University of Central Punjab

**Faculty of Information Technology**

**Data Structures and Algorithms Spring 2023**

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| **Lab 06** | |  |
| **Topic** | * LinkedList * Circular linked List * Linked List using Stack |
| **Objective** | * The basic purpose of this lab is to implement ADT of Linked List and test its applications. |

**Instructions:**

* Indent your code.
* Comment your code.
* Use meaningful variable names.
* Plan your code carefully on a piece of paper before you implement it.
* Name of the program should be same as the task name. i.e. the first program should be Task\_1.cpp

## void main() is not allowed. Use int main()

* **You have to work in multiple files. i.e separate .h and .cpp files**
* **You are not allowed to use system**("**pause**")
* **You are not allowed to use any built-in functions**
* **You are required to follow the naming conventions as follow:**
  + **Variables:** firstName; (no underscores allowed)
  + **Function:** getName(); (no underscores allowed)
  + **ClassName:** BankAccount (no underscores allowed)

## Students are required to complete the following tasks in lab timings.

**Task 1**

Create a C++ generic class named MyCircularList by using the class list created in Task 1 and Node class in Task 2 (see the lab 5) with following:

Implement All functions on TASK 1 and Task 2 (See the Lab 5) in Circular Linked List.

**Attributes:**

* Node <Type> \*tail;

**Functions:**

**bool isEmpty() --**Returns whether the list is empty(1) or not(0).

**int sizeOfList()** – Returns the number of elements in the list.

* Implement all the functions declared in class List
* Create appropriate constructor
* Implement the constructor which actually deletes the list node by node

**Constraint:**

**For this task there only Tail pointer you are not allowed to use Head pointer**

**Task 2**

Given a singly linked list, check whether the given list is palindrome or not. If it palindrome then return true otherwise return false.

**Hint:** Do this task by using Stack

**Input**: C🡪 I 🡪 V 🡪 I 🡪 C

**Output**: Given list is Palindrome

**Input**: S🡪 O 🡪 O 🡪 N

**Output**: Given list is Palindrome

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