**Generic QuickSort Program ReadMe File**

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Assignment 1

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**Assignment**:

Writing a program to sort different kinds of values (Generic programming: <https://he.wikipedia.org/wiki/%D7%AA%D7%9B%D7%A0%D7%95%D7%AA_%D7%92%D7%A0%D7%A8%D7%99>) – integer, string according to QuickSort sorting method.

for more details on the method QuickSort please go to:

<https://he.wikipedia.org/wiki/%D7%9E%D7%99%D7%95%D7%9F_%D7%9E%D7%94%D7%99%D7%A8>

The way of sorting in this program were written GENERIC (<https://he.wikipedia.org/wiki/%D7%AA%D7%9B%D7%A0%D7%95%D7%AA_%D7%92%D7%A0%D7%A8%D7%99>) so the program would be more efficient.

**Main Goals:**

Write generic QuickSort.

Write a ReadMe file that explains how the program works.

**Package:**

Hagay\_Elihai\_Exe1

**Classes:**

QuickSort – the main is included in this class.

**Classes Explanation:**

The class QuickSort contains 4 methods:

1. **main** – the main method who runs and control all the operation and the interactive discussion with the user.
2. **printArr** – A generic method that prints the sorted array.
3. **printMenu** – A method that prints the menu of the choices of sorting the array (do – while loop).
4. **qsort** – this is a recursive method, who runs according to quicksort algorithm, it gets a pivot and divide the array to 2 half's and runs it again in a recursive until the array has 1 element in it. When the array is for 2 elements it does a comparison and swap if needed.

**Running the program:**

Need to run the class "QuickSort" (the main is in there). Than the program will start to run.

After running the program you will have the menu – enter the kind of array that you want to sort in a digit between 1-4, or enter 0 to exit the program. The first 4 options are arrays from the system:

1. Sort **system** Integer array.

2. Sort **system** String array.

3. Insert your own Integer array quick sort.

4. Insert your own String array quick sort – **Note**: after every string you entered you need to press enter. the array will be sorted after we entered all the strings (you can also insert a string with several words and after you push the enter button, the system will count this as 1 string).

0. Exit – end the program.

The **1 - 2** options is to run an example from the system.

The **3 - 4** options is an interactive programs according the variables – first you choose the kind of the array that you want to enter and sort, then youhave to insert the array length and after that you will insert the elements you want to sort.

The **0** option is to EXIT the program completely.

**In every option** you choose (between 1-4), you will see **2** outputs:

1 – the array **before** sorting.

2 – the array **after** sorting.

**Algorithms:**

Quick sort algorithm.

**Note:** the program sort according to ASCII table (<https://sites.google.com/a/ulpanit.ort.org.il/cyber/_/rsrc/1392111840040/ascii/ascii.gif>). So upper letters comes before lower letters (e.g.: "E" come before "h")

For more information about ASCII table:

<https://he.wikipedia.org/wiki/ASCII#%D7%98%D7%91%D7%9C%D7%AA_ASCII>