Abstract

The paper presents a novel allocation algorithm to allocate independent real time tasks on a processor in a way that improves the processor's throughput (Processor's throughput is the number of tasks the processor can accept for execution). The proposed approach allocates tasks' workloads (task's workload is the percentage of work required by the processor to execute the task) instead of their processing powers (Processing power assigned to a task is a percentage of the processor reserved to execute the task such that its deadline is satisfied). To achieve our objective a variable processing power is assigned to the task under consideration over its deadline to satisfy its timing requirements instead of rejecting it if a constant processing power cannot be guaranteed as in previous CPU reservation approaches. Simulation results revealed that the acceptance rate of the admitted tasks to a certain processor using the new approach is superior to that achieved using the traditional processing power reservation approach.
- Ford, B. and Susarla, S., 1996, CPU inheritance scheduling, operating systems review.
Real-Time Workload Allocation on a Uni-Processor


Index Terms

Computer Science
Information Sciences

Keywords
Workload allocation
Processing power
Processor utilization
Scheduling real-time tasks