W1D1 Lab

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**Question 1.** Comparing Algorithms

A computer screen shot of a program

Description automatically generated

A screenshot of a computer program

Description automatically generated

A computer screen shot of a number

Description automatically generated

Graph:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Random 1000 | Random 2000 | Random 4000 | Random 10000 | Random 30000 |
| Algorithm 1 | 14 | 1 | 12 | 11 | 97 |
| Algorithm 2 | 7 | 4 | 13 | 48 | 942 |
| Algorithm 3 | 1 | 0 | 0 | 1 | 1 |

\_Comparation between 3 methods to solve the problem above (data in *milliseconds*)

Conclusion:

As the above graph we can see the Algorithm\_3 is the best for performance. This caused by that method used only 1 loop to solve the problem. While the Algorithm\_1 has used more loops to handle the case.

Can see the Algorithm\_2 consumed a lot of times, especially with big data test. It is because this method does not determine the even numbers first but compare both even and odd numbers together. It takes a long time when data becomes bigger.

**Question 2. Proof by Induction**

[will be updated]