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$[\mathbb{Z} \times \mathbb{B} \rightarrow \mathbb{Z}]$

$\langle \text{while } bi \text{ do } bi := ba \vee bi \text{ od},$
 $\sigma[bi := \text{true}] \rangle$

$\downarrow \quad \uparrow$

$\langle bi := ba \vee bi;$
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$$\mathcal{M}_{tot}[\mathbf{while} \ bi \ \mathbf{do} \ skip \ \mathbf{od}](\xi) = \{\perp\}$$

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$$\begin{aligned} & \langle \mathbf{if} \ hex \ \mathbf{then} \ z := int(hex) \ \mathbf{fi}, \\ & \quad \eta[hex := \hat{\eta}(bi)] \rangle \\ & \quad \downarrow \\ & \langle z := int(hex), \eta[hex := \hat{\eta}(bi)] \rangle \\ & \quad \downarrow \\ & \langle E, \eta[hex := \hat{\eta}(bi)][z := 1] \rangle \end{aligned}$$

$$\mathcal{M}[\mathbf{while} \ bi \ \mathbf{do} \ skip \ \mathbf{od}](\xi) = \emptyset$$

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$\hat{\vartheta}(23 \leq bla[5])$

$= \hat{\vartheta}(23) \leq \hat{\vartheta}(bla[5])$

$= 23 \leq \vartheta(bla)(\hat{\vartheta}(5))$

$= 23 \leq \vartheta(bla)(5)$

$= 23 \leq 25$

$= \mathbf{true}$

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$\mathcal{M} \llbracket z := \mathit{int}(hex) \rrbracket (\eta) =$

$\{ \eta[z := \hat{\eta}(\mathit{int}(hex))] \}$

$\{ \exists z : 47 \cdot 11 = z \}$

$z := \mathit{int}(hex)$

$\{ z = -273 \}$

$\mathcal{M}_{tot} \llbracket z := \mathit{int}(hex) \rrbracket (\eta) =$

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$$\llbracket \exists z : 47 \cdot 11 = z \rrbracket = \Sigma$$

$\llbracket z = -3 \cdot 7 \cdot 13 \rrbracket =$
 $\{\delta \mid \delta(z) = -273\}$

$\varrho[z := -273] \models z = -3 \cdot 7 \cdot 13$

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$\{bi = \text{true}\}$
while *bi* **do** *skip* **od**
 $\{\text{false}\}$

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$\{z = \text{int}(bi)\}$
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$\{z = \text{int}(bi)\}$ $z := -3 \cdot 7 \cdot 13$ $\{z = -273\}$ $(\text{false}, \forall bla[5] : bla[5] \geq 0)$ $\{z = \text{int}(bi)\}$ $z := -3 \cdot 7 \cdot 13$ $\{z = -273\}$ $\langle \text{while } bi \text{ do } bi := ba \vee bi \text{ od},$
 $\sigma[bi := \text{true}] \rangle$ $\downarrow \quad \uparrow$ $\langle bi := ba \vee bi;$
 $\text{while } bi \text{ do } bi := ba \vee bi \text{ od},$
 $\sigma[bi := \text{true}] \rangle$ $(\exists z : 47 \cdot 11 = z, z := \text{int}(hex))$ $(\exists z : 47 \cdot 11 = z, z = \text{int}(hex))$ $turn := 1;$ **while true do** $[turn := 1 || turn := 2]$ **od** $(\exists z : 47 \cdot 11 = z, z = \text{int}(hex))$

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