

Statistical fixed range multiple selection algorithm for peer-to-peer system

ABSTRACT

In this research, a new multiple selection algorithm, which is known as "statistical fixed range multiple selection algorithm" is proposed. This algorithm is developed based on the statistical knowledge about the uniform distribution nature of the data which has been arranged in ascending order in the local file. A global file with n keys is distributed evenly among p peers in the peer-to-peer network. The selection algorithm can perform multiple selections concurrently to find multiple target keys with different predefined target ranks. The algorithm uses a fixed filter range approach that has been defined before the process begins, in which the algorithm is able to make sure that the target key is within the specified filter range in each local file. The range is made smaller and smaller as the selection process iterates until all target keys are found. The algorithm is able to reduce the number of rounds needed and increase the success rate of all multiple selections in the selection process compared to the previous multiple selection algorithms proposed by Loo in 2005.

Keyword: Filter range; Multiple selection; Peer-to-peer system; Statistical selection algorithm