



Optimized Performance in Task Scheduling Algorithm Implementation

Sonia Saini

Department of CSE

Kurukshetra, Haryana, India

Abstract-Optimized Performance Task Scheduling is an algorithm that will do optimized prioritization means priorities of the tasks are decided so as to achieve optimized grid scheduling. Reliability of processors is also considered in this during selection of a processor for that particular task. Reliability factor makes this algorithm different from the previous work. The OPTS algorithm considers the reliability factor for Processors and obtains the task order and on the basis of rank, assigns the processor to that selected task, we can take Cost factor also here to enhance the capability of this algorithm, by considering cost factor, we can maximize profit for an organization. We can make this algorithm cost effective.

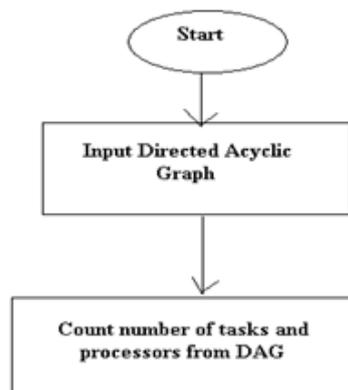
Keywords: Optimised Performance Task scheduling(OPTS),Communication cost to Computation Cost(CCR), Heterogenous Distributed Computing(HDS).

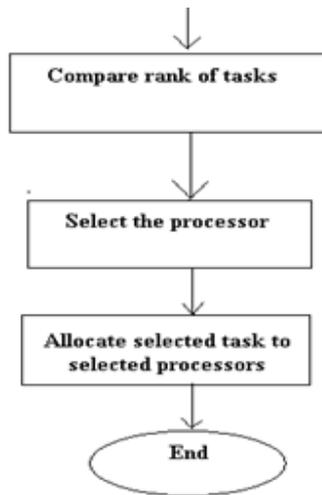
I. INTRODUCTION TO OPTIMISED PERFORMANCETASK SCHEDULING

A computational grid is a hardware & software infrastructure that provides a faithful, consistent, persistent, and in expensive access to high-end computations. Grid computing is the group of computer resources from multiple sites to reach a common target. The grid is like a distributed system with non-interactive workloads that involve a large number of files. Heterogeneous computing systems are capable computing stages, since single parallel architecture founded systems may not be sufficient to achieve the available parallelism with the running applications. In few cases, heterogeneous distributed computing (HDC) arrangements can accomplish higher performance by lower cost than any other single-machine super-systems. Though, in HDC systems, in processors and networks there is chance of failure and any kind of failure may be critical to the running applications. To solve such kind of problems our proposed OPTS algorithm is most appropriate. All the particular phases should be performed carefully to produce quality results it lessens the overall completion time. Scheduling algorithms are usually chosen for scheduling the tasks of a parallel program onto the heterogeneous computing systems. It Provide good quality of programs in less time complexity than the other approaches. It Generate good quality schedules at a reasonable cost. These have lower time complexity and in contrast to task duplication strategies, their solutions use fewer processors, producing more efficient schedules. Researchers have developed many list scheduling algorithms.

Three main facts during designing of Optimized Performance Task Scheduling algorithm in grid computing will be considered: Allocation of priorities to the tasks of a schedule; Select the task on the foundation of priority; which task will be allocated to which CPU. We are trying to obtain an effective task schedule by considering the reliability factor for the processors..If priority of two tasks will be same, then we will resolve it by selecting one out of them randomly. Optimized Performance Task Scheduling is an algorithm that will do optimized prioritization means priorities of the tasks are decided so as to achieve optimized grid scheduling. Reliability of processors is also considered in this during selection of a processor for that particular task. Reliability factor makes this algorithm different from the previous work.

II. PROCEDURE FOR USING OPTS





III. METHODOLOGY

The OPTS algorithm is explained in this paper with the help of the graphs shown in the following figures: Graph (i) consists of 5 processors {p₁, p₂,.....p₅} and their corresponding computation and communication costs are shown. Graph (ii) consists of 11 tasks {v₁, v₂...v₁₁} and their corresponding computation and communication costs are shown. Three main facts during designing of Optimized Performance Task Scheduling algorithm in grid computing will be considered:

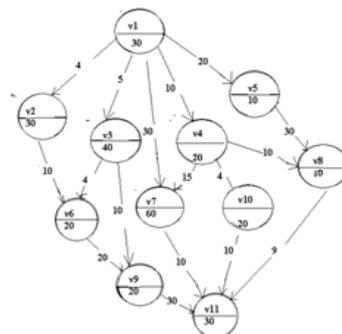
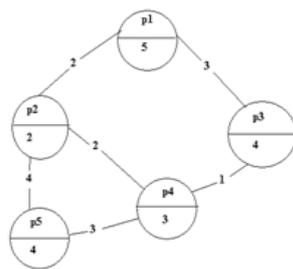
- (1) Allocate priorities to the tasks of a schedule.
- (2) Select the task on the foundation of priority.
- (3) Which task will be allocated which CPU?

Algorithm

- Steps: 1) Input the directed acyclic graph
- 2) Compute rank for every task v by traversing DAG from exit task
- 3) Count number of tasks and processors from directed acyclic graph
- 4) Reliability overhead $rc = ((1 - \text{Math.exp}(-v.\text{getWeight()} * \text{temp}rc)) * \text{averageTaskComputationCost})$
- 5) Rank = $rc + \text{averageTaskComputationCost}$
- 6) Selection of the appropriate processor.
- 7) Allocation of selected task to selected processors.

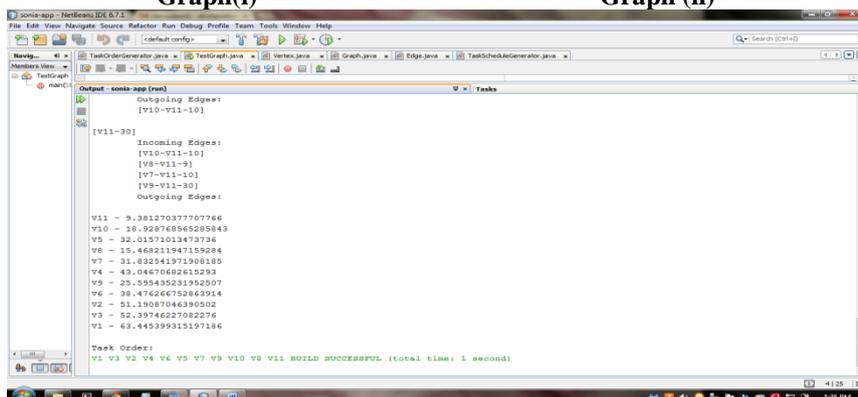
IV. RESULTS

Graph (i) Processors with their communication and computation costs
 Graph (ii) Tasks with their communication and computation costs



Graph(i)

Graph (ii)



V. CONCLUSION

All the particular phases should be performed carefully to produce better results. It lessens the overall completion time. Scheduling algorithms are usually chosen for scheduling the tasks of a parallel program onto the heterogeneous computing systems. It provides good quality of programs in less time complexity than the other approaches. It generates good quality schedules at a reasonable cost. These have lower time complexity and in contrast to task duplication strategies, their solutions use fewer processors, producing more efficient schedules. Researchers have developed many scheduling algorithms.

Three main facts during designing of Optimized Performance Task Scheduling algorithm in grid computing will be considered: Allocation of priorities to the tasks of a schedule; Select the task on the foundation of priority; which task will be allocated to which CPU. We are trying to obtain an effective task schedule by considering the reliability factor for the processors. If priority of two tasks will be same, then we will resolve it by selecting one out of them randomly. Optimized Performance Task Scheduling is an algorithm that will do optimized prioritization means priorities of the tasks are decided so as to achieve optimized grid scheduling. Reliability of processors is also considered in this during selection of a processor for that particular task. Reliability factor makes this algorithm different from the previous work.

VI. FUTURE SCOPE

(1) The OPTS algorithm considers the reliability factor for Processors and obtains the task order and on the basis of rank, assigns the processor to that selected task, we can take Cost factor also here to enhance the capability of this algorithm, by considering cost factor, we can maximize profit for an organization. We can make this algorithm cost effective.

(2) We can consider the CCR factor i.e. Communication cost to Computation cost; on the basis of this factor we can obtain task order and hence can obtain effective task scheduling. Although a large number of algorithms are there for task scheduling, but some more work can be done in case of grid computing.

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