1B)

|  |  |
| --- | --- |
| N Value | Ex Time |
| 100 | 2 |
| 400 | 10 |
| 800 | 39 |
| 1600 | 157 |
| 3000 | 555 |
| 6000 | 2213 |
| 8000 | 3928 |
| 10000 | 6131 |
| 12000 | 8882 |

|  |  |
| --- | --- |
| N Value | FLOPs |
| 100 | 2121361664 |
| 400 | 2068108416 |
| 800 | 2065028736 |
| 1600 | 2066078208 |
| 3000 | 1955533056 |
| 6000 | 1949298432 |
| 8000 | 1946768256 |
| 10000 | 1944652032 |
| 12000 | 1938668544 |

1C)

The EX. Time vs N graph shows that the execution time is increased as the value of N increases, this is because more data must be fetched from the cache, once the cache is no longer available a cache miss will occur (This is show with the massive increase in the graph), causing the CPU to use the slower memory. In the FLOPs vs N graph, FLOPs decline as N rises because the CPU spends more time managing the memory and addressing cache misses, which can slow down performance.

2)

How many processes does this program include? [2 marks]

7

How many processes execute the printf() commands? [5 marks]

The printf() instructions will be carried out by 5 processes. The first happens at the beginning of main when the programme starts, and the second happens in funct2(), where the for loop will cause it to run twice. The following one is in funct1(), which is called once, and the last one is at the end of main.

What messages will be printed in the screen when this program run? [13 marks]

Main started

Funct2 executes i=1

Funct2 executes i=1

Funct2 executes i=2

Funct2 executes i=2

Cheers from our world!

Cheers from our world!

This is the end(the doors)