The pseudocode is Dijkstra’s algorithm that finds the shortest path (which is the cheapest fee path for exchanging from our source currency to the target currency). The pseudocode would return the path from source currency to target currency and cheapest fee to exchange the source to target currency.

Since We know for a fact, the number of fees to exchange out number the number of currencies in the graph, thus the original runtime which is O(E log C + C log C) can be simplified.

In which E is the number of currencies exchange fees available and C is the number of currencies in the graph. E log C would be the runtime for finding the cheapest fee for a currency, while C log C would be the runtime for iterating through every currency in the graph.

Thus final runtime would be O(E log C), since E log C outnumbers C log C for C is vertex currencies 1

Dijkstra’s algorithm finds the shortest path which here is the cheapest fee path for changing given currency to target currency. The final runtime would be O(E log C)

Assume v and v’ are influential, then we know there is a path from v to v’ and vice versa (v’ to v). Thus, we can say v and v’ are in the same strongly connected component (SCC), since there is a path between all pairs of vertices (v and v’). Therefore, if v is influential and v’ is also in the same SCC as v, then v’ is also influential like v. This is because for all vertices u (any vertex other than v and v’) ∈ V, there would exist a

path from v to v’ to u.

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T is not a minimum spanning tree. This algorithm will examine the heaviest edges instead of the lightest as it should in a MST.

If we assume that v0 and v1 are influential, that means there is a path from v0 to v1 and back. From this we can say that v0 and v1 are strongly connected components. Since we said v0 is influential and v1 is in the same SCC as v0, therefore we can say that v1 is influential as all u ∈ V(u being any other vertices).

If v and v0 are influential, there is a path from v to v0 and from v0 to v. Thus v and v0 are in the same strongly connected component, by definition. Similarly, if v is influential and v0 is in the same SCC as v, then v0 is influential, because for all u∈V

Thus v and v0 are in the same strongly connected component, by definition. Similarly, if v is influential and v0 is in the same SCC as v, then v0 is influential, because for all u∈V, there is a path from v0 tov to u.