COMP26120 Lab 13: Background

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1 The small-world hypothesis

The hypothesis predicts that on average the distance between any two people in a social graph is 6 hops or 5 people between.

One might attempt to verify this by taking a graph and calculating the distance between every node and then taking an average.

2 Complexity Arguments

Dijkstra's algo:

The complexity of the algorythm is dependant on two factors V the number of vertexes or nodes and E the number of edges or connections.

The complexity is as follows:

$$O(|E| + |V|log|V|)$$

FloydWarshall algo:

The complexity of this algorythm is given by:

$$O(|V^3|)$$

For the graphs we have there are a small number of edges per vertex in the graph as the total connections possible for each vertex is $V - 1$ however each person only has $60 - 80$ friends. in Dijkstras algo the complexity is based on $|V|log|V|$ and this is much smaller than the V^3 in Floyd's

3 Part 1 results

4 Part 2 complexity analysis

5 Part 2 results