Lab No. – Linked Lists

Date: 01/02/2023

Exercise 1:

Write a program, which maintains a linked list of football players. For each player you should store: Name, Weight and Height. Implement a class player wi th appropriate methods: setters' methods, getters methods, …etc.
When your program starts up, it should read the data. You will maintain a linked list of nodes which contains a player data. The list should be sorted by player's name.

Your program should be able to:

- Add a player
- Dele te a player
- Find a player by name and print his data
- Save players in a file.
- Read a file and returns a linked list of players.
- Print players' names alphabetically

You should present a menu to the user as follow:

Choose one option:

1. Add a player
2. Dele te a player
3. Find a player
4. Save players
5. Read players
6. Print names
7. Exit

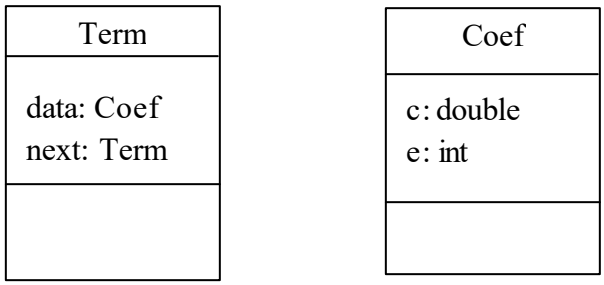
A user should be able to continually use the system until he chooses '7'.
Make sure that if there are no players on the list, you give an appropriate message.

Exercise 2:

Write a program that merges two linked lists of integers to create a third linked list. The new list will contain all the integers from the two original lists arranged in ascending order. You may assume that the entries in the original linked lists are organized in ascending order and that there are no duplicate entries.

Exercise 3:

A polynomial can be implemented by a linked list, where each term represents a node. A term is defined as follows:



The linked list should be ordered by exponent. For example, the following polynomial is composed by 4 Terms:

$$2X^4 + 1.5X^2 + 5X + 6$$

The class Polynomial will be defined as follows:

Member function	**Role**
Polynomial()	The polynomial is created and initialised to be empty
Boolean empty()	The function returns true or false according to whether the polynomial is empty or not
Boolean insert(Coef f)	Insert a new Coef in the right order. Exponent should order the terms.
Double value(double x)	Return the polynomial value

Write a menu-driven program to test the previous classes. It displays the following menu:

1- Insert a new term
2- Display a polynomial
3- Display the polynomial value
4- Exit menu