ABSTRACT

Operating and manipulating data in the graph database becomes most interesting topics to study along with expand use of graph database. The basic operations that often used in graph database is shortest path searching. However, by the growing of data, a new problem arises in searching shortest path, the searching performance must not affected by the amount of data. Tree decomposition based indexing (TEDI) is one of the shortest path search methods that perform search process by indexing. TEDI begins with indexing process. Indexing consists of three stages, namely graph reduction, tree construction, and local shortest path search using BFS. Once the indexing done, the next process is shortest path search in a bottom-up. By using TEDI, the process of finding shortest path is not affected by the size of the graph, rather on the value of the reduction degree. Besides the size of the index can be adjusted based on the value of the reduction degree. Because of that it is needed to conduct research to determine the influence of size of the graph on the performance of indexing and the influence of the reduction degree on the performance of finding shortest path in TEDI, so that this method can be implemented based on the limitations of the system. The result showed that, for the system that has limited storage capacity, the resulting index size can be reduced by increasing the value of the reduction degree. Otherwise, if the storage is large enough, the shortest path search performance can be improved by minimizing the value of the reduction degree.

Keywords*: Shortest path, indexing, tree decomposition, shortest path, TEDI*