Abstract

In the current scenario, distributed approach of computing is very popular over the centralized approach of computing due to faster execution of processes; cut off the execution time of processes and cost. In the year 1978, Lamport [6] has proposed an approach for synchronization of processes under distributed environment which has the limitations for reordering and executing the events of the processes by using time, ordering of events and clock conditions. The important limitation is that the algorithm does not cover the process execution in reflexive, symmetric and transitive manners when the unidirectional or bidirectional ring is appearing in the distributed network for executing the processes and sharing the common resources under distributed environment. The present work will focus on these aspects and processor can execute the events of processes either on its node called as computer system in the reflexive manner and if the current node is busy for other tasks then it can use the next promising node under the defined topology and can be executed by using symmetric property and if further second node is busy then events can be transmitted to next promising node and these are executed in the transitive manner and the output is transferred to the first node. These aspects are demonstrated by proposing a new kind of topology called as step topology in which numbers of computer systems are attached in the distributed network. Algorithms are designed for all these three cases by considering the definitions of process and
thread. Since one computer system can interact with another computer system with message passing technique under distributed environment, therefore, message complexities in all these cases are also measured and compared with Lamport and other similar kinds of algorithms available for distributed computing system.

References

- Zhang, H. L., Leung, H. C. and Raikundalia, G. K., Performance Analysis of Network
 Modifications in Lamport Algorithm for Distributed Computing System


Index Terms

Computer Science

Algorithms

Keywords

Distributed approach  Bidirectional ring  Message Complexity  Step topology and Lamport algorithm