# EE2T21 bonus assignment 2

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### The assignment:

The goal of this assignment is to calculate the optimal path in an Erdös Rényi random graph using the Bellman-Ford pathfinding algorithm. To accomplish this we have chosen to use Python, due to the familiarity and easy of use of this language. For performance reasons we’ve investigated a possible conversion of the code to C, however the choice was made not to develop this further.

### How to run the program:

We have precalculated all the data for the program, since it takes about 30 minutes to compute everything. The results of the experiment can be found in the CSV file.

### The results:

Below the graph of the number of vertices versus the time it takes to calculate the path. As Bellman-Ford (to be called BF in the rest of this report) has a complexity of O(V\*E), in which V is the number of nodes and E the number of edges.

This leads to an exponential relationship between the number of nodes and the time spent on the calculation, which can also be seen In the graph below.

Chart, line chart

Description automatically generated