**Data Structure & Algorithm** : Assignment 2

*By Find3r*

**Part 1 – Analysis**

**Question 1.**

Using the “HAL method”, we have :

static int freq(int f[]) // 50+10

{

int k = 1; // 10

int j = 0; // 10

while (j < f.length) // 20\*(N+1)+(N)\*160

{

if (f[j]\*2 == j)

k = k\*f[j];

j++;

}

return k; // 50

}

*Running time = 50 + 10 + 10 + 10 + 20(N+1) + 160N + 50*

*= 130 + 20N + 20 + 160N*

***= 150 + 180N***

**Question 2.**

1. Factorial : *O(n)*
2. Power : *O(n)*
3. LinearSearch : *O(n)*

**Part 2 – Java Classes**

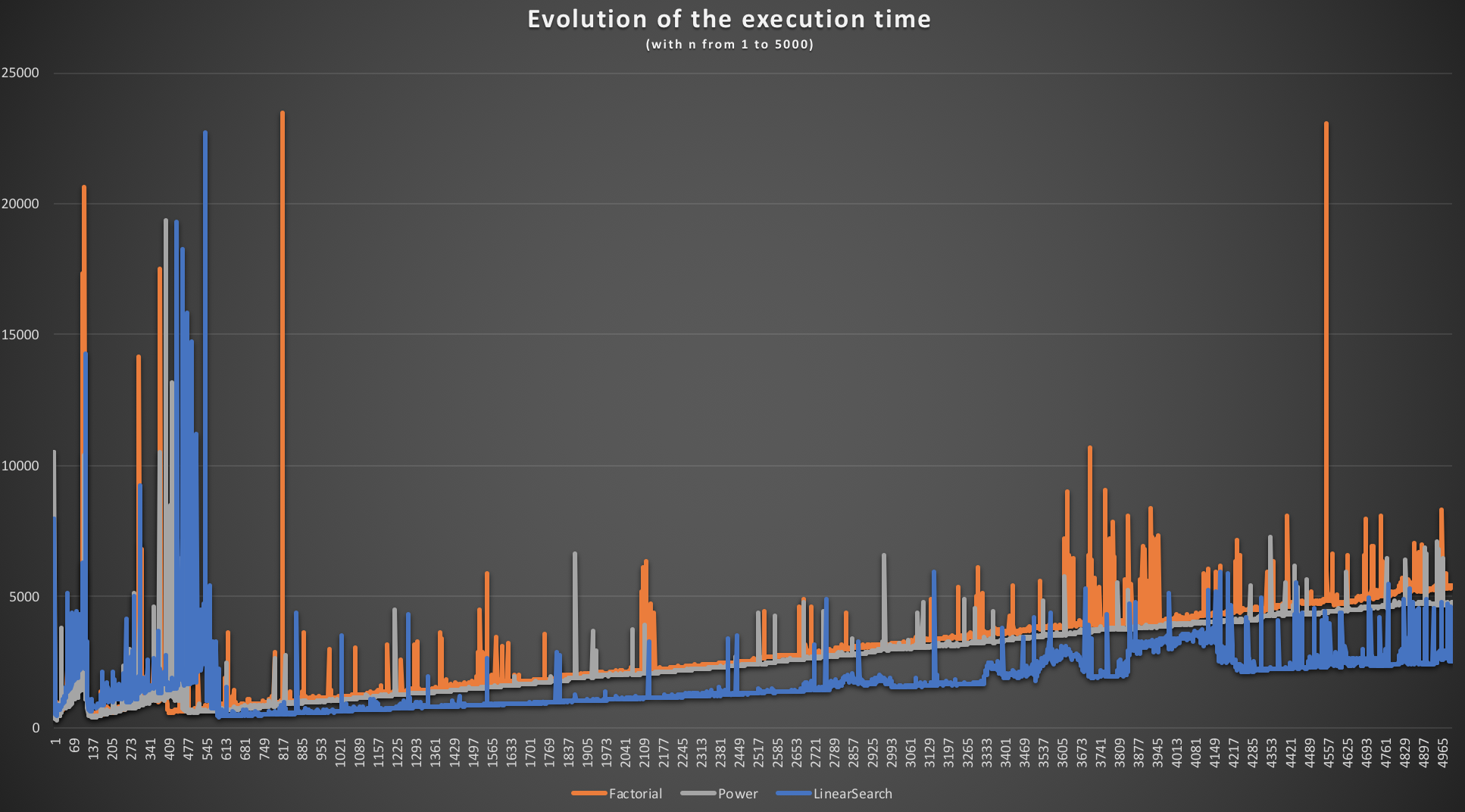
Please refer to the Java files in folder /Assignment\_2/bin and Assignment\_2/src.

**Part 3 – Evaluation**

For the Part 3, I decided to study the execution time of functions with n values ranging from 1 to 5000. I averaged each execution time on 5 tests for each function with each value of n (from 1 to 5000).

You will find in the folder /Assignment\_2 an Excel file result.xlsx with all the results as well as a summary chart.

Here is a copy of the graph of my Excel document :

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