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Improvement of earliest deadline first scheduling algorithm (Article)

Cheng, Y.^a , Zhao, H.-W.^a, Long, M.-L.^b , Li, Y.-C.^a

^a College of Computer Science and Technology, Jilin University, Changchun, 130012, China
^b School of Foreign Language Education, Jilin University, Changchun 130012, China

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Abstract

In the process of service flow scheduling based on IEEE802.16d agreement, a good scheduling algorithm should ensure that higher priority tasks get priority service; meanwhile, the occupation of system resources during the scheduling process should be minimized. The advantages and disadvantages of two kinds of existing Earliest Deadline First (EDF) algorithms, i.e. the non-preemptive EDF algorithm and preemptive EDF algorithm, are analyzed in depth. Then an improved semi-preemptive EDF algorithm based on the importance of factors is proposed. In this algorithm the time characteristics, the importance characteristics and the order of reference are taken as the adjustable parameters, and the transmission distance is also taken into account. By simulation, the improved EDF algorithm is applied to the Real-Time Polling Service (RTPS) service flow scheduling of IEEE802.16d agreement. The experimental results show that the improved EDF algorithm has a better balance between advantages and disadvantages than non-preemptive and preemptive EDF algorithms, with smaller and more stable delay.

Author keywords

Computer applications; Deadline time; Delay time; Earliest deadline first; Preempt; Time characteristics

Indexed keywords

Deadline time; Delay Time; Earliest deadline first; Preempt; Time characteristics

Engineering controlled terms: Computer applications; Real time systems; Scheduling; Scheduling algorithms

Engineering main heading: Response time (computer systems)

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Long, M.-L.; School of Foreign Language Education, Jilin University, China; email:Longml@jlu.edu.cn
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