



CS103-Computer Programming 2  
2<sup>nd</sup> Semester, 2023-2024

Programming Exercise 5  
( Pointers )

Write a program that sorts a set of strings based on their length (lexicographic order), i.e. from the shortest to the longest length string. Strings of equal lengths are then ordered alphabetically. The case of the letters in each string should not matter so all letters in the strings should be converted to the same cases first before sorting, i.e. either all are in lowercase or all are in uppercase. It is also assumed that each string will contain only letters. Output on the screen the sorted strings together with their lengths and addresses.

The input and output files must be specified by the user as command line arguments passed in to the `main()` function when the program is invoked. The first value that will be read from an input file will represent the number of strings and it will be followed by the strings to be sorted. The sorted strings together with their lengths and addresses should be displayed on the screen and written in the specified output file.

**Implement the set of strings as an array of pointers** and define the functions that will perform the sorting and conversion of cases. These functions should include the array of pointers as one of its parameters. You must also **use pointer offset notations** in manipulating the strings/arrays.

**Sample run of the program:**

( `strings.txt` and `sorted.txt` are just examples of input and output file. User may input any filename for input and output files)

`$ ./pe6.exe strings.txt sorted.txt`

**Sample content of "strings.txt"**

```
10
Variable
Computer
Science
student
Programming
char
ARRAY
int
function
String
```

**Sample output on the screen and output file "sorted.txt"**

STRING	MEMORY ADDRESS	LENGTH
int	0x2437	3
char	0x2440	4
array	0x2532	5
string	0x2236	6
science	0x3673	7
student	0x2890	7
computer	0x4562	8
function	0x2890	8
variable	0x7653	8
programming	0x2923	11