

Ex1:

Before the semester is opening, the school will hold a health examination for every freshmen to check their body health. And doctors will analyze the data to know the student's health condition. Please design a program to help the doctors analyze easilier, the data will include student's name, sex, height, weight, blood pressure and blood lipids (血脂) from the file

“patients_data.txt”, and you need to store the information in a structure array, and according the input from keyboard input to print out the patients' informations.

The structure contains a string and a boolean for sex (True is female, False is male), a floating point array with the size of 4 for other informations. The program should be able to do the following:

Input an integer, which is the size of the array.

Read the information from the file (same sequence as above).

Input an integer being 0, 1, 2, which represents choosing male, female, or all, respectively.

Input an integer being 0, 1, 2, or 3, which represents choosing height, weight, blood pressure, or blood lipids, respectively.

Input two numbers, find the patients with the chosen attribute between two input numbers (lower bound first, and the range without boundary), and print their names and its attribute.

```
please input the size of data.
4
please input which sex we want to select.
1
please input which attribute we want to choose.
0
please input the range of concern.
150 160
Maria_Curie 1 155.600000 40.300000 90.700000 75.300000
-----
please input the size of data.
8
please input which sex we want to select.
2
please input which attribute we want to choose.
0
please input the range of concern.
150 160
Maria_Curie 1 155.600000 40.300000 90.700000 75.300000
Jolin_Tsai 1 158.900000 41.300000 84.600000 91.600000
```

EX2:

You are given a sequence $\{a_k\}_1^n$ consisting of integers from 1 to n.

(You may store it as an integer array from index 0 to n-1.)

The sequence may contain duplicates (i.e. some elements can be equal).

Find the number of tuples of 3 elements such that the maximum number in the tuple differs from the minimum by no more than 2.

Formally, you need to find the number of triples of indices $i < j < z$ such that

$$\max(a_i, a_j, a_z) - \min(a_i, a_j, a_z) \leq 2$$

For example, if $n=4$ and $a=[1,2,4,3]$, then there are two such triples

($i=1, j=2, z=4$ and $i=2, j=3, z=4$). If $n=4$ and $a=[1,1,1,1]$, then all four possible

triples are suitable. Moreover, if $n=10$ and $a=[5, 6, 1, 3, 2, 9, 8, 1, 2, 4]$, then there are 15 such triples.

Input : You need to read 200 integers from file “p5.txt”

Note that you may try the example above to debug.

p5 - 記事本

檔案(F) 編輯(E) 格式(O) 檢視(V) 說明

```
106 184 95 110 137 190 58 129 155 64
120 157 16 174 129 128 128 121 12 50
170 181 191 4 89 87 101 86 39 100
171 120 198 36 136 79 83 82 56 167
188 20 184 87 164 121 29 10 9 56
89 131 63 160 80 105 136 120 166 54
13 132 192 18 191 106 137 129 173 109
26 126 55 42 7 64 15 140 152 161
39 134 176 149 51 14 56 27 87 74
105 132 103 111 189 32 30 65 113 198
91 26 106 144 47 118 103 153 116 172
21 19 140 115 36 148 183 26 174 73
175 181 113 107 183 120 185 1 56 67
3 35 57 194 4 173 134 117 79 22
128 118 135 54 13 6 93 81 152 31
55 73 52 117 20 189 151 165 179 18
175 42 54 67 55 17 66 82 154 62
126 111 88 173 167 113 46 18 93 32
181 146 28 25 54 111 107 85 21 84
29 152 3 52 150 48 45 35 184 156
```

Output : The number of Close Tuples

C:\Users\user\source\repos\Close Tuples\Debug\Close Tuples.exe

The number of Close Tuples is 697請按任意鍵繼續 . . .