| Algorithmics | Student information | Date | Number of session |
|---|---|---|---|
| | UO: 283428 | | 0 |
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Escuela de Ingeniería Informática
Universidad de Oviedo

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# Activity 1. Power of the CPUs

1. Write down the processor model and the system memory.

Intel(R) Core(TM) i7-1065G7 CPU @ 1.30GHz  1.50 GHz

16,0 GB (15,6 GB usable)

2. Find and take note of the average index of integer and float operations per unit of time.

Memory 66.3

1-core 112

2-core 207

3. Write down the time it took to execute.

288 milis, 276 milis, 268 milis.

The mean is 277.33.

4. The approximate index of integer and float operations performed by the program.

277.33 * 112 = 31,060.96 operations performed.

5. Extend the table with data from other computers to which you have Access.

| # | CPU | Milliseconds | SC Mix (avg.) | Operations (aprox.) |
|---|---|---|---|---|
| 1. | i7-4500U | 285 | 85.7 | 24424.5 |
| 2. | i3-3220 | 267 | 91.4 | 24403.8 |
| 3. | i5-4590 | 219 | 106 | 23214 |
| 4. | i7-4790 | 207 | 115 | 23805 |
| 5. | Intel Pentium Gold G5400 | 215 | 112 | 24080 |
| 6. | i7-1065G7 | 277.33 | 112 | 31060.96 |

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| | | | | |
|---|---|---|---|---|
| 7. | i7-3770 | 240 | 108 | 25920 |

6. Do you think you could mix values from different CPUs in the same analytical study of the execution times of an algorithm?

It depends on the model of the CPU.

For example, it is easily seen that an i7 has better performance than an i3 within the same generation (3rd). I7 has a SC Mix of 108 and i3 a 91.4, therefore the execution is faster on the i7 (240) than on the i3(267).

However, when the performance is not the most important feature, such us in a laptop's CPU, it can be harder to differentiate the CPU by its performance. The Intel Pentium Gold G5400 has the same SC Mix as the i7-1065G7 and it performs better than the i7.

# Activity 2. Influence of the operating system

Measurements (Means)

High performance: 278.8

Balanced: 284.2

Economizer: 451

CPU burn

High performance: 451

Economizer: 621

Measurements taken on: Intel(R) Core(TM) i7-1065G7 CPU @ 1.30GHz  1.50 GHz

16,0 GB (15,6 GB usable)

1. Which energy plan do you think is the most appropriate for making measurements?

Taking measurements in other energy plan than "High performance" will lead to poor performance, long response times and lower CPU usage.

2. If you had to perform a very long experiment, could you use the computer to, for example, watch a YouTube video in the meantime?

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As seen in the measurements taken while the CPU burn process was executed, multitasking can severely affect the performance of the CPU. It is important to consider that a high CPU usage leads to high temperatures that affects the speed of the CPU.

3. Do you think it is convenient to make several measurements simultaneously on the same computer?

Taking several measurements simultaneously doesn't represent how a program would be executed by itself, the usage of shared resources will have an impact on the processes.
In order to get more reliable measurements we must ensure that the least amount of simultaneous processes are carried out by the system.