

CS 340
Assignment 3 - Programming Part
Total: 34pts
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The goal here is a comparative experimental study, in terms of running time, of the following 4 sorting algorithms.

- Insertion sort
 - Mergesort
 - Quicksort
 - Quicksort as shown in exercise ?? above (we will call this algorithm Quick-insertion)
1. Implement the 4 algorithms above within the same program. The input and output are described as follows.
Input: 2 parameters N (number of random naturals to sort) and K (used by Quick-insertion).
Output: Display the list of N randomly generated naturals. For each algorithm display the list of sorted numbers + corresponding running time.
 2. Find the pair of values (N, K) where :
 - (a) Quick-insertion outperforms all the other algorithms.
 - (b) Insertion sort outperforms all the other algorithms.
 - (c) Quicksort outperforms all the other algorithms.

Marking scheme

1. Readability : 4pts
2. Compiling and execution process : 5pts
3. Correctness : 25pts

Hand in

Using UR Courses, submit all source files in one single zip file named: **assign3username.zip**. Your source files should include the following:

1. README file listing your name and ID #, and the compiling and execution commands of your program on Hercules/Titan. Any requirement regarding the input format should also be listed.
2. A screenshot showing your command line for execution and the execution results for different examples.
3. headers (.h)
4. implementations (.cpp)
5. the Makefile :
 - should be named "**makefile**". In the makefile, the generated executable should be named : "**assign3username**"

You can give any name to your source files. The marker will run "**make**" to compile your program and "**assign3username**" to execute it.