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Correction to "On Fitting's lemma"

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In Proposition 1 in [1] the proof of 1)$\Rightarrow$2) is invalid, since End $((R^n/e_{11}K)_R)$ is not ring isomorphic to $I_{(R)_n}(K)/K$ in general. Here is a revised proof.

PROOF OF 1)$\Rightarrow$2) OF [1, Proposition 1]. Let K be a right ideal of $(R)_n$. Then each element $s \in I_{(R)_n}(K)$ induces, by left multiplication, an $(R)_n$-endomorphism of the right $(R)_n$-module $(R)_n/K$, which we denote by $f(s)$. It is easy to see that the ring $I_{(R)_n}/K$ is isomorphic to the subring $\mathrm{End}_{(R)_n}((R)_n/K)$ of $\mathrm{End}_R((R)_n/K)$ by the map $s+K \to f(s)$. Suppose $xy-1 \in K$ with $x \in I_{(R)_n}(K)$ and $y \in (R)_n$. Then $f(x)$ is a surjective endomorphism and hence an isomorphism by 1). If the inverse of $f(x)$ is represented by $f(z)$ with $z \in I_{(R)_n}(K)$, we have that $zx-1 \in K$. Since $y-z=z(xy-1)-(zx-1)y \in K$, it is immediate that $y \in I_{(R)_n}(K)$ and $yx-1=(y-z)x-(zx-1) \in K$.

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Reference

[1] Y. Hirano: On Fitting's lemma, Hiroshima Math. J. 9 (1979), 623–626.

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