Algorithmics	Student information	Date	Number of session
	UO: 284185	1/2/2022	0
	Surname: Fernandez-Catuxo Ortiz		
	Name: Rita		

Escuela de Ingeniería Informática Universidad de Oviedo

Universidad de Oviedo
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SESSION 0

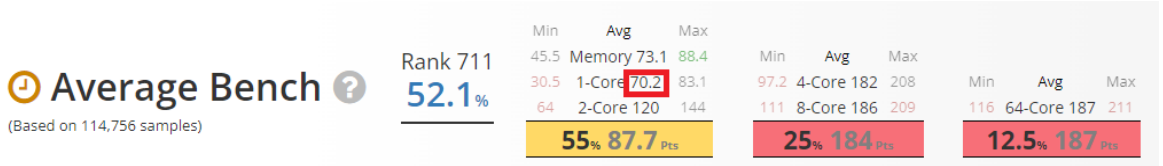
Activity 1. Power of the CPUs

Task 1

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

As we can see in the picture, the model of the processor of my personal computer is "Intel(R) Core(TM) i5-5200U", with a memory system of 2.20GHz.

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.**



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We search in the web page **http://cpu.userbenchmark.com/** for our processor model (Intel(R) Core(TM) i5-5200U) and, as a result, we get that the average index of integer and float operations per unit of time (SC Mix Avg) performed by my processor model is 70.2 (as marked in the picture with a red rectangle).

3. **Compile and run the Benchmarking1 program. Write down the time it took to execute.**

After compiling and running this program, the measured time is 421.

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

To calculate this operation we will multiply the execution time by the SC Mix Avg value (the one that we got in point 2). Then, the result is the following: 421* 70.2 = 29.554,2.

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Task 2

1. **Below is the complete table that has been provided to us in the PDF. I extended the table with my own computer and the one used in the laboratories.**

#	CPU	milliseconds	SC Mix (avg)	Operations (aprox.)
1.	i7-4500U	285	71,3	20320,5
2.	i3-3220	267	83,3	22241,1
3.	i5-4590	219	98,1	21483,9
4.	i7-4790	207	107	22149
5.	Intel Pentium Gold G5400 (lab computer)	215	104	22360
6.	i5-5200U (my computer)	421	70,2	29554,2

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

According to the results, we can conclude that we cannot mix the values from different CPUs because each processor has its own limitations and characteristics.

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Activity 2. Influence of the operating system

Running multiple times the run.cmd script with different energy plans, these are the measured time results:

Sequential execution

BALANCED:

252, 282, 262, 243, 276, 265, 270 — Average: 264

ECONOMIZER:

288, 318, 292, 298, 320, 299 — Average: 302

HIGH PERFORMANCE:

256, 254, 265, 258, 257, 253 — Average: 257

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Parallel execution

BALANCED:

```
E:\algorithmics\session 0\Practica0 2022.eng\benchmarking\activity2>Echo off
"Actividad 2. Tarea 2: Ejecutar este script en el ordenador de practicas"
"Compilar Benchmarking1"
"Ejecutar Benchmarking1 varias veces"
n=1048576**TIME=219
n=1048576**TIME=219
n=1048576**TIME=203
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n=1048576**TIME=203
n=1048576**TIME=219
n=1048576**TIME=218
n=1048576**TIME=219
n=1048576**TIME=219
n=1048576**TIME=218
n=1048576**TIME=219
```

ECONOMIZER:

```
E:\algorithmics\session 0\Practica0 2022.eng\benchmarking\activity2>Echo off
"Actividad 2. Tarea 2: Ejecutar este script en el ordenador de practicas"
"Compilar Benchmarking1"
"Ejecutar Benchmarking1 varias veces"
n=1048576**TIME=255
n=1048576**TIME=239
n=1048576**TIME=223
n=1048576**TIME=239
n=1048576**TIME=240
n=1048576**TIME=239
n=1048576**TIME=239
n=1048576**TIME=223
n=1048576**TIME=223
n=1048576**TIME=224
n=1048576**TIME=239
n=1048576**TIME=223
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n=1048576**TIME=223
n=1048576**TIME=223
```

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HIGH PERFORMANCE:

```
E:\algorithmics\session 0\Practica0 2022.eng\benchmarking\activity2>Echo off
"Actividad 2. Tarea 2: Ejecutar este script en el ordenador de practicas"
"Compilar Benchmarking1"
"Ejecutar Benchmarking1 varias veces"
n=1048576**TIME=208
n=1048576**TIME=224
n=1048576**TIME=208
n=1048576**TIME=208
n=1048576**TIME=224
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n=1048576**TIME=208
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n=1048576**TIME=208
```

---------- Conclusions ----------

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

According to the results, taking into account that the measurements with the Economic plan is higher than the measurements done with the other two plans (High performance and Balanced), in these cases the most appropriate is the High performance to finish before the processes (as it has the lowest average).

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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?**

It is possible to do other tasks while the programs are running. However, it would make the process slower and thus, the execution of the program would take more time. Therefore, we could watch a YouTube video in the meantime, but it will increase the execution time.

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

It is highly recommended to always do measurements with only one program using the CPU in order to get more reliable times. In case there are several programs (measurements, as said in the statement) on the same computer, they end up obstructing themselves (one with another) and thus, the times are not that reliable.