Lab work report: Lab 1

Submitted by: Janak Sitaula, 51, CE 2nd year

Objectives:

The objective of this lab work is to implement a singly linked list with the following procedures:

- isEmpty(): Returns true if the list is empty, and false otherwise
- addToHead(data): Inserts an element to the beginning of the list
- addToTail(data): Inserts an element to the end of the list
- add(data, predecessor): Inserts an element after the given predecessor node
- removeFromHead(): Removes the first node in the list
- remove(data): Removes the node with the given data
- retrieve(data, outputNodePointer): Returns the pointer to the node with the requested data
- search(data): Returns true if the data exists in the list, and false otherwise
- traverse(): Displays the contents of the list

Implementation:

The above instructed methods have been implemented in the program displaying desired output. All the methods that come to use are labelled before their respective executions.

Output:

Linked list

```
PS C:\Users\hp\Desktop\labwork\lab1> g++ main.cpp .\src\Linkedlist.cpp -I include
PS C:\Users\hp\Desktop\labwork\lab1> ./a.exe

A linked list is created
Traversing an empty linked list

The list is as follows:
The list is empty. Nothing to show here.


Adding 5 to the head

The List is empty
A data element is added to Head
Adding 34 to the tail of the linked list

A data element is added to Tail
Adding 5 using the add function

The data element is added to the list using add(); function
Traversing through the linked list

The list is as follows:
 [5]     [34]     [5]

Adding 45 to the head of the linked list

A data element is added to Head
Adding 125 to the tail of the linked list

A data element is added to Tail
Traversing through the linked list

The list is as follows:
```

```
 The list is as follows:
  [45]     [5]     [34]     [125]

 Removing an element from the head of the linkedlist

 A data element is removed from Head
 Perfoming removal of a desired data

 A data element is removed from Head
 Traversing through the linked list

 The list is as follows:
  [34]     [125]

 Searching an element through the linked list
 the data is found in the linked list

 Searching an element through the linked list
 The data could not be located
 Adding an element to the head of the linked list

 A data element is added to Head

 Retrieving 23 from the linkedlist
 The adress of the data is  0xe71730
PS C:\Users\hp\Desktop\labwork\lab1>
```