Erratum

General Purpose Schedulers for Database Systems

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Definition 5.1 should read:

**Definition 5.1.** $(L, S) \in SE$ iff $L = \lambda \lor$

$$\text{elem}(L) \land \text{DOMAIN}(S) \land \left( \exists i_1, \ldots, i_n \in [1, \infty) \right) ((L = R_{i_1} W_{i_1} \ldots R_{i_n} W_{i_n})).
$$

Note that Definition 5.1 allows $i_k = i_l$, for some $k, l$. Hence, $(L, S) \in SE$ abstracts a serial computation of the transactions, possibly with repetitions. Moreover, note that weak serializability now has a slightly different interpretation.

With this change $H_{DBS}$ becomes unnecessary, so that Lemma 5.1 now reads.

**Lemma 5.1.** Let $DBS = (V, A, n, S, SCD)$ be a database system and $H_{DBS}$ be a Herbrand interpretation for DBS.

$$\bar{y} \in H_{DBS} \text{ iff } (\exists (L, S) \in SE)(p_{H_{DBS}}[L, S] \text{"} = \bar{x} \text{"}) = \bar{y}.$$  

Theorem 5.2 remains the same, except that Step(5) is now unnecessary.

**Proof of Lemma 5.1.** (⇒) Follows from the definition of $H$ and $SE$.

(⇐) If $\bar{y}$ is a tuple of character strings, let $lg(\bar{y})$ denote the sum of the lengths of all coordinates of $\bar{y}$.

Note that $lg(\bar{y}) \geq m$, if $\bar{y} \in H_{DBS}$, where $m = \# V$. We prove the result by induction on $lg(\bar{y})$.

**basis:** assume that $lg(\bar{y}) = m$, $\bar{y} \in H_{DBS}$.

Then $\bar{y} = \bar{x}$. Since $p_{H_{DBS}}[\lambda, S] \text{"} = \bar{x} \text{"}$, we are done.

**Induction step:** assume that the result holds for $\bar{y} \in H_{DBS}$ such that $lg(\bar{y}) < k$, $k \geq m$.

Let $\bar{y}' \in H_{DBS}$ be such that $lg(\bar{y}') = k$. Since $\bar{y}' \in H_{DBS}$ and $k \geq m$, there must be $\bar{y} \in H_{DBS}$ and $j \in [1, n]$ such that for any $i \in [1, m]$, if $x_{ij} \notin S(W_j)$, then $y_{ij} = y_i$ otherwise $y_{ij} = "f_{ij}(y_{j_{ij}}, \ldots, y_{j_{kj}})"$, where $S(R_j) = \{x_{ij_1}, \ldots, x_{ij_k}\}$. Then, $lg(\bar{y}) < lg(\bar{y}')$. By the induction hypothesis, there is $(L, S) \in SE$ such that $p_{H_{DBS}}[L, S] \text{"} = \bar{x} \text{"} = \bar{y}$. Construct now $L' = LR_j W_j$. Then, we have that

$$p_{H_{DBS}}[L', S] \text{"} = \bar{x} \text{"} = p_{H_{DBS}}[R_j W_j, S](p_{H_{DBS}}[L, S] \text{"} = \bar{x} \text{"}) = p_{H_{DBS}}[R_j W_j, S] = \bar{y}.'$$

This concludes the proof.

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