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Summary: This paper introduces a new environment of online scheduling in which jobs are scheduled under the non-delayed processing (NDP) constraint, where NDP means that the available jobs cannot be delayed for processing when some machine is idle. We study in this paper the single-machine online scheduling to minimize the maximum weighted completion time ($WC_{\text{max}}$) or the maximum delivery completion time ($L_{\text{max}}$) under the NDP constraint. For the first problem, we establish a lower bound 2 and provide an online algorithm which has a competitive ratio of $(3 + \sqrt{5})/2 \approx 2.618$. We present a 3/2-competitive best possible online algorithm for the second problem.

MSC: 90B35 Deterministic scheduling theory in operations research

Keywords: online scheduling; weighted completion time; delivery time; non-delayed processing

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References:


[3] Chai, X.; Lu, LF; Li, WH; Zhang, LQ, Best-possible online algorithms for single machine scheduling to minimize the maximum weighted completion time, Asia Pac J Oper Res, 35, 1850048 (2018) · Zbl 1407.90144 · 10.1142/S0217595918500483


[5] Fang, Y.; Liu, PH; Lu, XW, Optimal on-line algorithms for one batch machine with grouped processing times, J Comb Optim, 22, 509-516 (2011) · Zbl 1236.90052 · 10.1007/s10878-010-9298-6


[9] Li, WH; Chai, X., Online scheduling on bounded batch machines to minimize the maximum weighted completion time, J Oper Res Soc China, 6, 455-465 (2018) · Zbl 1413.90095 · 10.1007/s40305-017-0179-x


[22] Yuan, JJ; Ng, CT; Cheng, TCE, Scheduling with release dates and preemption to minimize multiple max-form objective functions, Eur J Oper Res, 280, 860-875 (2020) · Zbl 1430.90296 · doi:10.1016/j.ejor.2019.07.072


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