Journal of the Korean Institute of Industrial Engineers
Vol. 33, No. 1, pp.164-165 , March 2007.

Erratum to "Production and Delivery Scheduling with Transportation Mode Selection Allowed" [Journal of the Korean Institute of Industrial Engineers 32(3) (2006) 163-171]

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"수송수단의 선택이 허용된 생산 및 배송 스케줄링에 관한 연구"에 대한 오류수정

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In a recent article published in Journal of the Korean Institute of Industrial Engineers 32(3) (2006) 163-171, the authors have found that the DP-Algorithm on the left column in page 167 is wrong. The purpose of this note is to correct the errors. Thus, the DP-Algorithm and the subsequent description in page 167 should be corrected as follows.

DP Algorithm:

Indexing **:** Index all the jobs in non-decreasing order of Q_i's.

Value function :
$f_i(V_{1,1}, \ldots, V_{1,k(1)}, \ldots, V_{m,1}, \ldots, V_{m,k(m)})$ = total minimum weighted cost of a partial schedule with jobs 1 through i.
Initial condition : $f_0(0, 0, \ldots, 0) = 0$.

Recursive relation :

$$f_i(V_{1,1}, \ldots, V_{1,k(1)}, \ldots, V_{m,1}, \ldots, V_{m,k(m)}) =$$

$$\begin{cases} \infty, \text{ if } \max_{j,h}\{V_{j,h} - 2t_j\} < Q_i \\ \min\limits_{\{j,h \mid V_{j,h} - 2t_j \geq Q_i\}} \left\{ \begin{array}{c} f_{i-1}(V_{1,1}, \ldots, V_{j,h-1}, V_{j,h} - 2t_j, V_{j,h+1}, \ldots, V_{m,k(m)}) \\ + w_i(V_{j,h} - t_j) + DC_j \end{array} \right\}, \end{cases}$$

$$\text{if } \max_{j,h}\{V_{j,h} - 2t_j\} \geq Q_i$$

In each recursive relation, the first term represents an infeasible case, since there is no available vehicle to deliver job i. The second term represents the situation where the associated h-th vehicle of transportation mode j is available to deliver job i after the processing is finished, as depicted in <Figure 1>.

In the DP-Algorithm, there are $O(nX^T)$ states (partial schedules) in total, and the function value of each state is calculated in $O(T)$ time, so that the complexity of the DP-Algorithm is of order $O(nT \times X^T)$, where

$$T = \sum_{j=1}^{m} k(j) \text{ and } X = \sum_{i=1}^{n} p_i + 2n \times t_{\max}.$$

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Received December 2006; accepted January 2007

- <Figure 1> in page 167 should be changed as follows.

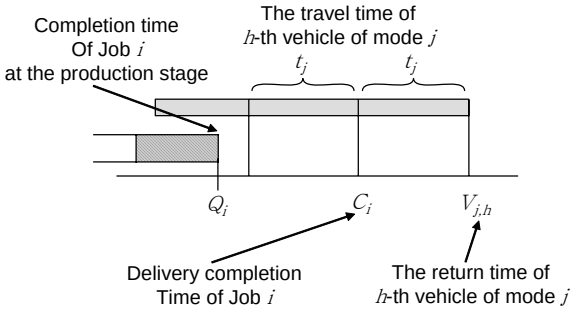

Figure 1. The second case in DP algorithm

- The following words should be changed as follows.

In line 10 on the right side in page 167, symbol i should be replaced with symbol l.

In line 24 on the right side in page 167, symbol i should be replaced with symbol l.

In line 33 on the right side in page 167, "SPT-ordered sequence" should be replaced with "LWF- ordered sequence".

In line 5 on the left side in page 168, symbol i should be replaced with symbol l.

- Two references in page 171 should be changed as follows.

Sung, C-S. and Kim, Y-H. (2002), Minimizing makespan in a two-machine flowshop with dynamic arrivals allowed, Computers & Operations Research, 29, 275-294.

Sung, C-S., Lee, I-S., and Yoon, S-H. (2006), Coordinated Scheduling of Production and Delivery Stages with Stage-dependent Inventory Holding Costs Allowed, working paper.

References

Cho, J-K., Lee, I-S. and Sung, C-S. (2006), Production-and-Delivery Scheduling with Transportation Mode Selection Allowed, *Journal of the Korean Institute of Industrial Engineers* **32**(3), 163-171.