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Algorithmics

LAB I-3

Activity 1: Power of the CPUs

Task 1:

1. **Write down the processor model and the system memory.**
    Processor model: Intel® Core(TM) i7-2820QM CPU @ 2.30GHz 2.30GHz
    System memory: 16,0 GB
2. **Find and take note of the average index of integer and float operations per unit of time (SC Mix Avg) performed by your processor model.**
    SC Mix Avg performed by my processor model is 91.5

Min	Avg	Max
47.5	Memory 79.3	89.9
15.8	1-Core 71.8	88.2
30	2-Core 136	171

    59.2% 95.5 Pts
3. **Write down the time it took to execute.**
    After running the Benchmarking program on Eclipse it took
    `TIME=413`
4. **Calculate the approximate index of integer and float operations performed by the program. To do this, we multiply the execution time by the SC Mix Avg value for that processor.**
    13 * 71,8 = 29653,4

Task 2:

1. **Record your results.**
2. **Extend the table with data from other computers to which you have access (for example, your own computer).**

 | # | CPU | milliseconds | SC Mix (avg) | Operatins (approx.) |
    |---|---|---|---|---|
    | 1 | i7-4500U | 285 | 71,5 | 20377,5 |
    | 2 | i3-3220 | 267 | 81,4 | 21733,8 |
    | 3 | i5-4590 | 219 | 100 | 21900 |
    | 4 | i7-4790 | 207 | 109 | 22563 |
    | 5 | Intel Pentium Gold G5400 | 215 | 103 | 22145 |
    | 6 | i7-2820QM | 413 | 71,8 | 29653,4 |
    | 7 | i7-6820HQ | 297 | 91,5 | 27175,5 |

    Conclusion: Looking at the results in milliseconds, do you think you could mix values from different CPUs in the same analytical study of the execution times of an algorithm? No, I dont think you can mix any kind of values from different CPUs as the SC Mix (average) of each one is different from one another. Therefore, the analytical study of the execution of times of a given algorithm would be wrong.
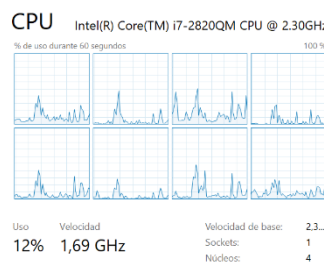
Activity 2: Influence of the operating system

Task 1:

1. **Open the Task Manager and go to the CPU tab.**
2. **Open the Windows power configuration: Control Panel\Hardware and sound \Energy options**
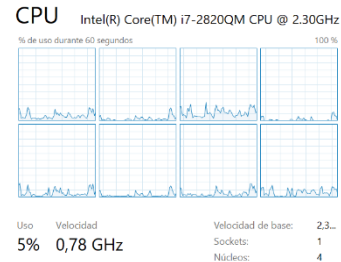3. **Change between the different plans: High performance, Balanced and Economizer. See how the CPU frequency varies.**
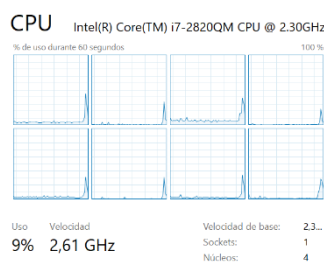
High performance: Balanced: Economizer:

Task 2:

Complete this task with the program Benchmarking1 from the previous activity.

• Sequential execution:

- o Economizer: time = 1550
- o Balanced: time =406
- o High performance: time= 388

• Parallel execution:

- o Economizer: time = 741
- o Balanced: time =787
- o High performance: time= 606

Conclusions:

1. **Which energy plan do you think is the most appropriate for making measurements?**
   High performance is the most appropiate one because the time i slower tan the rest.
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?**
   No, because the execution times would be higher while using the CPU to perform a long experiment and in order to watch a vide in YouTube the CPU is required to be used.

3. **Do you think it is convenient to make several measurements simultaneously on the same computer?**
No, I don´t think it is convenient because if you run them simultaneously, the measuements Will be affected since they share the same CPU.