COMP 2611 – Data Structures
Assignment 1

Date Due: *Tuesday October 13, 2020 @ 11:55 pm*

Description of Files You Are Given

Skill.h

This file contains the declaration of the structs for the linked list of skills. It also contains the function prototypes for the linked list functions that were written in Lab 3 to store and retrieve data on a person's skills.

Skill.cpp

This file contains the actual functions that were written in Lab 3. The skill data for a person is stored in a linked list where each node stores a struct with two fields, *name*, and *years*. The *name* is the name of a particular skill and *years* is the amount of years a person has this skill. For example, a skill *name* could be "Project_Management" and the *years* could be 5.

Employee.cpp

You must write the code for this assignment in this file. There are comments in the file describing the code that should be written in the different sections.

Assignment1.dev

This is a Dev-C++ project that contains all the files that are needed to create a working program for this assignment. You should open this file in Dev-C++ and make modifications to the Employee.cpp file. You do **not** have to modify the Skill.h and Skills.cpp files which were supplied.

Employee.txt

This file contains a list of employees in a company. Each line of data begins with an employee's name followed by a number representing the amount of skills that the employee has. Suppose this number is 3. The remainder of the line contains 3 pairs of data, the name of the skill and the number of years the employee has this skill.

The number of employees is unknown beforehand but the last line of data contains "END" for the employee's name. Here are two sample lines in the data file:

```
Harry  3     Programming 10     Database_Administration 5 Project_Management 3
Sally  2     Networking 10       Website_Development 20
```

The data file will be updated and posted on myElearning closer to the deadline date of the assignment.

Program Description

Write a program that displays a menu with the following options:

```
1.    Read data from Employee.txt
2.    Find the list of skills of an employee
3.    Find the employees who have a certain skill
4.    Add a skill to an employee
5.    Save data to Employee.txt
6.    Quit
```

Option 1

Your program must read the data from the Employee.txt file and store it in memory. The name of the employee should be stored in an array in ascending order and a linked list of skills created (as in Lab 3). The top of the linked list is stored in the array with the employee's name.

Option 2

The user must specify the name of the employee. If the employee is found, the list of skills of that employee must be displayed on the monitor. If the employee is not found, an appropriate message should be displayed. Binary search should be used to find the employee.

Option 3

The user must specify the name of a skill. Each employee is checked to find out if he/she has the skill specified. If so, the name of the employee is displayed.

Option 4

The user must specify the name of the employee. If the employee is found, a skill name and the number of years the employee has this skill must be entered by the user. The skill must be added to the top of the linked list of skills for that employee. If the employee is not found, an appropriate message should be displayed. Binary search should be used to find the employee.

Option 5

The data in memory (both from the array and from the linked list of each employee) must be stored in the Employee.txt file (the existing file must be overwritten) according to the specifications for the file.

Option 6

The program terminates with no further input from the user.

What to Submit

Submit Assignment1.dev, Employee.cpp, Skill.h, Skill.cpp, and Employee.txt together with your signed Plagiarism Declaration Form. If you made changes to Skill.h and Skill.cpp, you must say so at the top of Employee.cpp.