Text

Description automatically generated

Text

Description automatically generated

Merge Graph:

Text

Description automatically generated

**The analysis of the memory usage:**

The memory usage of adjacency matrix is 96.45MB and the usage of linked list is 61.91MB.

Because for a Graph (V, E), the space complexity using two-dimensional matrix is O(n^2), the space complexity using linked list is O(n). Using linked list use much less memory than using adjacency matrix, especially when the number of nodes is huge, and graph is sparse. The linked list can only store existing edges, but adjacency list must store n^2 edges even if there is no edge between two nodes.