Homework #9

(Due date: 23 November 2023)

Objective :

Learn how to use **array** and combine with **for** and **while loops** to implement some operations.

9.1

Write a program to use the rand() function to generate two two-dimensional arrays of size 3*3, then output these matrices and implement addition and subtraction operations.

Hint: random between 0 ~ 100.

```c
#include<stdio.h>
#include<stdlib.h>
#include<time.h>

int main(){

    srand(time(NULL));
    //隨機生成一個介於0到9之間的數字
    int randnum = rand() % 10;

```

Output:

```
a.
[0][0] = 32, [0][1] = 83, [0][2] = 88,
[1][0] = 91, [1][1] = 37, [1][2] = 96,
[2][0] = 39, [2][1] = 18, [2][2] =  0,
b.
[0][0] = 51, [0][1] = 15, [0][2] = 94,
[1][0] = 10, [1][1] = 22, [1][2] = 54,
[2][0] = 48, [2][1] = 88, [2][2] = 12,
add.
[0][0] = 83, [0][1] = 98, [0][2] = 182,
[1][0] = 101, [1][1] = 59, [1][2] = 150,
[2][0] = 87, [2][1] = 106, [2][2] = 12,
sub.
[0][0] = -19, [0][1] = 68, [0][2] = -6,
[1][0] = 81, [1][1] = 15, [1][2] = 42,
[2][0] = -9, [2][1] = -70, [2][2] = -12,
multi.
[0][0] = 6686, [0][1] = 10050, [0][2] = 8546,
[1][0] = 9619, [1][1] = 10627, [1][2] = 11704,
[2][0] = 2169, [2][1] = 981, [2][2] = 4638,
```

9.2

Write a program let the user to input two numbers as the lengths of the two arrays, randomly fill in numbers in the range of 0 to 20, and then perform bubble sort on the first array and insertion sort on the second array. Finally, merge these arrays and output the sorted results.

Input:
7 12

Output :

```
Frist array length:
7

Second array length:
12
First array:[ 5 0 19 3 2 17 20 ]
After bubble sort:[ 0 2 3 5 17 19 20 ]
Second array:[ 16 18 14 8 8 0 1 20 20 11 20 9 ]
After insertion sort:[ 0 1 8 8 9 11 14 16 18 20 20 20 ]
After merge and sorting:[ 0 0 1 2 3 5 8 8 9 11 14 16 17 18 19 20 20 20 20 ]
```

Please note:: users of visual studio add the following code to your program's beginning

```
2    #pragma warning(disable:4996)
```

繳交格式及規定 ：

程式重點地方請加註解,給分也會酌量參考註解。

請繳交 .c 檔即可。

c 檔的檔名一律統一,以學號為檔名壓縮成一個以學號為名的壓縮檔

上傳,

上傳請一律繳交壓縮檔。

Example:

若學號為 B123456789, 則.c/.cpp 檔名為 B123456789.c ,

而壓縮檔名為 B123456789.rar。

繳交期限 2023.11.09 (四) 09:00 分之前,逾期一律不收,

無輸入輸出及逾期者一律以 0 分計算。

作業請上傳中山網路大學 網大上傳方式:

1. 點選要繳交的作業,選擇「進行作業」。

2. 依照流程上傳檔案。