EGRE 246 Advanced Engineering Programming Using C++
Homework #4 – Linked Lists

<u>This homework must be your own (individual) work as defined in the course syllabus and discussed in class.</u>

This homework is an extension to homework 3 and will ask you to implement an additional menu option. Option 6 should give you the possibility to add a new rainfall entry into the (none-) existing linked list. If an entry already exists for the given month and year than the rainfall should be added to the existing entry.

In homework 3 you would have to exit the program if initially 0 months were entered for the first question. In homework 4 you have the option to add individual entries and thus when 0 months is entered the menu should be displayed as shown in the screenshot below.

```
How many months of rainfall should be entered: 0
Enter option:
        (0) - Exit
        (1) - Find highest monthly rainfall
        (2) - Find lowest monthly rainfall
        (3) - Calculate total average rainfall
        (4) - Display all rainfall data
        (5) - Change rainfall entry
        (6) - Add rainfall entry
        Choice? 6
Year of entry to be added: 2015
Month of entry to be added: 4
Rainfall in inches: 2.3
Enter option:
        (0) - Exit
        (1) - Find highest monthly rainfall
```

The following test-case can be used for testing your program but it should not be limited to only this test-case:
1. Start your program and input 0 months as in the above screenshot.
2. Select option 6 and input: year = 2015, month = 4, rainfall = 2.3
3. Select option 6 and input: year = 2015, month = 2, rainfall = 1.2
4. Select option 6 and input: year = 2015, month = 3, rainfall = 6.3
5. Select option 6 and input: year = 2016, month = 1, rainfall = 1.9
6. Select option 6 and input: year = 2014, month = 12, rainfall = 3.4
7. Select option 6 and input: year = 2015, month = 3, rainfall = 1.0

If you followed the above described test-case and you choose option 4 in the menu your program should output the following:

```
        Choice? 4
Year 2014, month 12, rainfall in inches: 3.40
Year 2015, month 2, rainfall in inches: 1.20
Year 2015, month 3, rainfall in inches: 7.30
Year 2015, month 4, rainfall in inches: 2.30
Year 2016, month 1, rainfall in inches: 1.90
Enter option:
```

For this homework you are given a header file called "rainfall.h", as a requirement for this homework you will have to use the structure "monthly_rainfall" as the basis for your linked list. You are also required to implement all the function prototypes in the header file that supports the menu functionality. You cannot change/alter "rainfall.h" and your implemented functions should look exactly like the function prototypes.

For this homework you should submit:
1. main.c – with the main() function
2. rainfall.c – with the implemented functions
3. rainfall.h – given to you, but submit this file so a complete project directory is created.
4. Makefile – a file that compiles your project.

Remember the class policy on late submissions – no late submissions are allowed unless prior arrangement is made with the instructor.