
Appendix on Mathematics

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Critical Instant Theorem

To apply the critical instant theorem, quite a few conditions have to be satisfied. Please indicate which of the following conditions are correct and which of them are incorrect. If a condition is incorrect, please correct it.

- The task set consists of only independent tasks.
- The task set must be *strictly* periodic.
- The scheduling algorithm is fixed-priority preemptive scheduling.
- Early completion of jobs is not possible. A job has to spin till its worst-case execution time if it finishes earlier.
- No task voluntarily suspends itself. That is, a job cannot suspend itself during its execution.
- The relative deadline of a task can be greater than its period.
- Scheduling overheads (context switch overheads) are zero.
- All periodic/sporadic tasks have zero release jitter (the time from the task arriving to it becoming ready to execute).