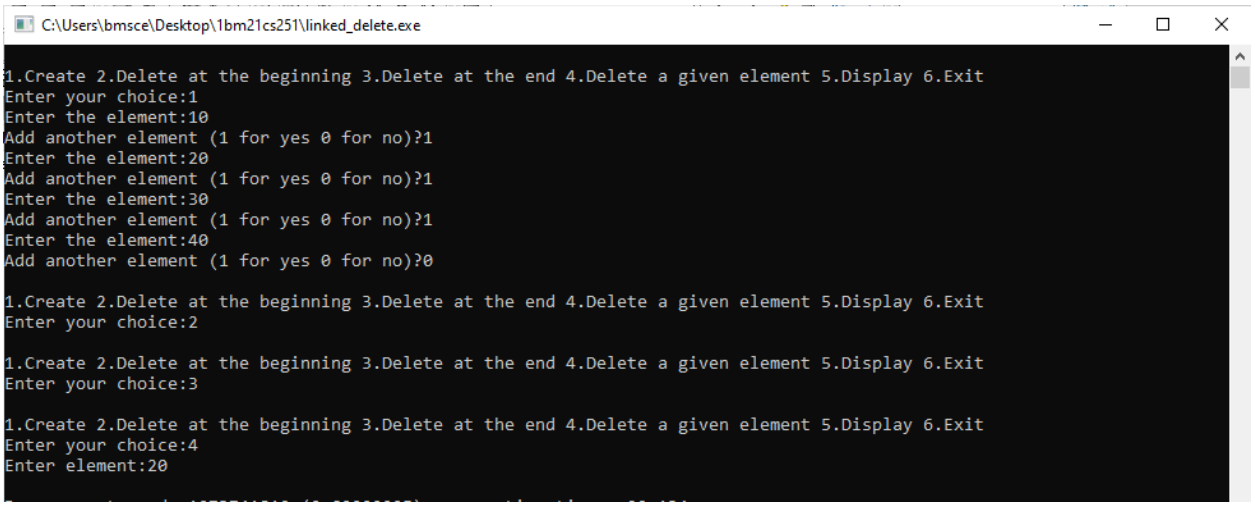
```
    }
    temp=start;
    next=start->link;
    while(next->link!=NULL)
    {
        temp=next;
        next=next->link;
    }
    free(next);
    temp->link=NULL;
}
void del_ele()
{
    node *prev,*curr;
    int ele;
    if(start==NULL)
    {
        printf("Linked list is empty");
        return;
    }
    if(start->link==NULL)
    {
        ele=start->data;
        free(start);
        start=NULL;
        return;
    }
    printf("Enter element:");
    scanf("%d",&ele);
    prev=start;
    curr=start->link;
    while(curr->data!=ele && curr!=NULL)
```

```
    {
        prev=curr;
        curr=curr->link;
    }
    if(curr->data==ele)
    {
        prev->link=curr->link;
        free(curr);
        return;
    }
        printf("Element not found");
}
void display()
{
    node *temp;
    if(start==NULL)
    {
        printf("Linked list is empty");
        return;
    }
    temp=start;
    while(temp!=NULL)
    {
        printf("%d\t",temp->data);
        temp=temp->link;
    }
}
void main()
{
    int choice;
    while(1)
    {
```

```
        printf("\n1.Create 2.Delete at the beginning 3.Delete at the end
4.Delete a given element 5.Display 6.Exit\n");
        printf("Enter your choice:");
        scanf("%d",&choice);
        switch(choice)
        {
           case 1:create();
                  break;
           case 2:del_beg();
                  break;
           case 3:del_end();
                  break;
           case 4:del_ele();
                  break;
           case 5:display();
                  break;
           case 6:exit(0);
                  break;
           default:printf("Wrong choice\n");
        }
     }
}
```

Output:





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