

Writhe a program in Python to implement following operations on a Singly Linked List:

- i) Insert a node at the end of the linked list**
- ii) Display the linked list**
- iii) Insert a node at the beginning of the linked list**
- iv) Count number of nodes present in a linked list**
- v) Search whether a given element is present in a linked list or not**
- vi) Delete a given element from the linked list**

```
class Node:
    def __init__(self, data):
        self.data = data
        self.next = None
```

```
def display(head):
    temp = head

    if temp == None:
        print("Empty List")

    while(temp):
        print(temp.data)
        temp = temp.next
```

```
def insert_end(head, n):
    if head == None:
        head = Node(n)
        return head
    else:
        temp = head

        while(temp):
            prev = temp
            temp = temp.next

        newnode = Node(n)
```

```
prev.next = newnode
return head
```

```
def insert_first(head, n):
    temp = head
    newnode = Node(n)
    newnode.next = temp
    head = newnode
    return head
```

```
def count(head):
    temp = head
    c = 0

    if temp == None:
        print("Empty List")
        return c

    while(temp):
        c = c + 1
        temp = temp.next

    return c
```

```
def search(head, n):
    temp = head
    pos = 0

    if temp == None:
        print("Empty List")
        return 0

    while(temp):
        pos = pos + 1

        if temp.data == n:
            return pos

        temp = temp.next

    return -1
```

```

def deletion(head, n):
    temp = head

    if temp == None:
        print("Empty List")
        return head
    elif(temp.data==n):
        print("Deleted item:", temp.data)
        head = temp.next
        return head
    else:
        prev = temp
        temp = temp.next

        while(temp):
            if(temp.data==n):
                nitem = temp.next
                prev.next = nitem
                print("Deleted item:", temp.data)
                return head

            prev = temp
            temp = temp.next

        print("Item not found")
        return head

```

```
head = None
```

```

while True:
    print("***** Main Menu *****")
    print("1. INSERT END")
    print("2. DISPLAY")
    print("3. INSERT FIRST")
    print("4. COUNT")
    print("5. SEARCH")
    print("6. DELETION")
    print("0. EXIT")

    ch = int(input("Enter Your Choice: "))

```

```

if(ch==1):
    n = int(input("Enter data: "))
    head = insert_end(head, n)
elif(ch==2):
    display(head)
elif(ch==3):
    n = int(input("Enter data: "))
    head = insert_first(head, n)
elif(ch==4):
    n = count(head)

    if n > 0:
        print("No. of elements=", n)
elif(ch==5):
    n = int(input("Enter data which you want: "))
    pos = search(head, n)

    if pos > 0:
        print("Item is in", pos, "th position")
    else:
        print("Item not found")
elif(ch==6):
    n = int(input("Enter data which you want to
delete: "))
    head = deletion(head, n)
elif(ch==0):
    break
else:
    print("Wrong Input")
    pass

```