Advanced Procedural Programming Assignment
Due Date: Sunday 26th April 2015
Worth 60%

This assignment will focus on the manipulation of linear linked lists using dynamic storage allocation. Each section of the assignment should be structured within its own function, passing parameters as necessary.

You are to write a C program that will allow you to retrieve, add, delete, update and manipulate an employee database.

The database is password protected and only the correct username and password details will allow the user to gain access to the Employee Menu.

The username and password (6 characters in length) will be stored in a login structure which is read in from a login file which holds three login records. Ensure that when the user enters in the password that it cannot be seen on the screen. (It only shows an * for each character. E.g. ******)

For each employee, you will store the following details in an employee structure:
- Employee ID (must be unique)
- Employee Name
- Employee Address
- Department
- Date of Joining (day/month/year)
- Annual Salary
- Email Address (must contain an @, a full stop and a .com)

Your program should provide an Employee menu as follows:
1) Add employee
2) Display employee details
3) Update employee
4) Delete employee
5) Display all employees by department
6) Employee Report

Add Employee: This will add a new employee at the correct position based on their ID number in your sorted linked list. The ID number must be unique.

Display Employee Details: Allow the user to input either an Employee ID or a name and display the details for that employee.

Update Employee Details: Allows the user to update the address, department or annual salary of an employee based on either a name or ID being entered.

Delete Employee: Allows the user to delete an employee from the list by ID number or name.

Display all employees: Display all employees by department.

Employee Report: Display an employee report which outputs the following information per department. This report should also be written out to a file for future reading.

- Department Name
- Number of employees
- Total Salary per annum
- Total Bonuses – this is paid to all employees based on their annual salary and is calculated as follows:
  - 5% - for all employees employed greater than 10 years
  - 4% - for all employees employed between 5 and 10 years
  - 3% for employees of less than 5 years
- Total Financial Outlay per annum for that department

Validation:

Your program should perform validation on all menu inputs and pay special attention to the following:

- The ID of a new employee does not exist already in the list.
- In Date of Joining, the date must be valid. (30 days in Sept etc…)
- The email address contains the following: @, . and .com.

Notes:

- Comments expected.
- The reuse of code through functions is expected.
- You should create and populate a login file with sample data to allow successful validation of user credentials which you will then read in to your login linked list.
- You should create an input file Employees.txt which holds some sample employee records and this file should be updated when the user terminates the program.
- Ensure that any files that are needed to run the program are included in your submission.
- Use of onscreen messages to inform the user is expected.
- Your code has to run. Serious deduction of marks will occur for code that is not running correctly.
- Plagiarism is not acceptable. You may be asked to explain your code.