Department of Computer Engineering

CENG104 – Computer Programming II

Spring 2017 - 2018

Lab Guide #1/B – Week 2

OBJECTIVE : General review of CENG103 subjects
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Q1.

In the **input.txt** file, you can find records about annual weather: temperature averages of some provinces in Turkey acquired during the years 2012 – 2013 – 2014 – 2015 – 2016 respectively.
Each line's very first two digits are denoting the location (province code number), e.g. 06 denotes the capital ANKARA, 07 denotes the vocational province ANTALYA, 34 denotes the wonderful ISTANBUL, and 35 denotes the city of IZMIR (a.k.a the pearl of Aegean).

NOTE THAT: The province code numbers are always two digits. If the code number is lower than 10, then it must be shown with a leading 0 (zero). For instance; the city of ANKARA's code number is 06, not 6!

Write a program that should store these code numbers in a one-dimensional array and the averages into a two-dimensional array, which should be parallel to the code numbers array. From these two arrays, to find;

- The average highest degree therewithal its year, and the corresponding province code.
- The overall sums of every single province.

And store these provinces' result findings to a text file named **output.txt** as seen exactly in the below demonstration of the output.txt.
To do so, you will need below functions;

- **readFile** that takes a file pointer and two arrays (1D and 2D), then, reads the file contents to store them into the necessary arrays of id and results.
- **findHighestDegree** is supposed to take a two-dim array and pointers as references of some variables, then, it returns row and column subscript numbers of the highest integer value among the array elements.
- **findTotals** takes two arrays (1D and 2D) and the sum of two-dim array's each row is supposed to be stored into a one-dim array in order.
- **printToFile** that helps us to write down City and Total average degrees during the following 5 years as it is seen below. Thus, it takes two parallel one-dim arrays, and a file pointer to write their content to a file.

input.txt

```
07 25 28 19 26 22
34 13 11 7 15 10
06 10 14 9 18 13
35 22 25 16 23 19
```

Province codes

Years: 2012-2013-2014-2015-2016 respectively

output.txt

```
Average highest degree is: 28
Year: 2013
City: 07

City  Total
07    120
34    56
06    64
35    105
```

Project_name: Lab1_Q1
File_name: question1.cpp

Q2. (USE ONLY POINTER NOTATION)

Write a C program that will initialize an one-dimensional integer array (size 10) with the numbers like 10, 20, 30,... The program should also give an output to the text file <result.txt> as given below.

Example Run:

```
Please see the <result.txt> file for the output
```

Content of the result.txt file

```
Element Name  Value  Address
------------  -----  --------
*(nums + 0)      10  00B8FAEC
*(nums + 1)      20  00B8FAF0
*(nums + 2)      30  00B8FAF4
*(nums + 3)      40  00B8FAF8
*(nums + 4)      50  00B8FAFC
*(nums + 5)      60  00B8FB00
*(nums + 6)      70  00B8FB04
*(nums + 7)      80  00B8FB08
*(nums + 8)      90  00B8FB0C
*(nums + 9)     100  00B8FB10
```

Project Name: LabGuide1_2
File Name: Question_2.cpp