Lab 6 - Pipes

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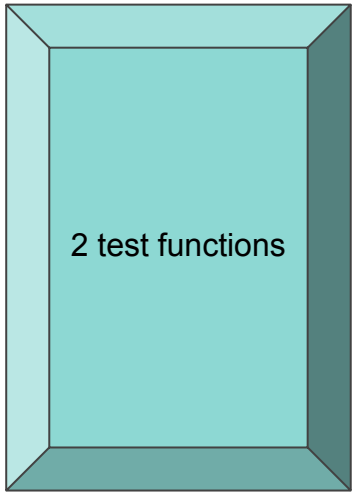
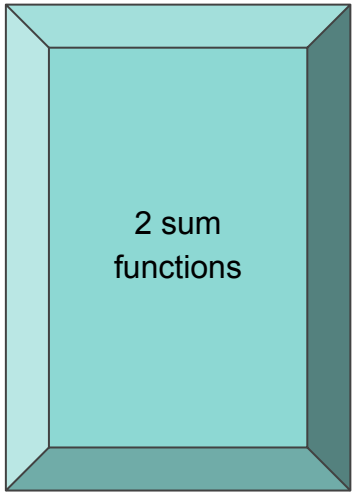
The role of every team member

Mariam



Shaalan



Pseudo-code and description of the 2 sum functions

Pseudo code:

```
Unsigned long long int parallel_ sum(int
n_proc,unsigned int N)

{           for(i=1;i <= n;n++)

                    if(fork == 0)

                    {start = i*steps +1}

if(last child)

            End = N

Else

            End = start + steps -1;

for(start -> end)

            Sum =sum + start;

}
```

Pseudo code:

```
Unsigned long long int
sum(unsigned int N)

{

for(i = 1; i ->N)

                    Sum = sum +i;

}
```

Description

- Func_1: It adds sequentially using a simple loop the N that is passed as a parameter

- Funct_2: It uses parallelism concept, by creating children for the parent and each child takes a part to calculate and then they are all summed in parallel

How the 2 tests were designed and why

We designed **two tests** functions:

- Test1()->we fixed n_proc and we change N

  This function creates two loops **for(unsigned int i=100000;i<=300000;i=i+1000)** and each one calls each one which are **sum()** and **parallellsum()**. We also calculated the cpu_time used by each function.

- Test2()->We fixed N to a large number

  This function fixed N to be equal **1000000** and we fixed it for the **normal sum** and calculated the cpu_time taken by it and we also fixed N and we looped over the n_proc **for(int i = 1; i < 200; i+=2)** in the **parallel sum()** and calculated cpu_time.

Answers to the 2 questions with reasons

If we fix n_proc, then at which value of N does parallel_sum outperform sum?

- We started with the value 10000

  In which we can see that at the

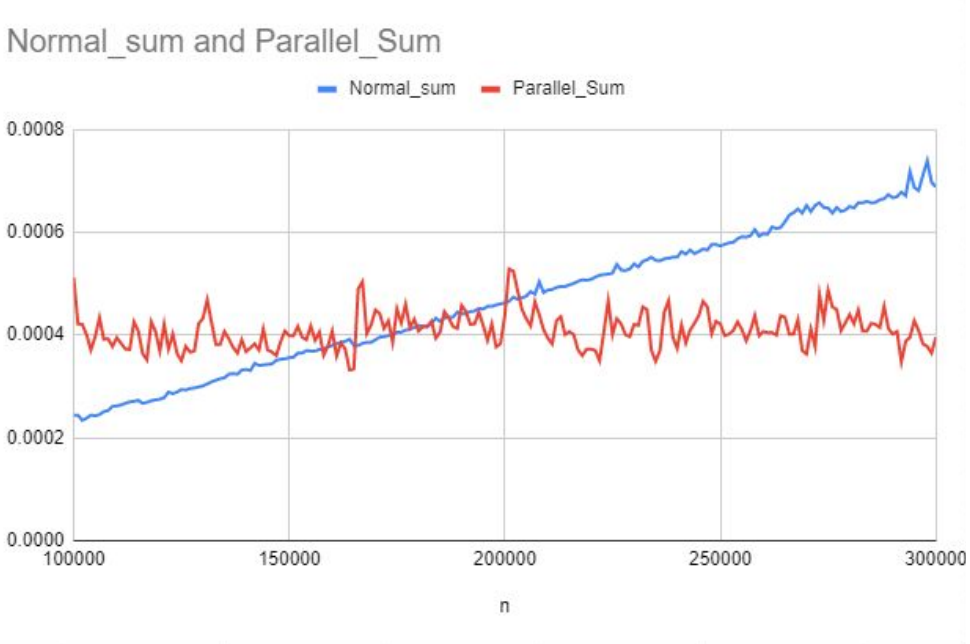
  Intersection point which is nearly

  at 20000 or 21000 and

  we fixed n_proc at 7

  according to the specs of the CPU

  Which is



- **If we fix N to a large number, then at which value of n_proc does parallel_sum outperform sum?**

  As we can see from the graph at the value nearly 40

  we can see the intersection between the two lines

  where before this we can see that

  Parallelism outperforms sum and after

  This the opposite happens . the reason

  is that the computer

  won't have enough cores to run these

  Processes when we exceed this number.