Algorithmica (2012) 62:633–634
DOI 10.1007/s00453-011-9558-6

ERRATUM

Erratum to: Linear Time Algorithms for Generalized Edge Dominating Set Problems

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Received: 25 May 2011 / Accepted: 27 July 2011 / Published online: 25 August 2011

Erratum to: Algorithmica (2008) 50(2):244–254
DOI 10.1007/s00453-007-9057-y

In our paper "Linear Time Algorithms for Generalized Edge Dominating Set Problems" [1] we claim that the edge-edge adjacency matrix with one's on the diagonal is totally unimodular (Lemma 6). Unfortunately there is a mistake in the proof of Lemma 6 and Fig. 1 shows a counterexample to the lemma.

The matrix in question is

$$M = \begin{pmatrix} 1 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 0 \\ 1 & 0 & 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 & 1 & 1 \end{pmatrix}$$

and its determinant is 2. This shows that the edge-edge adjacency matrix with one's on the diagonal is in general not totally unimodular for all trees.

The online version of the original article can be found under doi:10.1007/s00453-007-9057-y.

We would like to thank Keiko Imai, Naoyuki Kamiyama and Yusuke Matsumoto for pointing out the mistakes in the published version and for providing the counterexample.

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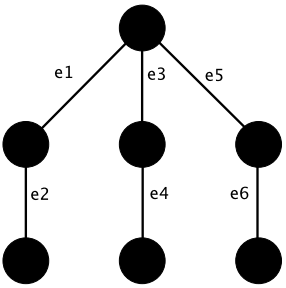

Fig. 1 A counterexample to Lemma 6

Theorem 1, based on Lemma 6, then concludes that the b-EDS problem on weighted trees can be solved optimally in strongly polynomial time for any values of b. At this time we do not have a different proof for or a disproof to Theorem 1.

Moreover, we overlooked a technical detail in the description of Algorithm 1. In Line 6 of the algorithm, for certain edges which are incident upon the vertex w, a child edge of that edge is added to the set S. However, there may exist a child s of w which is a leaf itself and for which $b(ws) = 1$. If such an edge ws exists then one just has to compute $F = EDS(T - gch(w), b, c)$ instead of the steps in Lines 6–13. Using this modification of the algorithm renders Theorem 3 correct.

References

1. Berger, A., Parekh, O.: Linear time algorithms for generalized edge dominating set problems. Algorithmica **50**(2), 244–254 (2008)