1. With my results, the BFS was the faster of both implementations. This is mainly to my lacking implementation of the Union-Find data structure. I wasn't able to time them, but I did very closely observe which one compiled faster as I waited for it to return the results.
2. Union-Find is faster when all the paths have been compressed. Thus, the find time becomes constant & not reliant on the linking of the up-tree. In this case it will outperform the BFS because while the BFS has to back-trace a path, the Union-Find can tell if two Actor are connected in constant time.
3. As explained in question number two, if we are able to compress the path in the Union-Find then all the paths with a connected path will all point to the same Actor. Thus, this takes O(1) in time, while the back trace when performing the BFS can take as long as O(N) where N is the number of actors.