**KATHMANDU UNIVERSITY**

**Department of Computer Science and Engineering**

**Dhulikhel, Kavre**

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Subject: COMP 202

Lab Report. 2

SUBMITTED BY SUBMITTED TO

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Level: - U.N.G/2nd Year/1st Sem

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1. Implement a singly linked list with the following operations:

(a) isEmpty(): Returns true if the list is empty, and false otherwise

(b) addToHead(data): Inserts an element to the beginning of the list

(c) addToTail (data): Inserts an element to the end of the list

(d) add(data, predecessor): Inserts an element after the given predecessor node

(e) removeFromHead(): Removes the first node in the list

(f) remove(data): Removes the node with the given data

(g) retrieve(data, outputNodePointer): Returns the pointer to the node with the requested data

(h) search(data): Returns true if the data exists in the list, and false otherwise

(i) traverse(): Displays the contents of the list

Also, write a test program to check if the implementation works properly.

**Answer:**

Source code for linked list:

<linkedlist.cpp> <main.cpp> <linkedlist.h>

output:

linkedlist is empty

all elements of linked list

8

9

4

2

6

after removing from head

9

4

2

6

after removing data

9

4

6

data exists in list

the retrived data is 9

9

1

4

6

2.Implement stack and queue data structures using linked lists. You may use the ADT of Lab1.

**Answer**

Source code for queuelinkedlist:

<queuelinkedlist.cpp>

output:

Enqueued

Data dequeued 3

Data dequeued 4

Data dequeued 5

Data dequeued 6

Data dequeued 7

Data dequeued 8

Data dequeued 9

Data dequeued 10

Data dequeued 11

Data dequeued 12

Source code for stacklinkedlist:

<stacklinkedlist.cpp>

Output:

94

38

32

10

Top element is 94

32

10

Top element is 32