**C Language Programming: Homework #5**
**Assigned on 11/14/2017(Tuesday), Due on 11/21/2017(Tuesday)**

This assignment alllows you to practice passing 2-D arrays into a function by doing matrix operations. You are required to do the following:

1. Using the format *Add* or *Multiplication*(*float R*[][*N*], *float M1*[][*N*], float *M2*[][*N*]) to perform Add and Multiplication operations.
2. Put all these codes in one file and use *switch statement* and *command argument list*, *main(int argc and char *argv[])* to (1) select *N* (*N*×*N* matrix), (2) select function (Add or Multiplication) and (3) select if the matrices *M1* and *M2* are randomly generated by random number generator or input from keyborad.
3. The input and result should be output to a file

# Requirement:

(1) Read *N* from **argv[1]**, *M1 M2 and result matrix* will be *N x N*.

(2) Select function from **argv[2]**. “ 0 ” for *Add* ; “ 1 ” for *Multiplication*.

(3) Select if the matrices *M1* and *M2* are randomly generated by random number generator or input by keyboard from **argv[3]**. “ 0 ” for random ; “ 1 ” for keyboard.

(4) Please output the 2 original Matrices *M1, M2 and result matrix* to a file name “*output*”.

# Example:

> ./hw5 5 0 0

(use random number to create 5 x 5 matrices *M1 and M2*, perform *Add* operation and output the original matrices and result matrix to file “*output*”. )

> ./hw5 2 1 1

1 2

3 4

5 6

7 8

(read number from keyboard to create 5 x 5 matrices M1 and M2, perform *Multiplication* operation and output the original matrices and result matrix to file “*output*”.)

# Hint:

https://en.wikipedia.org/wiki/Matrix_addition

https://en.wikipedia.org/wiki/Matrix_multiplication

C Library <stdlib.h>

# Command line:

./hw5 [N] [0 or 1] [0 or 1]

# Output:

A file named “output” which include results.

(Note: **Don’t** print any **unnecessary** message to output file, thank you.)

for example:

```
>   ./hw5   2    0    0
1   2
3   4

5   6
7   8
```

content in “output” will be

```
>   cat output
1   2
3   4

5   6
7   8

6   8
10  12
```

# Score:

*switch statement* and *command argument list*: 10%

*Add* and *Multiplication* operations: 50%

Requirement (1), (2), (3): 20%

File I/O and File Format: 10%

Report: 10%