

# Homework #10

Due date: 23:59, January 13<sup>th</sup>, Friday, 2017

## Problem statement

- PM2.5 is now a very serious issue. Attachment is a csv file named PM2.5.csv from open data. Please write a program to read the file and sort the **site name** from A to Z. We suggest you to access the data in **struct** format, and output the csv file named **outcomeSingle.csv**. (50%)

### PM2.5.csv

	A	B	C	D	E	F
1	Site Name	MonitorMate	Concentration	Item Unit		
2	Makung	2015/12 / 5	15	$\mu\text{g} / \text{m}^3$		
3	Kinmen	2015/12 / 5	29	$\mu\text{g} / \text{m}^3$		
4	Matsu	2015/12 / 5	17	$\mu\text{g} / \text{m}^3$		
5	Yilan	2015/12 / 5	11	$\mu\text{g} / \text{m}^3$		
6	Yangming	2015/12 / 5	4	$\mu\text{g} / \text{m}^3$		
7	Hualien	2015/12 / 5	11	$\mu\text{g} / \text{m}^3$		
8	Taitung	2015/12 / 5	7	$\mu\text{g} / \text{m}^3$		
9	Hengchun	2015/12 / 5	6	$\mu\text{g} / \text{m}^3$		
10	Pingtung	2015/12 / 5	54	$\mu\text{g} / \text{m}^3$		
11	Before gold	2015/12 / 5	45	$\mu\text{g} / \text{m}^3$		
12	Mino	2015/12 / 5	47	$\mu\text{g} / \text{m}^3$		
13	Tainan	2015/12 / 5	39	$\mu\text{g} / \text{m}^3$		
14	New Camp	2015/12 / 5	43	$\mu\text{g} / \text{m}^3$		
15	Chiayi	2015/12 / 5	51	$\mu\text{g} / \text{m}^3$		
16	Putz	2015/12 / 5	37	$\mu\text{g} / \text{m}^3$		
17	Beidun	2015/12 / 5	51	$\mu\text{g} / \text{m}^3$		

### outcomeSingle.csv

H14							
	A	B	C	D	E	F	G
1	Site Name	MonitorMate	Concentration	Item Unit			
2	Bamboo Dong	2015/12 / 5	16	$\mu\text{g} / \text{m}^3$			
3	Bamboo Dong	2015/12 / 2	17	$\mu\text{g} / \text{m}^3$			
4	Bamboo Dong	2015/11 / 29	19	$\mu\text{g} / \text{m}^3$			
5	Bamboo Dong	2015/11 / 26	12	$\mu\text{g} / \text{m}^3$			
6	Bamboo Dong	2015/11 / 23	10	$\mu\text{g} / \text{m}^3$			
7	Bamboo Dong	2015/11 / 20	10	$\mu\text{g} / \text{m}^3$			
8	Bamboo Dong	2015/11 / 17	27	$\mu\text{g} / \text{m}^3$			
9	Bamboo Dong	2015/11 / 14	18	$\mu\text{g} / \text{m}^3$			

2. Sort **Concentration** from max to min under the condition of question 1. Output the file names **outcomePair.csv**. (30%)

**outcomePair.csv**

	A	B	C	D	E	F
1	Site Name	MonitorMate	Concentration	Item Unit		
2	Bamboo Dong	2015/11 / 5	38	$\mu\text{g} / \text{m}^3$		
3	Bamboo Dong	2015/9 / 21	38	$\mu\text{g} / \text{m}^3$		
4	Bamboo Dong	2015/11 / 8	36	$\mu\text{g} / \text{m}^3$		
5	Bamboo Dong	2015/10 / 27	34	$\mu\text{g} / \text{m}^3$		
6	Bamboo Dong	2015/11 / 17	27	$\mu\text{g} / \text{m}^3$		
7	Bamboo Dong	2015/10 / 3	23	$\mu\text{g} / \text{m}^3$		
8	Bamboo Dong	2015/10 / 12	22	$\mu\text{g} / \text{m}^3$		
9	Bamboo Dong	2015/10 / 30	21	$\mu\text{g} / \text{m}^3$		
10	Bamboo Dong	2015/9 / 24	21	$\mu\text{g} / \text{m}^3$		
11	Bamboo Dong	2015/11 / 29	19	$\mu\text{g} / \text{m}^3$		
12	Bamboo Dong	2015/9 / 18	19	$\mu\text{g} / \text{m}^3$		
13	Bamboo Dong	2015/11 / 14	18	$\mu\text{g} / \text{m}^3$		

3. Let the user enter a **concentration threshold**, and print out all records which their concentrations are **greater than or equal to** the threshold in the same order with question 2 and print the row count at the end. (20%)

```
C:\Users\Enyu\Documents\TA\Introduction to Computers and Programming\Hw10\Hw10.exe
Enter an integer n as a threshold : 25
```

```
C:\Users\Enyu\Documents\TA\Introduction to Computers and Programming\Hw10\Hw10.exe
```

```
Taoyuan, 2015/10 / 12,26,  $\mu\text{g} / \text{m}^3$ 
Wanhua, 2015/11 / 8,41,  $\mu\text{g} / \text{m}^3$ 
Wanhua, 2015/10 / 27,28,  $\mu\text{g} / \text{m}^3$ 
Wanhua, 2015/10 / 12,28,  $\mu\text{g} / \text{m}^3$ 
Wanhua, 2015/9 / 27,27,  $\mu\text{g} / \text{m}^3$ 
Wanhua, 2015/9 / 24,25,  $\mu\text{g} / \text{m}^3$ 
Yangming, 2015/11 / 8,29,  $\mu\text{g} / \text{m}^3$ 
Yangming, 2015/10 / 12,26,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/11 / 8,74,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/10 / 21,54,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/11 / 5,52,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/10 / 6,49,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/10 / 27,46,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/11 / 29,43,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/11 / 17,38,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/10 / 3,37,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/9 / 21,36,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/11 / 14,32,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/10 / 30,31,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/9 / 24,29,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/11 / 20,29,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/9 / 15,28,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/12 / 2,27,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/9 / 12,26,  $\mu\text{g} / \text{m}^3$ 
Zhongming, 2015/12 / 5,26,  $\mu\text{g} / \text{m}^3$ 
327 warning data in total.
```

```
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Process exited after 35.52 seconds with return value 0
請按任意鍵繼續 . . .
```

## Requirements

1. Properly comment your codes.
2. We suggest you to access the data in **struct** format.  
You have to output two files in total (**outcomeSingle.csv** and **outcomePair.csv**), and let the user enter a concentration threshold then display the results.
3. **There will be no demo for this homework**, and you score will be judged by the results of your program.

## Submission

Be sure to upload your source code to E3 by the due date and name your file as **"Hw10\_XXXXXXX.c"**, where **XXXXXXX** is your student ID. **You don't need to hand in the csv files.**

## Hint

You can use linked-list to implement the code.