Subject:

TC4002 - Analysis, Design and Construction of Software Systems

Professor:

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L5.1 - Development Exercises

Student:

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For this assignment, we were requested to implement a couple of sorting algorithms and as bonus task to print their stats. Number of records, the time consumed in order to sort the list, start time, end time and the name of the used algorithm. A couple of learned lessons here, at least for me, are, in order to ease the test process, functions should focus in perform only one thing and only one thing. Input data should be passed as arguments rather generated inside them. Is a great practice to think how you will test your program before start coding.

Upon the results that I obtained, I conclude that the best algorithm is **quick sort** followed by **merge, heap** and **bubble sort**, in that order.
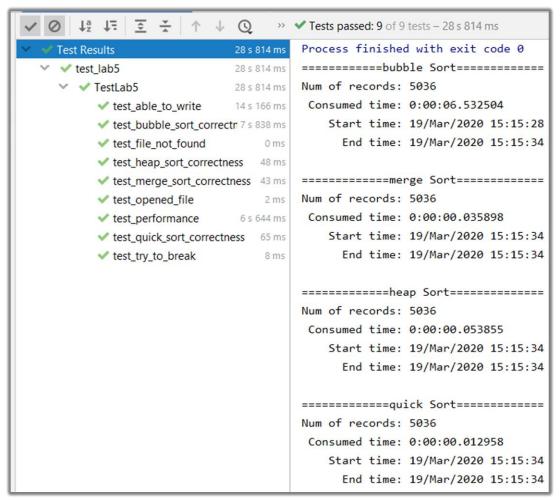

Figure 1 – Performed tests and output

```
C:\Users\jucorral\Documents\personal\Master\TC4002_analisisDiseñoYConstruccionDel
Software\Development Exercises\lab5>coverage run --source=. -m unittest discover
......=============bubble Sort=============
Num of records: 5036
 Consumed time: 0:00:58.292188
     Start time: 19/Mar/2020 01:41:51
       End time: 19/Mar/2020 01:42:49

=============merge Sort=============
Num of records: 5036
 Consumed time: 0:00:00.423897
     Start time: 19/Mar/2020 01:42:49
       End time: 19/Mar/2020 01:42:50

=============heap Sort=============
Num of records: 5036
 Consumed time: 0:00:00.845282
     Start time: 19/Mar/2020 01:42:50
       End time: 19/Mar/2020 01:42:51

=============quick Sort=============
Num of records: 5036
 Consumed time: 0:00:00.214426
     Start time: 19/Mar/2020 01:42:51
       End time: 19/Mar/2020 01:42:51

...
----------------------------------------------------------------------
Ran 9 tests in 182.747s

OK

C:\Users\jucorral\Documents\personal\Master\TC4002_analisisDiseñoYConstruccionDel
Software\Development Exercises\lab5>coverage report
Name           Stmts   Miss  Cover
----------------------------------
lab5.py          109      0   100%
test_lab5.py      62      0   100%
----------------------------------
TOTAL            171      0   100%

C:\Users\jucorral\Documents\personal\Master\TC4002_analisisDiseñoYConstruccionDel
Software\Development Exercises\lab5>coverage html

C:\Users\jucorral\Documents\personal\Master\TC4002_analisisDiseñoYConstruccionDel
Software\Development Exercises\lab5>
```

Figure 2 – Coverage run