The Calculational Design of a Generic Abstract Interpreter

Corrigendum, February 7, 1999

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Section 8.7, page 27

The backward ternary substraction operation $-^\sharp$ is defined as

$$-^\sharp(q_1, q_2, p) \stackrel{\Delta}{=} \text{let } (r_1, r_2) = -^\sharp(q_1, -^\flat(q_2), p) \text{ in } (r_1, -^\flat(r_2)) \ .$$

should be:

The backward ternary substraction operation $-^\sharp$ is defined as

$$-^\sharp(q_1, q_2, p) \stackrel{\Delta}{=} \text{let } (r_1, r_2) = +^\sharp(q_1, -^\flat(q_2), p) \text{ in } (r_1, -^\flat(r_2)) \ .$$

Section 10.3, page 34

The calculational design of the abstract equality operation $\stackrel{\sharp}{=}$ does not depend upon the specific choice of L

$$\begin{array}{ll}
 & \alpha^2(\{\langle i_1,\ i_2\rangle \mid i_1 \in \gamma(p_1) \cap \mathbb{I} \wedge i_2 \in \gamma(p_2) \cap \mathbb{I} \wedge i_1 \stackrel{\sharp}{=} i_2 = \mathtt{tt}\}) \\
 & \quad \wr \text{def. (45) of } \stackrel{\sharp}{=} \wr \\
 & \alpha^2(\{\langle i,\ i\rangle \mid i \in \gamma(p_1) \cap \gamma(p_2) \cap \mathbb{I}\}) \\
\sqsubseteq^2 & \quad \wr \gamma \circ \alpha \text{ is extensive (6) and } \alpha^2 \text{ is monotone} \wr \\
 & \alpha^2(\{\langle i,\ i\rangle \mid i \in \gamma(p_1) \cap \gamma(p_2) \cap \gamma(\alpha(\mathbb{I}))\}) \\
 & \quad \wr \gamma \text{ preserves meets} \wr \\
 & \alpha^2(\{\langle i,\ i\rangle \mid i \in \gamma(p_1 \sqcap p_2 \sqcap \alpha(\mathbb{I}))\}) \\
 & \quad \wr \text{def. (12) of } \gamma^2 \wr \\
 & \alpha^2(\gamma^2(\langle p_1 \sqcap p_2 \sqcap \alpha(\mathbb{I}),\ p_1 \sqcap p_2 \sqcap \alpha(\mathbb{I})\rangle)) \\
\sqsubseteq^2 &
\end{array}$$

$\wr\alpha^2 \circ \gamma^2$ is reductive and let notation$\wr$
let $p = p_1 \sqcap p_2 \sqcap \alpha(\mathbb{I})$ in $\langle p,\ p\rangle$
$\sqsubseteq^2$ $\wr$def. (36) of $?^\sim\wr$
let $p = p_1 \sqcap p_2 \sqcap ?^\sim$ in $\langle p,\ p\rangle$
$=$ $\wr$by defining $\tilde{=} \triangleq =$ let $p = p_1 \sqcap p_2 \sqcap ?^\sim$ in $\langle p,\ p\rangle\wr$
$\tilde{=}$.

_____ should be:

The calculational design of the abstract equality operation $\tilde{=}$ does not depend upon the specific choice of L

$\alpha^2(\{\langle i_1,\ i_2\rangle \mid i_1 \in \gamma(p_1) \cap \mathbb{I} \wedge i_2 \in \gamma(p_2) \cap \mathbb{I} \wedge i_1 \underline{=} i_2 = \mathbb{tt}\})$
$=$ $\wr$def. (45) of $\underline{=}\wr$
$\alpha^2(\{\langle i,\ i\rangle \mid i \in \gamma(p_1) \cap \gamma(p_2) \cap \mathbb{I}\})$
$\sqsubseteq^2$ $\wr\gamma \circ \alpha$ is extensive (6) and α^2 is monotone$\wr$
$\alpha^2(\{\langle i,\ i\rangle \mid i \in \gamma(p_1) \cap \gamma(p_2) \cap \gamma(\alpha(\mathbb{I}))\})$
$=$ $\wr\gamma$ preserves meets$\wr$
$\alpha^2(\{\langle i,\ i\rangle \mid i \in \gamma(p_1 \sqcap p_2 \sqcap \alpha(\mathbb{I}))\})$
$=$ $\wr$def. (12) of $\gamma^2\wr$
$\alpha^2(\gamma^2(\langle p_1 \sqcap p_2 \sqcap \alpha(\mathbb{I}),\ p_1 \sqcap p_2 \sqcap \alpha(\mathbb{I})\rangle))$
$\sqsubseteq^2$ $\wr\alpha^2 \circ \gamma^2$ is reductive and let notation$\wr$
let $p = p_1 \sqcap p_2 \sqcap \alpha(\mathbb{I})$ in $\langle p,\ p\rangle$
$\sqsubseteq^2$ $\wr$def. (36) of $?^\sim\wr$
let $p = p_1 \sqcap p_2 \sqcap ?^\sim$ in $\langle p,\ p\rangle$
$=$ $\wr$by defining $\tilde{=} \triangleq =$ let $p = p_1 \sqcap p_2 \sqcap ?^\sim$ in $\langle p,\ p\rangle\wr$
$\tilde{=}$.

_____ Section 13.9, page 75 _____

The third example shows the imprecision on reachability resulting from the choice to have $\gamma(\,)\,\mathrm{BOT} \neq \emptyset$).
_____ should be:

The third example shows the imprecision on reachability resulting from the choice to have $\gamma(\mathrm{BOT}) \neq \emptyset$).

_____ End of corrigendum _____